



June 30, 2016

**BY: U.S. CERTIFIED MAIL, RETURN RECEIPT REQUESTED**  
9590 9401 0037 5168 3778 51

William F. Durham  
Director, Division of Air Quality  
WVDEP  
601 57<sup>th</sup> Street  
Charleston, WV 25304

**RE: Dominion Transmission, Inc. (DTI)**  
**Loup Creek Compressor Station (ID# 109-00019)**  
**R13 Class II Administrative Update (Permit No. R13-2839B)**

Dear Mr. Durham,

Enclosed are one complete original and two (2) cd copies of a 45 CSR 13 Class II Administrative Update permit application for a request to update the horsepower rating on Engine 4 (EN04) from 1,085 hp to 1,150 hp. During an internal review, DTI identified that EN04 was incorrectly labeled in the permit. Per the manufacturer spec sheet (and nameplate on the engine), the engine is rated at 1,150 hp. The manufacturer, Caterpillar, has also verified the 1,150 hp rating. Some of the emissions from this source have increased slightly due to the new horsepower rating and corrected calculations, however; the manufacturer emission specifications for NO<sub>x</sub>, CO, and VOC have not.

The public notice affidavit will be submitted to WVDEP once it is received from the newspaper.

If you have any questions regarding this application, please feel free to contact Rebekah Remick at (804) 273-3536 or Rebekah.J.Remick@dom.com.

Sincerely,

A handwritten signature in blue ink that reads "Amanda B. Tornabene".

Amanda B. Tornabene  
Director, Energy Infrastructure Environmental Services

# **APPLICATION FOR R13 PERMIT CLASS II ADMINISTRATIVE UPDATE**

**Dominion Transmission, Inc.  
Loup Creek Compressor Station  
Station ID# 109-00019**

June 2016

**DOMINION TRANSMISSION, INC.  
LOUP CREEK COMPRESSOR STATION**

**CLASS II ADMINISTRATIVE UPDATE**

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Application for Permit to Construct, Modify, Relocate or Administratively Update a Stationary Source of Air Pollutants

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**\*\*Note:** There are no Attachments C, H, K, O, Q, and R for this permit application.



WEST VIRGINIA DEPARTMENT OF  
ENVIRONMENTAL PROTECTION  
**DIVISION OF AIR QUALITY**

601 57<sup>th</sup> Street, SE  
Charleston, WV 25304  
(304) 926-0475  
[www.dep.wv.gov/daq](http://www.dep.wv.gov/daq)

**APPLICATION FOR NSR PERMIT  
AND  
TITLE V PERMIT REVISION  
(OPTIONAL)**

PLEASE CHECK ALL THAT APPLY TO **NSR (45CSR13)** (IF KNOWN):

- ☐ CONSTRUCTION    ☐ MODIFICATION    ☐ RELOCATION  
☐ CLASS I ADMINISTRATIVE UPDATE    ☐ TEMPORARY  
☒ CLASS II ADMINISTRATIVE UPDATE    ☐ AFTER-THE-FACT

PLEASE CHECK TYPE OF **45CSR30 (TITLE V)** REVISION (IF ANY):

- ☐ ADMINISTRATIVE AMENDMENT    ☒ MINOR MODIFICATION  
☐ SIGNIFICANT MODIFICATION

IF ANY BOX ABOVE IS CHECKED, INCLUDE TITLE V REVISION INFORMATION AS **ATTACHMENT S** TO THIS APPLICATION

**FOR TITLE V FACILITIES ONLY:** Please refer to "Title V Revision Guidance" in order to determine your Title V Revision options (Appendix A, "Title V Permit Revision Flowchart") and ability to operate with the changes requested in this Permit Application.

**Section I. General**

1. Name of applicant (as registered with the WV Secretary of State's Office): <a href="#">Dominion Transmission, Inc.</a>		2. Federal Employer ID No. (FEIN): <a href="#">550629203</a>	
3. Name of facility (if different from above): <a href="#">Loup Creek Compressor Station</a>		4. The applicant is the: <input type="checkbox"/> OWNER <input type="checkbox"/> OPERATOR <input checked="" type="checkbox"/> BOTH	
5A. Applicant's mailing address: <a href="#">925 White Oaks Blvd.</a> <a href="#">Bridgeport, WV 26330</a>		5B. Facility's present physical address: <a href="#">Route 85</a> <a href="#">Kopperston, WV 24854</a>	
6. <b>West Virginia Business Registration.</b> Is the applicant a resident of the State of West Virginia? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO – If <b>YES</b> , provide a copy of the <b>Certificate of Incorporation/Organization/Limited Partnership</b> (one page) including any name change amendments or other Business Registration Certificate as <b>Attachment A</b> . – If <b>NO</b> , provide a copy of the <b>Certificate of Authority/Authority of L.L.C./Registration</b> (one page) including any name change amendments or other Business Certificate as <b>Attachment A</b> .			
7. If applicant is a subsidiary corporation, please provide the name of parent corporation:			
8. Does the applicant own, lease, have an option to buy or otherwise have control of the <i>proposed site</i> ? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO – If <b>YES</b> , please explain: <a href="#">Own</a> – If <b>NO</b> , you are not eligible for a permit for this source.			
9. Type of plant or facility (stationary source) to be <b>constructed, modified, relocated, administratively updated</b> or <b>temporarily permitted</b> (e.g., coal preparation plant, primary crusher, etc.): <a href="#">Natural gas compressor station</a>		10. North American Industry Classification System (NAICS) code for the facility:  <a href="#">486210</a>	
11A. DAQ Plant ID No. (for existing facilities only): <a href="#">109-00019</a>		11B. List all current 45CSR13 and 45CSR30 (Title V) permit numbers associated with this process (for existing facilities only): <a href="#">R13-2839B</a> <a href="#">R30-10900019-2012</a>	

**All of the required forms and additional information can be found under the Permitting Section of DAQ's website, or requested by phone.**

12A. – For <b>Modifications, Administrative Updates</b> or <b>Temporary permits</b> at an existing facility, please provide directions to the <i>present location</i> of the facility from the nearest state road; – For <b>Construction</b> or <b>Relocation permits</b> , please provide directions to the <i>proposed new site location</i> from the nearest state road. Include a <b>MAP</b> as <b>Attachment B</b> .  From I-77 at Harper Road, turn onto Route 3 North for 10.4 miles. Turn onto Route 99 West for 14.3 miles. Turn left onto Route 85 and travel 4 miles to Kopperston Grade School. Turn left onto private road to station.		
12.B. New site address (if applicable):	12C. Nearest city or town: <div style="text-align: center;">Kopperston</div>	12D. County: <div style="text-align: center;">Wyoming</div>
12.E. UTM Northing (KM): 4176.86	12F. UTM Easting (KM): 449.31	12G. UTM Zone: 17
13. Briefly describe the proposed change(s) at the facility: Correcting hp rating of EN04 from 1,085 hp to 1,150 hp.		
14A. Provide the date of anticipated installation or change: N/A – If this is an <b>After-The-Fact</b> permit application, provide the date upon which the proposed change did happen:		14B. Date of anticipated Start-Up if a permit is granted: <div style="text-align: center;">N/A</div>
14C. Provide a <b>Schedule</b> of the planned <b>Installation</b> of/ <b>Change</b> to and <b>Start-Up</b> of each of the units proposed in this permit application as <b>Attachment C</b> (if more than one unit is involved).		
15. Provide maximum projected <b>Operating Schedule</b> of activity/activities outlined in this application: <div style="display: flex; justify-content: space-around;"> <span>Hours Per Day 24</span> <span>Days Per Week 7</span> <span>Weeks Per Year 52 (8,760 hrs/yr)</span> </div>		
16. Is demolition or physical renovation at an existing facility involved? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		
17. <b>Risk Management Plans.</b> If this facility is subject to 112(r) of the 1990 CAAA, or will become subject due to proposed changes (for applicability help see <a href="http://www.epa.gov/ceppo">www.epa.gov/ceppo</a> ), submit your <b>Risk Management Plan (RMP)</b> to U. S. EPA Region III.		
18. <b>Regulatory Discussion.</b> List all Federal and State air pollution control regulations that you believe are applicable to the proposed process ( <i>if known</i> ). A list of possible applicable requirements is also included in Attachment S of this application (Title V Permit Revision Information). Discuss applicability and proposed demonstration(s) of compliance ( <i>if known</i> ). Provide this information as <b>Attachment D</b> .		
<b>Section II. Additional attachments and supporting documents.</b>		
19. Include a check payable to WVDEP – Division of Air Quality with the appropriate <b>application fee</b> (per 45CSR22 and 45CSR13).		
20. Include a <b>Table of Contents</b> as the first page of your application package.		
21. Provide a <b>Plot Plan</b> , e.g. scaled map(s) and/or sketch(es) showing the location of the property on which the stationary source(s) is or is to be located as <b>Attachment E</b> (Refer to <b>Plot Plan Guidance</b> ) . – Indicate the location of the nearest occupied structure (e.g. church, school, business, residence).		
22. Provide a <b>Detailed Process Flow Diagram(s)</b> showing each proposed or modified emissions unit, emission point and control device as <b>Attachment F</b> .		
23. Provide a <b>Process Description</b> as <b>Attachment G</b> . – Also describe and quantify to the extent possible all changes made to the facility since the last permit review (if applicable).		
<i>All of the required forms and additional information can be found under the Permitting Section of DAQ's website, or requested by phone.</i>		
24. Provide <b>Material Safety Data Sheets (MSDS)</b> for all materials processed, used or produced as <b>Attachment H</b> . – For chemical processes, provide a MSDS for each compound emitted to the air.		
25. Fill out the <b>Emission Units Table</b> and provide it as <b>Attachment I</b> .		
26. Fill out the <b>Emission Points Data Summary Sheet (Table 1 and Table 2)</b> and provide it as <b>Attachment J</b> .		

27. Fill out the <b>Fugitive Emissions Data Summary Sheet</b> and provide it as <b>Attachment K</b> .		
28. Check all applicable <b>Emissions Unit Data Sheets</b> listed below:		
<input type="checkbox"/> Bulk Liquid Transfer Operations	<input type="checkbox"/> Haul Road Emissions	<input type="checkbox"/> Quarry
<input type="checkbox"/> Chemical Processes	<input type="checkbox"/> Hot Mix Asphalt Plant	<input type="checkbox"/> Solid Materials Sizing, Handling and Storage Facilities
<input type="checkbox"/> Concrete Batch Plant	<input type="checkbox"/> Incinerator	<input type="checkbox"/> Storage Tanks
<input type="checkbox"/> Grey Iron and Steel Foundry	<input type="checkbox"/> Indirect Heat Exchanger	
<input checked="" type="checkbox"/> General Emission Unit, specify <b>Compressor Engine</b>		
Fill out and provide the <b>Emissions Unit Data Sheet(s)</b> as <b>Attachment L</b> .		
29. Check all applicable <b>Air Pollution Control Device Sheets</b> listed below:		
<input type="checkbox"/> Absorption Systems	<input type="checkbox"/> Baghouse	<input type="checkbox"/> Flare (Vapor Incinerator)
<input type="checkbox"/> Adsorption Systems	<input type="checkbox"/> Condenser	<input type="checkbox"/> Mechanical Collector
<input type="checkbox"/> Afterburner	<input type="checkbox"/> Electrostatic Precipitator	<input type="checkbox"/> Wet Collecting System
<input checked="" type="checkbox"/> Other Collectors, specify <b>Oxidation Catalyst</b>		
Fill out and provide the <b>Air Pollution Control Device Sheet(s)</b> as <b>Attachment M</b> .		
30. Provide all <b>Supporting Emissions Calculations</b> as <b>Attachment N</b> , or attach the calculations directly to the forms listed in Items 28 through 31.		
31. <b>Monitoring, Recordkeeping, Reporting and Testing Plans.</b> Attach proposed monitoring, recordkeeping, reporting and testing plans in order to demonstrate compliance with the proposed emissions limits and operating parameters in this permit application. Provide this information as <b>Attachment O</b> .		
➤ Please be aware that all permits must be practically enforceable whether or not the applicant chooses to propose such measures. Additionally, the DAQ may not be able to accept all measures proposed by the applicant. If none of these plans are proposed by the applicant, DAQ will develop such plans and include them in the permit.		
32. <b>Public Notice.</b> At the time that the application is submitted, place a <b>Class I Legal Advertisement</b> in a newspaper of general circulation in the area where the source is or will be located (See 45CSR§13-8.3 through 45CSR§13-8.5 and <b>Example Legal Advertisement</b> for details). Please submit the <b>Affidavit of Publication</b> as <b>Attachment P</b> immediately upon receipt.		
33. <b>Business Confidentiality Claims.</b> Does this application include confidential information (per 45CSR31)?		
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		
➤ If <b>YES</b> , identify each segment of information on each page that is submitted as confidential and provide justification for each segment claimed confidential, including the criteria under 45CSR§31-4.1, and in accordance with the DAQ's <b>"Precautionary Notice – Claims of Confidentiality"</b> guidance found in the <b>General Instructions</b> as <b>Attachment Q</b> .		

### Section III. Certification of Information

34. <b>Authority/Delegation of Authority.</b> Only required when someone other than the responsible official signs the application. Check applicable <b>Authority Form</b> below:	
<input type="checkbox"/> Authority of Corporation or Other Business Entity	<input type="checkbox"/> Authority of Partnership
<input type="checkbox"/> Authority of Governmental Agency	<input type="checkbox"/> Authority of Limited Partnership
Submit completed and signed <b>Authority Form</b> as <b>Attachment R</b> .	
<b>All of the required forms and additional information can be found under the Permitting Section of DAQ's website, or requested by phone.</b>	



35A. **Certification of Information.** To certify this permit application, a Responsible Official (per 45CSR§13-2.22 and 45CSR§30-2.28) or Authorized Representative shall check the appropriate box and sign below.

**Certification of Truth, Accuracy, and Completeness**

I, the undersigned ☒ **Responsible Official** / ☐ **Authorized Representative**, hereby certify that all information contained in this application and any supporting documents appended hereto, is true, accurate, and complete based on information and belief after reasonable inquiry I further agree to assume responsibility for the construction, modification and/or relocation and operation of the stationary source described herein in accordance with this application and any amendments thereto, as well as the Department of Environmental Protection, Division of Air Quality permit issued in accordance with this application, along with all applicable rules and regulations of the West Virginia Division of Air Quality and W.Va. Code § 22-5-1 et seq. (State Air Pollution Control Act). If the business or agency changes its Responsible Official or Authorized Representative, the Director of the Division of Air Quality will be notified in writing within 30 days of the official change.

**Compliance Certification**

Except for requirements identified in the Title V Application for which compliance is not achieved, I, the undersigned hereby certify that, based on information and belief formed after reasonable inquiry, all air contaminant sources identified in this application are in compliance with all applicable requirements.

SIGNATURE   
(Please use blue ink)

DATE: 06-27-16  
(Please use blue ink)

35B. Printed name of signee: Brian Sheppard

35C. Title: Vice President, Pipeline Operations

35D. E-mail: Brian.C.Sheppard@dom.com

36E. Phone: (681) 842-3733

36F. FAX: (681) 842-3323

36A. Printed name of contact person (if different from above): Rebekah Remick

36B. Title: Environmental Consultant

36C. E-mail: Rebekah.J.Remick@dom.com

36D. Phone: 804-273-3536

36E. FAX: 804-273-2964

**PLEASE CHECK ALL APPLICABLE ATTACHMENTS INCLUDED WITH THIS PERMIT APPLICATION:**

- |  |   |
|--|---|
| <input checked="" type="checkbox"/> Attachment A: Business Certificate               | <input type="checkbox"/> Attachment K: Fugitive Emissions Data Summary Sheet            |
| <input checked="" type="checkbox"/> Attachment B: Map(s)                             | <input checked="" type="checkbox"/> Attachment L: Emissions Unit Data Sheet(s)          |
| <input type="checkbox"/> Attachment C: Installation and Start Up Schedule            | <input checked="" type="checkbox"/> Attachment M: Air Pollution Control Device Sheet(s) |
| <input checked="" type="checkbox"/> Attachment D: Regulatory Discussion              | <input checked="" type="checkbox"/> Attachment N: Supporting Emissions Calculations     |
| <input checked="" type="checkbox"/> Attachment E: Plot Plan                          | <input type="checkbox"/> Attachment O: Monitoring/Recordkeeping/Reporting/Testing Plans |
| <input checked="" type="checkbox"/> Attachment F: Detailed Process Flow Diagram(s)   | <input checked="" type="checkbox"/> Attachment P: Public Notice                         |
| <input checked="" type="checkbox"/> Attachment G: Process Description                | <input type="checkbox"/> Attachment Q: Business Confidential Claims                     |
| <input type="checkbox"/> Attachment H: Material Safety Data Sheets (MSDS)            | <input type="checkbox"/> Attachment R: Authority Forms                                  |
| <input checked="" type="checkbox"/> Attachment I: Emission Units Table               | <input checked="" type="checkbox"/> Attachment S: Title V Permit Revision Information   |
| <input checked="" type="checkbox"/> Attachment J: Emission Points Data Summary Sheet | <input checked="" type="checkbox"/> Application Fee                                     |

*Please mail an original and three (3) copies of the complete permit application with the signature(s) to the DAQ, Permitting Section, at the address listed on the first page of this application. Please DO NOT fax permit applications.*

**FOR AGENCY USE ONLY – IF THIS IS A TITLE V SOURCE:**

- ☐ Forward 1 copy of the application to the Title V Permitting Group and:
- ☐ For Title V Administrative Amendments:
- ☐ NSR permit writer should notify Title V permit writer of draft permit,
- ☐ For Title V Minor Modifications:
- ☐ Title V permit writer should send appropriate notification to EPA and affected states within 5 days of receipt,
- ☐ NSR permit writer should notify Title V permit writer of draft permit.
- ☐ For Title V Significant Modifications processed in parallel with NSR Permit revision:
- ☐ NSR permit writer should notify a Title V permit writer of draft permit,
- ☐ Public notice should reference both 45CSR13 and Title V permits,
- ☐ EPA has 45 day review period of a draft permit.

*All of the required forms and additional information can be found under the Permitting Section of DAQ's website, or requested by phone.*

**Attachment A**

Current Business Certificate



**WEST VIRGINIA  
STATE TAX DEPARTMENT  
BUSINESS REGISTRATION  
CERTIFICATE**

ISSUED TO:  
**DOMINION TRANSMISSION INC  
445 W MAIN ST  
CLARKSBURG, WV 26301-2843**

**BUSINESS REGISTRATION ACCOUNT NUMBER: 1038-3470**

This certificate is issued on: 06/8/2011

*This certificate is issued by  
the West Virginia State Tax Commissioner  
in accordance with Chapter 11, Article 12, of the West Virginia Code*

*The person or organization identified on this certificate is registered  
to conduct business in the State of West Virginia at the location above.*

This certificate is not transferrable and must be displayed at the location for which issued.

This certificate shall be permanent until cessation of the business for which the certificate of registration was granted or until it is suspended, revoked or cancelled by the Tax Commissioner.

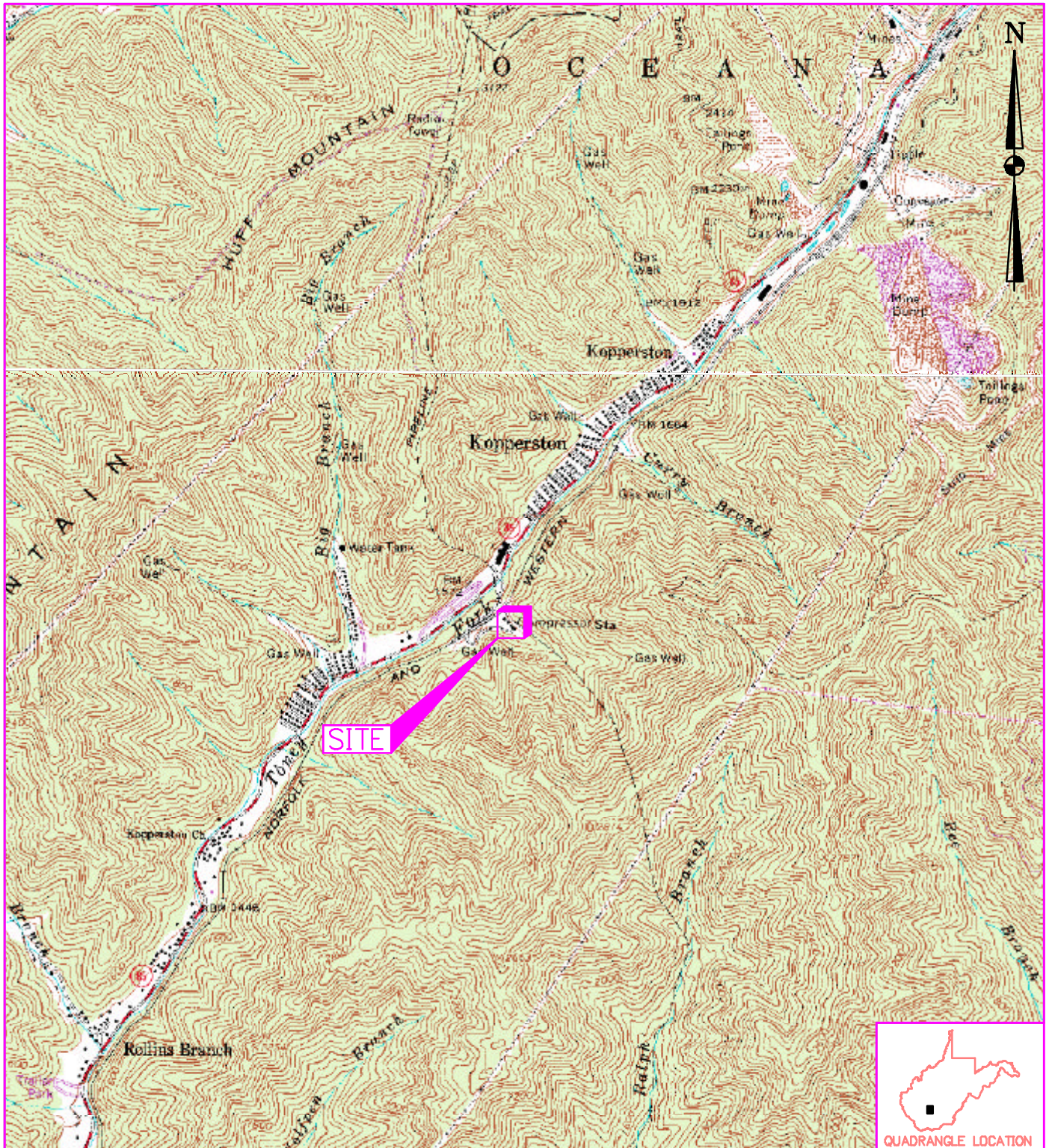
Change in name or change of location shall be considered a cessation of the business and a new certificate shall be required.

TRAVELING/STREET VENDORS: Must carry a copy of this certificate in every vehicle operated by them.  
CONTRACTORS, DRILLING OPERATORS, TIMBER/LOGGING OPERATIONS: Must have a copy of this certificate displayed at every job site within West Virginia.

## **Attachment B**

Maps





REFERENCE: USGS 7.5' QUADRANGLE MAPS OF: PILOT NOB, WEST VIRGINIA; DATED 1968, PHOTOREVISED 1989, AND MATHENY, WEST VIRGINIA; DATED 1967, PHOTOREVISED 1976.

DRAWN BY	DJF
DATE	
CHECKED BY	
SET JOB NO.	204046
SET DWG FILE	LOUP_CREEKm01.dwg
DRAWING SCALE	1"=2000'



98 Vanadium Road Bridgeville, PA 15017 (412) 221-1180

DOMINION TRANSMISSION	
LOUP CREEK COMPRESSOR STATION WYOMING COUNTY, WEST VIRGINIA SITE LOCATION MAP	
DRAWING NO.	FIGURE 1
REV.	0

Plot: env045 06/10/2004 12:44 G:\DOMINION\204046\LOUP\_CREEKm01.dwg



## **Attachment D**

### Regulatory Discussion

## **REGULATORY DISCUSSION**

This section provides an air quality regulatory review of the proposed Class II Administrative Update to Loup Creek Compressor Station. To determine the regulations of concern, a regulatory applicability analysis has been conducted. Regulations that require an applicability determination include:

- Classification of Ambient Air Quality (40 CFR 81)
- Prevention of Significant Deterioration (PSD) Regulations (40 CFR 52.21)
- Non-Attainment New Source Review (NSR) Regulations (40 CFR 52.24)
- West Virginia Minor Source Permitting (WV Regulation 13)
- New Source Performance Standards (40 CFR 60)

### **Classification of Air Quality**

Loup Creek Compressor Station is located on a property near Kopperston, Wyoming County, West Virginia. The area is classified as attainment with respect to the National Ambient Air Quality Standards (NAAQS) for all criteria pollutants.

### **Prevention of Significant Deterioration (PSD)**

The WVDEP is delegated the authority to implement federal air quality requirements. West Virginia'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 250 tons or more per year of a regulated pollutant. Loup Creek Compressor Station is not one of the 28 categories identified in 40 CFR 52.21, but is classified as a PSD source with NO<sub>x</sub> emissions above 250 tons per year. Since emission increases are not above significance levels, this permit action is not a major modification. Therefore, PSD regulations do not apply.

### **Non-Attainment New Source Review**

As identified above, Wyoming County, West Virginia, is currently classified as attainment with respect to the NAAQS for all criteria pollutants. Therefore, the nonattainment regulations are not applicable.

### **West Virginia Minor Source Permitting (R13)**

The requirement for new or modified sources to make application to the WVDEP is provided in 45 CSR 13 (Permits for Construction, Modification, Relocation, and Operation of Stationary Sources of Air Pollutants) – Regulation 13. Regulation 13 is applicable to new sources or modifications that result in an emissions increase of:

- 6 lbs/hr and 10 tons/yr of any regulated pollutant, or
- 144 lbs/day of any regulated pollutant, OR
- 2 lbs/hr or 5 tons/yr of hazardous air pollutants (HAPs)

Since the proposed changes in emissions from the horsepower rating of Engine 4 (EN04) are not above these threshold levels, this permit action will be a Class II Administrative Update to the existing Regulation 13 permit (R13-2839B).

Pollutant	Current PTE of EN04 at 1,085 hp		New PTE of EN04 at 1,150 hp		Change in PTE Emissions		
	(lbs/hr)	(tons/yr)	(lbs/hr)	(tons/yr)	(lbs/hr)	(lbs/day)	(tons/yr)
PM10	0.08	0.35	0.09	0.37	+ 0.01	+ 0.24	+ 0.02
SO2	0.01	0.02	0.01	0.02	--	--	--
CO	0.50	2.19	0.50	2.19	--	--	--
NOx	3.80	16.60	3.80	16.66	--	--	+ 0.06
VOC	1.27	5.60	1.24	5.44	- 0.03	- 0.72	- 0.16
Total HAPs	0.58	2.54	0.61	2.69	+ 0.03	+ 0.72	+ 0.15

\*PM10 is for filterable and condensable.

#### **New Source Performance Standards (NSPS) Subpart JJJJ**

EN04 is not subject to this rule as the engine was manufactured on June 4, 2001, before the applicability date of commencing construction after June 12, 2006 and manufactured on or after January 1, 2008.

#### **National Emission Standards for Hazardous Air Pollutants (NESHAP) Subpart ZZZZ**

EN04 is subject to this rule and is considered an existing source at an area source of HAPs. Below is a summary of the requirements contained in Subpart ZZZZ as they pertain to EN04:

- Install an oxidation catalyst to reduce HAP emissions. Comply by meeting one of the following:
  - Reduce average CO emissions by 93% or more;
  - Reduce average CO concentration  $\leq 47$  ppmvd at 15% O<sub>2</sub>

(63.6603(a) Table 2d)

- Maintain the engine, including air pollution control and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions (63.6605, 63.6625(e)(7))
- Testing Requirements:
  - Initial compliance demonstration within 180 days of startup (63.6612(a), 63.6630(e), Table 5)
  - Annual compliance demonstrations (63.6635, 63.6640(c), Table 6)



- Monitoring Requirement – Install, operate, and maintain a continuous parameter monitoring system (CPMS) to continuously monitor catalyst inlet temperature OR install equipment to automatically shut down the engine if temperature exceeds 1350 °F (63.6625(b), Table 5)
- The engine must be in compliance with emission limits within 30 minutes of startup and operators must minimize idling time to the greatest extent possible (63.6625(h))
- Reporting Requirements:
  - Semi-annual reports
  - Annual testing reports

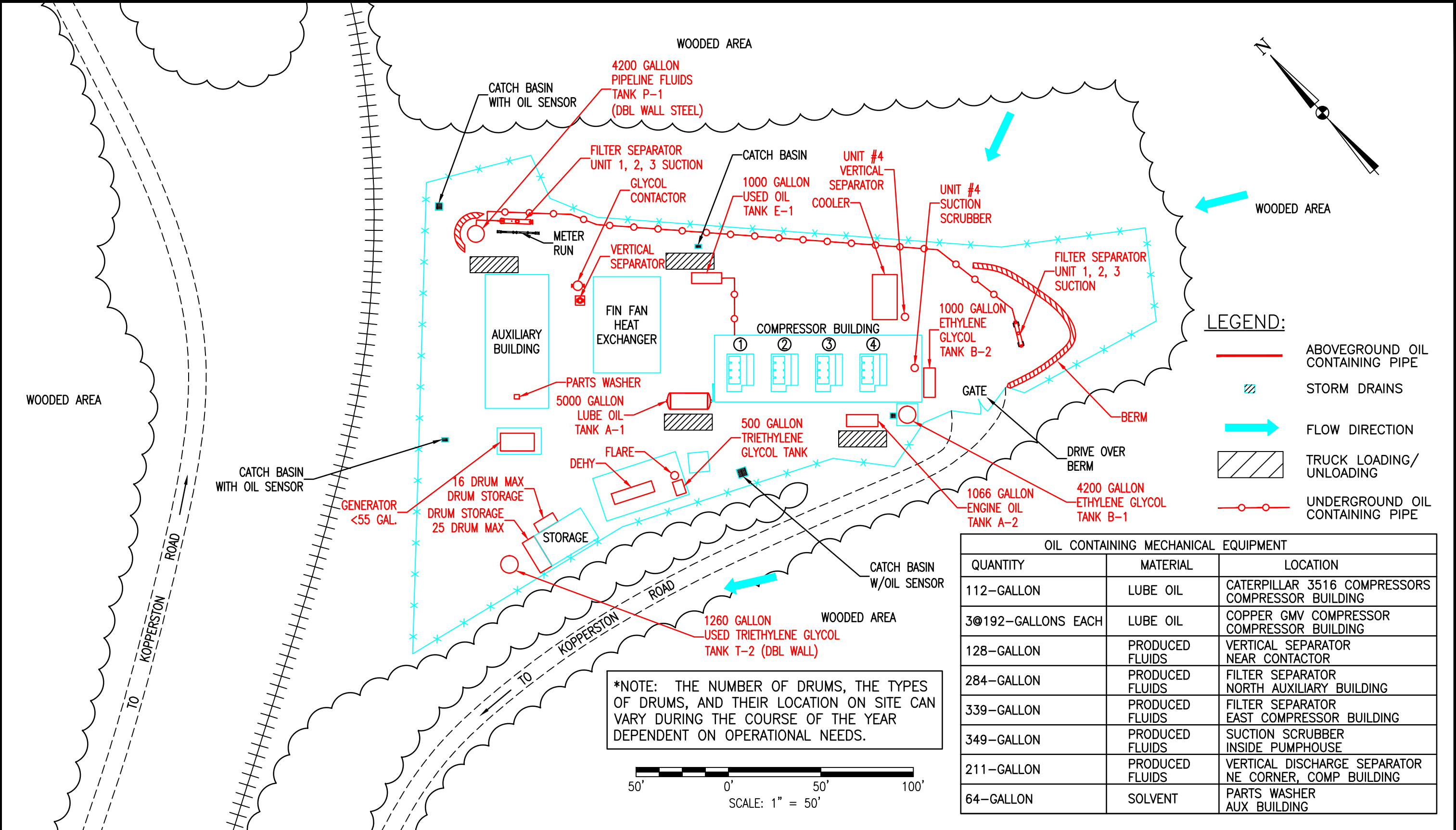
(63.6650(a) – (c), Table 7)

- Recordkeeping Requirements:
  - Records of notifications and reports
  - Records of occurrences and duration of each malfunction of the unit and control equipment, including actions taken during the malfunction to minimize emissions and corrective actions to restore the unit and/or control equipment.
  - Records of performance tests and performance evaluations
  - Records of required maintenance

(63.6640, 63.6655, 63.6660, 63.10(b)(1))

## **Attachment E**

Plot Plan



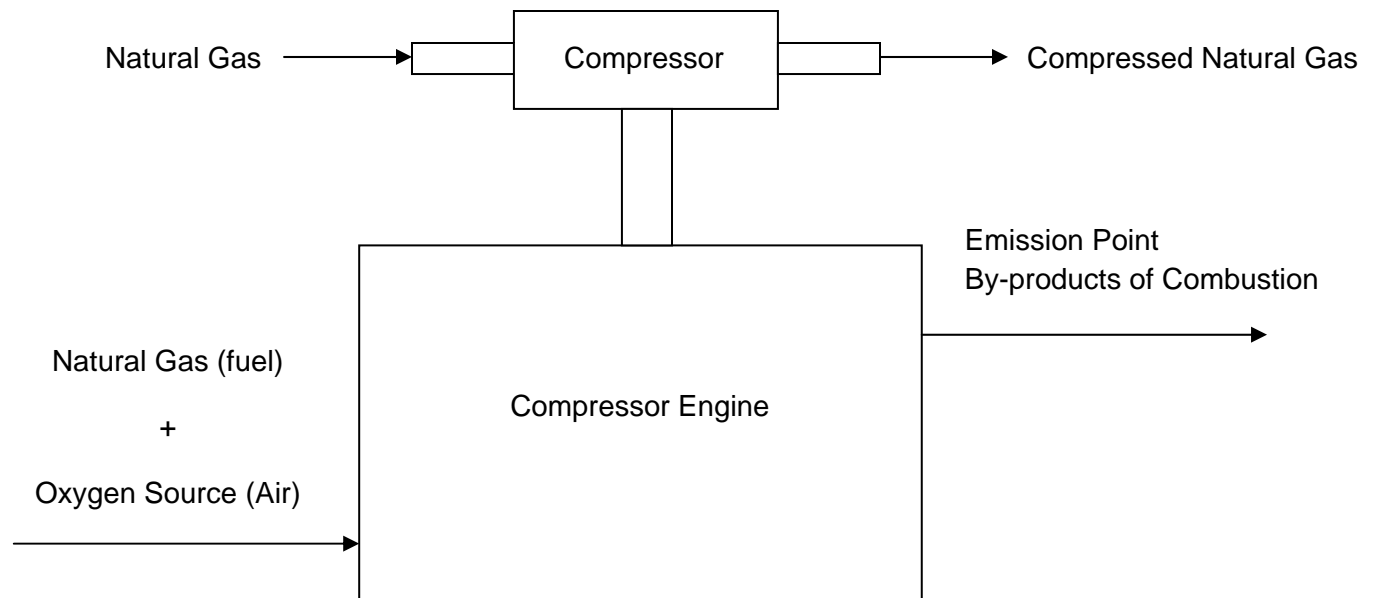
SYM.	DATE	BY	REVISION DESCRIPTION	PRJ/TSK	APP.	SCALE	1" = 50'	DATE	Dominion Transmission, Inc.				
5	10/14/15	TBB	UPDATED PER TIM JACKSONS MARK UPS			DRAWN	DJF		445 West Main St. Clarksburg, West Virginia 26301 / Phone: (304) 623-8000				
4	11/04/14	TBB	SCALED, ADDED BAR SCALE, ADDED ADJACENT PROPERTIES, & REVISED NORTH ARROW			CHECKED			FOR: LOUP CREEK COMPRESSOR STATION				
3	06/09/14	MPB	UPDATED PER TIM JACKSONS MARK UPS			APP. FOR BID			TITLE: ENVIRONMENTAL EMERGENCY SITE PLAN				
2	05/05/14	MPB	UPDATED PER TIM JACKSONS MARK UPS			APP. FOR CONST.			DIR: DOCUMENTUM		GROUP	DWG. NO.	REV.
1	03/15/10	JDB	UPDATED PER RUSS EVANS MARK UPS			TOWN: OCEANA, WV	COUNTY: WYOMING		FILE: PRJ/TSK:		PD	X9782	5

## **Attachment F**

### Detailed Process Flow Diagrams

**Dominion Transmission, Inc.**  
**Loup Creek Compressor Station**

**Compressor Engine (EN04) Process Flow Diagram**



## **Attachment G**

### Process Description



## **PROCESS DESCRIPTION**

The Loup Creek Compressor Station is a compressor facility that services a natural gas pipeline system. The purpose of the facility is to recompress natural gas flowing through a pipeline for transportation. The compressor engines (EN01 – EN04) at the facility receive natural gas from a valve on a pipeline and compresses it to enable further transportation in the pipeline.

Dominion Transmission Inc. (DTI) is submitting this Class II Administrative Update permit application for a request to update the horsepower rating on Engine 4 (EN04) from 1,085 hp to 1,150 hp. During an internal review, DTI identified that EN04 was incorrectly labeled in the permit. Per the manufacturer spec sheet (and nameplate on the engine), the engine is rated at 1,150 hp. The manufacturer, Caterpillar, has also verified the 1,150 hp rating. Some of the emissions from this source have increased slightly due to the new horsepower rating and corrected calculations, however; the manufacturer emission specifications for NO<sub>x</sub>, CO, and VOC have not.

## **Attachment I**

### Emission Units Table

## Attachment I

## Emission Units Table

(includes all emission units and air pollution control devices  
e part of this permit application review, regardless of permissi

[illegible]

<sup>1</sup> For Emission Units (or Sources) use the following numbering system: 1S, 2S, 3S,... or other appropriate designation.

<sup>2</sup> For Emission Points use the following numbering system: 1E, 2E, 3E, ... or other appropriate designation.

<sup>3</sup> New, modification, removal

<sup>4</sup> For Control Devices use the following numbering system: 1C, 2C, 3C,... or other appropriate designation.

## **Attachment J**

### Emission Points Data Summary Sheet

# Attachment J EMISSION POINTS DATA SUMMARY SHEET

Table 1: Emissions Data															
Emission Point ID No. <i>(Must match Emission Units Table &amp; Plot Plan)</i>	Emission Point Type <sup>1</sup>	Emission Unit Vented Through This Point <i>(Must match Emission Units Table &amp; Plot Plan)</i>		Air Pollution Control Device <i>(Must match Emission Units Table &amp; Plot Plan)</i>		Vent Time for Emission Unit <i>(chemical processes only)</i>		All Regulated Pollutants - Chemical Name/CAS <sup>3</sup>  <i>(Speciate VOCs &amp; HAPS)</i>	Maximum Potential Uncontrolled Emissions <sup>4</sup>		Maximum Potential Controlled Emissions <sup>5</sup>		Emission Form or Phase  <i>(At exit conditions, Solid, Liquid or Gas/Vapor)</i>	Est. Method Used <sup>6</sup>	Emission Concentration <sup>7</sup> (ppmv or mg/m <sup>4</sup> )
		ID No.	Source	ID No.	Device Type	Short Term <sup>2</sup>	Max (hr/yr)		lb/hr	ton/yr	lb/hr	ton/yr			
EN04	Vertical	EN04	Compressor Engine	2C	Oxidation Catalyst	N/A	N/A	PM Filterable	< 0.01	< 0.01	< 0.01	< 0.01	Solid	AP-42	
								PM-10 (Filterable)	< 0.01	< 0.01	< 0.01	< 0.01	Solid	AP-42	
								PM-2.5 (Filterable)	< 0.01	< 0.01	< 0.01	< 0.01	Solid	AP-42	
								PM Condensable	0.08	0.37	0.08	0.37	Solid	AP-42	
								SO2	0.01	0.02	0.01	0.02	Gas/Vapor	AP-42	
								NOx	3.80	16.66	3.80	16.66	Gas/Vapor	Man.	
								CO	4.56	19.99	0.50	2.19	Gas/Vapor	Man.	
								VOC	1.24	5.44	1.24	5.44	Gas/Vapor	Man.	
								Total HAP	0.61	2.69	0.61	2.69	Gas/Vapor	AP-42	

The EMISSION POINTS DATA SUMMARY SHEET provides a summation of emissions by emission unit. Note that uncaptured process emission unit emissions are not typically considered to be fugitive and must be accounted for on the appropriate EMISSIONS UNIT DATA SHEET and on the EMISSION POINTS DATA SUMMARY SHEET. Please note that total emissions from the source are equal to all vented emissions, all fugitive emissions, plus all other emissions (e.g. uncaptured emissions). Please complete the FUGITIVE EMISSIONS DATA SUMMARY SHEET for fugitive emission activities.

<sup>1</sup> Please add descriptors such as upward vertical stack, downward vertical stack, horizontal stack, relief vent, rain cap, etc.

<sup>2</sup> Indicate by "C" if venting is continuous. Otherwise, specify the average short-term venting rate with units, for intermittent venting (ie., 15 min/hr). Indicate as many rates as needed to clarify frequency of venting (e.g., 5 min/day, 2 days/wk).

<sup>3</sup> List all regulated air pollutants. Speciate VOCs, including all HAPs. Follow chemical name with Chemical Abstracts Service (CAS) number. **LIST** Acids, CO, CS<sub>2</sub>, VOCs, H<sub>2</sub>S, Inorganics, Lead, Organics, O<sub>3</sub>, NO, NO<sub>2</sub>, SO<sub>2</sub>, SO<sub>3</sub>, all applicable Greenhouse Gases (including CO<sub>2</sub> and methane), etc. **DO NOT LIST** H<sub>2</sub>, H<sub>2</sub>O, N<sub>2</sub>, O<sub>2</sub>, and Noble Gases.

<sup>4</sup> Give maximum potential emission rate with no control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).

<sup>5</sup> Give maximum potential emission rate with proposed control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).

<sup>6</sup> Indicate method used to determine emission rate as follows: MB = material balance; ST = stack test (give date of test); EE = engineering estimate; O = other (specify).

<sup>7</sup> Provide for all pollutant emissions. Typically, the units of parts per million by volume (ppmv) are used. If the emission is a mineral acid (sulfuric, nitric, hydrochloric or phosphoric) use units of milligram per dry cubic meter (mg/m<sup>3</sup>) at standard conditions (68 °F and 29.92 inches Hg) (see 45CSR7). If the pollutant is SO<sub>2</sub>, use units of ppmv (See 45CSR10).

## Attachment J

## EMISSION POINTS DATA SUMMARY SHEET

Table 2: Release Parameter Data								
Emission Point ID No. <i>(Must match Emission Units Table)</i>	Inner Diameter (ft.)	Exit Gas			Emission Point Elevation (ft)		UTM Coordinates (km)	
		Temp. (°F)	Volumetric Flow <sup>1</sup> (acfm) <i>at operating conditions</i>	Velocity (fps)	Ground Level <i>(Height above mean sea level)</i>	Stack Height <sup>2</sup> <i>(Release height of emissions above ground level)</i>	Northing	Easting
EN04	12	840	6,415	N/A	N/A	26 ft	4176.86	449.31

<sup>1</sup> Give at operating conditions. Include inerts.

<sup>2</sup> Release height of emissions above ground level.



## **Attachment L**

### Emissions Unit Data Sheet

**Attachment L**  
**EMISSIONS UNIT DATA SHEET**  
**GENERAL**

To be used for affected sources other than asphalt plants, foundries, incinerators, indirect heat exchangers, and quarries.

Identification Number (as assigned on *Equipment List Form*): 001-04 (EN04)

<p>1. Name or type and model of proposed affected source:</p>  <p style="text-align: center;">One (1) natural gas compressor engine - Caterpillar G3516</p>
<p>2. On a separate sheet(s), furnish a sketch(es) of this affected source. If a modification is to be made to this source, clearly indicated the change(s). Provide a narrative description of all features of the affected source which may affect the production of air pollutants.</p>
<p>3. Name(s) and maximum amount of proposed process material(s) charged per hour:</p>  <p style="text-align: center;">N/A</p>
<p>4. Name(s) and maximum amount of proposed material(s) produced per hour:</p>  <p style="text-align: center;">1,150 hp</p>
<p>5. Give chemical reactions, if applicable, that will be involved in the generation of air pollutants:</p>  <p style="text-align: center;">N/A</p>

\* The identification number which appears here must correspond to the air pollution control device identification number appearing on the *List Form*.

6. Combustion Data (if applicable):			
(a) Type and amount in appropriate units of fuel(s) to be burned:			
Natural gas consumption ~ 0.0085 MMcf/hr			
(b) Chemical analysis of proposed fuel(s), excluding coal, including maximum percent sulfur and ash:			
Natural Gas			
(c) Theoretical combustion air requirement (ACF/unit of fuel):			
@		°F and	psia.
(d) Percent excess air:			
(e) Type and BTU/hr of burners and all other firing equipment planned to be used:			
8.53 MMBtu/hr			
(f) If coal is proposed as a source of fuel, identify supplier and seams and give sizing of the coal as it will be fired:			
N/A			
(g) Proposed maximum design heat input:		8.53	× 10 <sup>6</sup> BTU/hr.
7. Projected operating schedule:			
Hours/Day	24	Days/Week	7
		Weeks/Year	52

Natural gas consumption ~ 0.0085 MMcf/hr

## Natural Gas

psia.

8.53 MMBtu/hr

N/A

× 10<sup>6</sup> BTU/hr.

## 52

8. Projected amount of pollutants that would be emitted from this affected source if no control devices were used:			
@	°F and		psia
a. NO <sub>x</sub>	3.80	lb/hr	grains/ACF
b. SO <sub>2</sub>	0.01	lb/hr	grains/ACF
c. CO	0.50	lb/hr	grains/ACF
d. PM <sub>10</sub>	< 0.01 (filterable) 0.08 (condensable)	lb/hr	grains/ACF
e. Hydrocarbons		lb/hr	grains/ACF
f. VOCs	1.24	lb/hr	grains/ACF
g. Pb	N/A	lb/hr	grains/ACF
h. Specify other(s)			
Formaldehyde	0.45	lb/hr	grains/ACF
Other HAPs, Refer to Attachment N		lb/hr	grains/ACF
		lb/hr	grains/ACF
		lb/hr	grains/ACF

NOTE: (1) An Air Pollution Control Device Sheet must be completed for any air pollution device(s) used to control emissions from this affected source.

(2) Complete the Emission Points Data Sheet.

<p>9. Proposed Monitoring, Recordkeeping, Reporting, and Testing Please propose monitoring, recordkeeping, and reporting in order to demonstrate compliance with the proposed operating parameters. Please propose testing in order to demonstrate compliance with the proposed emissions limits.</p>	
<p><b>MONITORING</b> Refer to Regulatory Discussion in Attachment D for a description of all monitoring, testing, recordkeeping, and reporting requirements.</p>	<p><b>RECORDKEEPING</b> Refer to Regulatory Discussion in Attachment D for a description of all monitoring, testing, recordkeeping, and reporting requirements.</p>
<p><b>REPORTING</b> Refer to Regulatory Discussion in Attachment D for a description of all monitoring, testing, recordkeeping, and reporting requirements.</p>	<p><b>TESTING</b> Refer to Regulatory Discussion in Attachment D for a description of all monitoring, testing, recordkeeping, and reporting requirements.</p>
<p><b>MONITORING.</b> PLEASE LIST AND DESCRIBE THE PROCESS PARAMETERS AND RANGES THAT ARE PROPOSED TO BE MONITORED IN ORDER TO DEMONSTRATE COMPLIANCE WITH THE OPERATION OF THIS PROCESS EQUIPMENT OPERATION/AIR POLLUTION CONTROL DEVICE.</p> <p><b>RECORDKEEPING.</b> PLEASE DESCRIBE THE PROPOSED RECORDKEEPING THAT WILL ACCOMPANY THE MONITORING.</p> <p><b>REPORTING.</b> PLEASE DESCRIBE THE PROPOSED FREQUENCY OF REPORTING OF THE RECORDKEEPING.</p> <p><b>TESTING.</b> PLEASE DESCRIBE ANY PROPOSED EMISSIONS TESTING FOR THIS PROCESS EQUIPMENT/AIR POLLUTION CONTROL DEVICE.</p>	
<p>10. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty</p> <p>Manufacturer spec sheet attached</p>	

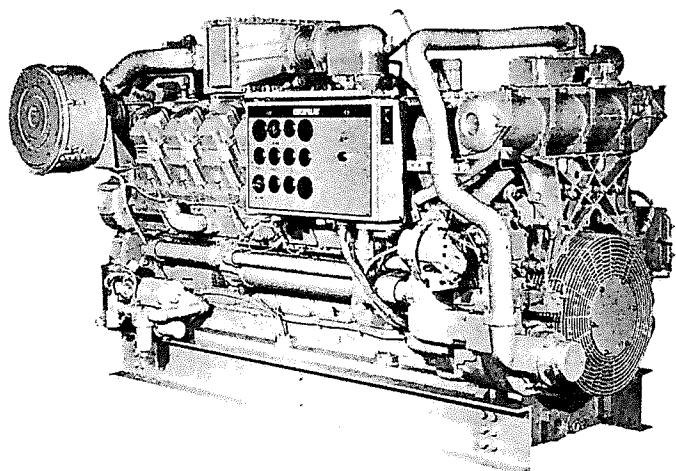
# CATERPILLAR®

## Gas Industrial Engine

# G3516

660-1340 hp

Standard and Low Emission



Shown with  
Optional Equipment

### SPECIFICATIONS

V-16, 4-Stroke-Cycle, Spark Ignited	
Bore—in (mm)	6.7 (170)
Stroke—in (mm)	7.5 (190)
Displacement—cu in (L)	4211 (69.0)
Compression Ratio	
STD	9:1
LE	8:1
Aspiration ..... Naturally Aspirated or Turbocharged-Aftercooled	
Lube Oil Capacity — gal (L)	
STD*	153 (580)
STD**	171 (646)
LE	106 (402)
Jacket Water System — gal (L)	
Capacity w/o Radiator	53 (205)

\* Oil fill capacity with 21 elements

\*\*Oil fill capacity without elements



### FEATURES

#### ■ DIESEL STRENGTH

All Caterpillar® gas engines are built on diesel frames which means greater service life. Caterpillar gas engines inherit more from their diesel counterparts than just strength. They are backed by the same support system recognized as one of the most sophisticated and dependable in the world.

#### ■ APPLICATION FLEXIBILITY

Broad operating speed range and ability to burn a wide spectrum of gaseous fuels.

#### ■ LOW EMISSIONS

Low emission engines are capable of NO(x) levels as low as 2.0 grams/hp-hr. Lower emissions may be achievable for selected applications. Consult your Caterpillar dealer.

#### ■ CATERPILLAR® GAS ENGINES

Represent the latest technology in engine design. Engines are offered in both naturally aspirated and turbocharged/aftercooled configurations.

TA is offered as standard and low emission. These different configurations offer:

- High energy ignition systems for consistent firing
- High efficient combustion chamber for complete burning of the fuel.
- Modern component design such as deep cup, oil gallery piston.

#### ■ ELECTRONIC IGNITION SYSTEM WITH DETONATION SENSITIVE TIMING

The Caterpillar electronic ignition system provides optimized spark timing for all operating conditions. Timing is automatically controlled to maintain continuous detonation protection.

**STANDARD EQUIPMENT**

Air cleaners	intake manifold
single stage, dry,	temp (TA only)
with service	pressure (LE)
indicator	service meter
Breather, crankcase	exhaust
Carburetor	pyrometer (LE)
natural gas	Lifting eyes
Cooler	Manifold, exhaust
lubricating oil	watercooled
Filter	Pumps, gear driven
lubricating oil, RH	aftercooler water
Flywheel housing	(TA only)
SAE No. 00	jacket water
Governor	Rails, mounting, 10 in.
Woodward	Regulator, gas
Ignition system	pressure
Altronic III	SAE standard rotation
Instrument panel, RH	Thermostats and
8 gauge panel (STD)	housing
12 gauge panel (LE)	Torsional vibration
oil pressure	damper
coolant temperature	
oil pressure	
differential	

**OPTIONAL EQUIPMENT**

Cooling systems
high temp (LE only)
Exhaust fittings
Muffler
Power takeoffs
Starting systems
Tachometer
Low BTU
arrangements
Landfill arrangements
Air head for 3161
CSA ignition
Air-to-air aftercooler
connection

**CONTINUOUS RATINGS (BHP)**

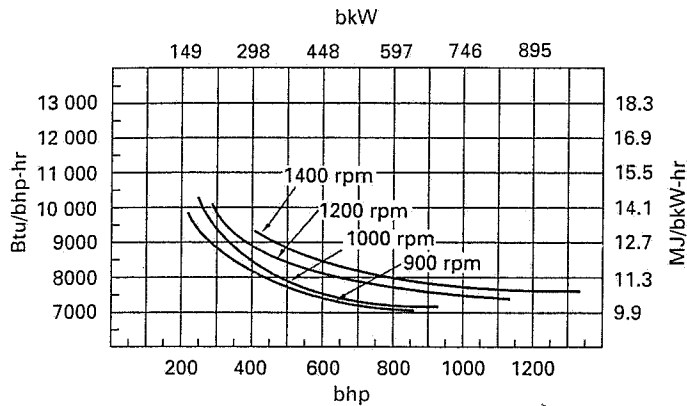
Aspiration	1400 rpm	1300 rpm	1200 rpm	1100 rpm	1000 rpm	900 rpm
LE-90	1340	1245	1150	1050	955	860
LE-130	1265	1175	1085	995	900	810
STD TA-90	—	—	1085	995	905	815
STD TA-130	—	—	1050	960	875	785
STD NA	—	—	660	605	585	525

**PHYSICAL FACTORS**

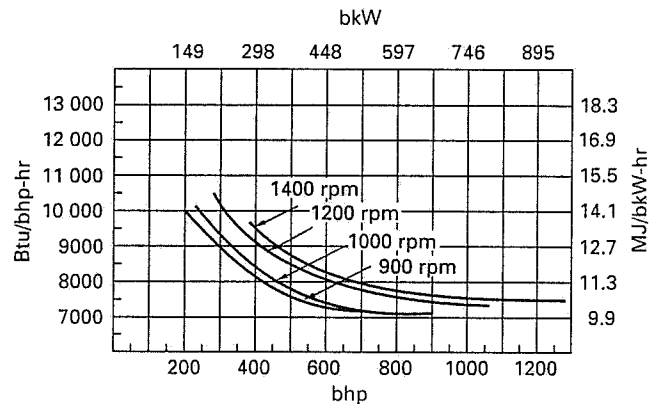
	Height in (mm)	Width in (mm)	Length in (mm)	Weight lb (kg)
LE	73.2 (1859)	67.1 (1703)	131 (3327)	17 670 (8022)
STD TA	73.2 (1859)	67.1 (1703)	131 (3327)	17 470 (7931)
STD NA	75.2 (1911)	61.6 (1564)	126.4 (3211)	16 400 (7446)

## FUEL CONSUMPTION

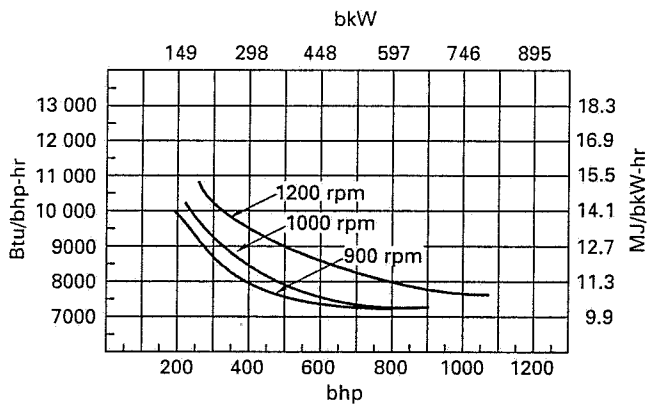
**LE-90**



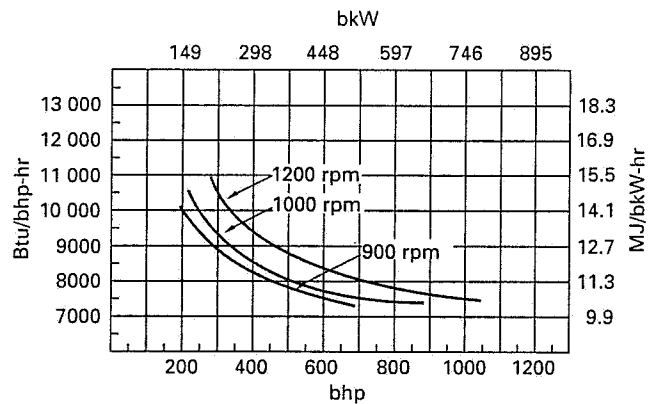
**LE-130**



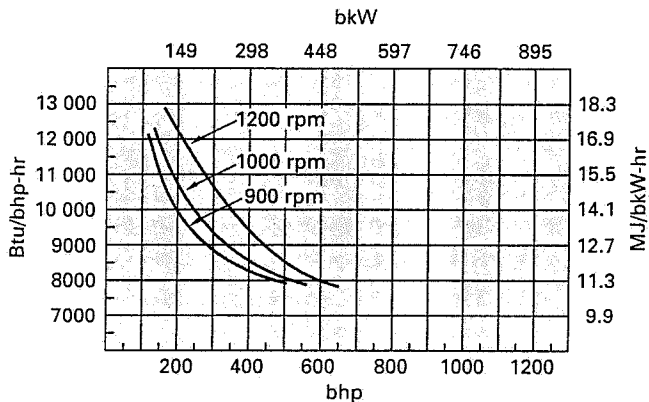
**STD TA-90**



**STD TA-130**



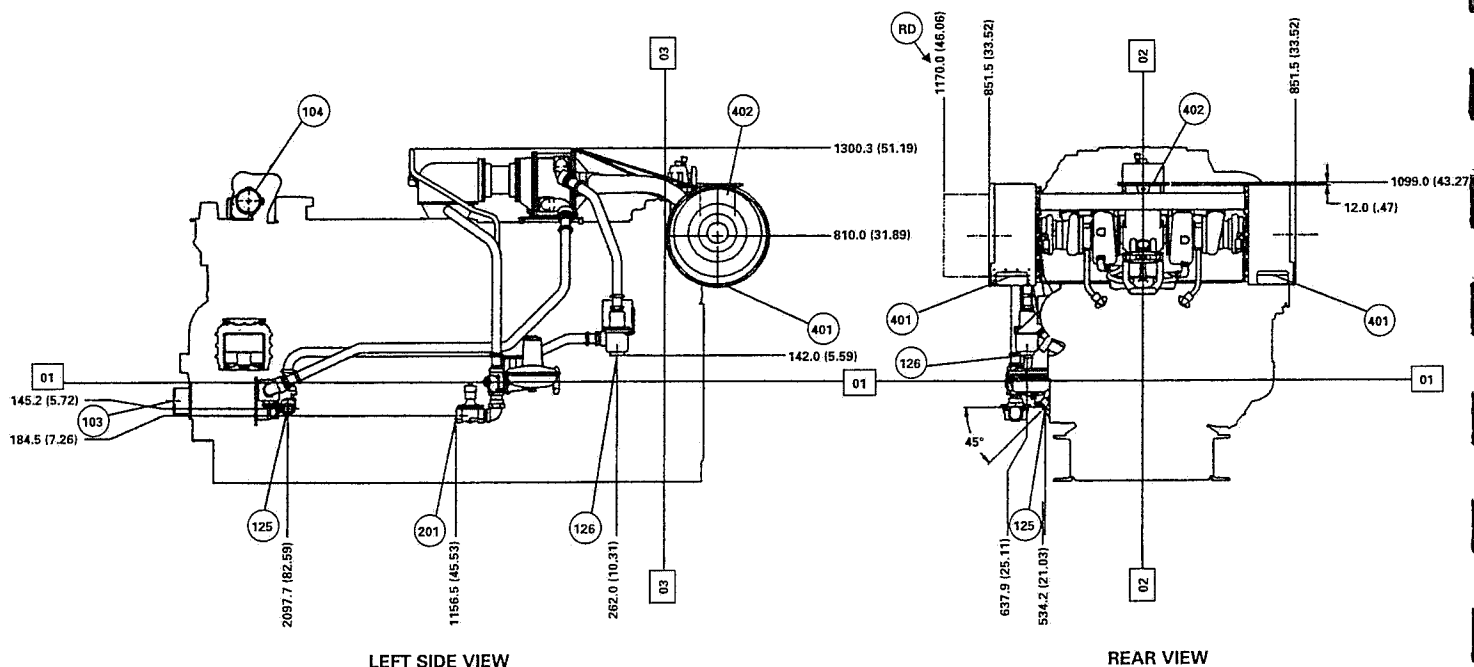
**STD NA**



LE refers to low emission engine configuration.  
 STD refers to standard engine configuration.  
 90 refers to aftercooler water inlet temperature in 90° F (32° C).  
 130 refers to aftercooler water inlet temperature in 130° F (54° C).  
 All data is based on standard conditions. 77° F (25° C) 500 ft Alt.  
 These ratings do not allow for overload capability.



## GAS INDUSTRIAL ENGINE PHYSICAL FACTORS



- |                                |                              |                     |
|--------------------------------|------------------------------|---------------------|
| 01 Centerline of Crankshaft    | 104 Jacket Water Outlet      | 401 Air Inlet       |
| 02 Centerline of Engine        | 125 Aftercooler water inlet  | 402 Exhaust         |
| 03 Rear face of Cylinder Block | 126 Aftercooler water outlet | RD Removal Distance |
| 103 Jacket Water Inlet         | 201 Fuel Inlet               |                     |

See general dimension drawing 114-6637 for additional Electronic Ignition System (E.I.S.) engine detail and NA information.

For magneto ignition system engines see general dimension drawing 7W4452.

Note: General configuration not to be used for installation.

## CONDITIONS AND DEFINITIONS

**Ratings** are based on SAE J1349 standard conditions of 29.61 in Hg (100 kPa) and 77° F (25° C). These ratings also apply at ISO3046, DIN6271, and BS5514 standard conditions of 29.61 in Hg (100 kPa), 81° F (27° C); and API 7B-11C standard conditions of 29.38 in Hg (99 kPa), 85° F (29° C).

**Ratings** are based on dry natural gas having a low heat value of 905 btu/ft<sup>3</sup> (35.54 MJ/N m<sup>3</sup>). Variations in altitude, temperature, and gas composition from standard conditions may require a reduction in engine horsepower.

**Turbocharged-aftercooled ratings** apply to 5000 ft (1525 m) and 77° F (25° C). **Naturally aspirated** engines apply to 500 ft (150 m) and 77° F (25° C). For applications which exceed these limits, consult your Caterpillar dealer.

Additional ratings may be available for specific customer requirements. Consult your Caterpillar representative for details.

G3516

Engine Speed (rpm)	1200
Compression Ratio	8:1
Aftercooler Inlet Temperature (°F)	130
Jacket Water Outlet Temperature (°F)	210
Ignition System	EIS
Exhaust Manifold	WATER COOLED
Combustion System Type	LOW EMISSION

Fuel	NAT GAS
LHV of Fuel (Btu/SCF)	920
Fuel System	HPG IMPCO
Minimum Fuel Pressure (psig)	35
Methane Number at Conditions Shown	80
Rated Altitude (ft)	5000
at 77°F Design Temperature	

**Engine Rating Data**

Engine Power (w/o fan)

% Load

100%

75%

50%

bhp

1151

863

575

**Engine Data**

Specific Fuel Consumption (BSFC) (1)

Air Flow (Wet, @ 77°F, 28.8 in Hg)

Air Mass Flow (Wet)

Compressor Out Pressure

Compressor Out Temperature

Inlet Manifold Pressure

Inlet Manifold Temperature (10)

Timing (11)

Exhaust Stack Temperature

Exhaust Gas Flow (Wet, @ stack temperature, 29.7 in Hg)

Exhaust Gas Mass Flow (Wet)

Btu/bhp-hr

7415

7594

8085

SCFM

2435

1866

1285

lb/hr

10796

8274

5697

in. HG (abs)

74.2

69.4

52.3

°F

306

283

209

in. HG (abs)

66.7

52.6

37.1

°F

136

136

136

°BTDC

33

33

33

°F

840

817

808

CFM

6415

4830

3306

lb/hr

11217

8600

5928

**Engine Emissions Data**

Nitrous Oxides (NOx as NO2) (9)

(Corr. 15% O2)

g/bhp-hr

1.5

1.5

1.5

ppm

110

106

104

Carbon Monoxide (CO) (9)

(Corr. 15% O2)

g/bhp-hr

1.8

1.8

2.0

ppm

212

213

217

Total Hydrocarbons (THC) (9)

(Corr. 15% O2)

g/bhp-hr

3.3

3.5

4.0

ppm

694

720

770

Non-Methane Hydrocarbons (NMHC) (9)

(Corr. 15% O2)

g/bhp-hr

0.49

0.53

0.60

ppm

49

50

52

Exhaust Oxygen (9)

Lambda

%

8.2

8.0

7.7

1.58

1.57

1.52

**Engine Heat Balance Data**

Input Energy LHV (1)

Work Output

Heat Rejection to Jacket (2) (6)

Heat Rejection to Atmosphere (Radiated) (4)

Heat Rejection to Lube Oil (5)

Total Heat Rejection to Exhaust (to 77°F) (2)

Heat Rejection to Exhaust (LHV to 350°F) (2)

Heat Rejection to Aftercooler (3) (7) (8)

Btu/min

142195

109220

77514

Btu/min

48817

36613

24408

Btu/min

41210

33828

27726

Btu/min

4554

3795

3037

Btu/min

0

0

0

Btu/min

40027

29869

20489

Btu/min

24609

17954

12153

Btu/min

7587

5115

1853

### Engine Noise Data - at 100% load

Noise - Mechanical @ 1 m 100 dB(A)

Noise - Exhaust @ 1.5 m	111	dB(A)
-------------------------	-----	-------

## Fuel Usage Guide

### Derate Factor / Engine Timing vs Methane Number

<30	30	35	40	45	50	55	60	65	70	75	80 to 100
0/-	0.90/19	0.90/21	0.90/22	1.0/23	1.0/24	1.0/26	1.0/27	1.0/28	1.0/30	1.0/31	1.0/33

### Altitude Deration Factors

AIR INLET TEMP. (°F)	ALTITUDE (FEET ABOVE SEA LEVEL)												
	0	1000	2000	3000	4000	5000	6000	7000	8000	9000	10000	11000	12000
130	1.00	1.00	1.00	0.98	0.94	0.91	0.88	0.84	0.81	0.78	0.75	0.72	0.70
120	1.00	1.00	1.00	1.00	0.96	0.93	0.89	0.86	0.83	0.80	0.77	0.74	0.71
110	1.00	1.00	1.00	1.00	0.98	0.94	0.91	0.87	0.84	0.81	0.78	0.75	0.72
100	1.00	1.00	1.00	1.00	1.00	0.96	0.92	0.89	0.86	0.82	0.79	0.76	0.73
90	1.00	1.00	1.00	1.00	1.00	0.98	0.94	0.91	0.87	0.84	0.81	0.78	0.75
80	1.00	1.00	1.00	1.00	1.00	0.99	0.96	0.92	0.89	0.85	0.82	0.79	0.76
70	1.00	1.00	1.00	1.00	1.00	1.00	0.98	0.94	0.90	0.87	0.84	0.81	0.77
60	1.00	1.00	1.00	1.00	1.00	1.00	0.99	0.96	0.92	0.89	0.85	0.82	0.79
50	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.98	0.94	0.90	0.87	0.84	0.80

### Aftercooler Heat Rejection Factors

[illegible]

**DM5154-00 Data is intended to be used with Gas Engine Performance Book Parameters – DM5900-00 on page 8**

## **Attachment M**

### Air Pollution Control Device Sheet

**Attachment M**  
**Air Pollution Control Device Sheet**  
(AFTERBURNER SYSTEM)

Control Device ID No. (must match Emission Units Table): 2C

**Equipment Information**

1. Manufacturer: DCL America, Inc. Model No. DC 64.5-14	2. <input type="checkbox"/> Thermal Energy Recovery <input type="checkbox"/> Recuperative (Conventional) <input checked="" type="checkbox"/> Catalytic
3. Provide diagram(s) of unit describing capture system with duct arrangement and size of duct, air volume, capacity, horsepower of movers. If applicable, state hood face velocity and hood collection efficiency.	
4. Combustion chamber dimensions: Length: _____ ft Diameter: _____ ft Cross-sectional area: _____ ft <sup>2</sup>	5. Stack Dimensions: Height: _____ ft Diameter: _____ ft
6. Combustion (destruction) efficiency: Estimated: _____ % Minimum guaranteed: _____ %	7. Retention or residence time of materials in combustion chamber: Maximum: _____ sec Minimum: _____ sec
8. Throat diameter: _____ ft	9. Combustion Chamber Volume: _____ ft <sup>3</sup>
10. Fuel used in burners: <input type="checkbox"/> Natural Gas <input type="checkbox"/> Fuel Oil, Number: _____ <input type="checkbox"/> Other, specify: _____	11. Burners per afterburner: Number of burners: _____ BTU/hr for burner: _____ BTU/hr
12. Fuel heating value of natural gas: _____ BTU/lb	13. Flow rate of natural gas: _____ ft <sup>3</sup> /min
14. Is a catalyst material used?: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If yes, catalyst material used: _____	15. Expected frequency of catalyst replacement: 10,000 hours _____ yr(s)
17. Space Velocity of the catalyst material used: _____ 1/hour	16. Date catalyst was last replaced: Month/Year: _____
	18. Catalyst area: _____ ft <sup>2</sup>
20. Minimum loading: _____ Maximum loading: _____	19. Volume of catalyst bed: _____ ft <sup>3</sup>
	21. Temperature catalyst bed inlet: _____ °F Temperature catalyst bed outlet: _____ °F
22. Explain degradation or performance indicator criteria determining catalyst replacement: Changes in temperature or pressure resulting from catalyst poisoning or plugging.	
23. Heat exchanger used? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Describe heat exchanger: _____	24. Heat exchanger surface area? _____ ft <sup>2</sup>
26. Temperature of gases: After preheat: _____ °F Before preheat: _____ °F	25. Average thermal efficiency: _____ %
	27. Dilution air flow rate: _____ ft <sup>3</sup> /minute
28. Describe method of gas mixing used: _____	

### Waste Gas (Emission Stream) to be Burned

29.	<b>Name</b>	<b>Quantity</b> Grains of H <sub>2</sub> S/100 ft <sup>2</sup>	<b>Quantity-Density</b> (LB/hr, ft <sup>3</sup> /hr, etc)	<b>Source of Material</b>

30. Estimate total combustibles to afterburner lb/hr or ACF/hr

31. Estimated total flow rate to afterburner or catalyst including materials to be burned, carrier gases, auxiliary fuel, etc.: 1,773 acfm lb/hr, ACF/hr, or scfm  
 Total flow rate = Flue gas flow rate

32. Afterburner operating parameters:	<b>During maximum operation of feeding unit(s)</b>	<b>During typical operation of feeding unit(s)</b>	<b>During minimum operation of feeding unit(s)</b>
Combustion chamber temperature in °F			
Emission stream gas temperature in			
Combined gas stream entering catalyst bed in			
Flue stream leaving the catalyst bed			
Emission stream flow rate (scfm)			
Efficiency (VOC Reduction)	%	%	%
Efficiency (Other; specify contaminant)	%	%	%

33. Inlet Emission stream parameters:
 

	<b>Maximum</b>	<b>Typical</b>
Pressure (mmHg):		
Heat Content (BTU/scf):		
Oxygen Content (%):		
Moisture Content (%):		
Are halogenated organics present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Are particulates present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Are metals present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	

34. For thermal afterburners, is the combustion chamber temperature continuously monitored and recorded?  
☐ Yes      ☐ No

35. For catalytic afterburners, is the temperature rise across the catalyst bed continuously monitored and recorded?   ☐ Yes      ☐ No

36. Is the VOC concentration of exhaust monitored and recorded?   ☐ Yes      ☒ No

37. Describe any air pollution control device inlet and outlet gas conditioning processes (e.g., gas cooling, gas reheating, gas humidification):

38. Describe the collection material disposal system:

39. Have you included **Afterburner Control Device** in the Emissions Points Data Summary Sheet?

**40. Proposed Monitoring, Recordkeeping, Reporting, and Testing**

Please propose monitoring, recordkeeping, and reporting in order to demonstrate compliance with the proposed operating parameters. Please propose testing in order to demonstrate compliance with the proposed emissions limits.

MONITORING:

RECORDKEEPING:

REPORTING:

TESTING:

MONITORING: Please list and describe the process parameters and ranges that are proposed to be monitored in order to demonstrate compliance with the operation of this process equipment or air control device.

RECORDKEEPING: Please describe the proposed recordkeeping that will accompany the monitoring.

REPORTING: Please describe any proposed emissions testing for this process equipment on air pollution control device.

TESTING: Please describe any proposed emissions testing for this process equipment on air pollution control device.

**41. Manufacturer's Guaranteed Capture Efficiency for each air pollutant.**

Assume 100%

**42. Manufacturer's Guaranteed Control Efficiency for each air pollutant.**

Outlet CO emission to be less than 47 ppmvd @ 15% O<sub>2</sub>. This equates to 0.5 lbs/hr at full load.

**43. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty.**

N/A

### 2.1.3 Combination Details

#### A.) Catalyst

The catalyst unit will be supplied by DCL America Inc. and they have proposed the use of their QUICK-LID™ Model DC64.5-14 catalytic converter with one (1) catalyst element, 304 stainless steel construction, provision for future upgrade, ANSI 150 lb bolt pattern carbon steel flanges, and four ½" standard monitoring ports.

3516TAL Engine	Details
CO (ppmvd) catalyst outlet	<47 @15%O2
CO (lb/hr) catalyst outlet	0.5
Number of Elements	1
Cell Density (cpsi)	300
Pressure Drop (w.c.)	8"

Table 1: This table shows the criteria that was evaluated by DCL.

#### B.) Silencer

The silencer unit will be supplied by DCL America Inc. as part of the combination unit. The silencer will be carbon steel. The paint specification will be as follows; blast to SP5, metalize, seal with 3 coat of Intertherm 50 at 1mm per. The silencer will have an approximate sound attenuation of 15-20 dBA. Tailpipe velocities are based on max rpm of 1200 and are approximately 8000 feet per minute.

### 2.1.4 DTI Scope

1. DTI will provide a complete engine analysis report including emissions and performance data for each unit prior to conversion. Report must be less than three (3) months old and must be delivered to DRE no less than three (3) weeks before start of construction
2. Ensure current calibration and proper functionality of all existing or DTI installed (end devices and control hardware)
3. Calculate horsepower during commissioning
4. Terminate the thermocouples and differential pressure signal.
5. Dispose of all hardware removed
6. Provide adequate pipeline conditions to ensure operation under all engine conditions, as required for commissioning
7. Provide any project permits necessary
8. Remove and dispose of hazardous materials and equipment during project
9. Provide cooler drawings
10. Design and procure the DP transmitter and thermocouples
11. Provide design for conduit and wire from the end devices to the control panel
12. Provide data collection, archiving and necessary programming



## **Attachment N**

### Supporting Emissions Calculations

Engine (EN04) Potential Emissions  
Dominion Transmission, Inc.  
Loup Creek Compressor Station

Date: June 2016

Input Data: Caterpillar G3516  
Design Class: 4-stroke lean burn  
Engine Power: 1,150 hp  
Fuel Input: 8.53 MMBtu/hr  
7,415 Btu/hp-hr (manufacturer spec sheet)  
Natural Gas Consumption: 0.0085 MMcf/hr  
74.70 MMcf/yr  
Maximum Hours of Operation: 8,760 hrs/yr  
Heating Value of Natural Gas: 1,000 Btu/cf

Emission Calculations

Pollutant	Emission Factor		Potential Emissions	
			(lb/hr)	(tons/yr)
PM (filterable)	7.71E-05	lb/MMBtu	6.57E-04	2.88E-03
PM-10 (filterable)	7.71E-05	lb/MMBtu	6.57E-04	2.88E-03
PM-2.5 (filterable)	7.71E-05	lb/MMBtu	6.57E-04	2.88E-03
PM (condensibles)	9.91E-03	lb/MMBtu	0.08	0.37
SO <sub>2</sub>	5.88E-04	lb/MMBtu	5.01E-03	0.02
CO	0.5	lb/hr	0.50	2.19
NO <sub>x</sub>	1.50	g/hp-hr	3.80	16.66
VOC	0.49	g/hp-hr	1.24	5.44
1,1,2,2-Tetrachloroethane	4.00E-05	lb/MMBtu	3.41E-04	1.49E-03
1,1,2-Trichloroethane	3.18E-05	lb/MMBtu	2.71E-04	1.19E-03
1,1-Dichloroethane	2.36E-05	lb/MMBtu	2.01E-04	8.81E-04
1,2-Dichloroethane	2.36E-05	lb/MMBtu	2.01E-04	8.81E-04
1,3-Butadiene	2.67E-04	lb/MMBtu	2.28E-03	9.97E-03
1,3-Dichloropropene	2.64E-05	lb/MMBtu	2.25E-04	9.86E-04
Acetaldehyde	8.36E-03	lb/MMBtu	0.07	0.31
Acrolein	5.14E-03	lb/MMBtu	0.04	0.19
Benzene	4.40E-04	lb/MMBtu	3.75E-03	0.02
Biphenyl	2.12E-04	lb/MMBtu	1.81E-03	7.92E-03
Carbon Tetrachloride	3.67E-05	lb/MMBtu	3.13E-04	1.37E-03
Chlorobenzene	3.04E-05	lb/MMBtu	2.59E-04	1.14E-03
Chloroform	2.85E-05	lb/MMBtu	2.43E-04	1.06E-03
Ethylbenzene	3.97E-05	lb/MMBtu	3.39E-04	1.48E-03
Ethylene Dibromide	4.43E-05	lb/MMBtu	3.78E-04	1.65E-03
Formaldehyde	5.28E-02	lb/MMBtu	0.45	1.97
Hexane	1.11E-03	lb/MMBtu	0.01	0.04
Methanol	2.50E-03	lb/MMBtu	2.13E-02	9.34E-02
Methylene Chloride	2.00E-05	lb/MMBtu	1.71E-04	7.47E-04
Naphthalene (POM)	7.44E-05	lb/MMBtu	6.34E-04	2.78E-03
Phenol	2.40E-05	lb/MMBtu	2.05E-04	8.96E-04
Styrene	2.36E-05	lb/MMBtu	2.01E-04	8.81E-04
Toluene	4.08E-04	lb/MMBtu	3.48E-03	0.02
Vinyl Chloride	1.49E-05	lb/MMBtu	1.27E-04	5.57E-04
Xylene	1.84E-04	lb/MMBtu	1.57E-03	6.87E-03
TOTAL HAP:			<b>0.61</b>	<b>2.69</b>

(1) CO, NO<sub>x</sub>, and VOC Emission Rates based on manufacturer information.

**\*\*Note:** The CO emission rates are based off of the catalyst/silencer control efficiency provided by the manufacturer.

(2) PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub>, and HAP emission factors based on AP-42 Section 3.2, Table 3.2-2.

## **Attachment P**

Public Notice

## AIR QUALITY PERMIT NOTICE

### Notice of Application

Notice is given that Dominion Transmission, Inc. has applied to the West Virginia Department of Environmental Protection, Division of Air Quality, for a Class II Administrative Update for the Loup Creek Compressor Station on Route 85 in Kopperston, WV, in Wyoming County, West Virginia. The latitude and longitude coordinates are:

Latitude = 37.7397  
Longitude = -81.5752

The applicant estimates the increased potential to discharge the following Regulated Air Pollutants will be:

PM <sub>10</sub>	+0.02	tons/yr
SO <sub>2</sub>	0.00	tons/yr
CO	0.00	tons/yr
NO <sub>x</sub>	+0.06	tons/yr
VOC	-0.16	tons/yr
Total HAPs	+0.15	tons/yr

Written comments will be received by the West Virginia Department of Environmental Protection, Division of Air Quality, 601 57<sup>th</sup> Street, SE, Charleston, WV 25304, for at least 30 calendar days from the date of publication of this notice.

Any questions regarding this permit application should be directed to the DAQ at (304) 926-0499, extension 1250, during normal business hours.

Dated this the (Day) day of (Month), (Year).

By: Dominion Transmission, Inc.  
Brian Sheppard  
VP of Pipeline Operations  
925 White Oaks Blvd.  
Bridgeport, WV 26330

## **Attachment S**

Title V Permit Revision Information

## Attachment S

### Title V Permit Revision Information

#### 1. New Applicable Requirements Summary

Mark all applicable requirements associated with the changes involved with this permit revision:

<input type="checkbox"/> SIP	<input type="checkbox"/> FIP
<input checked="" type="checkbox"/> Minor source NSR (45CSR13)	<input type="checkbox"/> PSD (45CSR14)
<input type="checkbox"/> NESHAP (45CSR15)	<input type="checkbox"/> Nonattainment NSR (45CSR19)
<input type="checkbox"/> Section 111 NSPS (Subpart(s)____)	<input type="checkbox"/> Section 112(d) MACT standards (Subpart(s)____)
<input type="checkbox"/> Section 112(g) Case-by-case MACT	<input type="checkbox"/> 112(r) RMP
<input type="checkbox"/> Section 112(i) Early reduction of HAP	<input type="checkbox"/> Consumer/commercial prod. reqts., section 183(e)
<input type="checkbox"/> Section 129 Standards/Reqts.	<input type="checkbox"/> Stratospheric ozone (Title VI)
<input type="checkbox"/> Tank vessel reqt., section 183(f)	<input type="checkbox"/> Emissions cap 45CSR§30-2.6.1
<input type="checkbox"/> NAAQS, increments or visibility (temp. sources)	<input type="checkbox"/> 45CSR27 State enforceable only rule
<input type="checkbox"/> 45CSR4 State enforceable only rule	<input type="checkbox"/> Acid Rain (Title IV, 45CSR33)
<input type="checkbox"/> Emissions Trading and Banking (45CSR28)	<input type="checkbox"/> Compliance Assurance Monitoring (40CFR64) <sup>(1)</sup>
<input type="checkbox"/> NO <sub>x</sub> Budget Trading Program Non-EGUs (45CSR1)	<input type="checkbox"/> NO <sub>x</sub> Budget Trading Program EGUs (45CSR26)

<sup>(1)</sup> If this box is checked, please include **Compliance Assurance Monitoring (CAM) Form(s)** for each Pollutants Specific Emission Unit (PSEU) (See Attachment H to Title V Application). If this box is not checked, please explain why **Compliance Assurance Monitoring** is not applicable:

Engine 4 (EN04) does not have potential to emit (PTE) calculations over 100 tons/yr.

#### 2. Non Applicability Determinations

List all requirements, which the source has determined not applicable to this permit revision and for which a permit shield is requested. The listing shall also include the rule citation and a rationale for the determination.

☐ **Permit Shield Requested** *(not applicable to Minor Modifications)*

*All of the required forms and additional information can be found under the Permitting Section of DAQ's website, or requested by phone.*

### 3. Suggested Title V Draft Permit Language

Are there any changes involved with this Title V Permit revision outside of the scope of the NSR Permit revision? ☐ Yes ☒ No If Yes, describe the changes below.

Also, please provide **Suggested Title V Draft Permit language** for the proposed Title V Permit revision (including all applicable requirements associated with the permit revision and any associated monitoring /recordkeeping/ reporting requirements), OR attach a marked up pages of current Title V Permit. Please include appropriate citations (Permit or Consent Order number, condition number and/or rule citation (e.g. 45CSR§7-4.1)) for those requirements being added / revised.

### 4. Active NSR Permits/Permit Determinations/Consent Orders Associated With This Permit Revision

Permit or Consent Order Number	Date of Issuance	Permit/Consent Order Condition Number
R13-2839B	9/17/2012	
R30-10900019-2012	12/18/2012 (SM01)	

### 5. Inactive NSR Permits/Obsolete Permit or Consent Orders Conditions Associated With This Revision

Permit or Consent Order Number	Date of Issuance	Permit/Consent Order Condition Number
N/A		

### 6. Change in Potential Emissions

Pollutant	Change in Potential Emissions (+ or -), TPY
CO	No change
NOx	+ 0.06
SO2	No change
VOC	- 0.16
PM-10	+ 0.02
Total HAP	+ 0.15

*All of the required forms and additional information can be found under the Permitting Section of DAQ's website, or requested by phone.*

**7. Certification For Use Of Minor Modification Procedures (Required Only for Minor Modification Requests)**

**Note:** This certification must be signed by a responsible official. Applications without a signed certification will be returned as incomplete. The criteria for allowing the use of Minor Modification Procedures are as follows:

- i. Proposed changes do not violate any applicable requirement;
- ii. Proposed changes do not involve significant changes to existing monitoring, reporting, or recordkeeping requirements in the permit;
- iii. Proposed changes do not require or change a case-by-case determination of an emission limitation or other standard, or a source-specific determination for temporary sources of ambient air quality impacts, or a visibility increment analysis;
- iv. Proposed changes do not seek to establish or change a permit term or condition for which there is no underlying applicable requirement and which permit or condition has been used to avoid an applicable requirement to which the source would otherwise be subject (synthetic minor). Such terms and conditions include, but are not limited to a federally enforceable emissions cap used to avoid classification as a modification under any provision of Title I or any alternative emissions limit approved pursuant to regulations promulgated under § 112(j)(5) of the Clean Air Act;
- v. Proposed changes do not involve preconstruction review under Title I of the Clean Air Act or 45CSR14 and 45CSR19;
- vi. Proposed changes are not required under any rule of the Director to be processed as a significant modification;

Notwithstanding subparagraph 45CSR§30-6.5.a.1.A. (items i through vi above), minor permit modification procedures may be used for permit modifications involving the use of economic incentives, marketable permits, emissions trading, and other similar approaches, to the extent that such minor permit modification procedures are explicitly provided for in rules of the Director which are approved by the U.S. EPA as a part of the State Implementation Plan under the Clean Air Act, or which may be otherwise provided for in the Title V operating permit issued under 45CSR30.

Pursuant to 45CSR§30-6.5.a.2.C., the proposed modification contained herein meets the criteria for use of Minor permit modification procedures as set forth in Section 45CSR§30-6.5.a.1.A. The use of Minor permit modification procedures are hereby requested for processing of this application.

(Signed):

  
(Please use blue ink)

Date:

06 / 27 / 16  
(Please use blue ink)

Named (typed):

Brian Sheppard

Title:

VP Pipeline Operations

**Note: Please check if the following included (if applicable):**

- |                          |   |
|--------------------------|---|
| <input type="checkbox"/> | Compliance Assurance Monitoring Form(s) |
| <input type="checkbox"/> | Suggested Title V Draft Permit Language |

All of the required forms and additional information can be found under the Permitting Section of DAQ's website, or requested by phone.