



May 12, 2016

**BY: U.S. CERTIFIED MAIL, RETURN RECEIPT REQUESTED**

9590 9401 0037 5168 3777 69

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

**RE: Dominion Transmission, Inc. – General Permit Application (G60-C)**  
**Southern Area Headquarters**

Dear Mr. Durham:

Enclosed are one complete original and two (2) cd copies of a G60-C General Permit application for the proposed installation of a new natural gas emergency generator at Dominion Transmission, Inc.'s Southern Area Headquarters in Lewis County, WV.

The emergency generator is a non-certified engine under 40 CFR 60 Subpart JJJJ; therefore, stack testing is required. As a result, the source "is subject to a substantive requirement of an emission control rule" and is considered a "stationary source" under West Virginia's R13 Regulations, as stated in §45-13-2.

If you require any additional information, please contact Rebekah Remick at (804) 273-3536 or via email at [Rebekah.J.Remick@dom.com](mailto: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

**DOMINION TRANSMISSION, INC.  
SOUTHERN AREA HEADQUARTERS**

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

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\*\*Note – There are no Attachments C, E, H, K, M, N, and O for this permit application



WEST VIRGINIA  
 DEPARTMENT OF ENVIRONMENTAL PROTECTION  
 DIVISION OF AIR QUALITY  
 601 57<sup>th</sup> Street, SE  
 Charleston, WV 25304  
 Phone: (304) 926-0475 • www.dep.wv.gov/daq

**APPLICATION FOR GENERAL PERMIT REGISTRATION**  
 CONSTRUCT, MODIFY, RELOCATE OR ADMINISTRATIVELY UPDATE  
 A STATIONARY SOURCE OF AIR POLLUTANTS

- CONSTRUCTION     MODIFICATION     RELOCATION     CLASS I ADMINISTRATIVE UPDATE  
 CLASS II ADMINISTRATIVE UPDATE

**CHECK WHICH TYPE OF GENERAL PERMIT REGISTRATION YOU ARE APPLYING FOR:**

- |   |  |
|---|--|
| <input type="checkbox"/> <b>G10-D</b> – Coal Preparation and Handling                                   | <input type="checkbox"/> <b>G40-C</b> – Nonmetallic Minerals Processing                  |
| <input type="checkbox"/> <b>G20-B</b> – Hot Mix Asphalt   | <input type="checkbox"/> <b>G50-B</b> – Concrete Batch                                   |
| <input type="checkbox"/> <b>G30-D</b> – Natural Gas Compressor Stations                                 | <input checked="" type="checkbox"/> <b>G60-C</b> – Class II Emergency Generator          |
| <input type="checkbox"/> <b>G33-A</b> – Spark Ignition Internal Combustion Engines                      | <input type="checkbox"/> <b>G65-C</b> – Class I Emergency Generator                      |
| <input type="checkbox"/> <b>G35-A</b> – Natural Gas Compressor Stations (Flare/Glycol Dehydration Unit) | <input type="checkbox"/> <b>G70-A</b> – Class II Oil and Natural Gas Production Facility |

**SECTION I. GENERAL INFORMATION**

1. Name of applicant (as registered with the WV Secretary of State's Office): <b>Dominion Transmission, Inc.</b>	2. Federal Employer ID No. (FEIN): <b>550629203</b>
3. Applicant's mailing address:  <b>925 White Oaks Blvd. Bridgeport, WV 26330</b>	4. Applicant's physical address:  <b>335 US Highway 33 West Weston, WV 26452</b>
5. If applicant is a subsidiary corporation, please provide the name of parent corporation: <b>N/A</b>	
6. <b>WV BUSINESS REGISTRATION.</b> Is the applicant a resident of the State of West Virginia? <input checked="" type="checkbox"/> <b>YES</b> <input type="checkbox"/> <b>NO</b> – IF <b>YES</b> , provide a copy of the Certificate of <b>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 LLC / Registration</b> (one page) including any name change amendments or other Business Certificate as <b>Attachment A</b> .	

**SECTION II. FACILITY INFORMATION**

7. Type of plant or facility (stationary source) to be constructed, modified, relocated or administratively updated (e.g., coal preparation plant, primary crusher, etc.):  <b>Installation of a natural gas emergency generator</b>	8a. Standard Industrial Classification (SIC) Code:    8741 8b. North American Industry Classification System (NAICS) Code:    551114
9. DAQ Plant ID No. (for existing facilities only):  <b>N/A</b>	10. List all current 45CSR13 and other General Permit numbers associated with this process (for existing facilities only):  <b>N/A</b>

**A: PRIMARY OPERATING SITE INFORMATION**

11A. Facility name of primary operating site:  <p align="center"><b>Southern Area Headquarters</b></p>	12A. Address of primary operating site:  <table border="0"> <tr> <td><u>Mailing:</u> <b>925 White Oaks Blvd. Bridgeport, WV 26330</b></td> <td><u>Physical:</u> <b>335 US Highway 33 West Weston, WV 26452</b></td> </tr> </table>		<u>Mailing:</u> <b>925 White Oaks Blvd. Bridgeport, WV 26330</b>	<u>Physical:</u> <b>335 US Highway 33 West Weston, WV 26452</b>
<u>Mailing:</u> <b>925 White Oaks Blvd. Bridgeport, WV 26330</b>	<u>Physical:</u> <b>335 US Highway 33 West Weston, WV 26452</b>			
13A. Does the applicant own, lease, have an option to buy, or otherwise have control of the proposed site? <span style="float:right"><input checked="" type="checkbox"/> YES    <input type="checkbox"/> NO</span> – IF YES, please explain: <b>Own</b> – IF NO, YOU ARE NOT ELIGIBLE FOR A PERMIT FOR THIS SOURCE.				
14A. – For <b>Modifications or Administrative Updates</b> at an existing facility, please provide directions to the present location of the facility from the nearest state road; – For Construction or Relocation permits, please provide directions to the proposed new site location from the nearest state road. Include a <b>MAP as Attachment F.</b>  <p><b>Go south on I-79 to exit 99 Weston. Go west on Route 33 through the town of Weston for 5 miles. Turn left into Southern Area Headquarters building (tan brick building with blue windows).</b></p>				
15A. Nearest city or town:  <p align="center"><b>Weston</b></p>	16A. County:  <p align="center"><b>Lewis</b></p>	17A. UTM Coordinates: Northing (KM): <b>4322008.7</b> Easting (KM): <b>543290.5</b> Zone: <b>17</b>		
18A. Briefly describe the proposed new operation or change (s) to the facility:  <p><b>Dominion Transmission, Inc. is proposing to install a 566 hp (350 kW) natural gas emergency generator.</b></p>		19A. Latitude & Longitude Coordinates (NAD83, Decimal Degrees to 5 digits): Latitude: <b>39.046075</b> Longitude: <b>-80.499739</b>		

**B: 1<sup>ST</sup> ALTERNATE OPERATING SITE INFORMATION (only available for G20, G40, & G50 General Permits)**

11B. Name of 1 <sup>st</sup> alternate operating site:  <p align="center"><b>N/A</b></p>	12B. Address of 1 <sup>st</sup> alternate operating site:  Mailing: <b>N/A</b> Physical: <b>N/A</b>	
13B. Does the applicant own, lease, have an option to buy, or otherwise have control of the proposed site? <b>N/A</b> – IF YES, please explain: – IF NO, YOU ARE NOT ELIGIBLE FOR A PERMIT FOR THIS SOURCE.		
14B. – For <b>Modifications or Administrative Updates</b> at an existing facility, please provide directions to the present location of the facility from the nearest state road; – For Construction or Relocation permits, please provide directions to the proposed new site location from the nearest state road. Include a <b>MAP as Attachment F.</b>  <p align="center"><b>N/A</b></p>		
15B. Nearest city or town:  <p align="center"><b>N/A</b></p>	16B. County:  <p align="center"><b>N/A</b></p>	17B. UTM Coordinates: Northing (KM): <b>N/A</b> Easting (KM): <b>N/A</b> Zone: <b>N/A</b>

18B. Briefly describe the proposed new operation or change (s) to the facility:  <b>N/A</b>	19B. Latitude & Longitude Coordinates (NAD83, Decimal Degrees to 5 digits):  Latitude: <b>N/A</b> Longitude: <b>N/A</b>
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**C: 2<sup>ND</sup> ALTERNATE OPERATING SITE INFORMATION (only available for G20, G40, & G50 General Permits):**

11C. Name of 2 <sup>nd</sup> alternate operating site:  <b>N/A</b>	12C. Address of 2 <sup>nd</sup> alternate operating site:  Mailing: <b>N/A</b> Physical: <b>N/A</b>
--	--

13C. Does the applicant own, lease, have an option to buy, or otherwise have control of the proposed site? **N/A**

- IF **YES**, please explain: **N/A**
- IF **NO**, YOU ARE NOT ELIGIBLE FOR A PERMIT FOR THIS SOURCE.

14C. - For **Modifications or Administrative Updates** at an existing facility, please provide directions to the present location of the facility from the nearest state road;

- For Construction or Relocation permits, please provide directions to the proposed new site location from the nearest state road. Include a **MAP** as **Attachment F**.

**N/A**

15C. Nearest city or town:  <b>N/A</b>	16C. County:  <b>N/A</b>	17C. UTM Coordinates:  Northing (KM): <b>N/A</b> Easting (KM): <b>N/A</b> Zone: <b>N/A</b>
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18C. Briefly describe the proposed new operation or change (s) to the facility:  <b>N/A</b>	19C. Latitude & Longitude Coordinates (NAD83, Decimal Degrees to 5 digits):  Latitude: <b>N/A</b> Longitude: <b>N/A</b>
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20. Provide the date of anticipated installation or change:  <b>11/1/16</b>  <input type="checkbox"/> If this is an <b>After-The-Fact</b> permit application, provide the date upon which the proposed change did happen: :	21. Date of anticipated Start-up if registration is granted:  <b>12/31/16</b>
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22. Provide maximum projected **Operating Schedule** of activity/activities outlined in this application if other than 8760 hours/year. (Note: anything other than 24/7/52 may result in a restriction to the facility's operation).

Hours per day **24** Days per week **7** Weeks per year **3** Percentage of operation **5.7% (500 hrs/8760 hrs)**

**SECTION III. ATTACHMENTS AND SUPPORTING DOCUMENTS**

23. Include a check payable to WVDEP – Division of Air Quality with the appropriate <b>application fee</b> (per 45CSR22 and 45CSR13).
24. Include a <b>Table of Contents</b> as the first page of your application package.
All of the required forms and additional information can be found under the Permitting Section (General Permits) of DAQ's website, or requested by phone.

25. Please check all attachments included with this permit application. Please refer to the appropriate reference document for an explanation of the attachments listed below.

- ATTACHMENT A : CURRENT BUSINESS CERTIFICATE
- ATTACHMENT B: PROCESS DESCRIPTION
- ATTACHMENT C: DESCRIPTION OF FUGITIVE EMISSIONS
- ATTACHMENT D: PROCESS FLOW DIAGRAM
- ATTACHMENT E: PLOT PLAN
- ATTACHMENT F: AREA MAP
- ATTACHMENT G: EQUIPMENT DATA SHEETS AND REGISTRATION SECTION APPLICABILITY FORM
- ATTACHMENT H: AIR POLLUTION CONTROL DEVICE SHEETS
- ATTACHMENT I: EMISSIONS CALCULATIONS
- ATTACHMENT J: CLASS I LEGAL ADVERTISEMENT
- ATTACHMENT K: ELECTRONIC SUBMITTAL
- ATTACHMENT L: GENERAL PERMIT REGISTRATION APPLICATION FEE
- ATTACHMENT M: SITING CRITERIA WAIVER
- ATTACHMENT N: MATERIAL SAFETY DATA SHEETS (MSDS)
- ATTACHMENT O: EMISSIONS SUMMARY SHEETS
- OTHER SUPPORTING DOCUMENTATION NOT DESCRIBED ABOVE (Equipment Drawings, Aggregation Discussion, etc.)

Please mail an original and two copies of the complete General Permit Registration Application with the signature(s) to the DAQ Permitting Section, at the address shown on the front page of this application. Please DO NOT fax permit applications. For questions regarding applications or West Virginia Air Pollution Rules and Regulations, please refer to the website shown on the front page of the application or call the phone number also provided on the front page of the application.

SECTION IV. CERTIFICATION OF INFORMATION

This General Permit Registration Application shall be signed below by a Responsible Official. A Responsible Official is a President, Vice President, Secretary, Treasurer, General Partner, General Manager, a member of a Board of Directors, or Owner, depending on business structure. A business may certify an Authorized Representative who shall have authority to bind the Corporation, Partnership, Limited Liability Company, Association, Joint Venture or Sole Proprietorship. Required records of daily throughput, hours of operation and maintenance, general correspondence, Emission Inventory, Certified Emission Statement, compliance certifications and all required notifications must be signed by a Responsible Official or an Authorized Representative. If a business wishes to certify an Authorized Representative, the official agreement below shall be checked off and the appropriate names and signatures entered. Any administratively incomplete or improperly signed or unsigned Registration Application will be returned to the applicant.

FOR A CORPORATION (domestic or foreign)

X I certify that I am a President, Vice President, Secretary, Treasurer or in charge of a principal business function of the corporation

FOR A PARTNERSHIP

O I certify that I am a General Partner

FOR A LIMITED LIABILITY COMPANY

O I certify that I am a General Partner or General Manager

FOR AN ASSOCIATION

O I certify that I am the President or a member of the Board of Directors

FOR A JOINT VENTURE

O I certify that I am the President, General Partner or General Manager

FOR A SOLE PROPRIETORSHIP

O I certify that I am the Owner and Proprietor

I hereby certify that (please print or type) Brian Sheppard is an Authorized Representative and in that capacity shall represent the interest of the business (e.g., Corporation, Partnership, Limited Liability Company, Association Joint Venture or Sole Proprietorship) and may obligate and legally bind the business. If the business changes its Authorized Representative, a Responsible Official shall notify the Director of the Office of Air Quality immediately, and/or,

I hereby certify that all information contained in this General Permit Registration Application and any supporting documents appended hereto is, to the best of my knowledge, true, accurate and complete, and that all reasonable efforts have been made to provide the most comprehensive information possible

Signature  05-04-16  
(please use blue ink) Responsible Official Date

Name & Title Brian Sheppard, Vice President, Pipeline Operations  
(please print or type)

Signature \_\_\_\_\_  
(please use blue ink) Authorized Representative (if applicable) Date

Applicant's Name Dominion Transmission, Inc.

Phone & Fax 681-842-3733 681-842-3323  
Phone Fax

Email Brian.C.Sheppard@dom.com

**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**

### Process Description

## **PROCESS DESCRIPTION**

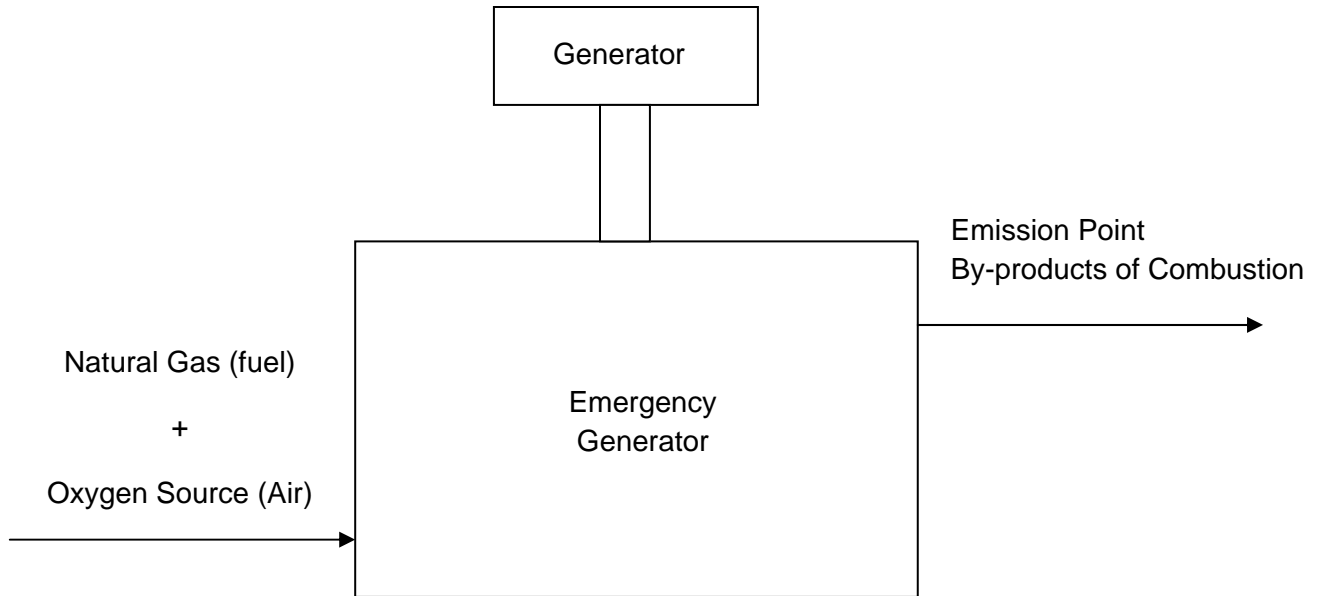
Southern Area Headquarters is an office/warehouse building for Dominion Transmission, Inc. The site currently has one (1) underground storage tank (gasoline) and an existing Generac 7.4L 80.5 hp emergency generator (EG-1). This general permit application is for the addition of a new Caterpillar G3412 566 hp natural gas emergency generator (EG-2) to supply power to the office/warehouse in the event of a power loss.

## **Attachment D**

Process Flow Diagram

**Dominion Transmission, Inc.**  
**Southern Area Headquarters**

**Emergency Generator Process Flow Diagram**



## **Attachment F**

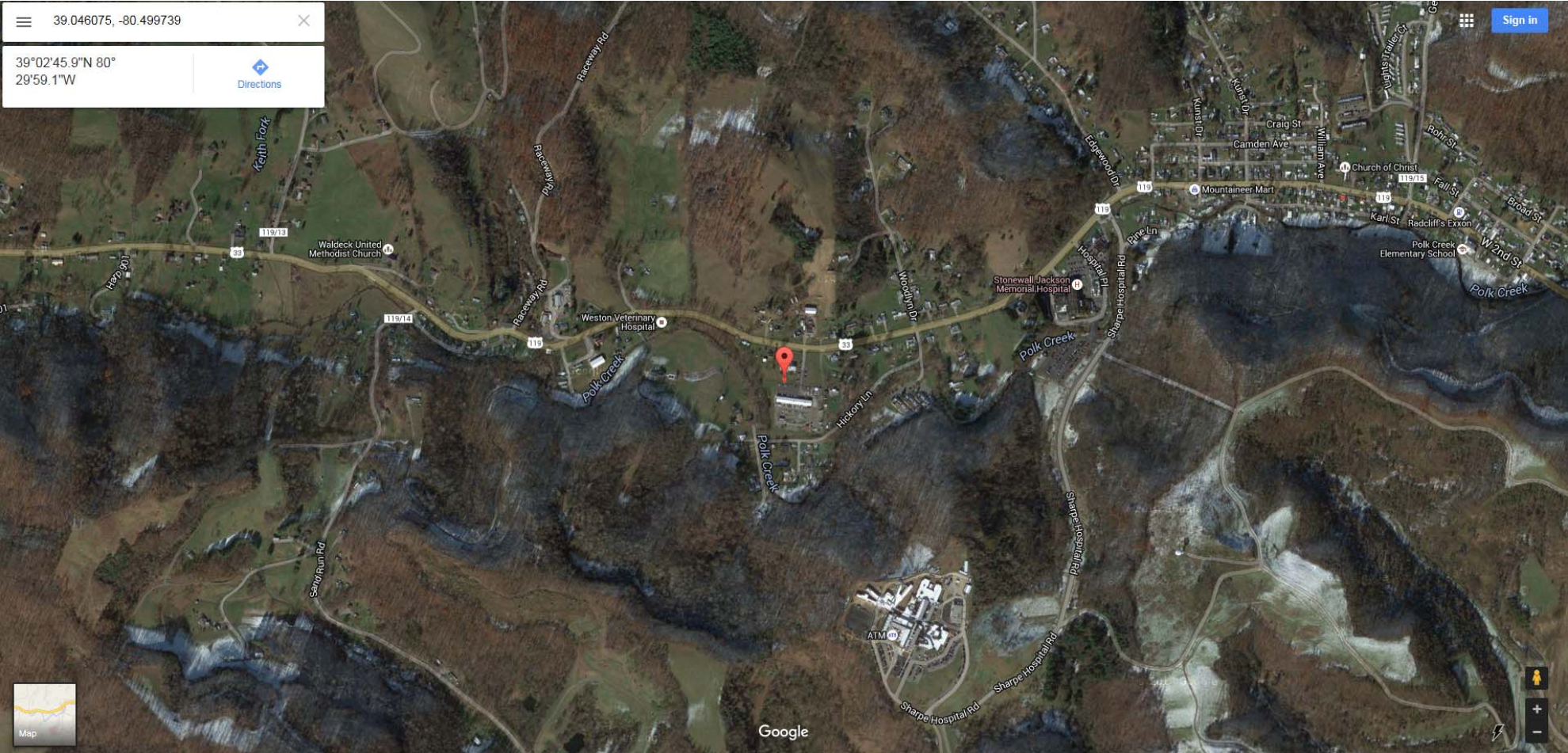
Area Map

☰ 39.046075, -80.499739 ✕

39°02'45.9"N 80°29'59.1"W

📍 Directions

Sign in



Google

**Attachment G**

Equipment Data Sheets and Registration Section  
Applicability Form



# **G60-C REGISTRATION APPLICATION FORMS**

## General Permit G60-C Registration Section Applicability Form

General Permit G60-C was developed to allow qualified registrants to seek registration for emergency generator(s).

General Permit G60-C allows the registrant to choose which sections of the permit that they wish to seek registration under. Therefore, please mark which sections that you are applying for registration under. Please keep in mind, that if this registration is approved, the issued registration will state which sections will apply to your affected facility.

Section 5	Reciprocating Internal Combustion Engines (R.I.C.E.)*	<input checked="" type="checkbox"/>
Section 6	Tanks	<input checked="" type="checkbox"/>
Section 7	Standards of Performance for Stationary Compression Ignition Internal Combustion Engines (40CFR60 Subpart IIII)	<input type="checkbox"/>
Section 8	Standards of Performance for Stationary Spark Ignition Internal Combustion Engines (40CFR60 Subpart JJJJ)	<input checked="" type="checkbox"/>

**\* Affected facilities that are subject to Section 5 may also be subject to Sections 7 or 8. Therefore, if the applicant is seeking registration under both sections, please select both.**

### EMERGENCY GENERATOR ENGINE DATA SHEET

Source Identification Number <sup>1</sup>		EG-1		EG-2			
Engine Manufacturer and Model		Generac 7.4L		Caterpillar G3412			
Manufacturer's Rated bhp/rpm		80.5 hp		566 hp			
Source Status <sup>2</sup>		ES		NS			
Date Installed/Modified/Removed <sup>3</sup>		1999		2016			
Engine Manufactured/Reconstruction Date <sup>4</sup>		Pre-1999		2013			
Is this a Certified Stationary Spark Ignition Engine according to 40CFR60 Subpart IIII? (Yes or No) <sup>5</sup>		No		No			
Is this a Certified Stationary Spark Ignition Engine according to 40CFR60 Subpart JJJJ? (Yes or No) <sup>6</sup>		No		No			
Engine, Fuel and Combustion Data	Engine Type <sup>7</sup>	RB4S		LB4S			
	APCD Type <sup>8</sup>	None		NSCR (3-way catalyst)			
	Fuel Type <sup>9</sup>	PQ		PQ			
	H <sub>2</sub> S (gr/100 scf)	20 (tariff)		20 (tariff)			
	Operating bhp/rpm	80.5 hp (at 1800 rpm)		566 hp (at 1800 rpm)			
	BSFC (Btu/bhp-hr)	unknown		9,197 (worst case load)			
	Fuel throughput (ft <sup>3</sup> /hr)	300		5,206 (worst case load)			
	Fuel throughput (MMft <sup>3</sup> /yr)	0.15		2.60			
	Operation (hrs/yr)	500		500			
Reference <sup>10</sup>	Potential Emissions <sup>11</sup>	lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr
AP (EG-1) MD (EG-2)	NO <sub>x</sub>	0.68	0.17	2.50	0.62		
AP (EG-1) MD (EG-2)	CO	1.12	0.28	4.99	1.25		
AP (EG-1) MD (EG-2)	VOC	0.01	2.22E-03	0.25	0.06		
AP	SO <sub>2</sub>	1.76E-04	4.41E-05	3.06E-03	7.65E-04		
AP	PM <sub>10</sub>	2.85E-03	7.13E-04	4.01E-04	1.00E-04		
AP	Formaldehyde	6.15E-03	1.54E-03	0.27	0.07		

1. Enter the appropriate Source Identification Number for each emergency generator. Generator engines should be designated EG-1, EG-2, EG-3 etc. If more than three (3) engines exist, please use additional sheets.
2. Enter the Source Status using the following codes:  
     NS     Construction of New Source (installation)            ES     Existing Source

MS Modification of Existing Source

RS Removal of Source

3. Enter the date (or anticipated date) of the engine's installation (construction of source), modification or removal.
4. Enter the date that the engine was manufactured, modified or reconstructed.
5. Is the engine a certified stationary spark ignition internal combustion engine according to 40CFR60 Subpart IIII. If so, the engine and control device must be operated and maintained in accordance with the manufacturer's emission-related written instructions. You must keep records of conducted maintenance to demonstrate compliance, but no performance testing is required. If the certified engine is not operated and maintained in accordance with the manufacturer's emission-related written instructions, the engine will be considered a non-certified engine and you must demonstrate compliance according to 40CFR§60.4210 as appropriate.

**Provide a manufacturer's data sheet for all engines being registered.**

6. Is the engine a certified stationary spark ignition internal combustion engine according to 40CFR60 Subpart JJJJ. If so, the engine and control device must be operated and maintained in accordance with the manufacturer's emission-related written instructions. You must keep records of conducted maintenance to demonstrate compliance, but no performance testing is required. If the certified engine is not operated and maintained in accordance with the manufacturer's emission-related written instructions, the engine will be considered a non-certified engine and you must demonstrate compliance according to 40CFR§60.4243a(2)(i) through (iii), as appropriate.

**Provide a manufacturer's data sheet for all engines being registered.**

7. Enter the Engine Type designation(s) using the following codes:

LB2S Lean Burn Two Stroke  
LB4S Lean Burn Four Stroke

RB4S Rich Burn Four Stroke

8. Enter the Air Pollution Control Device (APCD) type designation(s) using the following codes:

A/F Air/Fuel Ratio  
HEIS High Energy Ignition System  
PSC Prestratified Charge  
NSCR Rich Burn & Non-Selective Catalytic Reduction

IR Ignition Retard  
SIPC Screw-in Precombustion Chambers  
LEC Low Emission Combustion  
SCR Lean Burn & Selective Catalytic Reduction

9. Enter the Fuel Type using the following codes:

PQ Pipeline Quality Natural Gas  
2FO #2 Fuel Oil

RG Raw Natural Gas  
LPG Liquid Propane Gas

10. Enter the Potential Emissions Data Reference designation using the following codes. Attach all referenced data to this *Compressor/Generator Data Sheet(s)*.

MD Manufacturer's Data  
GR GRI-HAPCalc<sup>TM</sup>

AP AP-42  
OT Other \_\_\_\_\_ (please list)

11. Enter each engine's Potential to Emit (PTE) for the listed regulated pollutants in pounds per hour and tons per year. PTE shall be calculated at manufacturer's rated brake horsepower and may reflect reduction efficiencies of listed Air Pollution Control Devices. Emergency generator engines may use 500 hours of operation when calculating PTE. PTE data from this data sheet shall be incorporated in the *Emissions Summary Sheet*.

### STORAGE TANK DATA SHEET

Source ID # <sup>1</sup>	Status <sup>2</sup>	Content <sup>3</sup>	Volume <sup>4</sup>	Dia <sup>5</sup>	Throughput <sup>6</sup>	Orientation <sup>7</sup>	Liquid Height <sup>8</sup>
TK01	EXIST	Gasoline	8,000		21,000	HORZ	
*Note: This tank is an underground storage tank.							

1. Enter the appropriate Source Identification Numbers (Source ID #) for each storage tank located at the compressor station. Tanks should be designated T01, T02, T03, etc.
2. Enter storage tank Status using the following:
 

EXIST Existing Equipment	NEW Installation of New Equipment
REM Equipment Removed	
3. Enter storage tank content such as condensate, pipeline liquids, glycol (DEG or TEG), lube oil, etc.
4. Enter storage tank volume in gallons.
5. Enter storage tank diameter in feet.
6. Enter storage tank throughput in gallons per year.
7. Enter storage tank orientation using the following:
 

VERT Vertical Tank	HORZ Horizontal Tank
--------------------	----------------------
8. Enter storage tank average liquid height in feet.

**EMERGENCY GENERATOR EMISSION SUMMARY SHEET FOR CRITERIA POLLUTANTS**

Emergency Generator Location: <u>Southern Area Headquarters</u>						Registration Number <small>(Agency Use)</small> <u>G60-C</u>				
	Potential Emissions (lbs/hr)					Potential Emissions (tons/yr)				
Source ID No.	NO <sub>x</sub>	CO	VOC	SO <sub>2</sub>	PM <sub>10</sub>	NO <sub>x</sub>	CO	VOC	SO <sub>2</sub>	PM <sub>10</sub>
EG-1 (Existing)	0.68	1.12	0.01	1.76E-04	2.85E-03	0.17	0.28	2.22E-03	4.41E-05	7.13E-04
EG-2 (New)	2.50	4.99	0.25	3.06E-03	4.01E-04	0.62	1.25	0.06	7.65E-04	1.00E-04
<b>Total</b>	<b>3.18</b>	<b>6.11</b>	<b>0.26</b>	<b>3.24E-03</b>	<b>3.25E-03</b>	<b>0.79</b>	<b>1.53</b>	<b>0.06</b>	<b>8.10E-04</b>	<b>8.13E-04</b>

<b>EMERGENCY GENERATOR EMISSION SUMMARY SHEET FOR HAZARDOUS/TOXIC POLLUTANTS</b>												
<b>Emergency Generator Location: <u>Southern Area Headquarters</u></b>							<b>Registration Number <small>(Agency Use)</small> <u>G60-C</u></b>					
	<b>Potential Emissions (lbs/hr)</b>						<b>Potential Emissions (tons/yr)</b>					
<b>Source ID No.</b>	<b>Benzene</b>	<b>Ethyl-benzene</b>	<b>Toluene</b>	<b>Xylenes</b>	<b>n-Hexane</b>	<b>Formaldehyde</b>	<b>Benzene</b>	<b>Ethyl-benzene</b>	<b>Toluene</b>	<b>Xylenes</b>	<b>n-Hexane</b>	<b>Formaldehyde</b>
<b>EG-1</b>	<b>4.74E-04</b>	<b>7.44E-06</b>	<b>1.67E-04</b>	<b>5.85E-05</b>	<b>--</b>	<b>6.15E-03</b>	<b>1.19E-04</b>	<b>1.86E-06</b>	<b>4.19E-05</b>	<b>1.46E-05</b>	<b>--</b>	<b>1.54E-03</b>
<b>EG-2</b>	<b>2.29E-03</b>	<b>2.07E-04</b>	<b>2.12E-03</b>	<b>9.58E-04</b>	<b>5.78E-03</b>	<b>0.27</b>	<b>5.73E-04</b>	<b>5.17E-05</b>	<b>5.31E-04</b>	<b>2.39E-04</b>	<b>1.44E-03</b>	<b>0.07</b>
<b>Total</b>	<b>2.76E-03</b>	<b>2.14E-04</b>	<b>2.29E-03</b>	<b>1.02E-03</b>	<b>5.78E-03</b>	<b>0.28</b>	<b>6.92E-04</b>	<b>5.36E-05</b>	<b>5.73E-04</b>	<b>2.54E-04</b>	<b>1.44E-03</b>	<b>0.07</b>

## General Permit Levels

### Construction, Modification, Relocation, Administrative Update

Class II General Permits – G10-C (Coal Preparation and Handling), G20-B (Hot Mix Asphalt), G30-D (Natural Gas Compressor Stations), G35-A (Natural Gas Compressor Stations with Flares/Glycol Dehydration Units), G40-B (Nonmetallic Minerals Processing), G50-B (Concrete Batch Plant), G60-C (Emergency Generators)

Class I General Permit - G65-C (Emergency Generators)

General Permit	Public Notice	Review Period as per 45CSR13	Application Fee	Criteria	Application Type
Class II General Permit (Construction)	30 days (applicant)	90 days	\$500 + applicable NSPS fees	6 lb/hr and 10 tpy of any regulated air pollutant OR 144 lb/day of any regulated air pollutant, OR 2 lb/hr of any hazardous air pollutant OR 5 tpy of aggregated HAP OR 45CSR27 TAP (10% increase if above BAT triggers or increase to BAT triggers) or subject to applicable standard or rule, but subject to specific eligibility requirements	Registration Application
Class II General Permit (Modification)	30 days (applicant)	90 days	\$500 + applicable NSPS fees	Same as Class II General Permit (Construction) but subject to specific eligibility requirements	Registration Application
Administrative Update (Class I)	None	60 days	None	Decrease in emissions or permanent removal of equipment OR more stringent requirements or change in MRR that is equivalent or superior	Registration Application or Written Request
Administrative Update (Class II)	30 days (applicant)	60 days	\$300 + applicable NSPS fees	No change in emissions or an increase less than Class II Modification levels	Registration Application
Relocation	30 days (applicant)	45 days	\$500 + applicable NSPS fees	No emissions increase or change in facility design or equipment	Registration Application
Class I General Permit	None	45 days	\$250	Same as Class II General Permit (Construction) but subject to specific eligibility requirements	Registration Application



YOUR CATERPILLAR DEALER

**Cleveland  
Brothers**



**POWER SYSTEMS QUOTATION/OFFER TO SELL AND SECURITY AGREEMENT**

**190 Earnhardt Dr. Hunker, Pa 15639**

**Ph# 724-861-6080**

**Fax# 800-371-6647**

TO: Dominion

DATE: 01/28/2013

EQUIPMENT MODEL: G3412 Gas Genset

EQUIPMENT SERIAL NO.: TBD

ATTENTION:

IN RESPONSE TO YOUR INQUIRY: Dominion - Mullett CS

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~ QUOTATION NUMBER - 2012RJM183-V5 ~

ONE (1) NEW CATERPILLAR G3412 GENERATOR SET RATED AT 350 KW CONTINUOUS POWER RATING AT 480/277 VAC, 3 PHASE, 4 WIRE, 1800 RPM AND 60 HZ

FIELD COMPLIANT TO NSPS EMERGENCY USE 2/4/1 CONTINUOUS EMISSIONS LEVELS WITH AN AFRC AND TWC INCLUDED.

← EMCP 4.2 Control Panel

CATERPILLAR ~~EMCP III CONTROL PANEL~~ W/ NFPA 99 ANNUNCIATOR – INSTALLED, GENERATOR MOUNTED COMMON ALARM & GENERATOR RUNNING CONTACTS – DRY TYPE 30 VDC/120 VAC 3 AMPS WOODWARD 2301A SPEED CONTROL AND EG3P ACTUATOR

CHARGING ALTERNATOR – 35 AMPS AT 24 VDC

HEAVY DUTY BATTERIES AND RACK – INSTALLED

SENS 10 AMP DUAL RATE BATTERY CHARGER WITH NFPA 99/110 ALARMS – INSTALLED

JACKET WATER HEATER - 3 KW - INSTALLED

OIL HEATER WITH PUMP – SHIPPED LOOSE, INSTALLED BY OTHERS, PLUMBED BY CB

ENGINE LUBE OIL – INSTALLED

SPRING VIBRATION ISOLATORS – SHIPPED LOOSE

CATERPILLAR SR4B PERMANENT MAGNET THREE PHASE SENSING GENERATOR

ONE (1) 600 AMP UL LISTED 100% RATED CIRCUIT BREAKER – RH MOUNTED AND BOTTOM ENTRY WITH SHUNT TRIP

ONE (1) 400 AMP UL LISTED 100% RATED CIRCUIT BREAKER – LH MOUNTED AND BOTTOM ENTRY WITH SHUNT TRIP – LOAD BANK

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**TERMS:** SUBJECT TO CREDIT APPROVAL: NET 10 DAYS. UCC-1 FINANCING STATEMENT WILL BE FILED AND A \$300.00 DOCUMENTATION FEE WILL BE CHARGED IF NOT PAID IN FULL ON OR BEFORE 15 DAYS FROM DELIVERY DATE.

BY: Robert J. McNaughton – 724 934 5668  
rmcnaughton@clevelandbrothers.com

APPROX. SHIPPING DATE: SEE BELOW

F.O.B.: FACTORY

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**Fax# 800-371-6647**

TO: Dominion

DATE: 01/28/2013

EQUIPMENT MODEL: G3412 Gas Genset

EQUIPMENT SERIAL NO.: TBD

ATTENTION:

IN RESPONSE TO YOUR INQUIRY: **Dominion - Mullett CS**

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ONE (1) THREE WAY CATALYST, CRITICAL GRADE CARBON STEEL SILENCER WITH 24" MOUNTING FEET (V4), ALTRONIC SINGLE CARB AFRC, SENSORS, EXPANSION JOINT AND A STAINLESS STEEL FLEX SECTION W/ FLOATING FLANGE – SHIPPED LOOSE, INSTALLED & WIRED BY OTHERS  
LOW NOISE REMOTE RADIATOR – SINGLE FAN (V1) – STACKED CORE FOR JACKET WATER AND AFTERCOOLER  
ELECTRIC MOTOR DRIVEN FAN WITH HORIZONTAL CORE / VERTICAL AIR DISCHARGE  
ADDITIONAL PIPING IS BY OTHERS  
BRAIDED FLEXIBLE CONNECTORS W/ ASA FLANGE CONNECTIONS FOR ENGINE AND RADIATOR SIDE  
JACKET WATER AND AFTERCOOLER CIRCUITS – S/L  
COOLANT IS BY OTHERS  
VIBRATION SWITCH – INSTALLED, WIRED BY OTHERS FOR CUSTOMER USE (V4)  
NATURAL GAS REGULATOR  
NATURAL GAS FLEX FUEL LINE – S/L  
CATERPILLAR PRESSURE REGULATOR  
STAGED ENGINE SHUTDOWN W/ GAS PURGE CYCLE  
LOW PRESSURE GAS SYSTEM – 1.5 TO 5 PSI – CUSTOMER IS TO PROVIDE THE PROPER FLOW/PRESSURE TO THE GENSET ALONG WITH FILTERED GAS SUPPLY  
CATERPILLAR GAS VALVE – ENERGIZED TO RUN  
SEVEN (7) SETS OF O&M MANUALS & PARTS BOOKS  
ONE (1) ELECTRONIC COPY OF THE O&M MANUALS & PARTS BOOKS ON CD  
STANDARD CATERPILLAR STANDBY WARRANTY – TWO (2) YEARS  
ON SITE START UP SERVICES – STANDARD ONLY  
LOAD BANK TEST WITH PERMANENT LOAD BANK & BUILDING LOAD TO SET UP AFRC  
SIMPLEX NEPTUNE-150-480 - 150 KW RESISTIVE LOAD BANK WITH INTEGRAL CONTROLLER AND 3 YEAR WARRANTY – INSTALLED BY OTHERS

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ONE (1) DAY OF OWNER TRAINING

FREIGHT IS INCLUDED, CURB DELIVERY ONLY – SITE PREPERATION/PERMITS/BONDS TO ENABLE DELIVERY ARE NOT INCLUDED, OFF LOADING & RIGGING IS BY OTHERS

FIELD MODIFICATION OF GENERATOR SKID – CB WILL REMOVE THE PORTION OF THE SKID INTENDED FOR USE WITH AN ENGINE MOUNTED RADIATOR (V4)

LOAD BANK CIRCUIT BREAKER – ADD -

**WARRANTY CLARIFICATIONS**

CATERPILLAR GENSET – THE STANDARD WARRANTY IS 2 YEARS FOR STANDBY SERVICE. WARRANTY STARTS UPON COMPLETION OF OUR START UP. THIS CAN BE UP TO 5 YEARS AFTER THE UNIT'S SHIP DATE FROM THE FACTORY, **NO ADDITIONAL CHARGE.**

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HARCO/SUD-CHEMIE TWC – FACTORY ADVISED THAT THE WARRANTY CAN BE ADJUSTED TO THREE (3) YEARS FROM DATE OF SHIPMENT OR 3,000 HOURS, WHICH EVER IS FIRST, **NO ADDITIONAL CHARGE.**

~ DRAWINGS AND EQUIPMENT DELIVERY SCHEDULES ~

ENGINEERING APPROVAL DRAWINGS – 3 TO 4 WEEKS  
CURRENT GENSET DELIVERY – 22-24 WEEKS AFTER WRITTEN RELEASE  
TAX IS NOT INCLUDED – FORM MUST BE ON FILE FOR EXEMPTION  
PAYMENT TERMS ARE 100% UPON DELIVERY - NET 10

~ NOTES, COMMENTS & EXCEPTIONS ~

1. THE EQUIPMENT, TESTING AND SERVICES LISTED IN THIS QUOTATION CONSTITUTE THE ENTIRE OFFER; NO OTHER ITEMS ARE INCLUDED OR IMPLIED. WE RESERVE THE RIGHT TO UPDATE OUR BOM AND PRICING. PLEASE REVIEW OUR QUOTATION AND ADVISE IF ANY CHANGES NEED TO BE MADE.
2. CURB DELIVERY ONLY, ALL RIGGING/OFFLOADING IS BY OTHERS. ACCESS TO THE OFFLOADING SITE MUST BE PROVIDED AS REQUIRED FOR THIS TYPE OF EQUIPMENT. ANY TEMPORARY ROADS, PERMITS, TREE TRIMMING, ETC. IS BY OTHERS.
3. ADDITIONAL FREIGHT/HANDLING/STORAGE CHARGES WILL APPLY IF THE EQUIPMENT IS NOT RECEIVED DIRECTLY FROM THE FACTORY.
4. MANUALS WILL BE PROVIDED IN THE QUANTITY LISTED, ADDITIONAL SETS ARE \$150.00 EACH.
5. ALL PERMITS (AIR, FUEL, CONSTRUCTION, ETC.) ARE BY OTHERS.

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**EQUIPMENT SERIAL NO: TBD**

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6. CUSTOMER IS RESPONSIBLE TO COORDINATE AND COMPLETE ANY SITE EMISSIONS TESTING (IF REQUIRED) AND SUBMIT FOR A US EPA CERTIFICATE OF COMPLIANCE.
7. GAS SURGE TANK IS NOT PROVIDED.

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# G3412 TA

## GAS ENGINE TECHNICAL DATA



ENGINE SPEED:	1800	FUEL:	NAT GAS
COMPRESSION RATIO:	9.7:1	FUEL SYSTEM:	LPG IMPCO
AFTERCOOLER - MAX. INLET (°F):	130	WITH CUSTOMER SUPPLIED AIR FUEL RATIO CONTROL	
JACKET WATER - MAX. OUTLET (°F):	210	FUEL PRESS. RANGE (PSIG):	1.5 - 5.0
COOLING SYSTEM:	JW+OC, AC	MIN. METHANE NUMBER:	80
IGNITION SYSTEM:	CDIS	RATED ALTITUDE (FT):	4922
EXHAUST MANIFOLD:	WC	AT AIR TO TURBO. TEMP. (°F):	77
COMBUSTION:	CATALYST	EXHAUST O2 EMISSION LEVEL:	0.3 %O2
		FUEL LHV (BTU/SCF):	905
		APPLICATION:	STANDBY 60 Hz GENSET

RATING AND EFFICIENCY		NOTES	LOAD	100%	75%	50%
ENGINE POWER	(WITHOUT FAN)	(1)	BHP	566	424	283
GENERATOR POWER	(WITH MECH FAN)	(2)	EKW	350	251	158
ENGINE EFFICIENCY	(ISO 3046/1)	(3)	%	32.6	31.6	27.7
ENGINE EFFICIENCY	(NOMINAL)	(3)	%	32.6	31.6	27.7
THERMAL EFFICIENCY	(NOMINAL)	(4)	%	55.4	56.4	60.5
TOTAL EFFICIENCY	(NOMINAL)	(5)	%	87.9	88.0	88.2

ENGINE DATA						
FUEL CONSUMPTION	(ISO 3046/1)	(6)	BTU/bhp-hr	7813	8059	9197
FUEL CONSUMPTION	(NOMINAL)	(6)	BTU/bhp-hr	7813	8059	9197
AIR FLOW (77 °F, 14.7 psi)		(7)	SCFM	796	619	470
AIR FLOW		(7)	lb/hr	3530	2744	2084.00
COMPRESSOR OUT PRESSURE			in. HG (abs)	44.1	41.9	40
COMPRESSOR OUT TEMPERATURE			°F	175	164	152
AFTERCOOLER AIR OUT TEMPERATURE			°F	135	134	133
INLET MAN. PRESSURE		(8)	in. HG (abs)	38.8	30.3	23.3
INLET MAN. TEMPERATURE	(MEASURED IN PLENUM)	(9)	°F	144	143	143
TIMING		(10)	°BTDC	20	20	20
EXHAUST STACK TEMPERATURE		(11)	°F	1018	971	912
EXHAUST GAS FLOW (@ stack temp.)		(12)	CFM	2460	1851	1348
EXHAUST MASS FLOW		(12)	lb/hr	3753	2916	2216

EMISSIONS DATA						
NOx (as NO2)		(13)	g/bhp-hr	14.21	14.51	15.05
CO		(14)	g/bhp-hr	14.21	14.51	15.04
THC (molecular weight of 15.84)		(14)	g/bhp-hr	2.12	2.39	2.95
NMHC (molecular weight of 15.84)		(14)	g/bhp-hr	0.32	0.36	0.44
EXHAUST O2		(15)	% DRY	0.3	0.3	0.3
LAMBDA				1.00	1.00	1.00

HEAT BALANCE DATA						
LHV INPUT		(16)	BTU/min	73687	57009	43370
HEAT REJECTION TO JACKET (JW)		(17) (22)	BTU/min	25085	20488	17656
HEAT REJECTION TO ATMOSPHERE		(18)	BTU/min	2947	2280	1735
HEAT REJECTION TO LUBE OIL (OC)		(19) (22)	BTU/min	3967	3240	2792
HEAT REJECTION TO EXHAUST (LHV to 77°F)		(20)	BTU/min	17034	12614	8995
HEAT REJECTION TO EXHAUST (LHV to 350°F)		(20)	BTU/min	11735	8452	5796
HEAT REJECTION TO A/C (AC)		(21) (23)	BTU/min	633	372	183

### CONDITIONS AND DEFINITIONS

ENGINE RATING OBTAINED AND PRESENTED IN ACCORDANCE WITH ISO 3046/1STD. REF. CONDITIONS OF 77°F, 29.6 IN HG BAROMETRIC PRESSURE, 500 FT ALTITUDE). NO OVERLOAD PERMITTED AT RATING SHOWN. CONSULT ALTITUDE CHARTS FOR APPLICATIONS ABOVE MAXIMUM RATED ALTITUDE AND/OR TEMPERATURE.

EMISSION LEVELS ARE BASED ON THE ENGINE OPERATING AT STEADY STATE CONDITIONS. EMISSION TOLERANCES SPECIFIED ARE DEPENDANT UPON FUEL QUALITY. METHANE NUMBER CANNOT VARY MORE THAN ± 3. PUBLISHED PART LOAD DATA REQUIRES CUSTOMER SUPPLIED AIR FUEL RATIO CONTROL.

ENGINE RATING IS WITH 2 ENGINE DRIVEN WATER PUMPS.

FOR NOTES INFORMATION CONSULT PAGE THREE.

FUEL USAGE GUIDE												
CAT METHANE NUMBER	30	35	40	45	50	55	60	65	70	75	80	85-100
IGNITION TIMING	-	-	-	-	-	-	-	-	16	18	20	20
DERATION FACTOR	0	0	0	0	0	0	0	0	1.00	1.00	1.00	1.00

ALTITUDE DERATION FACTORS														
AIR TO TURBO (°F)	130	1.00	1.00	1.00	0.98	0.94	0.91	0.87	0.84	0.81	0.77	0.74	0.71	0.68
	120	1.00	1.00	1.00	1.00	0.96	0.92	0.89	0.85	0.82	0.79	0.76	0.73	0.70
	110	1.00	1.00	1.00	1.00	0.98	0.94	0.90	0.87	0.83	0.80	0.77	0.74	0.71
	100	1.00	1.00	1.00	1.00	0.99	0.96	0.92	0.88	0.85	0.82	0.78	0.75	0.72
	90	1.00	1.00	1.00	1.00	1.00	0.97	0.94	0.90	0.86	0.83	0.80	0.76	0.73
	80	1.00	1.00	1.00	1.00	1.00	0.99	0.95	0.92	0.88	0.85	0.81	0.78	0.75
	70	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.93	0.90	0.86	0.83	0.79	0.76
	60	1.00	1.00	1.00	1.00	1.00	1.00	0.99	0.95	0.91	0.88	0.84	0.81	0.78
	50	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.93	0.90	0.86	0.83	0.79
			0	1000	2000	3000	4000	5000	6000	7000	8000	9000	10000	11000

ALTITUDE (FEET ABOVE SEA LEVEL)

AFTERCOOLER HEAT REJECTION FACTORS (ACHRF)														
AIR TO TURBO (°F)	130	2.29	2.52	2.75	2.99	3.24	3.47	3.47	3.47	3.47	3.47	3.47	3.47	3.47
	120	2.03	2.25	2.48	2.72	2.96	3.18	3.18	3.18	3.18	3.18	3.18	3.18	3.18
	110	1.76	1.99	2.21	2.44	2.68	2.90	2.90	2.90	2.90	2.90	2.90	2.90	2.90
	100	1.50	1.72	1.94	2.17	2.40	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.62
	90	1.24	1.45	1.67	1.89	2.12	2.33	2.33	2.33	2.33	2.33	2.33	2.33	2.33
	80	1.00	1.19	1.40	1.62	1.84	2.05	2.05	2.05	2.05	2.05	2.05	2.05	2.05
	70	1.00	1.00	1.13	1.34	1.56	1.77	1.77	1.77	1.77	1.77	1.77	1.77	1.77
	60	1.00	1.00	1.00	1.07	1.28	1.49	1.49	1.49	1.49	1.49	1.49	1.49	1.49
	50	1.00	1.00	1.00	1.00	1.00	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20
			0	1000	2000	3000	4000	5000	6000	7000	8000	9000	10000	11000

ALTITUDE (FEET ABOVE SEA LEVEL)

FREE FIELD MECHANICAL & EXHAUST NOISE											
100% Load Data			dB(A)		dB						
Free Field Mechanical	DISTANCE FROM THE ENGINE (FEET)	3.2	97.7	87.2	91.2	92.2	94.2	93.2	92.2	76.2	69.2
		22.9	87.7	80.8	79.8	80.8	81.8	82.8	82.8	75.8	65.8
		49.2	81.7	77.3	76.3	79.3	78.3	76.3	75.3	70.3	58.3
Free Field Exhaust	DISTANCE FROM THE ENGINE (FEET)	4.9	113.0	102.5	112.5	113.2	112.5	105.5	103.2	101.9	92.1
		22.9	99.7	93.2	102.8	97.8	97.5	92.2	91.2	91.2	83.3
		49.2	93.0	86.6	96.2	91.2	90.9	85.6	84.6	84.6	76.6
Overall SPL				63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
Octave Band Center Frequency (OBCF)											

**FUEL USAGE GUIDE:**

This table shows the derate factor required for a given fuel. Note that deration occurs as the methane number decreases. Methane number is a scale to measure detonation characteristics of various fuels. The methane number of a fuel is determined by using the Caterpillar Methane Number Calculation program.

**ALTITUDE DERATION FACTORS:**

This table shows the deration required for various air inlet temperatures and altitudes. Use this information along with the fuel usage guide chart to help determine actual engine power for your site.

**ACTUAL ENGINE RATING:**

It is important to note that the Altitude/Temperature deration and the Fuel Usage Guide deration are not cumulative. They are not to be added together. The same is true for the Low Energy Fuel deration (reference the Caterpillar Methane Number Program) and the Fuel Usage Guide deration. However, the Altitude/Temperature deration and Low Energy Fuel deration are cumulative; and they must be added together in the method shown below. To determine the actual power available, take the lowest rating between 1) and 2).

- 1) (Altitude/Temperature Deration) + (Low Energy Fuel Deration)
- 2) Fuel Usage Guide Deration

Note: For NA's always add the Low Energy Fuel deration to the Altitude/Temperature deration. For TA engines only add the Low Energy Fuel deration to the Altitude/Temperature deration whenever the Altitude/Temperature deration is less than 1.0 (100%). This will give the actual rating for the engine at the conditions specified.

**AFTERCOOLER HEAT REJECTION FACTORS (ACHRF):**

Aftercooler heat rejection is given for standard conditions of 77°F and 500 ft altitude. To maintain a constant air inlet manifold temperature, as the air to turbo temperature goes up, so must the heat rejection. As altitude increases, the turbocharger must work harder to overcome the lower atmospheric pressure. This increases the amount of heat that must be removed from the inlet air by the aftercooler. Use the aftercooler heat rejection factor (ACHRF) to adjust for ambient and altitude conditions. Multiply this factor by the standard aftercooler heat rejection. Failure to properly account for these factors could result in detonation and cause the engine to shutdown or fail.

**SOUND DATA:**

Data determined by methods similar to ISO Standard DIS-8528-10. Accuracy Grade 3. SPL = Sound Pressure Level.

**NOTES**

- 1 ENGINE RATING IS WITH 2 ENGINE DRIVEN WATER PUMPS. TOLERANCE IS  $\pm 3\%$  OF FULL LOAD.
  - 2 GENERATOR POWER DETERMINED WITH AN ASSUMED GENERATOR EFFICIENCY OF 91% AND POWER FACTOR OF 0.8 [GENERATOR POWER = ENGINE POWER x GENERATOR EFFICIENCY].
  - 3 ISO 3046/1 ENGINE EFFICIENCY TOLERANCE IS (+)0, (-)5% OF FULL LOAD % EFFICIENCY VALUE. NOMINAL ENGINE EFFICIENCY TOLERANCE IS  $\pm 5\%$  OF FULL LOAD % EFFICIENCY VALUE.
  - 4 THERMAL EFFICIENCY: JACKET HEAT + LUBE OIL HEAT + EXH. HEAT TO 350°F.
  - 5 TOTAL EFFICIENCY = ENGINE EFF. + THERMAL EFF. TOLERANCE IS  $\pm 10\%$  OF FULL LOAD DATA.
  - 6 ISO 3046/1 FUEL CONSUMPTION TOLERANCE IS (+)5, (-)0% OF FULL LOAD DATA. NOMINAL FUEL CONSUMPTION TOLERANCE IS  $\pm 5\%$  OF FULL LOAD DATA.
  - 7 UNDRYED AIR. FLOW TOLERANCE IS  $\pm 5\%$
  - 8 INLET MANIFOLD PRESSURE TOLERANCE IS  $\pm 5\%$
  - 9 INLET MANIFOLD TEMPERATURE TOLERANCE IS  $\pm 9^\circ\text{F}$ .
  - 10 TIMING INDICATED IS FOR USE WITH THE MINIMUM FUEL METHANE NUMBER SPECIFIED. CONSULT THE APPROPRIATE FUEL USAGE GUIDE FOR TIMING AT OTHER METHANE NUMBERS.
  - 11 EXHAUST STACK TEMPERATURE TOLERANCE IS (+)63°F, (-)54°F.
  - 12 WET EXHAUST. FLOW TOLERANCE IS  $\pm 6\%$
  - 13 NOX VALUES ARE "NOT TO EXCEED".
  - 14 CO, CO<sub>2</sub>, THC, and NMHC VALUES ARE "NOT TO EXCEED".
  - 15 O<sub>2</sub>% TOLERANCE IS  $\pm 0.2$ .
  - 16 LHV INPUT TOLERANCE IS  $\pm 5\%$ .
  - 17 HEAT REJECTION TO JACKET TOLERANCE IS  $\pm 10\%$  OF FULL LOAD DATA, BASED ON TREATED WATER.
  - 18 HEAT REJECTION TO ATMOSPHERE TOLERANCE IS  $\pm 50\%$  OF FULL LOAD DATA, BASED ON TREATED WATER.
  - 19 HEAT REJECTION OF LUBE OIL TOLERANCE IS  $\pm 20\%$  OF FULL LOAD DATA, BASED ON TREATED WATER.
  - 20 HEAT REJECTION TO EXHAUST TOLERANCE IS  $\pm 10\%$  OF FULL LOAD DATA, BASED ON TREATED WATER.
  - 21 HEAT REJECTION TO A/C TOLERANCE IS  $\pm 5\%$  OF FULL LOAD DATA, BASED ON TREATED WATER.
- SITE SPECIFIC COOLING SYSTEM SIZING EQUATIONS (WITH TOLERANCES)**
- 22 TOTAL JACKET CIRCUIT (JW+OC) = (JW x 1.1) + (OC x 1.2).
  - 23 TOTAL AFTERCOOLER CIRCUIT (AC) = AC x ACHRF x 1.05.



# HARCO MANUFACTURING

## SUD-CHEMIE OXIDATION CATALYSTS

- Specification Sheet -  
**NSCR Catalyst - For Nox/CO/VOC Reduction**

Customer: CBEC  
 Attention: \_\_\_\_\_  
 Job Ref: \_\_\_\_\_

Notes: NSPS  
 Ref. No: B21018-2  
 Date: 05/02/16

Engine Mfg: Caterpillar Model No: G3412  
 Output : 350 EKW Cycle: 4 RPM: 1800  
 Fuel Type : Pipeline Natural Gas Load: 100% Hours/Year 2,000

Model: EnviCat-8364-12.5x3.5x1 Nbr Units: 1

Item Description	English	Units	Metric	Units
Engine Output	566	BHP	422	BKW
Exhaust Gas Mass Flow	3,462	Lbs/Hour	1,570	Kg/Hour
Exhaust Gas Temperature	993.0	°F	533.9	°C
Exhaust Gas Oxygen (Pre-Catalyst)	0.50	%	0.40	%
Exhaust Flow - Standard Units	48,930	SCFH	1,386	SCMH
Pre-Catalyst NOx Emissions	14.40	G/BHP/Hr	10.74	G/BKW/Hr
Pre-Catalyst NOx Emissions	965	PPMV@15% O2	965	PPMV@15% O2
Pre-Catalyst NOx Emissions	17.97	Lbs/Hour	8.15	Kg/Hour
Post-Catalyst NOx Emissions	2.000	G/BHP/Hr	1.491	G/BKW/Hr
Post-Catalyst NOx Emissions	134	PPMV@15% O2	134	PPMV@15% O2
Post-Catalyst NOx Emissions	2.50	Lbs/Hour	1.13	Kg/Hour
Percentage NOx Reduction	86.1	%	86.1	%
Pre-Catalyst CO Emissions	14.40	G/BHP/Hr	10.74	G/BKW/Hr
Pre-Catalyst CO Emissions	1584	PPMV@15% O2	1584	PPMV@15% O2
Pre-Catalyst CO Emissions	17.97	Lbs/Hour	8.15	Kg/Hour
Post-Catalyst CO Emissions	4.000	G/BHP/Hr	2.983	G/BKW/Hr
Post-Catalyst CO Emissions	440	PPMV@15% O2	440	PPMV@15% O2
Post-Catalyst CO Emissions	4.99	Lbs/Hour	2.26	Kg/Hour
Percentage CO Reduction	72.2	%	72.2	%
Pre-Catalyst VOC Emissions	0.30	G/BHP/Hr	0.22	G/BKW/Hr
Pre-Catalyst VOC Emissions	60	PPMV@15% O2	60	PPMV@15% O2
Pre-Catalyst VOC Emissions	0.37	Lbs/Hour	0.17	Kg/Hour
Post-Catalyst VOC Emissions	0.200	G/BHP/Hr	0.149	G/BKW/Hr
Post-Catalyst VOC Emissions	40	PPMV@15% O2	40	PPMV@15% O2
Post-Catalyst VOC Emissions	0.25	Lbs/Hour	0.11	Kg/Hour
Percentage VOC Reduction	33.3	%	33.3	%
Back Pressure Loss thru Catalyst (Clean)	5.0	Inches WC	12.5	Millibar
NSCR Catalyst Volume	0.249	Cu/Ft	0.0070	Cu/Meter
Catalyst Element Diameter	12.50	Inches	325	Millimeters
Number of Elements	1		1	
NSCR Catalyst Space Velocity	196,853	SCFH/FT <sup>3</sup>	196,853	SCMH/M <sup>3</sup>

## **Attachment I**

### Emissions Calculations

Emergency Engine (EG-1) Potential Emissions  
 Dominion Transmission, Inc.  
 Southern Area Headquarters

Date: May 2016

Input Data: Generac 7.4L  
 Design Class: 4-stroke rich burn  
 Engine Power: 80.5 bhp  
 Fuel Input: 0.30 MMBtu/hr  
 Natural Gas Consumption: 300 scf/hr (max from testing done in 2000)  
 0.15 MMscf/yr  
 Maximum Hours of Operation: 500 hrs/yr  
 Heating Value of Natural Gas: 1,000 Btu/cf

Emission Calculations

Pollutant	Emission Factor		Emissions (8760 hrs/yr)			Emissions (500 hrs/yr)		
			(lb/hr)	(lbs/day)	(tons/yr)	(lb/hr)	(lbs/day)	(tons/yr)
<b>Criteria Pollutants</b>								
PM (filterable)	9.50E-03	lb/MMBtu	2.85E-03	6.84E-02	1.25E-02	2.85E-03	6.84E-02	7.13E-04
PM-10 (filterable)	9.50E-03	lb/MMBtu	2.85E-03	6.84E-02	1.25E-02	2.85E-03	6.84E-02	7.13E-04
PM-2.5 (filterable)	9.50E-03	lb/MMBtu	2.85E-03	6.84E-02	1.25E-02	2.85E-03	6.84E-02	7.13E-04
PM (condensibles)	9.91E-03	lb/MMBtu	2.97E-03	0.07	1.30E-02	0.00	0.07	0.00
SO2	5.88E-04	lb/MMBtu	1.76E-04	4.23E-03	7.73E-04	1.76E-04	4.23E-03	4.41E-05
CO	3.72	lb/MMBtu	1.12	26.78	4.89	1.12	26.78	0.28
NO <sub>x</sub>	2.27	lb/MMBtu	0.68	16.34	2.98	0.68	16.34	0.17
VOC	2.96E-02	lb/MMBtu	8.88E-03	0.21	3.89E-02	0.01	0.21	2.22E-03
<b>Greenhouse Gases</b>								
CO <sub>2</sub>	117.0	lb/MMBtu	35.09	--	153.71	35.09	--	8.77
CH <sub>4</sub>	2.20E-03	lb/MMBtu	0.00	--	0.00	0.00	--	0.00
N <sub>2</sub> O	2.20E-04	lb/MMBtu	0.00	--	0.00	0.00	--	0.00
CO <sub>2</sub> e	117.1	lb/MMBtu	35.13	--	153.87	35.13	--	8.78
<b>Hazardous Air Pollutants</b>								
1,1,2,2-Tetrachloroethane	2.53E-05	lb/MMBtu	7.59E-06	--	3.32E-05	7.59E-06	--	1.90E-06
1,1,2-Trichloroethane	1.53E-05	lb/MMBtu	4.59E-06	--	2.01E-05	4.59E-06	--	1.15E-06
1,1-Dichloroethane	1.13E-05	lb/MMBtu	3.39E-06	--	1.48E-05	3.39E-06	--	8.48E-07
1,2-Dichloroethane	1.13E-05	lb/MMBtu	3.39E-06	--	1.48E-05	3.39E-06	--	8.48E-07
1,2-Dichloropropane	1.30E-05	lb/MMBtu	3.90E-06	--	1.71E-05	3.90E-06	--	9.75E-07
1,3-Butadiene	6.63E-04	lb/MMBtu	1.99E-04	--	8.71E-04	1.99E-04	--	4.97E-05
1,3-Dichloropropene	1.27E-05	lb/MMBtu	3.81E-06	--	1.67E-05	3.81E-06	--	9.53E-07
Acrolein	2.63E-03	lb/MMBtu	7.89E-04	--	3.46E-03	7.89E-04	--	1.97E-04
Acetaldehyde	2.79E-03	lb/MMBtu	8.37E-04	--	3.67E-03	8.37E-04	--	2.09E-04
Benzene	1.58E-03	lb/MMBtu	4.74E-04	--	2.08E-03	4.74E-04	--	1.19E-04
Carbon Tetrachloride	1.77E-05	lb/MMBtu	5.31E-06	--	2.33E-05	5.31E-06	--	1.33E-06
Chlorobenzene	1.29E-05	lb/MMBtu	3.87E-06	--	1.70E-05	3.87E-06	--	9.68E-07
Chloroform	1.37E-05	lb/MMBtu	4.11E-06	--	1.80E-05	4.11E-06	--	1.03E-06
Ethylbenzene	2.48E-05	lb/MMBtu	7.44E-06	--	3.26E-05	7.44E-06	--	1.86E-06
Ethylene Dibromide	2.13E-05	lb/MMBtu	6.39E-06	--	2.80E-05	6.39E-06	--	1.60E-06
Formaldehyde	2.05E-02	lb/MMBtu	6.15E-03	--	2.69E-02	6.15E-03	--	1.54E-03
Methanol	3.06E-03	lb/MMBtu	9.18E-04	--	4.02E-03	9.18E-04	--	2.30E-04
Methylene Chloride	4.12E-05	lb/MMBtu	1.24E-05	--	5.41E-05	1.24E-05	--	3.09E-06
Naphthalene (POM)	9.71E-05	lb/MMBtu	2.91E-05	--	1.28E-04	2.91E-05	--	7.28E-06
Styrene	1.19E-05	lb/MMBtu	3.57E-06	--	1.56E-05	3.57E-06	--	8.93E-07
Toluene	5.58E-04	lb/MMBtu	1.67E-04	--	7.33E-04	1.67E-04	--	4.19E-05
Vinyl Chloride	7.18E-06	lb/MMBtu	2.15E-06	--	9.43E-06	2.15E-06	--	5.39E-07
Xylene	1.95E-04	lb/MMBtu	5.85E-05	--	2.56E-04	5.85E-05	--	1.46E-05
TOTAL HAP:			<b>9.69E-03</b>		<b>0.04</b>	<b>9.69E-03</b>		<b>2.42E-03</b>

(1) NO<sub>x</sub>, CO, and VOC data taken from engine manufacturer's technical data sheet

(2) PM, SO<sub>2</sub>, and HAP emissions calculated from AP-42, Section 3.2, Natural Gas-Fired Reciprocating Engines, Table 3.2-3, 7/00

(3) Lb/MMBtu numbers based on 40 CFR Part 98 Tables C-1 and C-2 for natural gas

For example: CO<sub>2</sub> = (53.06 kg CO<sub>2</sub>/MMBtu) / (0.453592 kg/lb) = 117.0 lb/MMBtu

(4) Global Warming Potentials = 25 for CH<sub>4</sub> and 298 for N<sub>2</sub>O (per 40 CFR Part 98 Table A-1 to Subpart A)

For example: CO<sub>2</sub>e = (117.0 lb/MMBtu) + (0.0022 lb/MMBtu \* 25) + (0.00022 lb/MMBtu \* 298) = 117.1 lb/MMBtu

Emergency Engine (EG-2) Potential Emissions  
Dominion Transmission, Inc.  
Southern Area Headquarters

Date: May 2016

Input Data: Caterpillar G3412  
 Design Class: 4-stroke lean burn  
 Engine Power: 566 hp (Manufacturer Specs)  
 Fuel Consumption: 9,197 Btu/hp-hr (Manufacturer Specs - Worst Case Load)  
 Fuel Input: 5.21 MMBtu/hr  
 Maximum Hours of Operation: 8,760 hrs/yr  
 500 hrs/yr  
 Fuel Throughput: 5,206 cf/hr  
 2.60 MMcf/yr  
 Heating Value of Natural Gas: 1,000 Btu/cf

Emission Calculations

Pollutant	Emission Factor		Emissions (8760 hrs/yr)			Emissions (500 hrs/yr)		
			(lb/hr)	(lbs/day)	(tons/yr)	(lb/hr)	(lbs/day)	(tons/yr)
<b>Criteria Pollutants</b>								
PM (filterable)	7.71E-05	lb/MMBtu	4.01E-04	9.63E-03	1.76E-03	4.01E-04	9.63E-03	1.00E-04
PM-10 (filterable)	7.71E-05	lb/MMBtu	4.01E-04	9.63E-03	1.76E-03	4.01E-04	9.63E-03	1.00E-04
PM-2.5 (filterable)	7.71E-05	lb/MMBtu	4.01E-04	9.63E-03	1.76E-03	4.01E-04	9.63E-03	1.00E-04
PM (condensibles)	9.91E-03	lb/MMBtu	0.05	1.24	0.23	0.05	1.24	0.01
SO2	5.88E-04	lb/MMBtu	3.06E-03	0.07	1.34E-02	3.06E-03	0.07	7.65E-04
CO	4.00	g/hp-hr	4.99	119.79	21.86	4.99	119.79	1.25
NO <sub>x</sub>	2.00	g/hp-hr	2.50	59.90	10.93	2.50	59.90	0.62
VOC	0.20	g/hp-hr	0.25	5.99	1.09	0.25	5.99	0.06
<b>Greenhouse Gases</b>								
CO <sub>2</sub>	117.0	lb/MMBtu	608.93	--	2667.10	608.93	--	152.23
CH <sub>4</sub>	2.20E-03	lb/MMBtu	0.01	--	0.05	0.01	--	0.00
N <sub>2</sub> O	2.20E-04	lb/MMBtu	0.00	--	0.01	0.00	--	0.00
CO <sub>2</sub> e	117.1	lb/MMBtu	609.55	--	2669.85	609.55	--	152.39
<b>Hazardous Air Pollutants</b>								
1,1,2,2-Tetrachloroethane	4.00E-05	lb/MMBtu	2.08E-04	--	9.12E-04	2.08E-04	--	5.21E-05
1,1,2-Trichloroethane	3.18E-05	lb/MMBtu	1.66E-04	--	7.25E-04	1.66E-04	--	4.14E-05
1,1-Dichloroethane	2.36E-05	lb/MMBtu	1.23E-04	--	5.38E-04	1.23E-04	--	3.07E-05
1,2-Dichloroethane	2.36E-05	lb/MMBtu	1.23E-04	--	5.38E-04	1.23E-04	--	3.07E-05
1,3-Butadiene	2.67E-04	lb/MMBtu	1.39E-03	--	6.09E-03	1.39E-03	--	3.47E-04
1,3-Dichloropropene	2.64E-05	lb/MMBtu	1.37E-04	--	6.02E-04	1.37E-04	--	3.44E-05
Acetaldehyde	8.36E-03	lb/MMBtu	4.35E-02	--	1.91E-01	4.35E-02	--	1.09E-02
Acrolein	5.14E-03	lb/MMBtu	2.68E-02	--	1.17E-01	2.68E-02	--	6.69E-03
Benzene	4.40E-04	lb/MMBtu	2.29E-03	--	1.00E-02	2.29E-03	--	5.73E-04
Biphenyl	2.12E-04	lb/MMBtu	1.10E-03	--	4.83E-03	1.10E-03	--	2.76E-04
Carbon Tetrachloride	3.67E-05	lb/MMBtu	1.91E-04	--	8.37E-04	1.91E-04	--	4.78E-05
Chlorobenzene	3.04E-05	lb/MMBtu	1.58E-04	--	6.93E-04	1.58E-04	--	3.96E-05
Chloroform	2.85E-05	lb/MMBtu	1.48E-04	--	6.50E-04	1.48E-04	--	3.71E-05
Ethylbenzene	3.97E-05	lb/MMBtu	2.07E-04	--	9.05E-04	2.07E-04	--	5.17E-05
Ethylene Dibromide	4.43E-05	lb/MMBtu	2.31E-04	--	1.01E-03	2.31E-04	--	5.77E-05
Formaldehyde	5.28E-02	lb/MMBtu	0.27	--	1.20	0.27	--	0.07
Hexane	1.11E-03	lb/MMBtu	5.78E-03	--	2.53E-02	5.78E-03	--	1.44E-03
Methanol	2.50E-03	lb/MMBtu	1.30E-02	--	5.70E-02	1.30E-02	--	3.25E-03
Methylene Chloride	2.00E-05	lb/MMBtu	1.04E-04	--	4.56E-04	1.04E-04	--	2.60E-05
Naphthalene (POM)	7.44E-05	lb/MMBtu	3.87E-04	--	1.70E-03	3.87E-04	--	9.68E-05
Phenol	2.40E-05	lb/MMBtu	1.25E-04	--	5.47E-04	1.25E-04	--	3.12E-05
Styrene	2.36E-05	lb/MMBtu	1.23E-04	--	5.38E-04	1.23E-04	--	3.07E-05
Toluene	4.08E-04	lb/MMBtu	2.12E-03	--	9.30E-03	2.12E-03	--	5.31E-04
Vinyl Chloride	1.49E-05	lb/MMBtu	7.76E-05	--	3.40E-04	7.76E-05	--	1.94E-05
Xylene	1.84E-04	lb/MMBtu	9.58E-04	--	4.20E-03	9.58E-04	--	2.39E-04
TOTAL HAP:			<b>0.37</b>		<b>1.64</b>	<b>0.37</b>		<b>0.09</b>

(1) CO, NO<sub>x</sub>, and VOC emission rates based on 3-way catalyst manufacturer specification sheet (NO<sub>x</sub> and CO guarantee NSPS limits).

(2) PM10, PM2.5, SO<sub>2</sub>, and HAP emission factors based on AP-42 Section 3.2, Table 3.2-2.

(3) Lb/MMBtu numbers based on 40 CFR Part 98 Tables C-1 and C-2 for natural gas

For example: CO<sub>2</sub> = (53.06 kg CO<sub>2</sub>/MMBtu) / (0.453592 kg/lb) = 117.0 lb/MMBtu

(4) Global Warming Potentials = 25 for CH<sub>4</sub> and 298 for N<sub>2</sub>O (per 40 CFR Part 98 Table A-1 to Subpart A)

For example: CO<sub>2</sub>e = (117.0 lb/MMBtu) + (0.0022 lb/MMBtu \* 25) + (0.00022 lb/MMBtu \* 298) = 117.1 lb/MMBtu

**Attachment J**

Class I Legal Advertisement

# 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 General Permit (G60-C) for the Southern Area Headquarters office/warehouse building located on 335 US Highway 33 West, Weston, in Lewis County, West Virginia. The latitude and longitude coordinates are:

Latitude: 39.046075  
Longitude: -80.499739

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

CO	+ 1.25 tons/yr
NOx	+ 0.62 tons/yr
VOC	+ 0.06 tons/yr

Startup of operation is planned to begin on or about November 2016. Written comments will be received by the West Virginia Department of Environmental Protection, Division of Air Quality, 601 57th 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 L**

General Permit Registration Application Fee