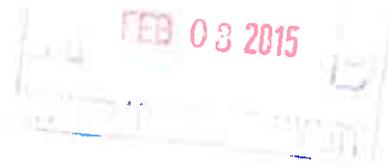


Dominion Resources Services, Inc.  
5000 Dominion Boulevard, Glen Allen, VA 23060



Dominion®

Tracy  
605-0548  
033-00130



January 30, 2015

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

7012 3460 0003 4189 8031

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 (G65-C)**  
**Clarksburg General Office Building**

Dear Mr. Durham:

Enclosed are one complete original and two (2) copies of a G65-C General Permit application for the proposed permanent installation of a new emergency diesel generator at Dominion Transmission, Inc.'s Clarksburg General Office Building in Harrison County, WV.

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, Gas Environmental Services

**DOMINION TRANSMISSION, INC.  
CLARKSBURG GENERAL OFFICE BUILDING**

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

**ATTACHMENTS**

Attachment A.	Business Certificate
Attachment B.	Process Description
Attachment D.	Process Flow Diagram
Attachment F.	Area Map
Attachment G.	Equipment Data Sheets and Registration Section Applicability Form
Attachment I.	Emissions Calculations
Attachment L.	General Permit Registration Application Fee

**\*\*Note – There are no Attachments C, E, H, J, 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 type="checkbox"/> <b>G60-C</b> - Class II Emergency Generator                     |
| <input type="checkbox"/> <b>G33-A</b> – Spark Ignition Internal Combustion Engines                      | <input checked="" 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): <i>Dominion Transmission, Inc.</i>		2. Federal Employer ID No. (FEIN): <i>550629203</i>	
3. Applicant's mailing address:  <i>445 West Main Street Clarksburg, WV 26301</i>		4. Applicant's physical address:  <i>445 West Main Street Clarksburg, WV 26301</i>	
5. If applicant is a subsidiary corporation, please provide the name of parent corporation: <i>N/A</i>			
6. <b>WV BUSINESS REGISTRATION.</b> Is the applicant a resident of the State of West Virginia? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <ul style="list-style-type: none"> <li>- IF YES, provide a copy of the Certificate of Incorporation/ Organization / Limited Partnership (one page) including any name change amendments or other Business Registration Certificate as <b>Attachment A</b>.</li> <li>- IF NO, provide a copy of the Certificate of Authority / Authority of LLC / Registration (one page) including any name change amendments or other Business Certificate as <b>Attachment A</b>.</li> </ul>			

**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.):  <i>Installation of an emergency diesel generator (was previously a non-road engine, will be stationary as it will be in the same location for greater than 12 months)</i>		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):  <i>033-00136</i>		10. List all current 45CSR13 and other General Permit numbers associated with this process (for existing facilities only):  <i>R13-2363B (the unit referenced in this permit is no longer operable)</i>

**A: PRIMARY OPERATING SITE INFORMATION**

11A. Facility name of primary operating site:  <b>Clarksburg General Office Building</b>		12A. Address of primary operating site:  Mailing and Physical: <b>445 West Main Street Clarksburg, WV 26301</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>The applicant was leasing the proposed unit, but now owns it.</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>  <b>From US Rt. 50, take the Chestnut Street exit. Turn left at the second red light onto West Main Street. The building's address is 445 West Main Street, Clarksburg, WV.</b>			
15A. Nearest city or town:  <b>Clarksburg</b>	16A. County:  <b>Harrison</b>	17A. UTM Coordinates: Northing (KM): <b>4348.02</b> Easting (KM): <b>556.72</b> Zone: <b>17</b>	
18A. Briefly describe the proposed new operation or change (s) to the facility:  <b>Dominion Transmission, Inc. is proposing to install a 1,207 hp (800 kW) diesel emergency generator to replace the existing 930 hp natural gas engine, as that engine catastrophically failed and is inoperable.</b>		19A. Latitude & Longitude Coordinates (NAD83, Decimal Degrees to 5 digits): Latitude: <u><b>39 16' 48" N</b></u> Longitude: <u><b>80 20' 34" W</b></u>	

**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:  <b>N/A</b>		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>  <b>N/A</b>			
15B. Nearest city or town:  <b>N/A</b>	16B. County:  <b>N/A</b>	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:  <i>N/A</i>	19B. Latitude & Longitude Coordinates (NAD83, Decimal Degrees to 5 digits):  Latitude: <i>N/A</i> Longitude: <i>N/A</i>
---	--

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

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:  <i>N/A</i>	16C. County:  <i>N/A</i>	17C. UTM Coordinates:  Northing (KM): <i>N/A</i> Easting (KM): <i>N/A</i> Zone: <i>N/A</i>
--	--------------------------------	--

18C. Briefly describe the proposed new operation or change (s) to the facility:  <i>N/A</i>	19C. Latitude & Longitude Coordinates (NAD83, Decimal Degrees to 5 digits):  Latitude: <i>N/A</i> Longitude: <i>N/A</i>
---	--

20. Provide the date of anticipated installation or change:  <i>N/A</i>  <input type="checkbox"/> If this is an <b>After-The-Fact</b> permit application, provide the date upon which the proposed change did happen: :  <i>6/2014 (was still considered a non-road engine)</i>	21. Date of anticipated Start-up if registration is granted:  <i>N/A</i>  <i>(6/2015 will be the 12 month timeframe)</i>
---	--

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)

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

I certify that I am a General Partner

FOR A LIMITED LIABILITY COMPANY

I certify that I am a General Partner or General Manager

FOR AN ASSOCIATION

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

FOR A JOINT VENTURE

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

FOR A SOLE PROPRIETORSHIP

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  Date 01/23/2015  
(please use blue ink) Responsible Official

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

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

Applicant's Name Dominion Transmission, Inc.

Phone & Fax 304-627-3733 304-627-3323  
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**

Clarksburg General Office Building is an office building for Dominion Transmission, Inc. It is an office complex of ~220 personnel including Gas Control and associated infrastructure.

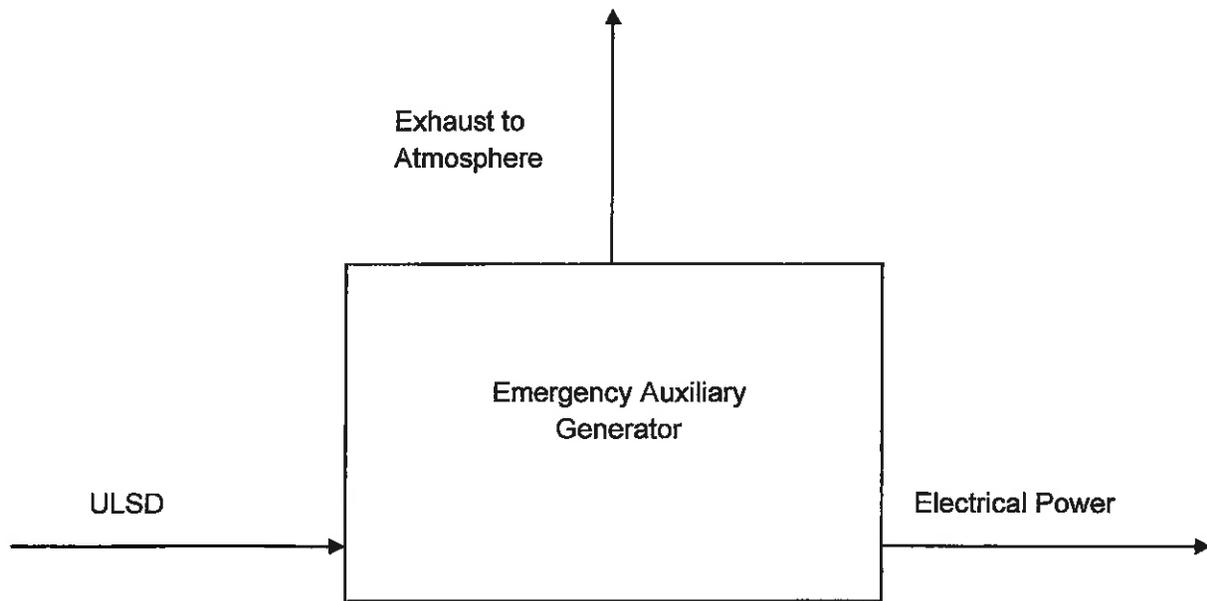
This general permit application is for the replacement of an emergency generator to supply power to the facility in the event of a complete power loss. Previously, the office building consisted of a 930 hp natural gas emergency generator engine, which currently has a R13 permit. In June 2014, the generator engine catastrophically failed and was (and now is) inoperable. At that time, a portable 1,207 hp (800 kW) diesel emergency generator engine (i.e. nonroad engine) was brought on site to replace the failed generator engine. The replacement engine will be on site for more than 12 consecutive months; therefore, no longer being considered a nonroad engine and needing permitting.

**Attachment D**

Process Flow Diagram

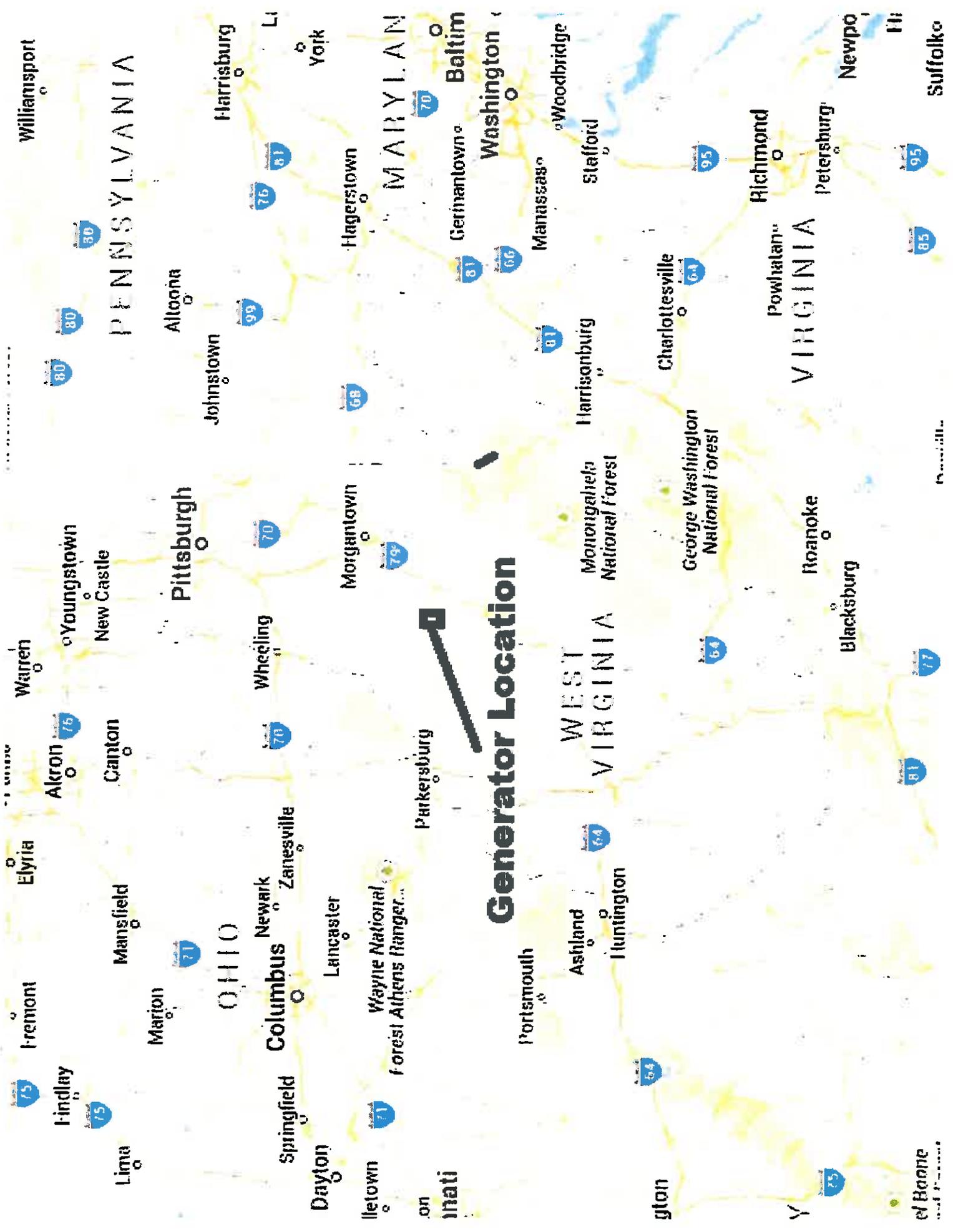
**Process Flow Diagram for the Emergency Auxiliary Generator**

**Clarksburg General Office Building**



**Attachment F**

Area Map



# Generator Location



PENNSYLVANIA

MARYLAND

VIRGINIA

OHIO

WEST VIRGINIA

Williamsport

Harrisburg

Baltimore

Washington

Newport

Suffolk

Johnstown

Hagerstown

Germanstown

Manassas

Woodbridge

Stafford

Richmond

Petersburg

95

85

80

30

99

76

61

68

81

66

81

64

95

85

95

70

79

76

70

54

77

75

75

71

70

64

81

54

75

Warren

Youngstown

New Castle

Pittsburgh

Morgantown

Wheeling

Elyria

Akron

Canton

Mansfield

Marion

Newark

Zanesville

Lancaster

Wayne National Forest

Athens Ranger District

Parkersburg

Portsmouth

Ashland

Huntington

Monongahela National Forest

George Washington National Forest

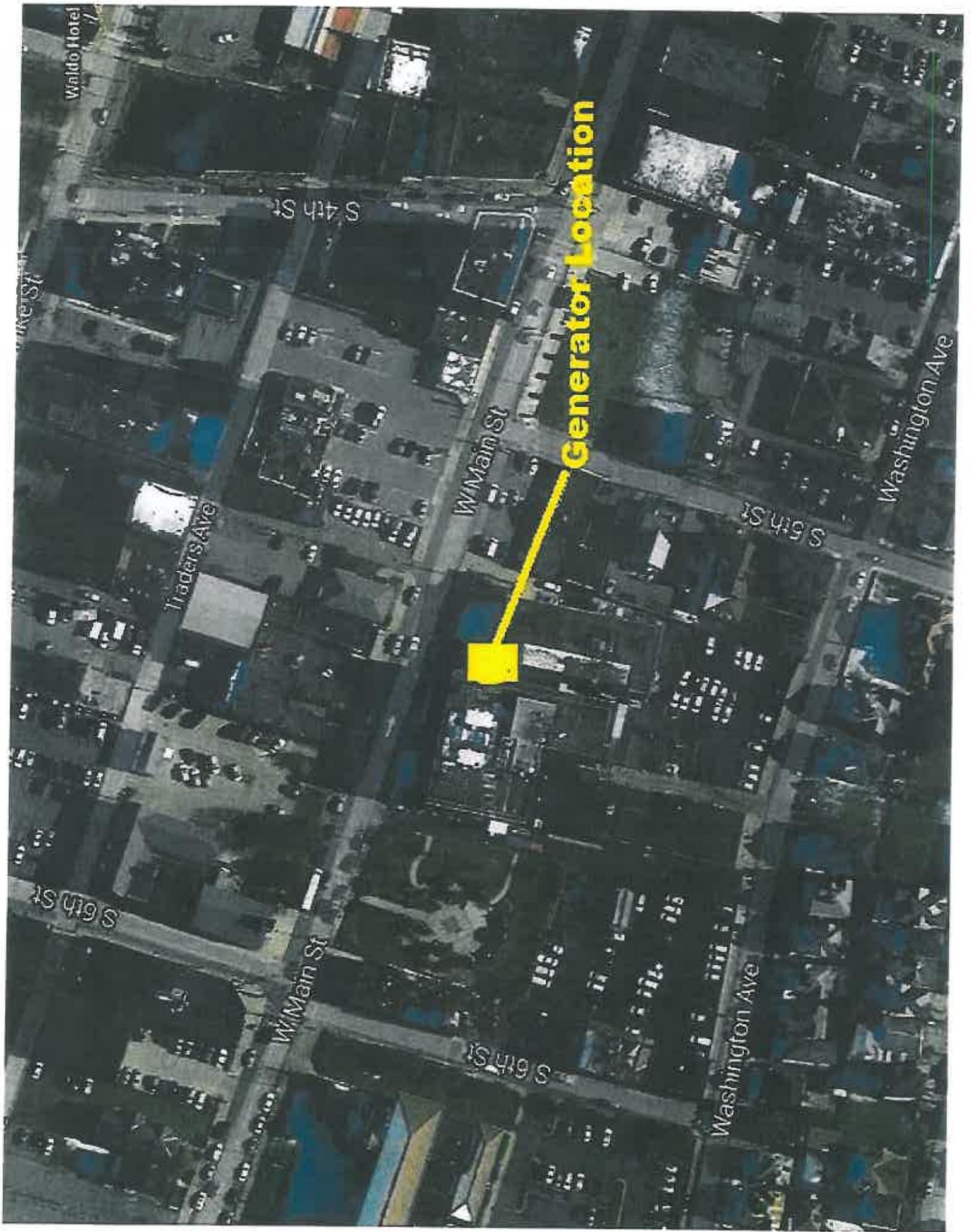
Roanoke

Blacksburg

Boone

Roanoke





**Generator Location**

**Attachment G**

Equipment Data Sheets and Registration Section  
Applicability Form

# **G65-C REGISTRATION APPLICATION FORMS**

## General Permit G65-C Registration Section Applicability Form

General Permit G65-C was developed to allow qualified registrants to seek registration for emergency generator(s).

General Permit G65-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 type="checkbox"/>            |
| Section 7 | Standards of Performance for Stationary Compression Ignition Internal Combustion Engines (40CFR60 Subpart IIII) | <input checked="" type="checkbox"/> |
| Section 8 | Standards of Performance for Stationary Spark Ignition Internal Combustion Engines (40CFR60 Subpart JJJJ)       | <input 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	
Engine Manufacturer and Model		Caterpillar XQ800	
Manufacturer's Rated bhp/rpm		1,207 bhp (800 kW)	
Source Status <sup>2</sup>		NS	
Date Installed/Modified/Removed <sup>3</sup>		6/2014 (as portable engine)	
Engine Manufactured/Reconstruction Date <sup>4</sup>		2013	
Is this a Certified Stationary Compression Ignition Engine according to 40CFR60 Subpart III? (Yes or No) <sup>5</sup>		Yes	
Is this a Certified Stationary Spark Ignition Engine according to 40CFR60 Subpart JJJJ? (Yes or No) <sup>5</sup>		No	
Engine, Fuel and Combustion Data	Engine Type <sup>7</sup>	N/A	
	APCD Type <sup>8</sup>	N/A	
	Fuel Type <sup>9</sup>	2FO (ULSD)	
	S (ppm)	15	
	Operating bhp/rpm	1,207	
	BSFC (Btu/bhp-hr)	6820	
	Fuel throughput (gal/hr)	58.8	
	Fuel throughput (gal/yr)	29,400	
	Operation (hrs/yr)	500	
Reference <sup>10</sup>	Potential Emissions <sup>11</sup>	lbs/hr	tons/yr
MD	NO <sub>x</sub>	6.92	1.73
MD	CO	0.29	0.07
MD	VOC	0.08	0.02
AP	SO <sub>2</sub>	0.01	0.004
MD	PM <sub>10</sub>	0.20	0.05
AP	Formaldehyde	<0.01	<0.01

1. Enter the appropriate Source Identification Number for each emergency generator. Generator engines should be designated EG-1.

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™

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>
N/A							

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>Clarksburg General Office Building</u>		Registration Number (Agency Use) <u>G65-C</u>													
Source ID No.	Potential Emissions (lbs/hr)										Potential Emissions (tons/yr)				
	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>	NO <sub>x</sub>	CO	VOC	SO <sub>2</sub>	PM <sub>10</sub>
EG-1	6.92	0.29	0.08	0.01	0.20	1.73	0.07	0.02	0.004	0.05					
<b>Total</b>	<b>6.92</b>	<b>0.29</b>	<b>0.08</b>	<b>0.01</b>	<b>0.20</b>	<b>1.73</b>	<b>0.07</b>	<b>0.02</b>	<b>0.004</b>	<b>0.05</b>					

**EMERGENCY GENERATOR EMISSION SUMMARY SHEET FOR HAZARDOUS/TOXIC POLLUTANTS**

Emergency Generator Location: <u>Clarksburg General Office Building</u>		Registration Number (Agency Use) <u>G65-C</u>										
Source ID No.	Potential Emissions (lbs/hr)						Potential Emissions (tons/yr)					
	Benzene	Ethylbenzene	Toluene	Xylenes	n-Hexane	Formaldehyde	Benzene	Ethylbenzene	Toluene	Xylenes	n-Hexane	Formaldehyde
EG-1	6.39E-03	N/A	2.31E-03	1.59E-03	N/A	6.50E-04	1.60E-03	N/A	5.78E-04	3.97E-04	N/A	1.62E-04
<b>Total</b>	<b>6.39E-03</b>	<b>N/A</b>	<b>2.31E-03</b>	<b>1.59E-03</b>	<b>N/A</b>	<b>6.50E-04</b>	<b>1.60E-03</b>	<b>N/A</b>	<b>5.78E-04</b>	<b>3.97E-04</b>	<b>N/A</b>	<b>1.62E-04</b>

## **Attachment I**

### Emissions Calculations

Company Name: Dominion Transmission, Inc.  
 Facility/Division: Clarksburg General Office Building  
 Prepared By: Becky Remick

**Emissions Calculations for the Emergency Diesel Generator**

1 - 2013 Caterpillar Tier 4 Diesel Engine

Engine Rating = 1,207 hp (Manufacturer Specs)  
 800 ekW (Manufacturer Specs)  
 58.8 gal/hr (Manufacturer Specs)  
 8.2 MMBtu/hr  
 Heating Value = 140,000 Btu/gal (AP-42 Appendix A)  
 Throughput = 8760 hrs/yr  
 500 hrs/yr  
 29,400 gal/yr  
 Sulfur Content = 0.0015 %

Pollutant	Worse Case Emissions	Emission Factor Units	Reference	Emissions (at 8760 hrs/yr)		Permitted Emissions (at 500 hrs/yr)	
				(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)
PM	0.075	g/hp-hr	(1, 3)	0.20	0.87	0.20	0.05
PM <sub>10</sub>	0.075	g/hp-hr	(1, 3)	0.20	0.87	0.20	0.05
PM <sub>2.5</sub>	0.075	g/hp-hr	(1, 3)	0.20	0.87	0.20	0.05
CO	0.11	g/hp-hr	(1)	0.29	1.28	0.29	0.07
NO <sub>x</sub>	2.6	g/hp-hr	(1)	6.92	30.30	6.92	1.73
SO <sub>2</sub>	1.21E-05	lb/hp-hr	(2)	0.01	0.06	0.01	0.004
VOC	0.03	g/hp-hr	(1)	0.08	0.35	0.08	0.02
CO <sub>2</sub>	163.05	lb/MMBtu	(4)	1,342.26	5,879.10	1,342.26	335.57
CH <sub>4</sub>	0.0066	lb/MMBtu	(4)	0.05	0.24	0.05	0.01
N <sub>2</sub> O	0.0013	lb/MMBtu	(4)	0.01	0.05	0.01	0.00
CO <sub>2</sub> e	163.61	lb/MMBtu	(4, 5)	1,346.87	5,899.28	1,346.87	336.72
Acetaldehyde	2.52E-05	lb/MMBtu	(6)	2.07E-04	9.09E-04	2.07E-04	5.19E-05
Acrolein	7.88E-06	lb/MMBtu	(6)	6.49E-05	2.84E-04	6.49E-05	1.62E-05
Benzene	7.76E-04	lb/MMBtu	(6)	6.39E-03	2.80E-02	6.39E-03	1.60E-03
Formaldehyde	7.89E-05	lb/MMBtu	(6)	6.50E-04	2.84E-03	6.50E-04	1.62E-04
Naphthalene	1.30E-04	lb/MMBtu	(6)	1.07E-03	4.69E-03	1.07E-03	2.68E-04
POM (as total PAH)	2.12E-04	lb/MMBtu	(6)	1.75E-03	7.64E-03	1.75E-03	4.36E-04
Toluene	2.81E-04	lb/MMBtu	(6)	2.31E-03	1.01E-02	2.31E-03	5.78E-04
Xylene	1.93E-04	lb/MMBtu	(6)	1.59E-03	6.96E-03	1.59E-03	3.97E-04

Total HAP: 0.061 0.004

(1) Emission factors based on manufacturer specification sheet

(2) Emission factor based on AP-42 Table 3.4-1 dated 10/96 (0.00809\*sulfur content\*hp rating)

(3) Assume PM = PM<sub>10</sub> = PM<sub>2.5</sub>

(4) Lb/MMBtu numbers based on 40 CFR Part 98 Tables C-1 and C-2 for distillate fuel oil #2

For example: CO<sub>2</sub> = (73.96 kg CO<sub>2</sub>/MMBtu) / (0.453592 kg/lb) = 163.05 lb/MMBtu

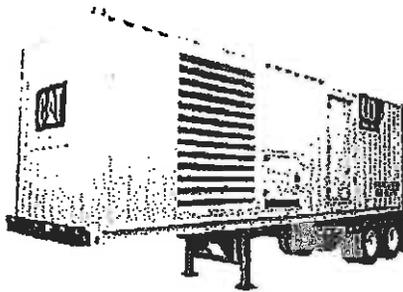
(5) Global Warming Potentials = 25 for CH<sub>4</sub> and 298 for N<sub>2</sub>O (per 40 CFR Part 98 Table A-1 to Subpart A)

For example: CO<sub>2</sub>e = (163.05 lb/MMBtu) + (0.0066 lb/MMBtu \* 25) + (0.0013 lb/MMBtu \* 298) = 163.61 lb/MMBtu

(6) Emission factors based on AP-42 Tables 3.4-3,4 dated 10/96



# XQ800 RENTAL



**STANDBY 795 kW**  
**PRIME 725 kW**  
**POWER MODULE**  
 50 Hz 1500 rpm  
 60 Hz 1800 rpm

Frequency	Voltage	Standby kW (kVA)	Prime kW (kVA)
60 Hz	480/277V	795 (994)	725 (906)
60 Hz	240/139V	795 (994)	725 (906)
60 Hz	208/120V	795 (994)	725 (906)
60 Hz	600V	795 (994)	725 (906)
50 Hz	400V	860 (825)	600 (750)

## FEATURES

### FUEL/EMISSIONS STRATEGY

- EPA Tier 4 Interim

### DESIGN CRITERIA

- Accepts 100% rated load in one step per NFPA 110 and meets ISO 8528-5 transient response
- CSA Approved

### SINGLE-SOURCE SUPPLIER

- Factory designed and fully prototype tested with certified torsional vibration analysis available
- ISO 9001:2000 compliant facility

### WORLDWIDE PRODUCT SUPPORT

- Cat® dealers provide extensive post sale support including maintenance and repair agreements
- Cat dealers have over 1600 dealer branch stores operating in 200 countries
- The Cat S•O•S<sup>SM</sup> program effectively detects internal engine component condition, even the presence of unwanted fluids and combustion byproducts

### CAT C27 ATAAC DIESEL ENGINE

- Utilizes ACERT™ Technology
- Reliable, rugged, durable design
- Four-stroke diesel engine combines consistent performance and excellent fuel economy with minimum weight
- Electronic engine control

### CAT GENERATOR

- Matched to the performance and output characteristics of Cat engines
- Single point access to accessory connections
- UL 1446 Recognized Class H Insulation

### CAT EMCP 4.4 CONTROL PANEL

- Simple user friendly interface and navigation
- Integrated, automatic genset paralleling facilitates multi-unit systems meeting a wide range of customer applications
- Integrated Control System and Communications Gateway

### CAT DIGITAL VOLTAGE REGULATOR (CAT DVR)

- Three-phase sensing
- Adjustable volts-per-hertz regulation
- Provides precise control, excellent block loading, and constant voltage in the normal operating range

### SOUND ATTENUATED CONTAINER

- Provides ease of transportation and protection
- Meets 74 dB(A) at 7 meters per SAE J1074 measurement procedure at 110% prime load

### REDUCED ENVIRONMENTAL IMPACT

- 110% spill containment of onboard engine fluids



# XQ800 RENTAL

## FACTORY INSTALLED STANDARD EQUIPMENT

SYSTEM	STANDARD EQUIPMENT
Engine	<p>EPA certified Tier 4 Interim Cat C27 heavy duty diesel engine            Heavy duty air cleaner with pre-cleaner and service indicator            65-Amp charging alternator            Fuel filters -- Duplex primary with integral water separator and change-over valve, engine mounted secondary filter            Fuel cooler and electric priming pump            Lubricating oil system including pump, integral oil cooler, lube oil, filter, filtered crankcase breather system and oil drain line with internal valve routed to connection point accessible from exterior            500 hour oil change intervals            Jacket water heater (6kW)            Electronic ADEM™ A4 controls            24V electric starting motors with battery rack and cables</p>
Generator	<p>SR4B, three-phase, brushless, salient pole, 0.6667 pitch, permanent magnet excited, Class H Insulation            Anti-condensation heaters (120V, 600V)            12-lead design, with voltage changeover link board            6-lead design, (600V)            Cat Digital Voltage Regulator (Cat DVR) with VAR/PF control</p>
Containerized Module	<p>30' ISO high cube container            2-axle, 30' ISO container chassis            Sound attenuated air intake louvers and 3 lockable personnel doors with panic release            Interior walls and ceilings insulated with 100 mm of acoustic paneling            Floor of container insulated with acoustic glass and covered with galvanized steel            Sound attenuated 74 dB(A) @ 7m            Side bus bar access door, external access load connection bus bars            Shore power connection via distribution block connections for jacket water heater, battery charger, and generator condensate heaters            Lighting 3 DC, one single duplex service receptacle, 2 external emergency stop push buttons            1,250 gal fuel tank, UL listed, double wall, 24 hr runtime @ 75% prime +10% rating (ULC + CGSB43-146)            External lockable connections for fuel            Spill containment 110% of all engine fluids            Fuel transfer system and controls            Two oversized maintenance-free batteries, battery rack and 20-Amp battery charger, and solar powered battery maintainer            Hospital grade, internally insulated, disc shaped exhaust silencer with vertical discharge            Vibration isolators, corrosion resistant hardware and hinges            External drain access to standard fluids            Two 4.5 kg (10lb) carbon dioxide fire extinguishers            Standard Cat rental decals and painted standard Cat power module white</p>
Cooling	<p>Standard cooling provides 43° C ambient capability at prime +10% rating            Vertically mounted radiator, with vertical air discharge from the container            Coolant drain line with internal valve            Coolant sight gauge, level switch and shutdown            50/50 Ethylene Extended Life Glycol</p>
Genset Controls and Protection	<p>EMCP 4.4 genset mounted controller            Automatic start/stop with cool down timer            Generator Protection features: 32, 46, 50/51, 27/59, 81 O/U, and phase sequence            Utility multi-function relay (UMR) protection features: 25, 27/59, 32, 47, 40Z, 51, 51N, 60FL, 81O, 81U (Optional)            Reverse compatible for interface to legacy power modules            3000A electrically operated generator circuit breaker            Multi-mode operation (island, multi-unit island and utility parallel (requires optional UMR))            Manual and automatic paralleling capability, with load sharing (multi-unit only)            Metering display: voltage, current, frequency, power factor, kW, WHM, KVAR, and synchroscope</p>
Quality	<p>Factory testing of standard generator set and complete power module            UL, NEMA, ISO, IEEE, CSA standards            O&amp;M manuals</p>



# XQ800 RENTAL

## TECHNICAL DATA

CAT GENERATOR		CAT DIESEL ENGINE	
Frame Size .....	598	C27 ATAAC, V-12 4-stroke water cooled diesel	
Pitch .....	0.6667	Bore – mm (in) .....	137.2 mm (5.4 in)
No. of poles .....	4	Stroke – mm (in) .....	152.4 mm (6.0 in)
Excitation .....	Static regulated brushless PM excited	Displacement – L (cu in) .....	27.03 L (1958.9 in <sup>3</sup> )
Number of bearings .....	Single bearing, close coupled	Compression ratio .....	16:1
Insulation .....	Class H	Aspiration .....	TA
Enclosure .....	Drip proof IP23	Fuel system .....	MEUIC
Alignment .....	Pilot shaft	Governor type .....	ADEM A4
Overspeed capability – % of rated .....	125% of rated		
Voltage regulator .....	3 phase sensing with Volts-per-Hertz		
Voltage regulation .....	Less than ± 12% voltage gain		
	Adjustable to compensate for engine speed droop and line loss		
Wave form deviation .....	3%		
Telephone Influence Factor (TIF) .....	Less than 50		
Harmonic Distortion (THD) .....	Less than 5%		

Generator Set Technical Data	Units	50Hz	50 Hz	60 Hz	60Hz
		Prime	Standby	Prime	Standby
Power Rating	kW (KVA)	600 (750)	660 (825)	725 (906)	795 (994)
Performance Specification					-
Lubricating System					
Oil pan capacity with filter change	L (gal)	99 (26)	99 (26)	99 (26)	99 (26)
Fuel System					
Fuel consumption					
100% Load	L/hr (gal/hr)	142 (37.4)	178 (47.1)	203 (53.5)	223 (58.8)
75% Load	L/hr (gal/hr)	108 (28.5)	135 (35.7)	152 (40.2)	167 (44.2)
50% Load	L/hr (gal/hr)	74 (19.6)	92 (24.4)	109 (28.7)	118 (31.1)
Fuel Tank Capacity	L (gal)	4730 (1250)	4730 (1250)	4730 (1250)	4730 (1250)
Running time @ 75% rating	Hr	44	35	31	28
Cooling System					
Ambient Capability	°C (°F)	43 (109)	43 (109)	43 (109)	43 (109)
Radiator & engine coolant capacity	L (gal)	100.7 (26.6)	100.7 (26.6)	100.7 (26.6)	100.7 (26.6)
Engine coolant capacity	L (gal)	70 (18.5)	70 (18.5)	70 (18.5)	70 (18.5)
Air Requirements					
Combustion air flow	m <sup>3</sup> /min (cfm)	42.5 (1500)	45.3 (1600)	54.6 (1927)	57.9 (2044)
Maximum dirty air cleaner restriction	kPa (in H <sub>2</sub> O)	2.5 (10)	2.5 (10)	2.5 (10)	2.5 (10)
Exhaust System					
Exhaust flow at rated	m <sup>3</sup> /min (cfm)	106 (3743)	116 (4097)	135 (4766)	148 (5224)
Exhaust temperature at rated kW – dry exhaust	°C (°F)	470 (878)	493 (919)	460 (860)	485 (905)
Noise Rating (with enclosure)* @ 7 meters (23 feet)	dB(A)	71	71	73	73
Emissions (Regulation)					
NO <sub>x</sub>	g/hp-hr	2.6	2.6	2.6	2.6
CO	g/hp-hr	0.11	0.11	0.11	0.11
HC	g/hp-hr	0.03	0.03	0.03	0.03
PM	g/hp-hr	0.075	0.075	0.075	0.075

Model XQ800	Length mm (in)	Width mm (in)	Height mm (in)	Weight kg (lb)	
				Lube Oil & Coolant – Empty Fuel Tank	16,129 (35,600)
				Fuel Tank 200 Gallons of Fuel	16,777 (36,930)
XQ800 w/o chassis	9,144 (360)	2,438 (96)	2,896 (114)	Full Fuel Tank	21,113 (46,547)
XQ800 w/ chassis	9,144 (360)	2,438 (96)	4,115 (162)	Chassis Weight Addition	x4,355 (9,660)

# XQ800 RENTAL

## STANDARD FEATURES

### EMCP 4.4 LOCAL CONTROL PANEL

- Generator mounted EMCP 4.4 provides power metering, protective relaying and engine and generator control and monitoring
- UL508 recognized
- Convenient service access for Cat Service tools (not included)
- Integration with the Cat DVR provides enhanced system monitoring
- Ability to view and reset diagnostics of all controls networked on primary CAN datalink eliminates need for separate service tools for troubleshooting
- True RMS AC metering, 3 phase
- Multiple stored setpoint group selection via switched input eliminates need to reprogram control when switching voltages and frequencies

### EMCP 4.4 ENGINE OPERATOR INTERFACE

- Controls
  - Run/Auto/Stop
  - Speed Adjust
  - Voltage Adjust
  - Emergency Stop
  - Cycle crank
  - Cool-down timer
- Digital indication for
  - RPM
  - Operating hours
  - Coolant Temperature
  - L-L volts, L-N volts, phase amps, Hz
  - kW, kVA, kVAR, kW-hr, %kW, PF
  - DC Volts
  - Oil pressure
  - Oil Temperature
- Shutdowns with common indicating light for
  - Low oil pressure
  - High Coolant Temp
  - Low Coolant level
  - Failure to Start (Overcrank)
  - Overspeed
  - High Oil Temperature
  - Emergency stop
- Emergency stop pushbutton
- Display navigation keys including four shortcut keys for Engine Parameters, Generator Parameters, Control and main menu
- Fuel level monitoring and control

### EMCP 4.4 GENERATOR PROTECTIVE RELAYING

- Generator protective features provided by EMCP 4.4
  - Phase over/under voltage (Device 27/59)
  - Over/Under frequency (Device 81 O/U)
  - Reverse Power (Device 32/32RV)
  - Current Balance (46)
  - Overcurrent (Device 50/51)
  - Bus Phase Sequence

### VOLTAGE REGULATION AND POWER FACTOR CONTROL CIRCUITRY

- Generator mounted automatic voltage regulator, microprocessor based
- Automatic voltage and VAR/power factor control for maintaining constant generator power factor while paralleled with the utility. Voltage and power factor adjustments are performed on the Generator Paralleling Control
- Includes RFI suppression, exciter limiter and exciter diode monitoring

### CIRCUIT BREAKER

- 3000A fixed type, 3 poles, genset mounted, electrically operated, insulated case circuit breaker
- Solid state trip unit for overload (time overcurrent) and fault (instantaneous) overcurrent protection
- 100 KA-interrupting capacity at 480 VAC
- Under-voltage release

### CURRENT TRANSFORMERS

- CT's rated 3000:5 with 200:5 secondaries wired to shorting terminal strips

### POTENTIAL TRANSFORMERS

- 4:1 ratio with primary and secondary fuse Protection (with optional UMR)

### BUS BARS

- Three phase, plus full rated neutral, bus bars are tin-plated copper with NEMA standard hole pattern for connection of customer load cables and generator cables
- Bus bars are sized for full load capacity of the generator set at 0.8 power factor
- Includes ground studs for connection to the generator frame ground and field ground cable

### LINK BOARD ASSEMBLY

- 3000A link board for 208/240/400/480 wye operation
- Reconnection via movable link board
- Includes switch to determine the mode of operation

# XQ800 RENTAL

## CONTAINER

- 30' ISO high cube container designed to meet CSC but not certified
- Painted standard Cat Power Module white
- Sound attenuated air intake louvers
- Floor insulated with acoustic glass and covered by galvanized steel
- Three lockable personnel doors with panic release
- Two fire extinguishers
- External drain access to standard fluids

## EXHAUST SILENCER

- Hospital grade, internally insulated, disc shaped exhaust silencer with vertical discharge

## FUEL TANK

- UL Listed 1250 gallon double walled tank provides 24 hr runtime at 75% prime +10% rating (ULC + TC (CGSB43-146))
- AC Fuel transfer system connected to shore and generator power with automatic switchover

## SHORE POWER

- Two shore power connections for jacket water heaters and fuel transfer pump
- One for generator space heater and battery charger

## INTERNAL LIGHTING

- Three internal DC lights with one timer installed at the container door
- One single duplex service receptacle connected to shore and generator power with automatic switchover

## BATTERY CHARGER AND BATTERIES

- 24 VDC/20A battery charger with float/equalize modes and charging ammeter
- Two oversized maintenance free batteries
- Solar power battery maintainer

## EMERGENCY STOP PUSHBUTTON

- Two external, emergency stop pushbuttons (ESP) located near each access door

## TRAILER

- Two axle with Anti-lock brake system
- 295/75R225 Load Range G Tires
- Air suspension chassis (optional)

## AC DISTRIBUTION

- Provides 120 VAC for all module accessories
- Includes controls to de-energize jacket water heaters and generator space heater when the engine is running

## UTILITY MULTI-FUNCTION RELAY (UMR) (OPTIONAL)

Basler Utility Multi-function Relay (UMR) BE1-11i provides the following utility/intertie protection features:

- Synch Check (Device 25)
- Phase under voltage, 2 stage (Device 27)
- Reverse Power (Device 32)
- Negative sequence overvoltage (Device 47)
- Phase time overcurrent (Device 51)
- Neutral overcurrent (Device 51N)
- Phase overvoltage, 2 stage (Device 59)
- Under frequency, 2 stage (Device 81U)
- Over frequency (Device 81O)
- Loss of field (Device 402)

## MODES OF OPERATION

- Provides for single unit stand-alone operation, island mode paralleling and load sharing with other power modules, and single unit-to-utility mode paralleling for base load control (with open transition between paralleling modes)
- Island mode paralleling features:
  - Lead unit select control allows single unit to connect to a dead bus or HWDBA Hard Wired Dead Bus Arbitration to allow first unit up to voltage and speed to be first unit to connect to a dead bus
  - Auto synchronization (voltage & phase matching)
  - Load sharing (kW) analog signal (like units & legacy compatible)
  - Load sharing (kVAR) analog signal (like units only)
- Utility mode paralleling features:
  - Auto synchronization (voltage & phase matching)
  - Base-load control (programmable set-point or potentiometer adjust)
  - Soft load/unload (programmable, shared set-point)
  - Power Factor control (programmable set-point)

## SINGLE UNIT STAND-ALONE AND MULTI-UNIT ISLAND OPERATION

1. Utility Standby Mode (Normal)
  - a. The utility is providing power for the plant loads.
  - b. The PM Generator breaker is open.
  - c. The PM is in automatic standby mode to respond to a utility failure.
2. Emergency Mode (Emergency)
  - a. Utility Failure
    - 1) The customer protective relaying senses a utility abnormal condition.
    - 2) A run request is sent to the PM Generator plant.
    - 3) The first PM generator to reach rated to voltage and frequency is closed to the bus.
    - 4) In Multi-Unit Island Mode, the remaining PM Generators are paralleled to the bus as they reach rated voltage and frequency. This function is performed via the lead unit select jumper and interconnect wiring connected between the Power Modules.

- 5) Plant load is transferred to the Power Modules, which share load equally via load share lines.

## SINGLE UNIT BASE LOAD OPERATION

1. Utility Mode (Normal)
  - a. The utility is providing power for the plant loads.
  - b. The PM is in auto mode and the generator breaker is open.
  - c. The PM is interconnected to the utility breaker aux contact, lead unit jumper is not installed and load share lines are not connected
  - d. The Paralleling controls automatically detect utility parallel mode when the utility aux contact is closed.
2. Base Load Mode
  - a. Unit receives remote run request and starts
  - b. Unit reaches rated voltage and frequency.
  - c. UMR performs sync-check to permit generator breaker to close.
  - d. Unit ramps to Base-Load setpoint at programmed ramp time.
  - e. Unit continues to run until remote run request is removed or unit is stopped at control panel.

## RATING DEFINITIONS AND CONDITIONS

**Meets or Exceeds International Specifications:**  
AS1359, CSA, IEC60034-1, ISO3046, ISO8528, NEMA  
MG 1-22, NEMA MG 1-33, 72/23/EEC, 98/37/EC,  
2004/108/EC

**Prime** - Output available with varying load for an unlimited time. Average power output is 70% of the prime power rating. Typical peak demand is 100% of prime rated kW with 10% overload capability for emergency use for a maximum of 1 hour in 12. Overload operation cannot exceed 25 hours per year. Prime power in accordance with ISO3046. Prime ambients shown indicate ambient temperature at 100% load which results in a coolant top tank temperature just below the alarm temperature.

Ratings are based on SAE J1349 standard conditions. These ratings also apply at ISO3046 standard conditions. Fuel rates are based on fuel oil of 35° API [16° C (60° F)] gravity having an LHV of 42 780 kJ/kg (18,390 Btu/lb) when used at 29° C (85° F) and weighing 838.9 g/liter (7.001 lbs/U.S. gal.). Additional ratings may be available for specific customer requirements, contact your Caterpillar representative for details. For information regarding Low Sulfur fuel and Biodiesel capability, please consult your Cat dealer.

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**Attachment L**

General Permit Registration Application Fee