



November 3, 2015

BY: OVERNIGHT MAIL

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



**RE: Dominion Transmission, Inc.
Newberne Microwave Tower
Permit Determination Request**

FD. No. 021-00029 Reg. PDS-014
 Agency Dominion Transmission, Inc
Newberne Microwave Tower *Vll*
WVDEP

Dear Mr. Durham:

Dominion Transmission, Inc. (Dominion) is submitting this request for a permit determination for the addition of a natural gas auxiliary generator at our Newberne Microwave Tower location, an existing microwave tower located near De-Knalb-Troy, Gilmer County, West Virginia. The auxiliary generator is not deemed to be a stationary source since there are no substantive requirements and the potential emission are below permitting thresholds.

Based on the responses from DEP dated December 16, 2013 and January 12, 2015 (enclosed) for similar units, Dominion believes a permit is not necessary for the installation and operation of a Cummins C20 engine at the Newberne Microwave Tower site. Information on the unit is included below:

Engine Manufacturer and Model: Cummins C20 N6
Manufacturer's Rated bhp: 40 bhp
Subject to NSPS Subpart JJJJ? Yes, certified
Subject to NESHAP Subpart ZZZZ? Yes, new source, area source
Fuel Type: Pipeline Quality Natural Gas

Potential Emissions (Based on 8,760 hours)

Pollutant	Source	lbs/hr	tons/yr
NO _x	Mfg.	0.50	2.20
CO	Mfg.	2.15	9.41
VOC	Mfg.	0.01	0.05
SO ₂	AP-42	1.56E-04	6.82E-04
PM (filterable)	AP-42	2.52E-03	1.10E-02
PM10 (filterable)	AP-42	2.52E-03	1.10E-02
PM2.5 (filterable)	AP-42	2.52E-03	1.10E-02
PM (condensibles)	AP-42	2.62E-03	1.15E-02
Formaldehyde	AP-42	5.43E-03	2.38E-02
Total HAP	AP-42	0.027	0.119

Entire Document
NON-CONFIDENTIAL

In accordance with 40 CFR 60 Subpart JJJJ, the engine purchased by Dominion will be certified to the emissions standards of §1048.101(c) and will be subject to maintaining records of maintenance. No performance testing will be required. Dominion will meet the requirements of Subpart JJJJ by complying with the following requirements:

- Maintaining records of maintenance conducted in accordance with the manufacturer's instructions or per the facility maintenance plan (§60.4243(a));
- Maintaining records of the hours of operation including number of hours of emergency usage with reason and number of hours of non-emergency usage (§60.4248);
- Installing a non-resettable hour meter upon startup (§60.4237(c)); and
- Maintaining a copy of the engine certification.

Per 40 CFR 63 Subpart ZZZZ §63.6590(c), the engine will meet the requirements of Subpart ZZZZ by complying with Subpart JJJJ, no further requirements under Subpart ZZZZ apply.

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

Sincerely,



Amanda Tornabene
Director, Gas Environmental Services

Enclosures

- Appendix A: Permit Determination for Newberne Microwave Tower
- Appendix B: Previous Reviews for Similar Units

Appendix A

Permit Determination Form



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

**PERMIT DETERMINATION FORM
(PDF)**

FOR AGENCY USE ONLY: PLANT I.D. # 021-00029
PDF # 15-094 PERMIT WRITER WJL

1. NAME OF APPLICANT (AS REGISTERED WITH THE WV SECRETARY OF STATE'S OFFICE):
Dominion Transmission, Inc.

2. NAME OF FACILITY (IF DIFFERENT FROM ABOVE): Newberne Microwave Tower	3. NORTH AMERICAN INDUSTRY CLASSIFICATION SYSTEM (NAICS) CODE: 551114
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4A. MAILING ADDRESS: 925 White Oaks Blvd., Bridgeport, WV 26330	4B. PHYSICAL ADDRESS: Jessie Run Road, De Kalb-Troy, WV
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5A. DIRECTIONS TO FACILITY (PLEASE PROVIDE MAP AS ATTACHMENT A):
Route 33 west out of Weston, WV. Right turn onto Route 47 West (16 miles). Left turn onto CR 7 South (12 miles). Left Turn onto Jessie Run Road (4.5 miles). Drive approximately 4 miles to plant.

5B. NEAREST ROAD: Jessie Run Road	5C. NEAREST CITY OR TOWN: De Kalb-Troy, WV	5D. COUNTY: Gilmer
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5E. UTM NORTHING (KM): 4319339	5F. UTM EASTING (KM): 507886.9	5G. UTM ZONE: 17
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6A. INDIVIDUAL TO CONTACT IF MORE INFORMATION IS REQUIRED: Rebekah Remick	6B. TITLE: Environmental Consultant
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6C. TELEPHONE: 804-273-3536	6D. FAX: 804-273-2964	6E. E-MAIL: Rebekah.J.Remick@dom.com
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7A. DAQ PLANT I.D. NO. (FOR AN EXISTING FACILITY ONLY): _____	7B. PLEASE LIST ALL CURRENT 45CSR13, 45CSR14, 45CSR19 AND/OR TITLE V (45CSR30) PERMIT NUMBERS ASSOCIATED WITH THIS PROCESS (FOR AN EXISTING FACILITY ONLY): N/A
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7C. IS THIS PDF BEING SUBMITTED AS THE RESULT OF AN ENFORCEMENT ACTION? IF YES, PLEASE LIST: **No**

8A. TYPE OF EMISSION SOURCE (CHECK ONE): <input checked="" type="checkbox"/> NEW SOURCE <input type="checkbox"/> ADMINISTRATIVE UPDATE <input type="checkbox"/> MODIFICATION <input type="checkbox"/> OTHER (PLEASE EXPLAIN IN 11B)	8B. IF ADMINISTRATIVE UPDATE, DOES DAQ HAVE THE APPLICANT'S CONSENT TO UPDATE THE EXISTING PERMIT WITH THE INFORMATION CONTAINED HEREIN? <input type="checkbox"/> YES <input type="checkbox"/> NO
---	--

9. IS *DEMOLITION* OR *PHYSICAL RENOVATION* AT AN EXISTING FACILITY INVOLVED? **YES** **NO**

10A. DATE OF ANTICIPATED INSTALLATION OR CHANGE: 01/2016	10B. DATE OF ANTICIPATED START-UP: 01/2016
--	--

11A. PLEASE PROVIDE A **DETAILED PROCESS FLOW DIAGRAM** SHOWING EACH PROPOSED OR MODIFIED PROCESS EMISSION POINT AS **ATTACHMENT B**.

11B. PLEASE PROVIDE A **DETAILED PROCESS DESCRIPTION** AS **ATTACHMENT C**.

12. PLEASE PROVIDE **MATERIAL SAFETY DATA SHEETS (MSDS)** FOR ALL MATERIALS PROCESSED, USED OR PRODUCED AS **ATTACHMENT D**. FOR CHEMICAL PROCESSES, PLEASE PROVIDE A MSDS FOR EACH COMPOUND EMITTED TO AIR.

13A. REGULATED AIR POLLUTANT EMISSIONS:

⇒ **FOR A NEW FACILITY**, PLEASE PROVIDE PLANT WIDE EMISSIONS BASED ON THE POTENTIAL TO EMIT (PTE) FOR THE FOLLOWING AIR POLLUTANTS INCLUDING ALL PROCESSES.

⇒ **FOR AN EXISTING FACILITY**, PLEASE PROVIDE THE PROPOSED CHANGE IN EMISSIONS BASED ON THE PTE OF ALL PROCESS CHANGES FOR THE FOLLOWING AIR POLLUTANTS.

PTE FOR A GIVEN POLLUTANT IS TYPICALLY BEFORE AIR POLLUTION CONTROL DEVICES AND IS COLLECTED BASED ON THE MAXIMUM DESIGN CAPACITY OF PROCESS EQUIPMENT.

POLLUTANT	HOURLY PTE (LB/HR)	YEARLY PTE (TON/YR) (HOURLY PTE MULTIPLIED BY 8760 HR/YR) DIVIDED BY 2000 LB/TON
PM	2.52E-03	1.10E-02
PM ₁₀	2.52E-03	1.10E-02
VOCs	0.01	0.05
CO	2.15	9.41
NO _x	0.50	2.20
SO ₂	1.56E-04	6.82E-04
Pb		
HAPs (AGGREGATE AMOUNT)	0.027	0.119
TAPs (INDIVIDUALLY)*		
OTHER (INDIVIDUALLY)*		

* ATTACH ADDITIONAL PAGES AS NEEDED

13B. PLEASE PROVIDE ALL SUPPORTING CALCULATIONS AS ATTACHMENT E.

CALCULATE AN HOURLY AND YEARLY PTE OF EACH PROCESS EMISSION POINT (SHOWN IN YOUR DETAILED PROCESS FLOW DIAGRAM) FOR ALL AIR POLLUTANTS LISTED ABOVE INCLUDING INDIVIDUAL HAP'S (LISTED IN SECTION 112[b] OF THE 1990 CAAA), TAP'S (LISTED IN 45CSR27), AND OTHER AIR POLLUTANTS (E.G. POLLUTANTS LISTED IN TABLE 45-13A OF 45CSR13, MINERAL ACIDS PER 45CSR7, ETC.).

14. CERTIFICATION OF DATA

I, BRIAN SHEPPARD (TYPE NAME) ATTEST THAT ALL THE REPRESENTATIONS CONTAINED IN THIS APPLICATION, OR APPENDED HERETO, ARE TRUE, ACCURATE, AND COMPLETE TO THE BEST OF MY KNOWLEDGE BASED ON INFORMATION AND BELIEF AFTER REASONABLE INQUIRY, AND THAT I AM A **RESPONSIBLE OFFICIAL**** (PRESIDENT, VICE PRESIDENT, SECRETARY OR TREASURER, GENERAL PARTNER OR SOLE PROPRIETOR) OF THE APPLICANT.

SIGNATURE OF RESPONSIBLE OFFICIAL: _____



TITLE: VICE PRESIDENT PIPELINE OPERATIONS

DATE: 11 / 02 / 15

** THE DEFINITION OF THE PHRASE 'RESPONSIBLE OFFICIAL' CAN BE FOUND AT 45CSR13, SECTION 2.23.

NOTE: PLEASE CHECK ENCLOSED ATTACHMENTS

ATTACHMENT A ATTACHMENT B ATTACHMENT C ATTACHMENT D ATTACHMENT E

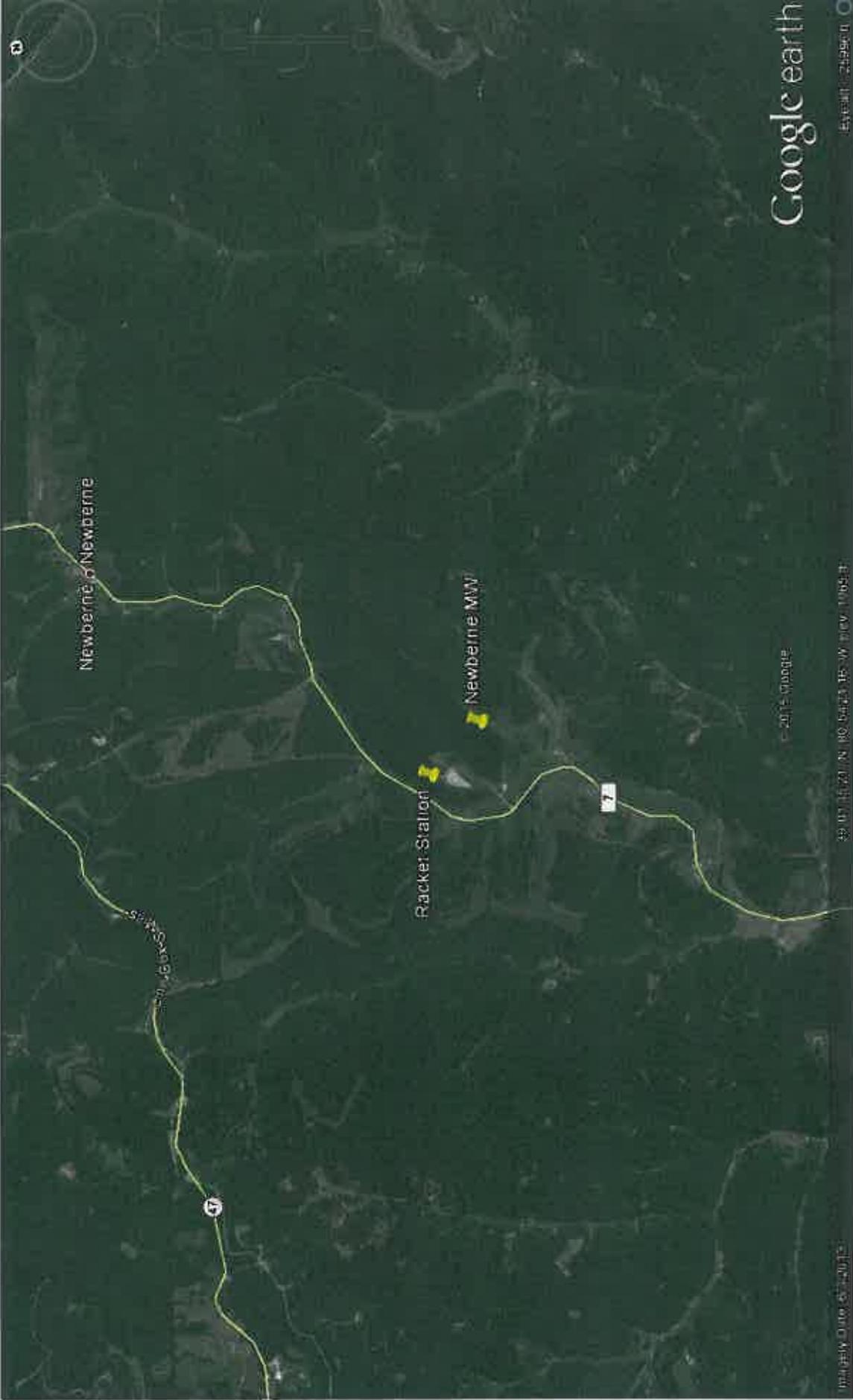
RECORDS ON ALL CHANGES ARE REQUIRED TO BE KEPT AND MAINTAINED ON-SITE FOR TWO (2) YEARS.

THE PERMIT DETERMINATION FORM WITH THE INSTRUCTIONS CAN BE FOUND ON DAQ'S PERMITTING SECTION WEB SITE.

www.dep.wv.gov/daq

Attachment A

Facility Location



10

Newberne, Newberne

Racker Station

Newberne MWW

7

47

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Google earth

39.071821 N, 80.8423185 W, Elev. 1095 ft.

01/14/14 0:09:47:2013

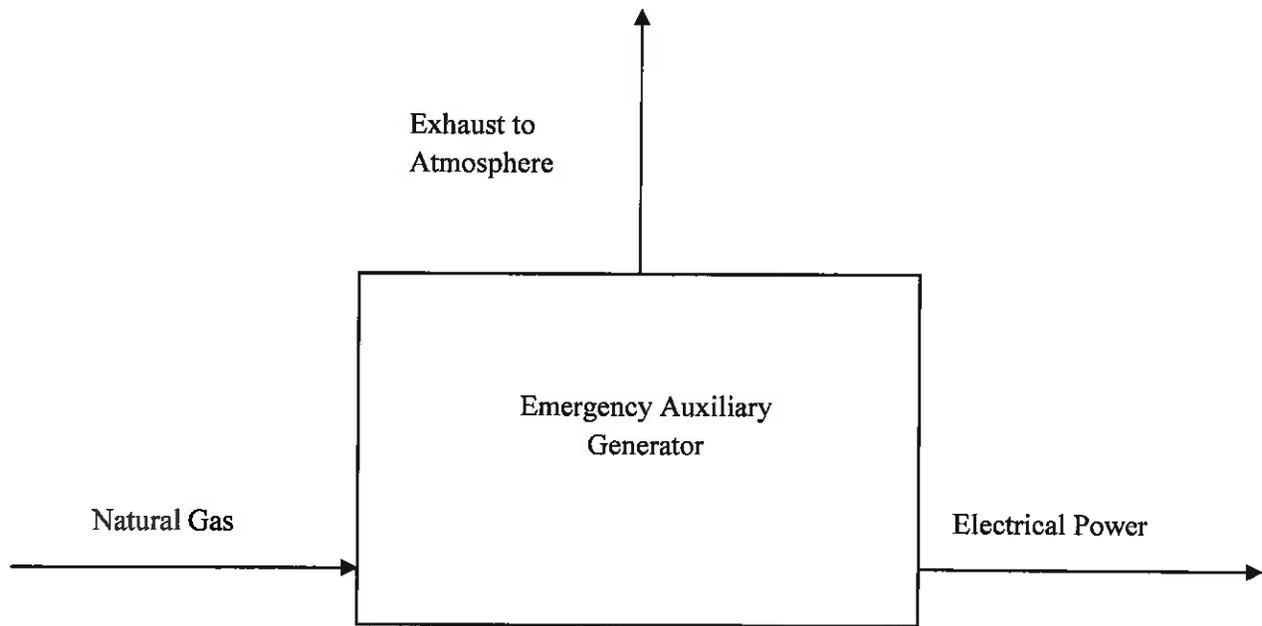
Eye Alt: 24996 ft.

Attachment B

Process Flow Diagram

Process Flow Diagram for the Emergency Auxiliary Generator

Newberne Microwave Tower



Attachment C

Process Description

Process Description

Newberne Microwave Tower is an existing microwave tower for Dominion Transmission, Inc. located near De Kalb-Troy, Gilmer County, West Virginia. This permit determination is for a natural gas emergency generator to supply power to the microwave tower in the event of a power loss.

Attachment E

Supporting Calculations

Company Name: Dominion Transmission, Inc.
 Facility/Division: Newberne Microwave Tower
 Prepared By: Abby Credicott

Input Data: Cummins C20 N6, QS12.4
 Design Class: 4-stroke rich burn
 Engine Power: 40 bhp
 Rated Electrical Output: 20 kW
 Fuel Consumption: 259.6 cf/hr (Worse case at 100% load from manufacturer spec sheet)
 Fuel Input: 0.3 MMBtu/hr = (259.6 cf/hr) * (1,020 Btu/cf) / (1,000,000 Btu/MMBtu)
 Maximum Hours of Operation: 8,760 hrs/yr
 500 hrs/yr
 Heating Value: 1,020 Btu/cf

Emission Calculations

Pollutant	Emission Factor	Emissions at 8760 hrs/yr			Emissions at 500 hrs/yr
		(lb/hr)	(lb/day)	(tons/yr)	(tons/yr)
Criteria Pollutants					
PM (filterable)	9.50E-03 lb/MMBtu	2.52E-03	0.06	1.10E-02	6.29E-04
PM-10 (filterable)	9.50E-03 lb/MMBtu	2.52E-03	0.06	1.10E-02	6.29E-04
PM-2.5 (filterable)	9.50E-03 lb/MMBtu	2.52E-03	0.06	1.10E-02	6.29E-04
PM (condensibles)	9.91E-03 lb/MMBtu	2.62E-03	0.06	1.15E-02	6.56E-04
SO2	5.88E-04 lb/MMBtu	1.56E-04	0.00	6.82E-04	3.89E-05
CO	24.37 g/bhp-hr	2.15	51.58	9.41	5.37E-01
NO _x	5.70 g/bhp-hr	0.50	12.06	2.20	1.26E-01
VOC	0.140 g/bhp-hr	0.01	0.30	0.05	3.09E-03
Greenhouse Gases					
CO ₂	117.0 lb/MMBtu	30.97	--	135.67	7.74
CH ₄	2.20E-03 lb/MMBtu	0.00	--	0.00	0.00
N ₂ O	2.20E-04 lb/MMBtu	0.00	--	0.00	0.00
CO ₂ e	117.1 lb/MMBtu	31.01	--	135.81	7.75
Hazardous Air Pollutants					
1,1,2,2-Tetrachloroethane	2.53E-05 lb/MMBtu	6.70E-06	--	2.93E-05	1.67E-06
1,1,2-Trichloroethane	1.53E-05 lb/MMBtu	4.05E-06	--	1.77E-05	1.01E-06
1,1-Dichloroethane	1.13E-05 lb/MMBtu	2.99E-06	--	1.31E-05	7.48E-07
1,2-Dichloroethane	1.13E-05 lb/MMBtu	2.99E-06	--	1.31E-05	7.48E-07
1,2-Dichloropropane	1.30E-05 lb/MMBtu	3.44E-06	--	1.51E-05	8.61E-07
1,3-Butadiene	6.63E-04 lb/MMBtu	1.76E-04	--	7.69E-04	4.39E-05
1,3-Dichloropropene	1.27E-05 lb/MMBtu	3.36E-06	--	1.47E-05	8.41E-07
Acrolein	2.63E-03 lb/MMBtu	6.96E-04	--	3.05E-03	1.74E-04
Acetaldehyde	2.79E-03 lb/MMBtu	7.39E-04	--	3.24E-03	1.85E-04
Benzene	1.58E-03 lb/MMBtu	4.18E-04	--	1.83E-03	1.05E-04
Butr/isobutyraldehyde	4.86E-05 lb/MMBtu	1.29E-05	--	5.64E-05	3.22E-06
Carbon Tetrachloride	1.77E-05 lb/MMBtu	4.69E-06	--	2.05E-05	1.17E-06
Chlorobenzene	1.29E-05 lb/MMBtu	3.42E-06	--	1.50E-05	8.54E-07
Chloroform	1.37E-05 lb/MMBtu	3.63E-06	--	1.59E-05	9.07E-07
Ethane	7.04E-02 lb/MMBtu	1.86E-02	--	8.16E-02	4.66E-03
Ethylbenzene	2.48E-05 lb/MMBtu	6.57E-06	--	2.88E-05	1.64E-06
Ethylene Dibromide	2.13E-05 lb/MMBtu	5.64E-06	--	2.47E-05	1.41E-06
Formaldehyde	2.05E-02 lb/MMBtu	5.43E-03	--	2.38E-02	1.36E-03
Methanol	3.06E-03 lb/MMBtu	8.10E-04	--	3.55E-03	2.03E-04
Methylene Chloride	4.12E-05 lb/MMBtu	1.09E-05	--	4.78E-05	2.73E-06
Naphthalene (POM)	9.71E-05 lb/MMBtu	2.57E-05	--	1.13E-04	6.43E-06
PAH	1.41E-04 lb/MMBtu	3.73E-05	--	1.64E-04	9.33E-06
Styrene	1.19E-05 lb/MMBtu	3.15E-06	--	1.38E-05	7.88E-07
Toluene	5.58E-04 lb/MMBtu	1.48E-04	--	6.47E-04	3.69E-05
Vinyl Chloride	7.18E-06 lb/MMBtu	1.90E-06	--	8.33E-06	4.75E-07
Xylene	1.95E-04 lb/MMBtu	5.16E-05	--	2.26E-04	1.29E-05
TOTAL HAP:		0.027		0.119	0.007

(1) CO, NO_x and VOC emission factors from Manufacturer Emission Data Sheet.

(2) All emission factors from AP-42, Section 3.2, Natural Gas-Fired Reciprocating Engines, Table 3.2-3, 7/00

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

For example: CO₂ = (53.06 kg CO₂/MMBtu) / (0.453592 kg/lb) = 117.0 lb/MMBtu

(4) Global Warming Potentials = 25 for CH₄ and 298 for N₂O (per 40 CFR Part 98 Table A-1 to Subpart A)

For example: CO₂e = (117.0 lb/MMBtu) + (0.0022 lb/MMBtu * 25) + (0.0022 lb/MMBtu * 298) = 117.1 lb/MMBtu



Generator set data sheet

EPA Emissions

Model: C20 N6
KW rating: 20.0 natural gas standby
 20.0 propane standby
Frequency: 60 Hz
Fuel type: Natural gas/propane

Exhaust emission data sheet:	EDS-1165
Exhaust emission compliance sheet:	EPA-1235
Sound performance data sheet:	MSP-1156
Cooling performance data sheet:	MCP-244
Prototype test summary data sheet:	PTS-317

Fuel consumption	Natural gas				Propane			
	Standby kW (kVA)				Standby kW (kVA)			
Ratings	20.0 (25.0)				20.0 (25.0)			
Load	1/4	1/2	3/4	Full	1/4	1/2	3/4	Full
scfh	115.3	163.4	211.5	259.6	47.8	66.9	86.0	105.1
m³/hr	3.2	4.6	5.9	7.3	1.3	1.9	2.4	2.9

Engine	Natural gas		Propane	
	Standby rating		Standby rating	
Engine model	QSJ2.4			
Configuration	Cast iron, in-line 4 cylinder			
Aspiration	Naturally aspirated			
Gross engine power output, kWm (bhp)	25.5 (34.3)		27.8 (37.3)	
BMEP at rated load, kPa (psi)	723.1 (104.9)		788.3 (114.3)	
Bore, mm (in)	86.5 (3.4)			
Stroke, mm (in)	100.0 (3.94)			
Rated speed, rpm	1800			
Piston speed, m/s (ft/min)	6.0 (1176.38)			
Compression ratio	9.5:1			
Lube oil capacity, L (qt)	4.3 (4.5)			
Overspeed limit, rpm	2250 ± 4.5			

Fuel flow	
Minimum operating pressure, kPa (in H ₂ O)	1.5 (6.0)
Maximum operating pressure, kPa (in H ₂ O)	3.5 (14.0)

Air	Natural gas	Propane
	Standby rating	Standby rating
Combustion air, m ³ /min (scfm)	0.9 (32.6)	0.88 (31.5)
Maximum air cleaner restriction, kPa (in H ₂ O)	0.4 (1.5)	
Alternator cooling air, m ³ /min (scfm)	N/A	

Exhaust

Exhaust flow at rated load, m ³ /min (cfm)	3.2 (115.4)	3.1 (110.7)
Exhaust temperature, °C (°F)	594 (1101)	618 (1144)
Maximum back pressure, kPa (in H ₂ O)	5.0 (20)	

Standard set-mounted radiator cooling

Ambient design, °C (°F)	50 (122)	
Fan load, kW (HP)	0.7 (1.0)	
Coolant capacity (with radiator), L (US gal)	11.7 (3.1)	
Coolant system air flow, m ³ /min (scfm)	60.2 (2150)	
Total heat rejection, MJ/min (Btu/min)	1.9 (1757)	1.9 (1757)
Maximum cooling air flow static restriction, kPa (in H ₂ O)	0.12 (0.5)	

Weights²

Unit dry weight kgs (lbs)	469 (1034)
Unit wet weight kgs (lbs)	485 (1070)

Notes:

¹ For non-standard remote installations contact your local Cummins Power Generation representative.

² Weights represent a set with 1-phase with sound level 1 enclosure.

Alternator data

Standard alternators

		Natural gas/ propane single phase table	Natural gas/propane three phase table			
		120 °C	120 °C	120 °C	120 °C	120 °C
Maximum temperature rise above 40 °C ambient						
Feature code		B949-2	B986-2	B946-2	B943-2	B952-2
Alternator data sheet number		ADS-570	ADS-568	ADS-568	ADS-568	ADS-568
Voltage ranges		120/240	120/240	120/208	277/480	347/600
Voltage feature code		R104-2	R106-2	R098-2	R002-2	R114-2
Surge kW		24.2/26.3	24.1/26.3	24.1/26.3	24.1/26.3	24.1/26.3
Motor starting kVA (at 90% sustained voltage)	Shunt	38	48	48	48	48
	PMG	62	75	75	75	75
Full load current amps at standby rating		83	60	69	30	24

Optional alternators for improved motor starting capability

		Natural gas/ propane single phase table	Natural gas/propane three phase table			
		120 °C	120 °C	120 °C	120 °C	120 °C
Maximum temperature rise above 40 °C ambient						
Feature code		B961-2	B987-2	B958-2	B955-2	B964-2
Alternator data sheet number		ADS-571	ADS-571	ADS-571	ADS-571	ADS-571
Voltage ranges		120/240	120/240	120/208	277/480	347/600
Voltage feature code		R104-2	R106-2	R098-2	R002-2	R114-2
Surge kW		24.4/26.7	24.8/27.1	24.8/27.1	24.8/27.1	24.8/27.1
Motor starting kVA (at 90% sustained voltage)	Shunt	48	59	59	59	59
	PMG	78	94	94	94	94
Full load current amps at standby rating		83	60	69	30	24

Derating factors

Natural gas/propane

Standby	Engine power available up to 1005 m (3300 ft) at ambient temperatures up to 40 °C (104 °F). Above these elevations derate at 4% per 305m (1000 ft) and 2% per 10 °C above 40 °C (104 °F).
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Ratings definitions

Emergency standby power (ESP):	Limited-time running power (LTP):	Prime power (PRP):	Base load (continuous) power (COP):
Applicable for supplying power to varying electrical load for the duration of power interruption of a reliable utility source. Emergency Standby Power (ESP) is in accordance with ISO 8528. Fuel Stop power in accordance with ISO 3046, AS 2789, DIN 6271 and BS 5514.	Applicable for supplying power to a constant electrical load for limited hours. Limited Time Running Power (LTP) is in accordance with ISO 8528.	Applicable for supplying power to varying electrical load for unlimited hours. Prime Power (PRP) is in accordance with ISO 8528. Ten percent overload capability is available in accordance with ISO 3046, AS 2789, DIN 6271 and BS 5514.	Applicable for supplying power continuously to a constant electrical load for unlimited hours. Continuous Power (COP) is in accordance with ISO 8528, ISO 3046, AS 2789, DIN 6271 and BS 5514.

Formulas for calculating full load currents:

Three phase output

$$\frac{\text{kW} \times 1000}{\text{Voltage} \times 1.73 \times 0.8}$$

Single phase output

$$\frac{\text{kW} \times \text{SinglePhaseFactor} \times 1000}{\text{Voltage}}$$

Warning: Back feed to a utility system can cause electrocution and/or property damage. Do not connect to any building's electrical system except through an approved device or after building main switch is open.

North America
1400 73rd Avenue N.E.
Minneapolis, MN 55432
USA

Phone 763 574 5000
Fax 763 574 5298

Our energy working for you.™

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NAD-5693a-EN (9/13)



cumminspower.com



Exhaust Emission Data Sheet

C20 N6

60 Hz Spark Ignited Generator Set EPA Emissions

Engine Information:			
Model:	QSJ2.4	Bore:	3.41 in. (86.5 mm)
Type:	4 Cycle, In-line, 4 Cylinder	Stroke:	3.94 in. (100 mm)
Aspiration:	Naturally aspirated	Displacement:	146.46 cu. in. (2.4 liters)
Compression Ratio:	9.5:1		
Emission Control Device:	Electronic Air/Fuel Ratio Control and Closed-Loop Breather System		

PERFORMANCE DATA	Natural Gas Standby	Propane Standby
BHP @ 1800 RPM (60 Hz)	40	43.5
Fuel Consumption (SCFH)	259.6	105.1
Air to Fuel Ratio	16.5:1	14.7:1
Exhaust Gas Flow (CFM)	115.4	110.7
Exhaust Gas Temperature (°F)	1265	1300
EXHAUST EMISSION DATA		
HC (Total Unburned Hydrocarbons)*	91	478
NOx (Oxides of Nitrogen as NO ₂)	1454	1470
CO (Carbon Monoxide)	8808	13258
Values are ppmvd		
HC (Total Unburned Hydrocarbons)*	0.14	0.67
NOx (Oxides of Nitrogen as NO ₂)	5.70	5.38
CO (Carbon Monoxide)	24.37	34.13

Values are Grams per HP-Hour

*HC includes all NMHC, VOC, POC, and ROC constituents (Non-Methane HC, Volatile Organic Compounds, Precursor Organic Compounds, and Reactive Organic Compounds)

TEST CONDITIONS

Data was recorded during steady-state rated engine speed (± 25 RPM) with full load ($\pm 2\%$). Pressures, temperatures, and emission rates were stabilized.

Fuel Specification:

Natural Gas: Dry gas as received from Supplier (1000 BTU/SCF).

Propane: Meets the requirements for Commercial Grade Propane under the ASTM D1835 Standard Specification for Liquefied Gases

Fuel Temperature: 60 \pm 9 °F at Flow Transmitter

Fuel Pressure: 14.73PSIA \pm 0.5 PSIA at Flow Transmitter

Intake Air Temperature: 77 \pm 9 °F at inlet

Barometric Pressure: 29.92 in. Hg \pm 1 in. Hg

Humidity: NOx measurement corrected to 75 grains H₂O/lb dry air

The NOx, HC, and CO emission data tabulated here were from a single engine under the test conditions shown above. These data are subjected to instrumentation and engine-to-engine variability. Field emission test data are not guaranteed to these levels. Actual field test results may vary due to test site conditions, installation, fuel specification, test procedures and instrumentation. Engine operation with excessive air intake or exhaust restriction beyond published maximum limit, or with improper maintenance, may result in elevated emission levels.



**Power
Generation**

**EPA Exhaust Emission
Compliance Statement
C20 N6
standby
60 Hz Spark Ignited Generator Set**

Compliance Information:

The engine used in this generator set complies with U.S. EPA emission regulations under the provisions of 40 CFR Part 60, Stationary Emergency Spark-Ignited emissions limits when tested on 6 mode cycle of Part 90.

Engine Manufacturer: Cummins Inc
 EPA Certificate Number: ECEXB02.4AAA-001
 Effective Date: 09/25/2013
 Date Issued: 09/25/2013
 EPA Engine Family: ECEXB02.4AAA

Engine Information:

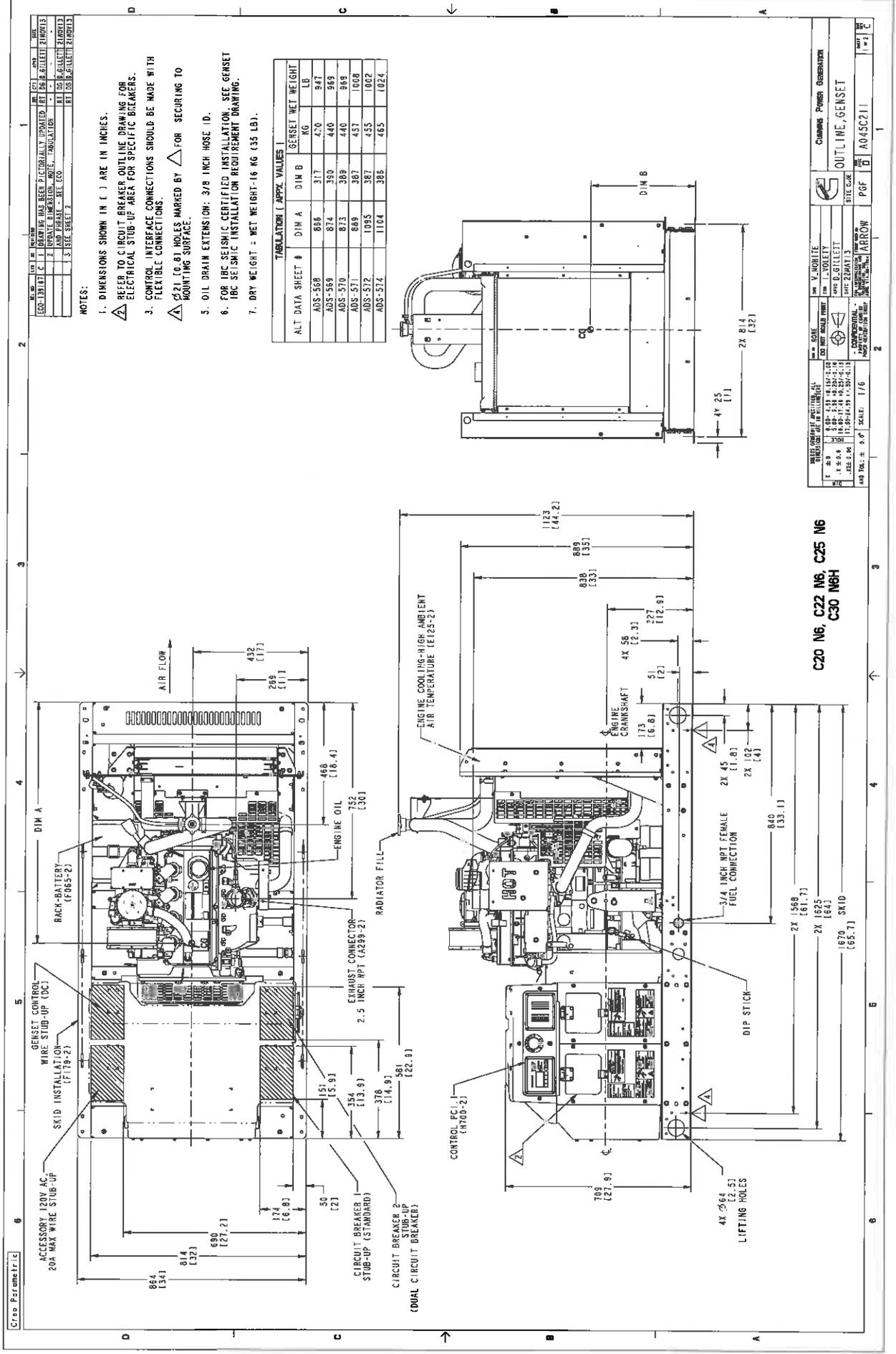
Model: QSJ2.4
 Engine Nameplate HP: Natural Gas 40 Bore: 3.41 in. (86.5 mm)
 Propane 43.5
 Type: 4 Cycle, In-line, 4 Cylinder Stroke: 3.94 in. (100 mm)
 Aspiration: Naturally Aspirated Displacement: 146.46 cu. in. (2.4 liters)
 Compression Ratio: 9.5:1
 Emission Control Device: Electronic Air/Fuel Ratio Control and Closed-Loop Breather System

U.S. Environmental Protection Agency Stationary Emergency SI Emission Limits

Natural Gas and Propane Fuel Emission Limits	Grams per BHP-hr		Grams per kWm-hr	
	NOx + HC	CO	NOx + HC	CO
Test Results (Natural Gas)	5.04	39.4	6.8	52.8
Test Results (Propane)	6.48	51.7	8.7	69.3
EPA Emissions Limit	10.0	387.0	13.4	519.0

Note:

Tests conducted using alternate test methods, instrumentation, fuel or reference conditions can yield different results. Engine operation with excessive air intake or exhaust restriction beyond published maximum limits, or with improper maintenance, may result in elevated emission levels.



Creo Parametric

REV	DATE	BY	CHKD	DESCRIPTION
1	10/11/17	C	J	ISSUE SHEET 7
2	10/11/17	C	J	ISSUE SHEET 7
3	10/11/17	C	J	ISSUE SHEET 7

NOTES:

1. DIMENSIONS SHOWN IN () ARE IN INCHES.
2. REFER TO CIRCUIT BREAKER OUTLINE DRAWING FOR ELECTRICAL STUB-UP AREA FOR SPECIFIC BREAKERS.
3. CONTROL INTERFACE CONNECTIONS SHOULD BE MADE WITH FLEXIBLE CONNECTIONS.
4. Ø21 (0.8) HOLES MARKED BY Δ FOR SECURING TO MOUNTING SURFACE.
5. OIL DRAIN EXTENSION: 3/8 INCH HOSE ID.
6. FOR IBC SEISMIC CERTIFIED INSTALLATION, SEE GENSET IBC SEISMIC INSTALLATION REQUIREMENT DRAWING.
7. DRY WEIGHT = NET WEIGHT-16 KG (35 LB).

TABLE 1 (APPR. VALUES)

ALT. DATA SHEET #	DIM A	DIM B	GENSET NET WEIGHT KG	GENSET NET WEIGHT LB
ADS-568	886	317	420	947
ADS-569	874	330	440	969
ADS-570	873	389	440	969
ADS-571	869	387	457	1008
ADS-572	1065	387	455	1002
ADS-574	1104	386	455	1024

GENSET POWER GENERATION
OUTLINE GENSET

SCALE: 1/6

DATE: 10/11/17

BY: C

CHKD: J

PROJECT: A045C211

PGF: 1

REV: 2

DATE: 10/11/17

BY: C

CHKD: J

PROJECT: A045C211

PGF: 1

REV: 2

Appendix B

Previous Reviews for Similar Units



west virginia department of environmental protection

Division of Air Quality
601 57th Street SE
Charleston, WV 25304
Phone (304) 926-0475 • FAX: (304) 926-0479

Earl Ray Tomblin, Governor
Randy C. Huffman, Cabinet Secretary
www.dep.wv.gov

December 16, 2013

Jeffrey Barger
P.O. Box 2450
Clarksburg, WV 26302-2450

Re: Withdrawal of Permit Application
Dominion Transmission, Inc.
Racket Newberne M&R Facility
Cox Mills, Gilmer County, WV
Permit Application G60-C055
Plant ID No.: 021-00021

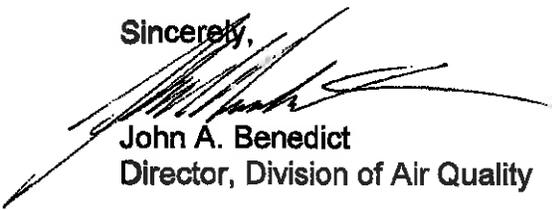
Dear Mr. Jeffrey Barger:

In accordance with your letter received on November 21, 2013, this Division hereby acknowledges the withdrawal of your company's application for a G60-C General Permit Registration for a Kohler 20 RESA, 27 bhp emergency generator/engine to be located at your Racket Newberne M&R Facility located near Cox Mills, Gilmer County, WV.

A permit registration was not needed for the generator engine because the generator was not deemed to be a stationary source and there are no substantive requirements. Although 40 CFR 60 Subpart JJJJ does apply, no performance tests are required. Dominion is aware that it must maintain maintenance records, a copy of the engine certification and fulfill any other applicable requirement(s) of Subpart JJJJ.

No further action will be taken by this Division regarding the G60-C General Permit Registration proposed in application G60-C055.

Sincerely,



John A. Benedict
Director, Division of Air Quality

JAB/jcl

cc: John Legg
Permit Writer

Meghann Quinn, Dominion Transmission, Inc.

Promoting a healthy environment.



west virginia department of environmental protection

Division of Air Quality
601 57th Street SE
Charleston, WV 25304
Phone 304/926-0475 • FAX: 304/926-0479

Earl Ray Tomblin, Governor
Randy C. Huffman, Cabinet Secretary
www.dep.wv.gov

January 12, 2015

Amanda B. Tornabene
5000 Dominion Boulevard
Glen Allen, VA 23060

RE: Permit Applicability Determination - No Permit Needed
Dominion Transmission, Inc.
Wilsonburg Microwave Tower, Dawmont, Harrison County, WV
Determination No. PD14-155
Plant ID No. 033-00011

Dear Ms. Tornabene:

It has been determined that a permit will not be required under 45CSR13 for your proposed construction of a natural gas-fueled auxiliary/emergency generator set/engine. This determination is based on information included with your permit determination form dated December 5, 2014 and received on December 8, 2014, which indicates that the increase in emissions will not exceed two (2) lbs/hr OR five (5) tons/year of total Hazardous Air Pollutants (HAPs); six (6) lbs/hour AND ten (10) TPY of any regulated pollutant; or, trigger a substantive requirement of any State or Federal air quality regulation.

Please bear in mind, however, that any additional changes to the proposed facility may require a permit under 45CSR13. Furthermore, pursuant to 45CSR13-5.14, records briefly describing the proposed change, the pollutants involved, the potential to emit for each pollutant increased or added shall be maintained by the owner or operator for at least two years and made available to the Director upon request.

Should you have any questions, please contact the undersigned engineer at (304) 926-0499 ext. 1257.

Sincerely,

John Legg
Permit Writer

cc: Rebekah Remick - Dominion Transmission, Inc.
Brian Tephabeck - DAQ North Central Regional Office

Promoting a healthy environment.