



west virginia department of environmental protection

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**GENERAL PERMIT REGISTRATION APPLICATION
ENGINEERING EVALUATION / FACT SHEET**

BACKGROUND INFORMATION

Registration No.: G60-C086
Plant ID No.: 011-00217
Applicant: DirecTV Customer Services, Inc. (DirecTV)
Facility Name: Huntington Call Center
Location: Huntington, Cabell County
SIC Code: 7389 - Business Services, Not Elsewhere Classified
NAICS Code: 561420 - Telephone Call Centers
Application Type: Construction
Received Date: January 25, 2016
Engineer Assigned: John Legg
Fee Amount: \$1,500.00
Date Received: January 26, 2016
Complete Date: March 1, 2016 (two CDs containing application received)
Applicant Ad Date: February 18, 2016 (affidavit of publication received February 29, 2016)
Newspaper: *The Herald-Dispatch*
Permit Due Date: April 16, 2016
UTM's: Easting: 372.70 km Northing: 4,249.93 km Zone: 17S
Lat/Long: Latitude: 38.389°N Longitude: -82.458°W
Description: Construction/installation of one (1), diesel-fueled, 2,206 bhp (1,645 kW) Caterpillar 3512C engine and a 1,500 kW emergency generator. The unit was purchased and installed new in 2011. The generator set is located outside the call center building on the south end of the site, and is equipped with a 2,600 gallon diesel-fuel storage tank. The generator will be used to supply power during an electric power outage and will be operated a maximum of 500 hr/yr.

General

Information: **G60-C** - Is a general permit registration used for emergency generators installed at Title V (major) facilities and other facilities having additional point source(s) of emissions.

DirecTV did not list any additional point source(s) of emission at the Huntington Call Center and there are no permits listed in the Airtrak database other than the current application. The 2,206 bhp engine is a huge engine with potential NOx emissions approaching 90 tpy. The writer believes the G60-C general permit registration was used because the engine is so huge.

- G65-C** - Is a general permit registration used for a single emergency generator located at a facility that does not have any other point source emissions.

DESCRIPTION OF PROCESS

DirecTV is a subsidiary corporation of AT&T Corp. The following information is provided in Attachment B of the permit application:

- The Huntington Call Center is a customer service call center located at 2203 5th Street Road, Huntington, Cabell County, WV 25701.
- The site is equipped with a 2,206 bhp (1,645 kW) diesel-fueled Caterpillar 3512C engine, associated with a 1,5000 kW emergency generator.
- As an emergency generator, this unit operates less than 500 hours per year.
- The unit's purpose is to provide electric power to the Huntington Call Center in the event off-site power is lost for any reason.
- The generator is located outside the call cent building on the south end of the site, and is equipped with a fuel storage tank with a capacity of 2,600 gallons.

Table 1: Information on DirecTV's Emergency Diesel-fired Generator Engine (EG-1) located at the Huntington Call Center, 2203 5th Street Road, Huntington, Cabell County, WV. (See Permit Registration Application G60-C086, Section 3: G60-C Registration Application Forms.)

Emergency Generator Engine (EG-1)	
Source ID No.	EG-1
Generator Manufacturer and Model	
Engine Manufacturer and Model	Caterpillar 3512C
Manufacturer's Rated bhp/rpm	2,206/1800

Table 1: Information on DirecTV's Emergency Diesel-fired Generator Engine (EG-1) located at the Huntington Call Center, 2203 5th Street Road, Huntington, Cabell County, WV. (See Permit Registration Application G60-C086, Section 3: G60-C Registration Application Forms.)

Emergency Generator Engine (EG-1)	
Source Status	Existing Source
Installation Date	2011
Engine Manufactured Date	2011
Engine Type	Lean Burn Four Stroke (LB4S)
Air Pollution Control Device	Not Applicable
Fuel Type	#2 Fuel Oil/Diesel
H ₂ S (gr/100 scf)	0.88
Operating bhp/rpm	2,206 bhp /1800 rpm
Brake Specific Fuel Consumption (BSFC) (Btu/bhp-hr)	6,496
Fuel throughput (gal/hr)	104.6
Fuel Use @ 500 hr/yr, (gal/yr)	52,300
Operating Hours (hr/yr)	≤ 500
Fuel Value for Diesel (Btu/gal)	137,030
Design Heat Input to Generator	14.33 MM Btu/hr

Table 2: Diesel-Fuel Storage Tank Data Sheet.

Source ID #	Status	Content	Volume (gallon)	Diameter (feet)	Throughput (gallon/year)	Orientation	Liquid Height (feet)
T01	EXIST	Diesel	2,600	5	5,000	Horizontal	4

SITE INSPECTION

A site inspection was deemed unnecessary by the writer. Directions to the facility are given in the permit application (Section 3: "G60-C Application Forms," page 7, Box No. 14.A.) and are as follows:

Site is located at the corner of 5th Street Road (WV Route 152) and Weaver Dr. in Huntington, WV. The engine-driven emergency generator is located at the south corner of the building.

TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

Low levels of toxic/hazardous non-criteria regulated pollutants are emitted from the combustion of No. 2 diesel fuel in the generator engine. DirecTV calculated HAP emissions (for benzene, toluene, xylene, formaldehyde, acetaldehyde, acrolein and polycyclic aromatic hydrocarbons (PAH) ; see permit application G60-C086, Attachment I: Emissions Calculations) for the generator engine using emission factors obtained from AP-42, Section 3.4, Table 3.4-3. Total HAP emissions are low: estimated at 0.01 ton/yr based on 500 hrs/yr of operation, and 0.39 ton/yr based on unrestricted/8,760 hours of operation per year which is not permitted.

CLASS II GENERAL PERMIT G60-C

Eligibility

The requirements and conditions of the G60-C general permit address the prevention and control of regulated pollutant emissions from emergency generators, including emergency generators installed at Title V (major) facilities and other facilities having additional point sources of emissions. The G60-C Emergency Generator General Permit benefits the regulated community by incorporating all air quality regulations into a single general permit. General Permit G60-C was issued May 21, 2009.

The proposed permitting of the emergency generator is eligible for a G60-C General Permit registration, i.e., it does meet the five (5) conditions given in 2.31 of G60-C and given below:

- a. The emergency generator(s) is not a major source as defined in 45CSR14, 45CSR19 or 45CSR30;
- b. The emergency generator(s) is not subject to 45CSR14, 45CSR15, 45CSR19, 45CSR25, 45CSR 27, or 45CSR34;
- c. Each emergency generator is to be operated 500 hours per year or less;
- d. The emergency generator(s) is not located in, nor will it (they) significantly impact, an area which has been determined to be a nonattainment area;
- e. The emergency generator(s) does not require an individual air quality permit review process and/or individual permit provisions to address the emission of a regulated pollutant or to incorporate regulatory requirements other than those established by General Permit G60-C.

Applicable Sections

All registered facilities under the Class II General Permit G60-C are subject to **Sections 1.0, 2.0, 3.0, and 4.0**. This is stated at the top of page 3 in the general permit registration.

In addition to Sections 1.0 through 4.0, DirecTV selected the following sections of G60-C as seeking registration under (see the permit application, Section 3: "G60-C Registration Application Forms"):

- DirecTV's generator engine is a Reciprocating Internal Combustion Engine (R.I.C.E.) and therefore is subject to **Section 5** of the Class II General Permit G60-C. The Section 5 box in the "General Permit G60-C Registration Section Application Form," page 2 of 8 was "Xed" by DirecTV.

[Section 5 gives the basic requirements for any R.I.C.E. and is always checked regardless if the engine is subject to NSPS or not. G60-C (nor G65-C) does not cover facilities subject to 40 CFR 63, Subpart ZZZZ, "National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines" which gives the requirements for stationary engines at major sources of HAP.]

- The generator engine will burn diesel fuel which is stored in a 2,600 gallon fuel storage tank (both generator set and tank are located outside call center building on the south end of the site).

The **Section 6** box (in the permit application, Attachment G) was "Xed" by DirecTV, **but according to G60-C, Section 6.1.1: tanks that are less than 20,000 gallons should not be permitted emissions, i.e., DirecTV's diesel storage tank is too small to have permitable emissions.**

- The generator engine is diesel fueled, and is subject to 40CFR60 Subpart IIII entitled "Standards of Performance for Stationary Compression Ignition Internal Combustion Engines" because the engine was manufactured before April 2, 2006. DirecTV checked the **Section 7** box as being applicable.
- The generator engine (is diesel-fueled and) does not burn gasoline or propane. For that reason, the engine is not subject to 40 CFR 60, Subpart JJJJ entitled "Standards of Performance for Stationary Spark Ignition Internal Combustion Engines." The **Section 8** box was (correctly) not "Xed" by DirecTV.

ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

The writer review DirecTV's calculations and found them to be accurate. Emissions from the emergency generator engine are summarized below in Table 3. The G60-C086 registration limits the facility to 500 hours per year of operation.

Table 3: Emissions Rates for DirecTV's 2,206 bhp (1,645 kW) Emergency Generator (EG-1).

Reference	Pollutant	Emission Factor (Units Shown Below)	Emissions		
			Hourly (lb/hr)	Annual	
				Restricted (tpy) ⁽⁶⁾	Unrestricted (tpy) ⁽⁷⁾
Criteria Pollutants	⁽²⁾ Nitrogen Oxide (NO _x)	4.08 (g/hp-hr)	⁽¹¹⁾ 19.84	4.96	86.90
	⁽¹⁰⁾ Carbon Monoxide (CO)	1.20 (g/kW-hr)	⁽³⁾ 4.35	1.09	19.05
	⁽²⁾ ⁽⁹⁾ Volatile Organic Compounds (VOC)	0.11 (g/hp-hr)	⁽¹¹⁾ 0.53	0.13	2.32
	⁽¹⁾ Sulfur Dioxide (SO ₂)	0.0000121 (lb/hp-hr)	0.0243	0.006	0.11
	⁽¹⁰⁾ PM ₁₀	0.17 (g/kW-hr)	⁽³⁾ 0.62	0.15	2.72
⁽⁵⁾ HAP	Benzene	7.64 x 10 ⁻⁴ (lb/MMBtu)	⁽⁸⁾ 0.011	0.00274	0.048
	Toluene	2.81 x 10 ⁻⁴ (lb/MMBtu)	⁽⁸⁾ 0.00403	0.00101	0.0176
	Xylenes	1.93 x 10 ⁻⁴ (lb/MMBtu)	⁽⁸⁾ 0.00277	0.000692	0.0121
	Formaldehyde	7.89 x 10 ⁻⁵ (lb/MMBtu)	⁽⁸⁾ 0.00113	0.000283	0.00495
	Total HAP	----	⁽¹²⁾ 0.0224	0.0056	0.098

- (1) SO₂ Emission factor from AP-42, Section 3.4, Tables 3.4-1.
- (2) Values from unit's spec sheet (CAT 3512C 1500ekW - EPA Tier 2 /Stationary Emergency Spec Sheet). Found at http://www.cat.com/en_US/articles/configurations/ep-genset-ratings/3512c.html
- (3) Emission Rate (lb/hr) = Engine Rated Capacity (1,645 kW) x Emission Factor (g/kW-hr) x (11b/453.5924g).
- (5) HAP emission factor from AP-42, Section 3.4, Table 3.4-3.
- (6) Annual emission rate Restricted based on operating 500 hr/yr.
- (7) Annual emission rate Unrestricted based on operating 8,760 hr/yr.
- (8) Emission Rate (lb/hr) = Emission Factor (lb/MMBtu) x Heat Content of Fuel (0.137030 MMBtu/gal) x Diesel Oil Firing Rate (104.6 gal/hr).
- (9) AP-42 Table 3.4-1 indicates that as much as 3/4 of total organic compounds are methane emissions for dual fuel engines. To conservatively over-estimate emissions, all hydrocarbon (HC) emissions are assumed to be VOC.
- (10) Values are from California Air Resources Board engine family certification rate.
- (11) Emission Rate (lb/hr) = Engine Rated Capacity (14.33 MMBtu/hr or 2,206 bhp) x Emission Factor (lb/MMBtu or lb/bhp-hr).
- (12) Total HAP = Benzene + Toluene + Xylenes + Formaldehyde + Acetaldehyde + Acrolein + Polycyclic Aromatic Hydrocarbons (PAH)

RECOMMENDATION TO DIRECTOR

DirecTV's request to construct and operate an emergency generator at their Huntington, Cabell County, WV facility meets the requirements of General Permit G60-C and all applicable rules and therefore DirecTV should be granted said General Permit Registration G60-C086.



John Legg, Permit Writer

March 25, 2016 

Date