



west virginia department of environmental protection

Division of Air Quality
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ENGINEERING EVALUATION / FACT SHEET

BACKGROUND INFORMATION

Application No.: R13-2931
Plant ID No.: 039-00011
Applicant: Clearon Corp. (Clearon)
Facility Name: South Charleston
Location: Kanawha County
NAICS Code: 325188
Application Type: Construction
Received Date: April 27, 2012
Engineer Assigned: John Legg
Fee Amount: \$1,000.00
Date Received: May 3, 2012
Complete Date: May 11, 2012
Due Date:
Applicant Ad Date: May 11, 2012
Newspaper: *Charleston Newspapers*
UTM's: Easting: 438.4 km Northing: 4246.6 km Zone: 17
Description: Construction of 157 hp, D106 (117 kW), Caterpillar diesel engine/generator set used to provide back-up power for the plant's computer network and phone system located in Building 514.

DESCRIPTION OF PROCESS

On April 27, 2012, the Division of Air Quality (DAQ) received Clearon Corp.'s permit application for the construction of a 157 hp, D106 (100 kW), Caterpillar diesel engine/generator set to be used to provide back-up power for the plant's computer network and phone system located in Building 514. Building 514 is an office building containing no process controls or process equipment. There will be no emissions associated with a chemical process. Clearon paid their \$1,000.00 application fee on May 3, 2012. Their Class I legal advertisement ran in the Charleston Newspapers on May 11, 2012. If approved, Clearon will be permitted to install the generator set at a location <300 feet from

adjacent businesses. The generator/engine will be allowed to operation a maximum of 500 hours per year.

Table 1: Information on Emergency Generator Engine (EG-514) at Clearon's South Charleston, WV Facility.

Emergency Generator Engine (EG-514)	
Source ID No.	EG-514
Manufacturer	Caterpillar
Model No.	D100-6
Manufacturer's Rated bhp/rpm	1474/1800
Engine Manufactured/ Reconstruction Date	2012
Installation Date	*June 1, 2012 (per application)
Engine Type	4-cycle
Air Pollution Control Device	None Stated
Fuel Type	#2 Diesel Fuel Oil
H ₂ S (gr/100 scf)	15 ppm max sulfur in fuel (per MSDS)
Operating bhp/rpm	156.9/1800
BSCFC (Btu/bhp-hr)	7009
Fuel throughput (gal/hr)	7.9
Fuel throughput (MM Btu/hr based on 139,200 Btu/gal diesel)	1.1 MM Btu/hr
Operating Hours	<500 hr/yr

* Legal ad ran May 11, 2012. Earliest date to legally install and run the generator/engine, allowing for the 30 day public comment period, would be June 11, 2012.

SITE INSPECTION

A site inspection was deemed unnecessary by the writer. The facility is already on DAQ Enforcement's regular inspection list of sources.

Directions as given in the permit application are as follows: Take Exit 56, Interstate I-64 (west bound). Turn right and go to the bottom of hill and turn left at the light onto MacCorkle Avenue (Rt. 60). Go to 3rd stoplight and turn right. Turn left into first driveway.

Fact Sheet R13-2931
Clearon Corp.
South Charleston, WV

ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

Maximum controlled emissions from Clearon's emergency generator are summarized below. Annual emission limits for the facility are based on operating the generator set 500 hours per year.

Emission Unit ID	Pollutant	Emission Factor	Maximum Emissions	
			(lb/hr)	(tpy) ⁽³⁾
EG-200	Nitrogen Oxides (NO _x)	0.004 ⁽¹⁾ (kg/kW-hr)	1.09	0.27
	Carbon Monoxide (CO)	0.005 ⁽¹⁾ (kg/kW-hr)	1.25	0.31
	Volatile Organic Compounds	0.00247 ⁽²⁾ (lb/hp-hr)	0.39	0.10
	Sulfur Dioxide (SO ₂)	0.00205 ⁽²⁾ (lb/hp-hr)	0.32	0.08
	Particulate Matter-10 (PM ₁₀)	0.0003 ⁽¹⁾ (kg/kW-hr)	0.08	0.02
	Formaldehyde	0.000463 ⁽²⁾ (lb/hp-hr)	0.07	0.02

(1) Emission factor provided by engine manufacturer Caterpillar. Per Caterpillar, emission factors are EPA Certified for Stationary Emergency Application (EPA Tier 3 emissions levels).
(2) Emission factor from AP42 Table 3.3-1:
(3) Based on operating a maximum of 500 hr/yr.

REGULATORY APPLICABILITY

Clearon is a Title V facility subject to regulation under 45CSR30. The emergency generator is regulated by 45CSR13. New Source Performance Standard (NSPS), Subpart IIII applies to the generator engine because it is a diesel-fueled stationary compression ignition engine.

Due to the close proximity of the proposed emergency generator to surrounding businesses (<300 ft), Clearon elected not to have adjacent business owners sign a waiver that would have made the generator engine eligible for the G60-C general permit. Instead, Clearon applied for a Rule 13 (45CSR13) permit.

The diesel storage tank for the generator is less than 10,000 gallons (only 190 gallons) and is not listed in Section 1.0's Emission Units Table. There are no requirements in the permit (R13-2931) for the diesel storage tank.

TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

Formaldehyde is emitted from combustion of #2 diesel fuel at very low levels:

Formaldehyde, a colorless, pungent-smelling gas, can cause watery eyes, burning sensations in the eyes and throat, nausea, and difficulty in breathing in some humans exposed at elevated levels (above 0.1 parts per million). High concentrations may trigger attacks in people with asthma. There is evidence that some people can develop a sensitivity to formaldehyde. It has also been shown to cause cancer in animals and may cause cancer in humans. Health effects include eye, nose, and throat irritation; wheezing and coughing; fatigue; skin rash; severe allergic reactions. May cause cancer. May also cause other effects listed under "organic gases."

AIR QUALITY IMPACT ANALYSIS

Emissions from the generator are small. No air quality impact analysis/study was conducted for the construction.

MONITORING OF OPERATIONS

- 4.1.3. Maximum Fuel Consumption Limitation. The maximum fuel consumption for the emergency generator (EG514) shall not exceed 3,950 gal/yr (based on operating 500 hr/yr or less) without effecting a modification or administrative update. Compliance with the Maximum Yearly Fuel Consumption Limitation shall be determined using a twelve month rolling total. A twelve month rolling total shall mean the sum of the fuel consumption at any given time during the previous twelve consecutive calendar months.
- 4.4.1. The permittee shall maintain records of the amount and type of fuel consumed and the hours of operation for the engine. Said records shall be maintained on site or in a readily accessible off-site location maintained by the permittee for a period of five (5) years. Said records shall be readily available to the Director of the Division of Air Quality or his/her duly authorized representative for expeditious inspection and review. Any records submitted to the agency pursuant to a requirement of this permit or upon request by the Director shall be certified by a responsible official.
- 5.1.1. Maximum Yearly Operation Limitation. The maximum yearly hours of operation for the emergency generator shall not exceed 500 hours per year. Compliance with the Maximum Yearly Operation Limitation shall be determined using a twelve month rolling total. A twelve month rolling total shall mean the sum of the hours of operation at any given time during the previous twelve consecutive calendar months.
- 5.3.1. **Records, Operation and Compliance**
- a. For the purpose of determining compliance with the Maximum Yearly Operation Limitation, a person designated by a Responsible Official or Authorized Representative shall maintain records of hours of operation utilizing copies of Attachment A - Monthly Hours of Operation Record (or a similar form containing the same information);

Fact Sheet R13-2931
Clearon Corp.
South Charleston, WV

- b. For the purpose of determining compliance with the Fuel Type Limitation, a person designated by a Responsible Official or Authorized Representative shall maintain records of quantity and type of fuel burned.
- c. For the purpose of determining compliance with the Regulated Pollutant Limitation for SO₂, a person designated by a Responsible Official or Authorized Representative shall maintain records of the maximum sulfur content on a per-shipment basis for fuel oil, recycled or used oil or annual certification of the sulfur content from the supplier for pipeline quality natural gas.

53.3. **Equipment Maintenance Records**

- a. The permittee shall maintain maintenance records relating to failure and/or repair of emergency generator equipment. In the event of equipment or system failure, these records shall document the registrant's effort to maintain proper and effective operation of such equipment and/or systems;

RECOMMENDATION TO DIRECTOR

Clearon's request to construct and operate an emergency generator set at their South Charleston, Kanawha County, WV site meets the requirements of 45CSR13 and all other applicable rules and therefore permit R13-2931 should be granted.

John Legg
Permit Writer

June 15, 2012

Fact Sheet R13-2931
Clearon Corp.
South Charleston, WV