

ALLEGHENY COUNTY HEALTH DEPARTMENT AIR QUALITY PROGRAM

May 24, 2012

SUBJECT: Level 3 Pittsburgh - PITEPADT
143 S 25th Street
Pittsburgh, PA 15203
Allegheny County

Synthetic Minor Source Operating Permit No. 0822

TO: Sandra L. Etzel
Chief Engineer

FROM: David D. Good
Air Quality Engineer

FACILITY DESCRIPTION

Level 3 Communications, LLC operates and maintains a 1,500 kW emergency generator enrolled in PJM's Emergency Load Response Program ("ELRP") for its facility at 143 S 25th Street in Pittsburgh, PA. The generator is limited to a total of 500 hours per year. The generator only burns ultra-low sulfur diesel fuel having a sulfur content of 15 ppm_w (0.0015%) or less. There is a 2,500 gallon diesel fuel tank associated with the generator.

This facility is a synthetic minor source of nitrogen oxides (NO_x), and a minor source of particulate matter (PM), particulate matter <10 μm in diameter (PM₁₀), particulate matter <2.5 μm in diameter (PM_{2.5}), sulfur dioxide (SO₂), carbon monoxide (CO), and volatile organic compounds (VOCs) as defined in §2101.20 of Article XXI.

PERMIT APPLICATION COMPONENTS:

1. Operating Permit Application No. 0822, dated November 22, 2010 (application was for both the installation and operating permit).

EMISSION SOURCES:

Generators

I.D.	Facility Name	Manufacturer / Model #	Maximum Capacity	Primary Fuel	Secondary Fuel	Control	Stack I.D.
B001	Emergency Generator	Caterpillar 3512BDITA Genset	1,500 kW	No. 2 Fuel Oil	none	none	S001
D001	Diesel Fuel Storage Tank	--	2,500 gallons	No. 2 Fuel Oil	none	none	--

Stacks

Stack I.D.	Stack Height	Stack Diameter	Exhaust Rate	Exhaust Temp.	Exhaust Moisture	Material
S001	14 ft.	1.0 ft.	12,184 acfm	944 °F	--	steel; n/a

METHOD OF DEMONSTRATING COMPLIANCE:

Compliance with the emission standards set in this permit will be demonstrated by maintaining records of generator operation and fuel use as well as supplier certification of sulfur content. See Operating Permit No. 0822 for the specific conditions for determining compliance with the applicable requirements.

REGULATORY APPLICABILITY:

1. **Article XXI Requirements for Issuance:**

See Permit Application No. 0822, Section 5: Applicable Requirements. The requirements of Article XXI, Parts B and C for the issuance of minor source operating permits have been met for this facility. Article XXI, Part D, Part E & Part H will have the necessary sections addressed individually.

2. **Testing Requirements:**

Testing is not required. However, the Department reserves the right to require additional testing if necessary in the future to assure compliance with the terms and conditions of Operating Permit No. 0822.

3. **New Source Performance Standards (NSPS):**

The facility is not subject to 40 CFR Part 60, Subpart III – *Standards of Performance for Stationary Compression Ignition Internal Combustion Engines*. The generator was installed in 2000, before the applicability date of the NSPS.

4. **NESHAP and MACT Standards:**

The facility is not subject to any NESHAP or MACT standards. 40 CFR Part 63, Subpart ZZZZ does not apply to this facility based on §63.6590(b)(3) which states: "...or an existing stationary residential, commercial, or institutional emergency stationary RICE located at an area source of HAP emissions, does not have to meet the requirements of this subpart and of subpart A of this part."

5. **Risk Management Plan; CAA Section 112(r):**

No materials stored at the facility meet the threshold for CAA §112(r). Therefore, the facility is not subject to CAA §112(r).

EMISSIONS CALCULATIONS:

Emergency Generator

Generator Rating:	1,500 kW
Fuel Use:	107.86 gal/hr
No. of Generators:	1 (one)
Fuel Oil Sulfur Limit:	0.0015%
Operation:	500 hrs/yr (60 hours non-emergency ELRP, 440 hours emergency use)

Emissions are based on data supplied by the manufacturer (see permit application #0822). Because particulate matter and sulfur oxide emissions based on manufacturer information are less than the limit in Article XXI, §2104.02(a)(1)(B) and §2104.03(a)(2)(A), the Article XXI limits have been streamlined into the manufacturer's limits. All PM is assumed to be PM₁₀, and all PM₁₀ is assumed to be PM_{2.5}.

$$\begin{aligned}\text{Article XXI: } & 0.28 \text{ lb}_{\text{PM}}/\text{MMBtu} \times 107.86 \text{ gal/hr} \times 130,000 \text{ Btu/gal} = 3.93 \text{ lb}_{\text{PM}}/\text{hr} \\ & 1.0 \text{ lb}_{\text{SO}_x}/\text{MMBtu} \times 107.86 \text{ gal/hr} \times 130,000 \text{ Btu/gal} = 14.02 \text{ lb}_{\text{SO}_x}/\text{hr}\end{aligned}$$

The manufacturer supplied the following equation for sulfur emissions when combusting ultra low-sulfur diesel:

$$\text{SO}_2 \text{ g/hr} = 0.01998 \times \text{fuel rate (g/hr)} \times \text{S\%}$$

$$0.01998 \times 107.86 \text{ gal/hr} \times 3.79 \text{ L/gal} \times 838.9 \text{ g/L} \times 0.0015 \div 453.6 \text{ g/lb} = \mathbf{0.023 \text{ lb/hr SO}_x}$$

From the manufacturer specifications, the maximum brake horsepower is 2,153 bhp.

Emergency Generator Emission Limits

Pollutant	Short-Term Emissions (lb/hr)	Long-Term Emissions [500 hours/year] (tons/year)
Particulate Matter	0.58	0.1
PM ₁₀	0.58	0.1
PM _{2.5}	0.58	0.1
Nitrogen Oxides	54.94	13.7
Sulfur Oxides	0.023	0.01
Carbon Monoxide	13.82	3.5
Volatile Organic Compounds	1.82	0.5

Diesel Fuel Storage Tank

VOC emissions from the diesel fuel storage tank are negligible (< 0.0005 tpy) using Tanks 4.0.9D.

RECOMMENDATION:

All applicable Federal, State, and County regulations have been addressed in the permit application and the facility was found to be in compliance. The operating permit for Level 3 Pittsburgh – PITEPADT at 143 S 25th Street should be approved with the emission limitations and terms & conditions in Operating Permit No. 0822.