

**ALLEGHENY COUNTY HEALTH DEPARTMENT
AIR QUALITY PROGRAM**

June 28, 2011

SUBJECT: ACS Pittsburgh Data Center
4920 Campbells Run Road
Robinson Township, PA 15205
Allegheny County

Operating Permit No. 0810

TO: Sandra L. Etzel
Chief Engineer

FROM: Hafeez A. Ajenifuja
Air Quality Engineer

FACILITY DESCRIPTION

ACS Pittsburgh Data Center is a limited manufacturing data center. The company is solely involved in data processing and storage.

The facility is a minor source of particulate matter (PM), particulate matter <10 microns in diameter (PM₁₀), sulfur oxides (SO_x), volatile organic compounds (VOCs), carbon monoxide (CO) and nitrogen oxides (NO_x) as defined in §2101.20 of Article XXI.

OPERATING PERMIT DESCRIPTION

This permit application is for the operating permit of the two (2) 2,384 kW (3,196 hp) each existing emergency diesel fired generators. The generators will be limited to 200 hours per year, with a non-resettable hourly measuring meter to record hours of operation and operated only in the event that electric power from the local utility is interrupted including routine maintenance and testing. Each generator will operate at 50% load except during maintenance or repair of one generator and the remaining one can operate at full load. Only No. 2 fuel oil (diesel fuel) with sulfur content of 500 ppm (0.05%) or less will be used in these units. The operating permit is also consisted of four (4) storage tanks total. Two (2) diesel fuel storage tanks with a capacity of 2,000 gallons and two (2) 600 gallons tanks associated with each generator and considered to be of minor significance

This operating permit will incorporate all the applicable requirements of the installation permit No. 0810-I001 issued on June 17, 2010 into a facility-wide operating permit.

PERMIT APPLICATION COMPONENTS:

1. Installation Permit Application No. 0810, dated December 7, 2009.

EMISSION SOURCES:

Fuel Burning / Combustion Equipment

ID	Facility ID	Manufacturer	Model	Rated Capacity	Primary Fuel	Secondary Fuel	Control Device	Stack
P001	B001	Caterpillar	3516B	3196 Hp	Diesel	None	None	S001
P001	B001	Caterpillar	3516B	3196 Hp	Diesel	None	None	S001
D001	Two (2) Diesel Fuel Storage Tanks	NA	NA	2,000	Diesel (#2 Fuel Oil)	None	None	None
D002	Two (2) Diesel Fuel Storage Tanks	NA	NA	600	Diesel (#2 Fuel Oil)	None	None	None

Stacks

Stack	Facility ID	Stack Height	Stack Diameter
S001	S-1	15.5ø	1.33ø

METHOD OF DEMONSTRATING COMPLIANCE:

Compliance with the emission standards set in this permit will be demonstrated through records of manufacturer's data, fuel consumption and operating hours. See Operating Permit No. 0810 for the specific conditions for determining compliance with the applicable requirements.

REGULATORY APPLICABILITY:

1. Article XXI Requirements for Issuance:

The requirements of Article XXI, §2103.12 for the issuance of operating permits have been met for this facility. Article XXI, §2104.01 for visible emissions, §2104.04 for odor and §2105.03 for operation and maintenance have been addressed in the permit.

2. BACT Analysis:

There are no add-on controls that are both technically feasible and economically feasible. Selective Catalytic Reduction was reviewed for NO_x reduction and it was not cost effective. However, since the generators are only used for limited time periods when normal power is interrupted, the use of ultra low sulfur fuel oil with 0.05% (500 ppm) sulfur content, low usage option and good combustion practice is chosen as the BACT option.

3. Testing Requirements:

Testing is not required, but the Department reserves the right to require testing in the future to assure compliance with the terms and conditions of Operating Permit No. 0810.

4. New Source Performance Standards (NSPS):

1) 40 CFR Part 60, Subpart Kb: The generators are not subject to this subpart because the liquid true vapor

pressure is 0.00774 psia, which is lower than the applicable vapor pressure of 2.18 psia

- 2) **40 CFR 60, Subpart III:** This subpart only applies to owner or operators of internal combustion engine (ICE) that commences construction (order date) after July 11, 2005 and was manufactured after April 1, 2006. These ACS generators were ordered after July 11, 2005, but were manufactured in 2001 and therefore, it is not applicable to ACS.

5. NESHAP and MACT Standards:

40 CFR 63, Subpart ZZZZ: This subpart is not applicable to the generators because §63.5690(c) says New compression ignition engines at an area source must meet the requirements of 40 CFR 60, Subpart III. However, the engines are not subject to 40 CFR 60, Subpart III. Therefore, the generators are not subject to any NESHAP or MACT standard.

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

The facility is not required to have a risk management plan at this time because none of the regulated chemicals exceed the thresholds in the regulation.

7. EMISSIONS CALCULATIONS:

Fuel Burning / Combustion Equipment (New Generators B001):

The NO_x, CO and VOC emissions (lbs/hr and tons/year) from the 3,196 Hp emergency diesel fired generators are based on manufacturers guarantee, while PM and SO_x are from AP-42. The summary of emission calculations are shown in Table below.

POLLUTANT	50 % Load Hourly Emissions (lb/hr) (per generator)	100% Load Hourly Emissions (lbs/hr)	100% Load Yearly Emission (tons/yr)¹
Particulate Matter ²	0.77	1.49	0.15
Particulate Matter ² < 10 m	0.77	1.49	0.15
Nitrogen Oxides (NO _x)	22.41	64.05	6.40
Sulfur Oxides (SO _x)	0.56	1.08	0.11
Carbon Monoxide (CO)	1.22	2.33	0.23
Volatile Organic Compounds (VOCs)	0.97	1.55	0.16

¹ A year is defined as any 12 consecutive months.

² PM₁₀ emission is for both condensable + filterable

Sample Calculation:

a) NO_x emission at 50% load:

$$NO_x = (1,626 \text{ hp}) * (6.25 \text{ g/hp-hr}) * (\text{lbs}/453.6\text{g}) = 22.41 \text{ lbs/hr}$$

b) NO_x emission at 100% load:

$$NO_x = (3,196 \text{ hp}) * (9.09 \text{ g/hp-hr}) * (\text{lbs}/453.6\text{g}) = 64.05 \text{ lbs/hr}$$

PM Emission Rate = (21MMBtu/hr)*(0.0697 lbs/MMBtu) = **1.49 lbs/hr (At 100% load)**
PM Emission Rate = (21MMBtu/hr)*(0.0697 lbs/MMBtu)*(0.50) = **0.77 lbs/hr (At 50% load)**

PM Emission Rate = (1.49 lb/hr)*(200 hr/yr)/(2000 lb/ton) = **0.15 tpy**

RECOMMENDATION:

All applicable Federal, State, and County regulations have been addressed in the permit. The installation permit for ACS Pittsburgh Data Center should be approved with the emission limitations, terms and conditions in Operating Permit No. 0810.