

DRAFT
ENGINEERING EVALUATION
Novartis Vaccines and Diagnostics, Inc.
PLANT NO. 8025
APPLICATION NO. 17149

BACKGROUND

Novartis Vaccines and Diagnostics, Inc. (Novartis) is applying for an Authority to Construct and/or to Permit to Operate the following equipment:

S-55 Emergency Generator, Building F: Caterpillar SR4B with Diesel Engine: Caterpillar Model C32 TA, 1502 BHP abated by A-55 Harco Catalyzed Diesel Particulate Filter

EMISSIONS SUMMARY

Annual Emissions:

The S-55 Emergency Diesel Generator is CARB/EPA Certified. The engine family number is 7CPXL32.0ESK. The emission factors are CARB certified. The owner/operator will abate S-55 with A-55 Catalyzed Diesel Particulate Filter (DPF). The A-55 DPF provides a 90% reduction in PM10, a 90% reduction in CO, and a 90% reduction in total hydrocarbons.

Under the new ATCM, the emergency diesel generator is allowed to run for 50 hrs/yr for maintenance and reliability testing.

NO _x *	4.038 g/bhp-hr
POC*	0.213 g/bhp-hr
CO	1.193 g/bhp-hr
PM10	0.097 g/bhp-hr
* NO _x + POC = 4.251 g/bhp-hr, POC = 5% of (NO _x + POC)	

The emission factor for SO₂ is from Chapter 3, Table 3.4-1 of the EPA Document AP-42, Compilation of Air Pollutant Emission Factors.

$$\text{SO}_2 \text{ (lb/hp-hr)} = 8.09\text{E-}3 \text{ (\% S in fuel oil)} = 8.09\text{E-}3 \text{ (0.0015\%)} (454 \text{ g/lb}) = 0.006 \text{ g/hp-hr}$$

NO _x	= (4.038 g/bhp-hr)(1502 bhp)(50 hrs/yr)(lb/454g) = 667.96 lb/yr = 0.334 TPY
CO	= (1.193 g/bhp-hr)(1502 bhp)(50 hrs/yr)(lb/454g)(1-0.90) = 19.73 lb/yr = 0.010 TPY
POC	= (0.213 g/bhp-hr)(1502 bhp)(50 hrs/yr)(lb/454g)(1-0.90) = 3.52 lb/yr = 0.002 TPY
PM10	= (0.097 g/bhp-hr)(1502 bhp)(50 hrs/yr)(lb/454g)(1-0.90) = 1.60 lb/yr = 0.001 TPY
SO ₂	= (0.006 g/bhp-hr)(1502 bhp)(50 hrs/yr)(lb/454g) = 0.99 lb/yr = 0.0005 TPY

Maximum Daily Emissions:

A full 24-hour day will be assumed since no daily limits are imposed on intermittent and unexpected operations.

NO _x	= (4.038 g/bhp-hr)(1502 bhp)(24 hrs/day)(lb/454g) = 320.62 lb/day
CO	= (1.193 g/bhp-hr)(1502 bhp)(24 hrs/day)(lb/454g)(1-0.90) = 9.47 lb/day
POC	= (0.213 g/bhp-hr)(1502 bhp)(24 hrs/day)(lb/454g)(1-0.90) = 1.69 lb/day
PM10	= (0.097 g/bhp-hr)(1502 bhp)(24 hrs/day)(lb/454g)(1-0.90) = 0.77 lb/day
SO ₂	= (0.006 g/bhp-hr)(1502 bhp)(24 hrs/day)(lb/454g) = 0.48 lb/day

Plant Cumulative Increase: (tons/year):

Pollutant	Existing	New	Total
NOx	8.390	0.334	8.724
POC	12.516	0.002	12.518
CO	6.595	0.010	6.605
SO2	0.170	0.0005	0.171
PM10	0.763	0.001	0.764
NPOC	0	0	0

Toxic Risk Screening:

For S-55 Emergency Diesel Generator abated by A-55 DPF, the emission rate of diesel exhaust particulate from 50 hours per year of maintenance and reliability related operation exceeds the risk screening trigger level in Regulation 2-5 and a risk screening analysis has been performed.

Diesel PM10 emissions operating 50 hrs/yr

<u>Application #</u>	<u>Source #</u>	<u>Emission Rate Toxic Pollutant (lb/yr)</u>	<u>Risk Screening Trigger (lb/yr)</u>
17149	S-55 abated by A-55	1.60	0.58

With diesel PM10 emissions of 0.0097 g/bhp-hr, S-55 abated by A-55 meets the District's TBACT standards for compression ignition internal combustion engines. To meet the District's TBACT level, diesel PM10 emissions must be less than or equal to 0.15 g/bhp-hr. The maximum cancer risk for the project is 1.3 chances in a million for nearby workers, 0.63 chances in a million for nearby residents, and 0.12 chances in a million for nearby students. The chronic hazard index is well below 1.0 for workers, residents, and students. In accordance with the District's Regulation 2-5, these risk levels are considered acceptable (see attached memo from Toxics Group, January 14, 2007).

STATEMENT OF COMPLIANCE

The owner/operator of S-55 Emergency Diesel Generator abated by A-55 Catalyzed Diesel Particulate Filter shall comply with Reg. 6 (Particulate Matter and Visible Emissions Standards) and Reg. 9-1-301 (Inorganic Gaseous Pollutants: Sulfur Dioxide for Limitations on Ground Level Concentrations). Ultra low sulfur diesel (0.0015wt%) will be used to meet the sulfur limitation of 0.5wt% in Reg. 9-1-304. Because S-55 abated by A-55 is used only for emergencies, Reg. 9-8-110 (Inorganic Gaseous Pollutants: Nitrogen Oxides from Stationary Gas Turbines) exempts the requirements for emission limits of Sections 9-8-301, 302, and 502. The engine may operate for up to 50 hours for maintenance and reliability testing, which is less than the 100 hours allowed by Regulation 9-8-330. Allowable operating hours and the corresponding record keeping will be included in the Permit Conditions.

CARB Stationary Diesel Engine ATCM

The State Office of Administrative Law approved the Airborne Toxic Control Measure (ATCM) on November 8, 2004. State law requires the local Air Districts to implement and enforce the requirements of the ATCM. Effective January 1, 2005, there is a prohibition on the operation of new diesel emergency standby engines unless the following operating requirements and emission standards are met:

“Stationary Diesel Engine ATCM”, section 93115, title 17, CA Code of Regulations.

Diesel PM – General Requirements

1. Meet 0.15 g/bhp-hr PM standard
2. Operate 50 hours per year, or less, for maintenance and testing (except emergency use and emissions testing)

HC, NO_x, NMHC+NO_x, CO

1. Meet standards for off-road engines of the same model year and horsepower rating as specified in the OFF-Road Compression Ignition Engine Standards; or if no standards have been established
2. Meet the Tier 1 standards in Title 13, CCR, Section 2423 for off-road engines of the same horsepower rating, irrespective of the new engine's model year

The emergency diesel generator complies with the above ATCM requirements. The diesel engine will operate for no more than 50 hours per year for maintenance and reliability testing. The engine is subject to the EPA Tier 1 requirements for HC, NO_x, NMHC+NO_x and CO. As shown in the table below, the engine meets these requirements.

	S-55 CARB Certified Emissions abated by A-55 g/bhp-hr	ATCM Tier 1 g/bhp-hr
HC (POC)	0.0213	0.97
NO _x	4.038	6.86
CO	0.1193	8.5
PM	0.0097	0.40

The project is considered to be ministerial under the District's CEQA regulation 2-1-311 and therefore is not subject to CEQA review. The engineering review for this project requires only the application of standard permit conditions and standard emissions factors and therefore is not discretionary as defined by CEQA. (Permit Handbook Chapter 3.1 for Internal Combustion Engines)

The project is within 1000 feet of Pacific Rim School (K-6th Grade) and is therefore subject to the public notification requirements of Reg. 2-1-412. A public notice will be prepared and sent to:

All addresses within 1000 feet of the emergency generator
Parents and guardians of students at the Pacific Rim School.

All comments received during the 30-day comment period will be addressed.

Best Available Control Technology: In accordance with Regulation 2, Rule 2, Section 301, BACT is triggered for any new or modified source with the potential to emit 10 pounds or more per highest day of POC, NPOC, NO_x, CO, SO₂ or PM₁₀.

Based on the emission calculations above, the owner/operator is subject to BACT for the following pollutant: NO_x. BACT 1 levels do not apply for 'engines used exclusively for emergency use during involuntary loss of power' as per Reference b, Document 96.1.2 of the BAAQMD BACT Guidelines for IC Engines.

For S-55 abated by A-55, the owner/operator satisfies BACT 2 for NO_x since the engine emissions of 4.038 g/bhp-hr of NO_x are less than the BACT standard of 6.90 g/bhp-hr for NO_x. Although not required, the owner/operator satisfies BACT 2 for CO and POC since the engine emissions of 0.1193 g/bhp-hr of CO and 0.0213 g/bhp-hr of POC are less than the standard of 2.75 g/bhp-hr of CO and 1.50 g/bhp-hr of

POC. The owner/operator meets the BACT 2 standards for PM10 and SO2 since California Diesel Fuel of <0.0015% by weight sulfur will be used.

	S-55 CARB Certified Emissions Abated by A-55 g/bhp-hr	BACT 2 g/bhp-hr
POC	0.0213	1.5
NOx	4.038	6.90
CO	0.1193	2.75

Offsets: Offsets must be provided for any new or modified source at a facility that emits more than 10 tons/yr of POC or NOx per Regulation 2-2-302. The District may provide offsets from the Small Facility Banking Account for a facility with emissions between 10 and 35 tons/yr of POC or NOx, provided that facility has no available offsets. Based on the emission calculations above, offsets of POC are required from the Small Facility Banking Account for this application.

PSD, NSPS, and NESHAPS do not apply.

PERMIT CONDITIONS

In addition to the standard permit condition for emergency standby engines (Permit Condition 22850), Novartis will also be subject to permit condition #23900 to ensure that ultra low sulfur diesel will be used at S-55 abated by A-55.

Permit Condition #23900
 Application 17149 (February 2008)

S-55 Emergency Generator, Building F: Caterpillar SR4B with Diesel Engine: Caterpillar Model C32 TA, 1502 BHP abated by A-55 Harco Catalyzed Diesel Particulate Filter

- 1) The owner/operator shall fire S-55 abated by A-55 with ultra low sulfur diesel (0.0015wt%). (basis: cumulative increase, toxics)

COND# 22850 -----

1. The owner/operator shall not exceed 50 hours per year per engine for reliability-related testing. [Basis: "Stationary Diesel Engine ATCM" section 93115, title 17, CA Code of Regulations, subsection (e)(2)(A)(3) or (e)(2)(B)(3)]
2. The owner/operator shall operate each emergency standby engine only for the following purposes: to mitigate emergency conditions, for emission testing to demonstrate compliance with a District, State or Federal emission limit, or for reliability-related activities (maintenance and other testing, but excluding emission testing). Operating while mitigating emergency conditions or while emission testing to show compliance with District, State or Federal emission limits is not limited. [Basis: "Stationary Diesel Engine ATCM" section 93115, title 17, CA Code of Regulations, subsection (e)(2)(A)(3) or (e)(2)(B)(3)]

3. The owner/operator shall operate each emergency standby engine only when a non-resettable totalizing meter (with a minimum display capability of 9,999 hours) that measures the hours of operation for the engine is installed, operated and properly maintained.

[Basis: "Stationary Diesel Engine ATCM" section 93115, title 17, CA Code of Regulations, subsection(e)(4)(G)(1)]

4. Records: The owner/operator shall maintain the following monthly records in a District-approved log for at least 36 months from the date of entry (60 months if the facility has been issued a Title V Major Facility Review Permit or a Synthetic Minor Operating Permit). Log entries shall be retained on-site, either at a central location or at the engine's location, and made immediately available to the District staff upon request.

- a. Hours of operation for reliability-related activities (maintenance and testing).
- b. Hours of operation for emission testing to show compliance with emission limits.
- c. Hours of operation (emergency).
- d. For each emergency, the nature of the emergency condition.
- e. Fuel usage for each engine(s).

[Basis: "Stationary Diesel Engine ATCM" section 93115, title 17, CA Code of Regulations, subsection (e)(4)(I), (or, Regulation 2-6-501)]

5. At School and Near-School Operation:

If the emergency standby engine is located on school grounds or within 500 feet of any school grounds, the following requirements shall apply:

The owner/operator shall not operate each stationary emergency standby diesel-fueled engine for non-emergency use, including maintenance and testing, during the following periods:

- a. Whenever there is a school sponsored activity (if the engine is located on school grounds)
- b. Between 7:30 a.m. and 3:30 p.m. on days when school is in session. "School" or "School Grounds" means any public or private school used for the purposes of the education of more than 12 children in kindergarten or any of grades 1 to 12, inclusive, but does not include any private school in which education is primarily conducted in a private home(s). "School" or "School Grounds" includes any building or structure, playground, athletic field, or other areas of school property but does not include unimproved school property.

[Basis: "Stationary Diesel Engine ATCM" section 93115, title 17, CA Code of Regulations, subsection (e)(2)(A)(1)] or (e)(2)(B)(2)]

RECOMMENDATION

Issue an Authority to Construct to Novartis Vaccines and Diagnostics, Inc. for the following source:

S-55 Emergency Generator, Building F: Caterpillar SR4B with Diesel Engine: Caterpillar Model C32 TA, 1502 BHP abated by A-55 Harco Catalyzed Diesel Particulate Filter

EXEMPTIONS

None

By: _____

Pamela J. Leong
Air Quality Engineer II
February 6, 2008