

DRAFT

**ENGINEERING EVALUATION
Peninsula Eye Surgery Center
Application #12924 - Plant #17145
1128 W El Camino Real
Mountain View, CA**

I. BACKGROUND

Peninsula Eye Surgery Center is proposing to install a new emergency generator. The facility is requesting permitting for the following source:

S-1 Emergency Generator, Cummins 80 DGDA, Cummins Engine Model 6BTA5.9-G4; 170 BHP; 20.9 hours annually

II. EMISSION CALCULATIONS

Emission factors provided by Perkins met BACT(2) for IC Engines. Thus, NO_x, CO, PM-10 and POC emissions are based on Manufacturer factors.

	<u>Manufacturer</u>	<u>BACT(2)</u>
NO _x	6.9 g/bhp-hr	6.9 g/bhp-hr
CO	0.82 g/bhp-hr	2.75 g/bhp-hr
POC	1.5 g/bhp-hr	1.5 g/bhp-hr
PM10-diesel	0.142 g/bhp-hr	0.15 g/bhp-hr
*SO ₂	0.184 g/hp-hr	

**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.*

$$SO_2 \quad 8.09E-3 (\% S \text{ in fuel oil}) \text{ lb/hp-hr} = 8.09E-3 (0.05\% S) (454 \text{ g/lb}) = 0.184 \text{ g/hp-hr}$$

Hours of Operation = 20.9 hr/yr

Diesel Heat Capacity = 19,300 BTU/lb

Fuel Consumption = 14.6 gal/hr

Estimated Fuel Usage = 14.6 gal/hr X 20.9 hr/yr = 730 gal/yr.

Heat Input = 14.6 gal/hr X 7.1 lb/gal X 19,300 Btu/lb = 2.001E6 Btu/hr

Emissions from S-1:

$$NO_x = 6.9 \text{ g/bhp-hr} (170 \text{ hp})(1 \text{ lb}/454 \text{ g})(20.9 \text{ hr/yr}) = 54.0 \text{ lb/yr or } 0.0270 \text{ TPY}$$

$$CO = 0.82 \text{ g/bhp-hr} (170 \text{ hp})(1 \text{ lb}/454 \text{ g})(20.9 \text{ hr/yr}) = 6.42 \text{ lb/yr or } 0.0032 \text{ TPY}$$

$$POC = 1.5 \text{ g/bhp-hr} (170 \text{ hp})(1 \text{ lb}/454 \text{ g})(20.9 \text{ hr/yr}) = 11.74 \text{ lb/yr or } 0.0059 \text{ TPY}$$

$$PM_{10} = 0.142 \text{ g/bhp-hr} (170 \text{ hp})(1 \text{ lb}/454 \text{ g})(20.9 \text{ hr/yr}) = 1.11 \text{ lb/yr or } 0.0006 \text{ TPY}$$

$$SO_2 = 0.184 \text{ g/bhp-hr}(170 \text{ hp})(1 \text{ lb}/454\text{g})(20.9 \text{ hr/yr}) = 1.44 \text{ lb/yr or } 0.0007 \text{ TPY}$$

III. PLANT CUMULATIVE INCREASE AFTER 4/5/91

	<u>Current</u> <u>Ton/yr</u>	<u>New</u> <u>Ton/yr</u>	<u>New Total</u> <u>Lbs/yr</u>	<u>Tons/yr</u>
POC =	0.00	0.0059	11.74	0.0059
NO _x =	0.00	0.0270	54.00	0.0270
SO ₂ =	0.00	0.0007	1.44	0.0007
CO =	0.00	0.0032	6.42	0.0032
NPOC =	0.00	0.0000	0.00	0.0000
TSP =	0.00	0.0006	1.11	0.0006
PM ₁₀ =	0.00	0.0006	1.11	0.0006

IV. TOXIC SCREENING ANALYSIS

This application is subject to a toxic review because the source triggers a Toxics Risk Screening. The facility does have diesel particulate emissions greater than the toxic trigger level. Results from the health risk screening analysis show that for 20.9 hours of operation per year excluding periods when operation is required due to emergency conditions, the maximum cancer risk is 10 in a million when the analysis was performed at a PM₁₀ emission 1.108 lb/year. In accordance with the District’s Risk Management Policy, this risk level is considered acceptable.

<u>Toxic Pollutant Emitted</u>	<u>Emission Rate (lb/yr)</u>	<u>Risk Screening Trigger (lb/yr)</u>
PM 10 (Diesel Particulate)	1.108	0.58

The ISCST3 computer model with Moffet Field NAS meteorological data was used to estimate annual average ambient air concentrations. Stack and building parameters for the analysis were based on information provided by the applicant. Estimates of residential risk assume exposure to annual average TAC concentrations occur 24 hours per day, 350 days per year, for a 70-year lifetime. Risk estimates for offsite workers assume exposure occurs 8 hours per day, 245 day per year, for 40 years. Risk estimates for students assume a higher breathing rate, and exposure is assumed to occur 10 hours per day, 36 weeks per year, for 9 years

V. BEST AVAILABLE CONTROL TECHNOLOGY

S-1 from this facility triggers BACT since the emission rate of NOx from this source is greater than 10 pounds of emission per highest day per source per Regulation 2-2-301. Emissions for PM-10 do not trigger BACT since emissions are not greater than 10 lbsm/day. The use of a Selective Catalyst Unit to meet BACT(1) is not required because it is not cost effective for emergency generators on a standby basis. Sources S-1 will comply with BACT(2) because it is conditioned to demonstrate compliance with BACT(2) for CO, NOX, and POC. BACT is not triggered for PM, CO and POC.

VI. OFFSETS

Offsets are not required since the facility's emissions are much less than 10 tons/yr per Regulation 2-2-302.

VII. STATEMENT OF COMPLIANCE

S-1 will be operated as emergency standby engines and therefore are not subject to the emission rate limits in Regulation 9, Rule 8 ("NOx and CO from Stationary Internal Combustion Engines"). S-1 is subject to the monitoring and record keeping requirements of Regulation 9-8-530 and the SO2 limitations of 9-1-301 (ground-level concentration) and 9-1-304 (0.5% by weight in fuel). Regulation 9-8-530 requirements are incorporated into the proposed permit conditions. Compliance with Regulation 9-1 is expected since diesel fuel with a 0.05% by weight sulfur is mandated for use in California. Like all sources, S-1 is subject to Regulation 6 ("Particulate and Visible Emissions"). These engines are not expected to produce visible emissions or fallout in violation of this regulation and they will be assumed to be in compliance with Regulation 6 pending a regular inspection. Source S-1 is subject to and

expected to be in compliance with the requirements of District Regulation 1-301 “Public Nuisance”.

This diesel engine is subject to the Stationary Diesel Engine Air Toxics Control Measure (ATCM) and is considered a new stationary emergency standby diesel engine since it will be installed after January 1, 2005 and is larger than 50 HP. The requirements of the ATCM will be include in the permit conditions.

This 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 emission factors in accordance with Permit Handbook Chapter 2.3.

The project is within 1000 feet from the nearest school and therefore subject to the public notification requirements of Reg. 2-1-412.

Offsets, PSD, NSPS, and NESHAPS are not triggered.

VIII. CONDITIONS

S-1 Emergency Generator, Cummins 80 DGDA, Cummins Engine Model 6BTA5.9-G4; 170 BHP; 20.9 hours annually

1. Hours of Operation: The owner/operator shall operate the emergency standby engine(s) only to mitigate emergency conditions or for reliability-related activities. Operating while mitigating emergency conditions is unlimited. Operating for reliability-related activities is limited to 20.9 hours per any calendar year. [Basis: ATCM]

“Emergency Conditions” is defined as any of the following:

- a. Loss of regular natural gas supply.
- b. Failure of regular electric power supply.
- c. Flood mitigation.
- d. Sewage overflow mitigation.
- e. Fire.
- f. Failure of a primary motor, but only for such time as needed to repair or replace the primary motor. [Basis: Regulation 9-8-231]

“Reliability-related activities” is defined as any of the following:

- a. Operation of an emergency standby engine to test its ability to perform for an emergency use, or
- b. Operation of an emergency standby engine during maintenance of a primary motor. [Basis: Regulation 9-8-232]

2. The owner/operator shall equip the emergency standby engine(s) with either:
 - a. a non-resettable totalizing meter that measures the hours of operation for the engine; or
 - b. a non-resettable fuel usage meter, the maximum hourly fuel rate shall be used to convert fuel usage to hours of operation. [Basis: Regulation 9-8-530]
3. Records: The owner/operator shall maintain the following monthly records in a District-approved log for at least 2 years and shall make the log available for District inspection upon request:
 - a. Hours of operation (total).
 - b. Hours of operation (emergency).

- c. For each emergency, the nature of the emergency condition.
 - d. Fuel usage for engine(s) if a non-resettable fuel usage meter is utilized.
- [Basis: Regulations 9-8-530 and 1-441]

IX. RECOMMENDATION

Recommend that an A/C be issued for the following equipment:

- S-1 Emergency Generator, Cummins 80 DGDA, Cummins Engine Model 6BTA5.9-G4; 170 BHP; 20.9 hours annually**

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