

**DRAFT ENGINEERING EVALUATION**  
**San Francisco Surgery**  
**450 Sutter St., San Francisco 94108**  
**Application: 24947**  
**Plant: 21641**

**1. BACKGROUND**

**San Francisco Surgery** has applied to obtain a Permit to Operate for the following equipment:

**S1 Emergency Standby Diesel Generator;**  
**John Deere/Kohler; Model: PE4045TFI; Model Year: 2003;**  
**99 BHP; Family Name: 3JDXL06.8014; 0.804 MMbtu/hr**

abated by:

**A1, Diesel Particulate Filter, Miratech Emissions Solutions, CombiKat CBS Particulate Trap**

The engine was installed in September of 2004. Late fees and back fees have been charged.

When the application was submitted, on October 12, 2012, the engine did not comply with the TBACT requirement for diesel particulate for emergency engines, which is a PM emission rate of 0.15 g/bhp-hr or less. The applicant proposed the abatement device listed above, which will reduce the PM emission rate from 0.21 g/bhp-hr to 0.03 g/bhp-hr. After installation of the diesel particulate filter, the engine will comply with TBACT.

Public notice pursuant to BAAQMD Regulation 2-1-412 is required because the engine is within 1,000 feet of the following public school: Notre Dame des Victoires.

The engine meets the Environmental Protection Agency and California Air Resources Board (EPA/CARB) Tier 2 Off-road standard. The engine will burn commercially available California low sulfur diesel fuel. The sulfur content of the diesel fuel will not exceed 0.0015% by weight.

**2. EMISSIONS**

S-1 has been certified by EPA to be a cleaner burning engine. Except for SO<sub>2</sub>, the emission factors for the engine are from the EPA certification test results. The SO<sub>2</sub> emissions were calculated based on the maximum allowable sulfur content (0.0015 wt% S) of the diesel fuel with assumption that all of the sulfur present will be converted to SO<sub>2</sub> during the combustion process.

Basis:

99 hp output rating

50 hr/yr operation for testing and maintenance

6 gallons/hr max fuel use rate

NMHC, NO<sub>x</sub>, CO and PM<sub>10</sub> emission factors provided by the EPA certification test results

SO<sub>2</sub> emissions are quantified based on the full conversion of 0.0015 wt% (~ 15 ppm) sulfur in the ULS diesel fuel. The SO<sub>2</sub> emission factor was derived from EPA AP-42, Table 3.4-1.

**Emissions:**

Annual emissions are calculated based on 50 hours per year of operation for testing and maintenance.

Emissions before Abatement

Pollutant	Emission Factor (g/kw-hr)	Emission Factor (g/hp-hr)	Annual Emissions (lb/yr)	Annual Emissions (TPY)	Max. Daily (lb/day)
NO <sub>x</sub>	7.3	5.45	59.43	0.030	28.53
POC	0.37	0.28	3.01	0.002	1.45
CO	0.87	0.65	7.08	0.004	3.40
PM <sub>10</sub>	0.276	0.21	2.25	0.001	1.08
SO <sub>2</sub> *		1.27E-5	neg	neg	neg

\*From Table 3.4-1 of AP-42: 0.001515 lb SO<sub>2</sub>/MMBTU with 15 ppm ULSD

Emissions of Particulate after Abatement

Pollutant	Emission Factor (g/kw-hr)	Emission Factor (g/hp-hr)	Annual Emissions (lb/yr)	Annual Emissions (TPY)	Max. Daily (lb/day)
PM <sub>10</sub>	0.041	0.03	0.34	0.000	0.16

### **3. PLANT CUMULATIVE INCREASE AND OFFSETS**

Following is a summary of the cumulative increase in criteria pollutant emissions that will result from the operation of S-1.

Pollutant	Annual Emissions (TPY)
NO <sub>x</sub>	0.030
POC	0.002
CO	0.004

Offsets must be provided for any new or modified source at a facility that emits more than 10 tons/yr of POC or NO<sub>x</sub> per Regulation 2-2-302. The engine is not subject to offsets.

### **4. TOXIC RISK SCREENING ANALYSIS**

This application requires a Toxics Risk Screen because the diesel particulate emissions are at the toxic trigger level. This level reflects the use of the diesel particulate filter.

Toxic Pollutant Emitted	Emission Rate (lb/yr)	Risk Screening Trigger (lb/yr)
PM <sub>10</sub> (Diesel Particulate)	0.34	0.34

S-1 will meet Best Available Control Technology for toxics (TBACT) since the diesel particulate emissions will be 0.03 g/bhp-hr after abatement. An engine that meets the TBACT requirement must also pass the toxic risk screening level of less than ten in a million. An engine that does not meet the TBACT requirement must pass the toxic risk screening level of less than one in a million.

Estimates of residential risk assume exposure to annual average toxic air contaminant 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 days 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.

Based on 50 hours per year of operation, the emergency generator passed the Health Risk Screening Analysis (HRSA) conducted on September 4, 2013 by the District's Toxics Evaluation Section. The source poses no significant toxic risk, since the increased cancer risk to the maximally exposed receptor (resident) is 0.11 in a million with a hazard index of 0.000035. The increased cancer risk to the workers near the project is 0.052 in a million with a hazard index of 0.000037. The increased cancer risk

to students is 0.012 in a million with a hazard index of 0.00001. In accordance with the District's Regulation 2, Rule 5, this risk level is considered acceptable and the engine is not subject to TBACT, although it does meet the TBACT standard of 0.15 g PM/bhp-hr.

## **5. BACT**

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<sub>x</sub>, CO, SO<sub>2</sub> or PM<sub>10</sub>. The engine is subject to BACT for NO<sub>x</sub> because the maximum NO<sub>x</sub> emissions will be 28.5 lb/day.

The engine met BACT when it was installed in 2003. At that time, BACT for NO<sub>x</sub> for emergency generators was an emission factor of 6.9 g/bhp-hr. Since the emission factor for NO<sub>x</sub> is 5.45 g/bhp-hr, the engine meets BACT.

## **6. STATEMENT OF COMPLIANCE** **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.

Section 93115.5 contains fuel requirements for diesel. The facility will comply because the diesel sold in California complies with the requirements.

Section 93115.6(b)(2)(B) of the ATCM restricts use of engines during school hours if an engine is located within 500 feet of school grounds. This engine is located about 725 feet of school grounds, so they are not restricted during school hours at this time. Nonetheless, the standard condition includes the prohibition. If a school locates within 500 feet of the engine in the future, the prohibition will apply.

Section 93115.6(b)(3) of the ATCM allows in-use engines to be operated for testing and maintenance for 50 hr/yr if the particulate emissions are between 0.01 and 0.15 g/bhp-hr. The engine will meet this requirement after installation of the DPF diesel particulate filter. Section 93115.4(a)(41) defines an "In-use" engine as an engine that is not "new." Section 93115.4(a)(50) defines a "new" engine as an engine that is installed after January 1, 2005. Therefore, this engine is defined as an "in-use" engine for the purposes of the ATCM.

The engine will comply with the ATCM after installation of the DPF diesel particulate filter. A permit condition requiring installation of the filter and Standard Condition 22850 will be imposed on the engine.

S-1 will be operated as an emergency standby engine and therefore is not subject to the emission rate limits in Regulation 9, Rule 8 ("NO<sub>x</sub> and CO from Stationary Internal Combustion Engines"). S-1 is exempt from the requirements of Sections 9-8-301

through 305, 501 and 503 per Reg. 9-8-110.5 (Emergency Standby Engines). S-1 is subject to and expected to comply with 9-8-330 (Emergency Standby Engines, Hours of Operation) since non-emergency hours of operation will be limited in the permit conditions to 50 hours per year. S-1 is also subject to and expected to comply with monitoring and record keeping requirements of Regulation 9-8-530 and the SO<sub>2</sub> 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, Rule 1 is very likely since diesel fuel with a 0.0015% by weight sulfur is mandated for use in California.

Like all combustion sources, S-1 is subject to Regulation 6, Rule 1 ("Particulate Matter"). Regulation 6-1-303.1 limits opacity from internal combustion engines to Ringelmann 2. This engine is not expected to produce visible emissions or fallout in violation of this regulation and will be assumed to be in compliance with Regulation 6-1.

### **CEQA**

This application is considered to be ministerial under the District's Regulation 2-1-311 because it was analyzed in accordance with Permit Handbook Chapter 2.3.1. Therefore, it is not subject to CEQA review.

### **PUBLIC NOTICE**

This facility is within 1,000 feet of a school and therefore is subject to the public notification requirements of Regulation 2-1-412.

### **NSPS**

The engine is not subject to 40 CFR 60, Subpart IIII, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines because Section 60.4200(a)(2), states that it applies to operators of engines manufactured after April 1, 2006.

### **NESHAPS**

This engine is not subject to the emission or operating limitations in 40 CFR 63, Subpart ZZZZ, National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines, because Section 63.6590(b) exempts existing institutional emergency stationary RICE located at an area source of HAP emissions.

Section 63.6675 defines institutional RICE (reciprocating internal combustion engine) as: "...an emergency stationary RICE used in institutional establishments such as medical centers, nursing homes, research centers, institutions of higher education, correctional facilities, elementary and secondary schools, libraries, religious establishments, police stations, and fire stations." The Surgery Center is like a medical center, so the engine will be considered to be an institutional RICE.

**PSD**

PSD is not triggered.

**PERMIT CONDITIONS**

Condition #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)]

**Condition #25628:**

1. Within 60 days of issuance of the Authority to Construct pursuant to Application 24947, the owner/operator of S1, Emergency Standby Diesel Generator Set, shall install A1, Diesel Particulate Filter. [Regulation 2, Rule 5]
2. After installation of A1, Diesel Particulate Filter, the owner/operator shall ensure that S1, Emergency Standby Diesel Generator Set, is abated at all times of operation by A1, Diesel Particulate Filter.
2. The owner/operator shall operate S1, Emergency Standby Diesel Generator, and A1, Diesel Particulate Filter, in accordance with the CARB Executive Order DE-05-006-03. [Basis: "Stationary Diesel Engine ATCM" section 93115.6, title 17, CA Code of Regulations, subsection (b)(3), Table 3; CARB Executive Order DE-05-006-03; Regulation 2, Rule 5]

**RECOMMENDATION**

The District has reviewed the material contained in the permit application for the proposed project and has made a preliminary determination that the project is expected to comply with all applicable requirements of District, state, and federal air quality-related regulations. The preliminary recommendation is to issue an Authority to Construct for the equipment listed below. However, the proposed source will be located within 1000 feet of a school, which triggers the public notification requirements of

District Regulation 2-1-412.6. After the comments are received and reviewed, the District will make a final determination on the permit.

I recommend that the District initiate a public notice and consider any comments received prior to taking any final action on issuance of an Authority to Construct for the following source and the following abatement device:

- S1    Emergency Standby Diesel Generator Set;  
John Deere/Kohler; Model: PE4045TFI; Model Year: 2003;  
99 BHP; Family Name: 3JDXL06.8014; 0.804 MMbtu/hr**
  
- A1,   Diesel Particulate Filter, Miratech Emissions Solutions, CombiKat  
CBS Particulate Trap**

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