DRAFT ENGINEERING EVALUATION
MLD-ADVANCED MEDIA
PLANT 23345
APPLICATION 27614

BACKGROUND

MLD-Advanced Media is applying for an Authority to Construct and/or Permit to Operate a new emergency standby generator.

S-1 Emergency Standby Generator Set: Diesel Engine, Make Caterpillar, Model C9, Model Year 2015, Rated 480 BHP; Abated by A-1, Diesel Particulate Filter: Rypos, RH400 Series EL-C

The engine will be within 1000 feet of the property boundary of Eagleswell Primary School (600 ft) and Bessie Carmichael Elementary School (880 ft). Thus, MLT-Advanced Media is subject to the public notice requirements in the District Regulation 2-1-412.

EMISSIONS SUMMARY

Annual and Maximum Daily Emissions:
Basis:
- 480 brake horsepower (bhp) output rating for full-load, standby operation for each engine
- 50 hours/year/engine operation for reliability-related activities
- The engine of S-1 has an EPA Engine Family Name FCPXL08.8NZS, and is certified to meet the EPA Tier 3. Emission factors were calculated using the manufacturer's emission testing data submitted to EPA for certification.
- 90% total PM reduction was assumed. 85% PM reduction based on the CARB Executive Order DE-07-001-05 and 5% credit was added for the use of ultra low sulfur diesel.

Pollutant	Emission Factor (g/bhp-hr)
NOx	2.55
CO	0.97
POC	0.18
PM_{10}	0.01

The emission factor for SO_2 is from Chapter 3, Table 3.4-1 of the EPA Document AP-42, Compilation of Air Pollutant Emission Factors, which is based on full conversion of fuel sulfur to SO_2 and which will therefore be considered applicable to any diesel engine (sulfur content will be assumed to be the California limit of 0.0015 wt% sulfur):

SO_2: 8.09E-3 (% S in fuel oil) lb/hp-hr = 8.09E-3 (0.0015% S) (454 g/lb)
= 0.0055 g/hp-hr

Daily emissions are calculated to establish whether a source triggers the requirement for Best Available Control Technology (10 lb/highest day total source emissions for any class of pollutants). A full 24-hour day will be assumed since no daily limits are imposed on intermittent and unexpected operations. Annual and maximum daily emissions for S-1 are presented in Table 1.

Table 1 – Annual and Maximum Daily Emissions for S-1

Source	Operating Hours (hr/yr)	Max Rated Output (bhp)	Fuel Use Rate (gal/hr)	Fuel Use Rate (MMBTU/hr)	Pollutant	Emission Factors (g/bhp-hr)	Max Daily Emissions (lb/day)	Annual Emissions (lb/yr)	Annual Emissions (TPY)
S-1	50	480	22.7	3.04	NO_x	2.55	64.76	134.92	0.067
					CO	0.97	24.62	51.29	0.026
					POC	0.18	4.54	9.47	0.005
					PM_{10}	0.01	0.27	0.55	0.000
					SO_2	0.0055	0.14	0.29	0.000

PLANT CUMULATIVE INCREASE

The cumulative increase for MLD-Advanced Media is presented in Table 2.

Table 2 – Cumulative Increase for MLD-Advanced Media (Plant #23345)

Pollutant	Current (TPY)	Application Increase (TPY)	New Total (TPY)
NOx	0.000	0.067	0.067
CO	0.000	0.026	0.026
POC	0.000	0.005	0.005
PM_{10}	0.000	0.000	0.000
SO2	0.000	0.000	0.000

HEALTH RISK SCREENING ANALYSIS (HRSA)

The calculated emissions increase of diesel exhaust particulate matter (PM) associated with the engine are in excess of the chronic risk screening trigger as set forth in Regulation 2, Rule 5 as shown below.

Source	Uncontrolled PM_{10} Emission Factor (g/bhp-hr)	HP	Annual Usage (Hours/year)	Diesel Exhaust Particulate Emissions (lb/year):	Trigger Level (lb/yr)
S-1	0.10	480	50	0.55	0.34

S-1 meets Best Available Control Technology for toxics (TBACT) since the diesel particulate emissions are less than 0.15 g/bhp-hr. For a project with engines that meet the TBACT requirement, it must also pass the toxic risk screening level of less than 10 in one million for cancer risk, 1 for chronic hazard index, and 1 for acute hazard index. 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 set passed the Health Risk Screening Analysis (HRSA) conducted on June 3, 2016 by the District's Toxic Evaluation Section. The increased cancer risk to the maximally exposed receptor (residents) is 1.9 in a million unabated. With the abatement control efficiency of 90% applied, the increased cancer risk to the maximally exposed receptor is 0.2 in a million. In accordance with the District's Regulation 2-5, this risk level is considered acceptable, as it has been determined that S-1 meets the current TBACT standards.

STATEMENT OF COMPLIANCE

The owner/operator of S-1 shall comply with Regulation 6-1 (Particulate Matter and Visible Emissions Standards) and Regulation 9-1-301 (Inorganic Gaseous Pollutants: Sulfur Dioxide for Limitations on Ground Level Concentrations). Since the engine meets TBACT for PM_{10} (=<0.15 g/hp-hr), it is expected to comply with Regulation 6-1. Ultra-low sulfur diesel (15 PPM sulfur) will be used to meet the sulfur limitation of 0.5 wt% in Regulation 9-1-304 as well as to minimize PM_{10} emissions. Because S-1 is an emergency standby generator, Regulation 9-8-110 (Inorganic Gaseous Pollutants: Nitrogen Oxides and Carbon Monoxide from Stationary Internal Combustion Engines) exempts the engines from the emission limits in Sections 9-8-301 through 305. Allowable operating hours and the corresponding record keeping in Regulation 9-8-330 and 530 will be included in the permit conditions.

The diesel engine is subject to the Stationary Diesel Airborne Toxics Control Measure (ATCM) and is considered 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 included in the permit conditions.

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 outlined in the Permit Handbook Chapter 2.3.1 and therefore is not discretionary as defined by CEQA.

The project is within 1000 feet from the nearest school and therefore is subject to the public notification requirements of Reg. 2-1-412. Notifications will be distributed to parents or guardians of children enrolled at Eagleswell Primary School and Bessie

Carmichael Elementary School within ¼ mile, and all residential and business neighbors within 1,000 feet of the proposed new source.

Best Available Control Technology (BACT):
In accordance with Regulation 2-2-301, BACT is triggered for any new or modified source with the potential to emit 10 pounds or more per highest day of POC, NPOC, NOx, CO, SO_2 or PM_{10}.

Based on the emission calculations above, the owner/operator of S-1 is subject to BACT for NOx, CO, and POC. The District's BACT requirements for "IC Engine - Compression Ignition: Stationary Emergency > 50 bhp" are addressed in the BACT Guideline, document # 96.1.3, revision 7, dated December 22, 2010. The BACT2 requirements are 3.0 g/bhp-hr for NMHC+NO_x, 2.6 g/bhp-hr for CO, and 0.15 g/bhp-hr for PM for engines with maximum power between 300 and 600 HP. According to the emission data in the EPA database for the engine family for S-1, S-1 meets the BACT2 requirements.

Offsets:
Offsets must be provided for any new or modified source at a facility that emits more than 10 tons per year of POC or NOx. Since the facility's permitted emissions are less than 10 tons per year of POC or NOx, offset is not required.

New Source Performance Standards (NSPS):
The engine is subject to 40 CFR 60, Subpart IIII, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines because it was manufactured after April 1, 2006, as required by Section 60.4200(a)(2)(i).

The engine has a total displacement of 8.8 liters and 6 cylinders. Therefore, each cylinder has a volume of less than 10 liters. The engine is a 2015 engine and is not a fire pump. Section 60.4205(b) requires these engines to comply with the standards in Section 60.4202 that apply to the same model year and maximum engine power. For engines above 50 hp, below 3000 hp, and that have a displacement less than 10 liters per cylinder, the requirement is to comply with the certification standards in 40 CFR 89.112 and 89.113 for all pollutants.

For engines between 300 and 600 hp, the standards in Section 89.112 are:

- NMHC + NOX: 3.0 g/hp-hr
- CO: 2.6 g/hp-hr
- PM: 0.15 g/hp-hr

Section 89.113 states that the exhaust opacity must not exceed:

- 20 percent during acceleration
- 15 percent during lugging
- 50 percent during peaks in acceleration or lugging modes

Since the engine has been certified by EPA, it will comply with the above standards.

The owner/operator is expected to comply with Sections 60.4206 and 60.4211(a), which require that the owner/operator operate and maintain the engine according to the manufacturer's written instructions or procedures developed by the owner or operator that are approved by the engine manufacturer, over the entire life of the engine.

Section 60.4209(a) requires a non-resettable hour meter. This requirement is already in the standard permit conditions.

The engine will comply with the requirement in Section 60.4211(e) to run for less than 100 hours per year for maintenance checks and readiness testing, and the prohibition of running for any reason other than emergency operation, maintenance, and testing because the facility is limited by permit condition to 50 hours per year for reliability testing and otherwise may only operate for emergencies.

The owner/operator is not required to perform tests in accordance with Section 60.4212 or 60.4213.

Section 60.4214 states that owner/operator does not have to submit an initial notification to EPA for emergency engines.

Because the engine has a diesel particulate filter, it is expected to comply with Section 60.4214(c).

The owner/operator is required to comply with certain sections of 40 CFR 60, Subpart A, General Provisions.

Prevention of Significant Deterioration (PSD):
The emission increase resulting from this project is expected to be less than 1 TPY for any class of pollutants. Since it is far below the PSD thresholds, the project is not subject to PSD review.

National Emission Standards for Hazardous Air Pollutants (NESHAP)
The engine is 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 it is a new engine at an area source, the engine must meet the requirements in 40 CFR part 60 subpart IIII and no further requirements apply to this engine under this subpart according to §63.6590(c)(1).

PERMIT CONDITIONS

S-1 will be subject to Permit Condition Numbers 22850 and 24354 as shown below.

Permit 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 93115.6 (b)(3)(A)(1)(a)]
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 93115.6 (b)(3)(A)(1)(a)]
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 93115.10 (e)(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 93115.10 (g) (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 93115.6 (b)(2)]

Permit Condition #24354

1. The owner/operator shall abate the particulate emissions from the emergency diesel engine with a Diesel Particulate Filter at all times the engine is in operation.
[Basis: "ATCM for Stationary Compression Ignition Engines" Section 93115.6(a)(3) or 93115.6(b)(3), title 17, CA Code of Regulations]

2. The owner/operator shall install and maintain a backpressure monitor that notifies the owner or operator when the high backpressure limit of the engine is

approached. The owner/operator shall maintain records of any corrective action taken after the backpressure monitor has notified the owner or operator that the high backpressure limit of the engine is approached 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).
[Basis: "ATCM for Stationary Compression Ignition Engines" Section 93115.10(e), title 17, CA Code of Regulations; 40 CFR 60.4214c]

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. 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 the Authority to Construct for the following source:

S-1 Emergency Standby Generator Set: Diesel Engine, Make Caterpillar, Model C9, Model Year 2015, Rated 480 BHP; Abated by A-1, Diesel Particulate Filter: Rypos, RH400 Series EL-C

By:_____ Date:_____

Alexander Sohn
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