

**DRAFT Engineering Evaluation
Genentech, Inc. (Synthetic Minor)
380 DNA Way
South San Francisco, CA 94080
Plant No. 1257
Application No. 31922**

Project Description: Building 38 Emergency Generator

BACKGROUND

Genentech, Inc. is applying for an Authority to Construct (AC) and a Permit to Operate (PO) for the following equipment:

S-150 Emergency Standby Engine Generator Set: Diesel Engine; Make Caterpillar, Model C13, Model Year 2022, Rated 469 bhp (3.49 MMBtu/hr)

Abated by

A-150 Diesel Particulate Filter and Oxidation Catalyst: Make Rypos, Model RH406-L

The stationary emergency diesel engine-generator set will be located at Genentech, Inc. (**Synthetic Minor Operating Permit**), 353 Pt San Bruno, South San Francisco, CA 94080 (**OBC**). The engine will provide support to facility operations during emergencies as defined by Regulation 9-8-231. The engine will be able to operate unrestricted during emergency use events. However, the engine’s annual maintenance and testing hours will be limited in accordance with the California Air Resources Board (CARB) “*Air Toxic Control Measure for Stationary Compression Ignition Engines*” (ATCM) and District regulation 9-8-330.3.

The applicant has submitted supporting documents, which includes manufacturer specifications. Table 1 provides a summary of the information provided by the applicant.

| Table 1. Engine Specifications and Certified Emission Factors for S-150 | | | |
|--|---------------|----------------------------|------------------|
| Engine Manufacturer | Caterpillar | | |
| Model | C13 | | |
| Model Year | 2022 | | |
| Family Name | NCPXL12.5NYS | | |
| Engine Power Rating, hp (kW) | 469 (350) | | |
| Fuel Consumption, gal/hr | 24.9 | | |
| Displacement, L (cu. in.) | 12.5 (763) | | |
| Emissions | Tier 3 | Vendor ¹ | Abatement |
| | g/hp-hr | g/bhp-hr | % Reduction |
| Non-Methane Hydrocarbons (NMHC) | 0.15 | 0.0088 | 0 |
| NO_x | 2.85 | 2.7 | 0 |
| CO | 2.60 | 2.0 | 0 |
| PM | 0.15 | 0.12 | 85 |

¹ After abatement, PM emission factor will reduce to 0.018 g/bhp-hr

EMISSION CALCULATIONS

The criteria pollutants are nitrogen oxides (NO_x), carbon monoxide (CO), precursor organic compounds (POC) from unburned diesel fuel, sulfur dioxide (SO₂) and particulate matter (PM₁₀/PM_{2.5}). These five pollutants are briefly discussed on the Air District’s website at www.baaqmd.gov.

S-150 meets the Environmental Protection Agency and California Air Resources Board (EPA/CARB) Tier 3 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.

This evaluation report will discuss compliance of the proposed project with all applicable rules and regulations.

| Table 2. New Source (S-150) Potential to Emit Review | | | | | | |
|---|---------------------------------|---|-------------------------------------|---|-------------------------------------|--------------------------------------|
| Pollutant | Emission Rate (g/bhp-hr) | PTE Daily Operating Hours¹ (hr/day) | PTE Daily Emissions (lb/day) | PTE Annual Operation² (hr/yr) | PTE Annual Emissions (lb/yr) | PTE Annual Emissions (ton/yr) |
| POC ³ | 0.088 | 24 | 2.18 | 50 | 4.55 | 0.002 |
| NO _x | 2.70 | 24 | 67.00 | 50 | 139.58 | 0.070 |
| CO | 2.00 | 24 | 49.63 | 50 | 103.40 | 0.052 |
| PM ⁴ | 0.02 | 24 | 0.45 | 50 | 0.93 | 0.000 |
| SO ₂ ⁵ | 0.0055 | 24 | 0.14 | 50 | 0.29 | 0.000 |

¹ Maximum daily operation is assumed to be 24 hours.

² Maximum annual operation is assumed to be 50 hours, per Regulation 9-8-330. Maximum annual operation will only include reliability-related activities as defined in Regulation 9-8-232.

³ NMHC is assumed to be in the form of POC.

⁴ PM is assumed to be in the form of particulate matter with a diameter of less than 10 μm (PM₁₀).

⁵ SO₂ emissions are based upon the Permit Handbook. The Permit Handbook suggests the use of EPA AP-42, Table 3.4-1. Assuming a sulfur content of 0.0015% (15 ppm), pursuant to the fuel requirements of CARB, the emission factor will be calculated as follows.

$$\text{SO}_2: 8.09\text{E-}3 \times (\% \text{ S in the fuel}) = 8.09\text{E-}3 \times (0.0015) \times (453.6 \text{ g/lb}) = 0.0055 \text{ g/hp-hr}$$

Cumulative Increase

The District tracks cumulative increase in emission from each facility. Table 3 summarizes the cumulative increase in criteria pollutant emissions that will result from this application assuming S-150 will operate 50 hours/year for reliability-related testing.

| Table 3. Facility Cumulative Emission Increase Review | | | | | |
|--|--------------------------|-----------------------------|---------------------|------------------------|-----------------------|
| Pollutant | Existing (ton/yr) | New (S-150) (ton/yr) | Offset Ratio | Offset (ton/yr) | Total (ton/yr) |
| POC | 0.000 | 0.002 | 1:1 | 0.002 | 0.000 |
| NO _x | 0.000 | 0.070 | 1:1 | 0.070 | 0.000 |
| CO | 21.635 | 0.052 | | | 21.687 |
| PM ₁₀ /PM _{2.5} | 3.953 | 0.000 | | | 3.953 |
| SO ₂ | 3.021 | 0.000 | | | 3.021 |

GRAIN LOADING RATE

The grain loading rate calculation is required for determining the compliance of this application with BAAQMD Regulation 6, Rule 1 (refer to “Statement of Compliance” section, below).

$$[0.019 \text{ lb PM/hr} \times 7000 \text{ grain/lb}] / [60 \text{ min/hr} \times 903 \text{ DSCFM}] = 0.002 \text{ grain/dscf}$$

Assumptions:

- PM Emission: 0.019 lb PM/hr
- 7000 grain/lb standard conversion factor (AP-42 Appendix A, Page A-19)
- Per Specs Sheet, exhaust flow is 2,591.3 cfm at 1,060.1°F dry.
- Actual P = 14.7 psi, Bwo = 0 (fraction of water vapor)

This is equivalent to 903 DSCFM.

$$\text{DSCFM} = \text{ACFM} \times [(460^\circ\text{R} + 70^\circ\text{F}) / (460^\circ\text{R} + \text{temp})] \times (\text{Actual P}/14.7 \text{ psi}) \times (1 - \text{Bwo})$$

STATEMENT OF COMPLIANCE

Regulation 2, Rule 1

CEQA (Section 2-1-311): The project is ministerial under the BAAQMD’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 as specified in the BAAQMD Engineering Division Permit Handbook Chapter 2.3.1 (Stationary Diesel Engines) and therefore is not discretionary as defined by CEQA.

Public Notice, Schools (Section 2-1-412): A new or modified source located within 1,000 feet of the outer boundary of a K-12 school site which results in the increase in emissions of a toxic air contaminant in Table 2-5-1 of *Regulation 2, Rule 5 New Source Review of Toxic Air Contaminants* shall prepare and distribute a public notice in accordance with subsections 412.1 and 412.2 of *Regulation 2, Rule 1 General Requirements*.

This application proposes a new source of TACs which is not located within 1,000 feet of the outer boundary of the nearest K-12 school (with more than 12 children enrolled). Therefore, public notification pursuant to Reg. 2-1-412 is not triggered, however being OBC and triggering HRA, Public Notice is required regardless of distance from a school.

To be completed with the comments from public notice.

Regulation 2 – Permits, Rule 2 – New Source Review

In accordance with the Air District Policy¹, the standard potential to emit for emergency engines is based on 150 hr/yr operation (50 hr/yr non-emergency, plus 100 hr/yr emergency purposes).

The assumption of 100 hours per year of emergency operation is used to determine the applicability of certain District permitting regulations, such as New Source Review and Title V Major Facility Review. The District Policy is not used to determine the quantity of emission offsets required for a project that triggers New Source Review or for PSD. It is also not applicable

¹ BAAQMD Policy: Calculating Potential to Emit for Emergency Backup Power Generators. Approval date June 3, 2019. (Referred to as “District Policy” in this engineering evaluation).

for purposes of the Toxics New Source Review requirements of District Reg. 2-5 (per Regulation 2-5-111).

This facility being Synthetic Minor, limiting their POC and NO_x emissions below 95 TPY, their POC and NO_x emissions offsets will be provided by the Small Facility Banking, anyway.

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, NO_x, CO, SO₂, or PM₁₀.

BACT for this source is presented in the current BAAQMD BACT/TBACT Workbook for IC Engine – Compression Ignition: Stationary Emergency, non-Agricultural, non-direct drive fire pump, Document #96.1.3, Revision 8, dated 12/22/2020. For NO_x, CO, POC and PM₁₀, BACT2 is the CARB ATCM standard for the respective pollutant at the applicable horsepower rating. For SO₂, BACT2 is using fuel with sulfur content not to exceed 0.0015%, or 15 ppm. The more restrictive BACT1 standards are not applicable to this engine because it will be limited to operation as an emergency standby engine.

S-150 satisfies the current BACT2 standards for the following pollutants which exceed 10 lb/day in Table 2:

| Pollutant | Emission Factor | BACT2 Standard |
|-----------------|-----------------|----------------|
| NO _x | 2.70 g/bhp-hr | 2.85 g/bhp-hr |
| CO | 2.00 g/bhp-hr | 2.60 g/bhp-hr |

Offsets Requirements for POC and NO_x: Pursuant to Regulation 2-2-302, offsets must be provided for any new or modified source at a facility that emits or has potential to emit more than 10 tons per year of POC or NO_x. If a facility has potential to emit more than 10 tons per year but less than 35 tons per year of POC or NO_x after the new or modified source is constructed, offsets must be provided at a 1:1 ratio for any un-offset cumulative increase in emissions at the facility. These emissions will be provided by the District’s Small Facility Bank Account, unless applicant owns offset pursuant to Regulation 2-2-302.1.2. If a facility emits or will be permitted to emit 35 tons per year or more, the facility must provide the offsets at a 1.15 to 1.0 ratio.

Potential to emit POC or NO_x, each, at this facility being above 10 ton/yr, this engine is subject to the offset requirements of Regulation 2-2-302. However, the potential to emit is less than 35 tpy and therefore POC and NO_x offsets will be provided at a 1:1 ratio, by the Small Facility Bank Account.

Offset Requirements for PM_{2.5}/PM₁₀ or SO₂: Pursuant to Regulation 2-2-303, offsets must be provided for any new or modified source with a cumulative increase that exceeds 100 tons per year of PM_{2.5}/PM₁₀ or SO₂. Since potential to emit PM_{2.5}/PM₁₀ or SO₂ at this facility are each below 100 ton/yr, this engine is not subject to the offset requirements of Regulation 2-2-303.

NAAQS Protection Requirement (2-2-308): Per Regulation 2-2-308, if a project will result in a significant net increase in emissions of CO, NO₂, SO₂, PM₁₀, PM_{2.5}, or lead, the applicant must demonstrate that the emissions will not cause or contribute to any exceedance of the National Ambient Air Quality Standards for these pollutants.

This project will not involve any significant net emissions increases, as defined in Regulation 2-2-227.2.

Publication of Notice and Opportunity for Public Comment (2-2-404): If an application involves a major facility, a PSD project, or an increase in CO, NO_x, SO₂, PM₁₀, PM_{2.5}, VOC, or lead in an amount that is significant as defined in Regulation 2-2-227.2, the BAAQMD must prepare and distribute a public notice and provide an opportunity for public comment in accordance with Regulation 2-2-404 (Publication of Notice and Opportunity for Public Comment).

This application does not involve a major facility or PSD project, and it will not increase emissions above any of the significance levels defined in Regulation 2-2-227.2.

Regulation 2-Permits, Rule 5-Air Toxic Pollutants (Health Risk Assessment): The proposed engine meets the EPA Tier 3 emission standards with a PM emission factor of 0.15 g/bhp-hr, without abatement. Using vender's abated PM emission factor for the engine at 0.02 g/bhp-hr (0.12 g/bhp-hr unabated, abated at 85%), a 50 hours per year limit for reliability-related activities, results in an estimated annual particulate matter emission of 0.931 pounds/year which is greater than the Regulation 2, Rule 5 chronic toxic trigger level of 0.26 pounds/year. Tables 6 summarizes TAC emissions for this project.

| Table 6. TAC Emissions for the Diesel Engine Generator (Abated) | | | | | | |
|---|----------------------------|-------------------------|-----------------------------------|---------------------------------------|-------------------------------------|---------------------|
| Pollutant | Emission Factor (g/bhp-hr) | Hourly Emission (lb/hr) | Acute Toxic Trigger Level (lb/hr) | Annual Emissions ¹ (lb/yr) | Chronic Toxic Trigger Level (lb/yr) | HRA Required? (Y/N) |
| Diesel PM | 0.02 | 0.019 | N/A | 0.931 | 0.26 | Y |

¹Based on 50 hours per year, annual operation for maintenance

Pursuant to Regulation 2-5-110, the application is subject to the provisions of this rule since the increase in diesel exhaust PM emissions from the project is above the trigger level listed in Table 2-5-1 of this regulation. Regulation 2-5 requires that the cumulative impacts from all related projects permitted within the last five years be included in the risk screening analysis.

Applications #31170, #31188, #28920, and #30877 were permitted within the last five years. Table 7A, summarize PM emissions for the five applications.

| Table 7A. PM TAC Emissions for Application #31922 and the Related Applications | | | | | | |
|--|--------------------|--------------------|--------------------------------|------------------------------------|--------------------------|----------------------|
| Application Number | Source Number | Rated Output [bhp] | Annual Operating Time [hrs/yr] | Abated Emission Factors [g/bhp-hr] | Abatement Efficiency [%] | PM Emissions [lb/yr] |
| New: 31922 | S-150 | 469 | 50 | 0.018 | 85% | 0.93 |
| Related: 31170 | S-147 | 539 | 20 | 0.018 | 85% | 0.43 |
| Related: 31188 | S-148 ¹ | 799 | 20 | 0.018 | 85% | 0.63 |
| Related: 28920 | S-80 | 2,155 | 20 | 0.020 | 85% | 1.91 |
| Related: 30877 | S-146 | 1,829 | 20 | 0.020 ² | | 1.61 |
| Total Project | | | | | | 5.52 |
| Trigger Level | | | | | | 0.26 |

¹ Portable Engine.

² Tier 4

Engine S-146 of the related application #30877, 1829 bhp Tier 2-certified engine, is equipped with an ARB-certified diesel particulate filter and SCR to meet the Tier 4 emission standards. The engine is also equipped with an ARB-certified Altronic GTI bi-fuel system that will allow

operation of the engine on 100% diesel as well as a diesel and natural gas mixture, consisting of up to 70% natural gas.

Engine S-80 of the related application #28920, 2155 bhp, is also equipped with an ARB-certified GTI bi-fuel system that will allow operation of the engine on 100% diesel as well as a diesel and natural gas mixture, consisting of up to 70% natural gas.

Ammonia TAC emissions from the engine S-146 SCR and TAC emissions from gas burning of the engines S-146 and S-80 are summarized in Table 7B and Table 7C, respectively.

| Table 7B. Ammonia TAC Emissions for the Related Application #30877 | | | | | |
|---|----------------------|---------------------------|---------------------------------------|--------------------------------|---------------------------------|
| Application Number | Source Number | Rated Output [bhp] | Annual Operating Time [hrs/yr] | Hourly Emission [lb/hr] | Annual Emissions [lb/yr] |
| Related: 30877 | S-146 | 1,829 | 20 | 0.314 | 6.28 |

| Table 7C. TAC Emissions from Natural Gas Burning of Engines S-146 (A/N 30877) and S-80 (A/N 28920) | | | | | |
|---|-----------------------------------|---------------------------|-------------------------|------------------------------|-------------------------|
| TAC | Emission Factor (lbs/MMcf) | Gas Flow (MMcf/hr) | | S-146 and S-80, Total | |
| | | S-146 (1,829 bhp) | S-80 (2,155 bhp) | Emission (lb/hr) | Emission (lb/yr) |
| 1,1,2,2-Tetrachloroethane | 4.08E-02 | 0.01 | 0.012 | 8.98E-04 | 1.80E-02 |
| 1,1,2-Trichloroethane | 3.24E-02 | 0.01 | 0.012 | 7.13E-04 | 1.43E-02 |
| 1,1-Dichloroethane | 2.41E-02 | 0.01 | 0.012 | 5.30E-04 | 1.06E-02 |
| 1,2-Dichloroethane | 4.30E-02 | 0.01 | 0.012 | 9.46E-04 | 1.89E-02 |
| 1,3-Butadiene | 3.67E-01 | 0.01 | 0.012 | 8.07E-03 | 1.61E-01 |
| Acetaldehyde | 5.29E-01 | 0.01 | 0.012 | 1.16E-02 | 2.33E-01 |
| Acrolein | 5.90E-02 | 0.01 | 0.012 | 1.30E-03 | 2.60E-02 |
| Benzene | 2.18E-01 | 0.01 | 0.012 | 4.80E-03 | 9.59E-02 |
| Carbon Tetrachloride | 3.84E-02 | 0.01 | 0.012 | 8.45E-04 | 1.69E-02 |
| Chlorobenzene | 3.10E-02 | 0.01 | 0.012 | 6.82E-04 | 1.36E-02 |
| Chloroform | 4.80E-02 | 0.01 | 0.012 | 1.06E-03 | 2.11E-02 |
| Ethylbenzene | 7.11E-02 | 0.01 | 0.012 | 1.56E-03 | 3.13E-02 |
| Ethylene Dibromide | 4.52E-02 | 0.01 | 0.012 | 9.94E-04 | 1.99E-02 |
| Formaldehyde | 4.71E+00 | 0.01 | 0.012 | 1.04E-01 | 2.07E+00 |
| Methanol | 2.55E+00 | 0.01 | 0.012 | 5.61E-02 | 1.12E+00 |
| Methylene Chloride | 2.04E-02 | 0.01 | 0.012 | 4.49E-04 | 8.98E-03 |
| Naphthalene | 2.51E-02 | 0.01 | 0.012 | 5.52E-04 | 1.10E-02 |
| Propylene | 5.38E+00 | 0.01 | 0.012 | 1.18E-01 | 2.37E+00 |
| Styrene | 2.41E-02 | 0.01 | 0.012 | 5.30E-04 | 1.06E-02 |
| Toluene | 2.39E-01 | 0.01 | 0.012 | 5.26E-03 | 1.05E-01 |
| Vinyl Chloride | 1.52E-02 | 0.01 | 0.012 | 3.34E-04 | 6.69E-03 |
| Xylene (Total) | 6.46E-01 | 0.01 | 0.012 | 1.42E-02 | 2.84E-01 |
| PAH Equivalents as Benzo(a)pyrene | 3.45E-06 | 0.01 | 0.012 | 7.59E-08 | 1.52E-06 |

Note: Annual Operating Time: 20 hrs/yr

Diesel engines of the related applications #30877 and #28920 having ammonia and/or natural gas related TAC emissions, a full scale HRA modeling is required.

A health risk assessment (HRA) was completed for this permit application. The HRA estimates the health risk resulting from toxic air contaminant (TAC) emissions from the operation of a new Standby Generator Diesel Engine (S-150). In addition, the project includes (4) existing diesel engines included as part of the Project as defined in Regulation 2-5-216. Since two of the existing engines are designed for dual fuel operation (natural gas / diesel) this project includes (2) separate scenarios to evaluate the maximum health risk impacts for the project:

Scenario A – All Engines Running on Diesel Oil Only

Scenario B – Engines S-147, S-148, and S-145 Running on Diesel Oil Only and S-80 and S-146 Running on 70% Natural Gas and 30% Diesel Oil

Results from the HRA indicate that the maximum project cancer risk is **0.077 in a million**, the maximum chronic hazard index (HI) is **0.000059**, and the acute HI is **0.046**. The highest cancer and chronic HI risk was found in Scenario A, while the maximum acute HI was found in Scenario B. In accordance with the District's Regulation 2-5-301, the proposed new source does not require TBACT because the estimated source risk does not exceed a cancer risk of 1.0 in a million and/or a chronic HI of 0.20. Since the estimated project cancer risk does not exceed 6.0 in a million and hazard indices do not exceed 1.0, this project complies with the District's Regulation 2-5-302 project risk requirements, for projects located within an Overburdened Community, as defined in Regulation 2-1-243.

Regulation 2 – Permits, Rule 6 – Major Facility Review: Regulation 2 Rule 6 implements the operating permit requirements of Title V of the federal Clean Air Act as amended in 1990. The rule applies to major facilities, Phase II acid rain facilities, subject solid waste incinerator facilities and any facility in a source category designated by the Administrator of the EPA in a rulemaking as requiring a Title V permit. The rule also provides a mean by which facilities can avoid the Title V or other requirements by limiting their potential to emit. A major facility is defined in Section 2-6-212 as one that has the potential to emit 100 tons per year of any regulation air pollutant as defined in Section 2-6-222, or that has the potential to emit 10 tons per year of a single hazardous air pollutant or 25 tons per year or more of a combination of hazardous air pollutants.

The facility being a synthetic minor, is required to keep their actual emissions below 95 TPY, whereas their potential to emit may exceed the 100 tons per year per pollutant threshold for a major facility.

In addition, the potential to emit toxics was calculated in accordance with Regulation 2 Rule 5 and presented previously in Table 7A; emissions are well below 10 tons per year single HAP threshold for a major facility.

The facility is not a Phase II Acid Rain Facility (2-6-217) or a subject solid waste incinerator facility (Section 2-6-229), or a facility defined in a source category defined by EPA requiring a Title V permit. Therefore, Title V requirements, as implemented by Regulation 2, Rule 6, are not triggered.

S-150 will comply with the synthetic minor permit condition 25404 including the emergency diesel engine limits specified in part 2-b.

Regulation 2 – Particulate Matter, Rule 1 – General Requirements

Ringelmann No. 1 Limitation (6-1-301): Except as provided in Sections 6-1-303, 6-1-304 and 6-1-306, a person shall not emit from any source for a period or periods aggregating more than three minutes in any hour, a visible emission which is as dark or darker than No. 1 on the Ringelmann Chart, or of such opacity as to obscure an observer's view to an equivalent or greater degree.

Source S-150 being an EPA-certified engine, abated by a Diesel Catalyzed Particulate Filter, is expected to emit low amount of PM₁₀, complying with *Regulation 6-1-301* pending a regular inspection.

Opacity Limitation (6-1-302): Except as provided in Sections 6-1-303, 6-1-304 and 6-1-306, a person shall not emit from any source for a period or periods aggregating more than three minutes in any hour an emission equal to or greater than 20% opacity as perceived by an opacity-sensing device, where such device is required by BAAQMD regulations.

Source S-150 being an EPA-certified engine, abated by a Diesel Catalyzed Particulate Filter, is expected to emit low amount of PM₁₀, it is expected to comply with Regulation 6-1-302 pending a regular inspection.

Visible Particles (Section 6-1-305): A person shall not emit particles which are large enough to be visible as individual particles at the emission point or of such size and nature as to be visible individually as incandescent particles.

Source S-150 being an EPA-certified engine, abated by a Diesel Catalyzed Particulate Filter, is expected to emit low amounts of PM₁₀, it is not expected to produce visible emissions or fallout in violation of this regulation and will be assumed to comply with Regulation 6-1-305 pending a regular inspection.

Particulate Weight Limitation (Section 6-1-310): A person shall not emit from any source particulate matter in excess of 0.15 grains/dscf of exhaust gas volume ².

The PM emission rate from engine S-150, abated, is 0.02 grams/bhp-hr, which results in an outlet grain loading of about 0.002 grains/dscf based on the engine specifications (469 bhp, 2,591.3 acfm exhaust flow, and 1,060.1° F emissions stack temperature). Grain loading for the project is much less than the 0.15 grains/dscf limit and comply with Regulation 6-1-310.1. Note that the TSP concentration limits set forth in Regulation 6-1-301.2 do not apply because the PTE for PM per source is below the 1000 kg per year applicability threshold.

Regulation 9 – Inorganic Gaseous Pollutants, Rule 1: Sulfur Dioxide

Source S-150 is subject to the following sections of Regulation 9, Rule 1 and will comply with all sections by burning Ultra Low Sulfur Diesel with a sulfur content of 15 ppm, which results in less than 1 ppmv of SO₂ in the exhaust gas.

Limitations on Ground Level Concentrations (Section 9-1-301): Sulfur Dioxide emissions shall not result in ground level concentrations more than 0.5 ppm continuously for 3 consecutive minutes or 0.25 ppm averaged over 60 consecutive minutes, or 0.05 ppm averaged over 24 hours.

General Emission Limitation (Section 9-1-302): A gas stream containing Sulfur Dioxide shall not contain sulfur dioxide more than 300 ppm (dry).

Fuel Burning (Section 9-1-304): The sulfur content of liquid fuel burned shall not exceed 0.5% by weight.

Regulation 9 – Inorganic Gaseous Pollutants, Rule 8: NO_x and CO from Stationary Internal Combustion Engines

² This number changes with DSCFM, according to Regulation 6-1 (Table 6-1-310.2).

Exemptions (Section 9-8-110): Section 110.5 exempts emergency standby engines from the requirements of Sections 9-8-301 through 305, 501 and 503.

Emergency Standby Engines, Hours of Operation (Section 9-8-330): S-150 is subject to the requirements of Regulation 9-8-330 which limits reliability related operation of the engines to 50 hours per year per engine.

Permit Condition for S-150 will include an operating limit that complies with this standard.

Monitoring and Records (Section 9-8-500): S-150 is subject to the reporting requirements of Sections 502 and 530

Permit Conditions for S-150 will include reporting requirements that meet this standard.

Regulation 10 – Standards of Performance for New Stationary Source

New Sources Performance Standards (NSPS): According to §60.4200(a)(2)(i), the engine is subject to the requirements of 40 CFR Part 60 Subpart III, “Standards of Performance of Stationary Compression Ignition Internal Combustion Engines.”

In accordance with §60.4202(a)(2), the emission standards must meet those established in 40 CFR 89.112 and 40 CFR 89.113.

Using the conversion factor of 1.341 hp per 1 kW, the rated power for the proposed 469 BHP engine in metric units becomes 350 kW.

Pursuant to 40 CFR 89.112, Tier 3 Interim engines with a rated power at or greater than 225 kW or less than 450 kW must meet the emission standards of Table 8.

| Table 8. Standards/Review for Engines with Rated Power \geq 225 kW and $<$ 450 kW | | |
|---|---|--|
| Pollutant | NSPS Emission Standard (g/kW-hr) | Abated Emission Rate¹ (350 kW) (g/kW-hr) |
| NO _x + NMHC | 4.0 | 3.74 |
| CO | 3.5 | 2.68 |
| PM | 0.20 | 0.02 |

¹Vender’s, after abatement by Diesel Catalyzed Particulate Filter.

The aforementioned analysis demonstrates that the engine will meet the emission standards of 40 CFR 89.112. In addition, the engine is expected to meet the opacity standards of Table 9, identified in 40 CFR 89.113.

| Table 9. 40 CFR 89.113 Opacity Standards | |
|---|--------------------|
| Mode | Opacity (%) |
| Acceleration | 20 |
| Lugging | 15 |
| Peak (During acceleration or lugging modes) | 50 |

§60.4211(a) requires the owner or operator to maintain and operate the engine according to the manufacturer’s written instructions or owner/operator developed procedures approved by the manufacturer for the entire life of the engine. The engine is expected to be maintained and operated in accordance with the requirements of §60.4206 and §60.4211(a).

§60.4207(b) requires diesel fuel consumed after October 1, 2010 to meet the requirements of 40 CFR 80.510(b), which is a maximum sulfur content of 15 parts per million (ppm). The fuel consumed is expected to meet this requirement.

§60.4209(a) requires the installation of a non-resettable hour meter. This will be included as a permit requirement.

The engine is certified to the requirements of 40 CFR Part 89 and is expected to comply with §60.4211(c).

According to §60.4211(f), the engine will be allowed to operate unrestricted during emergencies. In addition, the engine will be limited to less than 50 hours per calendar year for maintenance and testing.

Regulation 11 – National Emission Standards for Hazardous Air Pollutants (NESHAP)

Pursuant to §63.6585, engines located at an area source are subject to the requirements of 40 CFR Part 63 Subpart ZZZZ, “National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines.” However, according to §63.6590(a)(1)(iii) & §63.6590(c)(1), diesel engines that commenced construction on June 12, 2006 or later and that operate at a facility that emits or has the potential to emit any single hazardous air pollutant (HAP) at a rate of less than 10 tons per year or any combination of HAPs at a rate of less than 25 tons per year, must comply instead with 40 CFR Part 60 Subpart III, “Standards of Performance of Stationary Compression Ignition Internal Combustion Engines.” The engine is expected to meet the requirements of this subpart by meeting the standards of 40 CFR Part 60 Subpart III, “Standards of Performance of Stationary Compression Ignition Internal Combustion Engines.”

Other Regulations

The BAAQMD is charged with enforcing the requirements of California’s Air Toxic Control Measure for Stationary Compression Ignition Engines *Title 17, California Code of Regulations, Section 93115* for the purpose of reducing diesel particulate matter (PM) and criteria pollutant emissions from stationary diesel-fueled compression ignition (CI) engines.

CARB Airborne Toxic Control Measure for Stationary Compression Ignition Engines:

§93115.2 requires any person who purchases a stationary compression ignition engine to meet the requirements of the ATCM.

As of January 1, 2006, owners and operators of new engines are required to consume CARB diesel fuel in accordance with §93115.5.

According to §93115.6(a)(1), an engine located within 500 feet of school grounds shall not operate for non-emergency use between 7:30 A.M. and 3:30 P.M. on days when school is in session. However, it was determined that there is no school within 500 feet of the proposed engines.

Pursuant to §93115.6(a)(3), a new engine must meet the following requirements as of January 1, 2005.

- ATCM “Table 1 Emission Standards for New Stationary Emergency Standby Diesel-Fueled CI Engines” for same model year and maximum engine power, which is shown in Table 10.

Table 10. Emission Standards for New Stationary Emergency Standby Diesel-Fueled CI Engines¹

| Maximum Engine Power | Model Year | PM (g/kW-hr) | NMHC+NO _x (g/kW-hr) | CO (g/kW-hr) |
|----------------------|------------|-----------------|-----------------------------------|-----------------|
| 225 kW ≤ x < 450 kW | 2009+ | 0.20 | 4.0 | 3.5 |

¹ <https://ww2.arb.ca.gov/sites/default/files/classic/diesel/documents/finalreg2011.pdf>

- After December 31, 2008, be certified to the new non-road compression-ignition engine emission standard for all pollutants for 2007 and later model year engines as specified in 40 CFR, Part 60, Subpart III; and,
- Not operate more than 50 hours per year for maintenance and testing purposes, except as provided in §93115.6(a)(3)(A)(2). This regulation does not limit engine operation for emergency use and for emission testing to show compliance with §93115.6(a)(3).

The engine is expected to meet the aforementioned emission requirements and will be limited, through permit condition, to operate unrestricted only for emergencies and a maximum of 50 hours per year for maintenance and testing purposes.

Pursuant to §93115.10(d) (1) a non-resettable hour meter with a minimum display capability of 9,999 hours shall be installed upon engine installation. The owner/operator of the engine shall keep monthly records of the following for 36 months, with the prior 24 months readily accessible at the site and the prior 25 to 36 months available to the District within 5 working days from the request.

- Emergency use hours of operation;
- Maintenance and testing hours of operation;
- Hours of operation for emission testing to show compliance with §93115.6(a)(3) and §93115.6(b)(3);
- Initial start-up testing hours;
- If applicable, hours of operation to comply with the requirements of NFPA 25;
- Hours of operation for all uses other than those specified in §93115.10(g)(1)(A) through (D);
- If applicable, DRP engine hours of operation; and,
- The fuel used.

Permit Condition

Permit Condition #22850 for S-150

1. The owner/operator shall not exceed 50 hours per year per engine for reliability-related testing. [Basis: Title 17, California Code of Regulations, section 93115, ATCM for Stationary CI Engines]
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: Title 17, California Code of Regulations, section 93115, ATCM for Stationary CI Engines]

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: Title 17, California Code of Regulations, section 93115, ATCM for Stationary CI Engines]
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: Title 17, California Code of Regulations, section 93115, ATCM for Stationary CI Engines]

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, athletic field, or other areas of school property but does not include unimproved school property.

[Basis: Title 17, California Code of Regulations, section 93115, ATCM for Stationary CI Engines]

Recommendation

I recommend that the Air District issue an Authority to Construct for the following equipment:

S-150 Emergency Standby Engine Generator Set: Diesel Engine; Make Cummins Inc., S-150 Emergency Standby Engine Generator Set: Diesel Engine; Make Caterpillar, Model C13, Model Year 2022, Rated 469 bhp (3.49 MMBtu/hr)

Abated by

A-150 Diesel Particulate Filter and Oxidation Catalyst: Make Rypos, Model RH406-L

Prepared by: Sadegh Sadeghipour, Air Quality Engineer

Date: 2/15/2023

DRAFT