



**DEC 18 2015**

Dennis J. Becker  
City of Modesto  
P O Box 642  
Modesto, CA 95350

**Re: Notice of Preliminary Decision - Authority to Construct**  
**Facility Number: N-9203**  
**Project Number: N-1153142**

Dear Mr. Becker:

Enclosed for your review and comment is the District's analysis of City of Modesto's application for an Authority to Construct for the installation of a 1,881 bhp diesel-fired emergency engine powering an electrical generator located at 1105 Bangs Avenue, Modesto.

The notice of preliminary decision for this project will be published approximately three days from the date of this letter. After addressing all comments made during the 30-day public notice period, the District intends to issue the Authority to Construct. Please submit your written comments on this project within the 30-day public comment period, as specified in the enclosed public notice.

Thank you for your cooperation in this matter. If you have any questions regarding this matter, please contact Mr. Fred Cruz of Permit Services at (209) 557-6456.

Sincerely,



Arnaud Marjollet  
Director of Permit Services

AM:fjc

Enclosures

cc: Mike Tollstrup, CARB (w/ enclosure) via email

**Seyed Sadredin**  
Executive Director/Air Pollution Control Officer

---

**Northern Region**  
4800 Enterprise Way  
Modesto, CA 95356-8718  
Tel: (209) 557-6400 FAX: (209) 557-6475

**Central Region (Main Office)**  
1990 E. Gettysburg Avenue  
Fresno, CA 93726-0244  
Tel: (559) 230-6000 FAX: (559) 230-6061

**Southern Region**  
34946 Flyover Court  
Bakersfield, CA 93308-9725  
Tel: 661-392-5500 FAX: 661-392-5585

## **San Joaquin Valley Air Pollution Control District**

### **Authority to Construct Application Review Diesel-fired Emergency Standby IC Engine**

Facility Name: City of Modesto  
Mailing Address: P O Box 642  
Modesto, CA 95350  
Contact Person: Mr. Dennis J. Becker  
Telephone: (209) 577-5315  
Email: dbecker@modestogov.com  
Application No: N-9203-1-0  
Project No: N-1153142  
Complete: October 8, 2015

Date: December 4, 2015  
Engineer: Fred Cruz  
Lead Engineer: Nick Peirce

---

#### **I. Proposal:**

The City of Modesto submitted an Authority to Construct application to install a 1,881 bhp diesel-fired emergency standby internal combustion (IC) engine powering an electrical generator. This emergency engine is used to supply emergency power to support up to four 250 hp vertical pumps that distribute domestic potable water.

#### **II. Applicable Rules:**

Rule 2201 New and Modified Stationary Source Review Rule (4/21/2011)  
Rule 2410 Prevention of Significant Deterioration (6/16/2011)  
Rule 2520 Federally Mandated Operating Permits (6/21/2001)  
Rule 4001 New Source Performance Standards (4/14/1999)  
Rule 4002 National Emission Standards for Hazardous Air Pollutants (5/20/2004)  
Rule 4101 Visible Emissions (2/17/2005)  
Rule 4102 Nuisance (12/17/1992)  
Rule 4201 Particulate Matter Concentration (12/17/1992)  
Rule 4701 Stationary Internal Combustion Engines – Phase 1 (8/21/2003)  
Rule 4702 Stationary Internal Combustion Engines – Phase 2 (8/18/2011)  
Rule 4801 Sulfur Compounds (12/17/1992)  
CH&SC 41700 Health Risk Assessment  
CH&SC 41701.6 Limitation on Discharge Requirements for Drinking Water Systems  
CH&SC 42301.6 School Notice  
Title 17 CCR, Section 93115 - Airborne Toxic Control Measure (ATCM) for Stationary Compression-Ignition (CI) Engines  
California Environmental Quality Act (CEQA)  
Public Resources Code 21000-21177: California Environmental Quality Act (CEQA)  
California Code of Regulations, Title 14, Division 6, Chapter 3, Sections 15000-15387: CEQA Guidelines

### III. Project Location:

The facility is located at 1105 Bangs Avenue, Modesto, CA. The District has verified that the equipment is not located within 1,000 feet of the outer boundary of a K-12 school. Therefore, the public notification requirement of California Health and Safety Code 42301.6 is not applicable to this project. See area map.

### IV. Process Description:

The emergency standby engine powers an electrical generator that powers potable water distribution systems during an emergency. The applicant requested a high opacity limit based on CH&SC Section 41701.6. The non-emergency hours are limited to 30 minutes per week or two hours per month. Annual hours of non-emergency operation will be limited to 24 hours.

### V. Equipment Listing:

N-9203-1-0: 1881 BHP (INTERMITTENT) MITSUBISHI MODEL S12R-YPTAW-1 (TIER 2 CERTIFIED) DIESEL-FIRED EMERGENCY STANDBY IC ENGINE POWERING AN ELECTRICAL GENERATOR THAT POWERS UP TO FOUR VERTICAL TURBINE PUMPS FOR DISTRIBUTING DOMESTIC POTABLE WATER.

### VI. Emission Control Technology Evaluation:

The applicant has proposed to install a 2015 Model Year Tier 2 certified diesel-fired IC engine that is fired on very low-sulfur diesel fuel (0.0015% by weight sulfur maximum).

NO<sub>x</sub>, CO, VOC and PM<sub>10</sub>:

Per District Guidance Document FYI-324 and the District BACT Guideline 3.1.1, the applicant is required to install the latest available tier certification standard for emergency engines as noted below. A new emergency engine shall meet the requirements as follows:

50 ≤ bhp < 75: Tier 4 Interim certification standards  
75 ≤ bhp < 750: Tier 3 certification standards  
≥ 750 bhp: Tier 2 certification standards

The applicant has proposed to install a 1,881 bhp Tier 2 certified emergency engine which meets the requirements of District Policy FYI-324 (see Appendix B for a copy of the emissions data sheet for this engine).

SO<sub>x</sub>:

The use of very low-sulfur diesel fuel (0.0015% by weight sulfur maximum) reduces SO<sub>x</sub> emissions by over 99% from standard diesel fuel.

### VII. General Calculations:

#### A. Assumptions

Operating schedule: 24 hours/day, 24 hours/year

Density of diesel fuel: 7.1 lb/gal  
 EPA F-factor: 9051 dscf/MMBtu (corrected to 60° F)  
 PM<sub>10</sub> fraction of diesel exhaust is: 96% (Reference - CARB, 1988)  
 Fuel heating value: 137,000 Btu/gal  
 BHP to Btu/hr conversion: 2542.5 Btu/hp-hr  
 Thermal efficiency of engine commonly ≈ 35%  
 Fuel rate: 103.4 gal/hr @ 100% load (engine data sheet)

**B. Emission Factors**

The engine manufacturer supplied the emissions factor for NO<sub>x</sub>, CO, VOC and PM<sub>10</sub> emissions. The emission factors are listed below.

Pollutant	Emission Factor (g/bhp-hr)	Source
NO <sub>x</sub>	4.00	Engine manufacturer
CO	0.45	Engine manufacturer
VOC	0.42	Engine manufacturer
PM <sub>10</sub>	0.13	Engine manufacturer
SO <sub>x</sub>	0.005	Calculated below

The emission factor for SO<sub>x</sub> may be calculated based on the current CARB standard for diesel sulfur content, which is 15 ppm by weight.

$$\frac{0.000015 \text{ lb-S}}{\text{lb-fuel}} \times \frac{7.1 \text{ lb-fuel}}{\text{gallon}} \times \frac{2 \text{ lb-SO}_2}{1 \text{ lb-S}} \times \frac{1 \text{ gal}}{137,000 \text{ Btu}} \times \frac{1 \text{ bhp input}}{0.35 \text{ bhp out}} \times \frac{2,542.5 \text{ Btu}}{\text{bhp-hr}} \times \frac{453.6 \text{ g}}{\text{lb}} = 0.005 \frac{\text{g-SO}_x}{\text{bhp-hr}}$$

**C. Calculations:**

**1. Pre-Project Emissions (PE1)**

This is a new emissions unit and PE1 emissions will equal zero for all pollutants.

**2. Post Project PE (PE2)**

The potential to emit emissions from this emergency IC engine is based on the maximum operating capacity of the engine for 24 hours per day. The following calculation for NO<sub>x</sub> emissions is representative of emission calculations for all pollutants. Annual emissions are based on 24 hours per year for non-emergency operation.

NO<sub>x</sub>: 4.00 g/hp-hr × 1,881 bhp × lb/453.6 g  
 NO<sub>x</sub>: 16.59 lb/hr, 398.1 lb/day, 398 lb/yr  
 CO: 1.87 lb/hr, 44.8 lb/day, 45 lb/yr  
 VOC: 1.74 lb/hr, 41.8 lb/day, 42 lb/yr  
 PM<sub>10</sub>: 0.54 lb/hr, 12.9 lb/day, 13 lb/yr  
 SO<sub>x</sub>: 0.02 lb/hr, 0.5 lb/day, 1 lb/yr

	NO <sub>x</sub>	CO	VOC	PM <sub>10</sub>	SO <sub>x</sub>
Daily PE	398.1	44.8	41.8	12.9	0.5
Annual PE	398	45	42	13	1

**3. Pre-Project Stationary Source Potential to Emit (SSPE1):**

Pursuant to Section 4.9 of District Rule 2201, the Pre-Project Stationary Source Potential to Emit (SSPE1) is the Potential to Emit (PE) from all units with valid ATCs or PTOs at the Stationary Source and the quantity of Emission Reduction Credits (ERCs) which have been banked since September 19, 1991 for Actual Emissions Reductions that have occurred at the source, and which have not been used on-site. This is a new emissions unit located at a new facility, therefore, SSPE1 will equal zero for all pollutants.

**4. Post Project Stationary Source Potential to Emit (SSPE2):**

Pursuant to Section 4.10 of District Rule 2201, the Post Project Stationary Source Potential to Emit (SSPE2) is the Potential to Emit (PE) from all units with valid ATCs or PTOs, except for emissions units proposed to be shut down as part of the Stationary Project, at the Stationary Source and the quantity of Emission Reduction Credits (ERCs) which have been banked since September 19, 1991 for Actual Emissions Reductions that have occurred at the source, and which have not been used on-site.

Post Project Stationary Source Potential to Emit (SSPE2) (lb/year)					
Permit No.	NO <sub>x</sub>	CO	VOC	PM <sub>10</sub>	SO <sub>x</sub>
<b>N-9152-1-0 (ATC)</b>	<b>398</b>	<b>45</b>	<b>42</b>	<b>13</b>	<b>1</b>
Total	398	45	42	13	1
Major Source Threshold	20,000	200,000	20,000	140,000	140,000
Existing Major Source?	No	No	No	No	No

**5. Major Source Determination:**

Pursuant to Section 3.24 of District Rule 2201, a Major Source is a stationary source with post project emissions or a Post Project Stationary Source Potential to Emit (SSPE2), equal to or exceeding one or more of the following threshold values. However, Section 3.24.2 states, "for the purposes of determining major source status, the SSPE2 shall not include the quantity of emission reduction credits (ERC) which have been banked since September 19, 1991 for Actual Emissions Reductions that have occurred at the source, and which have not been used on-site." This facility does not have ERCs which have been banked at the source; therefore, SSPE2 does not have to be adjusted.

Major Source Determination					
Pollutant	SSPE1 (lb/yr)	SSPE2 (lb/yr)	Major Source Threshold (lb/yr)	Existing Major Source?	Becoming a Major Source?
NO <sub>x</sub>	0	398	20,000	No	No
SO <sub>x</sub>	0	1	140,000	No	No
PM <sub>10</sub>	0	13	140,000	No	No
CO	0	45	200,000	No	No
VOC	0	42	20,000	No	No

As seen in the table above, the facility is not an existing Major Source and also is not becoming a Major Source as a result of this project.

**Rule 2410 Major Source Determination:**

The facility or the equipment evaluated under this project is not listed as one of the categories specified in 40 CFR 52.21 (b) (1) (I). Therefore the following PSD Major Source thresholds are applicable.

PSD Major Source Determination (tons/year)							
	NO <sub>2</sub>	VOC	SO <sub>2</sub>	CO	PM	PM <sub>10</sub>	CO <sub>2e</sub>
Estimated Facility PE before Project Increase	0	0	0	0	0	0	0
PSD Major Source Thresholds	100	100	100	100	100	100	100,000
PSD Major Source ? (Y/N)	N	N	N	N	N	N	N

As shown above, the facility is not an existing major source for PSD for any pollutant. Therefore the facility is not an existing major source for PSD.

**6. Baseline Emissions (BE):**

The equipment is considered as a new emissions unit and the baseline emissions will equal zero for all pollutants.

**7. SB 288 Major Modification:**

The purpose of Major Modification calculations is to determine the following:

- A. If Best Available Control Technology (BACT) is triggered for a new or modified emission unit that results in a Major Modification (District Rule 2201, Section 4.1.3); and
- B. If a public notification is triggered (District Rule 2201, Section 5.4.1).

Based on the pre and post-project stationary source potential to emit calculations (less onsite Emission Reduction Credit's) in this document, the facility is not a Major Source for any pollutant. Therefore, the proposed project cannot trigger a Major modification and no further calculations are required.

## **8. Federal Major Modification**

This facility is not a Major Source for any pollutant. Therefore, this project can not constitute a Federal Major Modification and no further discussion is required.

## **9. Quarterly Net Emissions Change (QNEC)**

The QNEC is calculated solely to establish emissions that are used to complete the District's PAS emissions profile screen. Detailed QNEC calculations are included in Appendix C.

## **10. Rule 2410 – Prevention of Significant Deterioration (PSD) Applicability Determination:**

Rule 2410 applies to pollutants for which the District is in attainment or for unclassified pollutants. The pollutants addressed in the PSD applicability determination are listed as follows:

- NO<sub>2</sub> (as a primary pollutant)
- SO<sub>2</sub> (as a primary pollutant)
- CO
- PM
- PM<sub>10</sub>
- Greenhouse gases (GHG): CO<sub>2</sub>, N<sub>2</sub>O, CH<sub>4</sub>, HFCs, PFCs, and SF<sub>6</sub>

The first step of this PSD applicability evaluation consists of determining whether the facility is an existing PSD Major Source. This facility is not an existing PSD Major source (See Section VII.C.5 of this document).

In the case the facility is NOT an existing PSD Major Source, the second step of the PSD evaluation is to determine if the project, by itself, would be a PSD major source.

### **Potential to Emit of attainment/unclassified pollutant for New or Modified Emission Units vs PSD Significant Emission Increase Thresholds**

As a screening tool, the potential to emit from all new and modified units is compared to the PSD significant emission increase thresholds, and if total potential to emit from all new and modified units is below this threshold, no further analysis will be needed.

<b>PSD Major Source Determination: Potential to Emit (tons/yr)</b>						
	NO <sub>2</sub>	VOC	SO <sub>2</sub>	CO	PM	PM <sub>10</sub>
Total PE from New and Modified Units	0.20	0.02	0.001	0.02	0.007	0.007
PSD Major Source threshold	250	250	250	250	250	250
New PSD Major Source?	N	N	N	N	N	N

As demonstrated above, because the project has a total potential to emit from all new and modified emission units below the PSD significant emission increase thresholds, this project is not subject to the requirements of Rule 2410 due to a significant emission increase and no further discussion is required.

## VIII. COMPLIANCE

### Rule 2201 New and Modified Stationary Source Review Rule

#### A. Best Available Control Technology (BACT):

##### 1. BACT Applicability:

BACT requirements are triggered on a pollutant-by-pollutant basis and on an emissions unit-by-emissions unit basis for the following\*:

- a) Any new emissions unit with a potential to emit exceeding 2.0 pounds per day,
- b) The relocation from one Stationary Source to another of an existing emissions unit with a potential to emit exceeding 2.0 pounds per day,
- c) Modifications to an existing emissions unit with a valid Permit to Operate resulting in an AIPE exceeding 2.0 pounds per day, and/or
- d) Any new or modified emissions unit, in a stationary source project, which results in a Major Modification.

\*Except for CO emissions from a new or modified emissions unit at a Stationary Source with an SSPE2 of less than 200,000 pounds per year of CO.

##### a. New emissions units – PE > 2.0 lb/day

This engine is considered as a new emissions unit and the daily emissions are compared to the BACT thresholds in the following table:



New Emissions Unit BACT Applicability				
Pollutant	Daily Emissions for unit -1-0 (lb/day)	BACT Threshold (lb/day)	SSPE2 (lb/yr)	BACT Triggered?
NO <sub>x</sub>	398.1	> 2.0	N/A	Yes
SO <sub>x</sub>	0.5	> 2.0	N/A	No
PM <sub>10</sub>	12.9	> 2.0	N/A	Yes
CO	44.8	> 2.0 and SSPE2 ≥ 200,000 lb/yr	33	No
VOC	41.8	> 2.0	N/A	Yes

BACT will be triggered for NO<sub>x</sub>, VOC and PM<sub>10</sub> emissions from the engine.

**b. Relocation of emissions units – PE > 2.0 lb/day**

This engine is not being relocated from one stationary source to another stationary source as a result of this project.

**c. Modification of emissions units – Adjusted Increase in Permitted Emissions (AIPE) > 2.0 lb/day**

This engine is not being modified. Therefore, BACT is not triggered for the modification of emissions units with an AIPE > 2.0 lb/day.

**d. Major Modification**

This project does not constitute a Major Modification. Therefore, BACT is not triggered for a Major Modification.

**2. BACT Guideline:**

BACT Guideline 3.1.1, which appears in Appendix D of this report, covers diesel-fired emergency IC engines.

**3. Top Down BACT Analysis:**

Per District Policy APR 1305, Section IX, “A top-down BACT analysis shall be performed as a part of the Application Review for each application subject to the BACT requirements pursuant to the District’s NSR Rule for source categories or classes covered in the BACT Clearinghouse, relevant information under each of the following steps may be simply cited from the Clearinghouse without further analysis.” Pursuant to the attached Top-Down BACT Analysis, which appears in Appendix D of this report, BACT is satisfied with:

- NO<sub>x</sub>, VOC: Tier 2 engine
- PM<sub>10</sub>: Use of an engine with PM<sub>10</sub> emissions of 0.15 g/bhp-hr, or less

**B. Offsets:**

Since emergency standby IC engines are exempt from the offset requirements of Rule 2201, per Section 4.6.2, offsets are not required for this engine, and offset calculations are not required.

**C. Public Notification:**

**1. Applicability:**

Public noticing is required for:

- a. New Major Sources, which is a new facility that also becomes a Major Source,
- b. Major Modifications,
- c. Any new emissions unit with a Potential to Emit greater than 100 pounds during any one day for any one pollutant,
- d. Any project which results in the offset thresholds being surpassed, and/or
- e. Any project with an SSIPE of greater than 20,000 lb/year for any pollutant,
- f. Title V Significant Modification.

**a. New Major Source**

A New Major Source is a new facility, which also becomes a major source. This is an existing facility and does not become a Major Source from this project; public noticing is not required for this project for New Major Source purposes.

**b. Major Modification**

As demonstrated previously in Sections VII.C.7 and VII.C.8, this project does not constitute a Major Modification; therefore, public noticing for Major Modification purposes is not required.

**c. PE > 100 lb/day**

The Daily PE for this new emissions unit is compared to the daily PE Public Notice Thresholds in the following table:

PE > 100 lb/day Public Notice Thresholds			
Pollutant	Daily PE for unit -1-0 (lb/day)	Public Notice Threshold (lb/day)	Public Notice Triggered?
NO <sub>x</sub>	398.1	100	Yes
SO <sub>x</sub>	0.5	100	No
PM <sub>10</sub>	12.9	100	No
CO	44.8	100	No
VOC	41.8	100	No

As detailed in the preceding table, NO<sub>x</sub> emissions exceed the 100-lb/day threshold and public noticing is required for this project.

**d. Offset Threshold**

The following table compares the SSPE1 and SSPE2 with the offset thresholds to determine if any offset thresholds have been surpassed.

Offset Threshold				
Pollutant	SSPE1 (lb/yr)	SSPE2 (lb/yr)	Offset Threshold (lb/yr)	Public Notice Required?
NO <sub>x</sub>	0	398	20,000	No
SO <sub>x</sub>	0	1	54,750	No
PM <sub>10</sub>	0	13	29,200	No
CO	0	45	200,000	No
VOC	0	42	20,000	No

As detailed in the preceding table, there are no offset thresholds surpassed with this project. Therefore, public noticing is not required for this project

**e. SSIPE > 20,000 lb/year**

Public notification is required for any permitting action that results in a Stationary Source Increase in Permitted Emissions (SSIPE) of more than 20,000 lb/year of any affected pollutant. According to District policy, the SSIPE is calculated as the Post Project Stationary Source Potential to Emit (SSPE2) minus the Pre-Project Stationary Source Potential to Emit (SSPE1), i.e.  $SSIPE = SSPE2 - SSPE1$ . The values for SSPE2 and SSPE1 are calculated according to Rule 2201, Sections 4.9 and 4.10, respectively. The SSIPE is compared to the SSIPE Public Notice thresholds in the following table:

SSIPE Public Notice Threshold					
Pollutant	SSPE2 (lb/yr)	SSPE1 (lb/yr)	SSIPE (lb/yr)	SSIPE Threshold (lb/yr)	Public Notice Required?
NO <sub>x</sub>	398	0	398	20,000	No
SO <sub>x</sub>	1	0	1	20,000	No
PM <sub>10</sub>	13	0	13	20,000	No
CO	45	0	45	20,000	No
VOC	42	0	42	20,000	No

As detailed in the preceding table, there are no SSIPE thresholds surpassed with this project. Therefore, public noticing is not required for exceeding the SSIPE thresholds.

**f. Title V Significant Modification:**

This facility is not a Major Source and has not been issued a Title V permit. Therefore, public noticing for a Title V Significant Modification is not required.

**2. Public Notice Action**

As discussed above, this project will result in NO<sub>x</sub> emissions exceeding the 100-lb/day threshold, which would subject the project to the noticing requirements listed above. Therefore, public notice will be required for this project.

**D. Daily Emissions Limits**

Daily Emissions Limitations (DELs) and other enforceable conditions are required by Section 3.15 to restrict a unit's maximum daily emissions, to a level at or below the emissions associated with the maximum design capacity. Per Sections 3.15.1 and 3.15.2, the DEL must be contained in the latest ATC and contained in or enforced by the latest PTO and enforceable, in a practicable manner, on a daily basis. DELs are also required to enforce the applicability of BACT. For this emergency standby IC engine, the DELs are stated in the form of emission factors, the maximum engine horsepower rating, and the maximum operational time of 24 hours per day. Therefore, the following conditions will be listed on the ATC to ensure compliance:

- Emissions from this IC engine shall not exceed any of the following limits: 4.00 g-NO<sub>x</sub>/bhp-hr, 0.45 g-CO/bhp-hr, or 0.42 g-VOC/bhp-hr. [District Rule 2201 and 17 CCR 93115]
- Emissions from this IC engine shall not exceed 0.13 g-PM<sub>10</sub>/bhp-hr based on USEPA certification using ISO 8178 test procedure. [District Rules 2201 and 4102 and 17 CCR 93115]
- Only CARB certified diesel fuel containing not more than 0.0015% sulfur by weight is to be used. [District Rules 2201 and 4801 and 17 CCR 93115]

**E. Compliance Assurance:**

**1. Source Testing**

Pursuant to District Policy APR 1705, source testing is not required for emergency standby IC engines to demonstrate compliance with Rule 2201.

**2. Monitoring**

Monitoring is not required to demonstrate compliance with Rule 2201.

### **3. Recordkeeping**

Recordkeeping is required to demonstrate compliance with the offset, public notification, and daily emission limit requirements of Rule 2201. As required by District Rule 4702, *Stationary Internal Combustion Engines - Phase 2*, this IC engine is subject to recordkeeping requirements. Recordkeeping requirements, in accordance with District Rule 4702, will be discussed in Section VIII, *District Rule 4702*, of this evaluation.

### **4. Reporting**

Reporting is not required to ensure compliance with Rule 2201.

## **F. Ambient Air Quality Analysis (AAQA)**

An AAQA shall be conducted for the purpose of determining whether a new or modified Stationary Source will cause or make worse a violation of an air quality standard. The District's Technical Services Division conducted the required analysis. Refer to **Appendix E** of this document for the AAQA summary sheet.

The proposed location is in an attainment area for NO<sub>x</sub>, CO, and SO<sub>x</sub>. As shown by the AAQA summary sheet the proposed equipment will not cause a violation of an air quality standard for NO<sub>x</sub>, CO, or SO<sub>x</sub>.

The proposed location is in a non-attainment area for the state's PM<sub>10</sub> as well as federal and state PM<sub>2.5</sub> thresholds. As shown by the AAQA summary sheet the proposed equipment will not cause a violation of an air quality standard for PM<sub>10</sub> and PM<sub>2.5</sub>.

## **Rule 2520 Federally Mandated Operating Permits**

Since this facility's potential to emit does not exceed any major source thresholds of Rule 2201, this facility is not a major source and Rule 2520 does not apply.

## **Rule 4001 New Source Performance Standards (NSPS)**

### **40 CFR 60 Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines**

Pursuant to § 60.4200 of Subpart IIII, this engine is subject to this federal regulation. However, the District has not been delegated authorization to enforce the requirements of this regulation. The applicant will be so notified in a permit condition.

## **Rule 4002 National Emission Standards for Hazardous Air Pollutants**

### **40 CFR 63 Subpart ZZZZ – National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (RICE)**

Pursuant to § 63.6585 of Subpart ZZZZ, this engine is subject to this federal regulation. However, the District has not been delegated authorization to enforce the requirements of

40 CFR 63 Subpart ZZZZ for non-Part 70 sources (Major Sources). The applicant will be so notified in a permit condition.

**Rule 4101 Visible Emissions**

Rule 4101 states that no air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity. This emergency engine is used to provide electrical power to pumps used to distribute potable water to the city. The applicant as requested a higher opacity limit. See discussion of CH&SC 41706.1 on the next page concerning opacity limit for this emergency engine.

**Rule 4102 Nuisance**

Rule 4102 states that no air contaminant shall be released into the atmosphere which causes a public nuisance. Public nuisance conditions are not expected as a result of these operations provided the equipment is well maintained. Therefore, the following condition will be listed on the ATC to ensure compliance:

- {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]

**California Health & Safety Code 41700 (Health Risk Assessment)**

District Policy APR 1905 - Risk Management Policy for Permitting New and Modified Sources (dated 3/2/01) specifies that for an increase in emissions associated with a proposed new source or modification, the District perform an analysis to determine the possible impact to the nearest resident or worksite.

Technical Services received a request on October 8, 2015, to perform a Risk Management Review (RMR) for a 1,881 bhp emergency diesel IC engine powering an electric generator. (See RMR Summary in Appendix E).

<b>RMR Summary</b>			
<b>Categories</b>	<b>Emergency Diesel ICE (Unit 1-0)</b>	<b>Project Totals</b>	<b>Facility Totals</b>
<b>Prioritization Score</b>	N/A <sup>1</sup>	N/A <sup>1</sup>	>1
<b>Acute Hazard Index</b>	N/A <sup>2</sup>	N/A <sup>2</sup>	0.00
<b>Chronic Hazard Index</b>	N/A <sup>2</sup>	N/A <sup>2</sup>	0.00
<b>Maximum Individual Cancer Risk (10<sup>-6</sup>)</b>	<b>0.13</b>	<b>0.13</b>	<b>0.13</b>
<b>T-BACT Required?</b>	<b>No</b>		
<b>Special Permit Conditions?</b>	<b>Yes</b>		

1 Prioritization for this unit was not conducted since it has been determined that all diesel-fired IC engines will result in a prioritization score greater than 1.0.  
 2 Acute and Chronic Hazard Indices were not calculated since there is no risk factor, or the risk factor is so low that the risk has been determined to be insignificant for this type of unit.

The cancer risk associated with the operation of the proposed diesel IC engine is less than 1.0 in a million. In accordance with the District's Risk Management Policy, the project is approved without Toxic Best Available Control Technology (T-BACT) for PM<sub>10</sub>.

The following conditions will be listed on the ATC to ensure compliance with the RMR:

Unit # 1-0:

1. The PM<sub>10</sub> emissions rate shall not exceed 0.13 g/hp-hr based on US EPA certification using ISO 8178 test procedure. [District Rules 2201 and 4102; 13 CCR 2423 and 17 CCR 93115]
2. {1898} The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap (flapper ok), roof overhang, or any other obstruction. [District Rule 4102]
3. The engine shall be operated only for maintenance, testing, and required regulatory purposes, and during emergency situations. Operation of the engine for maintenance, testing, and required regulatory purposes shall not exceed 24 hours per year. [District Rules 2201, and 4702 and 17 CCR 93115]

**California Health & Safety Code 41701.6 - Limitation on Discharge Requirements for Drinking Water Systems**

This section states:

Section 41701.6: Neither the state board nor any district shall impose a discharge requirement on emissions of visible smoke from any diesel auxiliary engine or generator used exclusively to operate a drinking water system which is more stringent than the Ringelmann 2 limit, as published by the United States Bureau of Mines on January 1, 1995, when operated under emergency circumstances, or operated not more than 30 minutes each week, or two hours each month, under nonemergency circumstances.

The applicant has requested that this emergency engine be allowed the higher opacity limits as referenced above. Therefore, the following limit will appear on the ATC permit:

{3454} No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 2 or 40% opacity. [CH&SC 41701.6]

**Rule 4201 Particulate Matter Concentration**

Rule 4201 limits particulate matter emissions from any single source operation to 0.1 gr/dscf, which, as calculated below, is equivalent to a PM<sub>10</sub> emission factor of 0.4 g-PM<sub>10</sub>/bhp-hr.

$$0.1 \frac{\text{grain-PM}}{\text{dscf}} \times \frac{\text{g}}{15.43 \text{ grain}} \times \frac{1 \text{ Btu}_{in}}{0.35 \text{ Btu}_{out}} \times \frac{9,051 \text{ dscf}}{10^6 \text{ Btu}} \times \frac{2,542.5 \text{ Btu}}{1 \text{ bhp-hr}} \times \frac{0.96 \text{ g-PM}_{10}}{1 \text{ g-PM}} = 0.4 \frac{\text{g-PM}_{10}}{\text{bhp-hr}}$$

The new engine has a PM<sub>10</sub> emission factor less than 0.4 g/bhp-hr. Therefore, compliance is expected and the following condition will be listed on the ATC:

- {14} Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201]

**Rule 4701 Internal Combustion Engines – Phase 1**

District Rule 4701 is applicable to diesel-fired emergency standby or emergency IC engines. Rule 4702 is at least as stringent as this rule in all aspects; therefore, compliance with that rule will ensure compliance with Rule 4701.

**Rule 4702 Internal Combustion Engines – Phase 2**

The following table demonstrates how the proposed engine will comply with the requirements of District Rule 4702.

District Rule 4702 Requirements Emergency Standby IC Engines	Proposed Method of Compliance with District Rule 4702 Requirements
Operation of emergency standby engines is limited to 100 hours or less per calendar year for non-emergency purposes, verified through the use of a non-resettable elapsed operating time meter.	The Air Toxic Control Measure for Stationary Compression Ignition Engines (Stationary ATCM) limits this engine maintenance and testing to 24 hours/year. Thus, compliance is expected.
Emergency standby engines cannot be used to reduce the demand for electrical power when normal electrical power line service has not failed, or to produce power for the electrical distribution system, or in conjunction with a voluntary utility demand reduction program or interruptible power contract.	The following conditions will be included on the permit: <ul style="list-style-type: none"> <li>• {3807} An emergency situation is an unscheduled electrical power outage caused by sudden and reasonably unforeseen natural disasters or sudden and reasonably unforeseen events beyond the control of the permittee. [District Rules 4701 and 4702]</li> <li>• {3808} This engine shall not be used to produce power for the electrical distribution system, as part of a voluntary utility demand reduction program, or for an interruptible power contract. [District Rules 4701 and 4702]</li> </ul>
The owner/operator must monitor the operational characteristics of each engine as recommended by the engine manufacturer or emission control system supplier.	The following condition will be included on the permit: <ul style="list-style-type: none"> <li>• {3478} During periods of operation for maintenance, testing, and required regulatory purposes, the permittee shall monitor the operational characteristics of the engine as recommended by the manufacturer or emission control system supplier (for example: check engine fluid levels, battery, cables and connections; change engine oil and filters; replace engine coolant; and/or other</li> </ul>



	operational characteristics as recommended by the manufacturer or supplier). [District Rules 4701 and 4702]
<p>Records of the total hours of operation of the emergency standby engine, type of fuel used, purpose for operating the engine, all hours of non-emergency and emergency operation, and support documentation must be maintained. All records shall be retained for a period of at least five years, shall be readily available, and be made available to the APCO upon request.</p>	<p>The following conditions will be included on the permit:</p> <ul style="list-style-type: none"> <li>• {3496} The permittee shall maintain monthly records of emergency and non-emergency operation. Records shall include the number of hours of emergency operation, the date and number of hours of all testing and maintenance operations, the purpose of the operation (for example: load testing, weekly testing, rolling blackout, general area power outage, etc.) and records of operational characteristics monitoring. For units with automated testing systems, the operator may, as an alternative to keeping records of actual operation for testing purposes, maintain a readily accessible written record of the automated testing schedule. [District Rule 4702 and 17 CCR 93115]</li> <li>• The permittee shall maintain monthly records of the type of fuel purchased. [District Rule 4702 and 17 CCR 93115]</li> <li>• {3475} All records shall be maintained and retained on-site for a minimum of five years, and shall be made available for District inspection upon request. [District Rules 4701 and 4702 and 17 CCR 93115]</li> </ul>

**Rule 4801 Sulfur Compounds**

Rule 4801 requires that sulfur compound emissions (as SO<sub>2</sub>) shall not exceed 0.2% by volume. Using the ideal gas equation, the sulfur compound emissions are calculated as follows:

$$\text{Volume SO}_2 = (n \times R \times T) \div P$$

n = moles SO<sub>2</sub>

T (standard temperature) = 60 °F or 520 °R

$$R \text{ (universal gas constant)} = \frac{10.73 \text{ psi} \cdot \text{ft}^3}{\text{lb} \cdot \text{mol} \cdot \text{°R}}$$

$$\frac{0.000015 \text{ lb} - S}{\text{lb} - \text{fuel}} \times \frac{7.1 \text{ lb}}{\text{gal}} \times \frac{64 \text{ lb} - \text{SO}_2}{32 \text{ lb} - S} \times \frac{1 \text{ MMBtu}}{9,051 \text{ scf}} \times \frac{1 \text{ gal}}{0.137 \text{ MMBtu}} \times \frac{\text{lb} - \text{mol}}{64 \text{ lb} - \text{SO}_2} \times \frac{10.73 \text{ psi} \cdot \text{ft}^3}{\text{lb} - \text{mol} \cdot \text{°R}} \times \frac{520 \text{°R}}{14.7 \text{ psi}} \times 1,000,000 = 1.0 \text{ ppmv}$$

Since 1.0 ppmv is ≤ 2,000 ppmv, this engine is expected to comply with Rule 4801. Therefore, the following condition will be listed on the ATC to ensure compliance:

- Only CARB certified diesel fuel containing not more than 0.0015% sulfur by weight is to be used. [District Rules 2201 and 4801, and 17 CCR 93115]

**California Health & Safety Code 42301.6 (School Notice)**

The District has verified that this site is not located within 1,000 feet of a school. Therefore, pursuant to California Health and Safety Code 42301.6, a school notice is not required.

**Title 17 California Code of Regulations (CCR), Section 93115 - Airborne Toxic Control Measure (ATCM) for Stationary Compression-Ignition (CI) Engines**

The following table demonstrates how the proposed engine will comply with the requirements of Title 17 CCR Section 93115.

Title 17 CCR Section 93115 Requirements for New Emergency IC Engines Powering Electrical Generators	Proposed Method of Compliance with Title 17 CCR Section 93115 Requirements
Emergency engines must be fired on CARB diesel fuel, or an approved alternative diesel fuel.	The applicant has proposed the use of CARB certified diesel fuel. The proposed permit condition, requiring the use of CARB certified diesel fuel, was included earlier in this evaluation.
Engines must emit diesel PM at a rate less than or equal to 0.15 g/bhp-hr or must meet the diesel PM standard, as specified in the off-road compression ignition standards for off-road engines with the same maximum rated power (17 CCR 93115)	The applicant has proposed the use of an engine that is certified to the applicable EPA Tier Certification level for the applicable horsepower range, guaranteeing compliance with the emission standards of Subpart IIII. Additionally, the proposed diesel PM emissions rate is less than or equal to 0.15 g/bhp-hr.
The engine may not be operated more than 50 hours per year for maintenance and testing purposes.	The following condition will be included on the permit: <ul style="list-style-type: none"> <li>• This engine shall be operated only for testing and maintenance of the engine, required regulatory purposes, and during emergency situations. Operation of the engine for maintenance, testing, and required regulatory purposes shall not exceed 24 hours per calendar year. [District Rule 4702 &amp; 17 CCR 93115]</li> </ul>
Engines, with a PM10 emissions rate greater than 0.01 g/bhp-hr and located at schools, may not be operated for maintenance and testing whenever there is a school sponsored activity on the grounds. Additionally, engines located within 500 feet of school grounds may not be operated for maintenance and testing between 7:30 AM and 3:30 PM	The District has verified that this engine is not located within 500' of a school. See site map of proposed location of this emergency engine.
An owner or operator shall maintain monthly records of the following: emergency use hours of operation;	Permit conditions enforcing these requirements were shown earlier in the

maintenance and testing hours of operation; hours of operation for emission testing; initial start-up testing hours; hours of operation for all other uses; and the type of fuel used. All records shall be retained for a minimum of 36 months.	evaluation.
--	-------------

### California Environmental Quality Act (CEQA)

The California Environmental Quality Act (CEQA) requires each public agency to adopt objectives, criteria, and specific procedures consistent with CEQA Statutes and the CEQA Guidelines for administering its responsibilities under CEQA, including the orderly evaluation of projects and preparation of environmental documents. The San Joaquin Valley Unified Air Pollution Control District (District) adopted its *Environmental Review Guidelines* (ERG) in 2001.

The basic purposes of CEQA are to:

- Inform governmental decision-makers and the public about the potential, significant environmental effects of proposed activities.
- Identify the ways that environmental damage can be avoided or significantly reduced.
- Prevent significant, avoidable damage to the environment by requiring changes in projects through the use of alternatives or mitigation measures when the governmental agency finds the changes to be feasible.
- Disclose to the public the reasons why a governmental agency approved the project in the manner the agency chose if significant environmental effects are involved.

Consistent with California Environmental Quality Act (CEQA) and CEQA Guidelines requirements, the San Joaquin Valley Air Pollution Control District (District) has adopted procedures and guidelines for implementing CEQA. The District's Environmental Review Guidelines (ERG) establishes procedures for avoiding unnecessary delay during the District's permitting process while ensuring that significant environmental impacts are thoroughly and consistently addressed. The ERG includes policies and procedures to be followed when processing permits for projects that are exempt under CEQA.

The State Legislature granted a number of exemptions from CEQA, including projects that require only ministerial approval. Based upon analysis of its own laws and consideration of CEQA provisions, the District has identified a limited number of District permitting activities considered to be ministerial approvals. As set forth in §4.2.1 of the ERG, projects permitted consistent with the District's Guidelines for Expedited Application Review (GEAR) are standard application reviews in which little or no discretion is used in issuing Authority to Construct (ATC) documents.

For the proposed project, the District performed an Engineering Evaluation (this document) and determined that the project will occur at an existing facility; involves negligible expansion of the existing use; and would not have a significant effect on the environment. The District further determined that the project qualifies for processing under the procedures set forth in the District's Permit Services Procedures Manual in the

Guidelines for Expedited Application Review (GEAR). Thus, as discussed above, issuance of such ATC(s) is ministerial approval for the District and is not subject to CEQA provisions.

**IX. Recommendations:**

Compliance with all applicable rules and regulations is expected. Issue Authority to Construct N-9203-1-0 subject to the permit conditions on the attached Authority to Construct in Appendix A.

**X. Billing Information:**

<b>Billing Schedule</b>			
<b>Permit Number</b>	<b>Fee Schedule</b>	<b>Fee Description</b>	<b>Fee Amount</b>
N-9203-1-0	3020-10-D	1,881 bhp IC engine	\$785

**Appendices:**

- A. Authority to Construct permit N-9203-1-0
- B. Engine Emissions Data
- C. QNEC Calculations
- D. BACT Guideline and BACT Analysis
- E. RMR Summary

# Appendix A

Authority to Construct permit N-9203-1-0

San Joaquin Valley  
Air Pollution Control District

**AUTHORITY TO CONSTRUCT**

ISSUANCE DATE: DRAFT  
**DRAFT**

PERMIT NO: N-9203-1-0

LEGAL OWNER OR OPERATOR: CITY OF MODESTO  
MAILING ADDRESS: UTILITIES DEPT WATER OPERATIONS  
PO BOX 642  
MODESTO, CA 95350

LOCATION: UTILITIES DEPT WATER OPERATIONS  
1105 BANGS AVE  
MODESTO, CA 95353

**EQUIPMENT DESCRIPTION:**

1881 BHP (INTERMITTENT) MITSUBISHI MODEL S12R-YPTAW-1 (TIER 2 CERTIFIED) DIESEL-FIRED EMERGENCY STANDBY IC ENGINE POWERING AN ELECTRICAL GENERATOR THAT POWERS UP TO FOUR VERTICAL TURBINE PUMPS FOR DISTRIBUTING DOMESTIC POTABLE WATER

**CONDITIONS**

1. {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
2. {14} Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201]
3. {3454} No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 2 or 40% opacity. [CH&SC 41701.6]
4. {1898} The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap (flapper ok), roof overhang, or any other obstruction. [District Rule 4102]
5. {4749} This engine shall be equipped with a non-resettable hour meter with a minimum display capability of 9,999 hours, unless the District determines that a non-resettable hour meter with a different minimum display capability is appropriate in consideration of the historical use of the engine and the owner or operator's compliance history. [District Rule 4702 and 17 CCR 93115]
6. {4258} Only CARB certified diesel fuel containing not more than 0.0015% sulfur by weight is to be used. [District Rules 2201 and 4801, and 17 CCR 93115]
7. Emissions from this IC engine shall not exceed any of the following limits: 4.00 g-NOx/bhp-hr, 0.45 g-CO/bhp-hr, or 0.42 g-VOC/bhp-hr. [District Rule 2201 and 17 CCR 93115]

CONDITIONS CONTINUE ON NEXT PAGE

YOU **MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (209) 557-6400 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT.** This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

Seyed Sadredin, Executive Director, APCO

**Arnaud Marjolle, Director of Permit Services**

N-9203-1-0 Dec 10 2015 4:53PM - CRUZJ - Joint Inspection NOT Required

8. Emissions from this IC engine shall not exceed 0.13 g-PM10/bhp-hr based on USEPA certification using ISO 8178 test procedure. [District Rules 2201 and 4102, and 17 CCR 93115]
9. {4261} This engine shall be operated and maintained in proper operating condition as recommended by the engine manufacturer or emissions control system supplier. [District Rule 4702]
10. {3478} During periods of operation for maintenance, testing, and required regulatory purposes, the permittee shall monitor the operational characteristics of the engine as recommended by the manufacturer or emission control system supplier (for example: check engine fluid levels, battery, cables and connections; change engine oil and filters; replace engine coolant; and/or other operational characteristics as recommended by the manufacturer or supplier). [District Rule 4702]
11. {3807} An emergency situation is an unscheduled electrical power outage caused by sudden and reasonably unforeseen natural disasters or sudden and reasonably unforeseen events beyond the control of the permittee. [District Rule 4702]
12. {3808} This engine shall not be used to produce power for the electrical distribution system, as part of a voluntary utility demand reduction program, or for an interruptible power contract. [District Rule 4702]
13. {3496} The permittee shall maintain monthly records of emergency and non-emergency operation. Records shall include the number of hours of emergency operation, the date and number of hours of all testing and maintenance operations, the purpose of the operation (for example: load testing, weekly testing, rolling blackout, general area power outage, etc.) and records of operational characteristics monitoring. For units with automated testing systems, the operator may, as an alternative to keeping records of actual operation for testing purposes, maintain a readily accessible written record of the automated testing schedule. [District Rule 4702 and 17 CCR 93115]
14. This engine shall be operated only for testing and maintenance of the engine, required regulatory purposes, and during emergency situations. Operation of the engine for maintenance, testing, and required regulatory purposes shall not exceed any of the following limits: 30 minutes per week or 2 hours per month. [District Rule 4702 and 17 CCR 93115 and CH&SC 41701.6]
15. {4263} The permittee shall maintain monthly records of the type of fuel purchased. [District Rule 4702 and 17 CCR 93115]
16. {3475} All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rule 4702 and 17 CCR 93115]
17. U.S. EPA administers the requirements of 40 CFR Part 60 Subpart IIII and 40 CFR Part 63 Subpart ZZZZ. The owner or operator shall comply with the emission and operating limitations, testing requirements, initial and continuous compliance requirements as specified in these subparts. The owner or operator shall submit all applicable notifications, reports, and records to the administrator by the required compliance dates. [District Rules 4001 and 4002]

DRAFT

# **Appendix B**

Engine emissions data



# KOHLER Power Systems

## 1250REOZMD 60 HZ. DIESEL INDUSTRIAL GENERATOR SET EMISSION DATA SHEET

### ENGINE INFORMATION

**Model:** Mitsubishi, S12R-Y2PTAW-1  
**Nameplate BHP @ 1800 RPM:** 1881  
**Type:** 4-Cycle, 12-V Cylinder  
**Aspiration:** Turbocharged  
**Compression Ratio:** 14.5:1  
**Emission Control Device:** Turbocharged and after cooled

**Bore:** 170mm (6.69 in.)  
**Stroke:** 180mm (7.09 in.)  
**Displacement:** 49.0 L (2992 cu. in.)  
**EPA Family:** FMVXL49.0BBA  
**EPA Certificate:** FMVXL49.0BBA-009

Table 1

1/4	1/2	3/4	Full
Standby	Standby	Standby	Standby
351.00	702.00	1052.00	1403.00
266.00	233.00	228.00	236.00
			5.93
			497.00

### PERFORMANCE DATA:

**Engine kW @ Stated Load**  
**Fuel Consumption (g/kWh)**  
**Exhaust Gas Flow (m<sup>3</sup>/s)**  
**Exhaust Temperature (°C)**

Table 2

EPA CERTIFICATE DATA	
HC	0.56
NOx	5.36
CO	0.60
PM	0.17

### EXHAUST EMISSION DATA:

**HC (Total Unburned Hydrocarbons)**  
**NOx (Oxides of Nitrogen as NO<sub>2</sub>)**  
**CO (Carbon Monoxide)**  
**PM (Particular Matter)**

Values are in g/kWh

### TEST METHODS AND CONDITIONS

Data was recorded during steady-state rated engine speed (± 25 RPM) with full load (± 2%). Pressures,

temperatures, and emission rates were stabilized

Fuel Spec Type 2-D and ASTM D975 No.2D

Fuel Temperature 37 ± 10 °C

Intake Temperature 25 °C



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
2015 MODEL YEAR  
CERTIFICATE OF CONFORMITY  
WITH THE CLEAN AIR ACT**

**OFFICE OF TRANSPORTATION  
AND AIR QUALITY  
ANN ARBOR, MICHIGAN 48105**

**Certificate Issued To:** Mitsubishi Heavy Industries, Ltd.  
(U.S. Manufacturer or Importer)

**Certificate Number:** FMVXL49.0BBA-009

**Effective Date:**  
11/17/2014

**Expiration Date:**  
12/31/2015

  
Byron J. Bunker, Division Director  
Compliance Division

**Issue Date:**  
11/17/2014

**Revision Date:**  
N/A

**Model Year:** 2015

**Manufacturer Type:** Original Engine Manufacturer

**Engine Family:** FMVXL49.0BBA

**Mobile/Stationary Indicator:** Stationary  
**Emissions Power Category:** 560<KW<=2237

**Fuel Type:** Diesel

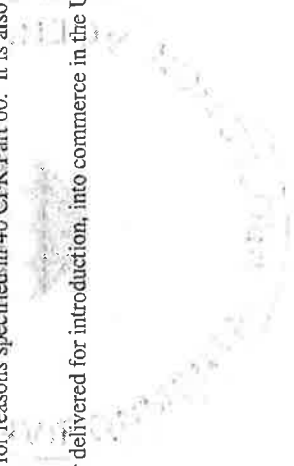
**After Treatment Devices:** No After Treatment Devices Installed  
**Non-after Treatment Devices:** Engine Design Modification

Pursuant to Section 111 and Section 213 of the Clean Air Act (42 U.S.C. sections 7411 and 7547) and 40 CFR Part 60, and subject to the terms and conditions prescribed in those provisions, this certificate of conformity is hereby issued with respect to the test engines which have been found to conform to applicable requirements and which represent the following engines, by engine family, more fully described in the documentation required by 40 CFR Part 60 and produced in the stated model year.

This certificate of conformity covers only those new compression-ignition engines which conform in all material respects to the design specifications that applied to those engines described in the documentation required by 40 CFR Part 60 and which are produced during the model year stated on this certificate of the said manufacturer, as defined in 40 CFR Part 60.

It is a term of this certificate that the manufacturer shall consent to all inspections described in 40 CFR 1068 and authorized in a warrant or court order. Failure to comply with the requirements of such a warrant or court order may lead to revocation or suspension of this certificate for reasons specified in 40 CFR Part 60. It is also a term of this certificate that this certificate may be revoked or suspended or rendered void *ab initio* for other reasons specified in 40 CFR Part 60.

This certificate does not cover engines sold, offered for sale, or introduced, or delivered for introduction, into commerce in the U.S. prior to the effective date of the certificate.



# Appendix C

## QNEC Calculations

### Quarterly Net Emissions Change (QNEC)

The Quarterly Net Emissions Change is used to complete the emission profile screen for the District's PAS database. The QNEC shall be calculated as follows:

QNEC = PE2 - PE1, where:

- QNEC = Quarterly Net Emissions Change for each emissions unit, lb/qtr
- PE2 = Post-Project Potential to Emit for each emissions unit, lb/qtr
- PE1 = Pre-Project Potential to Emit for each emissions unit, lb/qtr

Using the emission calculations in this evaluation, PE<sub>quarterly</sub> and BE<sub>quarterly</sub> can be calculated as follows:

This calculation is required for application emission profile purposes. It is assumed that each unit's annual emissions are evenly distributed throughout the year as follows:  $\Delta PE \text{ (lb/qtr)} = PE \text{ (lb/yr)} \div 4 \text{ qtr/yr}$

N-9203-1152-2-0:

- $\Delta PE_{NOx} = 398 \text{ lb-NOx/year} - 0 \text{ lb-NOx/year} = 398 \text{ lb/year}$
- $\Delta PE_{CO} = 45 \text{ lb-CO/year} - 0 \text{ lb-CO/year} = 45 \text{ lb/year}$
- $\Delta PE_{VOC} = 42 \text{ lb-VOC/year} - 0 \text{ lb-VOC/year} = 42 \text{ lb/year}$
- $\Delta PE_{PM10} = 13 \text{ lb-PM10/year} - 0 \text{ lb-PM10/year} = 13 \text{ lb/year}$
- $\Delta PE_{SOx} = 1 \text{ lb-SOx/year} - 0 \text{ lb-SOx/year} = 1 \text{ lb/year}$

	Quarter 1	Quarter 2	Quarter 3	Quarter 4
<b>NOx</b>	99	99	100	100
<b>CO</b>	11	11	11	12
<b>VOC</b>	10	10	11	11
<b>PM<sub>10</sub></b>	3	3	3	4
<b>SOx</b>	0	0	0	1

# **Appendix D**

## **BACT Guideline and BACT Analysis**

# San Joaquin Valley Unified Air Pollution Control District

**Best Available Control Technology (BACT) Guideline 3.1.1**  
**Last Update: 9/10/2013**  
**Emergency Diesel IC Engine**

Pollutant	Achieved in Practice or in the SIP	Technologically Feasible	Alternate Basic Equipment
CO	Latest EPA Tier Certification level for applicable horsepower range		
NOX	Latest EPA Tier Certification level for applicable horsepower range		
PM10	0.15 g/hp-hr or the Latest EPA Tier Certification level for applicable horsepower range, whichever is more stringent. (ATCM)		
SOX	Very low sulfur diesel fuel (15 ppmw sulfur or less)		
VOC	Latest EPA Tier Certification level for applicable horsepower range		

---

\*Note: for emergency engines 50 ≤ bhp < 75, Tier 4 Interim certification is the requirement; for emergency engines 75 ≤ bhp < 750 bhp, Tier 3 certification is the requirement; for emergency engines ≥ 750 bhp, Tier 2 certification is the requirement.

---

BACT is the most stringent control technique for the emissions unit and class of source. Control techniques that are not achieved in practice or contained in a state implementation plan must be cost effective as well as feasible. Economic analysis to demonstrate cost effectiveness is required for all determinations that are not achieved in practice or contained in an EPA approved State Implementation Plan.

## Top Down BACT Analysis for NO<sub>x</sub> and VOC emissions:

BACT Guideline 3.1.1 (September 10, 2009) applies to emergency diesel IC engines. In accordance with the District BACT policy, information from that guideline will be utilized without further analysis.

### 1. BACT analysis for NO<sub>x</sub> and VOC emissions:

#### a. Step 1 - Identify all control technologies

BACT Guideline 3.1.1 identifies only the following option:

- *Latest EPA Tier Certification level for applicable horsepower range*

To determine the latest applicable Tier level, the following EPA and state regulations were consulted:

- 40 CFR Part 60 Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines
- 40 CFR Part 89 – Control of Emissions from New and In-Use Nonroad Compression – Ignition Engines
- 40 CFR Part 1039 – Control of Emissions from New and In-Use Nonroad Compression-Ignition Engines
- Title 17 CCR, Section 93115 - Airborne Toxic Control Measure (ATCM) for Stationary Compression-Ignition (CI) Engines

40 CFR Parts 89 and 1039, which apply only to nonroad engines, do not directly apply because the proposed emergency engine does not meet the definition of a nonroad engine. Therefore, only Title 17 CCR, Section 93115 and 40 CFR Part 60 Subpart IIII apply directly to the proposed emergency engine.

Title 17 CCR, Section 93115.6(a)(3)(A) (CARB stationary diesel engine ATCM) applies to emergency standby diesel-fired engines and requires that such engines be certified to the emission levels in Table 1 (below). Please note that these levels are at least as stringent or more stringent than the emission levels in 40 CFR Subpart IIII.

Maximum Engine Power	Tier	Model Year(s)	PM	NMHC+NOx	CO
50 ≤ HP < 75 (37 ≤ kW < 56)	2	2007	0.15 (0.20)	5.6 (7.5)	3.7 (5.0)
	4i	2008+		3.5 (4.7)	
75 ≤ HP < 100 (56 ≤ kW < 75)	2	2007	0.15 (0.20)	5.6 (7.5)	3.7 (5.0)
	3	2008+		3.5 (4.7)	
100 ≤ HP < 175 (75 ≤ kW < 130)	3	2007	0.15 (0.20)	3.0 (4.0)	3.7 (5.0)
		2008+			
175 ≤ HP < 300 (130 ≤ kW < 225)	3	2007	0.15 (0.20)	3.0 (4.0)	2.6 (3.5)
		2008+			
300 ≤ HP < 600 (225 ≤ kW < 450)	3	2007	0.15 (0.20)	3.0 (4.0)	2.6 (3.5)
		2008+			
600 ≤ HP ≤ 750 (450 ≤ kW ≤ 560)	3	2007	0.15 (0.20)	3.0 (4.0)	2.6 (3.5)
		2008+			
HP > 750 (kW > 560)	2	2007	0.15 (0.20)	4.8 (6.4)	2.6 (3.5)
		2008+			

Additionally, 40 CFR Subpart IIII establishes emission standards for emergency diesel IC engines. These emission standards are the same as those specified in the CARB ATCM, except for engines rated greater than or equal to 100 and less than 175 hp. For such IC engines, the CARB ATCM is more stringent.

Therefore, the most stringent applicable emission standards are those listed in the CARB ATCM (Table 1). For IC engines rated greater than 750 hp, the Tier required is Tier 2.

Also, please note that neither the state ATCM nor the Code of Federal Regulations require the installation of IC engines meeting a higher Tier standard than those listed above for emergency applications, due to concerns regarding the effectiveness of the exhaust emissions controls during periods of short-term operation (such as testing operational readiness of an emergency engine).

The proposed engine is rated at 1,881 bhp. Therefore, the applicable control technology option is EPA Tier 2 certification.

**b. Step 2 - Eliminate technologically infeasible options**

The control option listed in Step 1 is not technologically infeasible.

**c. Step 3 - Rank remaining options by control effectiveness**

Ranking is not necessary since there is only one control option listed in Step 1.

**d. Step 4 - Cost Effectiveness Analysis**

The applicant has proposed the only control option remaining under consideration. Therefore, a cost effectiveness analysis is not required.

**e. Step 5 - Select BACT**

BACT for NOx and VOC is the use of an EPA Tier 2 certified engine. The applicant is proposing such a unit. Therefore, the District's BACT requirements will be satisfied.



## 2. BACT Analysis for PM<sub>10</sub> Emissions:

### a. Step 1 - Identify all control technologies

BACT Guideline 3.1.1 identifies only the following option:

- *0.15 g/bhp-hr or the Latest EPA Tier Certification level for applicable horsepower range, whichever is more stringent. (ATCM)*

The latest EPA Tier Certification level for an engine of the proposed model year and horsepower rating is Tier 3. Refer to the Top-Down BACT analysis for NO<sub>x</sub> for a discussion regarding the determination of the EPA Tier level to be considered.

Please note Tier 2 or 3 IC engines do not have a PM emission standard that is more stringent than 0.15 g/bhp-hr. Additionally, the ATCM requires a PM emission standard of 0.15 g/bhp-hr for all new emergency diesel IC engines.

Therefore, a PM/PM<sub>10</sub> emission standard of 0.15 g/bhp-hr is required as BACT.

### b. Step 2 - Eliminate technologically infeasible options

The control option listed in Step 1 is technologically feasible.

### c. Step 3 - Rank remaining options by control effectiveness

Ranking is not necessary since there is only one control option listed in Step 1.

### d. Step 4 - Cost Effectiveness Analysis

The applicant has proposed the only control option remaining under consideration. Therefore, a cost effectiveness analysis is not required.

### e. Step 5 - Select BACT

BACT for the control of PM<sub>10</sub> emissions is the use of an engine with an emission factor of 0.15 g/bhp-hr, or less. The applicant is proposing an engine that meets this requirement. Therefore, BACT will be satisfied.

# **Appendix E**

## RMR Summary

## San Joaquin Valley Air Pollution Control District Risk Management Review

To: James Harader, AQE - Permit Services  
 From: Jessica Coria, AQS - Permit Services  
 Date: 10/9/15  
 Facility Name: City of Modesto  
 Location: 1105 Bangs Ave, Modesto CA  
 Application #: N-9203-1-0  
 Project #: N-1153142

---

### A. RMR SUMMARY

RMR Summary			
Categories	Diesel-Fired IC Engine (Unit 1-0)	Project Totals	Facility Totals
Prioritization Score	N/A <sup>1</sup>	N/A <sup>1</sup>	N/A <sup>1</sup>
Acute Hazard Index	N/A <sup>2</sup>	N/A <sup>2</sup>	N/A <sup>2</sup>
Chronic Hazard Index	N/A <sup>2</sup>	N/A <sup>2</sup>	N/A <sup>2</sup>
Maximum Individual Cancer Risk (10 <sup>-6</sup> )	0.13	0.13	0.13
T-BACT Required?	No		
Special Permit Conditions?	Yes		

- <sup>1</sup> Prioritization for this unit was not conducted since it has been determined that all diesel-fired IC engines will result in a prioritization score greater than 1.0.
- <sup>2</sup> Acute and Chronic Hazard Indices were not calculated since there is no risk factor, or the risk factor is so low that the risk has been determined to be insignificant for this type of unit.

### Proposed Permit Conditions

To ensure that human health risks will not exceed District allowable levels; the following permit conditions must be included for:

#### Unit # 1-0

1. The PM10 emissions rate shall not exceed 0.13 g/bhp-hr based on US EPA certification using ISO 8178 test procedure. [District Rules 2201]
2. The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap (flapper ok), roof overhang, or any other obstruction. [District Rule 4102]
3. This engine shall be operated only for testing and maintenance of the engine, required regulatory purposes, and during emergency situations. Operation of the engine for maintenance, testing, and required regulatory purposes shall not exceed 24 hours per calendar year. [District Rule 4702 and 17 CCR 93115]

## B. RMR REPORT

### I. Project Description

Technical Services received a request on October 8, 2015, to perform an Ambient Air Quality Analysis and a Risk Management Review for a Mitsubishi Model S12R-YPTAW-1 Tier 2 Certified diesel-fired emergency IC engine, rated at 1881 bhp and powering an electrical generator.

### II. Analysis

Technical Services performed a screening level health risk assessment using the District developed DICE database.

The following parameters were used for the review:

Analysis Parameters Unit 1-0			
Source Type	Point	Location Type	Rural
BHP	1881	PM <sub>10</sub> g/hp-hr	0.13
Closest Receptor (m)	227.08	Quad	1
Max Hours per Year	24	Type of Receptor	Residential

Technical Services performed modeling for criteria pollutants CO, NO<sub>x</sub>, SO<sub>x</sub> and PM<sub>10</sub>; as well as an RMR. The emission rates used for criteria pollutant modeling were 45 lb/yr CO, 398 lb/yr NO<sub>x</sub>, 1 lb/yr SO<sub>x</sub>, and 13 lb/yr PM<sub>10</sub>. The engineer supplied the maximum fuel rate for the IC engine used during the analysis.

The results from the Criteria Pollutant Modeling are as follows:

#### Criteria Pollutant Modeling Results\*

Diesel ICE	1 Hour	3 Hours	8 Hours.	24 Hours	Annual
CO	NA <sup>1</sup>	X	NA <sup>1</sup>	X	X
NO <sub>x</sub>	NA <sup>1</sup>	X	X	X	Pass
SO <sub>x</sub>	NA <sup>1</sup>	NA <sup>1</sup>	X	NA <sup>1</sup>	Pass
PM <sub>10</sub>	X	X	X	NA <sup>1</sup>	Pass <sup>2</sup>
PM <sub>2.5</sub>	X	X	X	NA <sup>1</sup>	Pass <sup>2</sup>

\*Results were taken from the attached PSD spreadsheet.

<sup>1</sup>The project is an intermittent source as defined in APR-1920. In accordance with APR-1920, compliance with short-term (i.e., 1-hour, 3-hour, 8-hour and 24-hour) standards is not required.

<sup>2</sup>The criteria pollutants are below EPA's level of significance as found in 40 CFR Part §1.165 (b)(2).

### **III. Conclusion**

The cancer risk associated with the operation of the proposed diesel IC engine is less than 1.0 in a million. In accordance with the District's Risk Management Policy, the project is approved without Toxic Best Available Control Technology (T-BACT) for PM10.

To ensure that human health risks will not exceed District allowable levels; the permit conditions listed on page 1 of this report must be included for this proposed unit .

These conclusions are based on the data provided by the applicant and the project engineer. Therefore, this analysis is valid only as long as the proposed data and parameters do not change.

The emissions from the proposed equipment will not cause or contribute significantly to a violation of the State and National AAQS.

### **IV. Attachments**

- A. RMR request from the project engineer
- B. Additional information from the applicant/project engineer
- C. DICE Screening Risk
- D. Facility Summary
- E. AAQA Report
- F. AERMOD Non-Regulatory Option Checklist