San Joaquin Valley
AIR POLLUTION CONTROL DISTRICT

HEALTHY AIR LIVING™

DEC 12 2017

Mel Donahue
University of California Merced
Director, EH&S
5200 N Lake Rd - FSB-B
Merced, CA 95343

Re: Notice of Preliminary Decision - Authority to Construct Permits
Facility Number: N-5055
Project Number: N-1172664

Dear Mr. Donahue:

Enclosed for your review and comment is the District's analysis of University of California Merced's application for Authority to Construct permits for two 2,206 brake horsepower (bhp) Tier 2 certified, one 398 bhp Tier 3 certified, and two 1,141 bhp Tier 2 certified diesel-fired emergency standby engines powering electrical generators, at 5200 N Lake Rd, Merced.

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 permits. 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. Jonah Aiyabei of Permit Services at (559) 230-5910.

Sincerely,

for Arnaud Marjollet
Director of Permit Services

AM:jka

Enclosures

cc: Tung Le, CARB (w/ enclosure) via email

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www.valleyair.org www.healthyairliving.com

San Joaquin Valley Air Pollution Control District
Authority to Construct
Application Review

Diesel-Fired Emergency Standby IC Engines

Facility Name:	University of California Merced	Date:	December 11, 2017
Mailing Address:	Director, EH&S 5200 N Lake Rd - FSB-B Merced, CA 95343	Engineer:	Jonah Aiyabei
		Lead Engineer:	Jerry Sandhu
Contact Person:	Mel Donahue		
Telephone:	(209) 228-4234		
E-mail:	mdonahue@ucmerced.edu		
Application #s:	N-5055-12-0 through 16-0		
Project #:	N-1172664		
Deemed Complete:	September 19, 2017		

I. Proposal

University of California Merced is proposing to install two 2,206 brake horsepower (bhp) Tier 2 certified, one 398 bhp Tier 3 certified, and two 1,141 bhp Tier 2 certified diesel-fired emergency standby internal combustion (IC) engines powering electrical generators. The engines will be equipped with diesel particulate filter systems. The generators will be used to provide backup power to various facilities within the college campus.

II. Applicable Rules

Rule 2201	New and Modified Stationary Source Review Rule (2/18/16)
Rule 2410	Prevention of Significant Deterioration (6/16/11)
Rule 2520	Federally Mandated Operating Permits (6/21/01)
Rule 4001	New Source Performance Standards (4/14/99)
Rule 4002	National Emission Standards for Hazardous Air Pollutants (5/20/04)
Rule 4101	Visible Emissions (2/17/05)
Rule 4102	Nuisance (12/17/92)
Rule 4201	Particulate Matter Concentration (12/17/92)
Rule 4701	Internal Combustion Engines - Phase 1 (8/21/03)
Rule 4702	Internal Combustion Engines (11/14/13)
Rule 4801	Sulfur Compounds (12/17/92)
CH&SC 41700	Health Risk Assessment
CH&SC 42301.6	School Notice

Title 17 CCR, Section 93115 - Airborne Toxic Control Measure (ATCM) for Stationary Compression-Ignition (CI) Engines
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 engines will be installed at three different sites within the college campus at 5200 N Lake Rd, Merced, CA. The District has verified that the equipment will not be located within 1,000 feet of the outer boundaries of any K-12 schools. Therefore, the public notification requirement of California Health and Safety Code 42301.6 is not applicable to this project.

IV. Process Description

The emergency standby engines power electrical generators. Other than emergency standby operation, each engine may be operated up to 50 hours per year for maintenance and testing purposes.

V. Equipment Listing

N-5055-12-0: 2,206 BHP (INTERMITTENT) CATERPILLAR MODEL 3512C TIER 2 CERTIFIED DIESEL-FIRED EMERGENCY STANDBY IC ENGINE EQUIPPED WITH A JOHNSON MATTHEY CRT PARTICULATE FILTER SYSTEM POWERING AN ELECTRICAL GENERATOR (#1)

N-5055-13-0: 2,206 BHP (INTERMITTENT) CATERPILLAR MODEL 3512C TIER 2 CERTIFIED DIESEL-FIRED EMERGENCY STANDBY IC ENGINE EQUIPPED WITH A JOHNSON MATTHEY CRT PARTICULATE FILTER SYSTEM POWERING AN ELECTRICAL GENERATOR (#2)

N-5055-14-0: 398 BHP (INTERMITTENT) CATERPILLAR MODEL C9 TIER 3 CERTIFIED DIESEL-FIRED EMERGENCY STANDBY IC ENGINE EQUIPPED WITH A JOHNSON MATTHEY CRT PARTICULATE FILTER SYSTEM POWERING AN ELECTRICAL GENERATOR (#3)

N-5055-15-0: 1,141 BHP (INTERMITTENT) CATERPILLAR MODEL C27 TIER 2 CERTIFIED DIESEL-FIRED EMERGENCY STANDBY IC ENGINE EQUIPPED WITH A JOHNSON MATTHEY CRT PARTICULATE FILTER SYSTEM POWERING AN ELECTRICAL GENERATOR (#4)

N-5055-16-0: 1,141 BHP (INTERMITTENT) CATERPILLAR MODEL C27 TIER 2 CERTIFIED DIESEL-FIRED EMERGENCY STANDBY IC ENGINE EQUIPPED WITH A JOHNSON MATTHEY CRT PARTICULATE FILTER SYSTEM POWERING AN ELECTRICAL GENERATOR (#5)

VI. Emission Control Technology Evaluation

The applicant has proposed to install Tier 2 and Tier 3 certified diesel-fired IC engines that are fired on very low-sulfur diesel fuel.

diesel particulate matter, hydrocarbons, nitrogen oxides, and carbon monoxide (see Appendix C for copies of the manufacturer specifications sheets and emissions data).

The use of CARB certified diesel fuel (0.0015% by weight sulfur maximum) reduces SO_x emissions by over 99% from standard diesel fuel.

In addition, each engine will be equipped with a Johnson Matthey CRT diesel particulate filter (DPF) system capable of reducing PM emissions by at least 85%. A DPF removes particulate matter in engine exhaust by filtration, i.e. allowing gases to pass through while trapping soot particles. The accumulated soot particles are then thermally oxidized into carbon dioxide. The CRT system includes a catalyst component that aids in reducing the soot oxidation temperature, while also functioning as a regular oxidation catalyst that converts hydrocarbons and carbon monoxide into carbon dioxide and water. The design of the proposed system is explained in more detail on the manufacturer specifications sheet in Appendix C.

VII. General Calculations

A. Assumptions – Each IC Engine

Emergency operating schedule:	24 hours/day
Non-emergency operating schedule:	50 hours/year
Density of diesel fuel:	7.1 lb/gal
EPA F-factor (adjusted to 60 °F):	9,051 dscf/MMBtu
Fuel heating value:	137,000 Btu/gal
Thermal efficiency of engine:	commonly ≈ 35%
Bhp to Btu/hr conversion factor:	2,542.5 Btu/bhp-hr
All particulate matter (PM) = PM_{10}	

To streamline emissions calculations, $PM_{2.5}$ emissions are assumed to be equal to PM_{10} emissions. Only if needed to determine if a project is a Federal major modification for $PM_{2.5}$ will specific $PM_{2.5}$ emission calculations be performed.

B. Emission Factors

Emission Factors for Units N-5055-12-0 and 13-0		
Pollutant	**Emission Factor (g/bhp-hr)**	**Source**
NO_x	4.11	Manufacturer
SO_x	0.0051	Mass Balance Equation on the Following Page
PM_{10}	0.014	Manufacturer[1]
CO	0.85	Manufacturer
VOC	0.23	Manufacturer

[1] Each engine will be equipped with a diesel particulate filter system capable of reducing PM emissions by at least 85% from the manufacturer specified maximum levels.

Emission Factors for Unit N-5055-14-0		
Pollutant	**Emission Factor (g/bhp-hr)**	**Source**
NO_X	2.21	Manufacturer
SO_X	0.0051	Mass Balance Equation Below
PM_{10}	0.020	Manufacturer
CO	0.68	Manufacturer
VOC	0.21	Manufacturer

Emission Factors for Units N-5055-15-0 and 16-0		
Pollutant	**Emission Factor (g/bhp-hr)**	**Source**
NO_X	4.01	Manufacturer
SO_X	0.0051	Mass Balance Equation Below
PM_{10}	0.014	Manufacturer
CO	0.55	Manufacturer
VOC	0.08	Manufacturer

SOx Mass Balance Calculation

$$\frac{0.000015\,lb-S}{lb-fuel}\times\frac{7.1\,lb-fuel}{gallon}\times\frac{2\,lb-SO_2}{1\,lb-S}\times\frac{1\,gal}{137{,}000\,Btu}\times\frac{1\,bhp\,input}{0.35\,bhp\,out}\times\frac{2{,}542.5\,Btu}{bhp-hr}\times\frac{453.6\,g}{lb}=0.0051\ \frac{g-SO_x}{bhp-hr}$$

C. Calculations

1. Pre-Project Potential to Emit (PE1)

Since these are new emissions units, PE1 = 0.

2. Post-Project Potential to Emit (PE2)

The daily and annual PE2 are calculated as follows:

Daily PE2 (lb-pollutant/day) = EF (g-pollutant/bhp-hr) x rating (bhp) x daily operation (hr/day) / 453.6 g/lb

Annual PE2 (lb-pollutant/yr) = EF (g-pollutant/bhp-hr) x rating (bhp) x annual operation (hr/yr) / 453.6 g/lb

PE2 Summary for Units N-5055-12-0 and 13-0						
Pollutant	**Emissions Factor (g/bhp-hr)**	**Rating (bhp)**	**Daily Operation (hr/day)**	**Annual Operation (hr/year)**	**Daily PE2 (lb/day)**	**Annual PE2 (lb/yr)**
NO_x	4.11	2,206	24	50	**479.7**	**999**
SO_x	0.0051	2,206	24	50	**0.6**	**1**
PM_{10}	0.014	2,206	24	50	**1.6**	**3**
CO	0.85	2,206	24	50	**99.2**	**207**
VOC	0.23	2,206	24	50	**26.8**	**56**

PE2 Summary for Unit N-5055-14-0						
Pollutant	**Emissions Factor (g/bhp-hr)**	**Rating (bhp)**	**Daily Operation (hr/day)**	**Annual Operation (hr/year)**	**Daily PE2 (lb/day)**	**Annual PE2 (lb/yr)**
NO_x	2.21	398	24	50	**46.5**	**97**
SO_x	0.0051	398	24	50	**0.1**	**0**
PM_{10}	0.020	398	24	50	**0.4**	**1**
CO	0.68	398	24	50	**14.3**	**30**
VOC	0.21	398	24	50	**4.4**	**9**

PE2 Summary for Units N-5055-15-0 and 16-0						
Pollutant	**Emissions Factor (g/bhp-hr)**	**Rating (bhp)**	**Daily Operation (hr/day)**	**Annual Operation (hr/year)**	**Daily PE2 (lb/day)**	**Annual PE2 (lb/yr)**
NO_x	4.01	1,141	24	50	**242.1**	**504**
SO_x	0.0051	1,141	24	50	**0.3**	**1**
PM_{10}	0.014	1,141	24	50	**0.8**	**2**
CO	0.55	1,141	24	50	**33.2**	**69**
VOC	0.08	1,141	24	50	**4.8**	**10**

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

Pursuant to District Rule 2201, the SSPE1 is the Potential to Emit (PE) from all units with valid Authorities to Construct (ATCs) or Permits to Operate (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 (AER) that have occurred at the source, and which have not been used on-site.

This facility does not have any ERCs. The SSPE1 is summarized in the following table, based on PE values previously determined in project N-1151274:[2]

[2] The facility's most recent NSR project, finalized on June 17, 2015.

SSPE1 (lb/yr)					
Permit Unit	**NO_x**	**SO_x**	**PM_{10}**	**CO**	**VOC**
N-5055-1-1	1,349	1	3	39	1
N-5055-2-1	1,349	1	3	39	1
N-5055-3-1	342	0	1	18	0
N-5055-4-6	816	210	656	5,453	405
N-5055-5-6	1,415	367	989	9,536	708
N-5055-6-6	1,415	367	989	9,536	708
N-5055-7-4	657	183	475	4,526	329
N-5055-8-4	657	183	475	4,526	329
N-5055-9-1	0	0	0	0	194
N-5055-10-0	1	0	2	0	3
N-5055-11-0	726	1	24	422	49
SSPE1	**8,727**	**1,313**	**3,617**	**34,095**	**2,727**

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

Pursuant to District Rule 2201, the Post-Project Stationary Source Potential to Emit (SSPE2) is the 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 ERCs which have been banked since September 19, 1991 for AER that have occurred at the source, and which have not been used on-site. Since the only change in emissions for this facility is due to the installation of the new engines, the SSPE2 is as summarized in the following table:

SSPE2 (lb/yr)					
Permit Unit	**NO_X**	**SO_X**	**PM_{10}**	**CO**	**VOC**
SSPE1	8,727	1,313	3,617	34,095	2,727
N-5055-12-0	999	1	3	207	56
N-5055-13-0	999	1	3	207	56
N-5055-14-0	97	0	1	30	9
N-5055-15-0	504	1	2	69	10
N-5055-16-0	504	1	2	69	10
SSPE2	**11,830**	**1,317**	**3,628**	**34,677**	**2,868**

5. Major Source Determination

Rule 2201 Major Source Determination:

Pursuant to District Rule 2201, a Major Source is a stationary source with a SSPE2 equal to or exceeding one or more of the following threshold values. For the purposes of determining major source status the following shall not be included:

- Any ERCs associated with the stationary source
- Emissions from non-road IC engines (i.e. IC engines at a particular site at the facility for less than 12 months)
- Fugitive emissions, except for the specific source categories specified in 40 CFR 51.165

Rule 2201 Major Source Determination (lb/year)						
	NO_X	SO_X	PM_{10}	$PM_{2.5}$	CO	VOC
SSPE1	8,727	1,313	3,617	3,617	34,095	2,727
SSPE2	11,830	1,317	3,628	3,628	34,677	2,868
Major Source Threshold	20,000	140,000	140,000	140,000	200,000	20,000
Major Source?	No	No	No	No	No	No

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

Rule 2410 Major Source Determination:

The facility is not an existing Major Source for PSD for at least one pollutant. Therefore the facility is not an existing Major Source for PSD.

6. Baseline Emissions (BE)

BE = Pre Project Potential to Emit for:

- Any unit located at a non-Major Source,
- Any Highly-Utilized Emissions Unit, located at a Major Source,
- Any Fully-Offset Emissions Unit, located at a Major Source, or
- Any Clean Emissions Unit, located at a Major Source.

Otherwise,

BE = Historic Actual Emissions (HAE), calculated pursuant to District Rule 2201

Since these are new emission units, BE = PE1 = 0 for all pollutants.

7. SB 288 Major Modification

SB 288 Major Modification is defined in 40 CFR Part 51.165 as "any physical change in or change in the method of operation of a major stationary source that would result in a significant net emissions increase of any pollutant subject to regulation under the Act."

Since this facility is not a major source for any of the pollutants addressed in this project, this project does not constitute an SB 288 major modification.

8. Federal Major Modification

District Rule 2201 states that a Federal Major Modification is the same as a "Major Modification" as defined in 40 CFR 51.165 and part D of Title I of the CAA.

Since this facility is not a Major Source for any pollutants, this project does not constitute a Federal Major Modification.

9. Rule 2410 - Prevention of Significant Deterioration (PSD) Applicability Determination

The project potential to emit, by itself, will not exceed any PSD major source thresholds. Therefore Rule 2410 is not applicable and no further discussion is required.

10. 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 E.

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[3]:

a. Any new emissions unit with a potential to emit exceeding two pounds per day,
b. The relocation from one Stationary Source to another of an existing emissions unit with a potential to emit exceeding two pounds per day,
c. Modifications to an existing emissions unit with a valid Permit to Operate resulting in an AIPE exceeding two pounds per day, and/or
d. Any new or modified emissions unit, in a stationary source project, which results in an SB288 Major Modification or a Federal Major Modification, as defined by the rule.

As discussed in Section I, the facility is proposing to install five new emergency standby IC engines. Additionally, as determined in Sections VII.C.7 and VII.C.8, this project does not result in an SB288 Major Modification or a Federal Major Modification, respectively. Therefore, BACT can only be triggered if the daily emissions exceed 2.0 lb/day for any pollutant.

The daily emissions from the new engines are compared to the BACT threshold levels in the following tables:

New Emissions Unit BACT Applicability for Units N-5055-12-0 and 13-0				
Pollutant	**PE (lb/day)**	**BACT Threshold (lb/day)**	**SSPE2 (lb/yr)**	**BACT Triggered?**
NO_X	479.7	> 2.0	n/a	Yes
SO_X	0.6	> 2.0	n/a	No
PM_{10}	1.6	> 2.0	n/a	No
CO	99.2	> 2.0 and SSPE2 ≥ 200,000 lb/yr	34,677	No
VOC	26.8	> 2.0	n/a	Yes

[3] 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.

New Emissions Unit BACT Applicability for Unit N-5055-14-0				
Pollutant	**PE (lb/day)**	**BACT Threshold (lb/day)**	**SSPE2 (lb/yr)**	**BACT Triggered?**
NO_X	46.5	> 2.0	n/a	Yes
SO_X	0.1	> 2.0	n/a	No
PM_{10}	0.4	> 2.0	n/a	No
CO	14.3	> 2.0 and SSPE2 ≥ 200,000 lb/yr	34,677	No
VOC	4.4	> 2.0	n/a	Yes

New Emissions Unit BACT Applicability for Units N-5055-15-0 and 16-0				
Pollutant	**PE (lb/day)**	**BACT Threshold (lb/day)**	**SSPE2 (lb/yr)**	**BACT Triggered?**
NO_X	242.1	> 2.0	n/a	Yes
SO_X	0.3	> 2.0	n/a	No
PM_{10}	0.8	> 2.0	n/a	No
CO	33.2	> 2.0 and SSPE2 ≥ 200,000 lb/yr	34,677	No
VOC	4.8	> 2.0	n/a	Yes

As shown above, BACT will be triggered for NO_X and VOC emissions from the engines for this project.

2. BACT Guideline

BACT Guideline 3.1.1, which appears in Appendix B 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 B of this report, BACT is satisfied with:

NO_X: Latest Available Tier Certification level for applicable horsepower*

VOC: Latest Available Tier Certification level for applicable horsepower*

*Note: The certification requirements for emergency engines are as follows: 50 ≤ bhp < 75 – Tier 4I; 75 ≤ bhp < 750 – Tier 3; ≥ 750 bhp – Tier 2.

The facility has proposed to install two 2,206 bhp Tier 2 certified IC engines, two 1,141 bhp Tier 2 certified IC engines, and one 398 bhp Tier 3 certified IC engine. Therefore, BACT is satisfied for NO_x and VOC.

B. Offsets

1. Offset Applicability

Pursuant to Section 4.6.2 of this rule, offsets are not required for emergency IC engines. The engine in this project is an emergency IC engine; therefore, this exemption is applicable to this project.

However, even when there is an applicable exemption, the SSPE2 values are compared to the offset threshold to determine if offsets are triggered. In its PAS database, the District keeps track of facilities where offsets are triggered but an exemption applies. The SSPE2 values are compared to the offset trigger thresholds in the following table:

Offset Determination (lb/year)					
	NOx	**SOx**	**PM_{10}**	**CO**	**VOC**
SSPE2	11,830	1,317	3,628	34,677	2,868
Offset Thresholds	20,000	54,750	29,200	200,000	20,000
Offsets Triggered?	No	No	No	No	No

2. Quantity of Offsets Required

As shown in the table above, no offset thresholds are exceeded with this project. Further, as previously stated, the offset exemption from Section 4.6.2 of District Rule 2201 is applicable to this project; therefore, offset calculations are not necessary and offsets are not required.

C. Public Notification

1. Applicability

Public noticing is required for:

a. New Major Sources, SB288 Major Modifications, and Federal Major Modifications

As shown in Sections VII.C.5, VII.C.7, and VII.C.8, this facility is not a new Major Source, and the project does not constitute an SB 288 Major Modification or Federal Major Modification, respectively.

b. Any new emissions unit with a Potential to Emit greater than 100 pounds during any one day for any pollutant

As calculated in Section VII.C.2, daily emissions for NO_X are greater than 100 lb/day for four of the proposed engines.

c. Any project which results in the offset thresholds being surpassed

The SSPE1 and SSPE2 are compared to the offset thresholds in the following table.

Offset Thresholds				
Pollutant	**SSPE1 (lb/year)**	**SSPE2 (lb/year)**	**Offset Threshold**	**Public Notice Required?**
NO_X	8,727	11,830	20,000 lb/year	No
SO_X	1,313	1,317	54,750 lb/year	No
PM_{10}	3,617	3,628	29,200 lb/year	No
CO	34,095	34,677	200,000 lb/year	No
VOC	2,797	2,868	20,000 lb/year	No

As detailed above, there were no thresholds surpassed with this project; therefore public noticing is not required for offset purposes.

d. Any project with a Stationary Source Project Increase in Permitted Emissions (SSIPE) greater than 20,000 lb/year for any pollutant

For this project, the proposed engines are the only emissions units that will generate an increase in Potential to Emit. Since the proposed engines' total emissions are well below 20,000 lb/year for all pollutants (See Section VII.C.2), the SSIPE for this project will be below the public notice threshold.

e. Any project which results in a Title V significant permit modification

Since this facility does not have a Title V operating permit, this change is not a Title V significant Modification, and therefore public noticing is not required.

2. Public Notice Action

As demonstrated above, this project will require public noticing. Therefore, public notice documents will be submitted to the California Air Resources Board (CARB) and a public notice will be published in a local newspaper of general circulation prior to the issuance of the ATC for this equipment.

D. Daily Emissions Limits

Daily Emissions Limitations (DELs) and other enforceable conditions are required by Rule 2201 to restrict a unit's maximum daily emissions, to a level at or below the emissions associated with the maximum design capacity. 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. Therefore, the following conditions will be placed on the permits as a mechanism to ensure compliance:

Permit Units N-5055-12-0 and 13-0

- {4771} Emissions from this IC engine shall not exceed any of the following limits: 4.11 g-NOx/bhp-hr, 0.85 g-CO/bhp-hr, or 0.23 g-VOC/bhp-hr. [District Rule 2201 and 17 CCR 93115]

- {4772} Emissions from this IC engine shall not exceed 0.014 g-PM10/bhp-hr based on USEPA certification using ISO 8178 test procedure. [District Rules 2201 and 4102, and 17 CCR 93115]

- {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]

Permit Unit N-5055-14-0

- {4771} Emissions from this IC engine shall not exceed any of the following limits: 2.21 g-NOx/bhp-hr, 0.68 g-CO/bhp-hr, or 0.21 g-VOC/bhp-hr. [District Rule 2201 and 17 CCR 93115]

- {4772} Emissions from this IC engine shall not exceed 0.020 g-PM10/bhp-hr based on USEPA certification using ISO 8178 test procedure. [District Rules 2201 and 4102, and 17 CCR 93115]

- {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]

Permit Units N-5055-15-0 and 16-0

- {4771} Emissions from this IC engine shall not exceed any of the following limits: 4.01 g-NOx/bhp-hr, 0.55 g-CO/bhp-hr, or 0.08 g-VOC/bhp-hr. [District Rule 2201 and 17 CCR 93115]

- {4772} Emissions from this IC engine shall not exceed 0.014 g-PM10/bhp-hr based on USEPA certification using ISO 8178 test procedure. [District Rules 2201 and 4102, and 17 CCR 93115]

- {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]

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 District Rule 2201.

2. Monitoring

No monitoring is required to demonstrate compliance with District Rule 2201.

3. Recordkeeping

Recordkeeping requirements, in accordance with District Rule 4702, will be discussed in Section VIII, District Rule 4702, of this evaluation.

4. Reporting

No reporting is required to ensure compliance with District 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 D of this document for the AAQA summary sheet.

The proposed location is in an attainment area for NO_X, CO, and SO_X. As shown by the AAQA summary sheet the proposed equipment will not cause a violation of an air quality standard for NO_X, CO, or SO_X.

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

Rule 2410 Prevention of Significant Deterioration

As shown in Section VII.C.9 above, this project does not result in a new PSD major source or PSD major modification. No further discussion is required.

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

The District has not been delegated the authority to implement Subpart IIII requirements for non-Major Sources; therefore, no requirements will be placed on the permits.

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 Emissions (RICE)

The District has not been delegated the authority to implement NESHAP regulations for Area Source requirements for non-Major Sources; therefore, no requirements will be placed on the permits.

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. Therefore, the following condition will be placed on each permit as a mechanism to ensure compliance:

- {15} 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. [District Rule 4101]

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 placed on each permit as a mechanism 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* 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.

An HRA is not required for a project with a total facility prioritization score of less than one. According to the Technical Services Memo for this project (Appendix D), the total facility prioritization score including this project was greater than one. Therefore, an HRA was required to determine the short-term acute and long-term chronic exposure from this project.

The cancer risk for this project is summarized below:

HRA Summary			
Permit Unit	**Maximum Individual Cancer Risk**	**T-BACT Required?**	**Special Permit Requirements?**
N-5055-12-0	2.39E-08	No	Yes
N-5055-13-0	2.41E-08	No	Yes
N-5055-14-0	1.61E-07	No	Yes
N-5055-15-0	3.63E-09	No	Yes
N-5055-16-0	3.62E-09	No	Yes
Project Totals	**2.16E-07**		
Facility Totals	**1.41E-05**		

T-BACT

BACT for toxic emission control (T-BACT) is required if the cancer risk exceeds one in one million. As demonstrated above, T-BACT is not required for this project because the HRA indicates that the risk is not above the District's thresholds for triggering T-BACT requirements; therefore, compliance with the District's Risk Management Policy is expected.

District policy APR 1905 also specifies that the increase in emissions associated with a proposed new source or modification not have acute or chronic indices, or a cancer risk greater than the District's significance levels (i.e. acute and/or chronic indices greater than 1 and a cancer risk greater than 20 in a million). As outlined by the Technical Services Memo in Appendix D of this report, the emissions increases for this project were determined to be less than significant.

The following conditions will be placed on the permits as a mechanism to ensure compliance with the RMR:

Permit Units N-5055-12-0, 13-0, 15-0, and 16-0

- {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]

- {4772} Emissions from this IC engine shall not exceed 0.014 g-PM10/bhp-hr based on USEPA certification using ISO 8178 test procedure. [District Rules 2201 and 4102, and 17 CCR 93115]

- {4920} 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 50 hours per calendar year. [District Rules 2201, 4102, and 4702, and 17 CCR 93115]

Permit Units N-5055-14-0

- {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]

- {4772} Emissions from this IC engine shall not exceed 0.020 g-PM10/bhp-hr based on USEPA certification using ISO 8178 test procedure. [District Rules 2201 and 4102, and 17 CCR 93115]

- {4920} 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 50 hours per calendar year. [District Rules 2201, 4102, and 4702, and 17 CCR 93115]

Rule 4201 Particulate Matter Concentration

Rule 4201 limits particulate matter emissions from any single source operation to 0.1 g/dscf, which, as calculated below, is equivalent to a PM_{10} emission factor of 0.43 g-PM_{10}/bhp-hr.

$$0.1\ \frac{grain-PM}{dscf} \times \frac{g}{15.43\,grain} \times \frac{1\,Btu_{in}}{0.35\,Btu_{out}} \times \frac{9{,}051\,dscf}{10^6\,Btu} \times \frac{2{,}542.5\,Btu}{1\,bhp-hr} = 0.43\,\frac{g-PM_{10}}{bhp-hr}$$

Since all the proposed engines have PM_{10} emission factors less than 0.4 g/bhp-hr, compliance is expected. The following condition will be placed on each permit as a mechanism to ensure compliance:

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

Rule 4701 Internal Combustion Engines - Phase 1

The purpose of this rule is to limit the emissions of nitrogen oxides (NOx), carbon monoxide (CO), and volatile organic compounds (VOC) from internal combustion engines. Except as provided in Section 4.0, the provisions of this rule apply to any internal combustion engine, rated greater than 50 bhp, that requires a PTO.

The proposed engines are also subject to District Rule 4702, Internal Combustion Engines. Since emissions limits of District Rule 4702 and all other requirements are equivalent or more stringent than District Rule 4701 requirements for emergency engines, compliance with District Rule 4702 requirements will satisfy requirements of District Rule 4701.

Rule 4702 Internal Combustion Engines

Emergency standby engines are subject to District Rule 4702 requirements. Emergency standby engines are defined in Section 3.0 of District Rule 4702 as follows:

> *3.15 Emergency Standby Engine: an internal combustion engine which operates as a temporary replacement for primary mechanical or electrical power during an unscheduled outage caused by sudden and reasonably unforeseen natural disasters or sudden and reasonably unforeseen events beyond the control of the operator. An engine shall be considered to be an emergency standby engine if it is used only for the following purposes: (1) periodic maintenance, periodic readiness testing, or readiness testing during and after repair work; (2) unscheduled outages, or to supply power while maintenance is performed or repairs are made to the primary power supply; and (3) if it is limited to operate 100 hours or less per calendar year for non-emergency purposes. An engine shall not be considered to be an emergency standby engine if it is used: (1) to reduce the demand for electrical power when normal electrical power line service has not failed, or (2) to produce power for the utility electrical distribution system, or (3) in conjunction with a voluntary utility demand reduction program or interruptible power contract.*

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 each permit:

- {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 and 17 CCR 93115]

- {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 and 17 CCR 93115]

The 100 hour requirement is less stringent than the Air Toxic Control Measure operating limitations for emergency standby engines. Therefore, compliance with the applicable Air Toxic Control Measure requirements ensures compliance with the 100 hour requirement.

Operation of emergency standby engines is limited to 100 hours or less per calendar year for non-emergency purposes. The Air Toxic Control Measure for Stationary Compression Ignition Engines (Stationary ATCM) limits these engines' maintenance and testing to 50 hours/year each; therefore, compliance is expected. The following condition will be included on each permit:

- {4920} 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 50 hours per calendar year. [District Rules 2201, 4102, and 4702, and 17 CCR 93115]

The following exemption in Section 4.2 of District Rule 4702 applies to emergency standby engines:

> *4.2 Except for the requirements of Section 5.9 and Section 6.2.3, the requirements of this rule shall not apply to:*
> *4.2.1 An emergency standby engine as defined in Section 3.0 of this rule, and provided that it is operated with a nonresettable elapsed operating time meter. In lieu of a nonresettable time meter, the owner of an emergency engine may use an alternative device, method, or technique, in determining operating time provided that the alternative is approved by the APCO. The owner of the engine shall properly maintain and operate the time meter or alternative device in accordance with the manufacturer's instructions.*

Pursuant to the exemption in Section 4.2, the following requirements of Section 5.9 are applicable to emergency standby engines

Section 5.9 requires the owner to:

> *5.9.2 Properly operate and maintain each engine as recommended by the engine manufacturer or emission control system supplier.*

5.9.3 Monitor the operational characteristics of each engine as recommended by the engine manufacturer or emission control system supplier.

5.9.4 Install and operate a nonresettable elapsed operating time meter. In lieu of installing a nonresettable time meter, the owner of an engine may use an alternative device, method, or technique, in determining operating time provided that the alternative is approved by the APCO and is allowed by Permit-to-Operate or Permit-Exempt Equipment Registration condition. The owner of the engine shall properly maintain and operate the time meter or alternative device in accordance with the manufacturer's instructions.

Properly operate and maintain each engine as recommended by the engine manufacturer or emission control system supplier. The following condition will be included on each permit:

- {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]

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 each permit:

- {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]

Install and operate a nonresettable elapsed time meter. In lieu of installing a nonresettable elapsed time meter, the operator may use an alternative device, method, or technique, in determining operating time provided that the alternative is approved by the APCO and EPA and is allowed by Permit-to-Operate condition. The operator shall properly maintain and operate the nonresettable elapsed time meter or alternative device in accordance with the manufacturer's instructions. The following condition will be included on each permit:

- {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]

The exemption in Rule 4702 Section 4.2 for emergency standby engines requires the engines to comply with Section 6.2.3, shown below.

> *6.2.3 An owner claiming an exemption under Section 4.2 or Section 4.3 shall maintain annual operating records. This information shall be retained for at least five years, shall be readily available, and provided to the APCO upon request. The records shall include, but are not limited to, the following:*
>
> > *6.2.3.1 Total hours of operation,*
> > *6.2.3.2 The type of fuel used,*
> > *6.2.3.3 The purpose for operating the engine,*
> > *6.2.3.4 For emergency standby engines, all hours of non-emergency and emergency operation shall be reported, and*
> > *6.2.3.5 Other support documentation necessary to demonstrate claim to the exemption.*

Records of the total hours of operation, type of fuel used, purpose for operating the engine, all hours of non-emergency and emergency operation, and other 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. The following conditions will be included on each permit:

- {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]

- {4263} The permittee shall maintain monthly records of the type of fuel purchased. [District Rule 4702 and 17 CCR 93115]

- {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]

Rule 4801 Sulfur Compounds

Rule 4801 requires that sulfur compound emissions (as SO_2) shall not exceed 0.2% by volume. Using the ideal gas equation, the sulfur compound emissions are calculated as follows:

Volume SO_2 = (n x R x T) ÷ P

n = moles SO_2

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

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

$$\frac{0.000015\,lb-S}{lb-fuel}\times\frac{7.1\,\text{lb}}{\text{gal}}\times\frac{64\,\text{lb}-SO_2}{32\,\text{lb}-S}\times\frac{1\,\text{MMBtu}}{9{,}051\,\text{scf}}\times\frac{1\,\text{gal}}{0.137\,\text{MMBtu}}\times\frac{\text{lb}-\text{mol}}{64\,\text{lb}-SO_2}\times\frac{10.73\,\text{psi}-\text{ft}^3}{\text{lb}-\text{mol}-{}^\circ\text{R}}\times\frac{520{}^\circ\text{R}}{14.7\,\text{psi}}\times 1{,}000{,}000 = 1.0\ \text{ppmv}$$

Since 1.0 ppmv is ≤ 2,000 ppmv, these engines are expected to comply with Rule 4801. Therefore, the following condition will be placed on each permit as a mechanism to ensure compliance:

- {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]

California Health & Safety Code 42301.6 (School Notice)

The District has verified that this engine 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 requirements apply to new engines (those installed after 1/1/05):

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 engine(s) 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, is included on each permit: • {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]
The engine(s) must meet the emission standards in Table 1 of the ATCM for the specific power rating and model year of the proposed engine.	The applicant has proposed the use of engines that are certified to the latest EPA Tier Certification standards for the applicable horsepower ranges, guaranteeing compliance with the emission standards of the ATCM. Additionally, the proposed diesel PM emission rates are 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 unless the PM emissions are ≤ 0.01 g/bhp-hr, then the engine is allowed 100 hours per year. Emissions from these engines are certified at 0.014 and 0.020 g/bhp-hr, therefore the engines are allowed 50 hours.	The following conditions will be included on the permits: Units N-5055-12-0, 13-0, 15-0, and 16-0 • {4772} Emissions from this IC engine shall not exceed 0.014 g-PM10/bhp-hr based on USEPA certification using ISO 8178 test procedure. [District Rules 2201 and 4102, and 17 CCR 93115] Unit N-5055-14-0 • {4772} Emissions from this IC engine shall not exceed 0.020 g-PM10/bhp-hr based on USEPA certification using ISO 8178 test procedure. [District Rules 2201 and 4102, and 17 CCR 93115] All Units • {4920} 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 50 hours per calendar year. [District Rules 2201, 4102, and 4702, and 17 CCR 93115]
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 these engines are not located within 500' of any schools.
A non-resettable hour meter with a minimum display capability of 9,999 hours shall be installed upon engine installation, or by no later than January 1, 2005, on all engines subject to all or part of the requirements of sections 93115.6, 93115.7, or 93115.8(a) unless the District determines on a case-by-case basis 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.	The following condition will be included on each permit: • {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]

An owner or operator shall maintain monthly records of the following: emergency use hours of operation; 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.	The following condition will be included on each permit: • {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]

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.

The District performed an Engineering Evaluation (this document) for the proposed project and determined that the project qualifies for ministerial approval under the District's Guideline for Expedited Application Review (GEAR). Section 21080 of the Public Resources Code exempts from the application of CEQA those projects over which a public agency exercises only ministerial approval. Therefore, the District finds that this project is exempt from the provisions of CEQA.

Indemnification Agreement/Letter of Credit Determination

According to District Policy APR 2010 (CEQA Implementation Policy), when the District is the Lead or Responsible Agency for CEQA purposes, an indemnification agreement and/or a letter of credit may be required. The decision to require an indemnity agreement

and/or a letter of credit is based on a case-by-case analysis of a particular project's potential for litigation risk, which in turn may be based on a project's potential to generate public concern, its potential for significant impacts, and the project proponent's ability to pay for the costs of litigation without a letter of credit, among other factors.

As described above, the project requires only ministerial approval, and is exempt from the provisions of CEQA. As such, an Indemnification Agreement or a Letter of Credit will not be required for this project in the absence of expressed public concern.

IX. Recommendation

Pending a successful NSR public noticing period, issue Authority to Construct permits N-5055-12-0 through 16-0 subject to the permit conditions on the drafts attached in Appendix A.

X. Billing Information

Billing Schedule			
Permit Number	**Fee Schedule**	**Fee Description**	**Fee Amount**
N-5055-12-0	3020-10-F	2,206 bhp	$820
N-5055-13-0	3020-10-F	2,206 bhp	$820
N-5055-14-0	3020-10-C	398 bhp	$364
N-5055-15-0	3020-10-F	1,141 bhp	$820
N-5055-16-0	3020-10-F	1,141 bhp	$820

Appendixes

A. Draft ATC Permits
B. BACT Guideline and BACT Analysis
C. Manufacturer Specifications Sheets and Emissions Data
D. RMR and AAQA Summary
E. QNEC Calculations

Appendix A

Draft ATC Permits

San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

PERMIT NO: N-5055-12-0

ISSUANCE DATE: DRAFT

LEGAL OWNER OR OPERATOR: UNIVERSITY OF CALIFORNIA MERCED
MAILING ADDRESS: DIRECTOR, EH&S
5200 N LAKE RD - FSB-B
MERCED, CA 95343

LOCATION: 5200 N LAKE RD
MERCED, CA 95343

EQUIPMENT DESCRIPTION:
2,206 BHP (INTERMITTENT) CATERPILLAR MODEL 3512C TIER 2 CERTIFIED DIESEL-FIRED EMERGENCY STANDBY IC ENGINE EQUIPPED WITH A JOHNSON MATTHEY CRT PARTICULATE FILTER SYSTEM POWERING AN ELECTRICAL GENERATOR (#1)

CONDITIONS

1. {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
2. {15} 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. [District Rule 4101]
3. {14} Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201]
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: 4.11 g-NOx/bhp-hr, 0.85 g-CO/bhp-hr, or 0.23 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 Marjollet, Director of Permit Services
N-5055-12-0 : Dec 11 2017 11:26AM – AIYABEIJ : Joint Inspection NOT Required

8. Emissions from this IC engine shall not exceed 0.014 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 and 17 CCR 93115]

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 and 17 CCR 93115]

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. {4920} 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 50 hours per calendar year. [District Rules 2201, 4102, and 4702, and 17 CCR 93115]

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]

San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

DRAFT

PERMIT NO: N-5055-13-0 **ISSUANCE DATE:** DRAFT

LEGAL OWNER OR OPERATOR: UNIVERSITY OF CALIFORNIA MERCED
MAILING ADDRESS: DIRECTOR, EH&S
5200 N LAKE RD - FSB-B
MERCED, CA 95343

LOCATION: 5200 N LAKE RD
MERCED, CA 95343

EQUIPMENT DESCRIPTION:
2,206 BHP (INTERMITTENT) CATERPILLAR MODEL 3512C TIER 2 CERTIFIED DIESEL-FIRED EMERGENCY STANDBY IC ENGINE EQUIPPED WITH A JOHNSON MATTHEY CRT PARTICULATE FILTER SYSTEM POWERING AN ELECTRICAL GENERATOR (#2)

CONDITIONS

1. {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
2. {15} 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. [District Rule 4101]
3. {14} Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201]
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: 4.11 g-NOx/bhp-hr, 0.85 g-CO/bhp-hr, or 0.23 g-VOC/bhp-hr. [District Rule 2201 and 17 CCR 93115]

CONDITIONS CONTINUE ON NEXT PAGE

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Seyed Sadredin, Executive Director / APCO

DRAFT

Arnaud Marjollet, Director of Permit Services
N-5055-13-0 Dec 11 2017 11:26AM – AIYABEIJ Joint Inspection NOT Required

8. Emissions from this IC engine shall not exceed 0.014 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 and 17 CCR 93115]

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 and 17 CCR 93115]

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. {4920} 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 50 hours per calendar year. [District Rules 2201, 4102, and 4702, and 17 CCR 93115]

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]

San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

PERMIT NO: N-5055-14-0 **ISSUANCE DATE:** DRAFT

LEGAL OWNER OR OPERATOR: UNIVERSITY OF CALIFORNIA MERCED
MAILING ADDRESS: DIRECTOR, EH&S
5200 N LAKE RD - FSB-B
MERCED, CA 95343

LOCATION: 5200 N LAKE RD
MERCED, CA 95343

EQUIPMENT DESCRIPTION:
398 BHP (INTERMITTENT) CATERPILLAR MODEL C9 TIER 3 CERTIFIED DIESEL-FIRED EMERGENCY STANDBY IC ENGINE EQUIPPED WITH A JOHNSON MATTHEY CRT PARTICULATE FILTER SYSTEM POWERING AN ELECTRICAL GENERATOR (#3)

CONDITIONS

1. {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
2. {15} 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. [District Rule 4101]
3. {14} Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201]
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: 2.21 g-NOx/bhp-hr, 0.68 g-CO/bhp-hr, or 0.21 g-VOC/bhp-hr. [District Rule 2201 and 17 CCR 93115]

CONDITIONS CONTINUE ON NEXT PAGE

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Seyed Sadredin, Executive Director / APCO

Arnaud Marjollet, Director of Permit Services
N-5055-14-0 : Dec 11 2017 11:26AM – AIYABEIJ : Joint Inspection NOT Required

8. Emissions from this IC engine shall not exceed 0.020 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 and 17 CCR 93115]

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 and 17 CCR 93115]

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. {4920} 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 50 hours per calendar year. [District Rules 2201, 4102, and 4702, and 17 CCR 93115]

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]

San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

PERMIT NO: N-5055-15-0 **ISSUANCE DATE:** DRAFT

LEGAL OWNER OR OPERATOR: UNIVERSITY OF CALIFORNIA MERCED
MAILING ADDRESS: DIRECTOR, EH&S
5200 N LAKE RD - FSB-B
MERCED, CA 95343

LOCATION: 5200 N LAKE RD
MERCED, CA 95343

EQUIPMENT DESCRIPTION:
1,141 BHP (INTERMITTENT) CATERPILLAR MODEL C27 TIER 2 CERTIFIED DIESEL-FIRED EMERGENCY STANDBY IC ENGINE EQUIPPED WITH A JOHNSON MATTHEY CRT PARTICULATE FILTER SYSTEM POWERING AN ELECTRICAL GENERATOR (#4)

CONDITIONS

1. {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
2. {15} 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. [District Rule 4101]
3. {14} Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201]
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: 4.01 g-NOx/bhp-hr, 0.55 g-CO/bhp-hr, or 0.08 g-VOC/bhp-hr. [District Rule 2201 and 17 CCR 93115]

CONDITIONS CONTINUE ON NEXT PAGE

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Seyed Sadredin, Executive Director / APCO

Arnaud Marjollet, Director of Permit Services
N-5055-15-0 : Dec 11 2017 11:26AM – AIYABEIJ : Joint Inspection NOT Required

8. Emissions from this IC engine shall not exceed 0.014 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 and 17 CCR 93115]

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 and 17 CCR 93115]

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. {4920} 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 50 hours per calendar year. [District Rules 2201, 4102, and 4702, and 17 CCR 93115]

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]

San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

PERMIT NO: N-5055-16-0 **ISSUANCE DATE:** DRAFT

LEGAL OWNER OR OPERATOR: UNIVERSITY OF CALIFORNIA MERCED
MAILING ADDRESS: DIRECTOR, EH&S
5200 N LAKE RD - FSB-B
MERCED, CA 95343

LOCATION: 5200 N LAKE RD
MERCED, CA 95343

EQUIPMENT DESCRIPTION:
1,141 BHP (INTERMITTENT) CATERPILLAR MODEL C27 TIER 2 CERTIFIED DIESEL-FIRED EMERGENCY STANDBY IC ENGINE EQUIPPED WITH A JOHNSON MATTHEY CRT PARTICULATE FILTER SYSTEM POWERING AN ELECTRICAL GENERATOR (#5)

CONDITIONS

1. {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
2. {15} 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. [District Rule 4101]
3. {14} Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201]
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: 4.01 g-NOx/bhp-hr, 0.55 g-CO/bhp-hr, or 0.08 g-VOC/bhp-hr. [District Rule 2201 and 17 CCR 93115]

CONDITIONS CONTINUE ON NEXT PAGE

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Seyed Sadredin, Executive Director / APCO

Arnaud Marjollet, Director of Permit Services
N-5055-16-0 : Dec 11 2017 11:26AM – AIYABEIJ : Joint Inspection NOT Required

8. Emissions from this IC engine shall not exceed 0.014 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 and 17 CCR 93115]

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 and 17 CCR 93115]

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. {4920} 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 50 hours per calendar year. [District Rules 2201, 4102, and 4702, and 17 CCR 93115]

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]

Appendix B

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/bhp-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: The certification requirements are as follows: for emergency engines 50 ≤ bhp < 75 - Tier 4 Interim; for emergency engines 75 ≤ bhp < 750 - Tier 3; for emergency engines ≥ 750 bhp - Tier 2.

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 Each Emergency IC Engine

BACT Guideline 3.1.1 (September 10, 2013) 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_x 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 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 applies 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).

Table 1: Emission Standards for New Stationary Emergency Standby Diesel-Fueled CI Engines g/bhp-hr (g/kW-hr)					
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+			

Therefore, the most stringent applicable emission standards are those listed in the CARB ATCM (Table 1).

For IC engines rated greater than or equal to 50 hp and less than 75 hp, the highest Tier required is Tier 4i. For IC engines rated greater than or equal to 75 hp and less than 750 hp, the highest Tier reqired is Tier 3. For engines rated equal to or greater than 750 hp, the highest 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).

Permit Units N-5055-12-0, 13-0, 15-0, and 16-0

These proposed engines are rated at 2,206 and 1,141 bhp. Therefore, the applicable control technology option is EPA Tier 2 certification.

Permit Unit N-5055-14-0

The proposed engine is rated at 398 bhp. Therefore, the applicable control technology option is EPA Tier 3 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

No ranking needs to be done because 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

Permit Units N-5055-12-0, 13-0, 15-0, and 16-0

BACT for NOx and VOC will be the use of an EPA Tier 2 certified engines. The applicant is proposing such units. Therefore, BACT will be satisfied.

Permit Units N-5055-14-0

BACT for NOx and VOC will be the use of an EPA Tier 3 certified engines. The applicant is proposing such a unit. Therefore, BACT will be satisfied.

Appendix C

Manufacturer Specifications Sheets and Emissions Data

Cat® 3512C
Diesel Generator Sets

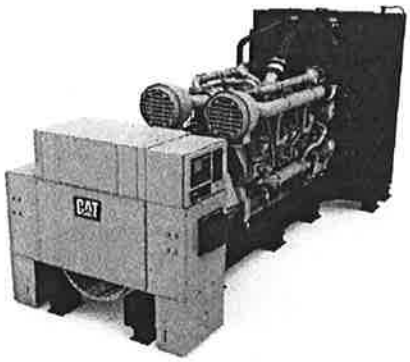


Image shown may not reflect actual configuration

Bore – mm (in)	170 (6.69)
Stroke – mm (in)	215 (8.46)
Displacement – L (in³)	58.56 (3573.55)
Compression Ratio	14.7:1
Aspiration	TA
Fuel System	EUI
Governor Type	ADEM™ A3

Standby 60 Hz ekW (kVA)	Mission Critical 60 Hz ekW (kVA)	Prime 60 Hz ekW (kVA)	Continuous 60 Hz ekW (kVA)	Emissions Performance
1500 (1875)	1500 (1875)	1360 (1700)	1230 (1537)	U.S. EPA Stationary Emergency Use Only. (Tier 2)

Standard Features

Cat® Diesel Engine
- Meets U.S. EPA Stationary Emergency Use Only (Tier 2) emission standards
- Reliable performance proven in thousands of applications worldwide

Generator Set Package
- Accepts 100% block load in one step and meets other NFPA 110 loading requirements
- Conforms to ISO 8528-5 G3 load acceptance requirements
- Reliability verified through torsional vibration, fuel consumption, oil consumption, transient performance, and endurance testing

Alternators
- Superior motor starting capability minimizes need for oversizing generator
- Designed to match performance and output characteristics of Cat diesel engines

Cooling System
- Cooling systems available to operate in ambient temperatures up to 50°C (122°F)
- Tested to ensure proper generator set cooling

EMCP 4 Control Panels
- User-friendly interface and navigation
- Scalable system to meet a wide range of installation requirements
- Expansion modules and site specific programming for specific customer requirements

Warranty
- 24 months/1000-hour warranty for standby and mission critical ratings
- 12 months/unlimited hour warranty for prime and continuous ratings
- Extended service protection is available to provide extended coverage options

Worldwide Product Support
- Cat dealers have over 1,800 dealer branch stores operating in 200 countries
- Your local Cat dealer provides extensive post-sale support, including maintenance and repair agreements

Financing
- Caterpillar offers an array of financial products to help you succeed through financial service excellence
- Options include loans, finance lease, operating lease, working capital, and revolving line of credit
- Contact your local Cat dealer for availability in your region

ELECTRIC POWER - Technical Spec Sheet
STANDARD

C9 ACERT

250 ekW/ 313 kVA/ 60 Hz/ 1800 rpm/ 480 V/ 0.8 Power Factor

Rating Type: STANDBY

Emissions: U.S. EPA Certified for Stationary Emergency Use Only (Tier 3 Nonroad Equivalent Emission Standards)

Image shown may not reflect actual configuration

C9 ACERT

250 ekW/ 313 kVA

60 Hz/ 1800 rpm/ 480 V

	Metric	English
Package Performance		
Genset Power Rating with Fan @ 0.8 Power Factor	250 ekW	
Genset Power Rating	313 kVA	
Aftercooler (Separate Circuit)	N/A	N/A
Fuel Consumption		
100% Load with Fan	73.3 L/hr	19.4 gal/hr
75% Load with Fan	58.8 L/hr	15.5 gal/hr
50% Load with Fan	43.8 L/hr	11.6 gal/hr
25% Load with Fan	27.4 L/hr	7.3 gal/hr
Cooling System[1]		
Engine Coolant Capacity	13.9 L	3.7 gal
Inlet Air		
Combustion Air Inlet Flow Rate	25.2 m³/min	889.8 cfm
Max. Allowable Combustion Air Inlet Temp	50 ° C	122 ° F
Exhaust System		
Exhaust Stack Gas Temperature	455.5 ° C	852.0 ° F
Exhaust Gas Flow Rate	63.6 m³/min	2245.6 cfm
Exhaust System Backpressure (Maximum Allowable)	10.0 kPa	40.0 in. water

DIESEL GENERATOR SET

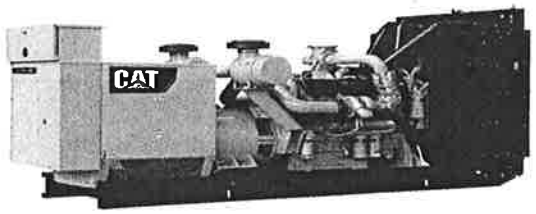


Image shown may not reflect actual package.

STANDBY
750 ekW 938 kVA
60 Hz 1800 rpm 480 Volts

Caterpillar is leading the power generation marketplace with Power Solutions engineered to deliver unmatched flexibility, expandability, reliability, and cost-effectiveness.

FEATURES

FUEL/EMISSIONS STRATEGY
- EPA Certified for Stationary Emergency Application (EPA Tier 2 emissions levels)

DESIGN CRITERIA
- The generator set accepts 100% rated load in one step per NFPA 110 and meets ISO 8528-5 transient response.

UL 2200 / CSA - Optional
- UL 2200 listed packages
- CSA Certified
  Certain restrictions may apply.
  Consult with your Cat® Dealer.

FULL RANGE OF ATTACHMENTS
- Wide range of bolt-on system expansion attachments, factory designed and tested
- Flexible packaging options for easy and cost effective installation

SINGLE-SOURCE SUPPLIER
- Fully prototype tested with certified torsional vibration analysis available

WORLDWIDE PRODUCT SUPPORT
- Cat dealers provide extensive post sale support including maintenance and repair agreements
- Cat dealers have over 1,800 dealer branch stores operating in 200 countries
- The Cat® S•O•S℠ program cost effectively detects internal engine component condition, even the presence of unwanted fluids and combustion by-products

CAT® C27 ATAAC DIESEL ENGINE
- Utilizes ACERT™ Technology
- Reliable, rugged, durable design
- Four-cycle diesel engine combines consistent performance and excellent fuel economy with minimum weight
- Electronic engine control

CAT GENERATOR
- Designed to match the performance and output characteristics of Cat diesel engines
- Single point access to accessory connections
- UL 1446 recognized Class H insulation

CAT EMCP 4 CONTROL PANELS
- Simple user friendly interface and navigation
- Scalable system to meet a wide range of customer needs
- Integrated Control System and Communications Gateway

SEISMIC CERTIFICATION
- Seismic Certification available
- Anchoring details are site specific, and are dependent on many factors such as generator set size, weight, and concrete strength.
  IBC Certification requires that the anchoring system used is reviewed and approved by a Professional Engineer
- Seismic Certification per Applicable Building Codes: IBC 2000, IBC 2003, IBC 2006, IBC 2009, CBC 2007
- Pre-approved by OSHP and carries an OPA#(OSP-0084-01) for use in healthcare projects in California

EM1899 3512C 1500kW Mission Critical

RATED SPEED "Nominal Data"								
GEN PWR EKW	PERCENT LOAD	ENGINE POWER BKW	TOTAL NOX (AS NO2) G/HR	TOTAL CO G/HR	TOTAL HC G/HR	TOTAL CO2 KG/HR	PART MATTER G/HR	ENGINE POWER BHP
1,500.00	100	1,644.90	11,972.00	1050	264	1,096.00	69.7	2205.8471
1,125.00	75	1,239.10	6,055.00	653	286	853	70.8	1661.6604
750	50	853	4,029.00	925	269	602	107.8	1143.8918
375	25	471.4	3,061.00	1,092.00	213	352	131.4	632.15777
150	10	231.2	2,359.00	1055	248	204	80.1	310.04429

D2

LOAD	WEIGHT	BHP	NOX	CO	HC	PM	
100%	5%	110.2924	598.6	52.5	13.2	3.485	
75%	25%	415.4151	1513.75	163.25	71.5	17.7	
50%	30%	343.1675	1208.7	277.5	80.7	32.34	
25%	30%	189.6473	918.3	327.6	63.9	39.42	
10%	10%	31.00443	235.9	105.5	24.8	8.01	
	D2 BHP	1089.527					
	TOTAL G/HR		4475.25	926.35	254.1	100.955	
							NOX + HC
	TOTAL G/HP-HR		**4.108**	**0.850**	**0.233**	**0.093**	**4.341**
	TIER 2 LIMITS			**2.6**		**0.15**	**4.8**

DM8501 C9 250kW

RATED SPEED "Nominal Data"								
GEN PWR EKW	PERCENT LOAD	ENGINE POWER BKW	TOTAL NOX (AS NO2) G/HR	TOTAL CO G/HR	TOTAL HC G/HR	TOTAL CO2 KG/HR	PART MATTER G/HR	OXYGEN IN EXHAUST PERCENT
250	100	297	1,150.00	144	36	193.8	32.1	10.1
187.5	75	225.5	661	145	47	155.6	33.9	11.5
125	50	157.1	419	113	48	115.8	25.1	12.7
62.5	25	92.3	260	152	37	70.9	25.1	13.6
25	10	51.1	205	144	38	42.5	17.5	15

ENGINE POWER BHP
398.28353
302.40046
210.67456
123.77633
68.526224

D2

LOAD	WEIGHT	BHP	NOX	CO	HC	PM
100%	5%	19.91418	57.5	7.2	1.8	1.605
75%	25%	75.60012	165.25	36.25	11.75	8.475
50%	30%	63.20237	125.7	33.9	14.4	7.53
25%	30%	37.1329	78	45.6	11.1	7.53
10%	10%	6.852622	20.5	14.4	3.8	1.75
	D2 BHP	202.7022				
	TOTAL G/HR		446.95	137.35	42.85	26.89

					NOX + HC
TOTAL G/HP-HR	**2.205**	**0.678**	**0.211**	**0.133**	**2.416**
TIER 2 LIMITS		**2.6**		**0.15**	**3**

DM9071 C27 750KW

RATED SPEED "Nominal Data"								
GEN PWR EKW	PERCENT LOAD	ENGINE POWER BKW	TOTAL NOX (AS NO2) G/HR	TOTAL CO G/HR	TOTAL HC G/HR	PART MATTER G/HR	OXYGEN IN EXHAUST PERCENT	ENGINE POWER BHP
750	100	851	5,935.00	278	29	24.2	8.5	1141.2097
562.5	75	655.1	3,437.00	365	43	30.5	9.6	878.50351
375	50	460.8	2,181.00	351	51	77.2	10.7	617.94294
187.5	25	269.6	1,507.00	289	47	59.9	12.6	361.53953
75	10	149.6	1,082.00	296	53	40.4	14.8	200.61689

D2

LOAD	WEIGHT	BHP	NOX	CO	HC	PM	
100%	5%	57.06049	296.75	13.9	1.45	1.21	
75%	25%	219.6259	859.25	91.25	10.75	7.625	
50%	30%	185.3829	654.3	105.3	15.3	23.16	
25%	30%	108.4619	452.1	86.7	14.1	17.97	
10%	10%	20.06169	108.2	29.6	5.3	4.04	
	D2 BHP	590.5928					
	TOTAL G/HR		2370.6	326.75	46.9	54.005	
							NOX + HC
	TOTAL G/HP-HR		**4.014**	**0.553**	**0.079**	**0.091**	**4.093**
	TIER 2 LIMITS			**2.6**		**0.15**	**4.8**

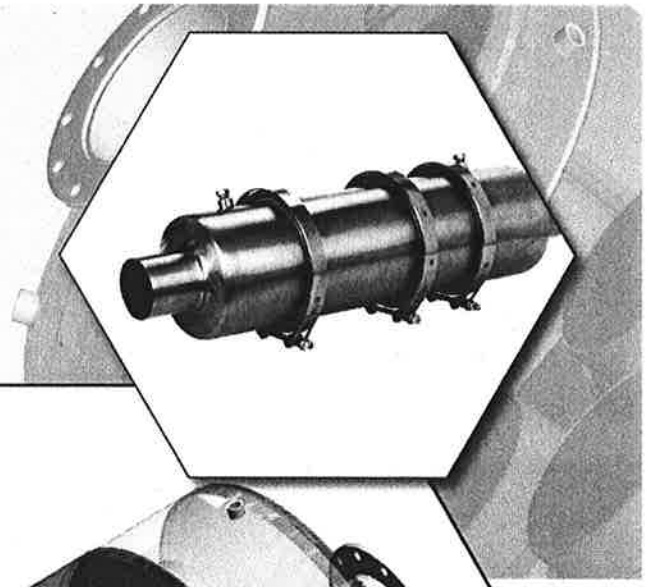
Johnson Matthey

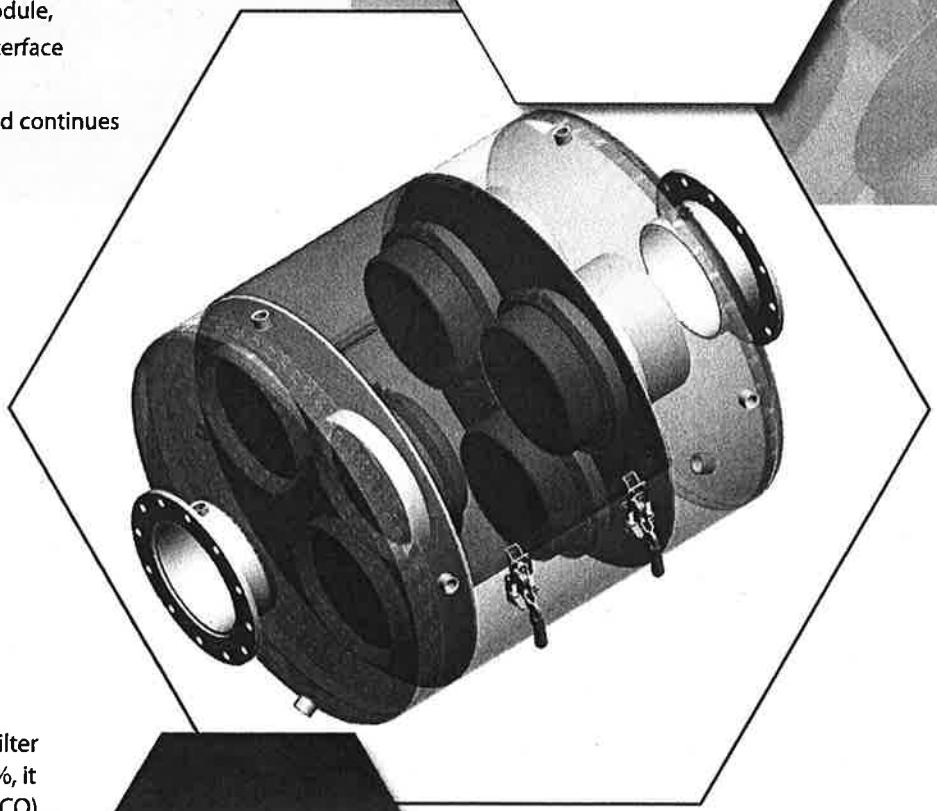
CRT® Particulate Filter System

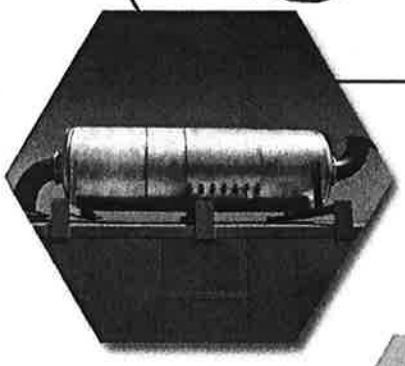
Johnson Matthey Sets the Standard for Stationary Diesel Engine PM Emissions Control

Benefits:

- Reduces PM, HC and CO by over 90%
- Verified by CARB for emergency backup power, prime power and pumping
- Multiple-filter design enables the CRT to be used on all engine sizes
- Modular design for ease of installation, routine service and easy maintenance
- Self-cleaning for convenience and ease-of-use
- No supplemental heat or fuel required
- For optimal performance, operates with Ultra Low 15ppm Sulfur diesel, which is now widely available nationally
- Each unit is equipped with the CRTdm diagnostic module, with data-logging, alarm capability and computer interface
- Housed in stainless steel for strength and durability
- PM collection/filtration begins when engine starts and continues for the entire run time







Johnson Matthey CRT®, Continuously Regenerating Technology

The **CRT®** (Continuously Regenerating Technology) Particulate Filter is Johnson Matthey's patented technology for the control of emissions from diesel engines. It is the first PM control technology that has been verified by the California Air Resources Board (CARB) for application to all stationary diesel engines, including:

- Emergency Back-Up Power
- Prime Power
- Pumping

This advanced passive regenerating diesel particulate filter system not only reduces particulate matter (PM) by 90%, it also reduces hydrocarbon (HC) and carbon monoxide (CO) by 90% or more, which exceeds CARB requirements.

Engineering Innovation Makes the CRT® Uniquely Superior

Based on a number of unique design factors, the Johnson Matthey **CRT** is engineered to ensure optimum effectiveness. While other filter systems may require an external

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Johnson Matthey
Stationary Source Emissions Control
Suite 200, 400 Lapp Road, Malvern, PA 19355, USA
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Johnson Matthey

CRT® Particulate Filter System

Verified by CARB for emergency backup power, prime power and pumping

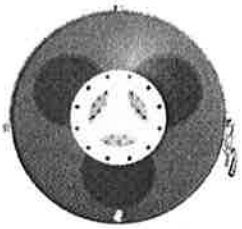
heat source or a catalyst coating on the filter, Johnson Matthey employs a novel two-component design in which the catalyst is separate from the filter. This allows for maximum catalyst and filter performance. The catalyst is positioned before the filter to convert NO into NO_2. The NO_2 then oxidizes the soot that is collected on the filter to regenerate the filter. The soot is combusted at a much lower temperature than is normally required. In fact, the **CRT** enables the filter to be regenerated at a temperature that is 20% lower than other filters on the market. NO_2 generation is the key to the oxidation of soot collected by the wall flow filter and is the heart of the Johnson Matthey patent. The catalyst also converts CO and HC into CO_2 and water.

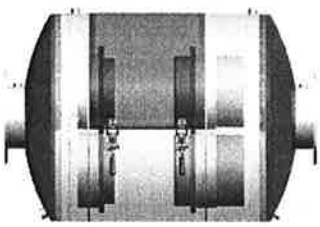
The significantly lower operating temperature of the Johnson Matthey **CRT** is compatible with typical diesel exhaust temperatures, so no supplemental heat is required. Using a "flow-through" platinum coated catalyst, the soot travels directly through the catalyst and is captured on the filter. As a result, the catalyst is kept free of soot, ensuring that it performs at the highest level possible. Soot is trapped on the filter where it's then destroyed by the NO_2 produced by the catalyst. This coordinated operation between the catalyst and filter makes the **CRT** highly efficient and effective.

What's more, the Johnson Matthey **CRT** utilizes passive regeneration during which soot trapped on the filter is automatically burned off to clean the filter. This is in contrast to active regeneration employed with other filters, during which diesel fuel or an electrical current is used to heat up the filter. This active approach has the dangerous potential to cause a fire.

Proven Success

For 40 years, Johnson Matthey has been the global leader in the emissions control industry. When it comes to performance, Johnson Matthey's **CRT** System has proven to be the superior solution for mobile heavy-duty diesel engines, with over a 120,000 **CRT** systems installed worldwide. Now, the **CRT** is also proving to be the best choice for PM emissions control in stationary diesel engines. The leader—Johnson Matthey—continues to be the best choice for all engine emissions control applications.





FILTER TECHNOLOGIES

Comparison of CARB verified particulate filter technologies for stationary diesel engines

	JOHNSON MATTHEY CRT® FILTER SYSTEM	OTHER FILTER SYSTEMS
Filter technology	Catalyst + ceramic filter	Catalyzed ceramic filter or Burner and SiC filter
Regeneration technology and temperature	Passive: @ 240°C for 40% of duty cycle, or 5 hours @ 300°C after every 200 consecutive hours < 240°C	Passive: @ 300°C for 30% of duty cycle or 2 hours, whichever is longer Active regeneration required: 0.1 PM : < 375°C 0.2 PM : < 405°C 0.3 PM : < 420°C 0.4 PM : < 435°C
NOx / PM Ratio	15 @ > 300°C 20 @ < 300°C	
Full CARB verification	• Emergency backup • Prime	• Emergency backup
Conditional CARB verification	• Pumping	• Pumping
Diesel engine family applicability	≤ 0.4 g/bhp-hr PM	Passive: ≤ 0.1 g/bhp-hr PM Active: ≤ 0.4 g/bhp-hr PM
Verification level	3 (> 85% PM reduction)	3 (> 85% PM reduction)
Maximum consecutive minutes at idle	720	Passive 240 Active 720
# of cold starts idle time after each cold start	24 30 minutes	12 to 24 10 to 30 minutes
Max. hours before filter cleaning	5000 project specific	2000 to 5000 project specific

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Johnson Matthey
Stationary Source Emissions Control

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Appendix D

RMR and AAQA Summary

San Joaquin Valley Air Pollution Control District
Risk Management Review

To:	Jonah Aiyabei – Permit Services
From:	Jessica Rosas – Technical Services
Date:	December 4, 2017
Facility Name:	University of California, Merced
Location:	5200 N Lake Road, Merced
Application #s:	N-5055-12-0, 13-0, 14-0, 15-0, and 16-0
Project #:	N-1172664

A. RMR SUMMARY

RMR Summary						
Units	**Prioritization Score**	**Acute Hazard Index**	**Chronic Hazard Index**	**Maximum Individual Cancer Risk**	**T-BACT Required?**	**Special Permit Requirements?**
Unit 12-0 (DICE)	N/A[1]	N/A[2]	0.00	3.25E-09	No	Yes
Unit 13-0 (DICE)	N/A[1]	N/A[2]	0.00	3.29E-09	No	Yes
Unit 14-0 (DICE)	N/A[1]	N/A[2]	0.00	1.61E-07	No	Yes
Unit 15-0 (DICE)	N/A[1]	N/A[2]	0.00	3.63E-09	No	Yes
Unit 16-0 (DICE)	N/A[1]	N/A[2]	0.00	3.62E-09	No	Yes
Project Totals	N/A[1]	N/A[2]	0.00	1.75E-07		
Facility Totals	>1	0.0	0.00	1.41E-05		

[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 Hazard Index was not calculated since there is no risk factor or the risk factor is so low that it has been determined to be insignificant for this type of unit.

Proposed Permit Requirements

To ensure that human health risks will not exceed District allowable levels; the following shall be included as requirements for:

Unit # 12-0

1. The PM10 emissions rate shall not exceed 0.014 g/bhp-hr based on US EPA certification using ISO 8178 test procedure.
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.
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 50 hours per calendar year.

Unit # 13-0

1. The PM10 emissions rate shall not exceed 0.014 g/bhp-hr based on US EPA certification using ISO 8178 test procedure.
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.
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 50 hours per calendar year.

Unit # 14-0

1. The PM10 emissions rate shall not exceed 0.020 g/bhp-hr based on US EPA certification using ISO 8178 test procedure.
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.
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 50 hours per calendar year.

Unit # 15-0

1. The PM10 emissions rate shall not exceed 0.014 g/bhp-hr based on US EPA certification using ISO 8178 test procedure.
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.
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 50 hours per calendar year.

Unit # 16-0

1. The PM10 emissions rate shall not exceed 0.014 g/bhp-hr based on US EPA certification using ISO 8178 test procedure.
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.
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 50 hours per calendar year.

B. RMR REPORT

I. Project Description

Technical Services received a request on September 19, 2017, to perform a Risk Management Review for a proposed installation of a two 2,206 bhp Caterpillar model 3152C diesel-fired emergency IC engines, two 1,141 bhp Caterpillar model C27 diesel-fired emergency IC engines and one 398 bhp Caterpillar model C9 diesel-fired emergency IC engine each powering an electric generator. Per the applicant, each emergency engine will be equipped with a diesel particulate matter filter achieving 85% reduction in particulate matter emissions.

II. Analysis

Toxic emissions for this proposed unit were calculated using PM10 emission rates calculated and supplied by the processing engineer, and input into the San Joaquin Valley APCD's Hazard Assessment and Reporting Program (SHARP). 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. The prioritization score for this proposed facility was greater than 1.0 (see RMR Summary Table). Therefore, a refined health risk assessment was required. The AERMOD model was used, with the parameters outlined below and meteorological data for 2010-2014 from Merced to determine the dispersion factors (i.e., the predicted concentration or X divided by the normalized source strength or Q) for a receptor grid. These dispersion factors were input into the SHARP Program, which then used the Air Dispersion Modeling and Risk Tool (ADMRT) of the Hot Spots Analysis and Reporting Program Version 2 (HARP 2) to calculate the chronic and acute hazard indices and the carcinogenic risk for the project.

The following parameters were used for the review:

Analysis Parameters Unit 12-0 (DICE)			
Source Type	Point	**Location Type**	Rural
Stack Height (m)	6.09	**Closest Receptor (m)**	457
Stack Diameter. (m)	0.55	**Type of Receptor**	Residential
Stack Exit Velocity (m/s)	27.3	**Max Hours per Year**	50
Stack Exit Temp. (°K)	675	**Fuel Type**	Diesel
PM10 Emission (lb/hr)	0.07	**PM10 Emission (lb/yr)**	3

Analysis Parameters Unit 13-0 (DICE)			
Source Type	Point	**Location Type**	Rural
Stack Height (m)	6.09	**Closest Receptor (m)**	457
Stack Diameter. (m)	0.55	**Type of Receptor**	Residential
Stack Exit Velocity (m/s)	27.3	**Max Hours per Year**	50
Stack Exit Temp. (°K)	675	**Fuel Type**	Diesel
PM10 Emission (lb/hr)	0.07	**PM10 Emission (lb/yr)**	3

Analysis Parameters Unit 14-0 (DICE)			
Source Type	Point	**Location Type**	Rural
Stack Height (m)	4.26	**Closest Receptor (m)**	457
Stack Diameter. (m)	0.20	**Type of Receptor**	Residential
Stack Exit Velocity (m/s)	32.6	**Max Hours per Year**	50
Stack Exit Temp. (°K)	728	**Fuel Type**	Diesel
PM10 Emission (lb/hr)	0.02	**PM10 Emission (lb/yr)**	1

Analysis Parameters Unit 15-0 (DICE)			
Source Type	Point	**Location Type**	Rural
Stack Height (m)	4.87	**Closest Receptor (m)**	457
Stack Diameter. (m)	0.35	**Type of Receptor**	Residential
Stack Exit Velocity (m/s)	27.3	**Max Hours per Year**	50
Stack Exit Temp. (°K)	782	**Fuel Type**	Diesel
PM10 Emission (lb/hr)	0.04	**PM10 Emission (lb/yr)**	2

Analysis Parameters Unit 16-0 (DICE)			
Source Type	Point	**Location Type**	Rural
Stack Height (m)	4.87	**Closest Receptor (m)**	457
Stack Diameter. (m)	0.35	**Type of Receptor**	Residential
Stack Exit Velocity (m/s)	27.3	**Max Hours per Year**	50
Stack Exit Temp. (°K)	782	**Fuel Type**	Diesel
PM10 Emission (lb/hr)	0.04	**PM10 Emission (lb/yr)**	2

Technical Services performed modeling for criteria pollutants CO, NO_x, SO_x, and PM10 with the emission rates below:

Unit #	NO_x (Lbs.)		SO_x (Lbs.)		CO (Lbs.)		PM_{10} (Lbs.)	
	Hr.	Yr.	Hr.	Yr.	Hr.	Yr.	Hr.	Yr.
12-0	N/A[1]	999	N/A[1]	1	N/A[1]	N/A[2]	N/A[1]	3

[1]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.
[2]No annual ambient air quality value for CO has been set.

Unit #	NO_x (Lbs.)		SO_x (Lbs.)		CO (Lbs.)		PM_{10} (Lbs.)	
	Hr.	Yr.	Hr.	Yr.	Hr.	Yr.	Hr.	Yr.
13-0	N/A[1]	999	N/A[1]	1	N/A[1]	N/A[2]	N/A[1]	3

[1]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.
[2]No annual ambient air quality value for CO has been set.

Unit #	NO_x (Lbs.)		SO_x (Lbs.)		CO (Lbs.)		PM_{10} (Lbs.)	
	Hr.	Yr.	Hr.	Yr.	Hr.	Yr.	Hr.	Yr.
14-0	N/A[1]	97	N/A[1]	0	N/A[1]	N/A[2]	N/A[1]	1

[1]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.
[2]No annual ambient air quality value for CO has been set.

Unit #	NO_x (Lbs.)		SO_x (Lbs.)		CO (Lbs.)		PM_{10} (Lbs.)	
	Hr.	Yr.	Hr.	Yr.	Hr.	Yr.	Hr.	Yr.
15-0	N/A[1]	504	N/A[1]	1	N/A[1]	N/A[2]	N/A[1]	2

[1]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.
[2]No annual ambient air quality value for CO has been set.

Unit #	NO_x (Lbs.)		SO_x (Lbs.)		CO (Lbs.)		PM_{10} (Lbs.)	
	Hr.	Yr.	Hr.	Yr.	Hr.	Yr.	Hr.	Yr.
16-0	N/A[1]	504	N/A[1]	1	N/A[1]	N/A[2]	N/A[1]	2

[1]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.
[2]No annual ambient air quality value for CO has been set.

The results from the Criteria Pollutant Modeling are as follows:

Criteria Pollutant Modeling Results*

	Background Site	1 Hour	3 Hours	8 Hours	24 Hours	Annual
CO	Modesto-14th Street (2016)	NA[1]	X	NA[1]	X	X
NO_x	Merced-Coffee (2016)	NA[1]	X	X	X	Pass
SO_x	Fresno – Garland (2016)	NA[1]	NA[1]	X	NA[1]	Pass
PM_{10}	Merced-M St (2016)	X	X	X	NA[1]	Pass[2]
$PM_{2.5}$	Merced-Coffee (2015)	X	X	X	NA[1]	Pass[3]

*Results were taken from the attached PSD spreadsheet.
[1]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.
[2]The criteria pollutants are below EPA's level of significance as found in 40 CFR Part 51.165 (b)(2).
[3]The court has vacated EPA's $PM_{2.5}$ SILs. Until such time as new SIL values are approved, the District will use the corresponding PM_{10} SILs for both PM_{10} and $PM_{2.5}$ analyses.

III. Conclusion

The chronic index is below 1.0 and the cancer risk factor associated with the project 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).**

To ensure that human health risks will not exceed District allowable levels; the permit requirements 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. Convert
D. Facility Summary
E. AAQA Summary

Appendix E

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

The quarterly PE2 and quarterly PE1 can be calculated as follows:

$PE2_{quarterly} = PE2_{annual} \div 4$ quarters/year

$PE1_{quarterly} = PE1_{annual} \div 4$ quarters/year

Using the values in Sections VII.C.2 and VII.C.1 in the evaluation above, the QNEC calculations are summarized in the following tables:

QNEC Summary for Units N-5055-12-0 and 13-0			
Pollutant	**PE2 (lb/qtr)**	**PE1 (lb/qtr)**	**QNEC (lb/qtr)**
NO_X	249.75	0	249.75
SO_X	0.25	0	0.25
PM_{10}	0.75	0	0.75
CO	51.75	0	51.75
VOC	14.0	0	14.0

QNEC Summary for Unit N-5055-14-0			
Pollutant	**PE2 (lb/qtr)**	**PE1 (lb/qtr)**	**QNEC (lb/qtr)**
NO_X	24.25	0	24.25
SO_X	0	0	0
PM_{10}	0.25	0	0.25
CO	7.5	0	7.5
VOC	2.25	0	2.25

QNEC Summary for Units N-5055-15-0 and 16-0			
Pollutant	**PE2 (lb/qtr)**	**PE1 (lb/qtr)**	**QNEC (lb/qtr)**
NO_X	126.0	0	126.0
SO_X	0.25	0	0.25
PM_{10}	0.5	0	0.5
CO	17.25	0	17.25
VOC	2.5	0	2.5