

DRAFT
ENGINEERING EVALUATION
Conor Medsystems, Plant: 18148
Application: 15501

BACKGROUND

Conor Medsystems has applied to obtain an Authority to Construct (AC) and/or a Permit to Operate (PO) for the following equipment:

S-1
 Standby Diesel Generator at Building F-1
 Cummins, Model: DQFAD 1010 Hamilton Court
 1986 BHP, 10.18 MMBTU/hr Menlo Park, CA 94025
 6CEXL030.AAD

S-2
 Standby Diesel Generator at Building K-1
 Cummins, Model: DQFAD 1394 Willow Road
 1986 BHP, 10.18 MMBTU/hr Menlo Park, CA 94025
 6CEXL030.AAD

S-3
 Standby Diesel Generator at Building E
 Cummins, Model: DQFAA 1010 Hamilton Court
 1490 BHP, 7.43 MMBTU/hr Menlo Park, CA 94025
 6CEXL030.AAD

EMISSIONS

- Basis:
- 25 hr/yr operation for testing and maintenance
 - CO and PM10 emission factors provided by CARB Certification with Executive Order U-R-002-0335 (S-1, S-2, and S-3)
 - SO2 emissions are quantified based on the full conversion of 0.05 wt% (~ 500 ppm) sulfur in the diesel fuel with a density of 7.206 lbs/gal that is consumed at a rate stated on the table below

Summary of S-1, S-2, and S-3 Standby Diesel Generator Emissions

Source 1

Pollutant	Emission Factor (gm/hp-hr)	Daily Emissions (lb/day)	Annual Emissions (lb/yr)	Annual Emissions (Tons/yr)
Nitrogen Oxides	4.39	461.13	480.34	0.22
POC	0.23	24.27	25.28	0.01
Carbon Monoxide	0.52	54.80	57.09	0.03
PM-10	0.08	8.61	8.97	0.004
Sulfur Dioxide	72.2 gal Fuel/hr	12.49	13.01	0.006

Source 2

Pollutant	Emission Factor (gm/hp-hr)	Daily Emissions (lb/day)	Annual Emissions (lb/yr)	Annual Emissions (Tons/yr)
Nitrogen Oxides	4.39	461.13	480.34	0.22

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POC	0.23	24.27	25.28	0.01
Carbon Monoxide	0.52	54.80	57.09	0.03
PM-10	0.08	8.61	8.97	0.004
Sulfur Dioxide	72.2 gal Fuel/hr	12.49	13.01	0.006

Source 3

Pollutant	Emission Factor (gm/hp-hr)	Daily Emissions (lb/day)	Annual Emissions (lb/yr)	Annual Emissions (Tons/yr)
Nitrogen Oxides	4.39	345.96	360.38	0.16
POC	0.23	18.21	18.97	0.01
Carbon Monoxide	0.52	41.12	42.83	0.02
PM-10	0.08	6.46	6.73	0.003
Sulfur Dioxide	52.7 gal Fuel/hr	9.11	9.49	0.004

PLANT CUMULATIVE INCREASE

Conor Medsystems is a new facility. Therefore, the District’s database does not contain information on existing emissions at the plant. Table 1 summarizes the cumulative increase in criteria pollutant emissions that will result at Plant 18148 from the operation of S-1, S-2, and S-3.

Table 1

Pollutant	Current plant emissions (TPY)	Increase in plant emissions associated with this application (TPY)	Cumulative emissions (Current + Increase) (TPY)
NO _x	0	0.600	0.600
POC	0	0.032	0.032
CO	0	0.071	0.071
PM10	0	0.011	0.011
SO ₂	0	0.016	0.016

TOXIC RISK SCREENING ANALYSIS

The cancer risk is calculated based on the emission rate of diesel exhaust particulate matter. Diesel exhaust particulate matter is used as a surrogate for all toxic contaminants found in diesel exhaust. Because the proposed emissions exceed the risk screening trigger level for diesel exhaust particulate matter in Table 2-5-1, a risk screening was performed.

Per the attached March 14, 2007 memo from Ted Hull, results from the health risk screening analysis indicate that the maximum cancer risk is estimated at 3.9 in a million if the three engines were to run for 25 hours/year for each engine. In accordance with the District’s Risk Management Policy, the above risk level is considered acceptable for engines such as S-1, S-2, and S-3 that meets TBACT.

PUBLIC COMMENT

The public notice will be posted on the Internet and mailed to all Parents or Guardians with children enrolled at Mid-Peninsula High School. It will also be mailed to all residential neighbors located within 1000 feet of the proposed new source of pollution.

BACT

BACT is triggered for Nox, POC, CO, and SO₂ since the maximum daily emissions of the above pollutant for S-1, S-2, and S-3 exceeds 10 lb/day. Please refer to the discussion on “Daily Emissions” in page 2 of this evaluation. BACT for this source is presented in the current BAAQMD BACT/TBACT Workbook for this source category as shown below:

Source:	IC Engine - Compression Ignition	Revision:	5
		Document #:	96.1.2
Class:	> or = 175 horsepower output rating	Date:	01/11/02

Determination

POLLUTANT	BACT 1. Technologically Feasible/ Cost Effective 2. Achieved in Practice 3. TBACT	TYPICAL TECHNOLOGY
POC	1. 0.30 g/bhp-hr [62 ppmvd @ 15% O ₂] ^{a,b} 2. 1.5 g/bhp-hr [309 ppmvd @ 15% O ₂] ^{b,c}	1. Catalytic Oxidation and CARB or EPA (or equivalent) low-total hydrocarbon emitting certified engine ^{a,b} 2. CARB or EPA (or equivalent) low-total hydrocarbon emitting certified engine ^{b,c}
NOx	1. 1.5 g/bhp-hr [107 ppmvd @ 15% O ₂] ^{a,b} 2. 6.9 g/bhp-hr [490 ppmvd @ 15% O ₂] ^{a,b,c} 3. 6.9 g/bhp-hr [490 ppmvd @ 15% O ₂]	1. Selective Catalytic Reduction (SCR) + Timing Retard + Turbocharger w/ Intercooler ^{a,b} 2. Timing Retard ≤ 4° + Turbocharger w/ Intercooler ^{a,b,c} 3. Timing Retard ≤ 4° + Turbocharger w/ Intercooler
SO ₂	1. n/d 2. fuel oil < 0.05% sulfur ^{a,b}	1. n/d 2. Fuel Selection ^{a,b}
CO	1. n/s 2. 2.75 g/bhp-hr [319 ppmvd @ 15% O ₂] ^{b,c}	1. Catalytic Oxidation ^b 2. CARB or EPA (or equivalent) low-CO emitting certified engine ^{b,c}
PM ₁₀	1. n/d 2. If practical, gas-fueled engine or electric motor. If not, "California Diesel Fuel" (fuel oil w/ < 0.05% by weight sulfur and < 20% by volume aromatic hydrocarbons) ^b 3. 0.1 grams/bhp-hr	1. Catalyst Guard Bed ^{a,b} 2. Fuel Selection ^{b,d} 3. CARB or EPA (or equivalent) low-particulate matter emitting certified engine, or particulate filter
NPOC	1. n/a 2. n/a	1. n/a 2. n/a

References

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| <p>a. CARB/CAPCOA Clearinghouse
 b. BAAQMD NOTE: IC Engine BACT and TBACT is a low emitting, spark-ignited, gas-fueled engine with lean burn combustion or rich burn with non-selective catalytic reduction, or electric</p> |
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motor. A diesel engine will be permitted only if a gas-fueled engine, or electric motor, is not practical (e.g., a remote location without natural gas availability or electric power, or only a diesel engine will meet the portability and/or power/torque/rpm requirements of the application under review, or the engine is used exclusively for emergency use during involuntary loss of power).
c. Timing retard, etc. controls alone may be acceptable only in very limited situations for temporary sources.

It can be seen from above that S-1, S-2, and S-3 satisfies the current BACT 2 standard for NO_x (6.9 g/hp-hr) and CO (2.75 g/hp-hr). As for the SO₂ BACT, S-1, S-2, and S-3 satisfied the current BACT 2 by fuel selection of Diesel Fuel #2. The more restrictive BACT 1 standard is not applicable to this engine because it will be limited to operation as an emergency standby engine. S-1, S-2, and S-3 satisfies the current BACT 1 standard for POC (0.30 g/hp-hr).

OFFSETS

Conor Medsystems is a new facility. Table 2 summarizes the increase in criteria pollutant emissions that will result at Plant 18148 from the operation of S-1, S-2 and S-3.

Table 2

Pollutant	Increase in Emissions At Plant Since April 5, 1991¹ (TPY)	Increase in Emissions Associated With This Application (TPY)	Total Emissions (Post 4/5/91 + Increase) (TPY)	Regulation 2-2-302 and 2-2-303 Offset Triggers (TPY)
NO _x	0	0.600	0.600	> 10; < 35
POC	0	0.032	0.032	> 10; < 35
CO	0	0.071	0.071	NA
PM10	0	0.011	0.011	> 1
SO ₂	0	0.016	0.016	> 1

It can be seen from Table 2 above that the operation of S-1, S-2 and S-3 does not trigger any offset. Therefore, offsets are not warranted for any emission.

CARB STATIONARY DIESEL ENGINE ATCM

The State Office of Administrative Law approved the Airborne Toxic Control Measure (ATCM) on November 8, 2004. State law requires the local Air Districts to implement and enforce the requirements of the ATCM. Effective January 1, 2005, there is a prohibition on the operation of new diesel emergency standby engines greater than 50 bhp unless the following operating requirements and emission standards are met:

“Stationary Diesel Engine ATCM” section 93115, title 17, CA Code of Regulations.

Diesel PM – General Requirements

1. Meet 0.15 g/bhp-hr PM standard

¹ In PSDP do the following steps to get data on the aggregate sum of all increases as defined in Reg. 2-2-212 after April 5, 1991: option 1 → type of pollutant.

2. Operate 50 hours per year, or less, for maintenance and testing (except emergency use and emissions testing)

HC,NO_x, NMHC+NO_x, CO

1. Meet standards for off-road engines of the same model year and horsepower rating
As specified in the OFF-Road Compression Ignition Engine Standards;
Or if no standards have been established
2. Meet the Tier 3 standards in Title 13, CCR, Section 2423 for off-road engines of the same horsepower rating, irrespective of the new engine’s model year

S-1, S-2 and S-3 are in compliance with the above ATCM requirements. The diesel engines will operate for no more than 25 hours per year for maintenance and reliability testing. This engine is subject to the EPA Tier 2 requirements for HC, NO_x, NMHC+NO_x and CO. As shown in the Table3, the engines meet these requirements.

Table3. ATCM Tier2 Compliance

	CARB ² g/bhp-hr	ATCM Tier 2 g/bhp-hr
NMHC (POC)	0.23	N/A
NO _x	4.39	N/A
NMHC+NO _x	4.62	4.8
CO	0.52	2.6
PM	0.08	0.15

STATEMENT OF COMPLIANCE

S-1, S-2 and S-3 will be operated as emergency standby engines and therefore are not subject to the emission rate limits in Regulation 9, Rule 8 ("NO_x and CO from Stationary Internal Combustion Engines"). S-1, S-2 and S-3 are subject to the monitoring and record keeping requirements of Regulation 9-8-530 and the SO₂ limitations of 9-1-301 (ground-level concentration) and 9-1-304 (0.5% by weight in fuel). Regulation 9-8-530 requirements are incorporated into the proposed permit conditions. Compliance with Regulation 9, Rule 1 is very likely since diesel fuel with a 0.05% by weight sulfur is mandated for use in California. Like all combustion sources, S-1, S-2 and S-3 are subject to Regulation 6 ("Particulate and Visible Emissions"). These engines are not expected to produce visible emissions or fallout in violation of this regulation and will be assumed to be in compliance with Regulation 6 pending a regular inspection.

This application is considered to be ministerial under the District's Regulation 2-1-311 and therefore is not subject to CEQA review. The engineering review for this project requires only the application of standard permit conditions and standard emission factors in accordance with Permit Handbook Chapter 2.3.

S-1 is within 1,000 feet from the nearest school and therefore is subject to the public notification requirements of Regulation 2-1-412.

PSD, NSPS and NESHAPS are not triggered.

² S-1, S-2 and S-3 has a similar engine family number of 6CEXL030.AAD

Source complies with state ATCM requirements. Appropriate permit conditions are included to ensure compliance.

Permit Condition

COND# 22825 -----

1. Operating for reliability-related activities is limited to 25 hours per year per engine.
[Basis: Regulation 2-5]

2. The owner or operator shall operate each emergency standby engine only for the following purposes: to mitigate emergency conditions, for emission testing to demonstrate compliance with a District, state or Federal emission limit, or for reliability-related activities (maintenance and other testing, but excluding emission testing). Operating hours while mitigating emergency conditions or while emission testing to show compliance with District, state or Federal emission limits is not limited.

[Basis: "Stationary Diesel Engine ATCM" section 93115, title 17, CA Code of Regulations, subsection (e)(2)(A)(3) or (e)(2)(B)(3)]

3. The owner/operator shall operate each emergency standby engine only when a non-resettable totalizing meter (with a minimum display capability of 9,999 hours) that measures the hours of operation for the engine is installed, operated and properly maintained.

[Basis: "Stationary Diesel Engine ATCM" section 93115, title 17, CA Code of Regulations, subsection (e)(4)(G)(1)]

4. Records: The owner/operator shall maintain the following monthly records in a District-approved log for at least 36 months from the date of entry (60 months if the facility has been issued a Title V Major Facility Review Permit or a Synthetic Minor Operating Permit). Log entries shall be retained on-site, either at a central location or at the engine's location, and made immediately available to the District staff upon request.
 - a. Hours of operation for reliability-related activities (maintenance and testing).
 - b. Hours of operation for emission testing to show compliance with emission limits.
 - c. Hours of operation (emergency).
 - d. For each emergency, the nature of the emergency condition.
 - e. Fuel usage for each engine(s).

[Basis: "Stationary Diesel Engine ATCM" section 93115, title 17, CA Code of Regulations, subsection (e)(4)(I),

