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Alamitos Energy Center

(13-AFC-01)

Data Response Set 6-R4

(Revised and Updated Data Response to 133, Air Quality)

Submitted to
California Energy Commission

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With Assistance from

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Introduction

Attached are AES Southland Development, LLC's (AES or the Applicant) revised and updated responses to the California Energy Commission (CEC) Staff Data Request, Set 6-R4 (Air Quality, number 133-R4) regarding the Alamitos Energy Center (AEC) (13-AFC-01) Supplemental Application for Certification (SAFC).

New, updated or revised tables or attachments are numbered in reference to the Data Request number. For example, the first table used in response to Data Request 133 would be numbered Table DR133-1. The first attachment used in response to Data Request 133 would be Attachment DR133-1, and so on. Tables or attachments from previous Data Request submissions that have been revised have "R1" following the original number, indicating revision 1.

Air Quality (133)

CUMULATIVE

BACKGROUND

Section 5.1.7 (Cumulative Effects) and Appendix 5.1F (Dispersion Modeling Protocol), of the SAFC describe the methodology for the cumulative effects analysis, but the SAFC does not include the analysis because a project list had not been provided by the District at the time the SAFC was prepared. The cumulative analysis should include all reasonably foreseeable projects within a six mile radius, i.e. projects that have received construction permits but are not yet operational, and those that are in the permitting process or can be reasonably expected to be in the permitting process in the near future. A complete impacts analysis should identify all existing and planned stationary sources that affect the baseline conditions and consider them in the modeling effort.

DATA REQUESTS

133. Upon approval of the list of sources to be included in the cumulative air quality impact analysis, please provide the cumulative modeling and impact analysis.

Response 133-R4: The Applicant's list of cumulative sources was provided in response to Data Request 132-R2, submitted to CEC on August 17, 2016 (Transaction Number [TN] #212822). The CEC provided verbal concurrence of this list on August 18, 2016. Additional background on the development of this list, such as the facilities evaluated but ultimately removed from the list of potential cumulative sources, was previously submitted to CEC on October 22, 2014 (TN #203233) and August 17, 2016 (TN #212822).

Table DR133-1R1 presents a final list of the facilities that have been included in the AEC cumulative air quality impact assessment. Attachment DR133-2R1 provides a summary of the information used to develop the list of facilities included in the cumulative impact assessment.

TABLE DR133-1R1
AEC Cumulative Impact Sources

Facility Name	Number of Sources	Permit Application Number(s)	Description
AEC	7	N/A	Addition of two combined-cycle natural gas combustion turbines, four simple-cycle natural gas combustion turbines, and one natural gas auxiliary boiler.
U.S. Government, Veteran Affairs Medical Center	6	503082, 516319, 516320, 560589, 560591, 560592	Addition of six emergency diesel ICEs.
Trend Offset Printing Services, Inc.	3	547744, 547749, 567815	Change of conditions for two existing Regenerative Thermal Oxidizers (RTO) and addition of one RTO.
Los Angeles City, DWP Haynes Generating Station	8	554366, 554367, 559600, 559601, 559602, 559603, 559604, 559605	Change of conditions for two existing emergency diesel ICEs and addition of six simple-cycle natural gas combustion turbines.

DWP = Department of Water and Power

ICE = internal combustion engine

N/A = Not applicable

RTO = regenerative thermal oxidizer

Cumulative Air Quality Impact Analysis

The cumulative air quality impact analysis was conducted using the methodology presented in the *Dispersion Modeling Protocol for the Alamos Energy Center* (see Appendix 5.1F of the AEC SAFC), with the exception of the receptor grid. Receptors within the cumulative facility fence lines were removed from the model setup because they would not be representative of ambient conditions.

Modeling Parameters

The emission and exhaust parameters used to estimate the cumulative impacts are presented in Attachment DR133-3R1, Tables 1 and 2. Because emission rates for particulate matter with aerodynamic diameter less than or equal to 2.5 microns (PM_{2.5}) were not available for some cumulative sources, it was conservatively assumed that PM_{2.5} emission rates for these sources were equal to those of particulate matter with aerodynamic diameter less than or equal to 10 microns (PM₁₀). The source parameters were based on the following data sources. A summary of the dispersion modeling inputs and output is also included in Attachment DR133-3R1. The modeling files are included with this submission on compact disc.

Alamos Energy Center:

- Source parameters and emission rates are based on the updated AEC operating profile submitted to CEC on April 12, 2016 (TN #211013).
- Source parameters and emission rates were selected according to the operating scenarios, which include start-up and shutdown emissions, resulting in the maximum predicted impacts presented in Table 5.1-38 of the SAFC, submitted to CEC on October 23, 2015. These worst-case operating scenarios did not change as a result of the updated modeling performed.

U.S. Government, Veterans Affairs Medical Center (Facility ID 13990):

- Source parameters and emission rates were based on permitted source data received from South Coast Air Quality Management District (SCAQMD) on July 29, 2014, with additional data provided by SCAQMD on September 24, 2014.
- Source locations were not available in the permitted source data. Therefore, all modeled sources were placed at the property centroid.
- Sources are permitted for up to 50 hours per year of maintenance and testing. The simultaneous testing of all emergency diesel internal combustion engines (ICEs) is not reasonably expected to occur within the same hour. Therefore, one emergency ICE with the highest hourly emission rates was modeled.
- Emergency sources (like the ICEs) were not modeled for the federal 1-hour nitrogen dioxide (NO₂) and sulfur dioxide (SO₂) standards as these are statistical average standards that will not likely be influenced by sources permitted to operate for up to 50 hours per year for testing and maintenance.
- The annual emissions from each of the six emergency diesel ICEs were based on 50 hours of testing per year at the maximum hourly emission rate.

Trend Offset Printing Services, Inc. (Facility ID 53729):

- Source parameters, source locations, and emission rates for the two existing regenerative thermal oxidizers (RTOs) were based on permitted source data received from SCAQMD on August 8, 2014.
- The permit applications for the two existing RTOs (permitted February 27, 2013) are for a change in conditions only. Since a potential for increase in emissions could not be ascertained from the information provided, the sources were included in the cumulative air quality impact analysis using their permitted emission limits.
- Source parameters, source location, and emission rates for the new RTO were based on permitted source data received from SCAQMD on July 28, 2016. Note that the source location was interpreted from relative distances to nearby schools and residences reported in the permitted source data.

Los Angeles City, Department of Water and Power (DWP) Haynes Generating Station (Facility ID 800074):

- Source parameters and source locations for the simple-cycle gas turbines were based on Prevention of Significant Deterioration (PSD) cumulative source data provided directly by DWP on October 23, 2013.
- Sources identified as emergency diesel ICEs are permitted for up to 50 hours per year of maintenance and testing. The simultaneous testing of the ICEs is not reasonably expected to occur within the same hour. Therefore, one emergency ICE with the highest hourly emission rates was modeled.
- Emergency sources (like the ICEs) were not modeled for the federal 1-hour NO₂ and SO₂ standards as these are statistical average standards that will not likely be influenced by sources permitted to operate for up to 50 hours per year for testing and maintenance.
- Emission rates for all sources, as well as source parameters for the two emergency diesel ICEs, were provided in the SCAQMD engineering evaluation dated November 23, 2010.
- Although the emergency diesel ICEs are permitted to operate for up to 50 hours per year for testing and maintenance, the SCAQMD engineering evaluation indicates that they are reasonably expected to operate only 12 hours per year. As a result, emergency diesel ICE emissions were limited to a 30-minute testing period as being more reflective of expected operating conditions for emergency generator engines.
- Since precise source locations for the two emergency diesel ICEs were not available in the SCAQMD engineering evaluation, the analysis placed them in an area of the site that houses generators.

Modeling Results

As shown in Table DR133-2R1, the maximum modeled cumulative NO₂, carbon monoxide (CO), SO₂, and PM_{2.5} concentrations combined with the background concentrations do not exceed the ambient air quality standards (AAQS). The results of the cumulative modeling analysis also conservatively assume that the contribution to background air quality that results from the existing Alamitos Generating Station emissions would remain the same in the future. However, as noted in the SAFC, all of the existing Alamitos Generating Station boiler units will be permanently retired either after completion of AEC construction or due to the elimination of once-through-cooling consistent with the State Water Resources Control Board Policy for the Use of Coastal and Estuarine Waters for Power Plant Cooling. Therefore, the cumulative sources are not expected to cause or contribute to the violation of a standard, and the NO₂, CO, SO₂, and PM_{2.5} impacts will be less than significant.

For NO₂, the contribution of the AEC to the maximum modeled cumulative 1-hour NO₂ concentration for the state standard was less than 1 microgram per cubic meter (µg/m³). This result is well below the New Source Review allowable change in concentration of 20 µg/m³ for 1-hour NO₂ per SCAQMD Rule 1303, as well as the Prevention of Significant Deterioration significant impact level of 7.52 µg/m³ for 1-hour NO₂ per SCAQMD correspondence. This further supports the conclusion that the 1-hour NO₂ impacts will be less than significant. Additionally, NO₂ and SO₂ emission increases shall be offset using Regional Clean Air Incentive Market (RECLAIM) Trading Credits (RTCs) and Emission Reduction Credits (ERCs), respectively, per SCAQMD Regulations 1303 and XX. Consistent with SCAQMD Rule 1304.1, the Applicant will also pay fees used specifically for air quality improvements within the project area. These mitigation efforts assure that NO₂ and SO₂ impacts will be less than significant.

For PM₁₀, the background concentrations exceed the AAQS without the cumulative sources, with the exception of the federal 24-hour standard. As a result, the impact of the cumulative sources plus background also exceeds the AAQS and the operation of the cumulative sources would further contribute to an existing violation of the state standards absent mitigation. As discussed in the SAFC, AEC emissions will be fully offset consistent with SCAQMD Rules 1303 and 1304 using the SCAQMD internal offset bank, with additional PM₁₀ reductions generated through the shutdown of the existing Alamitos Generating Station boiler units and through the SCAQMD's utilization of the Rule 1304.1 air quality improvement funding. Therefore, the PM₁₀ impacts will be mitigated to a less-than-significant level.

TABLE DR133-2R1

Cumulative Impacts Analysis—Maximum Modeled Impacts Compared to the Ambient Air Quality Standards

Pollutant	Averaging Time	Maximum Modeled Concentration ($\mu\text{g}/\text{m}^3$)	Background Concentration ($\mu\text{g}/\text{m}^3$) ^a	Total Predicted Concentration ($\mu\text{g}/\text{m}^3$)	State Standard ($\mu\text{g}/\text{m}^3$)	Federal Standard ($\mu\text{g}/\text{m}^3$)
NO ₂	1-hour (max) ^b	68.2	256	324	339	—
	1-hour (98th percentile) ^{c, d}	22.8	146	169	—	188
	Annual ^c	0.35	48	48.4	57	100
SO ₂	1-hour (max)	2.11	58	60.1	655	—
	1-hour (99th percentile) ^e	1.60	31	32.6	—	196
	3-hour ^f	1.71	58	59.7	—	1,300
	24-hour	0.51	11	11.5	105	—
CO	1-hour	187	3,665	3,852	23,000	40,000
	8-hour	44.7	2,978	3,023	10,000	10,000
PM ₁₀	24-hour	2.05	59	61.1	50	150
	Annual	0.26	27.3	27.6	20	—
PM _{2.5}	24-hour (98th percentile) ^d	1.60	27.2	28.8	—	35
	Annual	0.26	10.97	11.2	12	12

^a Background concentrations were taken from Air Quality Table 12 of the CEC's AEC Preliminary Staff Assessment (TN #212284).

^b The maximum state 1-hour NO₂ concentration was developed using Plume Volume Molar Ratio Method (PVMRM), with in-stack and out-of-stack NO₂ to oxides of nitrogen (NO_x) ratios of 0.5 and 0.9, respectively. Hourly ozone data for each year of meteorological data was obtained from the SCAQMD.

^c The maximum federal 1-hour and annual NO₂ concentrations include ambient NO₂ ratios of 0.80 and 0.75, respectively.

^d The total predicted concentrations for the federal 1-hour NO₂ standard and 24-hour PM_{2.5} standard are the 5-year average, high-8th-high modeled concentrations combined with the representative background concentration.

^e The total predicted concentration for the federal 1-hour SO₂ standard is the 5-year average, high-4th-high modeled concentration combined with the representative background concentration.

^f Consistent with the CEC's AEC Preliminary Staff Assessment, the maximum 1-hour background concentration is conservatively used for the 3-hour background.

Attachment DR133-2R1
Facilities Included in Cumulative Impact Assessment

Facility Name: US Govt, Veterans Affairs Medical Center								Step 2 - Source Applicability (FIND Data)		Step 3 - Source Applicability (PRR Data)			Source Information								
Address: 5901 E. 7th Street, Long Beach, CA 90822																					
FIND Date: 2/23/2016																					
Control #: 77147/N/A																					
Miles from AEC: < 2 miles								Source Included? (Yes or No)		Application Type		PRR Data Received		Source Included? (Yes or No)		Reference of Data for Analysis / Reason for Exclusion from Analysis		Source Make	Source Model	Source Size	Size Units
560591	G36225	6/17/2015	ACTIVE	Basic	I C E (50-500 HP) EM ELEC GEN-DIESEL	2/5/2014	PERMIT TO OPERATE GRANTED	Yes	Permit to Construct	Yes	Yes	Application is for a new source. Data from SCAQMD Engineering Application folder (one application file for Appl #s 560589, 560590, 560591, and 560592).	Cummins	QSX15-G9, Diesel, Model Yr 2013	755	BHP					
560589	G36224	6/17/2015	ACTIVE	Basic	I C E (50-500 HP) EM ELEC GEN-NAT GAS	2/5/2014	PERMIT TO OPERATE GRANTED	Yes	Permit to Construct	Yes	Yes	Application is for a new source. Data from SCAQMD Engineering Application folder (one application file for Appl #s 560589, 560590, 560591, and 560592).	Cummins	QSB7-G5, Diesel, Model Yr 2013	324	BHP					
560592	G36226	6/17/2015	ACTIVE	Basic	I C E (>500 HP) EM ELEC GEN DIESEL	2/5/2014	PERMIT TO OPERATE GRANTED	Yes	Permit to Construct	Yes	Yes	Application is for a new source. Data from SCAQMD Engineering Application folder (one application file for Appl #s 560589, 560590, 560591, and 560592).	Mitsubishi	S6R-Y2PTAW-1, Diesel, Model Yr 2012	918	BHP					
516319	G13992	6/28/2011	ACTIVE	Basic	I C E (>500 HP) EM ELEC GEN DIESEL	11/17/2010	PERMIT TO OPERATE GRANTED	Yes	Permit to Construct	Yes	Yes	Application is for a new source. Data from SCAQMD Engineering Application folder for Appl # 516319 (Stack info from Appendix A [pg. 164]; Emissions from pg. 124).	Caterpillar	3516C-DITA, Engine model yr: 2010, DIESEL FUEL SIXTEEN CYLINDERS, TURBOCHARGED AND AFTERCOOLED, WITH A DIESEL PARTICULATE FILTER, JOHNSON MATTHEY, MODEL CRT22-S-BITO-CS-RT	3,622	BHP					
516320	G13993	6/28/2011	ACTIVE	Basic	I C E (>500 HP) EM ELEC GEN DIESEL	11/17/2010	PERMIT TO OPERATE GRANTED	Yes	Permit to Construct	Yes	Yes	Application is for a new source. Data from SCAQMD Engineering Application folder for Appl # 516320 (Stack info from Appendix A [pg. 80]; Emissions from Appendix B [pg. 84]).	Caterpillar	3516C-DITA, Engine model yr: 2010, DIESEL FUEL SIXTEEN CYLINDERS, TURBOCHARGED AND AFTERCOOLED, WITH A DIESEL PARTICULATE FILTER, JOHNSON MATTHEY, MODEL CRT22-S-BITO-CS-RT	3,622	BHP					
503082	G10076	9/22/2010	ACTIVE	Basic	I C E (>500 HP) EM ELEC GEN DIESEL	10/21/2009	PERMIT TO OPERATE GRANTED	Yes	Permit to Construct	Yes	Yes	Application is for a new source. Data from SCAQMD Engineering Application folder for Application # 503082 (Emissions from pg. 15).	MTU DETROIT DIESEL	6063-HK36, DIESEL FUEL, SIX CYLINDERS, TURBOCHARGED AND AFTERCOOLED	760	BHP					

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See attached emissions data sheet, certified ICE, ref a/n 452051

2. EMISSIONS CALCULATIONS

	R1-lb/hr	R1-lb/dy	R2-30 dy av	R2-lb/yr
NOx	7.60	7.98	1.06	399
ROG	0.08	0.09	0.01	4.39
CO	0.85	0.90	0.12	45
SOx	0.0082	0.0086	0.00	0.43
PM	0.10546	0.11	0.01	5.54
PM10	0.10124	0.11	0.01	5.32

Certified engine, ref a/n 465048, emissions per AQMD database

3. PERMITTING ACTIVITIES

Rule 3000 (b)(6)-Permitting since the Title V permit was renewed (renewal sent to EPA review July 2010)

The Title V renewal permit was sent to EPA for review, only track increases in emissions increases form a/n 503082 and future applications.

Item	A/n	30 day ave-lb/dy				
		NOx	ROG	CO	SOx	PM10
Em-ICE	503082	+0	+0	+0	+0	+0
Facility totals delta		+0	+0	+0	+0	+0
Threshold limits (lb/dy)		40	30	220	60	30

RULES EVALUATION:

Rule 212 :The engine is not located within 1000 feet of a school, thus public notice is not required.

Rule 401 :The equipment is not expected to emit visible emissions.

Rule 402 :The equipment is not expected to emit odorous emissions.

Rule 404 :Grain loading from the engine expected to comply.

Rule 431.2 Per section (c)(e)(2) require the fuel oil purchased to have a sulfur content of less than 15 ppmw, expected to comply with this Rule.



Gen Set
 Series 60 (14.0 L) - 6063HK36
 760 bhp @ 1800 r/min

Technical Data
 06N04M8239

	Standby Power 60 Hz - 510 kW _e	Prime Power 60 Hz - 0	Limited Power 60 Hz - 0	Continuous Power 60 Hz - 0	
Maximum Power	760	-	-	-	bhp
Maximum Power Speed	1800	-	-	-	r/min
Rated Power Limit	760	-	-	-	bhp
Rated Power Limit Speed	1800	-	-	-	r/min
Typical Low Idle Speed	-	-	-	-	r/min
Typical High Idle Speed	2180	-	-	-	r/min
Intended Use	Standby Power applications	-	-	-	-
Coolant Capacity in Engine Circuit	24	-	-	-	qt (US)
Coolant Flow Rate in Engine Circuit	111	-	-	-	gal/min (US)
Heat Rejection to Engine Coolant Circuit	9650	-	-	-	Btu/min
Heat Rejection to Air in Charge Air Circuit	8200	-	-	-	Btu/min
Radiated Heat Rejection	-	-	-	-	Btu/min
Exhaust Flow Rate (volumetric)	4227	-	-	-	ft ³ /min
Exhaust Temperature	1030	-	-	-	°F
Injector Device	EUI N3	-	-	-	-
Injection System	EUI	-	-	-	-
Injector Timing Height	82	-	-	-	mm
Fuel Flow Rate (mass)	736.1	-	-	-	lb _m /h
Fuel Flow Rate (volumetric)	105.3	-	-	-	gal/h (US)
Fuel Spill Rate (mass)	483.1	-	-	-	lb _m /h
Fuel Spill Rate (volumetric)	69.1	-	-	-	gal/h (US)
Fuel Consumption (mass)	253.1	-	-	-	lb _m /h
Fuel Consumption (volumetric)	36.2	-	-	-	gal/h (US)
Heat Rejection to Fuel	220	-	-	-	Btu/min
Engine Air Flow Rate (volumetric)	1514	-	-	-	ft ³ /min
Intake Manifold Pressure	73	-	-	-	in. Hg
Turbocharger Compressor Outlet Temp.	442	-	-	-	°F
Oil Flow Rate	-	-	-	-	gal/min (US)
Oil Pressure	-	-	-	-	lb/in. ²
Oil Consumption (mass)	0.25	-	-	-	lb _m /h
Oil Consumption (volumetric)	0.13	-	-	-	qt/h (US)

Available power is shown. Data does not include parasitic losses from fans, accessories, etc. Parasitic losses will vary depending on the final product configuration and reduce the available power accordingly.

STANDBY 2500 kW 3125 kVA

60 Hz 1800 rpm 12 470 Volts



TECHNICAL DATA

Open Generator Set - - 1800 rpm/60 Hz/12 470 Volts	DM8266	
EPA Tier 2		
Generator Set Package Performance Genset Power rating @ 0.8 pf Genset Power rating with fan	3125 kVA 2500 kW	
Coolant to aftercooler Coolant to aftercooler temp max	50 ° C	122 ° F
Fuel Consumption 100% load with fan 75% load with fan 50% load with fan	655.9 L/hr 509.6 L/hr 372.3 L/hr	173.3 Gal/hr 134.6 Gal/hr 98.4 Gal/hr
Cooling System¹ Air flow restriction (system) Air flow (max @ rated speed for radiator arrangement) Engine Coolant capacity with radiator/exp. tank Engine coolant capacity Radiator coolant capacity	0.12 kPa 2800 m ³ /min 504.0 L 233.0 L 271.0 L	0.48 in. water 98881 cfm 133.1 gal 61.6 gal 71.6 gal
Inlet Air Combustion air inlet flow rate	198.0 m ³ /min	6992.3 cfm
Exhaust System Exhaust stack gas temperature Exhaust gas flow rate Exhaust flange size (internal diameter) Exhaust system backpressure (maximum allowable)	494.4 ° C 539.4 m ³ /min 203.2 mm 6.7 kPa	921.9 ° F 19048.7 cfm 8.0 in 26.9 in. water
Heat Rejection Heat rejection to coolant (total) Heat rejection to exhaust (total) Heat rejection to aftercooler Heat rejection to atmosphere from engine Heat rejection to atmosphere from generator	830 kW 2478 kW 763 kW 161 kW 1015 kW	47202 Btu/min 140924 Btu/min 43392 Btu/min 9156 Btu/min 57723 Btu/min
Alternator² Motor starting capability @ 30% voltage dip Frame Temperature Rise	4395 skVA 2770 130 ° C	234 ° F
Lube System Sump refill with filter	401.3 L	106.0 gal
Emissions (Nominal)³ NOx g/hp-hr CO g/hp-hr HC g/hp-hr PM g/hp-hr	5.05 g/hp-hr .41 g/hp-hr .1 g/hp-hr .036 g/hp-hr	

¹ For ambient and altitude capabilities consult your Caterpillar dealer. Air flow restriction (system) is added to existing restriction from factory.

² UL 2200 Listed packages may have oversized generators with a different temperature rise and motor starting characteristics. Generator temperature rise is based on a 40 degree C ambient per NEMA MG1-32.

³ Emissions data measurement procedures are consistent with those described in EPA CFR 40 Part 89, Subpart D & E and ISO8178-1 for measuring HC, CO, PM, NOx. Data shown is based on steady state operating conditions of 77°F, 28.42 in HG and number 2 diesel fuel with 35° API and LHV of 18,390 btu/lb. The nominal emissions data shown is subject to instrumentation, measurement, facility and engine to engine variations. Emissions data is based on 100% load and thus cannot be used to compare to EPA regulations which use values based on a weighted cycle.

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$$R1(LB/HR) = \frac{EF \times GAL\ USAGE}{1 \times 10^3}$$

Note R1 = R2

Where EF equal lb/MGAL (ref SCAQMD emissions fee form B-3)

Note, if applicant provide SOx in terms of g/bhp-hr, use previous formula

2. EMISSIONS CALCULATIONS

	R1-lb/hr	R1-lb/dy	R2-30 dy av	R2-lb/yr
NOx	29.52	29.52	3.94	1476
ROG	1.99	1.99	0.27	99.72
CO	5.35	5.35	0.71	267
SOx	0.0391	0.0391	0.01	1.95
PM	0.08377	0.08	0.01	4.19
PM10	0.08042	0.08	0.01	4.02

Based on 100% load, see attachment for emissions data (from AQMD database)

3. Permitting since the Title V permit was renewed since 6/4/2007

Two applications were submitted for review after the Title V renewal in 2007

Item	A/n	30 day ave-lb/dy				
		NOx	ROG	CO	SOx	PM10
EM-ICE	510599	+0	+0	+0	+0	+0
Gasoline storage & dispensing	499236	+0	+0	+0	+0	+0
EM-ICE	516319	+2.42	+0.38	+0.51	+0	+0
EM-ICE	516320	+0.26	0.05	+0.11	+0	+0.01
Title v rev	517369	+7.88	+0.54	+1.42	0	0
Facility		+10.56	+0.97	+2.04	+0	+0.01

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APPENDIX A

MAXIMUM INDIVIDUAL CANCER RISK

Methods per "Risk Assessment Procedures for Rule 1401 and 212" revised version 6.0, dated August 18, 2000.

Calculate contaminant R2 emissions (lb/hr) and ton/yr
 Find the correct met zone for this location
 Find the distance from equipment to the nearest residence and commercial receptor
 Look up the unit risk factor for each contaminant

- ⇒ *Note evaluate the engines at 1 hour per day, 50 weeks per year (testing)*
- ⇒ *Nearest residential receptor is 90 meter, based on max. concentration per SCREEN III*
- ⇒ *Nearest commercial receptor is 90 meters, based on max. concentration per SCREEN III*
- ⇒ *Stack diameter is 20 inches, ref from applicant*
- ⇒ *Stack ht =28 ft, ref applicant*
- ⇒ *Stack ACFM is 19049, ref engine information*
- ⇒ *Stack temp is 922 F, ref engine information*
- ⇒ *R1 PM emissions = 0.01 g/bhp-hr, per manufacturers data*
- ⇒ *R2 PM emissions = 0.07 g/bhp-hr * 0.15 = 0.0105 g/hp-hr (use 85% control eff, per CARB executive order no. DE-08-008-02, copy in file)*
- ⇒ *Typically the engines only operate at max load*
- ⇒ *PM emissions*

$$R1 (lb/hr) = HP * g / hp - hr.$$

Where HP is the max engine HP.

Where g/bhp-hr is the PM emissions, provided by AQMD certified engine

Please refer to Risk procedures for Risk procedures and formulas

Engine data entry

Engine hp	3622	hp
use default fuel usage	YES	
actual fuel rate	181.1	gal/hr
fuel rate	181.10	gal/hr
use default E.F.	no	yes/no
use PM default E.F.	yes	
Use 15 ppm sulfur	yes	yes/no
SOx-15 ppm sulfur	0.21579384	lb/mgal
PM10	0.96	
Nox (actual data)	3.7	g/bhp-hr
ROG (actual data)	0.25	g/bhp-hr
CO (actual data)	0.67	g/bhp-hr
PM (actual data)	0.0105	g/bhp-hr
hr/dy	1	hr
dy/wk	1	dy
dy/mon	4	dy
wk/yr	50	wk

Emissions Calculations

	R1-lb/hr	R1-lb/dy	R2-30 dy a	R2-lb/yr
NOx	29.52	29.52	3.94	1476
ROG	1.99	1.99	0.27	99.72
CO	5.35	5.35	0.71	267
SOx	0.0391	0.0391	0.01	1.95
PM	0.08377	0.08	0.01	4.19
PM10	0.08042	0.08	0.01	4.02

lbNOx/hr

$$=[E.F., \text{ g/bhp-hr}][\text{Rating, hp}]$$

$$=[3.7 \text{ g/bhp-hr}][3622 \text{ hp}][1 \text{ lb}/454 \text{ g}]$$

$$=[29.52 \text{ lb/hr}]$$

E&C DIVISION

APPLICATION PROCESSING AND CALCULATIONS

13

10

APPL. NO.

DATE

See Below

02/08/2011

PROCESSED BY

CHECKED BY

RDO

APPENDIX A

MAXIMUM INDIVIDUAL CANCER RISK

Methods per "Risk Assessment Procedures for Rule 1401 and 212" revised version 6.0, dated August 18, 2000.

Calculate contaminant R2 emissions (lb/hr) and ton/yr

Find the correct met zone for this location

Find the distance from equipment to the nearest residence and commercial receptor

Look up the unit risk factor for each contaminant

⇒ *Note evaluate the engines at 1 hour per day, 50 weeks per year (testing)*

⇒ *Nearest residential receptor is 90 meter, based on max. concentration per SCREEN III*

⇒ *Nearest commercial receptor is 90 meters, based on max. concentration per SCREEN III*

⇒ *Stack diameter is 20 inches, ref from applicant*

⇒ *Stack ht =28 ft, ref applicant*

⇒ *Stack ACFM is 19049, ref engine information*

⇒ *Stack temp is 922 F, ref engine information*

⇒ *R1 PM emissions = 0.01 g/bhp-hr, per manufacturers data*

⇒ *R2 PM emissions = 0.07 g/bhp-hr * 0.15 = 0.0105 g/hp-hr (use 85% control eff, per CARB executive order no. DE-08-008-02, copy in file)*

⇒ *Typically the engines only operate at max load*

⇒ *PM emissions*

$$R1 (\text{lb/hr}) = \text{HP} * \text{g} / \text{hp} - \text{hr}.$$

Where HP is the max engine HP.

Where g/bhp-hr is the PM emissions, provided by AQMD certified engine

Please refer to Risk procedures for Risk procedures and formulas



Mail Application To: SCAQMD, P.O. Box 4944, Diamond Bar, CA 91765

Tel: (909) 398-3385

www.aqmd.gov

This form must be accompanied by a completed Application for a Permit to Construct/Operate -Form 400A

Permit to be issued to (Business name of operator to appear on permit): US Govt, Veterans Affairs Medical Center
Street location where the equipment will be operated (for equipment which will be moved to various location in AQMD's jurisdiction, please list the initial location site): 5901 E. 7th Street

Section A: EQUIPMENT INFORMATION

Internal Combustion Engine form fields: Manufacturer: Cummins, Model No.: QSB7-G5 NR3, Serial No., Date of Manufacture, Date of Installation, ICE Emergency Function, Type, Fuel, Cycle Type, Combustion Type, No. of Cylinders, Aspiration Type, Air Pollution Control

Section B: OPERATION INFORMATION

Fuel Consumption and Operating Schedule form fields: Maximum Rated load, Average Load, Normal/Maximum hours/day, Testing & Maintenance (Emergency ICE only): 50 hours/year

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(c) Prepare a written justification for the confidentiality of each confidential item. Append this to the confidential copy.

CEP engine. Emissions data on-file with SCAQMD.

Engine Data:	(1) Select year of manufacture and rated horsepower.						
	(2) Provide actual emission figures from manufacturing specifications (if available) for the Rated Power selected. If engine fuel is LPG or Natural Gas, select Spark Ignition.						
	(3) The compression ignited internal combustion engine must meet the State of California or EPA's Non-Road Emission Standards as listed below (please provide manufacturer's specification and guarantee).						
	Rated Power	Year	Figures	Carbon Monoxide (grams/bhp*hr)	Hydrocarbons (grams/bhp*hr)	Oxides of Nitrogen (grams/bhp*hr)	Particulate Matter (grams/bhp*hr)
Compressor Ignition							
50 - < 750 H.P.							
C	50 - < 100 H.P.	Default	3.7	0.35 (0.56)*	3.15 (5.04)*	0.30	
		Actual					
C	100 - < 175 H.P.	Default	3.7	0.3	2.7	0.22	
		Actual					
C	175 - < 750 H.P.	Default	2.6	0.3	2.7	0.15	
		Actual					
750 and greater H.P.							
C	≥ 750	Default	2.6	0.48	4.32	0.15	
		Actual					

	Figures	VOC	NOx	CO
Spark Ignition	For natural gas fired or LPG. The ICE must meet the requirements for BACT as listed below.			
C	Default	1.5 grams/bhp-hr	1.5 grams/bhp-hr	2.0 grams/bhp-hr
	Actual			

Section C: Applicant Certification Statement		
I hereby certify that all information contained herein and information submitted with this application is true and correct.		
SIGNATURE OF PREPARER: <i>John Furlong</i>	TITLE OF PREPARER: Senior Scientist	
CONTACT PERSON FOR INFORMATION ON THIS EQUIPMENT: John Furlong	CONTACT PERSON'S TELEPHONE NUMBER: (949) 248-8490	DATE SIGNED: 12-3-13

General Engine Data

Type	4-cycle, in-line, 6-cylinder diesel
Bore mm	107 mm (4.21 in.)
Stroke mm	124 mm (4.88 in.)
Displacement Litre	6.89 litre (408 in. ³)
Cylinder Block	Cast iron, 6 cylinder
Battery Charging Alternator	100 amps
Starting Voltage	12 volt, negative ground
Fuel System	Direct injection
Fuel Filter	Spin on fuel filters with water separator
Lube Oil Filter Type(s)	Spin on full flow filter
Lube Oil Capacity (l)	18.9
Flywheel Dimensions	SAE2

Coolpac Performance Data

Cooling System Design	Air-Air Charge Cooled
Coolant Ratio	50% ethylene glycol; 50% water
Coolant Capacity (l)	26
Limiting Ambient Temp.** (°C)	60 (50 Hz); 60 (60 Hz)
Fan Power (kWm)	6.9 (50Hz); 12.7 (60Hz)
Cooling System Air Flow (m ³ /s)**	5.3 (50 Hz); 6.32 (60 Hz)
Air Cleaner Type	Light duty dry replaceable element with restriction indicator

** @ 13 mm H₂O

Weight & Dimensions

Length	Width	Height	Weight (dry)
mm	mm	mm	kg
1688	862	1190	585

Fuel Consumption 1500 (50 Hz)

%	kWm	BHP	L/ph	US gal/ph
Standby Power				
100	213	285	51	13.4
Prime Power				
100	182	244	45	11.9
75	137	183	36	9.5
50	91	122	26	6.9
25	46	61	13	3.4
Continuous Power				
100	152	204	40	10.5

Fuel Consumption 1800 (60 Hz)

%	kWm	BHP	L/ph	US gal/ph
Standby Power				
100	242	324	59	15.5
Prime Power				
100	208	279	50	13.3
75	156	209	40	10.6
50	104	140	30	7.8
25	52	70	15	4
Continuous Power				
100	164	220	42	11

Cummins G-Drive Engines

Asia Pacific
10 Toh Guan Road
#07-01
TT International Tradepark
Singapore 608838
Phone 65 6417 2388
Fax 65 6417 2399

Europe, CIS, Middle East and Africa
Manston Park Columbus Ave
Manston Ramsgate
Kent CT12 5BF, UK
Phone 44 1843 255000
Fax 44 1843 255902

Latin America
Rua Jati, 310, Cumbica
Guarulhos, SP 07180-900
Brazil
Phone 55 11 2186 4552
Fax 55 11 2186 4729

Mexico
Cummins S. de R.L. de C.V.
Eje 122 No. 200 Zona Industrial
San Luis Potosi, S.L.P. 78090
Mexico
Phone 52 444 870 6700
Fax 52 444 870 6811

North America
1400 73rd Avenue N.E.
Minneapolis, MN 55432
USA
Phone 1 763 574 5000
USA Toll-free 1 877 769 7669
Fax 1 763 574 5298

Ratings Definitions

Emergency Standby Power (ESP):
Applicable for supplying power to varying electrical load for the duration of power interruption of a reliable utility source. Emergency Standby Power (ESP) is in accordance with ISO 8528. Fuel Stop power in accordance with ISO 3046, AS 2789, DIN 6271 and BS 5514.

Limited-Time Running Power (LTP):
Applicable for supplying power to a constant electrical load for limited hours. Limited-Time Running Power (LTP) is in accordance with ISO 8528.

Prime Power (PRP):
Applicable for supplying power to varying electrical load for unlimited hours. Prime Power (PRP) is in accordance with ISO 8528. Ten percent overload capability is available in accordance with ISO 3046, AS 2789, DIN 6271 and BS 5514.

Base Load (Continuous) Power (COP):
Applicable for supplying power continuously to a constant electrical load for unlimited hours. Continuous Power (COP) in accordance with ISO 8528, ISO 3046, AS 2789, DIN6271 and BS 5514.

Our energy working for you.™

www.cumminsdrive.com

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32416

DESIGN PARAMETERS

The following conditions were used to design the CRT® Particulate Filter System:

Table 1. Design parameters at 100% load

Engine	Cummins
Model Number	DSGAB
Application	Generator
Horsepower, (kW)	(125)
Operating Hours per Year	TBD
Number of Systems	1
Type of Fuel	ULSD
Design Exhaust Flow Rate, acfm	1,129
Design Exhaust Temperature, °F	871
Recommended Size Load Bank for Regeneration using SootAlert™	50%
Maximum Allowable Engine Back Pressure	40 " H ₂ O
Typical (full load) Clean Back Pressure	18.9 " H ₂ O
Typical (full load) Operational Back Pressure	25.6 " H ₂ O

6" P1A

Table 2. Emissions Data (all values in gms/Bhp-hr at 100% load)

Pollutant	Inlet Level	Outlet Level	% Reduction
CO	0.38	80% Reduction	80
PM	0.06	85% reduction	85
NO _x	3.0	NA	NA
HC	0.02	70% Reduction	70

Johnson Matthey has calculated the appropriate catalyst volume and equipment required based on the above design parameters supplied. If actual operating conditions vary from above conditions more catalyst or filters may be required for the system to achieve desired destruction efficiencies. For this reason all operating conditions must be closely reviewed as different conditions will void the warranty.

In addition, SootAlert™ Alarms must be responded to in the recommended manner, and sufficient load must be used to regenerate the CRT unit, when necessary.



South Coast Air Quality Management District

FORM 400-E-13a

Emergency Internal Combustion Engine

Mail Application To:
SCAQMD
P.O. Box 4944
Diamond Bar, CA 91765

Tel: (909) 398-3385

www.aqmd.gov

This form must be accompanied by a completed Application for a Permit to Construct/Operate -Form 400A

Permit to be issued to (Business name of operator to appear on permit):
US Govt, Veterans Affairs Medical Center

Street location where the equipment will be operated (for equipment which will be moved to various location in AQMD's jurisdiction, please list the initial location site):
5901 E. 7th Street Fixed Various

Section A: EQUIPMENT INFORMATION

Internal Combustion Engine	Manufacturer: Cummins	Model No.: QSX15-G9
	Serial No.:	Date of Manufacture: (mm/dd/yyyy)
	Manufacturer Maximum Rating: 755.0 BHP @ 1800 RPM	Date of Installation: (mm/dd/yyyy)

ICE Emergency Function
 Electrical Generator Fire Pump Flood Control Pump Driver Compressor

Type
 Fixed site Portable How Is This Type of Equipment Used? (Check All That Apply) Within Facility Off-Site Rental

Fuel
 Diesel Oil No. 2 LPG Natural Gas Other:

Cycle Type
 Two Cycle Four Cycle

Combustion Type
 Lean Burn Rich Burn

No. of Cylinders
 Four Six Eight Ten Twelve Sixteen Other

Aspiration Type
 Turbocharged Turbocharged/Aftercooled Timing Retarded $\geq 4^\circ$ (relative to standard timing)
 Naturally Aspirated

Air Pollution Control (if applicable)
 Selective Catalytic Reduction (SCR)* No Controls
 Selective Non-catalytic Reduction (SNCR)* Air Fuel Ratio Controller
 Non-selective Catalytic Reduction (NSCR) Other (specify)
 * Separate application is required.
 Manufacturer: _____ Model No.: _____
 If already permitted, indicate Permit No. _____ Device No. _____

Section B: OPERATION INFORMATION

Fuel Consumption	Maximum Rated load:	gal./hr. OR	cu. ft./hr	Average Load:	gal./hr. OR	cu. ft./hr.
Operating Schedule	Normal:	1 hours/day	1 days/week	52 weeks/yr.		
	Maximum:	24 hours/day	7 days/week	52 weeks/yr.		
	Testing & Maintenance (Emergency ICE only):	50 hours/year				

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 (a) Make a copy of any page containing confidential information blanked out. Label this page "public copy."
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 (c) Prepare a written justification for the confidentiality of each confidential item. Append this to the confidential copy.

CEP engine. Emissions data on-file with SCAQMD.

Engine Data	(1) Select year of manufacture and rated horsepower.
	(2) Provide actual emission figures from manufacturing specifications (if available) for the Rated Power selected. If engine fuel is LPG or Natural Gas, select Spark Ignition.
	(3) The compression ignited internal combustion engine must meet the State of California or EPA's Non-Road Emission Standards as listed below (please provide manufacturer's specification and guarantee).

Rated Power	Year	Figures	Carbon Monoxide (grams/bhp-hr)	Hydrocarbons (grams/bhp-hr)	Oxides of Nitrogen (grams/bhp-hr)	Particulate Matter (grams/bhp-hr)
-------------	------	---------	--------------------------------	-----------------------------	-----------------------------------	-----------------------------------

Compressor Ignition						
50 - <750 H.P.						
C	50 - < 100 H.P.	Default	3.7	0.35 (0.56)*	3.15 (5.04)*	0.30
		Actual				
C	100 - < 175 H.P.	Default	3.7	0.3	2.7	0.22
		Actual				
C	175 - < 750 H.P.	Default	2.6	0.3	2.7	0.15
		Actual				
750 and greater H.P.						
C	≥750	Default	2.6	0.48	4.32	0.15
		Actual				

	Figures	VOC	NOx	CO
Spark Ignition	For natural gas fired or LPG. The ICE must meet the requirements for BACT as listed below.			
C	Default	1.5 grams/bhp-hr	1.5 grams/bhp-hr	2.0 grams/bhp-hr
	Actual			

Section C: Applicant Certification Statement		
I hereby certify that all information contained herein and information submitted with this application is true and correct.		
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CONTACT PERSON FOR INFORMATION ON THIS EQUIPMENT: John Furlong	CONTACT PERSON'S TELEPHONE NUMBER: (949) 248-8490	DATE SIGNED: 12-3-13

Engine

Cummins heavy duty diesel engines use advanced combustion technology for reliable and stable power, low emissions, and fast response to sudden load changes.

Electronic governing provides precise speed regulation, especially useful for applications requiring constant (isochronous) frequency regulation such as Uninterruptible Power Supply (UPS) systems, non-linear loads, or sensitive electronic loads. Optional coolant heaters are recommended for all emergency standby installations or for any application requiring fast load acceptance after start-up.

Note: Features included with the engine: battery charging alternator, fuel/water separator, shutdown low coolant and bypass oil filtration.

Specifications – Engine

Base Engine	Cummins Model QSX15-G9 Nonroad 2, Turbo-charged with air-to-air charge air cooling, diesel-fueled
Displacement in³ (L)	912.0 (14.9)
Overspeed Limit, rpm	2150 ±50
Regenerative Power, kW	52.00
Cylinder Block Configuration	Cast iron with replaceable wet liners, In-Line 6 cylinder
Battery Capacity	900 amps minimum at ambient temperature of 32°F (0°C)
Battery Charging Alternator	35 amps
Starting Voltage	24-volt, negative ground
Lube Oil Filter Types	Single spin-on combination element with full flow and bypass filtration
Standard Cooling System	104° F (40° C) ambient radiator

Power Output		Standby	Prime						
Gross Engine Power Output, bhp (kWm)		755.0 (563.0)	680.0 (507.3)						
BMEP at Rated Load, psi (kPa)		249.0 (1716.8)	229.0 (1578.9)						
Bore, in. (mm)		5.39 (136.9)	5.39 (136.9)						
Stroke, in. (mm)		6.65 (168.9)	6.65 (168.9)						
Piston Speed, ft/min (m/s)		1995.0 (10.1)	1995.0 (10.1)						
Compression Ratio		17.0:1	17.0:1						
Lube Oil Capacity, qt. (L)		88.0 (83.3)	88.0 (83.3)						
Fuel Flow									
Fuel Flow at Rated Load, US Gal/hr (L/hr)		112.0 (423.9)	112.0 (423.9)						
Maximum Inlet Restriction, in. Hg (mm Hg)		5.0 (127.0)	5.0 (127.0)						
Maximum Return Restriction, in. Hg (mm Hg)		6.5 (165.1)	6.5 (165.1)						
Air Cleaner									
Maximum Air Cleaner Restriction, in. H ₂ O (kPa)		25.0 (6.2)	25.0 (6.2)						
Exhaust									
Exhaust Flow at Rated Load, cfm (m ³ /min)		2600.0 (73.6)	2505.0 (70.9)						
Exhaust Temperature, °F (°C)		810.0 (432.2)	805.0 (429.4)						
Max Back Pressure, in. H ₂ O (kPa)		41.0 (10.2)	41.0 (10.2)						
Fuel System		Full Authority Electronic (FAE) Cummins HPI-TP							
Fuel Consumption		Standby				Prime			
60 Hz Ratings, kW (kVA)		350 (438)				320 (400)			
	Load	1/4	1/2	3/4	Full	1/4	1/2	3/4	Full
	US Gal/hr	9.0	14.3	19.4	24.1	8.5	13.4	18.1	22.1
	L/hr	34	54	73	91	32	51	69	84



South Coast Air Quality Management District

FORM 400-E-13a

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Tel: (909) 396-3385

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Permit to be issued to (Business name of operator to appear on permit):
 US Govt, Veterans Affairs Medical Center

Street location where the equipment will be operated (for equipment which will be moved to various location in AQMD's jurisdiction, please list the initial location site):
 5901 E. 7th Street Fixed Various

Section A: EQUIPMENT INFORMATION

Internal Combustion Engine	Manufacturer: Mitsubishi	Model No.: S6R-Y2PTAW-1
	Serial No.:	Date of Manufacture: (mm/dd/yyyy)
	Manufacturer Maximum Rating: 918.0 BHP @ 1800 RPM	Date of Installation: (mm/dd/yyyy)
ICE Emergency Function	<input checked="" type="radio"/> Electrical Generator <input type="radio"/> Fire Pump <input type="radio"/> Flood Control <input type="radio"/> Pump Driver <input type="radio"/> Compressor	
Type	<input type="radio"/> Fixed site <input checked="" type="radio"/> Portable How Is This Type of Equipment Used? (Check All That Apply) <input checked="" type="checkbox"/> Within Facility <input type="checkbox"/> Off- Site <input type="checkbox"/> Rental	
Fuel	<input checked="" type="radio"/> Diesel Oil No. 2 <input type="radio"/> LPG <input type="radio"/> Natural Gas <input type="radio"/> Other:	
Cycle Type	<input type="radio"/> Two Cycle <input checked="" type="radio"/> Four Cycle	
Combustion Type	<input checked="" type="radio"/> Lean Burn <input type="radio"/> Rich Burn	
No. of Cylinders	<input type="radio"/> Four <input checked="" type="radio"/> Six <input type="radio"/> Eight <input type="radio"/> Ten <input type="radio"/> Twelve <input type="radio"/> Sixteen <input type="radio"/> Other	
Aspiration Type	<input checked="" type="radio"/> Turbocharged <input type="radio"/> Turbocharged/Aftercooled <input type="checkbox"/> Timing Retarded $\geq 4^\circ$ (relative to standard timing) <input type="radio"/> Naturally Aspirated	
Air Pollution Control (if applicable)	<input type="radio"/> Selective Catalytic Reduction (SCR)* <input checked="" type="radio"/> No Controls <input type="radio"/> Selective Non-catalytic Reduction (SNCR)* <input type="radio"/> Air Fuel Ratio Controller <input type="radio"/> Non-selective Catalytic Reduction (NSCR) <input type="radio"/> Other (specify)	
	* Separate application is required.	
	Manufacturer:	Model No.:
	If already permitted, indicate Permit No.	Device No.

Section B: OPERATION INFORMATION

Fuel Consumption	Maximum Rated load: _____ gal./hr. OR _____ cu. ft./hr	Average Load: _____ gal./hr. OR _____ cu. ft./hr.
Operating Schedule	Normal: 1 hours/day 1 days/week 52 weeks/yr.	
	Maximum: 24 hours/day 7 days/week 52 weeks/yr.	
	Testing & Maintenance (Emergency ICE only): 50 hours/year	

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CEP engine. Emissions data on-file with SCAQMD.

Engine Data:	(1) Select year of manufacture and rated horsepower.
	(2) Provide actual emission figures from manufacturing specifications (if available) for the Rated Power selected. If engine fuel is LPG or Natural Gas, select Spark Ignition.
	(3) The compression ignited internal combustion engine must meet the State of California or EPA's Non-Road Emission Standards as listed below (please provide manufacturer's specification and guarantee).

Rated Power	Year	Figures	Carbon Monoxide (grams/bhp-hr)	Hydrocarbons (grams/bhp-hr)	Oxides of Nitrogen (grams/bhp-hr)	Particulate Matter (grams/bhp-hr)
-------------	------	---------	--------------------------------	-----------------------------	-----------------------------------	-----------------------------------

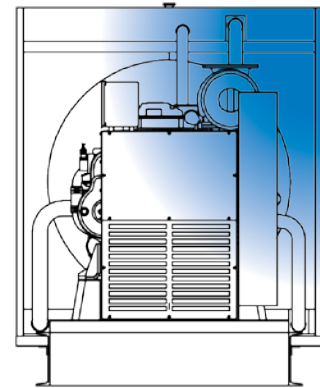
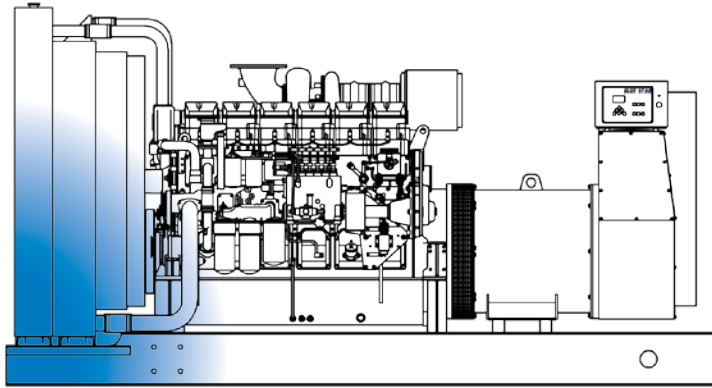
Compressor Ignition						
50 - <750 H.P.						
C	50 -< 100 H.P.	Default	3.7	0.35 (0.56)*	3.15 (5.04)*	0.30
		Actual				
C	100 -< 175 H.P.	Default	3.7	0.3	2.7	0.22
		Actual				
C	175 -< 750 H.P.	Default	2.6	0.3	2.7	0.15
		Actual				
750 and greater H.P.						
C	≥750	Default	2.6	0.48	4.32	0.15
		Actual				

	Figures	VOC	NOx	CO
Spark Ignition	For natural gas fired or LPG. The ICE must meet the requirements for BACT as listed below.			
C	Default	1.5 grams/bhp-hr	1.5 grams/bhp-hr	2.0 grams/bhp-hr
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CONTACT PERSON FOR INFORMATION ON THIS EQUIPMENT: John Furlong	CONTACT PERSON'S TELEPHONE NUMBER: (949) 248-8490	DATE SIGNED: 12-3-13

MD600-01

BLUE STAR



UNIT DIMENSIONS (OPU Less Silencer)

UNIT WEIGHT (OPU less silencer)

Unit Type	Dimensions (L x W x H)
OPU	160 x 69 x 86 in
LEVEL 1	180 x 80 x 124 in
LEVEL 2	N/A
LEVEL 3	300 x 80 x 124 in

Unit Type	Weight (Less Tank): lbs (kg)
OPU	12550 (5693)
LEVEL 1	14400 (6532)
LEVEL 2	N/A
LEVEL 3	16100 (7302)

Dimensions and weights based on standard 480V open power unit. All dimensions and weights may vary with other voltages. Consult factory for installation drawings and accurate weights for your particular unit.

SOUND DATA

Unit Type	Standby		Prime	
	No Load	Full Load	No Load	Full Load
OPU w/ Std Critical Silencer	89 dBA	91 dBA	89 dBA	91 dBA
LEVEL 1	86 dBA	88 dBA	86 dBA	87 dBA
LEVEL 2 (w/o foam)	N/A	N/A	N/A	N/A
LEVEL 3	76 dBA	80 dBA	76 dBA	80 dBA

INSTALLATION DATA

	Standby	Prime
Exhaust System		
Gas Temp. (Stack): °F (°C)	888 (476)	852 (452)
Gas Volume at Stack Temp: CFM (m³/min)	6,320 (179)	5,685 (161)
Maximum Allowable Exhaust Restriction: in. H ₂ O (kPa)	23.6 (5.9)	23.6 (5.9)
Cooling System		
Ambient Capacity of Radiator: °F (°C)	122 (50)	122 (50)
Maximum Allowable Static Pressure on Rad. Exhaust: in. H ₂ O (kPa)	0.5 (0.12)	0.5 (0.12)
Water Pump Flow Rate: Gpm (lit/min)	211 (800)	211 (800)
Heat Rejection to Coolant: BTUM (kW)	14,622 (256)	13,136 (230)
Heat Rejection to CAC: BTUM (kW)	13,479 (236)	12,126 (212)
Heat Radiated to Ambient: BTUM (kW)	5,977 (105)	5,379 (94)
Air Requirements		
Aspirating: CFM (m³/min)	2,401 (67.9)	2,154 (61.0)
Air Flow Required for Rad. Cooled Unit: CFM (m³/min)	43,147 (1,221)	43,147 (1,221)
Air Flow Required for Heat Exchanger/Rem. Rad. CFM (m³/min)	Consult Factory For Remote Cooled Applications	
Fuel Consumption		
At 100% of Power Rating: gal/hr (lit/hr)	50.8 (192)	45.6 (173)
At 75% of Power Rating: gal/hr (lit/hr)	36.9 (140)	34.6 (131)
At 50% of Power Rating: gal/hr (lit/hr)	25.2 (95)	23.6 (89)
Fluids Capacity		
Total Oil System: gal (lit)	27 (100)	27 (100)
Engine Jacket Water Capacity: gal (lit)	12 (45)	12 (45)
System Coolant Capacity: gal (lit)	48 (182)	48 (182)

Specifications subject to change at any time without notice.
FORM #: MD600-01 1-18-10

Deration Factors
Temperature: Derate 5% Per 18°F Over 104°F
Altitude: Derate 1% Per 328ft Over 3280ft



420 Short Road, Abbotsford, B.C. V2S 8A7
Telephone: 1-604-791-1815
Email: info@primapowersys.com
Website: www.primapowersys.com

Distributed by: _____

Dunavent, Andrew/SDO

From: Roy Olivares <ROlivares@aqmd.gov>
Sent: Wednesday, September 24, 2014 2:17 PM
To: Beattie, Benjamin/SAC
Subject: RE: Public Records Request #77147,

boilers

stack ht = 29 ft
dia = 34 inches
scfm = 7819
don't have temp-

engines	ht ft	dia in	temp F	acfm
755 hp	20	8	901	3625
324 hp	20	6	871	1129
918 hp	20	10	900	6320

Roy Olivares

*Air Quality Engineer II
Energy and Public Service Team
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765
909-396-2208*

From: Benjamin.Beattie@CH2M.com [mailto:Benjamin.Beattie@CH2M.com]
Sent: Wednesday, September 24, 2014 1:31 PM
To: Roy Olivares
Cc: Beth.Smoker@ch2m.com
Subject: RE: Public Records Request #77147,

Hello Roy,

Thank you for taking the time to respond to my PRR follow-up. As I described on the phone, I am completing a cumulative source inventory for dispersion modeling for the California Energy Commission. The CEC requires we look at all emissions increases from large facilities within 6 miles of our project. The permits in question are the three emergency ICEs (app #s 560589, 560591, and 560592) and three boilers (app #s 562448, 562449, and 562450) I have the emissions data based on the original PRR response, but I am really looking for any stack data that may have been submitted to the AQMD as part of the permitting process. If these data are available or become available in the future, would you be able to send them to me?

Thank you again,

Benjamin Beattie
Engineer



2485 Natomas Park Drive, Suite 600
Sacramento, CA 95833
(916) 572-0679

From: Jacob Allen [<mailto:jallen2@aqmd.gov>]
Sent: Thursday, July 10, 2014 10:16 AM
To: Smoker, Beth/SAC
Cc: OB PR Support NA Docs
Subject: Public Records Request #77147,

I have been assigned your request for Complete Engrg Appl Files and all previous for U.S. Government, Veterans Affairs Medical Center Fac ID 13990. While checking through your requested applications, I came across some confidential items.

There are a couple of options available to you when requesting confidential documents. The first option is to receive only what is not confidential. The second option is for you to contact the requested facility and have them send us an authorization letter created on their letterhead. This letter should say something along the lines of "We authorize the release of all records to CH2M Hill." The final option is to go through our internal confidentiality process. This consists of our department contacting the facility and allowing them to review all records that are being provided. This option involves a delay.

Please let me know how you would like to proceed.

FYI – There are several applications that are still being processed by the engineer. I have routed this request to our Engineering & Compliance Department for copies of the open applications and a copy of the Facility Permit. There will be a delay involved so feel free to contact me if you need to check on the status of your request

Jacob Allen
Public Records, SCAQMD
(909) 396-2282



Facility Name: Trend Offset Printing Services, Inc.								Step 2 - Source Applicability (FIND Data)		Step 3 - Source Applicability (PRR Data)			Source Information			
Address: 3722-82 Catalina Street, Los Alamitos, CA 90720																
FIND Date: 2/23/2016																
Control #: 77148/85107																
Miles from AEC: < 4 miles								Source Included? (Yes or No)	Application Type	PRR Data Received	Source Included? (Yes or No)	Reference of Data for Analysis / Reason for Exclusion from Analysis	Source Make	Source Model	Source Size	Size Units
Application Number	Permit Number	Permit Issued Date	Permit Status	Equipment Type	Equipment Description	Application Date	Application Status									
567815				Control	AFTERBURNER, DIRECT FLAME	8/21/2014	ASSIGNED TO ENGINEER - CLASS III	Yes	Permit to Operate without Permit to Construct	Yes	Yes	Installing printing system and RTO. This is the same afterburner as 579885. Source location and emission rates from Appl #567815 (pg. 6 and 18). Stack parameter data from Appl #579885 (pg. 6).	Adwest Technologies, Inc.	Model 13.0 RTO-95, with Maxon Kinedizer LE 4" Low-NOx Burner	3,757,000	BTU/hr
547744				Control	AFTERBURNER, DIRECT FLAME	2/27/2013	APPLICATION CHANGED FROM CLASS I - III	Yes	Alteration/Modification	Yes	Yes	This is the same afterburner as 491093 and 534014. Alteration/Modification to RTO. Stack parameter data from SCAQMD Engineering Application folder for Appl # 547744. Emissions are from 534014 Part 1 (pg. 4-6).	Adwest Technologies, Inc.	RETOX 25.0 RT095	7.225	MMBtu/hr
547749				Control	AFTERBURNER, DIRECT FLAME	2/27/2013	APPLICATION CHANGED FROM CLASS I - III	Yes	Alteration/Modification	Yes	Yes	This is the same afterburner as 491094 and 534015. Alteration/Modification to RTO. Stack parameter data from SCAQMD Engineering Application folder for Appl # 547749. Emissions are from 534015 Part 1 (pg. 4-6).	Advantage Energy Group	Premier 22.5 RTO	6.4	MMBtu/hr

NSR DATA SUMMARY SHEET

Application No: 534014
Application Type: Alteration/Modification
Application Status: PENDAPPRV
Previous Apps,Dev,Permit #: 491093, 0 - ,, NONE

Company Name: TREND OFFSET PRINTING SERVICES, INC
Company ID: 53729
Address: 3722-382 CATALINA ST, LOS ALAMITOS, CA 907
RECLAIM: NOX
RECLAIM Zone: 01
Air Basin: SC
Zone: 17
Title V: YES

Device ID: 0 -
Estimated Completion Date: 12-02-2012
Heat Input Capacity: 7.225 Million BTU/hr
Priority Reserve: NONE - No Priority Access Requested
Recommended Disposition: 25 - PERMIT TO CONSTRUCT GRANTED
PR Expiration:
School Within 1000 Feet: NO
Operating Weeks Per Year: 52
Operating Days Per Week: 7
Monday Operating Hours: 00:00 to 24:00
Tuesday Operating Hours: 00:00 to 24:00
Wednesday Operating Hours: 00:00 to 24:00
Thursday Operating Hours: 00:00 to 24:00
Friday Operating Hours: 00:00 to 24:00
Saturday Operating Hours: 00:00 to 24:00
Sunday Operating Hours: 00:00 to 24:00

Emittant: CO
BACT:
Cost Effectiveness: NO
Source Type: MINOR
Emis Increase: 0
Modeling: N/A
Public Notice: N/A
CONTROLLED EMISSION
Max Hourly: 0.01 lbs/hr
Max Daily: 0.24 lbs/day
UNCONTROLLED EMISSION
Max Hourly: 0.01 lbs/hr
Max Daily: 0.24 lbs/day
CURRENT EMISSION
BACT 30 days Avg: 0 lbs/day
Annual Emission: 87.36 lbs/yr
District Exemption: None

Emittant: NOX
BACT:
Cost Effectiveness: NO
Source Type: MINOR
Emis Increase: 0
Modeling: N/A
Public Notice: N/A
CONTROLLED EMISSION
Max Hourly: 0.04 lbs/hr
Max Daily: 0.96 lbs/day
UNCONTROLLED EMISSION
Max Hourly: 0.04 lbs/hr
Max Daily: 0.96 lbs/day
CURRENT EMISSION
BACT 30 days Avg: 0 lbs/day
Annual Emission: 349.44 lbs/yr
District Exemption: None

Emittant: PM10
BACT:
Cost Effectiveness: NO
Source Type: MINOR
Emis Increase: 0
Modeling: N/A
Public Notice: N/A
CONTROLLED EMISSION
Max Hourly: 0 lbs/hr
Max Daily: 0 lbs/day
UNCONTROLLED EMISSION
Max Hourly: 0 lbs/hr
Max Daily: 0 lbs/day
CURRENT EMISSION
BACT 30 days Avg: 0 lbs/day
Annual Emission: 0 lbs/yr
District Exemption: None

Emittant: ROG
BACT:
Cost Effectiveness: NO
Source Type: MINOR
Emis Increase: 0
Modeling: N/A
Public Notice: N/A
CONTROLLED EMISSION
Max Hourly: 0 lbs/hr
Max Daily: 0 lbs/day
UNCONTROLLED EMISSION
Max Hourly: 0 lbs/hr
Max Daily: 0 lbs/day
CURRENT EMISSION
BACT 30 days Avg: 0 lbs/day
Annual Emission: 0 lbs/yr
District Exemption: None

Emittant: SOX
BACT:
Cost Effectiveness: NO
Source Type: MINOR
Emis Increase: 0
Modeling: N/A
Public Notice: N/A
CONTROLLED EMISSION
Max Hourly: 0 lbs/hr
Max Daily: 0 lbs/day
UNCONTROLLED EMISSION
Max Hourly: 0 lbs/hr
Max Daily: 0 lbs/day
CURRENT EMISSION
BACT 30 days Avg: 0 lbs/day
Annual Emission: 0 lbs/yr
District Exemption: None

SUPERVISOR'S APPROVAL: H. Mendenhall SUPERVISOR'S REVIEW DATE: 5-2-13

Processed By: rickl 5/1/2013 3:28:31 PM

SCAQMD PERMIT PROCESSING SYSTEM (PPS)

AEIS DATA SHEET

Company Name : TREND OFFSET PRINTING SERVICES, INC

Facility ID : 53729

Equipment Address : 3722-362 CATALINA ST
 LOS ALAMITOS CA 90720

Application Number : 534014

Equipment B-Cat :

Estimated Completion Date : 11/07/12

Equipment C-Cat : 05

Equipment Type : Control

Equipment Description : AFTERBURNER, DIRECT FLAME

Emissions

Emittants	Emissions	
	R1 LB/HR	R2 LB/HR
CO	0.12	0.12
NOX	0.45	0.45
PM10	0.03	0.03
ROG	0.01	0.01
SOX	0.01	0.01

Applicable Rules

1130	10/08/1999	Graphic Arts
1171	05/01/2009	Solvent Cleaning Operations

	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Daily Start Times :	00:00	00:00	00:00	00:00	00:00	00:00	00:00
Daily Stop Times :	24:00	24:00	24:00	24:00	24:00	24:00	24:00

User's Initials : RL01 Date: 11/07/12 Supervisor's Name : _____ Review Date : / /

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South Coast Air Quality Management District

Form 400-PS

Plot Plan And Stack Information Form

This form must be accompanied by a completed Application for a Permit to Construct/Operate - Form 400A and Form 400-CEQA.

Mail To:
SCAQMD
P.O. Box 4944
Diamond Bar, CA 91765-0944
Tel (909) 396-3385
www.aqmd.gov

Section A - Operator Information

Facility Name (Business Name of Operator To Appear On The Permit): Trend Offset Printing Services, Inc. Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD): 053729
Address where the equipment will be operated (for equipment which will be moved to various location in AQMD's jurisdiction, please list the initial location site): 3722-382 Catalina Street, Los Alamitos, California 92335
Fixed Location [checked] Various Locations []

Section B - Location Data

Plot Plan: Please attach a site map for the project with distances and scales. Identify and locate the proposed equipment on the map.
Location of Schools Nearby: Is the facility located within a 1/4 mile radius (1,320 feet) of the outer boundary of a school? [checked] Yes [] No
School Name: Los Alamitos Elementary school School Name:
School Address: 10862 Bloomfield St School Address:
Los Alamitos, CA 90720
Distance from stack or equipment vent to the outer boundary of the school: 892 feet
CA Health & Safety Code 42301.9: "School" means any public or private school used for purposes of the education of more than 12 children in kindergarten or any of grades 1 to 12, inclusive, but does not include any private school in which education is primarily conducted in private homes.
Population Density: [checked] Urban [] Rural (<50% of land within 3 km radius accounted for by urban land use categories, i.e., multi-family dwelling or industrial.)
Zoning Classification: [checked] Mixed Use Residential Commercial Zone (M-U) [] Service and Professional Zone (C-S) [] Medium Commercial (C-3)
[] Heavy Commercial (C-4) [] Commercial Manufacturing (C-M)

Section C - Emission Release Parameters - Stacks, Vents

Stack Data: Stack Height: 44.00 feet (above ground level) What is the height of the closest building nearest the stack? 35 feet
Stack Inside Diameter: 50.00 inches Stack Flow: 25,000 acfm Stack Temperature: 1,500 F
Rain Cap Present: [] Yes [] No Stack Orientation: [checked] Vertical [] Horizontal
If the stack height is less than 2.5 times the closest building height (H), please provide information on any building within 5xH distance from the stack (attach additional sheet if necessary):
Building #/Name: Central press room/10811 Bloomfield Building #/Name:
Building Height: 35 feet (above ground level) Building Height:
Building Width: 200 feet Building Width:
Building Length: 600 feet Building Length:
Receptor Distance From Equipment Stack or Roof Vents/Openings: Distance to nearest residence: 575 feet Distance to nearest business: 300 feet
Building Information: Are the emissions released from vents and/or openings from a building? [] Yes [checked] No
If yes, please provide:
Building #/Name: Building Width:
Building Height: feet (above ground level) Building Length: feet

NSR DATA SUMMARY SHEET

Application No: 534015
Application Type: Alteration/Modification
Application Status: PENDAPPRV
Previous Apps,Dev,Permit #: 491094, 0 - ,, NONE

Company Name: TREND OFFSET PRINTING SERVICES, INC
Company ID: 53729
Address: 3722-382 CATALINA ST, LOS ALAMITOS, CA 907
RECLAIM: NOX
RECLAIM Zone: 01
Air Basin: SC
Zone: 17
Title V: YES

Device ID: 0 -
Estimated Completion Date: 12-02-2012
Heat Input Capacity: 6.4 Million BTU/hr
Priority Reserve: NONE - No Priority Access Requested
Recommended Disposition: 25 - PERMIT TO CONSTRUCT GRANTED
PR Expiration:
School Within 1000 Feet: NO
Operating Weeks Per Year: 52
Operating Days Per Week: 7
Monday Operating Hours: 00:00 to 24:00
Tuesday Operating Hours: 00:00 to 24:00
Wednesday Operating Hours: 00:00 to 24:00
Thursday Operating Hours: 00:00 to 24:00
Friday Operating Hours: 00:00 to 24:00
Saturday Operating Hours: 00:00 to 24:00
Sunday Operating Hours: 00:00 to 24:00

Emittant: CO
BACT:
Cost Effectiveness: NO
Source Type: MINOR
Emis Increase: 0
Modeling: N/A
Public Notice: N/A
CONTROLLED EMISSION
Max Hourly: 0.24 lbs/hr
Max Daily: 5.76 lbs/day
UNCONTROLLED EMISSION
Max Hourly: 0.24 lbs/hr
Max Daily: 5.76 lbs/day
CURRENT EMISSION
BACT 30 days Avg: 6 lbs/day
Annual Emission: 2096.64 lbs/yr
District Exemption: None

Emittant: NOX
BACT:
Cost Effectiveness: NO
Source Type: MINOR
Emis Increase: 0
Modeling: N/A
Public Notice: N/A
CONTROLLED EMISSION
Max Hourly: 0.05 lbs/hr
Max Daily: 1.2 lbs/day
UNCONTROLLED EMISSION
Max Hourly: 0.05 lbs/hr
Max Daily: 1.2 lbs/day
CURRENT EMISSION
BACT 30 days Avg: 1 lbs/day
Annual Emission: 436.8 lbs/yr
District Exemption: None

Emittant: PM10
BACT:
Cost Effectiveness: NO
Source Type: MINOR
Emis Increase: 0
Modeling: N/A
Public Notice: N/A
CONTROLLED EMISSION
Max Hourly: 0.03 lbs/hr
Max Daily: 0.72 lbs/day
UNCONTROLLED EMISSION
Max Hourly: 0.03 lbs/hr
Max Daily: 0.72 lbs/day
CURRENT EMISSION
BACT 30 days Avg: 1 lbs/day
Annual Emission: 262.08 lbs/yr
District Exemption: None

Emittant: ROG
 BACT:
 Cost Effectiveness: NO
 Source Type: MINOR
 Emis Increase: 0
 Modeling: N/A
 Public Notice: N/A
 CONTROLLED EMISSION
 Max Hourly: 0.03 lbs/hr
 Max Daily: 0.72 lbs/day
 UNCONTROLLED EMISSION
 Max Hourly: 0.03 lbs/hr
 Max Daily: 0.72 lbs/day
 CURRENT EMISSION
 BACT 30 days Avg: 0 lbs/day
 Annual Emission: 262.08 lbs/yr
 District Exemption: None

Emittant: SOX
 BACT:
 Cost Effectiveness: NO
 Source Type: MINOR
 Emis Increase: 0
 Modeling: N/A
 Public Notice: N/A
 CONTROLLED EMISSION
 Max Hourly: 0 lbs/hr
 Max Daily: 0 lbs/day
 UNCONTROLLED EMISSION
 Max Hourly: 0 lbs/hr
 Max Daily: 0 lbs/day
 CURRENT EMISSION
 BACT 30 days Avg: 0 lbs/day
 Annual Emission: 0 lbs/yr
 District Exemption: None

SUPERVISOR'S APPROVAL: *H. M...* SUPERVISOR'S REVIEW DATE: 5-1-13

Processed By: rickl 5/1/2013 3:28:57 PM

SCAQMD PERMIT PROCESSING SYSTEM (PPS)

AEIS DATA SHEET

Company Name : TREND OFFSET PRINTING SERVICES, INC

Facility ID : 53729

Equipment Address : 3722-382 CATALINA ST

LOS ALAMITOS CA 90720

Application Number : 534015

Equipment B-Cat :

Estimated Completion Date : 11/07/12

Equipment C-Cat : 05

Equipment Type : Control

Equipment Description : AFTERBURNER, DIRECT FLAME

Emissions

Emittants	Emissions	
	R1 LB/HR	R2 LB/HR
CO	0.24	0.24
NOX	0.55	0.55
PM10	0.03	0.03
ROG	0.03	0.03
SOX	0.01	0.01

Applicable Rules

1130	10/08/1999	Graphic Arts
1171	05/01/2009	Solvent Cleaning Operations

	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Daily Start Times :	00:00	00:00	00:00	00:00	00:00	00:00	00:00
Daily Stop Times :	24:00	24:00	24:00	24:00	24:00	24:00	24:00

User's Initials : RL01 Date: 11/07/12 Supervisor's Name : _____ Review Date : ____ / ____ / ____



South Coast Air Quality Management District

Form 400-PS

Plot Plan And Stack Information Form

This form must be accompanied by a completed Application for a Permit to Construct/Operate - Form 400A and Form 400-CEQA.

Mail To:
 SCAQMD
 P.O. Box 4944
 Diamond Bar, CA 91765-0944
 Tel: (909) 396-3385
 www.aqmd.gov

Section A - Operator Information	
Facility Name (Business Name of Operator To Appear On The Permit): Trend Offset Printing Services, Inc.	Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD): 053729
Address where the equipment will be operated (for equipment which will be moved to various location in AQMD's jurisdiction, please list the initial location site): 3722-382 Catalina Street, Los Alamitos, California 92335	
<input checked="" type="radio"/> Fixed Location <input type="radio"/> Various Locations	
Section B - Location Data	
Plot Plan	Please attach a site map for the project with distances and scales. Identify and locate the proposed equipment on the map. A copy of the appropriate Thomas Brothers page, a web-based map, or a sketch that shows the major streets and location of the equipment is acceptable.
Location of Schools Nearby	<p>Is the facility located within a 1/4 mile radius (1,320 feet) of the outer boundary of a school? <input checked="" type="radio"/> Yes <input type="radio"/> No</p> <p>If yes, please provide name(s) of school(s) below:</p> <p>School Name: Los Alamitos Elementary school School Name: _____</p> <p>School Address: 10862 Bloomfield St School Address: _____</p> <p style="padding-left: 40px;">Los Alamitos, CA 90720</p> <p>Distance from stack or equipment vent to the outer boundary of the school: 892 feet Distance from stack or equipment vent to the outer boundary of the school: _____ feet</p> <p><small>CA Health & Safety Code 42301.9: "School" means any public or private school used for purposes of the education of more than 12 children in kindergarten or any of grades 1 to 12, inclusive, but does not include any private school in which education is primarily conducted in private homes.</small></p>
Population Density	<input checked="" type="radio"/> Urban <input type="radio"/> Rural (<50% of land within 3 km radius accounted for by urban land use categories, i.e., multi-family dwelling or industrial)
Zoning Classification	<input checked="" type="radio"/> Mixed Use Residential Commercial Zone (M-U) <input type="radio"/> Service and Professional Zone (C-S) <input type="radio"/> Medium Commercial (C-3) <input type="radio"/> Heavy Commercial (C-4) <input type="radio"/> Commercial Manufacturing (C-M)
Section C - Emission Release Parameters - Stacks, Vents	
Stack Data	<p>Stack Height: 44.00 feet (above ground level) What is the height of the closest building nearest the stack? 45 feet</p> <p>Stack Inside Diameter: 50.00 inches Stack Flow: 25,000 acfm Stack Temperature: 1,500 °F</p> <p>Rain Cap Present: <input type="radio"/> Yes <input checked="" type="radio"/> No Stack Orientation: <input checked="" type="radio"/> Vertical <input type="radio"/> Horizontal</p> <p>If the stack height is less than 2.5 times the closest building height (H), please provide information on any building within 5xH distance from the stack (attach additional sheet if necessary):</p> <p>Building #/Name: 10811 Bloomfield Building #/Name: _____</p> <p>Building Height: 35 feet (above ground level) Building Height: _____ feet (above ground level)</p> <p>Building Width: 200 feet Building Width: _____ feet</p> <p>Building Length: 600 feet Building Length: _____ feet</p>
Receptor Distance From Equipment Stack or Roof Vents/Openings	<p>Distance to nearest residence: 575 feet Distance to nearest business: 300 feet</p>
Building Information	<p>Are the emissions released from vents and/or openings from a building? <input type="radio"/> Yes <input checked="" type="radio"/> No</p> <p>If yes, please provide:</p> <p>Building #/Name: _____ Building Width: _____ feet</p> <p>Building Height: _____ feet (above ground level) Building Length: _____ feet</p>



South Coast Air Quality Management District

Form 400-PS

Plot Plan And Stack Information Form

This form must be accompanied by a completed Application for a Permit to Construct/Operate - Form 400A and Form 400-CEQA.

for control equipment C87 RTO

Mail To: SCAQMD P.O. Box 4944 Diamond Bar, CA 91765-0944 Tel: (909) 396-3385 www.aqmd.gov

Section A - Operator Information

Facility Name (Business Name of Operator To Appear On The Permit): Trend Offset Printing Services, Inc. Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD): 053729

Address where the equipment will be operated (for equipment which will be moved to various location in AQMD's jurisdiction, please list the initial location site): 10811 Bloomfield Street, Los Alamitos, California 90270 [X] Fixed Location [] Various Locations

Section B - Location Data

Plot Plan: Please attach a site map for the project with distances and scales. Identify and locate the proposed equipment on the map. A copy of the appropriate Thomas Brothers page, a web-based map, or a sketch that shows the major streets and location of the equipment is acceptable.

Location of Schools Nearby: Is the facility located within a 1/4 mile radius (1,320 feet) of the outer boundary of a school? [X] Yes [] No. School Name: Los Alamitos Elementary School. School Address: 10862 Bloomfield Street, Los Alamitos, CA 90720. Distance from stack or equipment vent to the outer boundary of the school: 892 feet.

Population Density: [X] Urban [] Rural (<50% of land within 3 km radius accounted for by urban land use categories, i.e., multi-family dwelling or industrial.)

Zoning Classification: [X] Mixed Use Residential Commercial Zone (M-U) [] Service and Professional Zone (C-S) [] Medium Commercial (C-3) [] Heavy Commercial (C-4) [] Commercial Manufacturing (C-M)

Section C - Emission Release Parameters - Stacks, Vents

Stack Data: Stack Height: 28.50 feet (above ground level). Stack Inside Diameter: 32.00 inches. Stack Flow: 13,000 acfm. Stack Temperature: 1,500 F. Rain Cap Present: [] Yes [X] No. Stack Orientation: [X] Vertical [] Horizontal. Building #/Name: 10811 Bloomfield. Building Height: 35 feet (above ground level). Building Width: 200 feet. Building Length: 600 feet.

Receptor Distance From Equipment Stack or Roof Vents/Opening: Distance to nearest residence: 575 feet. Distance to nearest business: _____ feet.

Building Information: Are the emissions released from vents and/or openings from a building? [] Yes [X] No. Building #/Name: _____. Building Width: _____ feet. Building Height: _____ feet (above ground level). Building Length: _____ feet.



South Coast Air Quality Management District

Form 400-PS

Plot Plan And Stack Information Form

This form must be accompanied by a completed Application for a Permit to Construct/Operate - Form 400A and Form 400-CEQA.

Mail To:
SCAQMD
P.O. Box 4944
Diamond Bar, CA 91765-0944
Tel: (909) 396-3385
www.aqmd.gov

Section A - Operator Information	
Facility Name (Business Name of Operator To Appear On The Permit): Trend Offset Printing Services, Inc.	Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD): 053729
Address where the equipment will be operated (for equipment which will be moved to various location in AQMD's jurisdiction, please list the initial location site): 3701 Catalina Street, Los Alamitos, CA 90720 <input checked="" type="radio"/> Fixed Location <input type="radio"/> Various Locations	
Section B - Location Data	
Plot Plan	Please attach a site map for the project with distances and scales. Identify and locate the proposed equipment on the map. A copy of the appropriate Thomas Brothers page, a web-based map, or a sketch that shows the major streets and location of the equipment is acceptable.
Location of Schools Nearby	Is the facility located within a 1/4 mile radius (1,320 feet) of the outer boundary of a school? <input checked="" type="radio"/> Yes <input type="radio"/> No If yes, please provide name(s) of school(s) below: School Name: Los Alamitos Elementary School School Name: _____ School Address: 10862 Bloomfield Street School Address: _____ Los Alamitos, CA 90720 Distance from stack or equipment vent to the outer boundary of the school: 892 feet Distance from stack or equipment vent to the outer boundary of the school: _____ feet CA Health & Safety Code 42301.9: "School" means any public or private school used for purposes of the education of more than 12 children in kindergarten or any of grades 1 to 12, inclusive, but does not include any private school in which education is primarily conducted in private homes.
Population Density	<input checked="" type="radio"/> Urban <input type="radio"/> Rural (<50% of land within 3 km radius accounted for by urban land use categories, i.e., multi-family dwelling or industrial.)
Zoning Classification	<input checked="" type="radio"/> Mixed Use Residential Commercial Zone (M-U) <input type="radio"/> Service and Professional Zone (C-S) <input type="radio"/> Medium Commercial (C-3) <input type="radio"/> Heavy Commercial (C-4) <input type="radio"/> Commercial Manufacturing (C-M)
Section C - Emission Release Parameters - Stacks, Vents	
Stack Data	Stack Height: _____ feet (above ground level) What is the height of the closest building nearest the stack? _____ feet Stack Inside Diameter: _____ inches Stack Flow: _____ acfm Stack Temperature: _____ °F Rain Cap Present: <input type="radio"/> Yes <input type="radio"/> No Stack Orientation: <input type="radio"/> Vertical <input type="radio"/> Horizontal If the stack height is less than 2.5 times the closest building height (H), please provide information on any building within 5xH distance from the stack (attach additional sheet if necessary): Building #/Name: _____ Building #/Name: _____ Building Height: _____ feet (above ground level) Building Height: _____ feet (above ground level) Building Width: _____ feet Building Width: _____ feet Building Length: _____ feet Building Length: _____ feet
Receptor Distance From Equipment Stack or Roof Vents/Openings	Distance to nearest residence: _____ feet Distance to nearest business: _____ feet
Building Information	Are the emissions released from vents and/or openings from a building? <input type="radio"/> Yes <input type="radio"/> No If yes, please provide: Building #/Name: _____ Building Width: _____ feet Building Height: _____ feet (above ground level) Building Length: _____ feet

Table 1 – Summary of Maximum Potential to Emit from Dryer

Pollutant	Emission Factor, lb/dscf	Volume of Natural Gas Combusted, dscf/hr	Maximum Operating Load	Maximum Hourly Emissions, lbs/hr	Maximum Daily Emissions, lbs/day	Maximum Annual Potential to Emit, lbs/yr
NOx	0.00003828	7,619.05	1.0	0.2917	7.00	2,555.03
SOx	0.00000060	7,619.05	1.0	0.0046	0.11	40.03
CO	0.00003500	7,619.05	1.0	0.2667	6.40	2,336.03
PM	0.00000750	7,619.05	1.0	0.0571	1.37	500.55
VOC	0.00000700	7,619.05	1.0	0.0533	1.28	467.17

Table 2 – Summary of Maximum Potential to Emit from RTO

Pollutant	Emission Factor, lb/dscf	Volume of Natural Gas Combusted, dscf/hr	Maximum Operating Load	Maximum Hourly Emissions, lbs/hr	Maximum Daily Emissions, lbs/day	Maximum Annual Potential to Emit, lbs/yr
NOx	0.00003828	3,578.10	1.0	0.1370	3.29	1,199.94
SOx	0.00000060	3,578.10	1.0	0.0022	0.05	18.83
CO	0.00003500	3,578.10	1.0	0.1252	3.01	1,097.01
PM	0.00000750	3,578.10	1.0	0.0268	0.64	235.12
VOC	0.00000700	3,578.10	1.0	0.0251	0.60	219.44

Emissions from the Use of Heat-set Lithographic Inks

The operation of each Goss C-550 lithographic printing press may result in atmospheric emissions of VOC from the use of lithographic inks, blanket washes, fountain solutions, and miscellaneous solvents. The materials proposed for use in the Goss C-550 lithographic printing press are similar to materials currently in use at the facility, and actual materials use and throughput will vary based on production demands. Copies of Safety Data Sheets for typical materials proposed for use in each C-550 press are contained in **Appendix E**.

The Goss C-550 lithographic printing press is equipped with an automatic blanket wash system to clean the printing blankets. The automatic blanket wash system sprays the blanket wash across the blankets to remove residual ink from the printing process. The automatic blanket wash system is an enclosed system; therefore, emissions of VOC resulting from the operation of the automatic blanket wash system will be captured and directed to an air pollution control device. Please note, some materials may not be used in any given day while others may be used at the maximum potential. As described subsequently in the rule evaluation section of this application, the facility has previously proposed an increase in the existing monthly facility-wide VOC emissions limit of 10,890 with the purchase of 140 pounds of VOC ERCs, which will be surrendered upon approval of this application. This would result in a new monthly facility-wide VOC emissions limit of 15,090 pounds per month.

Facility Name: LA City, DWP Haynes Generating Station								Step 2 - Source Applicability (FIND Data)		Step 3 - Source Applicability (PRR Data)			Source Information			
Address: 6801 2nd St, Long Beach, CA 90803																
FIND Date: 2/24/2016																
Control #: 77344/8511																
Miles from AEC: < 1 mile																
Application Number	Permit Number	Permit Issued Date	Permit Status	Equipment Type	Equipment Description	Application Date	Application Status	Source Included? (Yes or No)	Application Type	PRR Data Received	Source Included? (Yes or No)	Reference of Data for Analysis / Reason for Exclusion from Analysis	Source Make	Source Model	Source Size	Size Units
559600			ACTIVE	Basic	TURBINE ENGINE (>50 MW) EL PEAK OTH FUEL	1/16/2014	PERMIT TO OPERATE GRANTED	Yes	Change of Conditions	N/A	Yes	Stack Parameters from "HaynesLMS100ModFileFinal.xls" provided by DWP. Emissions from "Haynes_Engineering%20Evaluation.PDF".	LMS100		102.7	MW
559601			ACTIVE	Basic	TURBINE ENGINE (>50 MW) EL PEAK OTH FUEL	1/16/2014	PERMIT TO OPERATE GRANTED	Yes	Change of Conditions	N/A	Yes	Stack Parameters from "HaynesLMS100ModFileFinal.xls" provided by DWP. Emissions from "Haynes_Engineering%20Evaluation.PDF".	LMS100		102.7	MW
559602			ACTIVE	Basic	TURBINE ENGINE (>50 MW) EL PEAK OTH FUEL	1/16/2014	PERMIT TO OPERATE GRANTED	Yes	Change of Conditions	N/A	Yes	Stack Parameters from "HaynesLMS100ModFileFinal.xls" provided by DWP. Emissions from "Haynes_Engineering%20Evaluation.PDF".	LMS100		102.7	MW
559603			ACTIVE	Basic	TURBINE ENGINE (>50 MW) EL PEAK OTH FUEL	1/16/2014	PERMIT TO OPERATE GRANTED	Yes	Change of Conditions	N/A	Yes	Stack Parameters from "HaynesLMS100ModFileFinal.xls" provided by DWP. Emissions from "Haynes_Engineering%20Evaluation.PDF".	LMS100		102.7	MW
559604			ACTIVE	Basic	TURBINE ENGINE (>50 MW) EL PEAK OTH FUEL	1/16/2014	PERMIT TO OPERATE GRANTED	Yes	Change of Conditions	N/A	Yes	Stack Parameters from "HaynesLMS100ModFileFinal.xls" provided by DWP. Emissions from "Haynes_Engineering%20Evaluation.PDF".	LMS100		102.7	MW
559605			ACTIVE	Basic	TURBINE ENGINE (>50 MW) EL PEAK OTH FUEL	1/16/2014	PERMIT TO OPERATE GRANTED	Yes	Change of Conditions	N/A	Yes	Stack Parameters from "HaynesLMS100ModFileFinal.xls" provided by DWP. Emissions from "Haynes_Engineering%20Evaluation.PDF".	LMS100		102.7	MW
554366			ACTIVE	Basic	I C E (>500 HP) EM ELEC GEN DIESEL	7/23/2013	PERMIT TO OPERATE GRANTED	Yes	Change of Conditions	N/A	Yes	Emissions and source parameters from "Haynes_Engineering%20Evaluation.PDF".	Caterpillar	3516C	3,622	BHP
554367			ACTIVE	Basic	I C E (>500 HP) EM ELEC GEN DIESEL	7/23/2013	PERMIT TO OPERATE GRANTED	Yes	Change of Conditions	N/A	Yes	Emissions and source parameters from "Haynes_Engineering%20Evaluation.PDF".	Caterpillar	3516C	3,622	BHP

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APPENDIX B CRITERIA POLLUTANTS EMISSIONS – AUXILIARY EQUIPMENT

1. Standby Generators

The project includes two diesel fueled standby generator engines. The following specifications are used in emission calculations:

Engine Manufacturer	Caterpillar
Engine Model Number	3516C DITA
Engine brake horsepower (BHP)	3,622
Engine Power Output (KW)	2,500
Fuel:	#2 CARB Diesel (7.5 lbs/gal)
Fuel Usage (Gallons/hour):	173.3
Annual Operation Limit (hours):	200
Annual Maintenance Limit (hours):	50

The following emission factors are proposed by the applicant and warranted by the manufacturer.

NOx (grams/bhp-hr)	3.7
CO (grams/bhp-hr)	0.67
VOC (grams/bhp-hr)	0.25
PM (grams/bhp-hr)	0.07 before the particulate filter
	0.007 after the diesel particulate filter

SOx emission factor is extrapolated by assuming the CARB diesel contains less than 15 ppm sulfur as H₂S. One pound of H₂S would convert to 64/34 pounds of SO₂ or SOx.

SOx (lb/lb diesel)	$28.2 * 10^{-6}$
SOx (lb/Mgal)	$28.2 * 10^{-6} * 1000 * 7.5 = 0.21$

Emission increases are then calculated by assuming 50 hours of annual maintenance, or 4.2 hours per month (1 hour per week).

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Emergency Generators

Two diesel fuel operated emergency power generators will be installed that would allow the gas turbines to shut down safely and maintain critical systems during emergencies. The power rating of each standby power generator will be 3,622 brake horsepower. Each engine will drive a 2.5 MW electric generator. These engines will be tested for one hour every week. The specifications of this engine are provided in the Table 6.

Table 6 Emergency Generator Specifications

PARAMETERS	SPECIFICATIONS
Manufacturer	Caterpillar
Model No.	3516C DITA
Rated Power	3,622 bhp (2,500 kW) at 1,800 rpm
Engine Design	Lean Burn, 4 stroke, water-cooled
Rated Fuel Consumption	173.3 gallons per hour
Number of Cylinders	16
Expected Hours of Operation	12 hr/yr (emission calculations are performed for 50 hrs/yr)
Type of Fuel	No. 2 Diesel, 15 ppmw sulfur content by weight
Stack Temperature	921.9 °F
Stack Flow	19,048.7 ACFM
Stack Height	18 ft
Stack Diameter	20-inch
Aspiration	Turbocharged and aftercooled
Particulate Filter	Johnson Matthey CRT(+)-16-BITO-CS-28-RT

Based on the emission characteristics provided in the next table this diesel engine complies with EPA Tier II emission standards. The particulate filter is installed so that the unit will meet the federal LAER requirement. The emission profile of the engine is provided in the next table.

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Emissions from each operating mode are determined in Appendix A. For potential to emit determinations the worst emitting operating conditions are assumed. For the gas turbine generators the worst emitting operating conditions are 100% capacity, 65° F ambient temperature.

1. MONTHLY TOTAL EMISSIONS – NORMAL OPERATION

The monthly total emissions of criteria pollutants NO_x, CO, VOC, PM10 and SO_x during normal operation are determined by assuming the following monthly operating schedule. One calendar month is assumed to have 31 days.

22 days continuous operation at full load that includes 6 startups and 6 shutdowns per day
9 days operating for 8 hours per day and with 2 startups and 2 shutdowns.

The total emissions are calculated in Appendix A, Table A-4 and are tabulated in the next table:

Table 9 Monthly Total Emissions – Normal Operation Each Turbine

	NO _x	CO	VOC	PM10	SO _x
Startups– 150 events (lbs)	3,000	2,384	645	275	8
Shutdowns – 150 events (lbs)	450	5,250	450	33	3
Regular Operation – 523 hours (lbs)	4,231	4,121	1,177	3,033	79
Monthly total (lbs)	7,681	11,755	2,272	3,341	90

The monthly total emissions per turbine will be enforced in Condition A63.4.

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- (vii) A brief description of the public comment procedures provided.
- (viii) The time and place of any proposed permit hearing that may be held or a statement of the procedures to request a proposed permit hearing if one has not already been requested.

DISCUSSION

Based on the engineering evaluation, the new equipment is expected to comply with all federal, state, and local rules and regulations. A public notice is required pursuant to Rules 212, 1701, and 3006. The total monthly emissions from the proposed project to be included in the public notice are summarized in the next table.

Table 21 Project Emissions for Rule 212 Public Notice (Normal Operation; lbs/month)

	NO _x	CO	VOC	PM ₁₀	SO _x
Gas Turbines (6)	46,086	70,530	13,632	20,046	540
Emergency ICEs (2)	246	45	17	0	0
Diesel Storage Tank (1)	0	0	0	0	0
Oil/Water Separators (3)	0	0	1	0	0
Total Project Emissions	46,332	70,575	13,650	20,046	540

Since the total electrical generating capacity of the new SCGS is slightly greater than the electrical generating capacity of the existing electric utility boiler generating units, as required by AQMD rules and regulations, the emissions associated with the increase in the electrical generating capacity from the new equipment will be offset through providing emission reduction credits (ERCs) from shut down of other facilities within the air basin that LADWP has acquired. The amounts of ERCs required that is associated with the increase in the electrical generating capacity are 12 pounds per day (or 360 pounds per month) of VOC and 15 pounds per day (or 450 pounds per month) of PM₁₀. There are no emission offsets in the form of ERCs required for SO_x and CO, since the SO_x increase in emissions is less than 0.5 pound per day and the air basin is considered attainment with CO. Also all of the NO_x emissions from this facility has to be offset with emission credits that LADWP either holds or purchases in the form of NO_x Trading Credits available in the Regional Clean Air Incentive's Market (RTCs). Finally, the total facility's emissions of PM_{2.5} will be limited to less than 100 tons per year, unless LADWP also provides ERCs for PM_{2.5} in the amount of 292 pounds per day, unless a different amount associated with the Repower Project modification at this facility as determined to be required according to the federal New Source Review (NSR) requirements, as approved by both AQMD and EPA. The VOC and PM₁₀ ERCs are required to be provided by LADWP prior to issuance of the final Title V Permits to Construct. The NO_x RTCs and PM_{2.5} ERCs (if necessary), are required to be provided by LADWP prior to the Repower Project commencing its operation in

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Table A-2 Criteria Pollutants Emissions during Normal Operation, 65 °F

	BACT (ppmv)	Emission Factor (lb/mmscf)	Hourly Emission (lb/hr)
NOx	2.5 ppmv	8.96 ²	8.09 ¹
CO	4 ppmv	8.84 ²	7.88 ¹
VOC	2.0 ppmv	2.80 ²	2.25 ¹
PM10	Natural Gas	6.423	5.80 ³
SOx	Natural Gas	0.168	0.15 ³

1. (lbs/hr) = (26.70 mmscf)*(ppmv)/(379.5 scf/lb-mole)*(MW lb/lb-mole)
2. (lbs/mmscf) = (lbs/hr)/(0.903 mmscf/hr)
3. (lbs/hr) = (Emission Factor in lbs/mmscf)*(0.903 mmscf/hr)

3. EMISSIONS FROM SHUT DOWN

Shutdown is the process of bringing down the load of the CTG to zero. It typically takes 10 minutes to conclude the shutdown process for a GE LMS100 gas turbine. LADWP used the same emission factors of the shutdown process of the CPV Sentinel project with one exception of NOx emission rates. According to LADWP, the latest information provided by GE indicate that NOx emissions during a shutdown would be 0.2 lbs. LADWP choose to assume NOx emissions to be 3 lb. The increase of NOx emissions from 0.2 lbs to 3.0 lbs is intended to include a safety margin and to ensure compliance.

Table A-3 Shutdown Emissions

Parameter	Value
Duration (minutes)	10
Heat Input (MMBtu, LHV)	26.0
Heat Input (MMBtu, HHV)	28.9
Fuel Usage (MMscf)	0.029
NOx (lbs)	3.0
CO (lbs)	35.0
VOC (lbs)	3.0
PM10 (lbs)	0.22
SOx (lbs)	0.02

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4. MONTHLY TOTAL EMISSIONS – NORMAL OPERATION

Once the gas turbine generators start commercial operation LADWP expects the units may operate continuously at full load in some days and at partial load in other days. A hypothetical monthly operating schedule is presented, assuming that there are 31 days in the month. This schedule is considered for PTE calculations.

Full load continuous operation: 22 days, 24 hours per day that includes 6 startups (150 minutes total), 6 shutdowns (60 minutes total), and 20.5 hour normal operation

Full load partial operation: 9 days, each day includes 2 startups, 2 shutdowns, and 8 hours normal operation

Based on the above schedule there are 150 (6*22+2*9) startups, 150 (6*22+2*9) shutdowns, and 523 (20.5*22+8*9) total hours of normal operation in a calendar month. Using the emission rates calculated in the previous three sections the monthly emissions are calculated and summarized in the next table.

Table A-4 Monthly Total Emissions – Normal Operation

	NO _x	CO	NO ₂	PM ₁₀	SO ₂
Startups– 150 events (lbs)	3,000	2,384	645	275	8
Shutdowns – 150 events (lbs)	450	5,250	450	33	3
Regular Operation – 523 hours (lbs)	4,231	4,121	1,177	3,033	79
Monthly total (lbs)	7,681	11,755	2,272	3,341	90

Total fuel consumption is:

$$150*0.247 + 150*0.029 + 523*0.903 = 513.70 \text{ mmscf/month}$$

The equivalent emission factors are:

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Table A-5 Average Emission Factors – Normal Operation

Average Emission Factor (lbs/mmssf)	NOx	CO	VOC	PM10	PM2.5
Average Emission Factor (lbs/mmssf)	14.95	22.88	4.42	6.50	0.57

5. EMISSIONS FROM NATURAL GAS COMMISSIONING

PROCESS DESCRIPTION

The combustion turbine generators must first be commissioned to the desired performance before they begin regular service. The commissioning is a dedicated process that is generally prescribed by the turbine manufacturer. In the case of the GE LMS100 generators the manufacturer GE provides a 7-step commissioning process. GE estimates that it will take 104 hours to accomplish the commissioning. The LADWP decides to assign 152 hours for the commissioning, which are the same hours as the CPV Sentinel Project GE LMS100 generators. In addition, the LADWP adds 24 hours for SCR system testing and stack/RATA testing to the commissioning schedule. In all the commissioning will be a 9-step process, and will take 176 hours. The commissioning will be concluded in 12 days.

A maximum of three gas turbines will be commissioned during a month. However, only two turbines will be commissioned simultaneously during a month.

The following table describes the commissioning process.

Table A-6 Commissioning Schedule

Step	Description	Duration
Step 1	Checking and inspection, unfired	Included in Step 2 in Day 1
Step 2	First fire and shutdown to check leaks	23 hours in Day 1
Step 3	Synch and check Emergency-stop	17 hours in Day 2
Step 4	Automatic Voltage Regulator (AVR) commissioning	17 hours in Day 3
Step 5	Break-in run	12 hours in Day 4
Step 6	Dynamic commissioning of AVR	60 hours in Days 5-9
Step 7	Base load AVR commissioning	23 hours in Day 10
Step 8	SCR testing	12 hours in Day 11
Step 9	Stack/RATA testing	12 hours in Day 12

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$$8,450.936 * 7.6 / 2000 = 32.11 \text{ tons/year (baseline PM2.5 emissions)}$$

The new units PM2.5 emissions are calculated in the next table. The emission factors for PM10 have been calculated in Tables A-1, A-2, and A-3. The annual operation schedule is provided in Appendix A-7. The PM2.5 emissions are assumed to be the same as PM10 emissions for the gas turbines.

Table C-3 PM2.5 Annual Emissions Per Turbine

	Event	Emission Factor	Total (lbs)
Startup	1,095 times	1.836 lbs/time	2,010
Shutdown	1,095 times	0.22 lbs/time	241
Normal Operation	4,524 hours	5.8 lbs/hr	26,239
Total (lbs/year/turbine)			28,490

Therefore, the six units total is:

$$28,490 * 6 = 170,940 \text{ lbs/year}$$

The emergency IC engine annual PM2.5 emissions are calculated based on 50 hours/year.

$$2 * 50 * 0.056 \text{ lbs/hr} = 6 \text{ lbs/year}$$

Total annual PM2.5 emissions are:

$$170,940 + 6 = 170,946 \text{ lbs} = 85.473 \text{ tons/year}$$

The net emissions increase is:

$$85.473 - 32.11 = 53.363 \text{ ton/year, } 292.4 \text{ lbs/day (based on 365 days/year)}$$

LADWP will be required to provide 292 pounds per day of federally enforceable PM2.5 emission reduction credits unless a different amount associated with the Repower Project modification at this facility as determined to be required according to the federal New Source Review (NSR) requirements (40CFR Part 51 Subpart Z Appendix S), as approved by both AQMD and EPA.

Source Type	ID	UTM (NAD83) X (m)	UTM (NAD83) Y (m)	Elevation (m)	Emission Rate (g/s)	Release Height (m)	Diameter (m)	Exit Velocity (m/s)	Exit Temp (K)	Description
POINT	80007401	398554.43	3736805.23	2.74	3.116	45.72	4.11	21.58	626.91	Unit 11
POINT	80007402	398554.25	3736810.89	2.67	3.116	45.72	4.11	21.58	626.91	Unit 12
POINT	80007403	398553.96	3736912.35	2.60	3.116	45.72	4.11	21.58	626.91	Unit 13
POINT	80007404	398553.78	3736918.98	2.61	3.116	45.72	4.11	21.58	626.91	Unit 14
POINT	80007405	398554.06	3737019.05	2.60	3.116	45.72	4.11	21.58	626.91	Unit 15
POINT	80007406	398554.08	3737025	2.60	3.116	45.72	4.11	21.58	626.91	Unit 16

The above information is for the six LMS100 combustion turbine units requiring permit condition modification.

**Attachment DR133-3R1
Summary of Dispersion Modeling Parameters and
Results**

Alamitos Energy Center
Attachment DR133-3R1 Table 1
Cumulative Modeling Parameters - Stack Parameters
August 2016

Point Sources

Facility	Source ID	Source Type	Easting (X) (m)	Northing (Y) (m)	Base Elevation (m)	Stack Height (m)	Temperature (K)	Exit Velocity (m/s)	Stack Diameter (m)
AEC (1-hour SO ₂ [state])	GE 7FA.05-01 Scenario 2	CCGT	398058	3736934	4.57	42.7	354	15.6	6.10
	GE 7FA.05-02 Scenario 2	CCGT	398058	3736890	4.57	42.7	354	15.6	6.10
AEC (CO, 1-hour NO ₂)	GE 7FA.05-01 Scenario 3	CCGT	398058	3736934	4.57	42.7	350	12.2	6.10
	GE 7FA.05-02 Scenario 3	CCGT	398058	3736890	4.57	42.7	350	12.2	6.10
AEC (1-hour SO ₂ [federal], 3-hour SO ₂ , 24-hour SO ₂)	GE 7FA.05-01 Scenario 6	CCGT	398058	3736934	4.57	42.7	353	14.9	6.10
	GE 7FA.05-02 Scenario 6	CCGT	398058	3736890	4.57	42.7	353	14.9	6.10
AEC (Annual NO ₂ , PM ₁₀ , PM _{2.5})	GE 7FA.05-01 Scenario 7	CCGT	398058	3736934	4.57	42.7	350	11.8	6.10
	GE 7FA.05-02 Scenario 7	CCGT	398058	3736890	4.57	42.7	350	11.8	6.10
AEC (1-hour SO ₂ [state])	GE LMS 100PB-01 Scenario 1	SCGT	398252	3737139	4.57	24.4	693	33.3	4.11
	GE LMS 100PB-02 Scenario 1	SCGT	398252	3737124	4.57	24.4	693	33.3	4.11
	GE LMS 100PB-03 Scenario 1	SCGT	398251	3737012	4.57	24.4	693	33.3	4.11
	GE LMS 100PB-04 Scenario 1	SCGT	398251	3736997	4.57	24.4	693	33.3	4.11
AEC (CO, 1-hour NO ₂)	GE LMS 100PB-01 Scenario 3	SCGT	398252	3737139	4.57	24.4	749	23.8	4.11
	GE LMS 100PB-02 Scenario 3	SCGT	398252	3737124	4.57	24.4	749	23.8	4.11
	GE LMS 100PB-03 Scenario 3	SCGT	398251	3737012	4.57	24.4	749	23.8	4.11
	GE LMS 100PB-04 Scenario 3	SCGT	398251	3736997	4.57	24.4	749	23.8	4.11
AEC (1-hour SO ₂ [federal], 3-hour SO ₂ , 24-hour SO ₂)	GE LMS 100PB-01 Scenario 5	SCGT	398252	3737139	4.57	24.4	699	33.0	4.11
	GE LMS 100PB-02 Scenario 5	SCGT	398252	3737124	4.57	24.4	699	33.0	4.11
	GE LMS 100PB-03 Scenario 5	SCGT	398251	3737012	4.57	24.4	699	33.0	4.11
	GE LMS 100PB-04 Scenario 5	SCGT	398251	3736997	4.57	24.4	699	33.0	4.11
AEC (Annual NO ₂ , PM ₁₀ , PM _{2.5})	GE LMS 100PB-01 Scenario 7	SCGT	398252	3737139	4.57	24.4	746	23.6	4.11
	GE LMS 100PB-02 Scenario 7	SCGT	398252	3737124	4.57	24.4	746	23.6	4.11
	GE LMS 100PB-03 Scenario 7	SCGT	398251	3737012	4.57	24.4	746	23.6	4.11
	GE LMS 100PB-04 Scenario 7	SCGT	398251	3736997	4.57	24.4	746	23.6	4.11
AEC (All Pollutants)	Auxiliary Boiler	Auxiliary Boiler	398086	3736829	4.57	24.4	432	21.2	0.91
U.S. Government, Veteran Affairs Medical Center (USVA)	USVA1	Emergency Diesel ICE	396394	3738074	24.4	6.10	828	61.5	0.20
	USVA2	Emergency Diesel ICE	396394	3738074	24.4	8.53	768	44.4	0.51
	USVA3	Emergency Diesel ICE	396394	3738074	24.4	8.53	768	44.4	0.51
	USVA4	Emergency Diesel ICE	396394	3738074	24.4	6.10	739	29.2	0.15
	USVA5	Emergency Diesel ICE	396394	3738074	24.4	6.10	756	52.8	0.20
	USVA6	Emergency Diesel ICE	396394	3738074	24.4	6.10	755	58.9	0.25
Trend Offset Printing Services, Inc. (TOPS)	TOPS1	RTO	401349	3741225	9.14	13.4	1,089	9.31	1.27
	TOPS2	RTO	401350	3741236	9.14	13.4	1,089	9.31	1.27
	TOPS3	RTO	401332	3741184	9.14	8.69	1,089	11.8	0.81
Los Angeles City, DWP Haynes Generating Station (LADWP)	LADWP1	Emergency Diesel ICE	398536	3737108	1.22	5.49	768	44.4	0.51
	LADWP2	Emergency Diesel ICE	398543	3737108	1.22	5.49	768	44.4	0.51
	LADWP3	SCGT	398554	3736805	2.74	45.7	627	21.6	4.11
	LADWP4	SCGT	398554	3736811	2.67	45.7	627	21.6	4.11
	LADWP5	SCGT	398554	3736912	2.60	45.7	627	21.6	4.11
	LADWP6	SCGT	398554	3736919	2.61	45.7	627	21.6	4.11
	LADWP7	SCGT	398554	3737019	2.60	45.7	627	21.6	4.11
	LADWP8	SCGT	398554	3737025	2.60	45.7	627	21.6	4.11

CCGT = combined-cycle natural gas turbine

ICE = internal combustion engine

RTO = regenerative thermal oxidizer

SCGT = simple-cycle natural gas turbine

Alamitos Energy Center
Attachment DR133-3R1 Table 2
Cumulative Modeling Parameters - Emission Rates
August 2016

Emission Rates for 1-hour, 3-hour, 8-hour, and 24-hour Modeling^a

Source ID	State 1-hour NO ₂		Federal 1-hour NO ₂ ^b		1-hour CO		8-hour CO		State 1-hour SO ₂		Federal 1-hour SO ₂ ^b		3-hour SO ₂		24-hour SO ₂		24-hour PM ₁₀		24-hour PM _{2.5}	
	(g/s)	(lb/hr)	(g/s)	(lb/hr)	(g/s)	(lb/hr)	(g/s)	(lb/hr)	(g/s)	(lb/hr)	(g/s)	(lb/hr)	(g/s)	(lb/hr)	(g/s)	(lb/hr)	(g/s)	(lb/hr)	(g/s)	(lb/hr)
GE 7FA.05-01	7.69	61.0	7.69	61.0	41.0	325	14.9	118	0.48	3.84	0.47	3.72	0.47	3.72	0.47	3.72	1.07	8.50	1.07	8.50
GE 7FA.05-02	7.69	61.0	7.69	61.0	41.0	325	14.9	118	0.48	3.84	0.47	3.72	0.47	3.72	0.47	3.72	1.07	8.50	1.07	8.50
GE LMS 100PB-01	2.67	21.2	2.67	21.2	5.66	44.9	1.89	15.0	0.20	1.62	0.20	1.61	0.20	1.61	0.20	1.61	0.79	6.23	0.79	6.23
GE LMS 100PB-02	2.67	21.2	2.67	21.2	5.66	44.9	1.89	15.0	0.20	1.62	0.20	1.61	0.20	1.61	0.20	1.61	0.79	6.23	0.79	6.23
GE LMS 100PB-03	2.67	21.2	2.67	21.2	5.66	44.9	1.89	15.0	0.20	1.62	0.20	1.61	0.20	1.61	0.20	1.61	0.79	6.23	0.79	6.23
GE LMS 100PB-04	2.67	21.2	2.67	21.2	5.66	44.9	1.89	15.0	0.20	1.62	0.20	1.61	0.20	1.61	0.20	1.61	0.79	6.23	0.79	6.23
Auxiliary Boiler	0.054	0.42	0.054	0.42	0.36	2.83	0.30	2.37	0.018	0.14	0.018	0.14	0.018	0.14	0.0057	0.046	0.020	0.16	0.020	0.16
USVA1	-	-	-	-	-	-	0.013	0.11	-	-	-	-	0.00034	0.0027	0.000043	0.00034	0.00053	0.0042	0.00053	0.0042
USVA2	-	-	-	-	-	-	0.084	0.67	-	-	-	-	0.0016	0.013	0.00020	0.0016	0.00042	0.0034	0.00042	0.0034
USVA3	3.72	29.5	-	-	0.67	5.35	0.084	0.67	0.0049	0.039	-	-	0.0016	0.013	0.00020	0.0016	0.00042	0.0034	0.00042	0.0034
USVA4	-	-	-	-	-	-	0.029	0.23	-	-	-	-	0.00014	0.0011	0.000017	0.00014	0.00056	0.0045	0.00056	0.0045
USVA5	-	-	-	-	-	-	0.068	0.54	-	-	-	-	0.00021	0.0017	0.000027	0.00021	0.0013	0.010	0.0013	0.010
USVA6	-	-	-	-	-	-	0.083	0.66	-	-	-	-	0.00045	0.0036	0.000056	0.00045	0.0016	0.013	0.0016	0.013
TOPS1	0.0050	0.040	0.0050	0.040	0.0013	0.010	0.0013	0.010	0.0013	0.010	0.0013	0.010	0.0013	0.010	0.0013	0.010	0.0038	0.030	0.0038	0.030
TOPS2	0.0063	0.050	0.0063	0.050	0.030	0.24	0.030	0.24	0.0013	0.010	0.0013	0.010	0.0013	0.010	0.0013	0.010	0.0038	0.030	0.0038	0.030
TOPS3	0.017	0.14	0.017	0.14	0.016	0.13	0.016	0.13	0.00028	0.0022	0.00028	0.0022	0.00028	0.0022	0.00028	0.0022	0.0034	0.027	0.0034	0.027
LADWP1 ^c	1.86	14.8	-	-	0.34	2.68	0.084	0.67	0.0023	0.019	-	-	0.0016	0.012	0.00020	0.0016	0.00029	0.0023	0.00029	0.0023
LADWP2 ^c	-	-	-	-	-	-	0.084	0.67	-	-	-	-	0.0016	0.012	0.00020	0.0016	0.00029	0.0023	0.00029	0.0023
LADWP3	1.02	8.09	1.02	8.09	0.99	7.88	0.99	7.88	0.019	0.15	0.019	0.15	0.019	0.15	0.019	0.15	0.73	5.80	0.73	5.80
LADWP4	1.02	8.09	1.02	8.09	0.99	7.88	0.99	7.88	0.019	0.15	0.019	0.15	0.019	0.15	0.019	0.15	0.73	5.80	0.73	5.80
LADWP5	1.02	8.09	1.02	8.09	0.99	7.88	0.99	7.88	0.019	0.15	0.019	0.15	0.019	0.15	0.019	0.15	0.73	5.80	0.73	5.80
LADWP6	1.02	8.09	1.02	8.09	0.99	7.88	0.99	7.88	0.019	0.15	0.019	0.15	0.019	0.15	0.019	0.15	0.73	5.80	0.73	5.80
LADWP7	1.02	8.09	1.02	8.09	0.99	7.88	0.99	7.88	0.019	0.15	0.019	0.15	0.019	0.15	0.019	0.15	0.73	5.80	0.73	5.80
LADWP8	1.02	8.09	1.02	8.09	0.99	7.88	0.99	7.88	0.019	0.15	0.019	0.15	0.019	0.15	0.019	0.15	0.73	5.80	0.73	5.80

Emission Rates for Annual Modeling

Source ID	Annual NO ₂		Annual PM ₁₀		Annual PM _{2.5}	
	(g/s)	(tpy)	(g/s)	(tpy)	(g/s)	(tpy)
GE 7FA.05-01	0.79	27.3	0.57	19.7	0.57	19.7
GE 7FA.05-02	0.79	27.3	0.57	19.7	0.57	19.7
GE LMS 100PB-01	0.29	10.0	0.21	7.35	0.21	7.35
GE LMS 100PB-02	0.29	10.0	0.21	7.35	0.21	7.35
GE LMS 100PB-03	0.29	10.0	0.21	7.35	0.21	7.35
GE LMS 100PB-04	0.29	10.0	0.21	7.35	0.21	7.35
Auxiliary Boiler	0.019	0.66	0.019	0.68	0.019	0.68
USVA1	0.0057	0.20	0.000077	0.0027	0.000077	0.0027
USVA2	0.021	0.74	0.000058	0.0020	0.000058	0.0020
USVA3	0.021	0.74	0.000058	0.0020	0.000058	0.0020
USVA4	0.0014	0.048	0.000077	0.0027	0.000077	0.0027
USVA5	0.0052	0.18	0.00018	0.0062	0.00018	0.0062
USVA6	0.0063	0.22	0.00022	0.0076	0.00022	0.0076
TOPS1	0.0050	0.17	0.0038	0.13	0.0038	0.13
TOPS2	0.0063	0.22	0.0038	0.13	0.0038	0.13
TOPS3	0.017	0.60	0.0034	0.12	0.0034	0.12
LADWP1	0.021	0.74	0.000040	0.0014	0.000040	0.0014
LADWP2	0.021	0.74	0.000040	0.0014	0.000040	0.0014
LADWP3	0.89	30.9	0.41	14.2	0.41	14.2
LADWP4	0.89	30.9	0.41	14.2	0.41	14.2
LADWP5	0.89	30.9	0.41	14.2	0.41	14.2
LADWP6	0.89	30.9	0.41	14.2	0.41	14.2
LADWP7	0.89	30.9	0.41	14.2	0.41	14.2
LADWP8	0.89	30.9	0.41	14.2	0.41	14.2

^a Sources identified as emergency diesel ICEs are permitted for 50 hours per year of maintenance and testing. The simultaneous testing of all ICEs at a single facility is not expected to occur within the same hour. Therefore, only the single emergency ICE with the highest hourly emission rates was modeled.

^b Emergency sources (like the ICEs) were not modeled for the federal 1-hour NC₂ and SO₂ standards as these are statistical average standards that will not likely be influenced by sources permitted to operate for up to 50 hours per year for testing and maintenance.

^c Of the two emergency generators located at the LADWP facility, it was assumed that a single generator would be tested for only 30 minutes in a given hour.

Alamitos Energy Center
Attachment DR133-3R1 Table 3
Cumulative Modeling Results Summary
August 2016

Source Group	Year	NO ₂ (µg/m ³)			CO (µg/m ³)		SO ₂ (µg/m ³)			PM ₁₀ (µg/m ³)		PM _{2.5} (µg/m ³)		
		1-hour ^a	Federal 1-hour ^{b, c}	Annual ^d	1-hour	8-hour	1-hour	Federal 1-hour ^a	3-hour	24-hour	24-hour	Annual	24-hour ^c	Annual
ALL	2006	55.0	24.4	0.35	173	44.3	1.92	1.64	1.71	0.51	2.01	0.26	1.67	0.26
	2007	47.6	21.6	0.33	175	38.4	2.10	1.54	1.56	0.51	2.05	0.24	1.51	0.24
	2008	53.4	22.3	0.34	178	38.3	1.88	1.54	1.42	0.43	1.82	0.25	1.56	0.25
	2009	52.2	22.2	0.33	168	42.3	1.83	1.56	1.50	0.48	1.99	0.23	1.69	0.23
	2011	68.2	23.6	0.35	187	44.7	2.11	1.71	1.52	0.50	2.04	0.25	1.59	0.25
AEC	2006	32.2	24.3	0.19	172	44.2	1.90	1.64	1.69	0.51	1.58	0.19	1.32	0.19
	2007	30.7	21.4	0.18	174	38.2	2.09	1.54	1.56	0.51	1.61	0.17	1.09	0.17
	2008	30.8	22.1	0.19	178	38.1	1.87	1.54	1.41	0.43	1.33	0.18	1.12	0.18
	2009	28.3	22.0	0.18	168	42.1	1.83	1.56	1.50	0.48	1.45	0.17	1.24	0.17
	2011	33.7	23.4	0.18	186	44.3	2.09	1.70	1.47	0.50	1.56	0.18	1.12	0.18

^a The maximum state 1-hour NO₂ concentration was developed using PVMRM, with in-stack and out-of-stack NO₂ to NO_x ratios of 0.5 and 0.9, respectively. Hourly ozone data for each year of meteorological data was obtained from the SCAQMD.

^b The maximum federal 1-hour and annual NO₂ concentrations include ambient NO₂ ratios of 0.80 and 0.75, respectively.

^c The total predicted concentrations for the Federal 1-hour NO₂ and 24-hour PM_{2.5} standards are the high-8th-high (98th percentile) modeled concentrations.

^d The total predicted concentration for the Federal 1-hour SO₂ standard is the high-4th-high (99th percentile) modeled concentration.