

# DOCKET

09-AFC-6

DATE FEB 08 2010

RECD. FEB 09 2010

February 8, 2010

Alan Solomon  
Project Manager  
California Energy Commission  
1516 Ninth Street  
Sacramento, CA 95814

RE: **Blythe Solar Power Project, Docket No. 09-AFC-6**

*Responses to January 14, 2010 CEC Workshop Queries (Technical Area: Air Quality)*

*Agency Correspondence:*

Blythe Cumulative Source Email Correspondence, Mojave Desert Air Quality Management District (MDAQMD); and,  
Modification to Air Permit Applications for the Blythe Solar Power Project

Dear Mr. Solomon:

During the January 14, 2010, CEC Workshop CEC staff requested additional information and clarification on several matters in the technical area of Air Quality. Attached please find our responses to those specific questions. Additionally we are providing copies of submittals and correspondence to the MDAQMD and other agencies as requested in Data Request#29.

If you have any questions on these data responses to the staff's workshop queries or on the other submittals, please feel free to contact me directly.

Sincerely,



Alice Harron  
Senior Director, Development

**STATE OF CALIFORNIA  
ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION**

***In the Matter of:***  
**APPLICATION FOR CERTIFICATION**  
**for the *BLYTHE SOLAR POWER PROJECT***

**Docket No. 09-AFC-6**  
**PROOF OF SERVICE**  
*(Revised 1/26/2010)*

**APPLICANT**

Alice Harron  
Senior Director of Project  
Development  
1625 Shattuck Avenue, Suite 270  
Berkeley, CA 94709-1161  
[harron@solarmillenium.com](mailto:harron@solarmillenium.com)

Gavin Berg  
Senior Project Manager  
1625 Shattuck Avenue, Suite 270  
Berkeley, CA 94709  
[berg@solarmillennium.com](mailto:berg@solarmillennium.com)

**APPLICANT'S CONSULTANT**

Carl Lindner  
AECOM Project Manager  
1220 Avenida Acaso  
Camarillo, CA 93012  
[arrie.bachrach@aecom.com](mailto:arrie.bachrach@aecom.com)

**COUNSEL FOR APPLICANT**

Scott Galati, Esq.  
Galati/Blek, LLP  
455 Capitol Mall, Suite 350  
Sacramento, CA 95814  
[sgalati@qb-llp.com](mailto:sgalati@qb-llp.com)

Peter Weiner  
Matthew Sanders  
Paul, Hastings, Janofsky & Walker LLP  
55 2nd Street, Suite 2400-3441  
San Francisco, CA 94105  
[peterweiner@paulhastings.com](mailto:peterweiner@paulhastings.com)  
[matthewsanders@paulhastings.com](mailto:matthewsanders@paulhastings.com)

**INTERESTED AGENCIES**

Holly L. Roberts, Project Manager  
Bureau of Land Management  
Palm Springs-South Coast Field Office  
1201 Bird Center Drive Palm Springs,  
CA 92262  
[CAPSSolarPalen@blm.gov](mailto:CAPSSolarPalen@blm.gov)

California ISO  
[e-recipient@caiso.com](mailto:e-recipient@caiso.com)

**INTERVENORS**

Tanya A. Gulesserian,  
Marc D. Joseph  
Adams Broadwell Joseph & Cardozo  
601 Gateway Boulevard, Suite 1000  
South San Francisco, CA 94080  
[tgulesserian@adamsbroadwell.com](mailto:tgulesserian@adamsbroadwell.com)

**ENERGY COMMISSION**

Karen Douglas  
Chair and Presiding Member  
[Ukldougl@energy.state.ca.us](mailto:Ukldougl@energy.state.ca.us)

Robert Weisenmiller  
Commissioner and Associate  
Member  
[rweisenm@energy.state.ca.us](mailto:rweisenm@energy.state.ca.us)

Raoul Renaud  
Hearing Officer  
[rrenaud@energy.state.ca.us](mailto:rrenaud@energy.state.ca.us)

Alan Solomon  
Project Manager  
[asolomon@energy.state.ca.us](mailto:asolomon@energy.state.ca.us)

Lisa DeCarlo  
Staff Counsel  
[ldecarlo@energy.state.ca.us](mailto:ldecarlo@energy.state.ca.us)

Public Adviser's Office  
[publicadviser@energy.state.ca.us](mailto:publicadviser@energy.state.ca.us)

**DECLARATION OF SERVICE**

I, Carl Lindner, declare that on, February 8, 2010, I served and filed copies of the attached Blythe Solar Power Project Data Response and Agency Correspondence Materials:

Data Responses to January 14, 2010 CEC Workshop Queries (Technical Area: Air Quality)  
Agency Correspondence:  
Blythe Cumulative Source Email Correspondence: Mojave Desert Air Quality Management District; and  
Modification to Air Permit Applications for the Blythe Solar Power Project

The original document, filed with the Docket Unit, is accompanied by a copy of the most recent Proof of Service list, located on the web page for this project at:

[\[http://www.energy.ca.gov/sitingcases/solar\\_millennium\\_blythe\]](http://www.energy.ca.gov/sitingcases/solar_millennium_blythe).

The document has been sent to the other parties in this proceeding (as shown on the Proof of Service list) and to the Commission's Docket Unit, in the following manner:

**(Check all that Apply)**

**For service to all other parties:**

\_\_\_\_\_ sent electronically to all email addresses on the Proof of Service list;

  X   by personal delivery or by overnight delivery service or depositing in the United States mail at Camarillo, California with postage or fees thereon fully prepaid and addressed as provided on the Proof of Service list above to those addresses **NOT** marked "email preferred."

**AND**

**For filing with the Energy Commission:**

  X   sending an original paper copy and one electronic copy, mailed and emailed respectively, to the address below (preferred method);

**OR**

\_\_\_\_\_ depositing in the mail an original and 12 paper copies, along with 13 CDs, as follows:

**CALIFORNIA ENERGY COMMISSION**

Attn: Docket No. 09-AFC-6  
1516 Ninth Street, MS-4  
Sacramento, CA 95814-5512

[docket@energy.state.ca.us](mailto:docket@energy.state.ca.us)

I declare under penalty of perjury that the foregoing is true and correct.

  
\_\_\_\_\_

## Draft Air Quality Responses – CEC Workshop, January 14, 2010

### Off-site vehicle emissions of GHG at Palen are three times those at Blythe. Why?

The GHG emissions estimates for off-site vehicle uses for the PSPP and BSPP, as presented in the responses to DR-AIR-6-1 (BSPP) and DR-AIR-18-1 (PSPP) were incorrect and reflected the failure to update the referenced tables in the Data Request responses from earlier draft versions). The GHG emissions in the spreadsheets provided with the Data Responses were computed correctly and are internally consistent. In addition, the GHG emission calculations for the two Projects are based on similar/the same assumptions, with the primary differences due to construction duration and distance traveled by specific vehicle types. Please note that, given the modular nature of the construction process, the peak construction activities for both Projects are roughly similar to each other. PSPP has a shorter construction period (39 months) compared to BSPP (69 months), but the PSPP site is more remote and so average trip distances for key vehicle types are greater than those for BSPP. These two factors tend to offset each other in the GHG calculations for each Project, so that the GHG emissions totals for the two Projects are surprisingly close to each other.

Tables DR-AIR-6-1 (BSPP) (revised) and DR-AIR-18-1 (PSPP) (revised) are presented below. Total construction phase CO<sub>2</sub>e emissions for BSPP from offsite vehicles are 31,400 metric tons CO<sub>2</sub>e, based on 56.3 million Project vehicle-miles. By comparison, PSPP construction phase GHG emissions and total offsite vehicle mileage are 29,300 metric tons CO<sub>2</sub>e based on 57.6 million Project vehicle-miles.

Table 1 presents a summary of the activity data assumed in the computations of Project GHG emissions. The first two data columns of the table present the assumed mileages per vehicle trip for each vehicle class for each Project. Subsequent columns show the average monthly vehicle mileage by vehicle class, the total construction phase vehicle mileage, the total GHG emissions, and the GHG emission contribution for each vehicle type as a percent of the total emissions. Due to its more remote location, there are greater worker commuting mileages for PSPP than for BSPP. The average worker commute round trip is assumed to be 110 miles for PSPP, compared to 57 miles for BSPP. The number of workers for a typical month is roughly similar between the two Projects, and thus so PSPP has approximately double the number of commuting vehicle miles on an average monthly basis compared to BSPP. However, this is counter balanced by the approximately 75 percent longer construction period for BSPP (69 months compared to 39 months for PSPP). Thus, over the projected construction periods, PSPP has 2.5 percent more worker commuting vehicle miles than BSPP. The worker commute vehicle miles are the predominant source of GHG emissions from off-site vehicles. The worker commute GHG emissions comprise 71 percent and 63 percent of total offsite vehicle GHG emissions for PSPP and BSPP construction projects, respectively.

The assumed vehicle trip mileages for equipment/material delivery truck and low-boy trucks are roughly equivalent between the two Projects, reflecting delivery of twice as much material (because the BSPP is twice the size of the PSPP) and approximately one-half the transport distance, as the BSPP site is closer to the railhead than is the PSPP site. Note that for the emission estimates for both BSPP and PSPP, it was assumed that materials will be delivered to the city of Blythe by rail, and transported by truck to the two Project sites. However, construction plans have not been finalized with our EPC Contractor. Our EPC Contractor may require a different rail delivery point for certain large equipment items based on final procurement arrangements. The refueling truck trip mileages for PSPP are four times that for BSPP, reflecting the greater remoteness from fueling stations for PSPP compared to BSPP. For all other vehicle types, the vehicle trip mileage for PSPP is assumed to be twice that for BSPP.

**Table 1 Activity Data Leading to Computation of Project CO<sub>2</sub>e Emissions for Construction of the PSPP and BSPP**

Vehicle Type	Vehicle Average Round Trip Mileage (mi/veh/trip)		Monthly Average Mileage (miles/month)		Total Project Mileage (miles)		Construction GHG Emissions from Off-Site Vehicles (MT CO <sub>2</sub> e)		Construction GHG Emissions from Off-Site Vehicles (%)	
	PSPP	BSPP	PSPP	BSPP	PSPP	BSPP	PSPP	BSPP	PSPP	BSPP
Off-site Construction Worker Commute	110	57	1,357,036	722,468	52,924,410	49,850,262	20,959	19,742	71%	63%
Off-site Equipment/Material Delivery Truck	77	70	39,596	50,704	1,544,235	3,498,600	2,889	6,544	10%	21%
Off-site Low Boy Trucks	300	300	2,100	2,191	81,900	151,200	153	283	1%	1%
Off-Site Dump Trucks	160	80	21,711	10,567	846,720	729,120	1,281	1,103	4%	4%
Off-site Flat Bed Trucks	80	40	6,117	1,948	238,560	134,400	361	203	1%	1%
Off-site Fuel Trucks	80	20	1,508	420	58,800	28,980	110	54	0%	0%
Off-site Concrete Trucks	80	40	48,978	27,026	1,910,160	1,864,800	3,573	3,488	12%	11%
<b>Total</b>	---	---	<b>1,477,046</b>	<b>815,324</b>	<b>57,604,785</b>	<b>56,257,362</b>	<b>29,326</b>	<b>31,418</b>	<b>100%</b>	<b>100%</b>

**Table DR-AIR-6-1 BSPP Construction GHG Emissions (Revised)**

<b>Aspect of Construction</b>	<b>Project Construction Total (metric tons CO<sub>2</sub>e)</b>
Construction Equipment Total	70,700
Onsite Motor Vehicle Total	1,800
Offsite Motor Vehicle Total	31,400
Construction Project Total	103,900
Annualized GHG Construction Emissions over Project Life (30 years) (metric tons CO <sub>2</sub> e/yr)	3,500
Note: All emission totals rounded to the nearest 100 metric tons	

**Table DR-AIR-18-1 PSPP Construction GHG Emissions (Revised)**

<b>Aspect of Construction</b>	<b>Project Construction Total (metric tons CO<sub>2</sub>e)</b>
Construction Equipment Total	70,200
Onsite Motor Vehicle Total	1,500
Offsite Motor Vehicle Total	29,300
Construction Project Total	101,000
Annualized GHG Construction Emissions over Project Life (30 years) (metric tons CO <sub>2</sub> e/yr)	3,400
Note: All emission totals rounded to the nearest 100 metric tons	

**If GHG need to be adjusted, the criteria pollutants need to be adjusted as well.**

As noted in the response above, the data reported in the DR responses related to GHG (DR-AIR-18 (PSPP) and DR-AIR-6 (BSPP) were incorrect; however, the GHG emission calculations and results found in the spreadsheets (Attachment DR-AIR-3 for both PSPP and BSPP) were correct. The criteria pollutant emission calculations reported in the DR responses, including the Project criteria pollutant emissions reported in DR-AIR-4 and -13 (PSPP) and DR-AIR-4, -16, and -19 (BSPP) were correct, as were the criteria pollutant emissions used in the air quality impacts analysis (DR-AIR-5 [PSPP] and DR-AIR-5 [BSPP]).

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**Confirm appropriate emissions standards for energy generator engines**

At this time, the Applicant plans to order the equipment upon approval of the CEC license, anticipated in 2010. The appropriate design standard for 2010 model year engines greater than 750 Hp is the Tier 2 standard. The Applicant proposed a Tier 2 engine for the emergency generator based on the emission standards identified in 40 Code of Federal Regulations (CFR), Part 60, Subpart IIII, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines. Pursuant to §60.4202(a)(2) of that subpart, engines with a maximum rating of more than 50 horsepower (Hp) must meet the emission standards listed in 40 CFR 89.112 for all pollutants beginning in 2007. The emission standards listed in 40 CFR 89.112 for engines with rated power greater than 560 kilowatt (kW) (750 Hp) are Tier 2 standards which are: 6.4 grams per kilowatt hour (g/kWh) for NO<sub>x</sub> and non-methane hydrocarbons (NMHC) combined, 3.5 g/kWh for CO and 0.20 g/kWh for PM.

If the equipment is not ordered until 2011, the appropriate design standard would be the Interim Tier 4 standards, in accordance with the California Airborne Toxic Control Measure (ATCM) for Stationary Compression Ignition Engines. According to the ATCM, new stationary emergency engines must meet the standards for off-road engines of the same model year and maximum rated power as specified in the Off-Road Compression Ignition Engines Standards (Title 13, California Code of Regulations (CCR), Section 2423). Title 13 CCR Section 2423 sets emission standards for the generator engine with model years 2011 and later. The Interim Tier 4 standard would apply to the Project generator engine as it would be larger than 900 kW (750 Hp) and would be manufactured between 2011 and 2014. The Interim Tier 4 Standards are 0.67 g/kWh for NO<sub>x</sub>, 0.40 g/kWh for NMHC, 3.5 g/kWh for CO and 0.10 g/kWh for PM.

The Tier 2 emissions were used in the emission calculations, ambient air quality impacts analysis (i.e., modeling) and health risk assessment. If the equipment is not ordered until 2011, the appropriate design standard would be the Interim Tier 4 standard and NO<sub>x</sub>, NMHC and PM<sub>10</sub> emissions would be lower than the emissions from the Tier 2 engine. In that case, the air quality impacts would be lower than the impacts predicted for the Tier 2 engine. Thus use of the Tier 2 emissions in the analyses yields the worst-case predicted impacts for modeling, for predicting emission offset requirements, and for predicting health risk impacts.

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**Confirm that SO<sub>2</sub> is higher for Palen than Blythe due to use of propane in stationary equipment.**

The difference between the SO<sub>x</sub> emissions reported for PSPP and BSPP is the result of operational differences between the two projects. First, PSPP has proposed to use LPG in the auxiliary boiler, while BSPP has proposed to use natural gas. As shown in Table E.3-1b of the operating emissions spreadsheet previously provided in Attachment DR-Air-2, the SO<sub>x</sub> emission factor differs greatly between the two fuel types. When compared in units of pounds of SO<sub>x</sub> emissions per MMBtu, the SO<sub>x</sub> emissions from LPG combustion are more than 41 times higher than SO<sub>x</sub> emissions from natural gas

**Responses to CEC Workshop,  
January 14, 2010  
Air Quality**

**Blythe Solar Power Project**

**Docket No. 09-AFC-6**

Alice Harron  
Senior Director of Project Development  
1625 Shattuck Avenue, Suite 270  
Berkeley, CA 94709-1161



combustion. Secondly, PSPP has eliminated the use of the HTF heater and increased the usage of the auxiliary boiler from the operations as they were described in the AFC. The operations of BSPP remain as described in the AFC, using both an auxiliary boiler and HTF heater. The difference in operational usages has a minor effect on the SOx emissions between the two projects; these differences are summarized in Table 2.

**Table 2 Summary of Operational Differences in SOx Emissions between PSPP and BSPP**

<b>Project Details</b>	<b>PSPP</b>	<b>BSPP</b>
Auxiliary Boiler Fuel Type and emission factor	LPG (SOx = 1.13 E-2 lb/MMBtu)	Natural Gas (SOx = 2.72E-4 lb/MMBtu)
Auxiliary Boiler Operation	5,100 hours/year 12% at full load 88% at 25% load	5,000 hours/year 10% at full load 90% at 25%load
HTF Heater Operation	No HTF Heater at PSPP	500 hours/year 100% at full load

**Explain the difference in PM10 and PM2.5 ratios between Palen and Blythe.**

The PM10 to PM2.5 ratio is consistent for all stationary sources and all vehicle (i.e., tailpipe) emissions for PSPP and BSPP. For the auxiliary boiler, HTF heater, emergency generator, fire water pump, and cooling tower, it was assumed that the PM2.5 emissions are equal to the PM10 emissions as footnoted in each table and discussed in Appendix E.3 of the AFC for each Project. The exhaust PM10 emissions for construction equipment, construction motor vehicles, operational on-site vehicles and operational offsite vehicles were taken from the EMFAC or OFFROAD model, and the South Coast Air Quality Management District (SCAQMD) mass fractions of PM2.5 in PM10, which is dependent on the type of fuel (diesel or gasoline), was used to calculate the PM2.5 emissions.

The difference between the PM10 to PM2.5 ratios used to calculate fugitive emissions for PSPP and BSPP is due to the methodologies used for fugitive emission calculations. The methodologies used reflect the different air quality agencies involved in the two Projects- the PSPP is in the SCAQMD's jurisdiction and the BSPP site is located in the Mojave Desert AQMD (MDAQMD) -The PM10 to PM2.5 ratio was used to calculate operational fugitive emissions associated with onsite and offsite vehicle travel, and construction-phase fugitive emissions associated with soil handling, storage pile wind erosion, and bulldozing, scraping and grading activities.

For PSPP, a PM2.5 to PM10 fraction was applied to the calculated PM10 emissions in order to distinguish the PM2.5 emissions from the PM10 emissions. Since the PSPP site is located within the SCAQMD jurisdiction, the SCAQMD guidance document entitled: "PM2.5 Fraction of PM10 from Appendix A of the Final Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds" was used to estimate the PM2.5 emissions. These PM2.5 mass fractions are from PM profiles in the California Emission Inventory Data and Reporting System (CEIDARS) developed by the California Air Resources Board (ARB). This methodology was discussed in AFC Appendices E.2 and E.3 as well as noted in Tables E.2-3b, E.2-4b, E.2-4d, E.2-4f of the Construction Emissions and in Tables E.3 7b and E.3-8c in the Operation Emissions.

For BSPP, which is under MDAQMD jurisdiction, a combination of methods was used to calculate fugitive PM2.5 emissions including: EPA AP-42 Section 13.2.2 for onsite fugitive emissions, AP-42

Section 13.2.4 for soil handling operations, ARB "Emission Inventory Methodology for Entrained Paved Road Dust" for offsite vehicle travel, and MDAQMD "Emission Inventory Guidance Mineral Handling and Processing Industries" for storage pile wind erosion and bulldozing, scraping, and grading activities. These methodologies are discussed in AFC Appendices E.2 and E.3, as well as noted in Tables E.2-1, E.2-2a, E.2-2b, E.2-3b, E.2-4b, E.2-4d, E.2-4f of the Construction Emissions and in Tables E.3 7b and E.3-8c in the Operation Emissions.

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**Review OFFROAD model - were calculations based on Tier III construction engines for 2006 or for 2006 through 2008?**

The emission factors developed from the OFFROAD model are not averaged over multiple years, but rather represent the Tier 3 emissions factors for a specifically defined year. The OFFROAD model provides activity (hours of operation per day) and emissions (total tons per day) for each of several engine size categories and model year for each type of equipment. For each Project, a spreadsheet database of the OFFROAD output was created, and using this database, an emission factor for each specific combination of model year, engine/equipment type, fuel type, and engine size used in the construction plan was created. The resultant emission factors are specific for a given engine model year. There is no averaging between model years other than any averaging performed within the OFFROAD model itself.

The PSPP and BSPP emission computation spreadsheets provided in response to DR-AIR-7 for the BSPP included a tab in the Project spreadsheets entitled "OFFROAD GHG EF Documentation". These tabs present the engine type/size/fuel/year assumed for each equipment type assumed to be used during facility construction, along with the final emission factors from OFFROAD output.

**Blythe Cumulative Source Email Exchange  
with MDAQMD  
Air Quality**

**Blythe Solar Power Project**

**Docket No. 09-AFC-6**

Alice Harron  
Senior Director of Project Development  
1625 Shattuck Avenue, Suite 270  
Berkeley, CA 94709-1161

**From:** Richard Wales [mailto:rwales@mdaqmd.ca.gov]  
**Sent:** Thursday, January 21, 2010 11:15 AM  
**To:** Hamel, Richard; Alan De Salvio  
**Cc:** Roseana Navarro-Brasington  
**Subject:** RE: Cumulative Modeling Sources for Blythe Solar Power Project

Hello Richard

Yes. Per Google Earth the only 5 ton per year source within 5 miles of the proposed Blythe Solar Power Project is BEP and BEP II. The SoCalGas Blythe Compressor station is over 7 miles to the southeast.

If you have any questions or need further assistance feel free to contact me.

***Richard Wales, PE, QEP***  
Mojave Desert AQMD  
14306 Park Avenue  
Victorville, CA 92392-2310  
Phone (760) 245-1661 ext 1803 FAX (760) 245-2022

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**From:** Hamel, Richard [mailto:richard.hamel@aecom.com]  
**Sent:** Thursday, January 21, 2010 7:00 AM  
**To:** Richard Wales; Alan De Salvio  
**Cc:** Roseana Navarro-Brasington  
**Subject:** RE: Cumulative Modeling Sources for Blythe Solar Power Project

Richard,

Thank you for the information. At this point we are only doing a cumulative criteria pollutant modeling assessment per CEC's request, not a cumulative HRA.

Because we were up against a CEC deadline, we went ahead and did a cumulative modeling analysis using criteria pollutant emissions information from the CEC website and a recent cumulative PM2.5 assessment done for BEP II. In that analysis we included BEP, BEP II, and the SoCalGas Compressor station in Blythe.

However, we take his email to confirm that BEP and BEP II are the only existing and permitted facilities with over 5 tpy of criteria pollutant emissions within 6 miles of the BSPP. If this understanding is incorrect, please let us know if there are other facilities that fit that criteria. I'd be happy to provide a copy of the analysis we did if you'd like to see it.

Thanks,

**Richard Hamel**

Air Quality Meteorologist

Environment

D 978.589.3275

[richard.hamel@aecom.com](mailto:richard.hamel@aecom.com)

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**From:** Richard Wales [mailto:[rwales@mdaqmd.ca.gov](mailto:rwales@mdaqmd.ca.gov)]

**Sent:** Tuesday, January 19, 2010 5:04 PM

**To:** Hamel, Richard; Alan De Salvio

**Cc:** Roseana Navarro-Brasington

**Subject:** RE: Cumulative Modeling Sources for Blythe Solar Power Project

Hello Richard

Attached is the 2007 HARP file for Blythe Power I. The MDAQMD does not have a HARP file for Blythe Power II. However, I have attached several files from the application for Blythe II. Per Roseana, the engineer reviewing the BSPP, and the application for Blythe II the application only list the diesel PM from the emergency genset.

If you have any questions or need further assistance feel free to contact me.

***Richard Wales, PE, QEP***

Mojave Desert AQMD

14306 Park Avenue

Victorville, CA 92392-2310

Phone (760) 245-1661 ext 1803 FAX (760) 245-2022

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**From:** Hamel, Richard [mailto:[richard.hamel@aecom.com](mailto:richard.hamel@aecom.com)]

**Sent:** Monday, January 04, 2010 2:05 PM

**To:** Alan De Salvio

**Cc:** Richard Wales; Tony Malone

**Subject:** RE: Cumulative Modeling Sources for Blythe Solar Power Project

Alan and Richard,

I was actually just about to call you, I apologize for not following up last week. There are actually two requests from CEC regarding the Blythe Solar Power Project.

The first request:

Please provide a list from the MDAQMD of large stationary source projects with permitted emissions, for projects with greater than 5 tons of permitted emissions

of any single criteria pollutant. Include projects located within six miles of the project site that have been recently permitted, but did not start operation prior to 2009 such as the Blythe Energy Project Phase II, or are in the process of being permitted.

And secondly:

Please provide a cumulative impacts modeling analysis in consultation with Energy Commission staff, if necessary, based on the project list provided by MDAQMD.

I assume Blythe Energy Project Phase I would be one source that should be included. Are there any others?

The Blythe Solar Power Project would be located about 3 miles NNW of Blythe airport. It would cover a large area, but the approximate center would be located at UTM 708120, 3728249, Zone 11, NAD 83.

Please don't hesitate to call or email with any questions.

Thanks very much.

Rich Hamel

**Richard Hamel**  
Air Quality Meteorologist  
Environment  
D 978.589.3275  
richard.hamel@aecom.com

# **Blythe Modifications to Air Permit Air Quality**

**Blythe Solar Power Project**

**Docket No. 09-AFC-6**

Alice Harron  
Senior Director of Project Development  
1625 Shattuck Avenue, Suite 270  
Berkeley, CA 94709-1161



AECOM Environment  
1220 Avenida Acaso  
Camarillo, CA 93012  
tel 805-388-3775  
fax 805-388-3577

January 26, 2010

Roseana Navarro-Brasington  
Air Quality Engineer  
Mojave Desert Air Quality Management District  
14306 Park Avenue  
Victorville, CA 92392-2310

**Subject: Modifications to the Air Permit Applications for the Blythe Solar Power Project**

Dear Ms. Navarro-Brasington,

Solar Millennium LLC and Chevron Energy Solutions (in partnership) had proposed to construct a solar thermal electric power generating facility, the Blythe Solar Power Project (BSPP or Project). There have been a number of changes to the Project that we would like to bring to your attention. These changes have been addressed in correspondence with the Energy Commission (CEC), but apparently the District has not received copies of the relevant information.

The first change we would like to bring to your attention is that Chevron Energy Solutions will no longer be involved with the Project. For permitting purposes, the Applicant is requesting that CEC issue one license to a project-specific company known as Blythe Solar I, LLC (BSI). BSI is a wholly owned subsidiary of Solar Millennium and is the single applicant for the BSPP.

The second change that we would like to bring to your attention is the substitution of larger emergency generators. The emergency generators installed in each of the power blocks will be 2-megawatt (output) diesel-fired units. The engines driving the generators are 2,922 horsepower; engine specifications are listed in **Table 1**. The MDAQMD application forms for each engine are provided in **Attachment 1** for each of the new emergency generator engines, and the manufacturer's specification sheets for the generator engine are provided in **Attachment 2**.

The Applicant will purchase and install engines meeting the applicable emissions standards for these engines as of the date of manufacture, as defined by the applicable regulation. At this time, the Applicant plans to order the equipment upon approval of the CEC license, anticipated in 2010. The appropriate design standard for 2010 model year engines greater than 750 horsepower is the Tier 2 standard. The Applicant proposed a Tier 2 engine for the emergency generator based on the emission standards identified in 40 Code of Federal Regulations (CFR), Part 60, Subpart IIII, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines. Pursuant to Section 60.4202(a)(2) of that subpart, engines with a maximum rating of more than 50 horsepower must meet the emission standards listed in 40 CFR 89.112 for all pollutants beginning in 2007. The emission standards listed in 40 CFR 89.112 for engines with rated power greater than 560 kilowatt (kW) (750 Hp) are Tier 2 standards which are: 6.4 grams per kilowatt hour (g/kWh) for NO<sub>x</sub> and non-methane hydrocarbons (NMHC) combined, 3.5 g/kWh for CO and 0.20 g/kWh for PM.



**Table 1 Emergency Generator Engine Specifications**

Manufacturer:	Cummins
Model:	QSK60-G6
Type:	4-cycle, Turbocharged, After-cooled
Rating:	1,800 rpm, 60 Hz
Fuel Type:	Diesel
Maximum Fuel Usage:	149.3 gallons/hr
EPA Tier Rating:	Tier 2

If the equipment is not ordered until 2011, the appropriate design standard would be the Interim Tier 4 standards, in accordance with the California Airborne Toxic Control Measure (ATCM) for Stationary Compression Ignition Engines. According to the ATCM, new stationary emergency engines must meet the standards for off-road engines of the same model year and maximum rated power as specified in the Off-Road Compression Ignition Engines Standards (Title 13, California Code of Regulations (CCR), Section 2423). Title 13 CCR Section 2423 sets emission standards for the generator engine with model years 2011 and later. The Interim Tier 4 standard applies to the Project generator engine as the engine would be larger than 900 kW (750 horsepower) and would be manufactured between 2011 and 2014. The standards are 0.67 g/kWh for NO<sub>x</sub>, 0.40 g/kWh for NMHC, 3.5 g/kWh for CO and 0.10 g/kWh for PM.

Tier 2 emissions were used in the emission calculations, ambient air quality impacts analysis (i.e., modeling) and health risk assessment. If the equipment is not ordered until 2011, the appropriate design standard would be the Interim Tier 4 standard and NO<sub>x</sub>, NMHC and PM<sub>10</sub> emissions would be lower than the emissions from the Tier 2 engine. In that case, the air quality impacts would be lower than the impacts predicted for the Tier 2 engine. Thus, use of the Tier 2 emissions yields the worst-case predicted impacts for modeling, for predicting emission offset requirements, and for predicting health risk impacts.

Combustion of diesel fuel results in the emissions of the criteria pollutants. The assumptions made regarding emergency engine operation for the Project used as the basis for emission calculations include:

- One 2,9220-hp diesel-fired emergency generator engine power plant unit, a total of four emergency generator engines for the Project;
- All engines will use ultra-low sulfur (15 ppm) diesel fuel;
- All engines have Tier 2 Certification;
- The diesel fire emergency generator engine hours are based upon up to one one-hour test per week per engine, not to exceed 50 hours per year, and do not reflect emergency use; and
- 100 percent of the PM<sub>10</sub> emissions are PM<sub>2.5</sub>.

Emission estimates for NO<sub>x</sub>, CO, VOC and PM<sub>10</sub> are based on emission factors for EPA Tier 2 certified engines. Under Tier 2, the emission standard for non-methane hydrocarbons (NMHC) is combined with NO<sub>x</sub>. For these emission estimates, the NO<sub>x</sub> fraction is assumed to be 95 percent of the combined emissions with the balance NMHC. NMHC is assumed to be equivalent to VOC. Emission estimates for SO<sub>x</sub> are based on estimated fuel use of 149.3 gallons per hour for each engine with a heating value of

137,000 Btu per gallon, and fuel sulfur content of 15 ppm. The criteria pollutant emissions for one emergency generator are shown in **Table 2**.

**Table 2 Emergency Generator Engine Criteria Pollutant Emissions  
(One Engine)**

Pollutant	Emissions		
	(lb/hr)	(lb/day)	(tpy)
NOx	29.35	29.35	0.73
VOC	1.54	1.54	0.039
CO	16.73	16.73	0.42
SOx	0.97	0.97	0.024
PM10	0.97	0.97	0.024
PM2.5	0.032	0.032	0.001

There have been other changes to the Project and clarifications of Project information which are described in the Data Responses that were submitted to the CEC on January 4, 2010 and in response to questions raised during a CEC workshop held on January 6, 2010. I understand that you have received copies of this information from CEC; however, if you need additional information, please let me know.

If you have any questions concerning these applications, please call Russ Kingsley at (805) 388-3775. Thank you for your time.

Sincerely,



Russ Kingsley  
Air Quality Specialist – AECOM Environment  
Russ.Kingsley@aecom.com

Attachments:

- 1 MDAQMD Forms
- 2 Equipment Specifications

**Attachment 1**  
**MDAQMD Forms**

**MOJAVE DESERT AIR QUALITY MANAGEMENT DISTRICT**

14306 Park Avenue, Victorville, CA 92392-2310  
 (760) 245-1661 Facsimile: (760) 245-2022

www.mdaqmd.ca.gov  
 Eldon Heaston  
 Executive Director

**APPLICATION FOR INTERNAL COMBUSTION ENGINE (I.C.E.) ONLY**

Page 1 of 2: please type or print

REMIT \$226.00 WITH THIS DOCUMENT (\$129.00 FOR CHANGE OF OWNER)

1. Permit To Be Issued To (company name to receive permit): Blythe Solar I, LLC		1a. Federal Tax ID No.:	
2. Mailing/Billing Address (for above company name): 1625 Shattuck Ave. Suite 270, Berkeley, CA 94709			
3. Facility or Business License Name (for equipment location): Blythe Solar Power Project			
4. Facility Address - Location of Equipment (if same as for company, enter "Same"): Blythe Solar Power Project - 8 miles west of Blythe and 2 mi north of Interstate I-10 at exit #232, Airport/Mesa Dr		Facility UTM or Lat/Long: 33°37'55"N, 114°45'45"W	
5. Contact Name/Title: Michael Cressner, Associate Project Development & Permitting		Email Address: <a href="mailto:cressner@solarcentury.com">cressner@solarcentury.com</a>	Phone/Fax Nos.: (510) 524-4517 x 324
6. Application is hereby made for Authority To Construct (ATC) and Permit To Operate (PTO) the following equipment: Emergency Generator Engine #3			
7. Application is for: <input checked="" type="checkbox"/> New Construction <input type="checkbox"/> Modification* <input type="checkbox"/> Change of Owner*		For modification or change of owner: *Current Permit Number: <u>---</u>	
8. Type of Organization (check one): <input type="checkbox"/> Individual Owner <input checked="" type="checkbox"/> Partnership <input type="checkbox"/> Corporation <input type="checkbox"/> Utility <input type="checkbox"/> Local Agency <input type="checkbox"/> State Agency <input type="checkbox"/> Federal Agency			
9. Distances (feet and direction to closest): <u>3,000, West</u> Fenceline <u>530, South</u> Residence <u>2,100, East</u> Business <u>35,000, East</u> School			
10. General Nature of Business: Solar Energy Generation		11. Principal Product: Solar Energy	
12. Facility Annual Throughput by Quarters (percent): <u>25 %</u> <u>25 %</u> <u>25 %</u> <u>25 %</u> Jan-Mar    Apr-Jun    Jul-Sep    Oct-Dec		13. Expected Operating Hours of IC Engine: <u>1</u> <u>1</u> <u>50</u> <u>50</u> Hrs/Day    Days/Wk    Wks/Yr    Total Hrs/Yr	
14. Do you claim Confidentiality of Data (if yes, state nature of data in attachment)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
15. Signature of Responsible Official:		Official Title:	
Typed or Printed Name of Responsible Official:		Phone Number:	Date Signed:
- For District Use Only -			
Application Number:	Invoice Number:	Permit Number:	Company/Facility Number:

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4. Facility Address - Location of Equipment (if same as for company, enter "Same"): Blythe Solar Power Project - 8 miles west of Blythe and 2 mi north of Interstate I-10 at exit #232, Airport/Mesa Dr		Facility UTM or Lat/Long: 33°37'55"N, 114°45'45"W	
5. Contact Name/Title: Michael Cressner, Associate Project Development & Permitting		Email Address: <a href="mailto:cressner@solarmillennium.com">cressner@solarmillennium.com</a>	Phone/Fax Nos.: (510) 524-4517 x 324
6. Application is hereby made for Authority To Construct (ATC) and Permit To Operate (PTO) the following equipment: Emergency Generator Engine #2			
7. Application is for: <input checked="" type="checkbox"/> New Construction <input type="checkbox"/> Modification* <input type="checkbox"/> Change of Owner*		For modification or change of owner: *Current Permit Number: <u>---</u>	
8. Type of Organization (check one): <input type="checkbox"/> Individual Owner <input checked="" type="checkbox"/> Partnership <input type="checkbox"/> Corporation <input type="checkbox"/> Utility <input type="checkbox"/> Local Agency <input type="checkbox"/> State Agency <input type="checkbox"/> Federal Agency			
9. Distances (feet and direction to closest): <u>3,000, North</u> Fenceline <u>530, South</u> Residence <u>2,100, East</u> Business <u>35,000, East</u> School			
10. General Nature of Business: Solar Energy Generation		11. Principal Product: Solar Energy	
12. Facility Annual Throughput by Quarters (percent): <u>25 %</u> <u>25 %</u> <u>25 %</u> <u>25 %</u> Jan-Mar    Apr-Jun    Jul-Sep    Oct-Dec		13. Expected Operating Hours of IC Engine: <u>1</u> <u>1</u> <u>50</u> <u>50</u> Hrs/Day    Days/Wk    Wks/Yr    Total Hrs/Yr	
14. Do you claim Confidentiality of Data (if yes, state nature of data in attachment)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
15. Signature of Responsible Official:		Official Title:	
Typed or Printed Name of Responsible Official:		Phone Number:	Date Signed:
- For District Use Only -			
Application Number:	Invoice Number:	Permit Number:	Company/Facility Number:

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4. Facility Address - Location of Equipment (if same as for company, enter "Same"): Blythe Solar Power Project - 8 miles west of Blythe and 2 mi north of Interstate I-10 at exit #232, Airport/Mesa Dr		Facility UTM or Lat/Long: 33°37'55"N, 114°45'45"W	
5. Contact Name/Title: Michael Cressner, Associate Project Development & Permitting		Email Address: <a href="mailto:cressner@solarcentury.com">cressner@solarcentury.com</a>	Phone/Fax Nos.: (510) 524-4517 x 324
6. Application is hereby made for Authority To Construct (ATC) and Permit To Operate (PTO) the following equipment: Emergency Generator Engine #1			
7. Application is for: <input checked="" type="checkbox"/> New Construction <input type="checkbox"/> Modification* <input type="checkbox"/> Change of Owner*		For modification or change of owner: *Current Permit Number:    ---	
8. Type of Organization (check one): <input type="checkbox"/> Individual Owner <input checked="" type="checkbox"/> Partnership <input type="checkbox"/> Corporation <input type="checkbox"/> Utility <input type="checkbox"/> Local Agency <input type="checkbox"/> State Agency <input type="checkbox"/> Federal Agency			
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10. General Nature of Business: Solar Energy Generation		11. Principal Product: Solar Energy	
12. Facility Annual Throughput by Quarters (percent): <u>25 %</u> <u>25 %</u> <u>25 %</u> <u>25 %</u> Jan-Mar    Apr-Jun    Jul-Sep    Oct-Dec		13. Expected Operating Hours of IC Engine: <u>1</u> <u>1</u> <u>50</u> <u>50</u> Hrs/Day    Days/Wk    Wks/Yr    Total Hrs/Yr	
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15. Signature of Responsible Official:		Official Title:	
Typed or Printed Name of Responsible Official:		Phone Number:	Date Signed:
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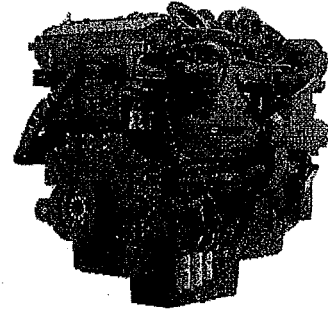
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5. Contact Name/Title: Michael Cressner, Associate Project Development & Permitting		Email Address: <a href="mailto:cressner@solarcentury.com">cressner@solarcentury.com</a>	Phone/Fax Nos.: (510) 524-4517 x 324
6. Application is hereby made for Authority To Construct (ATC) and Permit To Operate (PTO) the following equipment: Emergency Generator Engine #4			
7. Application is for: <input checked="" type="checkbox"/> New Construction <input type="checkbox"/> Modification* <input type="checkbox"/> Change of Owner*		For modification or change of owner: *Current Permit Number: <u>---</u>	
8. Type of Organization (check one): <input type="checkbox"/> Individual Owner <input checked="" type="checkbox"/> Partnership <input type="checkbox"/> Corporation <input type="checkbox"/> Utility <input type="checkbox"/> Local Agency <input type="checkbox"/> State Agency <input type="checkbox"/> Federal Agency			
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10. General Nature of Business: Solar Energy Generation		11. Principal Product: Solar Energy	
12. Facility Annual Throughput by Quarters (percent): <u>25</u> % <u>25</u> % <u>25</u> % <u>25</u> % Jan-Mar    Apr-Jun    Jul-Sep    Oct-Dec		13. Expected Operating Hours of IC Engine: <u>1</u> <u>1</u> <u>50</u> <u>50</u> Hrs/Day    Days/Wk    Wks/Yr    Total Hrs/Yr	
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Typed or Printed Name of Responsible Official:		Phone Number:	Date Signed:
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**Attachment 2  
Equipment Specifications**



# QSK60-G6

Emissions Compliance  
EPA Tier 2 @ 60Hz



> Specification sheet

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## Description

The QSK60 is a V 16 cylinder engine with a 60 litre displacement. This Quantum series utilizes sophisticated electronics and premium engineering to provide outstanding performance levels, reliability and versatility for Standby, Prime and Continuous Power applications.



This engine has been built to comply with CE certification.



This engine has been designed in facilities certified to ISO9001 and manufactured in facilities certified to ISO9001 or ISO9002.

## Features

**High pressure fuel pump, Modular Common Rail fuel System (MCRS)** and state of the art integrated electronic control system provide superior performance, efficiency and diagnostics. The electronic fuel pumps deliver up to 1600 bar injection pressure and eliminate mechanical linkage adjustments. The new MCRS utilizes an electric priming pump which is integrated with the off-engine stage-1 fuel filter head and is controlled and powered by the engine ECM. The stage-2 fuel filters are mounted on-engine

**CTT (Cummins Turbo Technologies) HX82/HX83 turbo-charging** utilizes exhaust energy with greater efficiency for improved emissions and fuel consumption.

**Low Temperature After-cooling** - Two-pump Two-loop (2P2L)

**Ferrous Cast Ductile Iron (FCD) Pistons** - High strength design delivers superior durability.

**G-Drive Integrated Design** - Each component has been specifically developed and rigorously tested for G-Drive products, ensuring high performance, durability and reliability.

**Service and Support** - G-Drive products are backed by an uncompromising level of technical support and after sales service, delivered through a world class service network.

## 1800 rpm (60 Hz Ratings)

Gross Engine Output			Net Engine Output			Typical Generator Set Output					
Standby	Prime	Base	Standby	Prime	Base	Standby (ESP)		Prime (PRP)		Base (COP)	
kWm/BHP			kWm/BHP			kWe	kVA	kWe	kVA	kWe	kVA
2180/2923	1975/2648	1740/2333	2120/2843	1937/2598	1702/2282	2000	2500	1825	2281	1633	2042

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## General Engine Data

Type	4 cycle, Turbocharged, After-cooled
Bore mm	159
Stroke mm	190
Displacement Litre	60.2
Cylinder Block	Cast iron, 16 cylinder
Battery Charging Alternator	55A
Starting Voltage	24V
Fuel System	Direct injection Cummins MCRS
Fuel Filter	Spin on fuel filters with water separator
Lube Oil Filter Type(s)	Spin on full flow filter
Lube Oil Capacity (l)	280
Flywheel Dimensions	SAE 0

## Coolpac Performance Data

Cooling System Design	2 pump - 2 loop
Coolant Ratio	50% ethylene glycol; 50% water
Coolant Capacity (l)	Engine only – not applicable
Limiting Ambient Temp.**	
Fan Power	
Cooling System Air Flow (m <sup>3</sup> /s)**	
Air Cleaner Type	Dry replaceable element with restriction indicator

\*\* @ 13 mm H<sub>2</sub>O

## Weight & Dimensions

Length	Width	Height	Weight (dry)
mm	mm	mm	kg
2781	1794	2155	7185

## Fuel Consumption 1800 (60 Hz)

%	kWm	BHP	L/ph	US gal/ph
<b>Standby Power</b>				
100	2180	2922	536	141.4
<b>Prime Power</b>				
100	1975	2647	470	124.1
75	1481	1985	381	100.6
50	987	1324	285	75.1
25	494	662	165	43.5
<b>Continuous Power</b>				
100	1740	2332	423	111.6

## 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 Potosí, 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):

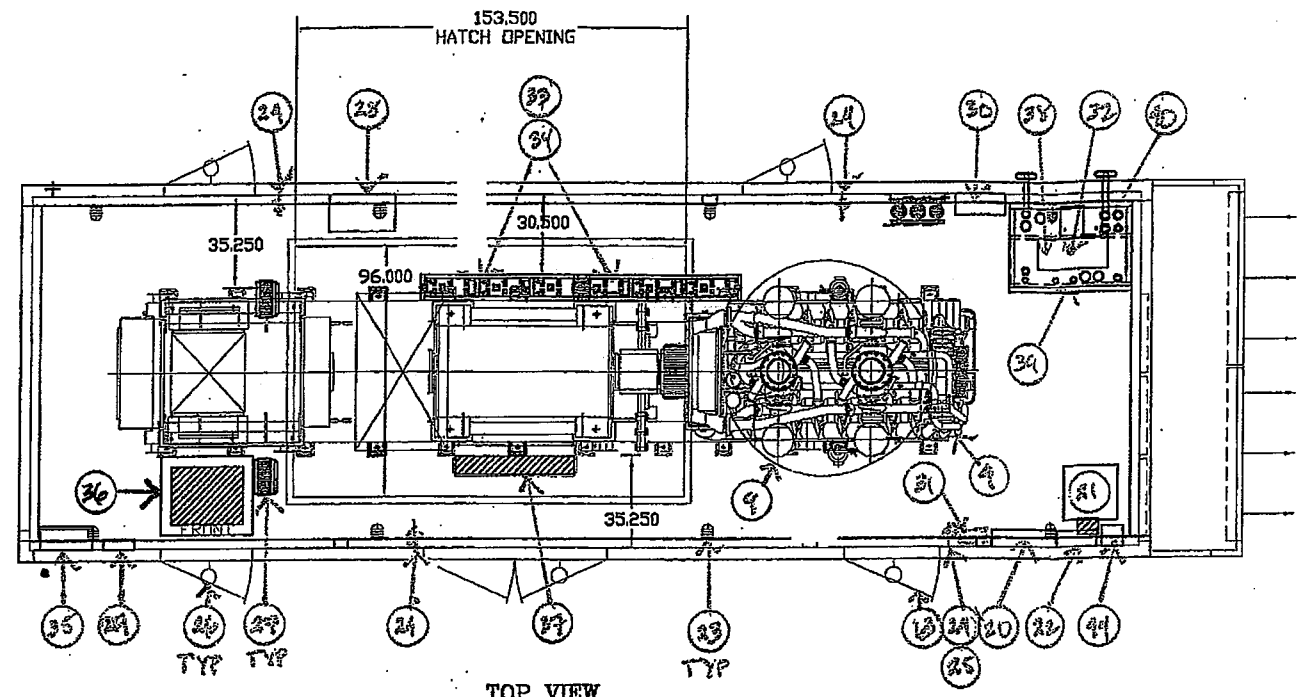
Applicable for supplying power continuously to a constant electrical load for unlimited hours. Continuous Power (COP) in accordance with ISO 8528, ISO 3046, AS 2789, DIN6271 and BS 5514.

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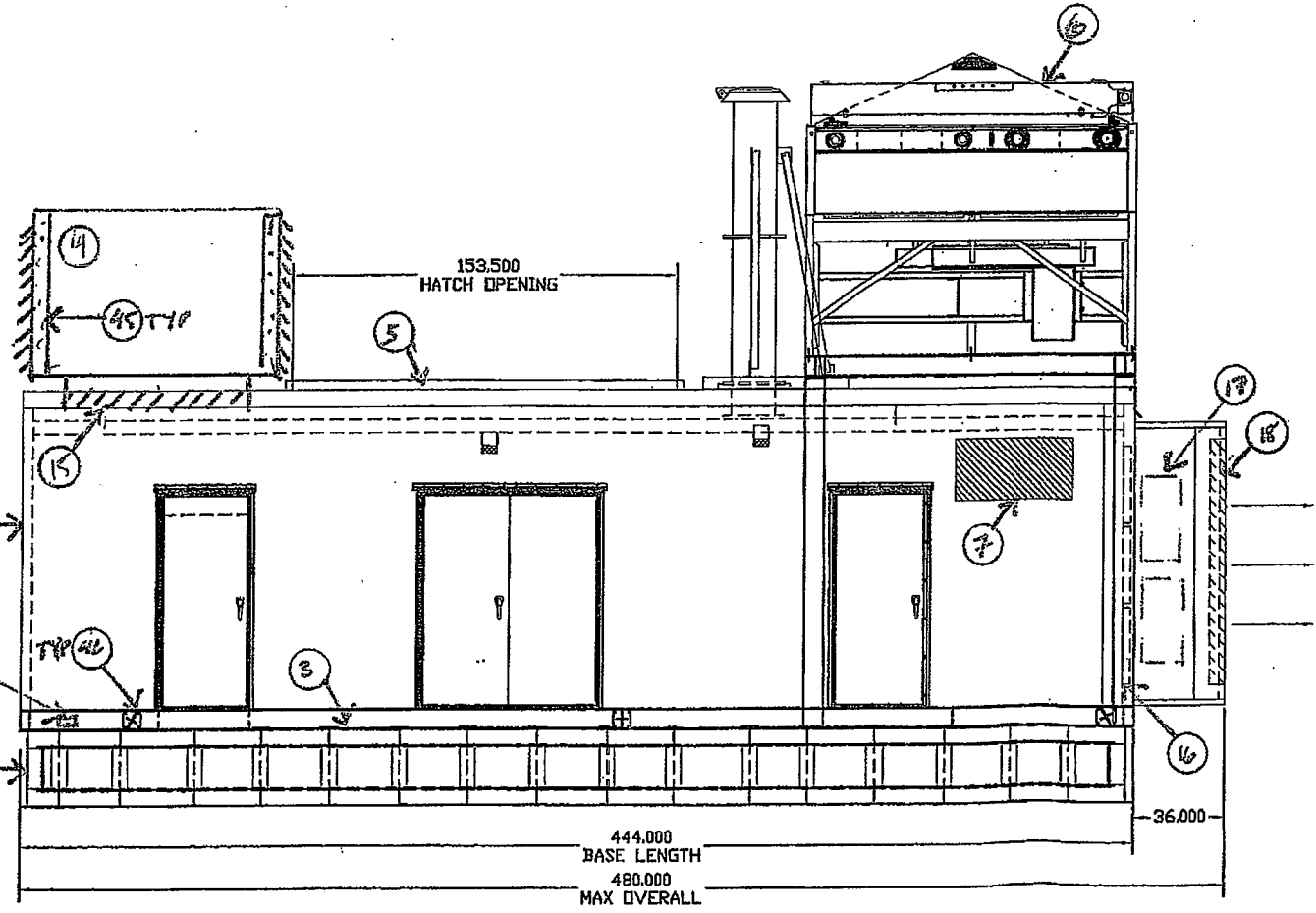
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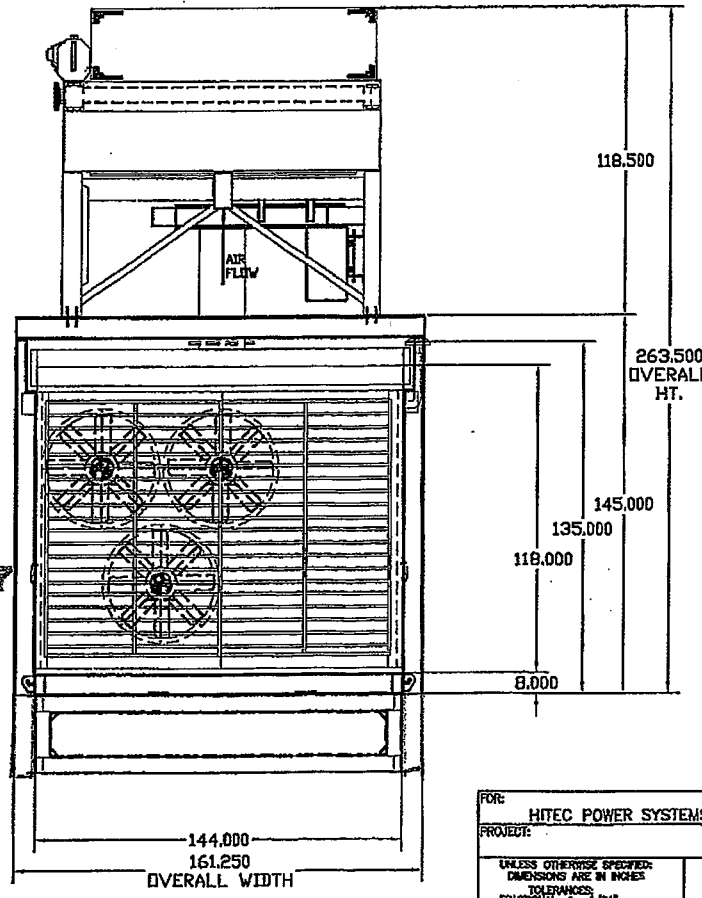




TOP VIEW



SIDE VIEW



DISCHARGE END VIEW

ITEM	QTY	DESCRIPTION
1	1	PACKAGE- DROP OVER CONSTRUCTION
2	A/R	4.5"D WALL PANEL- INSULATED, MARINE GRADE ALUMINUM CONSTRUCTION
3	1	DROP-OVER ENCLOSURE FRAME
4	1	HITEC ROTARY UPS- 2000KW, <del>XXXXXXXXXX</del>
5	1	ROOF HATCH- REMOVABLE, FOR INDUCTION COUPLING SERVICE
6	1	EXTERIOR MOUNTED RADIATOR- ROCORE HBBB, HITEC PROVIDED, SHIPPED LOOSE
7	1	RADIATOR PIPING ACCESS AREA- 24" X 48", <del>XXXXXXXXXX</del>
8	1	RADIATOR FRAME STRUCTURE- SHIPPED LOOSE, INSTALLED BY CONTRACTOR
9	1	EXHAUST SILENCER- INTERIOR MOUNT, W/ EXHAUST OUTLET ON TOP
10	2	EXHAUST FLEX PIPE- HITEC PROVIDED
11	3	EXHAUST EXTENSION SUPPORTS- SHIPPED LOOSE
12	2	EXHAUST EXTENSION SECTION- W/ RAIN CAP & SUPPORTS, SHIPPED LOOSE
13	4	PERSONNEL ENTRANCE DOORS- PAD LOCKABLE
14	1	AIR INTAKE HOOD W/ FIXED INTAKE LOUVER ASSEMBLY- FOR VENTILATION
15	1	MOTORIZED INTAKE DAMPER ASSEMBLY
16	1	GRAVITY DISCHARGE DAMPER ASSEMBLY
17	4	VENTILATION FAN- INSTALLED IN DISCHARGE HOOD
18	1	AIR DISCHARGE HOOD- W/ FANS
19	1	HAND PUMP - FOR FUEL SUPPLY TO DAY TANK, NOT SHOWN
20	1	DISTRIBUTION PANEL- <del>XXXXXXXXXX</del> 100A MAIN
21	1	TRANSFORMER- 30KVA, <del>XXXXXXXXXX</del> 120/208V, CEILING MOUNTED
22	1	SERVICE PANEL- 120/208V, 100A MAIN, 3P4W
23	8	LIGHT FIXTURE- VAPOR TIGHT, AC
24	4	LIGHT SWITCH
25	2	GFCI RECEPTACLE
26	4	EXTERIOR LIGHT FIXTURE- VAPOR TIGHT, W/ PHOTOCCELL
27	2	ENCLOSURE HEATER- CEILING MOUNTED, W/ THERMOSTAT
28	1	BATTERY CHARGER- HITEC PROVIDED
29	1	AUXILIARY CONNECTION BOX
30	1	FUEL CONTROL PANEL
31	1	VENTILATION CONTROL PANEL
32	1	REDUNDANT START PANEL (RSP)- W/ DRIP PAN, HITEC PROVIDED
33	2	STARTING BATTERY SET- HITEC PROVIDED
34	2	BATTERY RACK
35	1	SAXON RADIATOR MOTOR CONTROL PANEL- HITEC PROVIDED
36	1	OUTPUT CIRCUIT BREAKER CUBICLE (ODP)- <del>XXXXXXXXXX</del> BY K.C.
37	1	POWER GENERATING MODULE (PGM) CONNECTION BOX- HITEC PROVIDED
38	1	FUEL DAY TANK- ELEVATED, 150 GAL. PRIMARY W/ 225 GAL. RUPTURE, U.L. 142
39	1	DAY TANK FUEL FITTINGS & VENTS
40	1	FUEL OIL COOLER- FOR ENGINE FUEL RETURN TO DAY TANK, MOUNTED ABOVE TANK
41	1	FUEL/WATER SEPARATOR- RACOR 79/100DFGV, HITEC PROVIDED
42	6	REMOVABLE LIFT LUG
43	2	GROUND LUG- LOCATION: RIGHT REAR, FRONT LEFT
44	1	100A DISCONNECT
45	24	24X24X2 500FPM AIR FILTERS

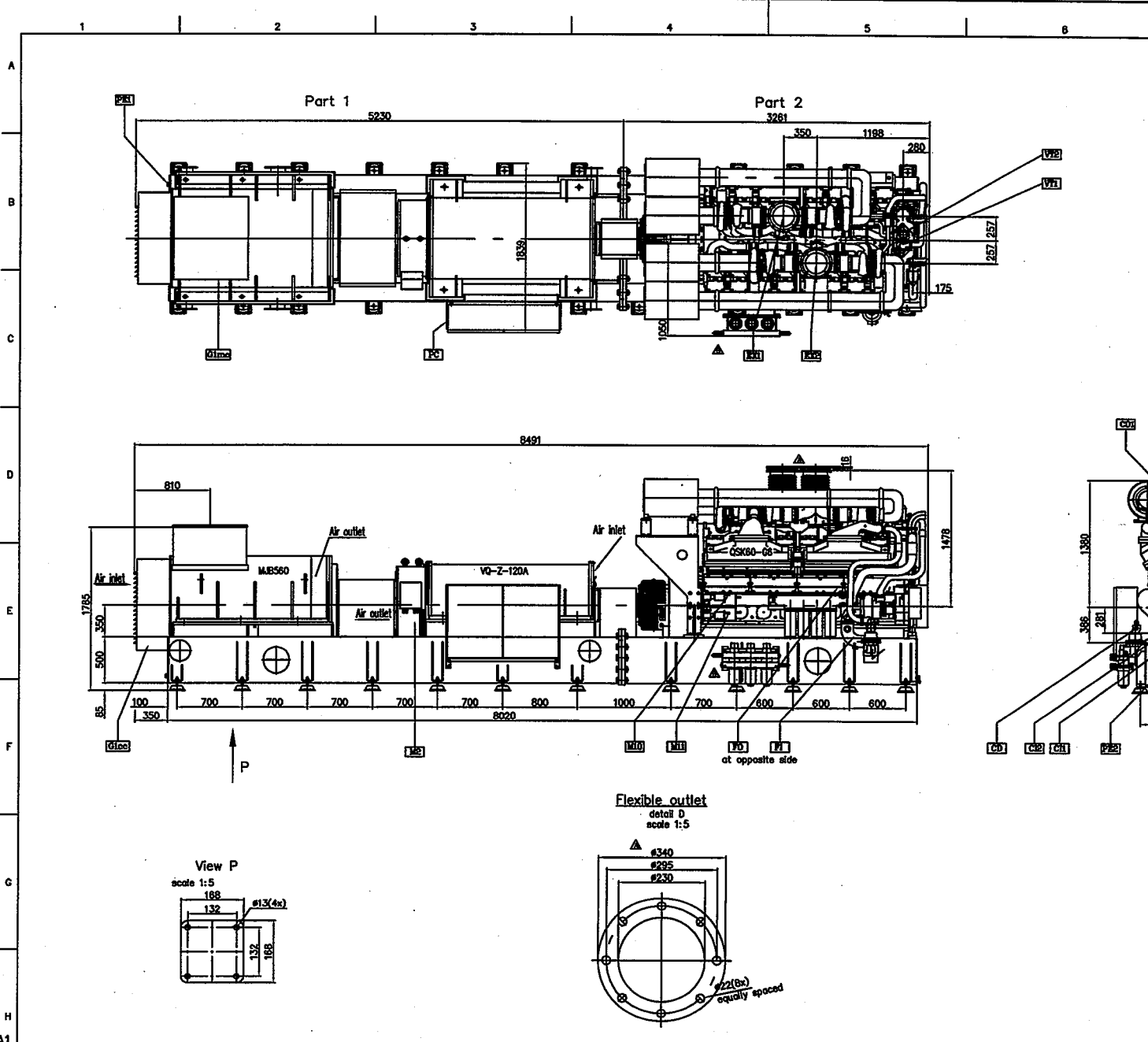
NOTES:  
 AIR FLOW REQUIREMENTS:  
 COOLING- 55,500 CFM  
 COMBUSTION- 8,475 CFM  
 TOTAL- 61,975 CFM  
 MAXIMUM WALL PANEL WIDTH- 24"

DROP OVER ENCLOSURE FRAME TO INSTALL DIRECTLY ON CUSTOMER PROVIDED PAD.  
 GASKET MATERIAL, PROVIDED W/ SHIPMENT, TO BE INSTALLED BETWEEN FRAME & PAD.

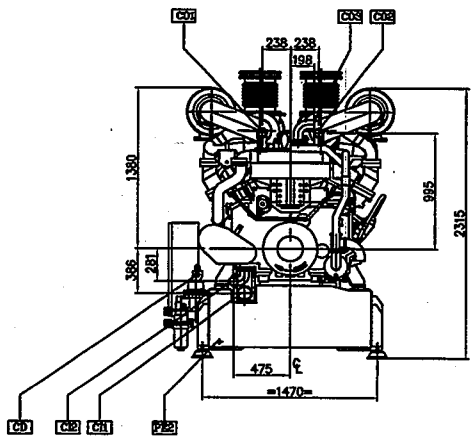
FINISH COLOR: UNDETERMINED  
 EST. ENCL. FRAME WEIGHT: 5,000 LBS  
 EST. ENCLOSURE WEIGHT: 9,000 LBS  
 EST. DAY TANK WT., DRY: 2,000 LBS  
 EST. RADIATOR WT., DRY: 12,000 LBS  
 EST. RAD. FRAME WEIGHT: 3,000 LBS  
 EST. DISCHARGE HOOD WT.: 1,500 LBS  
 EST. MISC. WEIGHT: 5,000 LBS  
 EST. DRY SHIPPING WT.: 37,500 LBS  
 APPROXIMATE OVERALL DIMENSIONS  
 LENGTH: 570"  
 WIDTH: 194.6"  
 HEIGHT: 263.5"  
 DAY TANK CAPACITY: 150 GAL.  
 RUPTURE BASIN CAPACITY: 150%

FOR: HITEC POWER SYSTEMS	
PROJECT:	
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONS ± 1/16" DECIMALS ± .001"	XX XX
S.C. # QTE#11314F P.O.# F7110D	DROP-OVER THERMALLY INSULATED ENCLOSURE GENERAL ARRANGEMENT FOR A 2,000KW ROTARY UPS
DRAWN: X DATE: X	DRAWING NO. X REV. X
CHECKED: X	SCALE: 1" = 6'
DESIGN: X	SHEET 01

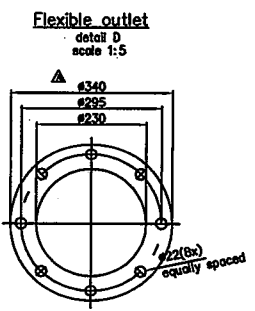
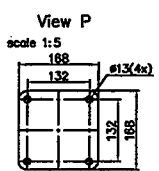
ZONE	REV	DESCRIPTION	DATE	APPROVED
-	-	-	-	-



Customer electrical installation			Customer mechanical installation		
Item	Loc.	Remarks	Item	Loc.	Remarks
G100	CE	Generator main connection	C1	FE	Crushless oil drain
M2	FS	Connection inflection coupling	C1	FE	Coolant inlet #1/2"
M10	FE	Connection starting motor 1	C2	FE	Assy/ coolant inlet #7/8"
M11	FE	Connection starting motor 2	C3	FE	Coolant outlet #7/8"
			C4	FE	Coolant outlet #7/8"
			C5	FE	Coolant outlet #7/8"
P11	A1	Connection earthing MIP			
P12	FE	Connection earthing MIP			
			E1	C4	Flexible exhaust outlet (Detail D)
			E2	C5	Flexible exhaust outlet (Detail D)
FC	CS	Panel box connection			
			F1	FE	Final drain 3/4" BSP
			F2	FE	Final inlet 1 1/8"-15-2A
			F3	FE	Final outlet 1 1/8"-15-2A
			G1		Oil supply
			V1	FE	Coolant vent. Res 1.1/16" BSP
			V2	FE	Intercooler coolant vent. Res 1.1/16" BSP



Mass Part 1: ±14000 kg  
 Mass Part 2: ± 9300 kg  
 Total mass : ±23300 kg



1	Final design	2	Final design	3	Final design	4	Final design	5	Final design	6	Final design	7	Final design	8	Final design	9	Final design	10	Final design
Scale: 1:20 Part: M850/VQ-2/GSK00-GS Title: Dimension sketch Unit: 4.2 & 4.3 (Left Construction) No: DRW-2200326-324 Date: 2001.11.11 Rev: 1										Scale: 1:20 Part: M850/VQ-2/GSK00-GS Title: Dimension sketch Unit: 4.2 & 4.3 (Left Construction) No: DRW-2200326-324 Date: 2001.11.11 Rev: 1									

	CUMMINS INC.	EXECUTIVE ORDER U-R-002-0523
		New Off-Road Compression-Ignition Engines

Pursuant to the authority vested in the Air Resources Board by Sections 43013, 43018, 43101, 43102, 43104 and 43105 of the Health and Safety Code; and

Pursuant to the authority vested in the undersigned by Sections 39515 and 39516 of the Health and Safety Code and Executive Order G-02-003;

**IT IS ORDERED AND RESOLVED:** That the following compression-ignition engines and emission control systems produced by the manufacturer are certified as described below for use in off-road equipment. Production engines shall be in all material respects the same as those for which certification is granted.

MODEL YEAR	ENGINE FAMILY	DISPLACEMENT (liters)	FUEL TYPE	USEFUL LIFE (hours)
2010	ACEXL060.AAD	60.0	Diesel	8000
SPECIAL FEATURES & EMISSION CONTROL SYSTEMS			TYPICAL EQUIPMENT APPLICATION	
Direct Diesel Injection, Turbocharger, Charge Air Cooler, Engine Control Module			Generator Set	

The engine models and codes are attached.

The following are the exhaust certification standards (STD) and certification levels (CERT) for hydrocarbon (HC), oxides of nitrogen (NO<sub>x</sub>), or non-methane hydrocarbon plus oxides of nitrogen (NMHC+NO<sub>x</sub>), carbon monoxide (CO), and particulate matter (PM) in grams per kilowatt-hour (g/kw-hr), and the opacity-of-smoke certification standards and certification levels in percent (%) during acceleration (Accel), lugging (Lug), and the peak value from either mode (Peak) for this engine family (Title 13, California Code of Regulations, (13 CCR) Section 2423):

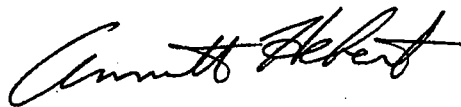
RATED POWER CLASS	EMISSION STANDARD CATEGORY		EXHAUST (g/kw-hr)					OPACITY (%)		
			HC	NO <sub>x</sub>	NMHC+NO <sub>x</sub>	CO	PM	ACCEL	LUG	PEAK
KW > 560	Tier 2	STD	N/A	N/A	6.4	3.5	0.20	N/A	N/A	N/A
		CERT	--	--	5.4	0.5	0.09	--	--	--

**BE IT FURTHER RESOLVED:** That for the listed engine models, the manufacturer has submitted the information and materials to demonstrate certification compliance with 13 CCR Section 2424 (emission control labels), and 13 CCR Sections 2425 and 2426 (emission control system warranty).

Engines certified under this Executive Order must conform to all applicable California emission regulations.

**This Executive Order is only granted to the engine family and model-year listed above. Engines in this family that are produced for any other model-year are not covered by this Executive Order.**

Executed at El Monte, California on this 23 day of July 2009.



Annette Hebert, Chief  
Mobile Source Operations Division

## Engine Model Summary Template

U-R-002-0523  
Attachment  
7/8/2009

Engine Family	1.Engine Code	2.Engine Model	3.BHP@RPM (SAE Gross)	4.Fuel Rate: mm/stroke @ peak HP (for diesel only)	5.Fuel Rate: (lbs/hr) @ peak HP (for diesels only)	6.Torque @ RPM (SEA Gross)	7.Fuel Rate: mm/stroke@peak torque	8.Fuel Rate: (lbs/hr)@peak torque	9.Emission Control Device Per SAE J1930
ACEXL060.AAD	0930:FR6526	QSK60-G	2922@1800	629	1017.9	N/A	N/A	N/A	DDI,ECM,TC,CAC
ACEXL060.AAD	0930:FR6528	QSK60-G	3251@1800	702	1137	N/A	N/A	N/A	DDI,ECM,TC,
ACEXL060.AAD	2769:FR6602	QSK60-G	2922@1800	620	1003.3	NA	NA	NA	DDI,ECM,TC,
ACEXL060.AAD	2769:FR6671	QSK60-G	2922@1800	620	1003.3	N/A	N/A	N/A	DDI,ECM,TC,
ACEXL060.AAD	2769:FR6684	QSK60-G	2922@1800	620	1003.3	N/A	N/A	N/A	DDI,ECM,TC,
ACEXL060.AAD	2770:FR6646	QSK60-G	2922@1800	634	1025.6	N/A	N/A	N/A	DDI,ECM,TC,
ACEXL060.AAD	2770:FR6646	QSK60-G	2332@1500	586	790	N/A	N/A	N/A	DDI,ECM,TC,
ACEXL060.AAD	2770:FR6682	QSK60-G	2785@1800	597	966.9	N/A	N/A	N/A	DDI,ECM,TC,
ACEXL060.AAD	2770:FR6682	QSK60-G	2255@1500	554	747.2	N/A	N/A	N/A	DDI,ECM,TC,
ACEXL060.AAD	3141:FR6644	QSK60-G	2922@1800	616	997	N/A	N/A	N/A	DDI,ECM,TC,
ACEXL060.AAD	3143:FR6645	QSK60-G	3315@1800	702	1137	N/A	N/A	N/A	DDI,ECM,TC,
ACEXL060.AAD	3178:FR6665	QSK60-G	2705@1500	676	911.6	N/A	N/A	N/A	DDI,ECM,TC,
ACEXL060.AAD	8595:FR6525	QSK60-G	2922@1800	634	1026.1	NA	NA	NA	DDI,ECM,TC,
ACEXL060.AAD	8595:FR6525	QSK60-G	2334@1500	590	796.3	NA	NA	NA	DDI,ECM,TC,
ACEXL060.AAD	8595:FR6528	QSK60-G	3251@1800	702	1137	N/A	N/A	N/A	DDI,ECM,TC, ✓

February 3, 2010

Ms. Roseana Navarro-Brasington  
Air Quality Engineer  
Mojave Desert Air Quality Management District  
14306 Park Avenue  
Victorville, CA 92392-2310

**Subject: Modifications to the Air Permit Applications for the Blythe Solar Power Project**

Dear Ms. Navarro-Brasington,

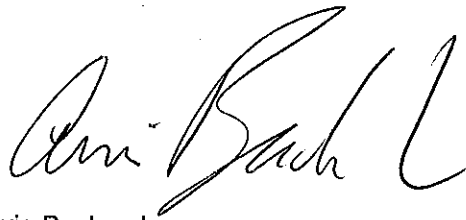
On January 26, on behalf of Solar Millennium LLC, AECOM provided application forms for the four new 2,922 Hp emergency generators. Unfortunately, the name listed as the owner/operator on the forms was incorrect. The correct name for the project-specific entity that will own and operate the Blythe Solar Energy Project is Palo Verde Solar I LLC. Attached please find corrected application forms for your records.

I apologize for any inconvenience this error has caused. If you have any questions concerning these applications, please call Russ Kingsley at (805) 388-3775.

Sincerely,



Russell Kingsley  
Program Manager  
Russ.Kingsley@aecom.com



Arrie Bachrach  
Sr. Program Manager  
arrie.bachrach@aecom.com

Attachments:

1 MDAQMD Forms


**MOJAVE DESERT AIR QUALITY MANAGEMENT DISTRICT**  
 14306 Park Avenue, Victorville, CA 92392-2310  
 (760) 245-1661 Facsimile: (760) 245-2022

www.mdaqmd.ca.gov  
 Eldon Heaston  
 Executive Director

**APPLICATION FOR INTERNAL COMBUSTION ENGINE (I.C.E.) ONLY**

Page 1 of 2: please type or print

REMIT \$226.00 WITH THIS DOCUMENT (\$129.00 FOR CHANGE OF OWNER)

1. Permit To Be Issued To (company name to receive permit): Palo Verde Solar I LLC		1a. Federal Tax ID No.: 26-2611503	
2. Mailing/Billing Address (for above company name): 1625 Shattuck Ave. Suite 270, Berkeley, CA 94709			
3. Facility or Business License Name (for equipment location): Blythe Solar Power Project			
4. Facility Address - Location of Equipment (if same as for company, enter "Same"): Blythe Solar Power Project - 8 miles west of Blythe and 2 mi north of Interstate I-10 at exit #232, Airport/Mesa Dr		Facility UTM or Lat/Long: 33°37'55"N, 114°45'45"W	
5. Contact Name/Title: Michael Cressner, Associate Project Development & Permitting		Email Address: <a href="mailto:cressner@solarmillennium.com">cressner@solarmillennium.com</a>	Phone/Fax Nos.: (510) 524-4517 x 324
6. Application is hereby made for Authority To Construct (ATC) and Permit To Operate (PTO) the following equipment: Emergency Generator Engine #1			
7. Application is for: <input checked="" type="checkbox"/> New Construction <input type="checkbox"/> Modification* <input type="checkbox"/> Change of Owner*		For modification or change of owner: *Current Permit Number:    ---	
8. Type of Organization (check one): <input type="checkbox"/> Individual Owner <input type="checkbox"/> Partnership <input checked="" type="checkbox"/> Corporation <input type="checkbox"/> Utility <input type="checkbox"/> Local Agency <input type="checkbox"/> State Agency <input type="checkbox"/> Federal Agency			
9. Distances (feet and direction to closest): <u>3,000, North</u> Fenceline <u>530, South</u> Residence <u>2,100, East</u> Business <u>35,000, East</u> School			
10. General Nature of Business: Solar Energy Generation		11. Principal Product: Solar Energy	
12. Facility Annual Throughput by Quarters (percent): <u>25%</u> Jan-Mar <u>25%</u> Apr-Jun <u>25%</u> Jul-Sep <u>25%</u> Oct-Dec		13. Expected Operating Hours of IC Engine: <u>1</u> Hrs/Day <u>1</u> Days/Wk <u>50</u> Wks/Yr <u>50</u> Total Hrs/Yr	
14. Do you claim Confidentiality of Data (if yes, state nature of data in attachment)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
15. Signature of Responsible Official: 		Official Title: Senior Director, Project Development & Permitting	
Typed or Printed Name of Responsible Official: Alice Harron		Phone Number: (510) 524-4517	Date Signed: 2/3/10
- For District Use Only -			
Application Number:	Invoice Number:	Permit Number:	Company/Facility Number:



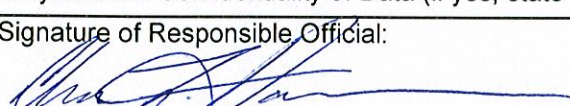
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4. Facility Address - Location of Equipment (if same as for company, enter "Same"): Blythe Solar Power Project - 8 miles west of Blythe and 2 mi north of Interstate I-10 at exit #232, Airport/Mesa Dr		Facility UTM or Lat/Long: 33°37'55"N, 114°45'45"W	
5. Contact Name/Title: Michael Cressner, Associate Project Development & Permitting		Email Address: cressner@solarmillennium.com	Phone/Fax Nos.: (510) 524-4517 x 324
6. Application is hereby made for Authority To Construct (ATC) and Permit To Operate (PTO) the following equipment: Emergency Generator Engine #4			
7. Application is for: <input checked="" type="checkbox"/> New Construction <input type="checkbox"/> Modification* <input type="checkbox"/> Change of Owner*		For modification or change of owner: *Current Permit Number:    ---	
8. Type of Organization (check one): <input type="checkbox"/> Individual Owner <input type="checkbox"/> Partnership <input checked="" type="checkbox"/> Corporation <input type="checkbox"/> Utility <input type="checkbox"/> Local Agency <input type="checkbox"/> State Agency <input type="checkbox"/> Federal Agency			
9. Distances (feet and direction to closest): <u>3,000, South</u> Fenceline <u>530, South</u> Residence <u>2,100, East</u> Business <u>35,000, East</u> School			
10. General Nature of Business: Solar Energy Generation		11. Principal Product: Solar Energy	
12. Facility Annual Throughput by Quarters (percent): <u>25 %</u> <u>25 %</u> <u>25 %</u> <u>25 %</u> Jan-Mar    Apr-Jun    Jul-Sep    Oct-Dec		13. Expected Operating Hours of IC Engine: <u>1</u> <u>1</u> <u>50</u> <u>50</u> Hrs/Day    Days/Wk    Wks/Yr    Total Hrs/Yr	
14. Do you claim Confidentiality of Data (if yes, state nature of data in attachment)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
15. Signature of Responsible Official: 		Official Title: Senior Director, Project Development & Permitting	
Typed or Printed Name of Responsible Official: Alice Harron		Phone Number: (510) 524-4517	Date Signed: 2/2/10
- For District Use Only -			
Application Number:	Invoice Number:	Permit Number:	Company/Facility Number:

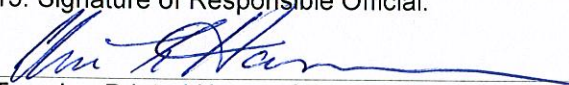
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**APPLICATION FOR INTERNAL COMBUSTION ENGINE (I.C.E.) ONLY**

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4. Facility Address - Location of Equipment (if same as for company, enter "Same"): Blythe Solar Power Project - 8 miles west of Blythe and 2 mi north of Interstate I-10 at exit #232, Airport/Mesa Dr		Facility UTM or Lat/Long: 33°37'55"N, 114°45'45"W	
5. Contact Name/Title: Michael Cressner, Associate Project Development & Permitting		Email Address: <a href="mailto:cressner@solarmillennium.com">cressner@solarmillennium.com</a>	Phone/Fax Nos.: (510) 524-4517 x 324
6. Application is hereby made for Authority To Construct (ATC) and Permit To Operate (PTO) the following equipment: Emergency Generator Engine #2			
7. Application is for: <input checked="" type="checkbox"/> New Construction <input type="checkbox"/> Modification* <input type="checkbox"/> Change of Owner*		For modification or change of owner: *Current Permit Number:    ---	
8. Type of Organization (check one): <input type="checkbox"/> Individual Owner <input type="checkbox"/> Partnership <input checked="" type="checkbox"/> Corporation <input type="checkbox"/> Utility <input type="checkbox"/> Local Agency <input type="checkbox"/> State Agency <input type="checkbox"/> Federal Agency			
9. Distances (feet and direction to closest): <u>3,000</u> , North Fenceline <u>530</u> , South Residence <u>2,100</u> , East Business <u>35,000</u> , East School			
10. General Nature of Business: Solar Energy Generation		11. Principal Product: Solar Energy	
12. Facility Annual Throughput by Quarters (percent): <u>25</u> % <u>25</u> % <u>25</u> % <u>25</u> % Jan-Mar    Apr-Jun    Jul-Sep    Oct-Dec		13. Expected Operating Hours of IC Engine: <u>1</u> <u>1</u> <u>50</u> <u>50</u> Hrs/Day    Days/Wk    Wks/Yr    Total Hrs/Yr	
14. Do you claim Confidentiality of Data (if yes, state nature of data in attachment)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
15. Signature of Responsible Official: 		Official Title: Senior Director, Project Development & Permitting	
Typed or Printed Name of Responsible Official: Alice Harron		Phone Number: (510) 524-4517	Date Signed: 2/3/10
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3. Facility or Business License Name (for equipment location): Blythe Solar Power Project			
4. Facility Address - Location of Equipment (if same as for company, enter "Same"): Blythe Solar Power Project - 8 miles west of Blythe and 2 mi north of Interstate I-10 at exit #232, Airport/Mesa Dr		Facility UTM or Lat/Long: 33°37'55"N, 114°45'45"W	
5. Contact Name/Title: Michael Cressner, Associate Project Development & Permitting		Email Address: <a href="mailto:cressner@solarmillennium.com">cressner@solarmillennium.com</a>	Phone/Fax Nos.: (510) 524-4517 x 324
6. Application is hereby made for Authority To Construct (ATC) and Permit To Operate (PTO) the following equipment: Emergency Generator Engine #3			
7. Application is for: <input checked="" type="checkbox"/> New Construction <input type="checkbox"/> Modification* <input type="checkbox"/> Change of Owner*		For modification or change of owner: *Current Permit Number:    ---	
8. Type of Organization (check one): <input type="checkbox"/> Individual Owner <input type="checkbox"/> Partnership <input checked="" type="checkbox"/> Corporation <input type="checkbox"/> Utility <input type="checkbox"/> Local Agency <input type="checkbox"/> State Agency <input type="checkbox"/> Federal Agency			
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14. Do you claim Confidentiality of Data (if yes, state nature of data in attachment)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
15. Signature of Responsible Official: 		Official Title: Senior Director, Project Development & Permitting	
Typed or Printed Name of Responsible Official: Alice Harron		Phone Number: (510) 524-4517	Date Signed: 2/13/10
- For District Use Only -			
Application Number:	Invoice Number:	Permit Number:	Company/Facility Number: