



**Mojave Desert Air Quality Management District**

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Eldon Heaston, Executive Director

January 28, 2010

Josef Eichhammer, CEO  
Solar Millennium, LLC  
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<b>DOCKET</b>
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DATE <u>JAN 28 2010</u>
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**Preliminary Determination of Compliance for the Blythe Solar Power Project**

Dear Mr. Eichhammer:

The Mojave Desert Air Quality Management District (MDAQMD) has completed the preliminary decision on the proposed Blythe Solar Power Project (BSPP). Enclosed please find the Preliminary Determination of Compliance (PDOC) for BSPP, prepared pursuant to MDAQMD Rule 1306. Written comments on the BSPP PDOC will be accepted through approximately February 28, 2010 (the actual public comment period closure date is a function of when the public notice is published). The MDAQMD expects to issue a Final Determination of Compliance on or about April 1, 2010.

If you have any questions regarding this action or the enclosure, please contact Ms. Roseana Navarro-Brasington at (760) 245-1661, x5706.

Sincerely,

**Alan J. De Salvio**  
Supervising Air Quality Engineer

enclosure

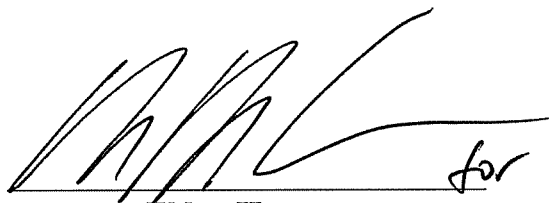
- cc: Chief, Air Permits Office USEPA Region IX
- Chief, Stationary Source Division CARB
- Alan Solomon, CEC
- Will Walters, Aspen Environmental Group
- Robert Redlinger, Chevron Energy Solutions
- Ralph Hollenbacher, Chevron Energy Solutions
- Sara J. Head, AECOM
- Russell Kingsley, AECOM

AJD/mb

BSPP PDOC cover.doc

**Preliminary Decision/  
Determination of Compliance**  
(Preliminary New Source Review Document)

Blythe Solar Power Project – Solar Millennium,  
LLC  
located approximately eight miles west of  
Blythe, CA.

A handwritten signature in black ink, appearing to read 'E. Heaston', with a horizontal line underneath and the word 'for' written in cursive to the right.

**Eldon Heaston**  
**Executive Director**  
Mojave Desert Air Quality Management District

January 28, 2010

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## List of Abbreviations

APCO	Air Pollution Control Officer
ATC	Authority To Construct
ATCM	Airborne Toxic Control Measure
AVAQMD	Antelope Valley Air Quality Management District
BACT	Best Available Control Technology
BSPP	Blythe Solar Power Project
CARB	California Air Resources Board
CATEF	California Air Toxics Emission Factors
CEC	California Energy Commission
CEMS	Continuous Emissions Monitoring System
CERMS	Continuous Emission Rate Monitoring System
CFR	Code of Federal Regulations
CH <sub>4</sub>	Methane
CO	Carbon Monoxide
CTG	Combustion Turbine Generator
dscf	Dry Standard Cubic Feet
ERC	Emission Reduction Credit
°F	Degrees Fahrenheit (Temperature)
FDOC	Final Determination of Compliance
FONA	Federal Ozone Non-Attainment Area
HAP	Hazardous Air Pollutant
HARP	Hot Spots Analysis and Reporting Program
HDPP	High Desert Power Project
HHV	Higher Heating Value
hp	Horsepower
hr	Hour
HRA	Health Risk Assessment
HRSG	Heat Recovery Steam Generator
HTF	Heat Transfer Fluid
LAER	Lowest Achievable Emission Rate
lb	Pound
MACT	Maximum Achievable Control Technology
µg/m <sup>3</sup>	Micrograms per cubic meter
MDAQMD	Mojave Desert Air Quality Management District
MMBtu	Millions of British Thermal Units
n/a	Not applicable
NAAQS	National Ambient Air Quality Standard
NO <sub>2</sub>	Nitrogen Dioxide
NO <sub>x</sub>	Oxides of Nitrogen
NSPS	New Source Performance Standard
O <sub>2</sub>	Molecular Oxygen
OEHHA	Office of Environmental Health Hazard Assessment

OLM	Ozone Limiting Method
o/o	Owner/Operator
PAH	Polycyclic Aromatic Hydrocarbons
PDOC	Preliminary Determination of Compliance
PM <sub>2.5</sub>	Fine Particulate, Respirable Fraction ≤ 2.5 microns in diameter
PM <sub>10</sub>	Fine Particulate, Respirable Fraction ≤ 10 microns in diameter
ppmv	Parts per million by volume, dry
PSD	Prevention of Significant Deterioration
RSP	Rapid Start Process
SCAQMD	South Coast Air Quality Management District
SJVAPCD	San Joaquin Valley Unified Air Pollution Control District
SCLA	Southern California Logistics Airport
SCR	Selective Catalytic Reduction
SIP	State Implementation Plan
SO <sub>2</sub>	Sulfur Dioxide
SO <sub>x</sub>	Oxides of Sulfur
SSG	Solar Steam Generator System
STG	Steam Turbine Generator
TAC	Toxic Air Contaminants
TOG	Total Organic Gases
tpy	Tons per Year
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compounds

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## **1. Introduction**

The Mojave Desert Air Quality Management District (MDAQMD) received two Applications for New Source Review for the Blythe Solar Power Project (BSPP) and a Request for Agency Participation and Application for Certification on September 16, 2009. The MDAQMD deemed the applications complete on October 13, 2009.<sup>1</sup> For clarity and consistency, the MDAQMD will herein refer to this project as the “BSPP” or “Project”. The project is a joint venture proposed by Chevron Energy Solutions and Solar Millennium, LLC. Chevron Energy Solutions will own and operate one half of the project and Solar Millennium, LLC will own and operate one half of the project. This NSR document pertains to the BSPP portion owned and operated by Solar Millennium, LLC.

As required by MDAQMD Rule 1306(E)(1)(a), this PDOC reviews the proposed project, evaluating worst-case or maximum air quality impacts, and establishes control technology requirements and related air quality permit conditions. This PDOC represents MDAQMD’s preliminary pre-construction compliance review of the proposed project, to determine whether construction and operation of the proposed project will comply with all applicable MDAQMD rules and regulations.

## **2. Project Location**

The Project is a solar thermal electric generating facility proposed on approximately 9,400 acres in unincorporated Riverside County, California approximately eight miles west of Blythe, CA, and 2 miles north of Interstate I-10 on land owned by the Federal Government and managed by the Bureau of Land Management (BLM). The project site has been designated unclassified for the Federal 8-hour ozone ambient air quality standard (NAAQS) and for the Federal PM<sub>10</sub> ambient air quality standards (NAAQS). The area is attainment or unclassified for all other Federal standards and averaging times. The project site has been designated non-attainment and classified as moderate for the State ozone ambient air quality standard (CAAQS) and is also non-attainment for the State PM<sub>10</sub> ambient air quality standards (CAAQS). The area is attainment or unclassified for all other State standards. The proposed site consists of flat undeveloped desert terrain.

## **3. Description of Project**

The proposed facility will consist of four 250 MW (gross) solar units. The Project uses parabolic trough solar thermal technology to generate electricity. In each power generating unit or power block, the proposed technology uses a steam turbine generator (STG) fed from a solar steam generator (SSG). SSGs receive heat transfer fluid (HTF) from solar thermal equipment comprised of arrays of parabolic mirrors that collect energy from the sun. Chevron will own and operate two power block units and Solar Millennium will own and operate two power block units.

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<sup>1</sup> A. De Salvio (MDAQMD) to A. Solomon (CEC), October 13, 2009.



The four power blocks share a main office building, a central switchyard, a maintenance/warehouse facility, a parking lot, access roads and two land treatment units to treat HTF contaminated soil. Units 1 and 2 and Units 3 and 4 share water treatment and storage facilities. Each of the four power blocks will consist of a solar array field, auxiliary boiler, steam turbine, and HTF freeze protection system, emergency generator set, emergency fire pump system, an HTF ullage/expansion system with carbon adsorption, a cooling tower, electrical interconnections, and several small adjacent buildings for support services.

Note that the project construction emissions and non-stationary source emissions have not been included or evaluated in this document.

Solar Millennium is proposing to install:

- two (2) Tier III diesel fueled emergency fire pump engines rated at 300 hp
- two (2) Tier II diesel fueled emergency generator set rated at 2,922 hp
- two (2) auxiliary natural gas fired boilers each rated at - 35 MMBtu/hr
- two (2) HTF natural gas fired heaters for freeze protection each rated at - 35 MMBtu/hr
- two (2) HTF ullage/expansion tanks with carbon adsorption systems
- two (2) cooling towers each with drift eliminator

The internal combustion engines will meet all applicable California Air Resources Board (CARB) and U.S. Environmental Protection Agency (USEPA) Tier emissions standards depending upon engine size, year of manufacture, and service category. Additionally, the engines will meet the requirements of the CARB Airborne Toxic Control Measure (ATCM) for Stationary Compression Ignition Engines.

Proposed equipment specifications, for emissions sources, are summarized as follows:

#### **Auxiliary Boilers (2)**

- Manufacturer: Nebraska Boiler (or equivalent)
- Model: D-Type Watertube
- Fuel: Natural Gas
- Rated Heat Input: 35 MMBtu/hr
- Fuel consumption: ~33,333 scf/hr (Gas HHV 1050 Btu/scf)
- Exhaust flow: 5080 dscfm, at 100% load
- Exhaust temperature: ~300 degrees Fahrenheit (°F)
- Low NO<sub>x</sub> burner (9 ppmv)

#### **HTF Freeze Protection Heaters (2)**

- Manufacturer: FLAGSOL GMBH (or equivalent)

- Model: To Be Determined
- Fuel: Natural Gas
- Rated Heat Input: 35 MMBtu/hr
- Fuel consumption: ~33,333 scf/hr (Gas HHV 1050 Btu/scf)
- Exhaust flow: To be Determined
- Exhaust temperature: To be Determined
- Low NO<sub>x</sub> burner (9 ppmv)

**Carbon Adsorption System (2)**

- Two carbon beds in series – control efficiency 98%
- Manufacturer: To be Determined

**Internal Combustion Engines – Fire Pump (2)**

- Manufacturer: To be Determined
- Emission Standard: Tier III
- Fuel: Diesel or distillate oil (15 ppmw S)
- Rated horsepower: 300 hp
- Fuel consumption: ~15.3 gallons per hour (gph)

**Internal Combustion Engines - Emergency Electrical Generators (2)**

- Manufacturer: Cummins
- Model: QSK60-G6
- Emissions Standard: Tier II, Engine Family ACEXL060.AAD
- Fuel: Diesel or distillate oil (15 ppm S)
- Rated horsepower: ~ 2,922 hp
- Fuel consumption: ~ 141.4 gallons per hour (gph)

**Cooling Towers (2)**

- Manufacturer: To be determined
- Number of Cells: 2
- Number of Fans: To be determined

- Water circulation rate: ~ 6,034 gallons per minute (gpm)
- Drift rate: less than or equal to 0.0005%
- Expected average TDS: ~ 2,000 ppmw

The only fuels to be combusted on-site will be California-certified low-sulfur low-aromatic diesel fuel used by the emergency fire pump and the emergency generator engines, and pipeline-quality natural gas for the auxiliary boilers and HTF freeze protection heaters.

**Overall Project Emissions**

Operation of the Project will result in emissions to the atmosphere of both criteria and toxic air pollutants from the proposed auxiliary boilers, HTF freeze protection heaters, fire pumps, emergency generator engines, and cooling towers, the HTF ullage/expansion tank equipped with 98% control carbon adsorption system and fugitive losses from the HTF system. Criteria pollutant emissions will consist primarily of nitrogen oxides (NO<sub>x</sub>), carbon monoxide (CO), volatile organic compounds (VOCs), sulfur oxides (SO<sub>x</sub>), sub 10-micron particulate matter (PM10), and sub 2.5-micron particulate matter (PM2.5). Air toxic pollutants will consist of a combination of toxic gases and toxic particulate matter species. Table 5 lists the pollutants that may potentially be emitted from the proposed Project.<sup>2</sup>For natural gas-fired equipment, emissions calculations are based on the Higher Heating Value (HHV) of the natural gas fuel. Project emissions limited by permit condition based on fuel usage for the auxiliary boilers and HTF freeze protection heaters and by hours for the emergency generator and fire pump internal combustion engines. Emissions limits have been applied by permit condition to the HTF ullage/expansion tank and associated carbon adsorption units. The emissions calculations are presented in the Appendix.

**Maximum Annual Emissions**

Table 1 presents maximum annual facility operational emissions (Table 1A presents maximum annual facility hazardous air pollutant (HAP) emissions). For this project, PM<sub>2.5</sub> emissions are assumed to be equal to PM<sub>10</sub> emissions, which were calculated using a PM<sub>2.5</sub> emissions factor.

<i>Table 1 – BSPP- Solar Millennium Maximum Annual Operational Emissions</i>				
(All emissions presented in tons per year – two power block units, VOC fugitive emissions included)				
NOx	SOx	CO	PM10	VOC
2.155	0.719	3.016	1.745	2.352

<sup>2</sup> “Application for Certification Blythe Solar Power Project, September 2009.

**Table 1A – BSPP – Solar Millennium Maximum Annual HAP Emissions – 2 powerblocks, HTF fugitive emissions NOT included**

Pollutant	Tons/Year	Threshold (Tons/Year)
7,12-Dimethylbenz(a)anthracene	1.13E-06	10
Acenaphthene	1.28E-07	10
Acenaphthylene	1.28E-07	10
Anthracene	1.70E-07	10
Benz(a)anthracene	1.28E-07	10
Benzene	3.00E-01	10
Benzo(a)pyrene	8.50E-08	10
Benzo(b)fluoranthene	1.28E-07	10
Benzo(g,h,i)perylene	8.50E-08	10
Benzo(k)fluoranthene	1.28E-07	10
Biphenyl	3.00E-05	10
Chrysene	1.28E-07	10
Chloroform	1.12E-01	10
Chromium (Hexavalent)	4.95E-08	10
Copper	4.92E-07	10
Dibenz(a,h)anthracene	8.50E-08	10
Dichlorobenzene	8.50E-05	10
Diesel Particulate Matter	5.32E-02	10
Fluoranthene	2.13E-07	10
Formaldehyde	5.31E-03	10
Hexane	1.28E-01	10
Indeno(1,2,3-cd)pyrene	1.28E-07	10
Naphthalene	4.32E-05	10
Phenanthrene	1.20E-06	10
Pyrene	3.54E-07	10
Toluene	2.41E-04	10
Vanadium	2.65E-07	10
Zinc	1.21E-05	10
<b>Total</b>	<b>5.98E-01</b>	<b>25</b>

\*\* Note: Threshold is 10 tpy per HAP and 25 tpy combined

## Maximum Daily Emissions

Table 2 presents maximum daily facility emissions calculated under worst case conditions. Please see the Appendix for emissions calculations and limits.

<i>Table 2 – BSPP – Solar Millennium Maximum Daily Operational Emissions</i>				
(All emissions presented in pounds per day – two power block units, VOC fugitive emissions included)				
NOx	SOx	CO	PM10	VOC
65.388	18.261	44.763	25.343	20.545

## 5. Control Technology Evaluation/BACT Determination

Best Available Control Technology (BACT) is required for all new permit units that emits, or has the potential to emit, 25 pounds per day at any new facility that emits, or has the potential to emit, 25 tons per year or more of any non-attainment pollutant or its precursors (MDAQMD Rule 1303(A)). The proposed project site is state non-attainment for ozone and PM<sub>10</sub> and their precursors and unclassified for federal standards for ozone and PM<sub>10</sub>. Based on the proposed project's maximum emissions as calculated in §4 above, the project triggers only BACT for the proposed internal combustion engines, which have the potential to emit more than 25 pounds per day of NO<sub>x</sub>.

The applicant proposes to meet BACT for all emissions units and has submitted an analysis that evaluates the control technology for these pollutants, trace organics, and trace metals.<sup>3</sup> The MDAQMD accepts the proposed emission limits as compliant with all applicable air quality regulations. The proposed internal combustion engine emission rates are at least as stringent as applicable federal regulations such as the applicable New Source Performance Standards (NSPS) for Stationary Compression Ignition Internal Combustion Engines (40 CFR Part 60 Subpart IIII). The MDAQMD deems the proposed limits for internal combustion engines to meet BACT.

### *Proposed Limits for each 35MMBtu/hr Natural Gas Fired Boiler and for each 35MMBtu/hr HTF Freeze Protection Heater*

Pollutant	Limit	Control
NO <sub>x</sub>	9.0 ppm at 3% O <sub>2</sub>	Ultra low-NO <sub>x</sub> burner
VOC	None	PUC quality natural gas
PM	None	PUC quality natural gas
SO <sub>x</sub>	None	PUC quality natural gas
CO	50 ppm at 3% O <sub>2</sub>	Ultra low-NO <sub>x</sub> burner

### *Proposed Limit for each Carbon Adsorption System (Expansion Tank/Ullage Vent System)*

Presumptive MACT for VOC/air toxic emissions from the HTF expansion tank/ullage vent system is carbon adsorption.

<sup>3</sup> *ibid*

Pollutant	Control
VOC	Carbon adsorption system with at least 85% control efficiency.
NO <sub>x</sub> , SO <sub>x</sub> , CO, PM	Not Applicable

The proposed 2 stage condenser/carbon adsorption system meets presumptive MACT and provides for 98% control of VOC emissions. VOC emissions from the system will not exceed 1.5 lb/day from each of the four proposed vents.

***Proposed Limit for each Cooling Tower***

Pollutant	Control
PM	Drift rate not to exceed 0.0005%
VOC	Not Applicable
NO <sub>x</sub> , SO <sub>x</sub> , CO	Not Applicable

The proposed cooling towers will have drift eliminators with vendor-guaranteed PM control efficiency of 0.0005%. The facility will be required to have a functional hydrocarbon detection device and to repair leaks in a timely manner. The proposed cooling towers meet the above requirements.

***BACT for each Internal Combustion Engine – Emergency Generator and Fire Pump (total of eight engines)***

The proposed engines are compliant with the applicable NSPS for Stationary Compression Ignition Internal Combustion Engines (40 CFR Part 60 Subpart IIII) and with the applicable California State Airborne Toxic Control Measure for Stationary Compression Ignition Engines (17 CCR 93115). Compliance with the NSPS and ATCM is determined to be BACT for the fire pump and emergency generator engines and is found to be an engine meeting the current tier requirements. The proposed engines meet this requirement.

Proposed Engine – Fire Pump	NO <sub>x</sub> + NMHC (g/bhp-hr)	PM (g/bhp-hr)	CO (g/bhp-hr)	SO <sub>x</sub>
300 hp Tier III	3.0	0.15	2.6	15 ppm S fuel

Proposed Engine – Emergency Generator	NO <sub>x</sub> + NMHC (g/bhp-hr)	PM (g/bhp-hr)	CO (g/bhp-hr)	SO <sub>x</sub>
2,922 hp Tier II	4.0	0.07	.37	15 ppm S fuel

**6. PSD Class I Area Protection**

The Clean Air Act (CAA) established the PSD permit program to prevent areas that currently have clean air from significant deterioration. The PSD permit program limits emissions by requiring permits for major stationary air pollution sources. The BSPP did not evaluate the

visibility reduction potential of project emissions on Prevention of Significant Deterioration (PSD) Class I areas. The BSPP is not a major stationary source, is not subject to the PSD requirements Title I, Part C of the Federal Clean Air Act (42 U.S.C. §§7470-7492), and therefore is in compliance with the Class I Area protection requirements of Regulation XIII.

## 7. Air Quality Impact Analysis

BSPP performed the ambient air quality standard impact analyses for CO, PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub> and NO<sub>2</sub> emissions. The MDAQMD approves of the analysis methods used in these impact analyses and the findings of these impact analyses.

### Findings

The impact analysis calculated a maximum incremental increase for each pollutant for each applicable averaging period, as shown in Table 4 below. When added to the maximum recent background concentration, the BSPP did not exceed the most stringent (or lowest) standard for any pollutant except PM<sub>10</sub>, which is already in excess of the State standard without the project.

*Table 4 – BSPP – Solar Millennium (2 power blocks) Maximum Ambient Air Quality Impacts*

Pollutant	Project Impact	Background	Total Impact	Federal Standard	State Standard
	<i>All values in <math>\mu\text{g}/\text{m}^3</math></i>				
CO (1 hour)	94.5	2645	2739.5	40,000	23,000
CO (8 hour)	32.4	1035	1067.4	10,000	10,000
PM <sub>10</sub> (24 hour)	9.28	162.0	171.3	150	50
PM <sub>10</sub> (annual)	0.80	30.0	30.8	n/a	20
PM <sub>2.5</sub> (24 hour)	0.82	27.0	27.8	35	n/a
PM <sub>2.5</sub> (annual)	0.08	10.6	10.7	15	12
SO <sub>2</sub> (1 hour)	0.19	503	503.2	n/a	665
SO <sub>2</sub> (3 hour)	0.15	434.9	435.1	1300	n/a
SO <sub>2</sub> (24 hour)	0.003	99.6	99.6	365	105
SO <sub>2</sub> (annual)	0.0003	5.2	5.2	80	n/a
NO <sub>2</sub> (1 hour)	91.5	174.9	266.4	n/a	339
NO <sub>2</sub> (annual)	0.02	22.6	22.6	100	57

### Inputs and Methods

Maximum emissions for four power blocks under normal operating conditions were modeled. Emissions from two of the power blocks, those owned by Solar Millennium, are presented above in Table 4. A three-year (2002 through 2004) sequential hourly meteorological data set from the meteorological tower at the Blythe Airport was used. Mixing heights were determined from Desert Rock, Nevada data. For determining NO<sub>2</sub> impacts using a NO<sub>x</sub> background, the hourly Ozone Limiting Method (OLM) for conversion of NO<sub>x</sub> to NO<sub>2</sub> was used.

The AERMOD dispersion model (version 07026) was used to estimate ambient concentrations resulting from BSPP – Solar Millennium emissions. The dispersion modeling was performed according to USEPA requirements.

## **8. Health Risk Assessment and Toxics New Source Review**

BSPP – Solar Millennium performed a Health Risk Assessment (HRA) for carcinogenic, non-carcinogenic chronic, and non-carcinogenic acute toxic air contaminants. The MDAQMD approves of the HRA methods and findings.

### ***Findings***

The HRA calculated a peak 70-year cancer risk of 0.38 per million. The calculated peak 70-year residential cancer risk is less than 1.0 per million (for all receptors). The maximum non-cancer chronic and acute hazard indices are both less than the significance level of 1.0 (0.00013 and 0.042, respectively). As these risks make the project a “low priority” project, and as the project emits less than 10 tons per year of every single HAP and 25 tons per year of any combination of HAPs, no further toxics new source review is required for this project (Rule 1320(E)(2)(b)). Please refer to Table 1A above for a summary of project HAP emissions.

### ***Inputs and Methods***

BSPP will emit toxic air contaminants as products of natural gas combustion, diesel fuel combustion, venting of the ullage tank, equipment wear and cooling tower emissions. Combustion emissions were estimated using emission factors from OEHHA and USEPA, and a speciation profile for polycyclic aromatic hydrocarbons (PAH) was derived from the California Air Toxics Emission Factors (CATEF) database. Venting of VOC from the HTF ullage tank is controlled via carbon adsorption with a 98% control efficiency. Cooling tower emissions were estimated using USEPA emission factors for evaporative emissions, engineering calculation for drift droplets, and water quality estimations for water supplied from onsite groundwater wells.

The AERMOD (version 07026) dispersion model (as incorporated into HARP) was used to estimate ambient concentrations of toxic air pollutants. The Hot Spots and Reporting Program (HARP, Version 1.4a) risk assessment model was used to estimate health risks due to exposure to emissions. The AERMOD meteorological dataset was used for the risk analysis.

## **9. Offset Requirements**

MDAQMD Regulation XIII – *New Source Review* requires offsets for non-attainment pollutants and their precursors emitted by large, new sources. The BSPP does not have the PTE 25 tons or more of NO<sub>x</sub>, SO<sub>x</sub> or VOC or 15 tons per year or more of PM<sub>10</sub>. Offsets are not required for the BSPP.



<i>Table 5 - Comparison of BSPP – Solar Millennium Emissions with Offset Thresholds</i>				
All emissions in tons per year				
	<b>NO<sub>x</sub></b>	<b>VOC</b>	<b>SO<sub>x</sub></b>	<b>PM<sub>10</sub></b>
Maximum Annual Potential to Emit	2	1	0	4
Offset Threshold	25	25	25	15

## 10. Applicable Regulations and Compliance Analysis

Selected MDAQMD Rules and Regulations will apply to the proposed project:

### ***Regulation II – Permits***

Rule 212 – Standards for Approving Permits establishes baseline criteria for approving permits by the MDAQMD for certain projects. In accordance with these criteria, the proposed project accomplishes all required notices and emission limits through the PDOC and complying with stringent emission limitations set forth on permits.

### ***Regulation IV - Prohibitions***

Rule 401 – *Visible Emissions* limits visible emissions opacity to less than 20 percent (or Ringelmann No. 1). During start up of all equipment, visible emissions may exceed 20 percent opacity. However, emissions of this opacity are not expected to last three minutes or longer. In normal operating mode, visible emissions are not expected to exceed 20 percent opacity.

Rule 402 – *Nuisance* prohibits facility emissions that cause a public nuisance. The proposed turbine power train exhaust is not expected to generate a public nuisance due to the sole use of pipeline-quality natural gas as a fuel. In addition, due to the location of the proposed project, no nuisance complaints are expected.

Rule 403 – *Fugitive Dust* specifies requirements for controlling fugitive dust. The proposed project does not include any significant sources of fugitive dust so the proposed project is not expected to violate Rule 403.

Rule 404 – *Particulate Matter – Concentration* specifies standards of emissions for particulate matter concentrations. The proposed project will be required to comply with Rule 404.

Rule 405 – *Solid Particulate Matter - Weight* limits particulate matter emissions from fuel combustion on a mass per unit combusted basis. The proposed project will be required to comply with Rule 405.

Rule 408 – *Circumvention* prohibits hidden or secondary rule violations. The proposed project is not expected to violate Rule 408.

Rule 409 – *Combustion Contaminants* limits total particulate emissions on a density basis. The proposed project will be required to comply with Rule 409.

Rule 430 – *Breakdown Provisions* requires the reporting of breakdowns and excess emissions. The proposed project will be required to comply with Rule 430.

Rule 431 – *Sulfur Content in Fuels* limits sulfur content in gaseous, liquid and solid fuels. The proposed project will be required to use fuels which comply with Rule 431.

### ***Regulation IX – Standards of Performance for New Stationary Sources***

Regulation IX includes by reference the NSPS for Stationary Compression Ignition Internal Combustion Engines (40 CFR 60 Subpart IIII) and for Small Industrial-Commercial-Institutional Steam Generating Units (40 CFR 60 Subpart Dc). Permit conditions for the proposed project will establish limits which are in compliance with the compression ignition engine NSPS referenced in Regulation IX.

### ***Regulation XI - Source Specific Standards***

Rule 1113 - *Architectural Coatings* limits VOC content of applied architectural coatings. The proposed project will be required to use compliant coatings.

Rule 1158 – *Electric Power Generating Facilities*. This rule is only applicable to units located within the FONA. Since the BSPP is located outside of the FONA, this rule does not apply.

Rule 1157 – *Boilers and Process Heaters*. This rule is only applicable to units located within the FONA. Since the BSPP is located outside of the FONA, this rule does not apply.

### ***Regulation XII – Federal Operating Permits***

Regulation XII contains requirements for sources which must have a federal operating permit and an acid rain permit. The proposed project will not be required to submit applications for a federal operating permit because this facility is not a major source nor is a federal operating permit required under any applicable federal regulation.

### ***Regulation XIII – New Source Review***

Rule 1300 – *General* ensures that Prevention of Significant Deterioration (PSD) requirements apply to all projects. The proposed project does not have the PTE to emit more than the offset emissions thresholds (table 5) and therefore is not a major source of emissions. As this facility is not a major source it is not subject to the PSD requirements Title I, Part C of the Federal Clean Air Act (42 U.S.C. §§7470-7492) which apply to major sources only and therefore is in compliance with the PSD requirements of Rule 1300.

Rule 1302 – *Procedure* requires certification of compliance with the Federal Clean Air Act, applicable implementation plans, and all applicable AVAQMD rules and regulations. The ATC

application package for the proposed project includes sufficient documentation to comply with Rule 1302(D)(5)(b)(iii). Permit conditions for the proposed project will require compliance with Rule 1302(D)(5)(b)(iv).

Rule 1303 – *Requirements* requires BACT major new sources and permit units which have the PTE to emit more than 25 pounds per day of criteria pollutants. As this facility is not a major source BACT is only required for the internal combustion engines which have the PTE to emit more than 25 pounds per day of NO<sub>x</sub>.

Rule 1305 – *Emissions Offsets* this facility does not have the PTE to emit more than the offset emissions thresholds (table 5) and therefore offsets are not required.

Rule 1306 – *Electric Energy Generating Facilities* places additional administrative requirements on projects involving approval by the California Energy Commission (CEC). The proposed project will not receive an ATC without CEC's approval of their Application for Certification, ensuring compliance with Rule 1306.

### ***Maximum Achievable Control Technology Standards***

Health & Safety Code §39658(b)(1) states that when USEPA adopts a standard for a toxic air contaminant pursuant to §112 of the Federal Clean Air Act (42 USC §7412), such standard becomes the Airborne Toxic Control Measure (ATCM) for the toxic air contaminant. Once an ATCM has been adopted it becomes enforceable by the MDAQMD 120 days after adoption or implementation (Health & Safety Code §39666(d)). USEPA has not to date adopted a Maximum Achievable Control Technology (MACT) standard that is applicable to the proposed project. Should USEPA adopt an applicable MACT standard in the future, the MDAQMD will be required to enforce said MACT as an ATCM on the proposed project. MACT is also required for each major source of toxic air contaminants. BSPP will not emit more than ten tons per year of any individual toxic air contaminant, and will not collectively emit more than 25 tons per year of all toxic air contaminants, so MACT is not required.

## **11. Conclusion**

The MDAQMD has reviewed the proposed project's Application for New Source Review. The District has determined that the proposed project, after application of the permit conditions given below, will comply with all applicable MDAQMD Rules and Regulations. This PDOC will be released for public comment and publicly noticed on or after January 28, 2010. Written comments will be accepted for thirty days from the date of publication of the public notice. A Final Determination of Compliance shall be prepared no later than forty five days after the end of the public comment period (approximately April 1, 2010).

Please forward any comments on this document to:

Eldon Heaston  
Executive Director  
Mojave Desert Air Quality Management District  
14306 Park Avenue  
Victorville, CA 92392

## 12. Permit Conditions

The following permit conditions will be placed on the Authorities to Construct (ATC) for the project. Separate permits will be issued for each auxiliary boiler, HFT heater, HTF ullage/expansion tank, carbon adsorption system, cooling tower, fire pump internal combustion engine and emergency internal combustion engine. The electronic version of this document contains a set of conditions that are essentially identical for each of multiple pieces of equipment, differing only in MDAQMD permit reference numbers. The signed and printed ATCs will have printed permits (with descriptions and conditions) in place of condition language listings.

### *Auxiliary Boilers Authority to Construct Conditions*

*[Two - 35 MMBtu/hr Natural Gas Fired Auxiliary Boiler, Application Number: 0010748 and 0010755]*

1. Operation of this equipment shall be conducted in compliance with all data and specifications submitted with the application under which this permit is issued unless otherwise noted below.
2. This equipment shall be exclusively fueled with natural gas and shall be operated and maintained in strict accord with the recommendations of its manufacturer or supplier and/or sound engineering principles.
3. This equipment is subject to the federal NSPS codified at 40 CFR Part 60, Subparts A (General Provisions) and Dc (Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units).
4. Emissions from this equipment shall not exceed the following hourly emission limits at any firing rate, verified by fuel use and compliance tests:
  - a.  $\text{NO}_x$  as  $\text{NO}_2$ :
    1. 0.389 lb/hr operating at 100% load (based on 9.0 ppmvd corrected to 3%  $\text{O}_2$  and averaged over one hour)
    2. 0.097 lb/hr operating at 100% load (based on 9.0 ppmvd corrected to 3%  $\text{O}_2$  and averaged over one hour)
  - b. CO:
    1. 1.322 lb/hr operating at 100% load (based on 50 ppmvd corrected to 3%  $\text{O}_2$  and averaged over one hour)

2. 0.331 operating at 25% load (based on 50 ppmvd corrected to 3% O<sub>2</sub> and averaged over one hour)
  - c. VOC as CH<sub>4</sub>:
    1. 0.175 lb/hr operating at 100% load
    2. 0.044 lb/hr operating at 25% load
  - d. SO<sub>x</sub> as SO<sub>2</sub>:
    1. 0.183 lb/hr operating at 100% load
    2. 0.046 lb/hr operating at 25% load
  - e. PM<sub>10</sub>:
    1. 0.700 lb/hr operating at 100% load
    2. 0.175 lb/hr operating at 25% load
5. This equipment shall be operated only on PUC pipeline quality natural gas and shall be equipped with a non-resettable fuel meter. Fuel used shall not exceed:
    - a. 54,166,125 million cubic feet of natural gas per rolling twelve months; and
    - b. 191,665 cubic feet of natural gas per calendar day.
  6. The o/o shall maintain an operations log for this equipment on-site and current for a minimum of five (5) years, and said log shall be provided to District personnel on request. The operations log shall include the following information at a minimum:
    - a. Total operation time (hours per day, hours per year);
    - b. Maximum hourly, maximum daily, total quarterly, and total calendar year emissions of NO<sub>x</sub>, CO, PM<sub>10</sub>, VOC and SO<sub>x</sub> (including calculation protocol); and,
    - c. Any permanent changes made to the equipment that would affect air pollutant emissions, and indicate when changes were made.
  7. The o/o shall perform annual compliance tests on this equipment in accordance with the MDAQMD Compliance Test Procedural Manual. The test report shall be submitted to the District no later than six weeks prior to the expiration date of this permit. The following compliance tests are required:
    - a. NO<sub>x</sub> as NO<sub>2</sub> in ppmvd at 3% oxygen and lb/hr (measured per USEPA Reference Methods 19 and 20).
    - b. VOC as CH<sub>4</sub> in ppmvd at 3% oxygen and lb/hr (measured per USEPA Reference Methods 25A and 18).
    - c. CO in ppmvd at 3% oxygen and lb/hr (measured per USEPA Reference Method 10).
    - d. Flue gas flow rate in dscf per minute.
  8. The o/o shall perform an initial compliance test on this equipment in accordance with the MDAQMD Compliance Test Procedural Manual within 180 days of initial start up. The test report shall be submitted to the District within 6 weeks of performance of the test. The initial compliance test shall be for all items listed in condition 7 above, in addition to:
    - a. SO<sub>x</sub> as SO<sub>2</sub> in ppmvd at 3% oxygen and lb/hr.
    - b. PM<sub>10</sub> in mg/m<sup>3</sup> at 3% oxygen and lb/hr (measured per USEPA Reference Methods 5 and 202 or CARB Method 5).
    - c. Opacity (measured per USEPA reference Method 9).

***HTF Heater Authority to Construct Conditions***

*[Two - 35 MMBtu/hr Natural Gas Fired HTF Heater, Application Number: 0010749 and 0010756]*

1. Operation of this equipment shall be conducted in compliance with all data and specifications submitted with the application under which this permit is issued unless otherwise noted below.
2. This equipment shall be exclusively fueled with natural gas and shall be operated and maintained in strict accord with the recommendations of its manufacturer or supplier and/or sound engineering principles.
3. This equipment is subject to the federal NSPS codified at 40 CFR Part 60, Subparts A (General Provisions) and Dc (Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units).
4. Emissions from this equipment shall not exceed the following hourly emission limits at any firing rate, verified by fuel use and annual compliance tests:
  - a. NO<sub>x</sub> as NO<sub>2</sub> 0.391 lb/hr (based on 9.0 ppmvd corrected to 3% O<sub>2</sub> and averaged over one hour)
  - b. CO 1.322 lb/hr (based on 50 ppmvd corrected to 3% O<sub>2</sub> and averaged over one hour)
  - c. VOC as CH<sub>4</sub> 0.175 lb/hr
  - d. SO<sub>x</sub> as SO<sub>2</sub> 0.183 lb/hr
  - e. PM<sub>10</sub> 0.700 lb/hr
5. This equipment hours of operation shall not exceed 500 hours per rolling twelve months and more than 10 hours per calendar day.
6. The o/o shall maintain an operations log for this equipment on-site and current for a minimum of five (5) years, and said log shall be provided to District personnel on request. The operations log shall include the following information at a minimum:
  - a. Total operation time (hours per month, by month);
  - b. Maximum hourly, maximum daily, total quarterly, and total calendar year emissions of NO<sub>x</sub>, CO, PM<sub>10</sub>, VOC and SO<sub>x</sub> (including calculation protocol); and,
  - c. Any permanent changes made to the equipment that would affect air pollutant emissions, and indicate when changes were made.
7. The o/o shall perform annual compliance tests on this equipment in accordance with the MDAQMD Compliance Test Procedural Manual. The test report shall be submitted to the District no later than six weeks prior to the expiration date of this permit. The following compliance tests are required:
  - a. NO<sub>x</sub> as NO<sub>2</sub> in ppmvd at 3% oxygen and lb/hr (measured per USEPA Reference Methods 19 and 20).
  - b. VOC as CH<sub>4</sub> in ppmvd at 3% oxygen and lb/hr (measured per USEPA Reference Methods 25A and 18).
  - c. CO in ppmvd at 3% oxygen and lb/hr (measured per USEPA Reference Method 10).
  - d. Flue gas flow rate in dscf per minute.

8. The o/o shall perform an initial compliance test on this equipment in accordance with the MDAQMD Compliance Test Procedural Manual within 180 days of initial start up. The test report shall be submitted to the District within 6 weeks of performance of the test. The initial compliance test shall be for all items listed in condition 7 above, in addition to:
  - a. SO<sub>x</sub> as SO<sub>2</sub> in ppmvd at 3% oxygen and lb/hr.
  - b. PM<sub>10</sub> in mg/m<sup>3</sup> at 3% oxygen and lb/hr (measured per USEPA Reference Methods 5 and 202 or CARB Method 5).
  - c. Opacity (measured per USEPA reference Method 9).

***(Ullage Vent System) Authority to Construct Conditions***

*[Two – HTF ullage expansion tank, Application Number: 0010750 and 0010757]*

1. This tank stores HTF, specifically the condensable fraction of the vapors vented from the ullage system.
2. This tank must be properly maintained at all times.
3. This tank shall be operated at all times with the carbon adsorption system under District permit [To be Determined].

***Carbon Adsorption System Authority to Construct Conditions***

*[Two – carbon adsorption systems, one serving each HTF ullage tank, Application Number: 0010751 and 001078]*

1. Operation of this equipment shall be conducted in accordance with all data and specifications submitted with the application under which this permit is issued unless otherwise noted below.
2. This carbon adsorption system shall provide 98% control efficiency of VOC emissions vented from the HTF ullage expansion tank under District Permit [to be determined].
3. The o/o shall prepare and submit a monitoring and change-out plan for the carbon adsorptions system which ensures that the system is operating at optimal control efficiency at all times for District approval prior to start up.
4. This equipment shall be properly maintained and kept in good operating condition at all times.
5. This equipment must be in use and operating properly at all times the HTF ullage expansion tank is venting.
6. Total emissions of VOC to the atmosphere shall not exceed 1.5 lbs/day and 300 lbs/year calculated based on the most recent monitoring results.
7. During operation, o /o shall monitor VOC breakthrough between the first and second carbon beds. Monitoring shall be conducted using a flame ionization detector (FID), photoionization detector (PID), or other method determined to be equivalent by this District. Monitoring is to be performed on a weekly basis. Initial test shall be submitted to the District within 180 days after startup.
8. FID, PID or equivalent shall be considered invalid if not calibrated on the day of required use.
9. The o/o shall maintain current and on-site for the duration of the project a log of FID/PID readings, which shall be provided to District personnel upon request, with date and time the monitoring was conducted.

10. Prior to January 31 of each new year, the o/o of this unit shall submit to the District a summary report of all benzene and VOC emissions (as hexane).

***Cooling Tower Authority to Construct Conditions***

*[Two Cooling Towers, Application Number: 0010752 and 0010759]*

1. Operation of this equipment shall be conducted in compliance with all data and specifications submitted with the application under which this permit is issued unless otherwise noted below.
2. This equipment shall be operated and maintained in strict accord with the recommendations of its manufacturer or supplier and/or sound engineering principles.
3. The drift rate shall not exceed 0.0005 percent with a maximum circulation rate of 6,034 gallons per minute. The maximum hourly PM<sub>10</sub> emission rate shall not exceed 0.061 pounds per hour, as calculated per the written District-approved protocol.
4. The operator shall perform weekly tests of the blow-down water total dissolved solids (TDS). The TDS shall not exceed 2000 ppmv on a calendar monthly basis. The operator shall maintain a log which contains the date and result of each blow-down water test in TDS ppm, and the resulting mass emission rate. This log shall be maintained on site for a minimum of five (5) years and shall be provided to District personnel on request.
5. The operator shall conduct all required cooling tower water tests in accordance with a District-approved test and emissions calculation protocol. Thirty (30) days prior to the first such test the operator shall provide a written test and emissions calculation protocol for District review and approval.
6. A maintenance procedure shall be established that states how often and what procedures will be used to ensure the integrity of the drift eliminators. This procedure is to be kept on-site and available to District personnel on request.

***Emergency Generator Authority to Construct Conditions***

*[Two – 2,922 hp emergency IC engine each driving a generator, Application Number: 0010753 and 0010760]*

1. This equipment shall be installed, operated and maintained in strict accord with those recommendations of the manufacturer/supplier and/or sound engineering principles which produce the minimum emissions of contaminants. Unless otherwise noted, this equipment shall also be operated in accordance with all data and specifications submitted with the application for this permit.
2. This unit shall only be fired on ultra-low sulfur diesel fuel, whose sulfur concentration is less than or equal to 0.0015% (15 ppm) on a weight per weight basis per CARB Diesel or equivalent requirements.



3. A non-resettable hour meter with a minimum display capability of 9,999 hours shall be installed and maintained on this unit to indicate elapsed engine operating time. (Title 17 CCR §93115.10(e)(1)).
4. This unit shall be limited to use for emergency power, defined as in response to a fire or when commercially available power has been interrupted. In addition, this unit shall be operated no more than 50 hours per year for testing and maintenance, excluding compliance source testing. Time required for source testing will not be counted toward the 50 hour per year limit.
5. The owner/operator (o/o) shall maintain a operations log for this unit current and on-site, either at the engine location or at a on-site location, for a minimum of two (2) years, and for another year where it can be made available to the District staff within 5 working days from the District's request, and this log shall be provided to District, State and Federal personnel upon request. The log shall include, at a minimum, the information specified below:
  - a. Date of each use and duration of each use (in hours);
  - b. Reason for use (testing & maintenance, emergency, required emission testing);
  - c. Calendar year operation in terms of fuel consumption (in gallons) and total hours; and,
  - d. Fuel sulfur concentration (the o/o may use the supplier's certification of sulfur content if it is maintained as part of this log).
6. This unit shall not be used to provide power during a voluntary agreed to power outage and/or power reduction initiated under an Interruptible Service Contract (ISC); Demand Response Program (DRP); Load Reduction Program (LRP) and/or similar arrangement(s) with the electrical power supplier.
7. This engine may operate in response to notification of impending rotating outage if the area utility has ordered rotating outages in the area where the engine is located or expects to order such outages at a particular time, the engine is located in the area subject to the rotating outage, the engine is operated no more than 30 minutes prior to the forecasted outage, and the engine is shut down immediately after the utility advises that the outage is no longer imminent or in effect.
8. This unit is subject to the requirements of the Airborne Toxic Control Measure (ATCM) for Stationary Compression Ignition Engines (Title 17 CCR 93115). In the event of conflict between these conditions and the ATCM, the more stringent shall govern.
9. This unit is subject to the requirements of the Federal National Source Performance Standards (NSPS) for Stationary Compression Ignition Internal Combustion Engines (40 CFR Part 60 Subpart III).

***Emergency Fire Suppression Water Pump Authority to Construct Conditions***

*[Two - 300 hp emergency IC engine each driving a fire suppression water pump, Application Number: 0010754 and 0010761]*

1. This equipment shall be installed, operated and maintained in strict accord with those recommendations of the manufacturer/supplier and/or sound engineering principles which produce the minimum emissions of contaminants. Unless otherwise noted, this equipment shall also be operated in accordance with all data and specifications submitted with the application for this permit.

2. This unit shall only be fired on ultra-low sulfur diesel fuel, whose sulfur concentration is less than or equal to 0.0015% (15 ppm) on a weight per weight basis per CARB Diesel or equivalent requirements.

3. A non-resettable hour meter with a minimum display capability of 9,999 hours shall be installed and maintained on this unit to indicate elapsed engine operating time. (Title 17 CCR §93115.10(e)(1)).

4. This unit shall be limited to use for emergency power, defined as in response to a fire or due to low fire water pressure. In addition, this unit shall be operated no more than 50 hours per year for testing and maintenance, excluding compliance source testing. Time required for source testing will not be counted toward the 50 hour per year limit. The 50 hour limit can be exceeded when the emergency fire pump assembly is driven directly by a stationary diesel fueled CI engine operated per and in accord with the National Fire Protection Association (NFPA) 25 - "Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems," 1998 edition. This requirement includes usage during emergencies. {Title 17 CCR 93115.3(n)}

5. The owner/operator (o/o) shall maintain a operations log for this unit current and on-site, either at the engine location or at a on-site location, for a minimum of two (2) years, and for another year where it can be made available to the District staff within 5 working days from the District's request, and this log shall be provided to District, State and Federal personnel upon request. The log shall include, at a minimum, the information specified below:

- a. Date of each use and duration of each use (in hours);
- b. Reason for use (testing & maintenance, emergency, required emission testing);
- c. Calendar year operation in terms of fuel consumption (in gallons) and total hours; and,
- d. Fuel sulfur concentration (the o/o may use the supplier's certification of sulfur content if it is maintained as part of this log).

6. This unit shall not be used to provide power during a voluntary agreed to power outage and/or power reduction initiated under an Interruptible Service Contract (ISC); Demand Response Program (DRP); Load Reduction Program (LRP) and/or similar arrangement(s) with the electrical power supplier

7. This engine may operate in response to notification of impending rotating outage if the area utility has ordered rotating outages in the area where the engine is located or expects to order such outages at a particular time, the engine is located in the area subject to the rotating outage, the engine is operated no more than 30 minutes prior to the forecasted outage, and the

engine is shut down immediately after the utility advises that the outage is no longer imminent or in effect.

8. This unit is subject to the requirements of the Airborne Toxic Control Measure (ATCM) for Stationary Compression Ignition Engines (Title 17 CCR 93115). In the event of conflict between these conditions and the ATCM, the requirements of the ATCM shall govern.

9. This unit is subject to the requirements of the Federal National Source Performance Standards (NSPS) for Stationary Compression Ignition Internal Combustion Engines (40 CFR Part 60 Subpart III).

## Appendix – BSPP- Solar Millennium Emissions Calculations

Table A-1

	lb/day					t/yr				
	NOx	SOx	CO	PM10	VOC	NOx	SOx	CO	PM10	VOC
Emission Per 250 MW unit	32.694	9.131	22.381	12.524	10.272	1.077	0.359	1.508	0.869	1.176
Total Solar Millenium (2 unit blocks)	65.388	18.261	44.763	25.048	20.545	2.155	0.719	3.016	1.738	2.352
Total Chevron (2 unit blocks)	65.388	18.261	44.763	25.048	20.545	2.155	0.719	3.016	1.738	2.352

Table A-2

BSPP Auxiliary Boiler																									
Permit No.	Equipment	MMBtu/hr	Max Day Hours	Annual Hours	EmFac lb/MMBTU				CO	EmFac pounds/hour				Max Daily (pounds)				Max Annual (pounds)							
					NOx	VOC	SO2	PM10		NOx	VOC	SO2	PM10	CO	NOx	VOC	SO2	PM10	CO	NOx	VOC	SOx	PM10	CO	
	35 MMBtu/hr at 25% load	35	15	4500	0.011	0.005	0.005	0.020	0.038	0.097	0.044	0.046	0.175	0.331	1.458	0.656	0.686	2.625	4.959	437.510	196.875	205.774	787.500	1487.671	
	35 MMBtu/hr at 100% load	35	2	500	0.011	0.005	0.005	0.020	0.038	0.389	0.175	0.183	0.700	1.322	0.778	0.350	0.010	1.400	0.076	194.449	87.500	91.455	350.000	661.187	
												total pounds each:				2.236	1.006	0.686	4.025	5.034	631.958	284.375	297.229	1137.500	2148.857
												total tons each:				0.001	0.001	0.000	0.002	0.003	0.316	0.142	0.149	0.569	1.074

Notes:  
 NOx and CO based on manufacturer guarantee 9 ppm Nox and 50 ppm CO  
 Other emission factors from vendor data  
 SO2 from AP 42 (7/98 table 1.4-2)  
 Emissions at 25% load are 100% of those at 100% load - manufacturer guarantee  
 Meets BACT for Nox, CO

Table A-3

BSPP HTF Heater																									
Permit No.	Equipment	MMBtu/hr	Max Day Hours	Annual Hours	EmFac lb/MMBTU				CO	EmFac pounds/hour				Max Daily (pounds)				Max Annual (pounds)							
					NOx	VOC	SO2	PM10		NOx	VOC	SO2	PM10	CO	NOx	VOC	SO2	PM10	CO	NOx	VOC	SOx	PM10	CO	
	35	10	500	0.011	0.005	0.005	0.020	0.038	0.391	0.175	0.183	0.700	1.322	3.911	1.750	1.829	7.000	13.224	195.565	87.500	91.455	350.000	661.187		
												total pounds each:				3.911	1.750	1.829	7.000	13.224	195.565	87.500	91.455	350.000	661.187
												total tons each:				0.002	0.001	0.001	0.004	0.007	0.098	0.044	0.046	0.175	0.331

Notes:  
 NOx and CO based on manufacturer guarantee 9 ppm Nox and 50 ppm CO  
 Other emission factors from vendor data  
 SO2 from AP 42 (7/98 table 1.4-2)  
 Max Daily based on 10 hours @100%, annual max 500  
 Meets BACT for Nox, CO

Table A-4

BSPP Emergency ICE																										
Tier 2																										
App No.	Equipment	bhp	Max Day Hours	PTE Annual Hours	EmFac gm/bhp-hr					EmFac pounds/hour					Max Daily (pounds)					Max Annual (pounds)						
					NOx	VOC	SO2	PM10	CO	NOx	VOC	SO2	PM10	CO	NOx	VOC	SO2	PM10	CO	NOx	VOC	SOx	PM10	CO		
2922			1	50	3.83	0.24	0.93	0.07	0.37	24.662	1.538	5.990	0.433	2.404	24.66	1.54	5.99	0.43	2.40	1233	77	300	22	120		
												total pounds:					total tons:									
												25					0.0					1				
												2					0.0					0				
												6					0.0					0				
												0					0.0					0				
												2					0.0					0				
												1233					1					0				
												77					0					0				
												300					0					0				
												22					0					0				
												120					0					0				

Notes:  
 EPA Tier II emission factors - except SOx  
 SOx emission factors from AP 42 (10/96)  
 ok per Stationary ATCM - emergency & meets .15 g/bhp-hr - 50 hrs/yr maintenance and testing  
 Is not within 1000 feet of a school  
 Assumes voc .05% Nox + NMHC  
 Current tiered engine (tier II for this hp) is BACT

Table A-5

BSPP Emergency ICE - Fire Pump																										
Tier 3																										
App No.	Equipment	bhp	PTE Max Day Hours	PTE Annual Hours	EmFac gm/bhp-hr					EmFac pounds/hour					Max Daily (pounds)					Max Annual (pounds)						
					NOx	VOC	SO2	PM10	CO	NOx	VOC	SO2	PM10	CO	NOx	VOC	SO2	PM10	CO	NOx	VOC	SOx	PM10	CO		
300			24	50	2.85	0.15	0.93	0.15	2.60	1.885	0.099	0.615	0.099	1.720	45.24	2.38	14.76	2.38	41.27	94	5	31	5	86		
												total pounds:					total tons:									
												45					0.0					0				
												2					0.0					0				
												15					0.0					0				
												2					0.0					0				
												41					0					0				
												94					0					0				
												5					0					0				
												31					0					0				
												5					0					0				
												86					0					0				

Notes:  
 EPA Tier III emission factors - except SOx  
 SOx emission factors from AP 42 (10/96)  
 ok per Stationary ATCM - emergency & meets .15 g/bhp-hr - 50 hrs/yr maintenance and testing  
 Is not within 1000 feet of a school  
 Assumes voc .05% Nox + NMHC

Table A-6

<b>BSPP Cooling Tower</b>			
	hourly emissions (lb/hr)	daily emissions (lb/dy)	annual emissions (t/yr)
PM	0.06046068	0.96737088	0.111852258
WCR	6034	gpm	
TDS	2000	ppmv	
drift	0.0005	%	
density	8.35	lb/gal	
	16	hrs/dy	
	3700	hrs/yr	

Table A-8

<b>BSPP HTF Ullage/Expansion Tank</b>			
	hourly emissions (lb/hr)	daily emissions (lb/dy)	annual emission (t/yr)
1 HTF vent	0.75	1.5	0.15
daily hours	2		
annual hours	400		
CE	98	%	

Table A-7

<b>Fugitive Emissions</b>			
<b>Table E.3-5a Reference Data</b>			
Daily Operating Hours		24	Assumed
Annual Days of Operation		365	Assumed
Equipment	Component Count <sup>1</sup>	Emission Factor <sup>2</sup> (kg/hr/source)	Emissions (lb/hr)
Valves	3050	8.40E-06	5.65E-02
Pump Seals	4	2.40E-05	2.12E-04
Connectors	7594	7.50E-06	1.26E-01
Pressure Relief Valves	10	8.40E-06	1.85E-04
<b>Table E.3-5b Fugitive VOC Emissions for One Power Plant Unit</b>			
	Hourly Emissions (lb/hr)	Daily Emissions (lb/day)	Annual Emissions (ton/yr)
Fugitive VOC	0.182	4.38	0.799
<b>Notes:</b>			
<sup>1</sup> Component count is per power plant unit			
<sup>2</sup> Emission factors from EPA 1995 Protocol for Equipment Leak Emission			





## Mojave Desert Air Quality Management District

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Visit our web site: <http://www.mdaqmd.ca.gov>

Eldon Heaston, Executive Director

January 28, 2010

Robert Redlinger, Director, Renewable Energy  
Chevron Energy Solutions  
345 California St., 18th Floor  
San Francisco, CA 94104

### Preliminary Determination of Compliance for the Blythe Solar Power Project

Dear Mr. Redlinger:

The Mojave Desert Air Quality Management District (MDAQMD) has completed the preliminary decision on the proposed Blythe Solar Power Project (BSPP). Enclosed please find the Preliminary Determination of Compliance (PDOC) for BSPP, prepared pursuant to MDAQMD Rule 1306. Written comments on the BSPP PDOC will be accepted through approximately February 28, 2010 (the actual public comment period closure date is a function of when the public notice is published). The MDAQMD expects to issue a Final Determination of Compliance on or about April 1, 2010.

If you have any questions regarding this action or the enclosure, please contact Ms. Roseana Navarro-Brasington at (760) 245-1661, x5706.

Sincerely,

A handwritten signature in black ink, appearing to read "Alan J. De Salvio".

**Alan J. De Salvio**  
Supervising Air Quality Engineer

enclosure

cc: Chief, Air Permits Office USEPA Region IX  
Chief, Stationary Source Division CARB  
Alan Solomon, CEC  
Will Walters, Aspen Environmental Group  
Josef Eichhammer, Solar Millennium  
Gavin Berg, Solar Millennium  
Sara J. Head, AECOM  
Russell Kingsley, AECOM

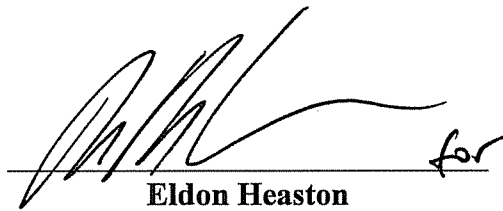
AJD/rmb

BSPP PDOC cover.doc



**Preliminary Decision/  
Determination of Compliance**  
(Preliminary New Source Review Document)

Blythe Solar Power Project – Chevron Energy  
Solutions  
located approximately eight miles west of  
Blythe, CA.

A handwritten signature in black ink, appearing to read 'E. Heaston', is written over a horizontal line. To the right of the signature, the word 'for' is written in a cursive script.

**Eldon Heaston**  
**Executive Director**  
Mojave Desert Air Quality Management District

January 28, 2010

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## List of Abbreviations

APCO	Air Pollution Control Officer
ATC	Authority To Construct
ATCM	Airborne Toxic Control Measure
AVAQMD	Antelope Valley Air Quality Management District
BACT	Best Available Control Technology
BSPP	Blythe Solar Power Project
CARB	California Air Resources Board
CATEF	California Air Toxics Emission Factors
CEC	California Energy Commission
CEMS	Continuous Emissions Monitoring System
CERMS	Continuous Emission Rate Monitoring System
CFR	Code of Federal Regulations
CH <sub>4</sub>	Methane
CO	Carbon Monoxide
CTG	Combustion Turbine Generator
dscf	Dry Standard Cubic Feet
ERC	Emission Reduction Credit
°F	Degrees Fahrenheit (Temperature)
FDOC	Final Determination of Compliance
FONA	Federal Ozone Non-Attainment Area
HAP	Hazardous Air Pollutant
HARP	Hot Spots Analysis and Reporting Program
HDPP	High Desert Power Project
HHV	Higher Heating Value
hp	Horsepower
hr	Hour
HRA	Health Risk Assessment
HRSG	Heat Recovery Steam Generator
HTF	Heat Transfer Fluid
LAER	Lowest Achievable Emission Rate
lb	Pound
MACT	Maximum Achievable Control Technology
µg/m <sup>3</sup>	Micrograms per cubic meter
MDAQMD	Mojave Desert Air Quality Management District
MMBtu	Millions of British Thermal Units
n/a	Not applicable
NAAQS	National Ambient Air Quality Standard
NO <sub>2</sub>	Nitrogen Dioxide
NO <sub>x</sub>	Oxides of Nitrogen
NSPS	New Source Performance Standard
O <sub>2</sub>	Molecular Oxygen
OEHHA	Office of Environmental Health Hazard Assessment

OLM	Ozone Limiting Method
o/o	Owner/Operator
PAH	Polycyclic Aromatic Hydrocarbons
PDOC	Preliminary Determination of Compliance
PM <sub>2.5</sub>	Fine Particulate, Respirable Fraction ≤ 2.5 microns in diameter
PM <sub>10</sub>	Fine Particulate, Respirable Fraction ≤ 10 microns in diameter
ppmvd	Parts per million by volume, dry
PSD	Prevention of Significant Deterioration
RSP	Rapid Start Process
SCAQMD	South Coast Air Quality Management District
SJVAPCD	San Joaquin Valley Unified Air Pollution Control District
SCLA	Southern California Logistics Airport
SCR	Selective Catalytic Reduction
SIP	State Implementation Plan
SO <sub>2</sub>	Sulfur Dioxide
SO <sub>x</sub>	Oxides of Sulfur
SSG	Solar Steam Generator System
STG	Steam Turbine Generator
TAC	Toxic Air Contaminants
TOG	Total Organic Gases
tpy	Tons per Year
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compounds



## **1. Introduction**

The Mojave Desert Air Quality Management District (MDAQMD) received two Applications for New Source Review for the Blythe Solar Power Project (BSPP) and a Request for Agency Participation and Application for Certification on September 16, 2009. The MDAQMD deemed the applications complete on October 13, 2009.<sup>1</sup> For clarity and consistency, the MDAQMD will herein refer to this project as the "BSPP" or "Project". The project is a joint venture proposed by Chevron Energy Solutions and Solar Millennium, LLC. Chevron Energy Solutions will own and operate one half of the project and Solar Millennium, LLC will own and operate one half of the project. This NSR document pertains to the BSPP portion owned and operated by Chevron Energy Solutions.

As required by MDAQMD Rule 1306(E)(1)(a), this PDOC reviews the proposed project, evaluating worst-case or maximum air quality impacts, and establishes control technology requirements and related air quality permit conditions. This PDOC represents MDAQMD's preliminary pre-construction compliance review of the proposed project, to determine whether construction and operation of the proposed project will comply with all applicable MDAQMD rules and regulations.

## **2. Project Location**

The Project is a solar thermal electric generating facility proposed on approximately 9,400 acres in unincorporated Riverside County, California approximately eight miles west of Blythe, CA. and 2 miles north of Interstate I-10 on land owned by the Federal Government and managed by the Bureau of Land Management (BLM). The project site has been designated unclassified for the Federal 8-hour ozone ambient air quality standard (NAAQS) and for the Federal PM<sub>10</sub> ambient air quality standards (NAAQS). The area is attainment or unclassified for all other Federal standards and averaging times. The project site has been designated non-attainment and classified as moderate for the State ozone ambient air quality standard (CAAQS) and is also non-attainment for the State PM<sub>10</sub> ambient air quality standards (CAAQS). The area is attainment or unclassified for all other State standards. The proposed site consists of flat undeveloped desert terrain.

## **3. Description of Project**

The proposed facility will consist of four 250 MW (gross) solar units. The Project uses parabolic trough solar thermal technology to generate electricity. In each power generating unit or power block, the proposed technology uses a steam turbine generator (STG) fed from a solar steam generator (SSG). SSGs receive heat transfer fluid (HTF) from solar thermal equipment comprised of arrays of parabolic mirrors that collect energy from the sun. Chevron will own and operate two power block units and Solar Millennium will own and operate two power block units.

The four power blocks share a main office building, a central switchyard, a maintenance/warehouse facility, a parking lot, access roads and two land treatment units to treat

---

<sup>1</sup> A. De Salvo (MDAQMD) to A. Solomon (CEC), October 13, 2009.  
BSPP – Chevron Energy Solutions  
PDOC

HTF contaminated soil. Units 1 and 2 and Units 3 and 4 share water treatment and storage facilities. Each of the four power blocks will consist of a solar array field, auxiliary boiler, steam turbine, and HTF freeze protection system, emergency generator set, emergency fire pump system, an HTF ullage/expansion system with carbon adsorption, a cooling tower, electrical interconnections, and several small adjacent buildings for support services.

Note that the project construction emissions and non-stationary source emissions have not been included or evaluated in this document.

Chevron Energy Solutions is proposing to install:

- two (2) Tier III diesel fueled emergency fire pump engines rated at 300 hp
- two (2) Tier II diesel fueled emergency generator set rated at 2,922 hp
- two (2) auxiliary natural gas fired boilers each rated at - 35 MMBtu/hr
- two (2) HTF natural gas fired heaters for freeze protection each rated at - 35 MMBtu/hr
- two (2) HTF ullage/expansion tanks with carbon adsorption systems
- two (2) cooling towers each with drift eliminator

The internal combustion engines will meet all applicable California Air Resources Board (CARB) and U.S. Environmental Protection Agency (USEPA) Tier emissions standards depending upon engine size, year of manufacture, and service category. Additionally, the engines will meet the requirements of the CARB Airborne Toxic Control Measure (ATCM) for Stationary Compression Ignition Engines.

Proposed equipment specifications, for emissions sources, are summarized as follows:

#### **Auxiliary Boilers (2)**

- Manufacturer: Nebraska Boiler (or equivalent)
- Model: D-Type Watertube
- Fuel: Natural Gas
- Rated Heat Input: 35 MMBtu/hr
- Fuel consumption: ~33,333 scf/hr (Gas HHV 1050 Btu/scf)
- Exhaust flow: 5080 dscfm, at 100% load
- Exhaust temperature: ~300 degrees Fahrenheit (°F)
- Low NO<sub>x</sub> burner (9 ppmv)

#### **HTF Freeze Protection Heaters (2)**

- Manufacturer: FLAGSOL GMBH (or equivalent)
- Model: To Be Determined



- Fuel: Natural Gas
- Rated Heat Input: 35 MMBtu/hr
- Fuel consumption: ~33,333 scf/hr (Gas HHV 1050 Btu/scf)
- Exhaust flow: To be Determined
- Exhaust temperature: To be Determined
- Low NO<sub>x</sub> burner (9 ppmv)

### **Carbon Adsorption System (2)**

- Two carbon beds in series – control efficiency 98%
- Manufacturer: To be Determined

### **Internal Combustion Engines – Fire Pump (2)**

- Manufacturer: To be Determined
- Emission Standard: Tier III
- Fuel: Diesel or distillate oil (15 ppmw S)
- Rated horsepower: 300 hp
- Fuel consumption: ~15.3 gallons per hour (gph)

### **Internal Combustion Engines - Emergency Electrical Generators (2)**

- Manufacturer: Cummins
- Model: QSK60-G6
- Emissions Standard: Tier II, Engine Family ACEXL060.AAD
- Fuel: Diesel or distillate oil (15 ppm S)
- Rated horsepower: ~ 2,922 hp
- Fuel consumption: ~ 141.4 gallons per hour (gph)

### **Cooling Towers (2)**

- Manufacturer: To be determined
- Number of Cells: 2
- Number of Fans: To be determined
- Water circulation rate: ~ 6,034 gallons per minute (gpm)

- Drift rate: less than or equal to 0.0005%
- Expected average TDS: ~ 2,000 ppmw

The only fuels to be combusted on-site will be California-certified low-sulfur low-aromatic diesel fuel used by the emergency fire pump and the emergency generator engines, and pipeline-quality natural gas for the auxiliary boilers and HTF freeze protection heaters.

**Overall Project Emissions**

Operation of the Project will result in emissions to the atmosphere of both criteria and toxic air pollutants from the proposed auxiliary boilers, HTF freeze protection heaters, fire pumps, emergency generator engines, and cooling towers, the HTF ullage/expansion tank equipped with 98% control carbon adsorption system and fugitive losses from the HTF system. Criteria pollutant emissions will consist primarily of nitrogen oxides (NO<sub>x</sub>), carbon monoxide (CO), volatile organic compounds (VOCs), sulfur oxides (SO<sub>x</sub>), sub 10-micron particulate matter (PM10), and sub 2.5-micron particulate matter (PM2.5). Air toxic pollutants will consist of a combination of toxic gases and toxic particulate matter species. Table 5 lists the pollutants that may potentially be emitted from the proposed Project.<sup>2</sup>For natural gas-fired equipment, emissions calculations are based on the Higher Heating Value (HHV) of the natural gas fuel. Project emissions limited by permit condition based on fuel usage for the auxiliary boilers and HTF freeze protection heaters and by hours for the emergency generator and fire pump internal combustion engines. Emissions limits have been applied by permit condition to the HTF ullage/expansion tank and associated carbon adsorption units. The emissions calculations are presented in the Appendix.

**Maximum Annual Emissions**

Table 1 presents maximum annual facility operational emissions (Table 1A presents maximum annual facility hazardous air pollutant (HAP) emissions). For this project, PM<sub>2.5</sub> emissions are assumed to be equal to PM<sub>10</sub> emissions, which were calculated using a PM<sub>2.5</sub> emissions factor.

<i>Table 1 – BSPP- Chevron Energy Solutions Maximum Annual Operational Emissions</i>				
(All emissions presented in tons per year – two power block units, VOC fugitive emissions included)				
NOx	SOx	CO	PM10	VOC
2.155	0.719	3.016	1.745	2.352

<sup>2</sup> “Application for Certification Blythe Solar Power Project, September 2009.

**Table 1A – BSPP – Chevron Energy Solutions Maximum Annual HAP Emissions – 2 power blocks, HTF fugitive emissions NOT included**

Pollutant	Tons/Year	Threshold (Tons/Year)
7,12-Dimethylbenz(a)anthracene	1.13E-06	10
Acenaphthene	1.28E-07	10
Acenaphthylene	1.28E-07	10
Anthracene	1.70E-07	10
Benz(a)anthracene	1.28E-07	10
Benzene	3.00E-01	10
Benzo(a)pyrene	8.50E-08	10
Benzo(b)fluoranthene	1.28E-07	10
Benzo(g,h,i)perylene	8.50E-08	10
Benzo(k)fluoranthene	1.28E-07	10
Biphenyl	3.00E-05	10
Chrysene	1.28E-07	10
Chloroform	1.12E-01	10
Chromium (Hexavalent)	4.95E-08	10
Copper	4.92E-07	10
Dibenz(a,h)anthracene	8.50E-08	10
Dichlorobenzene	8.50E-05	10
Diesel Particulate Matter	5.32E-02	10
Fluoranthene	2.13E-07	10
Formaldehyde	5.31E-03	10
Hexane	1.28E-01	10
Indeno(1,2,3-cd)pyrene	1.28E-07	10
Naphthalene	4.32E-05	10
Phenanthrene	1.20E-06	10
Pyrene	3.54E-07	10
Toluene	2.41E-04	10
Vanadium	2.65E-07	10
Zinc	1.21E-05	10
<b>Total</b>	<b>5.98E-01</b>	<b>25</b>

\*\* Note: Threshold is 10 tpy per HAP and 25 tpy combined

## Maximum Daily Emissions

Table 2 presents maximum daily facility emissions calculated under worst case conditions. Please see the Appendix for emissions calculations and limits.

<i>Table 2 – BSPP – Chevron Energy Solutions Maximum Daily Operational Emissions</i>				
(All emissions presented in pounds per day – two power block units, VOC fugitive emissions included)				
NO <sub>x</sub>	SO <sub>x</sub>	CO	PM10	VOC
65.388	18.261	44.763	25.343	20.545

## 5. Control Technology Evaluation/BACT Determination

Best Available Control Technology (BACT) is required for all new permit units that emits, or has the potential to emit, 25 pounds per day at any new facility that emits, or has the potential to emit, 25 tons per year or more of any non-attainment pollutant or its precursors (MDAQMD Rule 1303(A)). The proposed project site is state non-attainment for ozone and PM<sub>10</sub> and their precursors and unclassified for federal standards for ozone and PM<sub>10</sub>. Based on the proposed project's maximum emissions as calculated in §4 above, the project triggers only BACT for the proposed internal combustion engines, which have the potential to emit more than 25 pounds per day of NO<sub>x</sub>.

The applicant proposes to meet BACT for all emissions units and has submitted an analysis that evaluates the control technology for these pollutants, trace organics, and trace metals.<sup>3</sup> The MDAQMD accepts the proposed emission limits as compliant with all applicable air quality regulations. The proposed internal combustion engine emission rates are at least as stringent as applicable federal regulations such as the applicable New Source Performance Standards (NSPS) for Stationary Compression Ignition Internal Combustion Engines (40 CFR Part 60 Subpart IIII). The MDAQMD deems the proposed limits for internal combustion engines to meet BACT.

### *Proposed Limits for each 35MMBtu/hr Natural Gas Fired Boiler and for each 35MMBtu/hr HTF Freeze Protection Heater*

Pollutant	Limit	Control
NO <sub>x</sub>	9.0 ppm at 3% O <sub>2</sub>	Ultra low-NO <sub>x</sub> burner
VOC	None	PUC quality natural gas
PM	None	PUC quality natural gas
SO <sub>x</sub>	None	PUC quality natural gas
CO	50 ppm at 3% O <sub>2</sub>	Ultra low-NO <sub>x</sub> burner

<sup>3</sup> *ibid*

**Proposed Limit for each Carbon Adsorption System (Expansion Tank/Ullage Vent System)**

Presumptive MACT for VOC/air toxic emissions from the HTF expansion tank/ullage vent system is carbon adsorption.

Pollutant	Control
VOC	Carbon adsorption system with at least 85% control efficiency.
NO <sub>x</sub> , SO <sub>x</sub> , CO, PM	Not Applicable

The proposed 2 stage condenser/carbon adsorption system meets presumptive MACT and provides for 98% control of VOC emissions. VOC emissions from the system will not exceed 1.5 lb/day from each of the four proposed vents.

**Proposed Limit for each Cooling Tower**

Pollutant	Control
PM	Drift rate not to exceed 0.0005%
VOC	Not Applicable
NO <sub>x</sub> , SO <sub>x</sub> , CO	Not Applicable

The proposed cooling towers will have drift eliminators with vendor-guaranteed PM control efficiency of 0.0005%. The facility will be required to have a functional hydrocarbon detection device and to repair leaks in a timely manner. The proposed cooling towers meet the above requirements.

**BACT for each Internal Combustion Engine – Emergency Generator and Fire Pump (total of eight engines)**

The proposed engines are compliant with the applicable NSPS for Stationary Compression Ignition Internal Combustion Engines (40 CFR Part 60 Subpart III) and with the applicable California State Airborne Toxic Control Measure for Stationary Compression Ignition Engines (17 CCR 93115). Compliance with the NSPS and ATCM is determined to be BACT for the fire pump and emergency generator engines and is found to be an engine meeting the current tier requirements. The proposed engines meet this requirement.

Proposed Engine – Fire Pump	NO <sub>x</sub> + NMHC (g/bhp-hr)	PM (g/bhp-hr)	CO (g/bhp-hr)	SO <sub>x</sub>
300 hp Tier III	3.0	0.15	2.6	15 ppm S fuel

Proposed Engine – Emergency Generator	NO <sub>x</sub> + NMHC (g/bhp-hr)	PM (g/bhp-hr)	CO (g/bhp-hr)	SO <sub>x</sub>
2,922 hp Tier II	4.0	0.07	.37	15 ppm S fuel

## 6. PSD Class I Area Protection

The Clean Air Act (CAA) established the PSD permit program to prevent areas that currently have clean air from significant deterioration. The PSD permit program limits emissions by requiring permits for major stationary air pollution sources. The BSPP did not evaluate the visibility reduction potential of project emissions on Prevention of Significant Deterioration (PSD) Class I areas. The BSPP is not a major stationary source, is not subject to the PSD requirements Title I, Part C of the Federal Clean Air Act (42 U.S.C. §§7470-7492), and therefore is in compliance with the Class I Area protection requirements of Regulation XIII.

## 7. Air Quality Impact Analysis

BSPP performed the ambient air quality standard impact analyses for CO, PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub> and NO<sub>2</sub> emissions. The MDAQMD approves of the analysis methods used in these impact analyses and the findings of these impact analyses.

### *Findings*

The impact analysis calculated a maximum incremental increase for each pollutant for each applicable averaging period, as shown in Table 4 below. When added to the maximum recent background concentration, the BSPP did not exceed the most stringent (or lowest) standard for any pollutant except PM<sub>10</sub>, which is already in excess of the State standard without the project.

*Table 4 – BSPP – Chevron Energy Solutions (2 power blocks) Maximum Ambient Air Quality Impacts*

Pollutant	Project Impact	Background	Total Impact	Federal Standard	State Standard
	<i>All values in <math>\mu\text{g}/\text{m}^3</math></i>				
CO (1 hour)	94.5	2645	2739.5	40,000	23,000
CO (8 hour)	32.4	1035	1067.4	10,000	10,000
PM <sub>10</sub> (24 hour)	9.28	162.0	171.3	150	50
PM <sub>10</sub> (annual)	0.80	30.0	30.8	n/a	20
PM <sub>2.5</sub> (24 hour)	0.82	27.0	27.8	35	n/a
PM <sub>2.5</sub> (annual)	0.08	10.6	10.7	15	12
SO <sub>2</sub> (1 hour)	0.19	503	503.2	n/a	665
SO <sub>2</sub> (3 hour)	0.15	434.9	435.1	1300	n/a
SO <sub>2</sub> (24 hour)	0.003	99.6	99.6	365	105
SO <sub>2</sub> (annual)	0.0003	5.2	5.2	80	n/a
NO <sub>2</sub> (1 hour)	91.5	174.9	266.4	n/a	339
NO <sub>2</sub> (annual)	0.02	22.6	22.6	100	57

### *Inputs and Methods*

Maximum emissions for four power blocks under normal operating conditions were modeled. Emissions from two of the power blocks, those owned by Chevron Energy Solutions, are presented above in Table 4. A three-year (2002 through 2004) sequential hourly meteorological data set from the meteorological tower at the Blythe Airport was used. Mixing heights were

determined from Desert Rock, Nevada data. For determining NO<sub>2</sub> impacts using a NO<sub>x</sub> background, the hourly Ozone Limiting Method (OLM) for conversion of NO<sub>x</sub> to NO<sub>2</sub> was used.

The AERMOD dispersion model (version 07026) was used to estimate ambient concentrations resulting from BSPP – Chevron Energy Solutions emissions. The dispersion modeling was performed according to USEPA requirements.

## **8. Health Risk Assessment and Toxics New Source Review**

BSPP – Solar Millennium performed a Health Risk Assessment (HRA) for carcinogenic, non-carcinogenic chronic, and non-carcinogenic acute toxic air contaminants. The MDAQMD approves of the HRA methods and findings.

### ***Findings***

The HRA calculated a peak 70-year cancer risk of 0.38 per million. The calculated peak 70-year residential cancer risk is less than 1.0 per million (for all receptors). The maximum non-cancer chronic and acute hazard indices are both less than the significance level of 1.0 (0.00013 and 0.042, respectively). As these risks make the project a “low priority” project, and as the project emits less than 10 tons per year of every single HAP and 25 tons per year of any combination of HAPs, no further toxics new source review is required for this project (Rule 1320(E)(2)(b)). Please refer to Table 1A above for a summary of project HAP emissions.

### ***Inputs and Methods***

BSPP will emit toxic air contaminants as products of natural gas combustion, diesel fuel combustion, venting of the ullage tank, equipment wear and cooling tower emissions. Combustion emissions were estimated using emission factors from OEHHA and USEPA, and a speciation profile for polycyclic aromatic hydrocarbons (PAH) was derived from the California Air Toxics Emission Factors (CATEF) database. Venting of VOC from the HTF ullage tank is controlled via carbon adsorption with a 98% control efficiency. Cooling tower emissions were estimated using USEPA emission factors for evaporative emissions, engineering calculation for drift droplets, and water quality estimations for water supplied from onsite groundwater wells.

The AERMOD (version 07026) dispersion model (as incorporated into HARP) was used to estimate ambient concentrations of toxic air pollutants. The Hot Spots and Reporting Program (HARP, Version 1.4a) risk assessment model was used to estimate health risks due to exposure to emissions. The AERMOD meteorological dataset was used for the risk analysis.

## **9. Offset Requirements**

MDAQMD Regulation XIII – *New Source Review* requires offsets for non-attainment pollutants and their precursors emitted by large, new sources. The BSPP does not have the PTE 25 tons or more of NO<sub>x</sub>, SO<sub>x</sub> or VOC or 15 tons per year or more of PM<sub>10</sub>. Offsets are not required for the BSPP.

<i>Table 5 - Comparison of BSPP – Chevron Energy Solutions Emissions with Offset Thresholds</i>				
All emissions in tons per year				
	<b>NO<sub>x</sub></b>	<b>VOC</b>	<b>SO<sub>x</sub></b>	<b>PM<sub>10</sub></b>
Maximum Annual Potential to Emit	2	1	0	4
Offset Threshold	25	25	25	15

## 10. Applicable Regulations and Compliance Analysis

Selected MDAQMD Rules and Regulations will apply to the proposed project:

### **Regulation II – Permits**

Rule 212 – Standards for Approving Permits establishes baseline criteria for approving permits by the MDAQMD for certain projects. In accordance with these criteria, the proposed project accomplishes all required notices and emission limits through the PDOC and complying with stringent emission limitations set forth on permits.

### **Regulation IV - Prohibitions**

Rule 401 – *Visible Emissions* limits visible emissions opacity to less than 20 percent (or Ringelmann No. 1). During start up of all equipment, visible emissions may exceed 20 percent opacity. However, emissions of this opacity are not expected to last three minutes or longer. In normal operating mode, visible emissions are not expected to exceed 20 percent opacity.

Rule 402 – *Nuisance* prohibits facility emissions that cause a public nuisance. The proposed turbine power train exhaust is not expected to generate a public nuisance due to the sole use of pipeline-quality natural gas as a fuel. In addition, due to the location of the proposed project, no nuisance complaints are expected.

Rule 403 – *Fugitive Dust* specifies requirements for controlling fugitive dust. The proposed project does not include any significant sources of fugitive dust so the proposed project is not expected to violate Rule 403.

Rule 404 – *Particulate Matter – Concentration* specifies standards of emissions for particulate matter concentrations. The proposed project will be required to comply with Rule 404.

Rule 405 – *Solid Particulate Matter - Weight* limits particulate matter emissions from fuel combustion on a mass per unit combusted basis. The proposed project will be required to comply with Rule 405.

Rule 408 – *Circumvention* prohibits hidden or secondary rule violations. The proposed project is not expected to violate Rule 408.



Rule 409 – *Combustion Contaminants* limits total particulate emissions on a density basis. The proposed project will be required to comply with Rule 409.

Rule 430 – *Breakdown Provisions* requires the reporting of breakdowns and excess emissions. The proposed project will be required to comply with Rule 430.

Rule 431 – *Sulfur Content in Fuels* limits sulfur content in gaseous, liquid and solid fuels. The proposed project will be required to use fuels which comply with Rule 431.

### ***Regulation IX – Standards of Performance for New Stationary Sources***

Regulation IX includes by reference the NSPS for Stationary Compression Ignition Internal Combustion Engines (40 CFR 60 Subpart IIII) and for Small Industrial-Commercial-Institutional Steam Generating Units (40 CFR 60 Subpart Dc). Permit conditions for the proposed project will establish limits which are in compliance with the compression ignition engine NSPS referenced in Regulation IX.

### ***Regulation XI - Source Specific Standards***

Rule 1113 - *Architectural Coatings* limits VOC content of applied architectural coatings. The proposed project will be required to use compliant coatings.

Rule 1158 – *Electric Power Generating Facilities*. This rule is only applicable to units located within the FONA. Since the BSPP is located outside of the FONA, this rule does not apply.

Rule 1157 – *Boilers and Process Heaters*. This rule is only applicable to units located within the FONA. Since the BSPP is located outside of the FONA, this rule does not apply.

### ***Regulation XII – Federal Operating Permits***

Regulation XII contains requirements for sources which must have a federal operating permit and an acid rain permit. The proposed project will not be required to submit applications for a federal operating permit because this facility is not a major source nor is a federal operating permit required under any applicable federal regulation.

### ***Regulation XIII – New Source Review***

Rule 1300 – *General* ensures that Prevention of Significant Deterioration (PSD) requirements apply to all projects. The proposed project does not have the PTE to emit more than the offset emissions thresholds (table 5) and therefore is not a major source of emissions. As this facility is not a major source it is not subject to the PSD requirements Title I, Part C of the Federal Clean Air Act (42 U.S.C. §§7470-7492) which apply to major sources only and therefore is in compliance with the PSD requirements of Rule 1300.

Rule 1302 – *Procedure* requires certification of compliance with the Federal Clean Air Act, applicable implementation plans, and all applicable AVAQMD rules and regulations. The ATC application package for the proposed project includes sufficient documentation to comply with

Rule 1302(D)(5)(b)(iii). Permit conditions for the proposed project will require compliance with Rule 1302(D)(5)(b)(iv).

Rule 1303 – *Requirements* requires BACT major new sources and permit units which have the PTE to emit more than 25 pounds per day of criteria pollutants. As this facility is not a major source BACT is only required for the internal combustion engines which have the PTE to emit more than 25 pounds per day of NO<sub>x</sub>.

Rule 1305 – *Emissions Offsets* this facility does not have the PTE to emit more than the offset emissions thresholds (table 5) and therefore offsets are not required.

Rule 1306 – *Electric Energy Generating Facilities* places additional administrative requirements on projects involving approval by the California Energy Commission (CEC). The proposed project will not receive an ATC without CEC's approval of their Application for Certification, ensuring compliance with Rule 1306.

### ***Maximum Achievable Control Technology Standards***

Health & Safety Code §39658(b)(1) states that when USEPA adopts a standard for a toxic air contaminant pursuant to §112 of the Federal Clean Air Act (42 USC §7412), such standard becomes the Airborne Toxic Control Measure (ATCM) for the toxic air contaminant. Once an ATCM has been adopted it becomes enforceable by the MDAQMD 120 days after adoption or implementation (Health & Safety Code §39666(d)). USEPA has not to date adopted a Maximum Achievable Control Technology (MACT) standard that is applicable to the proposed project. Should USEPA adopt an applicable MACT standard in the future, the MDAQMD will be required to enforce said MACT as an ATCM on the proposed project. MACT is also required for each major source of toxic air contaminants. BSPP will not emit more than ten tons per year of any individual toxic air contaminant, and will not collectively emit more than 25 tons per year of all toxic air contaminants, so MACT is not required.

## **11. Conclusion**

The MDAQMD has reviewed the proposed project's Application for New Source Review. The District has determined that the proposed project, after application of the permit conditions given below, will comply with all applicable MDAQMD Rules and Regulations. This PDOC will be released for public comment and publicly noticed on or after January 28, 2010. Written comments will be accepted for thirty days from the date of publication of the public notice. A Final Determination of Compliance shall be prepared no later than forty five days after the end of the public comment period (approximately April 1, 2010).

Please forward any comments on this document to:

Eldon Heaston  
Executive Director  
Mojave Desert Air Quality Management District  
14306 Park Avenue  
Victorville, CA 92392

## 12. Permit Conditions

The following permit conditions will be placed on the Authorities to Construct (ATC) for the project. Separate permits will be issued for each auxiliary boiler, HFT heater, HTF ullage/expansion tank, carbon adsorption system, cooling tower, fire pump internal combustion engine and emergency internal combustion engine. The electronic version of this document contains a set of conditions that are essentially identical for each of multiple pieces of equipment, differing only in MDAQMD permit reference numbers. The signed and printed ATCs will have printed permits (with descriptions and conditions) in place of condition language listings.

### *Auxiliary Boilers Authority to Construct Conditions*

*[Two - 35 MMBtu/hr Natural Gas Fired Auxiliary Boiler, Application Number: 0010748 and 0010755]*

1. Operation of this equipment shall be conducted in compliance with all data and specifications submitted with the application under which this permit is issued unless otherwise noted below.
2. This equipment shall be exclusively fueled with natural gas and shall be operated and maintained in strict accord with the recommendations of its manufacturer or supplier and/or sound engineering principles.
3. This equipment is subject to the federal NSPS codified at 40 CFR Part 60, Subparts A (General Provisions) and Dc (Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units).
4. Emissions from this equipment shall not exceed the following hourly emission limits at any firing rate, verified by fuel use and compliance tests:
  - a. NO<sub>x</sub> as NO<sub>2</sub>:
    1. 0.389 lb/hr operating at 100% load (based on 9.0 ppmvd corrected to 3% O<sub>2</sub> and averaged over one hour)
    2. 0.097 lb/hr operating at 100% load (based on 9.0 ppmvd corrected to 3% O<sub>2</sub> and averaged over one hour)
  - b. CO:
    1. 1.322 lb/hr operating at 100% load (based on 50 ppmvd corrected to 3% O<sub>2</sub> and averaged over one hour)
    2. 0.331 operating at 25% load (based on 50 ppmvd corrected to 3% O<sub>2</sub> and averaged over one hour)

- c. VOC as CH<sub>4</sub>:
    - 1. 0.175 lb/hr operating at 100% load
    - 2. 0.044 lb/hr operating at 25% load
  - d. SO<sub>x</sub> as SO<sub>2</sub>:
    - 1. 0.183 lb/hr operating at 100% load
    - 2. 0.046 lb/hr operating at 25% load
  - e. PM<sub>10</sub>:
    - 1. 0.700 lb/hr operating at 100% load
    - 2. 0.175 lb/hr operating at 25% load
5. This equipment shall be operated only on PUC pipeline quality natural gas and shall be equipped with a non-resettable fuel meter. Fuel used shall not exceed:
    - a. 54,166,125 million cubic feet of natural gas per rolling twelve months; and
    - b. 191,665 cubic feet of natural gas per calendar day.
  6. The o/o shall maintain an operations log for this equipment on-site and current for a minimum of five (5) years, and said log shall be provided to District personnel on request. The operations log shall include the following information at a minimum:
    - a. Total operation time (hours per day, hours per year);
    - b. Maximum hourly, maximum daily, total quarterly, and total calendar year emissions of NO<sub>x</sub>, CO, PM<sub>10</sub>, VOC and SO<sub>x</sub> (including calculation protocol); and,
    - c. Any permanent changes made to the equipment that would affect air pollutant emissions, and indicate when changes were made.
  7. The o/o shall perform annual compliance tests on this equipment in accordance with the MDAQMD Compliance Test Procedural Manual. The test report shall be submitted to the District no later than six weeks prior to the expiration date of this permit. The following compliance tests are required:
    - a. NO<sub>x</sub> as NO<sub>2</sub> in ppmvd at 3% oxygen and lb/hr (measured per USEPA Reference Methods 19 and 20).
    - b. VOC as CH<sub>4</sub> in ppmvd at 3% oxygen and lb/hr (measured per USEPA Reference Methods 25A and 18).
    - c. CO in ppmvd at 3% oxygen and lb/hr (measured per USEPA Reference Method 10).
    - d. Flue gas flow rate in dscf per minute.
  8. The o/o shall perform an initial compliance test on this equipment in accordance with the MDAQMD Compliance Test Procedural Manual within 180 days of initial start up. The test report shall be submitted to the District within 6 weeks of performance of the test. The initial compliance test shall be for all items listed in condition 7 above, in addition to:
    - a. SO<sub>x</sub> as SO<sub>2</sub> in ppmvd at 3% oxygen and lb/hr.
    - b. PM<sub>10</sub> in mg/m<sup>3</sup> at 3% oxygen and lb/hr (measured per USEPA Reference Methods 5 and 202 or CARB Method 5).
    - c. Opacity (measured per USEPA reference Method 9).

***HTF Heater Authority to Construct Conditions***

*[Two - 35 MMBtu/hr Natural Gas Fired HTF Heater, Application Number: 0010749 and 0010756]*

1. Operation of this equipment shall be conducted in compliance with all data and specifications submitted with the application under which this permit is issued unless otherwise noted below.
2. This equipment shall be exclusively fueled with natural gas and shall be operated and maintained in strict accord with the recommendations of its manufacturer or supplier and/or sound engineering principles.
3. This equipment is subject to the federal NSPS codified at 40 CFR Part 60, Subparts A (General Provisions) and Dc (Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units).
4. Emissions from this equipment shall not exceed the following hourly emission limits at any firing rate, verified by fuel use and annual compliance tests:
  - a. NO<sub>x</sub> as NO<sub>2</sub> 0.391 lb/hr (based on 9.0 ppmvd corrected to 3% O<sub>2</sub> and averaged over one hour)
  - b. CO 1.322 lb/hr (based on 50 ppmvd corrected to 3% O<sub>2</sub> and averaged over one hour)
  - c. VOC as CH<sub>4</sub> 0.175 lb/hr
  - d. SO<sub>x</sub> as SO<sub>2</sub> 0.183 lb/hr
  - e. PM<sub>10</sub> 0.700 lb/hr
5. This equipment hours of operation shall not exceed 500 hours per rolling twelve months and more than 10 hours per calendar day.
6. The o/o shall maintain an operations log for this equipment on-site and current for a minimum of five (5) years, and said log shall be provided to District personnel on request. The operations log shall include the following information at a minimum:
  - a. Total operation time (hours per month, by month);
  - b. Maximum hourly, maximum daily, total quarterly, and total calendar year emissions of NO<sub>x</sub>, CO, PM<sub>10</sub>, VOC and SO<sub>x</sub> (including calculation protocol); and,
  - c. Any permanent changes made to the equipment that would affect air pollutant emissions, and indicate when changes were made.
7. The o/o shall perform annual compliance tests on this equipment in accordance with the MDAQMD Compliance Test Procedural Manual. The test report shall be submitted to the District no later than six weeks prior to the expiration date of this permit. The following compliance tests are required:
  - a. NO<sub>x</sub> as NO<sub>2</sub> in ppmvd at 3% oxygen and lb/hr (measured per USEPA Reference Methods 19 and 20).
  - b. VOC as CH<sub>4</sub> in ppmvd at 3% oxygen and lb/hr (measured per USEPA Reference Methods 25A and 18).
  - c. CO in ppmvd at 3% oxygen and lb/hr (measured per USEPA Reference Method 10).
  - d. Flue gas flow rate in dscf per minute.

8. The o/o shall perform an initial compliance test on this equipment in accordance with the MDAQMD Compliance Test Procedural Manual within 180 days of initial start up. The test report shall be submitted to the District within 6 weeks of performance of the test. The initial compliance test shall be for all items listed in condition 7 above, in addition to:
  - a. SO<sub>x</sub> as SO<sub>2</sub> in ppmvd at 3% oxygen and lb/hr.
  - b. PM<sub>10</sub> in mg/m<sup>3</sup> at 3% oxygen and lb/hr (measured per USEPA Reference Methods 5 and 202 or CARB Method 5).
  - c. Opacity (measured per USEPA reference Method 9).

***(Ullage Vent System) Authority to Construct Conditions***

*[Two – HTF ullage expansion tank, Application Number: 0010750 and 0010757]*

1. This tank stores HTF, specifically the condensable fraction of the vapors vented from the ullage system.
2. This tank must be properly maintained at all times.
3. This tank shall be operated at all times with the carbon adsorption system under District permit [To be Determined].

***Carbon Adsorption System Authority to Construct Conditions***

*[Two – carbon adsorption systems, one serving each HTF ullage tank, Application Number: 0010751 and 001078]*

1. Operation of this equipment shall be conducted in accordance with all data and specifications submitted with the application under which this permit is issued unless otherwise noted below.
2. This carbon adsorption system shall provide 98% control efficiency of VOC emissions vented from the HTF ullage expansion tank under District Permit [to be determined].
3. The o/o shall prepare and submit a monitoring and change-out plan for the carbon adsorptions system which ensures that the system is operating at optimal control efficiency at all times for District approval prior to start up.
4. This equipment shall be properly maintained and kept in good operating condition at all times.
5. This equipment must be in use and operating properly at all times the HTF ullage expansion tank is venting.
6. Total emissions of VOC to the atmosphere shall not exceed 1.5 lbs/day and 300 lbs/year calculated based on the most recent monitoring results.
7. During operation, o /o shall monitor VOC breakthrough between the first and second carbon beds. Monitoring shall be conducted using a flame ionization detector (FID), photoionization detector (PID), or other method determined to be equivalent by this District. Monitoring is to be performed on a weekly basis. Initial test shall be submitted to the District within 180 days after startup.
8. FID, PID or equivalent shall be considered invalid if not calibrated on the day of required use.
9. The o/o shall maintain current and on-site for the duration of the project a log of FID/PID readings, which shall be provided to District personnel upon request, with date and time the monitoring was conducted.

10. Prior to January 31 of each new year, the o/o of this unit shall submit to the District a summary report of all benzene and VOC emissions (as hexane).

***Cooling Tower Authority to Construct Conditions***

*[Two Cooling Towers, Application Number: 0010752 and 0010759]*

1. Operation of this equipment shall be conducted in compliance with all data and specifications submitted with the application under which this permit is issued unless otherwise noted below.
2. This equipment shall be operated and maintained in strict accord with the recommendations of its manufacturer or supplier and/or sound engineering principles.
3. The drift rate shall not exceed 0.0005 percent with a maximum circulation rate of 6,034 gallons per minute. The maximum hourly PM<sub>10</sub> emission rate shall not exceed 0.061 pounds per hour, as calculated per the written District-approved protocol.
4. The operator shall perform weekly tests of the blow-down water total dissolved solids (TDS). The TDS shall not exceed 2000 ppmv on a calendar monthly basis. The operator shall maintain a log which contains the date and result of each blow-down water test in TDS ppm, and the resulting mass emission rate. This log shall be maintained on site for a minimum of five (5) years and shall be provided to District personnel on request.
5. The operator shall conduct all required cooling tower water tests in accordance with a District-approved test and emissions calculation protocol. Thirty (30) days prior to the first such test the operator shall provide a written test and emissions calculation protocol for District review and approval.
6. A maintenance procedure shall be established that states how often and what procedures will be used to ensure the integrity of the drift eliminators. This procedure is to be kept on-site and available to District personnel on request.

***Emergency Generator Authority to Construct Conditions***

*[Two – 2,922 hp emergency IC engine each driving a generator, Application Number: 0010753 and 0010760]*

1. This equipment shall be installed, operated and maintained in strict accord with those recommendations of the manufacturer/supplier and/or sound engineering principles which produce the minimum emissions of contaminants. Unless otherwise noted, this equipment shall also be operated in accordance with all data and specifications submitted with the application for this permit.
2. This unit shall only be fired on ultra-low sulfur diesel fuel, whose sulfur concentration is less than or equal to 0.0015% (15 ppm) on a weight per weight basis per CARB Diesel or equivalent requirements.

3. A non-resettable hour meter with a minimum display capability of 9,999 hours shall be installed and maintained on this unit to indicate elapsed engine operating time. (Title 17 CCR §93115.10(e)(1)).
4. This unit shall be limited to use for emergency power, defined as in response to a fire or when commercially available power has been interrupted. In addition, this unit shall be operated no more than 50 hours per year for testing and maintenance, excluding compliance source testing. Time required for source testing will not be counted toward the 50 hour per year limit.
5. The owner/operator (o/o) shall maintain a operations log for this unit current and on-site, either at the engine location or at a on-site location, for a minimum of two (2) years, and for another year where it can be made available to the District staff within 5 working days from the District's request, and this log shall be provided to District, State and Federal personnel upon request. The log shall include, at a minimum, the information specified below:
  - a. Date of each use and duration of each use (in hours);
  - b. Reason for use (testing & maintenance, emergency, required emission testing);
  - c. Calendar year operation in terms of fuel consumption (in gallons) and total hours; and,
  - d. Fuel sulfur concentration (the o/o may use the supplier's certification of sulfur content if it is maintained as part of this log).
6. This unit shall not be used to provide power during a voluntary agreed to power outage and/or power reduction initiated under an Interruptible Service Contract (ISC); Demand Response Program (DRP); Load Reduction Program (LRP) and/or similar arrangement(s) with the electrical power supplier.
7. This engine may operate in response to notification of impending rotating outage if the area utility has ordered rotating outages in the area where the engine is located or expects to order such outages at a particular time, the engine is located in the area subject to the rotating outage, the engine is operated no more than 30 minutes prior to the forecasted outage, and the engine is shut down immediately after the utility advises that the outage is no longer imminent or in effect.
8. This unit is subject to the requirements of the Airborne Toxic Control Measure (ATCM) for Stationary Compression Ignition Engines (Title 17 CCR 93115). In the event of conflict between these conditions and the ATCM, the more stringent shall govern.
9. This unit is subject to the requirements of the Federal National Source Performance Standards (NSPS) for Stationary Compression Ignition Internal Combustion Engines (40 CFR Part 60 Subpart III).

***Emergency Fire Suppression Water Pump Authority to Construct Conditions***

*[Two - 300 hp emergency IC engine each driving a fire suppression water pump, Application Number: 0010754 and 0010761]*

1. This equipment shall be installed, operated and maintained in strict accord with those recommendations of the manufacturer/supplier and/or sound engineering principles which



produce the minimum emissions of contaminants. Unless otherwise noted, this equipment shall also be operated in accordance with all data and specifications submitted with the application for this permit.

2. This unit shall only be fired on ultra-low sulfur diesel fuel, whose sulfur concentration is less than or equal to 0.0015% (15 ppm) on a weight per weight basis per CARB Diesel or equivalent requirements.

3. A non-resettable hour meter with a minimum display capability of 9,999 hours shall be installed and maintained on this unit to indicate elapsed engine operating time. (Title 17 CCR §93115.10(e)(1)).

4. This unit shall be limited to use for emergency power, defined as in response to a fire or due to low fire water pressure. In addition, this unit shall be operated no more than 50 hours per year for testing and maintenance, excluding compliance source testing. Time required for source testing will not be counted toward the 50 hour per year limit. The 50 hour limit can be exceeded when the emergency fire pump assembly is driven directly by a stationary diesel fueled CI engine operated per and in accord with the National Fire Protection Association (NFPA) 25 - "Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems," 1998 edition. This requirement includes usage during emergencies. {Title 17 CCR 93115.3(n)}

5. The owner/operator (o/o) shall maintain a operations log for this unit current and on-site, either at the engine location or at a on-site location, for a minimum of two (2) years, and for another year where it can be made available to the District staff within 5 working days from the District's request, and this log shall be provided to District, State and Federal personnel upon request. The log shall include, at a minimum, the information specified below:

- a. Date of each use and duration of each use (in hours);
- b. Reason for use (testing & maintenance, emergency, required emission testing);
- c. Calendar year operation in terms of fuel consumption (in gallons) and total hours; and,
- d. Fuel sulfur concentration (the o/o may use the supplier's certification of sulfur content if it is maintained as part of this log).

6. This unit shall not be used to provide power during a voluntary agreed to power outage and/or power reduction initiated under an Interruptible Service Contract (ISC); Demand Response Program (DRP); Load Reduction Program (LRP) and/or similar arrangement(s) with the electrical power supplier

7. This engine may operate in response to notification of impending rotating outage if the area utility has ordered rotating outages in the area where the engine is located or expects to order such outages at a particular time, the engine is located in the area subject to the rotating outage, the engine is operated no more than 30 minutes prior to the forecasted outage, and the engine is shut down immediately after the utility advises that the outage is no longer imminent or in effect.

8. This unit is subject to the requirements of the Airborne Toxic Control Measure (ATCM) for Stationary Compression Ignition Engines (Title 17 CCR 93115). In the event of conflict between these conditions and the ATCM, the requirements of the ATCM shall govern.

9. This unit is subject to the requirements of the Federal National Source Performance Standards (NSPS) for Stationary Compression Ignition Internal Combustion Engines (40 CFR Part 60 Subpart III).

## Appendix – BSPP- Chevron Energy Solutions Emissions Calculations

Table A-1

	lb/day					t/yr				
	NOx	SOx	CO	PM10	VOC	NOx	SOx	CO	PM10	VOC
Emission Per 250 MW unit	32.694	9.131	22.381	12.524	10.272	1.077	0.359	1.508	0.869	1.176
Total Solar Millenium (2 unit blocks)	65.388	18.261	44.763	25.048	20.545	2.155	0.719	3.016	1.738	2.352
Total Chevron (2 unit blocks)	65.388	18.261	44.763	25.048	20.545	2.155	0.719	3.016	1.738	2.352

Table A-2

BSPP Auxiliary Boiler																								
Permit No.	Equipment	MMBtu/hr	Max Day Hours	Annual Hours	EmFac lb/MMBTU					EmFac pounds/hour					Max Daily (pounds)					Max Annual (pounds)				
					NOx	VOC	SO2	PM10	CO	NOx	VOC	SO2	PM10	CO	NOx	VOC	SO2	PM10	CO	NOx	VOC	SOx	PM10	CO
	35 MMBtu/hr at 25% load	35	15	4500	0.011	0.005	0.005	0.020	0.038	0.097	0.044	0.046	0.175	0.331	1.458	0.656	0.686	2.625	4.959	437.510	196.875	205.774	787.500	1487.671
	35 MMBtu/hr at 100% load	35	2	500	0.011	0.005	0.005	0.020	0.038	0.389	0.175	0.183	0.700	1.322	0.778	0.350	0.010	1.400	0.076	194.449	87.500	91.455	350.000	661.187
												total pounds each:												
												total tons each:												

**Notes:**  
 NOx and CO based on manufacturer guarantee 9 ppm Nox and 50 ppm CO  
 Other emission factors from vendor data  
 SO2 from AP 42 (7/98 table 1.4-2)  
 Emissions at 25% load are 100% of those at 100% load - manufacturer guarantee  
 Meets BACT for Nox, CO

Table A-3

BSPP HTF Heater																								
Permit No.	Equipment	MMBtu/hr	Max Day Hours	Annual Hours	EmFac lb/MMBTU					EmFac pounds/hour					Max Daily (pounds)					Max Annual (pounds)				
					NOx	VOC	SO2	PM10	CO	NOx	VOC	SO2	PM10	CO	NOx	VOC	SO2	PM10	CO	NOx	VOC	SOx	PM10	CO
	35	10	500	0.011	0.005	0.005	0.020	0.038	0.391	0.175	0.183	0.700	1.322	3.911	1.750	1.829	7.000	13.224	195.565	87.500	91.455	350.000	661.187	
												total pounds each:												
												total tons each:												

**Notes:**  
 NOx and CO based on manufacturer guarantee 9 ppm Nox and 50 ppm CO  
 Other emission factors from vendor data  
 SO2 from AP 42 (7/98 table 1.4-2)  
 Max Daily based on 10 hours @100%, annual max 500  
 Meets BACT for Nox, CO

Table A-4

BSPP Emergency ICE																												
Tier 2																												
App No.	Equipment	bhp	Max Day Hours	PTE Annual Hours	EmFac gm/bhp-hr					EmFac pounds/hour					Max Daily (pounds)					Max Annual (pounds)								
					NOx	VOC	SO2	PM10	CO	NOx	VOC	SO2	PM10	CO	NOx	VOC	SO2	PM10	CO	NOx	VOC	SOx	PM10	CO				
2922			1	50	3.83	0.24	0.93	0.07	0.37	24.662	1.538	5.990	0.433	2.404	24.66	1.54	5.99	0.43	2.40	1233	77	300	22	120				
total pounds:															25	2	6	0	2	1233	77	300	22	120				
total tons:															0.0	0.0	0.0	0.0	0.0	1	0	0	0	0				

Notes:  
 EPA Tier II emission factors - except SOx  
 SOx emission factors from AP 42 (10/96)  
 ok per Stationary ATCM - emergency & meets .15 g/bhp-hr - 50 hrs/yr maintenance and testing  
 Is not within 1000 feet of a school  
 Assumes voc .05% Nox + NMHC  
 Current tiered engine (tier II for this hp) is BACT

Table A-5

BSPP Emergency ICE - Fire Pump																												
Tier 3																												
App No.	Equipment	bhp	PTE Max Day Hours	PTE Annual Hours	EmFac gm/bhp-hr					EmFac pounds/hour					Max Daily (pounds)					Max Annual (pounds)								
					NOx	VOC	SO2	PM10	CO	NOx	VOC	SO2	PM10	CO	NOx	VOC	SO2	PM10	CO	NOx	VOC	SOx	PM10	CO				
300			24	50	2.85	0.15	0.93	0.15	2.60	1.885	0.099	0.615	0.099	1.720	45.24	2.38	14.76	2.38	41.27	94	5	31	5	86				
total pounds:															45	2	15	2	41	94	5	31	5	86				
total tons:															0.0	0.0	0.0	0.0	0.0	0	0	0	0	0				

Notes:  
 EPA Tier III emission factors - except SOx  
 SOx emission factors from AP 42 (10/96)  
 ok per Stationary ATCM - emergency & meets .15 g/bhp-hr - 50 hrs/yr maintenance and testing  
 Is not within 1000 feet of a school  
 Assumes voc .05% Nox + NMHC

Table A-6

<b>BSPP Cooling Tower</b>			
	hourly emissions (lb/hr)	daily emissions (lb/dy)	annual emissions (t/yr)
PM	0.06046068	0.96737088	0.111852258
WCR	6034	gpm	
TDS	2000	ppmv	
drift	0.0005	%	
density	8.35	lb/gal	
	16	hrs/dy	
	3700	hrs/yr	

Table A-7

*[Table content is extremely faint and illegible]*

Table A-8

<b>BSPP HTF Ullage/Expansion Tank</b>			
	hourly emissions (lb/hr)	daily emissions (lb/dy)	annual emission (t/yr)
1 HTF vent	0.75	1.5	0.15
daily hours	2		
annual hours	400		
CE	98	%	

**Fugitive Emissions**

**Table E.3-5a Reference Data**

Daily Operating Hours		24	Assumed
Annual Days of Operation		365	Assumed
Equipment	Component Count <sup>1</sup>	Emission Factor <sup>2</sup> (kg/hr/source)	Emissions (lb/hr)
Valves	3050	8.40E-06	5.65E-02
Pump Seals	4	2.40E-05	2.12E-04
Connectors	7594	7.50E-06	1.26E-01
Pressure Relief Valves	10	8.40E-06	1.85E-04

**Table E.3-5b Fugitive VOC Emissions for One Power Plant Unit**

	Hourly Emission (lb/hr)	Daily Emission (lb/day)	Annual Emission (ton/yr)
Fugitive VOC	0.182	4.38	0.799

**Notes:**

<sup>1</sup> Component count is per power plant unit

<sup>2</sup> Emission factors from EPA 1995 Protocol for Equipment Leak Emission