



DEC 07 2011

Mr. Terry Ellis  
Macpherson Oil Company  
PO Box 5368  
Bakersfield, CA 93388

**Re: Proposed ATC / Certificate of Conformity (Significant Mod)  
District Facility # S-1703  
Project # S-1113747**

Dear Mr. Ellis:

Enclosed for your review is the District's analysis of an application for Authority to Construct for the facility identified above. The applicant is requesting that a Certificate of Conformity with the procedural requirements of 40 CFR Part 70 be issued with this project. The project is to install a new 85 MMBtu/hr natural gas-fired steam generator.

After addressing any EPA comments made during the 45-day comment period, the Authority to Construct will be issued to the facility with a Certificate of Conformity. Prior to operating with modifications authorized by the Authority to Construct, the facility must submit an application to modify the Title V permit as an administrative amendment, in accordance with District Rule 2520, Section 11.5.

If you have any questions, please contact Mr. Leonard Scandura, Permit Services Manager, at (661) 392-5500.

Thank you for your cooperation in this matter.

Sincerely,



David Warner  
Director of Permit Services

DW: JS/cm

Enclosures

**Seyed Sadredin**  
Executive Director/Air Pollution Control Officer

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**Northern Region**  
4800 Enterprise Way  
Modesto, CA 95356-8718  
Tel: (209) 557-6400 FAX: (209) 557-6475

**Central Region (Main Office)**  
1990 E. Gettysburg Avenue  
Fresno, CA 93726-0244  
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**Southern Region**  
34946 Flyover Court  
Bakersfield, CA 93308-9725  
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# San Joaquin Valley

AIR POLLUTION CONTROL DISTRICT



DEC 07 2011

Gerardo C. Rios, Chief  
Permits Office  
Air Division  
U.S. EPA - Region IX  
75 Hawthorne St.  
San Francisco, CA 94105

**Re: Proposed ATC / Certificate of Conformity (Significant Mod)  
District Facility # S-1703  
Project # S-1113747**

Dear Mr. Rios:

Enclosed for your review is the District's engineering evaluation of an application for Authority to Construct for Macpherson Oil Company at their Heavy Oil Central Stationary Source in Kern County, which has been issued a Title V permit. Macpherson Oil Company is requesting that a Certificate of Conformity, with the procedural requirements of 40 CFR Part 70, be issued with this project. The project is to install a new 85 MMBtu/hr natural gas-fired steam generator.

Enclosed is the engineering evaluation of this application with a copy of the current Title V permit and proposed Authority to Construct # S-1703-204-0 with Certificate of Conformity. After demonstrating compliance with the Authority to Construct, the conditions will be incorporated into the facility's Title V permit through an administrative amendment.

Please submit your written comments on this project within the 45-day comment period that begins on the date you receive this letter. If you have any questions, please contact Mr. Leonard Scandura, Permit Services Manager, at (661) 392-5500.

Thank you for your cooperation in this matter.

Sincerely,

David Warner  
Director of Permit Services

DW: JS/cm

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DEC 07 2011

Mike Tollstrup, Chief  
Project Assessment Branch  
Air Resources Board  
P O Box 2815  
Sacramento, CA 95812-2815

**Re: Proposed ATC / Certificate of Conformity (Significant Mod)  
District Facility # S-1703  
Project # S-1113747**

Dear Mr. Tollstrup:

Enclosed for your review is the District's analysis of an application for Authority to Construct for the facility identified above. The applicant is requesting that a Certificate of Conformity with the procedural requirements of 40 CFR Part 70 be issued with this project. The project is to install a new 85 MMBtu/hr natural gas-fired steam generator.

Enclosed is the engineering evaluation of this application with a copy of the current Title V permit and proposed Authority to Construct # S-1703-204-0 with Certificate of Conformity. After demonstrating compliance with the Authority to Construct, the conditions will be incorporated into the facility's Title V permit through an administrative amendment.

Please submit your written comments on this project within the 30-day comment period that begins on the date you receive this letter. If you have any questions, please contact Mr. Leonard Scandura, Permit Services Manager, at (661) 392-5500.

Thank you for your cooperation in this matter.

Sincerely,



David Warner  
Director of Permit Services

DW: JS/cm

Enclosures

**Seyed Sadredin**  
Executive Director/Air Pollution Control Officer

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**NOTICE OF PRELIMINARY DECISION  
FOR THE ISSUANCE OF AUTHORITY TO CONSTRUCT AND  
THE PROPOSED SIGNIFICANT MODIFICATION OF FEDERALLY  
MANDATED OPERATING PERMIT**

NOTICE IS HEREBY GIVEN that the San Joaquin Valley Air Pollution Control District solicits public comment on the proposed significant modification of Macpherson Oil Company for its Heavy oil production operation at their Heavy Oil Central Stationary Source in Kern County, California. The project is to install a new 85 MMBtu/hr natural gas-fired steam generator.

The District's analysis of the legal and factual basis for this proposed action, project #S-1113747, is available for public inspection at [http://www.valleyair.org/notices/public\\_notices\\_idx.htm](http://www.valleyair.org/notices/public_notices_idx.htm) and the District office at the address below. This will be the public's only opportunity to comment on the specific conditions of the modification. If requested by the public, the District will hold a public hearing regarding issuance of this modification. For additional information, please contact Mr. Jim Swaney, Permit Services Manager, at (559) 230-5900. Written comments on the proposed initial permit must be submitted within 30 days of the publication date of this notice to DAVID WARNER, DIRECTOR OF PERMIT SERVICES, SAN JOAQUIN VALLEY AIR POLLUTION CONTROL DISTRICT, 1990 E. GETTYSBURG AVE, FRESNO, CA 93726-0244.



## II. Applicable Rules

Rule 2201 New and Modified Stationary Source Review Rule (4/21/11)  
Rule 2520 Federally Mandated Operating Permits (6/21/01)  
Rule 4001 New Source Performance Standards (4/14/99)  
Rule 4101 Visible Emissions (2/17/05)  
Rule 4102 Nuisance (12/17/92)  
Rule 4201 Particulate Matter Concentration (12/17/92)  
Rule 4301 Fuel Burning Equipment (12/17/92)  
Rule 4305 Boilers, Steam Generators & Process Heaters – Phase II (8/21/03)  
Rule 4306 Boilers, Steam Generators & Process Heaters – Phase III (3/17/05)  
Rule 4320 Advanced Emission Reduction Options for Boilers, Steam Generators, and Process Heaters Greater than 5.0 MMBtu/hr (10/16/08)  
Rule 4351 Boilers, Steam Generators & Process Heaters – Phase I (8/21/03)  
Rule 4801 Sulfur Compounds (12/17/92)  
CH&SC 41700 Health Risk Assessment  
California Health & Safety Code 42301.6  
Public Resources Code 21000-21177: California Environmental Quality Act (CEQA)  
California Code of Regulations, Title 14, Division 6, Chapter 3, Sections 15000-15387: CEQA Guidelines

## III. Project Location

The proposed steam generator will be located in MOC's Heavy Oil Central Stationary Source within the Round Mountain Oil Field in the SE/4 of Section 18, Township 28S, Range 29E. The equipment is not located within 1,000 feet of the outer boundary of a K-12 school; therefore, the public notification requirement of California Health and Safety Code 42301.6 is not applicable to this project.

See Appendix A: Project Location Map

## IV. Process Description

Steam generators or cogeneration plants are used to provide high quality steam for injection into heavy crude oil production zones. The heat added by the steam reduces the viscosity of the crude oil making it easier to produce.

Steam generators are designed to operate 24 hours per day, 365 days per year.

## V. Equipment Listing

S-1703-204-0: 85.0 MMBTU/HR NATURAL GAS-FIRED STEAM GENERATOR WITH COEN MODEL QLN-II ULTRA-LOW NOX BURNER (OR EQUIVALENT) AND A FLUE GAS RECIRCULATION (FGR) SYSTEM

Per District policy APR 1035, "Flexibility in Equipment Descriptions in ATCs," flexibility in the final specifications of the equipment is requested and will be allowed as stated in the following ATC conditions:

- The permittee shall obtain written District approval for the use of any equivalent equipment not specifically approved by this Authority to Construct. Approval of the equivalent equipment shall be made only after the District's determination that the submitted design and performance of the proposed alternate equipment is equivalent to the specifically authorized equipment. [District Rule 2010]
- The permittee's request for approval of equivalent equipment shall include the make, model, manufacturer's maximum rating, manufacturer's guaranteed emission rates, equipment drawing(s), and operational characteristics/parameters. [District Rule 2010]

## VI. Emission Control Technology Evaluation

The combustion equipment in this project is capable of generating emissions of NO<sub>x</sub>, CO, VOC, PM<sub>10</sub>, and SO<sub>x</sub> due to the combustion of natural gas, with NO<sub>x</sub> as the major pollutant of concern. The steam generator will be equipped with an ultra-low NO<sub>x</sub> burner capable of achieving 6 ppmv NO<sub>x</sub> @ 3% O<sub>2</sub>. Low-NO<sub>x</sub> burners reduce NO<sub>x</sub> formation by producing lower flame temperatures and longer flames than conventional burners. Conventional burners thoroughly mix all the fuel and air in a single stage just prior to combustion, whereas low-NO<sub>x</sub> burners delay the mixing of fuel and air by introducing the fuel (or sometimes the air) in multiple stages. Generally, in the first combustion stage, the air-fuel mixture is fuel rich. In a fuel rich environment, all the oxygen will be consumed in reactions with the fuel, leaving no excess oxygen available to react with nitrogen to produce thermal NO<sub>x</sub>. In the secondary and tertiary stages, the combustion zone is maintained in a fuel-lean environment. The excess air in these stages helps to reduce the flame temperature so that the reaction between the excess oxygen and nitrogen is minimized.

The unit is also equipped with FGR, which can reduce NO<sub>x</sub> emissions by 60% to 70%. In an FGR system, a portion of the flue gas is re-circulated back to the inlet air. As flue gas is composed mainly of nitrogen and the products of combustion, it is much lower in oxygen than the inlet air and contains virtually no combustible hydrocarbons to burn. Thus, flue gas is practically inert. The addition of an inert mass of gas to the combustion reaction serves to absorb heat without producing heat, thereby lowering the flame temperature. Since thermal NO<sub>x</sub> is formed by high flame temperatures, the lower flame temperatures produced by FGR serve to reduce thermal NO<sub>x</sub>.

## VII. General Calculations

### A. Assumptions

#### S-1703-204 (New Steam Generator)

- The maximum operating schedule is 24 hr/day and 8,760 hr/year.
- Maximum heat input rating: 85.0 MMBtu/hr
- Natural Gas Heating Value: 1,000 Btu/scf
- F-Factor for Natural Gas @ 60°F: 8,578 dscf/MMBtu
- The unit will be fired exclusively on purchased natural gas.

S-1703-79 (Tank to be removed)

- Permit to Operate S-1703-79 will be surrendered as a requirement to implement S-1703-204. Emissions from S-1703-79 will be deleted from the SSPE2 and used to net the VOC increase from the new steam generator (proposed by the applicant).
- The maximum operating schedule is 24 hr/day and 8,760 hr/year.
- The tank emits only volatile organic compounds (VOCs).
- Emissions from the tank are based on one tank turnover per day.
- Maximum TVP of the liquid placed in the tank is 0.5 psia (per current permit).

**B. Emission Factors**

S-1703-204 (New Steam Generator)

Pollutant	Project Emission Factors (EF2)		Source
NO <sub>x</sub>	0.007 lb-NO <sub>x</sub> /MMBtu	6 ppmvd (@ 3%O <sub>2</sub> )	Applicant's Proposal
SO <sub>x</sub>	0.00285 lb-SO <sub>x</sub> /MMBtu	1.0 gr-S/100 scf	District Policy APR 1720
PM10	0.003 lb-PM10/MMBtu		Applicant's Proposal**
CO	0.0185 lb-CO/MMBtu	25 ppmv @ 3% O <sub>2</sub>	Applicant's Proposal
VOC	0.0055 lb-VOC/MMBtu	--	AP-42 (7/98), Table 1.4-2

\*\*Per applicant, based on emissions testing results documenting that natural gas-fired steam generators have a PM10 emission rate of 0.001 lb/MMBtu.

S-1703-79 (Tank to be removed)

Both the daily and annual Potential to Emit (PE) for the storage tank will be based on the results from the District's Microsoft Excel spreadsheet for Tank Emissions - Fixed Roof Crude Oil less than 26° API. The spreadsheet for tanks was developed using the equations for fixed-roof tanks from EPA AP-42, Chapter 7.1.

**C. Calculations**

**1. Pre-Project Potential to Emit (PE1)**

S-1703-204 (New Steam Generator)

Since this is a new emissions unit, PE1 = 0 for all pollutants.

S-1703-79 (Tank to be removed)

The pre-project daily and annual PE for the existing tank is calculated using the District's tank emission calculation spreadsheet in Appendix B and summarized in the following table:

<b>PE 1 Summary Table</b>	
<b>Permit Number</b>	<b>S-1703-79</b>
<b>Facility Tank I.D.</b>	<b>1004</b>
<b>Tank capacity (bbl)</b>	<b>1,000</b>
<b>Tank diameter (ft)</b>	<b>21</b>
<b>Tank shell height (ft)</b>	<b>16</b>
<b>Conical or Dome Roof</b>	<b>Conical</b>
<b>Maximum Daily Fluid Throughput (bbl/day)</b>	<b>1,000</b>
<b>Maximum Annual Fluid Throughput (bbl/year)</b>	<b>365,000</b>
<b>Maximum Daily Oil Throughput (bbl/day)</b>	<b>N/A</b>
<b>Maximum Annual Oil Throughput (bbl/year)</b>	<b>N/A</b>
<b>Total Uncontrolled Daily Tank VOC Emissions (lb/day)</b>	<b>52.5</b>
<b>Total Uncontrolled Annual Tank VOC Emissions (lb/year)</b>	<b>19,153</b>

**2. Post Project Potential to Emit (PE2)**

S-1703-79 (Tank to be removed)

The applicant has proposed to remove this tank. Therefore, PE2 = 0 for VOC emissions.

S-1703-204 (New Steam Generator)

The PE2 calculations are shown in the following table:

Pollutant	Daily PE2			
	EF1 (lb/MMBtu)	Heat Input (MMBtu/hr)	Operating Schedule (hr/day)	Daily PE2 (lb/day)
NO <sub>x</sub>	0.0070	85	24	14.3
SO <sub>x</sub>	0.00285	85	24	5.8
PM <sub>10</sub>	0.0030	85	24	6.1
CO	0.0185	85	24	37.7
VOC	0.0055	85	24	11.2

Pollutant	Annual PE2			
	EF1 (lb/MMBtu)	Heat Input (MMBtu/hr)	Operating Schedule (hr/year)	Annual PE2 (lb/year)
NO <sub>x</sub>	0.0070	85	8,760	5,212
SO <sub>x</sub>	0.00285	85	8,760	2,122
PM <sub>10</sub>	0.0030	85	8,760	2,234
CO	0.0185	85	8,760	13,775
VOC	0.0055	85	8,760	4,095

**Greenhouse Gas (GHG) Emissions:**

The GHG direct emissions from the proposed steam generator can be calculated using the following equation:

$$\text{GHG (metric tons as CO}_2\text{)} = \text{EF (kg-CO}_2\text{/MMBtu)} * \text{Ht Input/yr} \times (1 \times 10^{-3})$$

Where EF = 52.87 kg-CO<sub>2</sub>/MMBtu for 1,000 BTU/scf natural gas  
(CARB Compendium of Emission Factors, 2008)

$$\begin{aligned} \text{GHG (metric tons as CO}_2\text{)} &= 52.87 \times 744,600 \text{ MMBtu/yr} \times 10^{-3} \\ &= 39,367 \text{ metric tons as CO}_2 \end{aligned}$$

As shown in the above calculation, the GHG as CO<sub>2</sub> is already above the District threshold of 230 metric tons of CO<sub>2</sub> equivalent. To address the potential increase in GHG emissions, MOC is proposing to comply with the best performance standard (BPS) developed by the District for steam generators. The steam generator will utilize high efficiency variable speed drive electric motors and a bare tube area exceeding 235 ft/MMBtu of heat input, which meets the District's BPS. BPS conditions will be included to ensure compliance with the GHG requirements.

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

Pursuant to Section 4.9 of District Rule 2201, the Pre-Project Stationary Source Potential to Emit (SSPE1) is the Potential to Emit (PE) from all units with valid Authorities to Construct (ATC) or Permits to Operate (PTO) at the Stationary Source

and the quantity of emission reduction credits (ERC) which have been banked since September 19, 1991 for Actual Emissions Reductions that have occurred at the source, and which have not been used on-site.

SSPE1 is calculated in Appendix C and summarized in the table below.

Pre-Project Stationary Source Potential to Emit [SSPE1] (lb/year)					
	NO <sub>x</sub>	SO <sub>x</sub>	PM <sub>10</sub>	CO	VOC
Pre-Project SSPE (SSPE1)	85,805	21,023	39,439	170,441	1,844,918

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

Pursuant to Section 4.10 of District Rule 2201, the Post Project Stationary Source Potential to Emit (SSPE2) is the Potential to Emit (PE) from all units with valid Authorities to Construct (ATC) or Permits to Operate (PTO) at the Stationary Source and the quantity of emission reduction credits (ERC) which have been banked since September 19, 1991 for Actual Emissions Reductions that have occurred at the source, and which have not been used on-site.

Post Project Stationary Source Potential to Emit [SSPE2] (lb/year)					
	NO <sub>x</sub>	SO <sub>x</sub>	PM <sub>10</sub>	CO	VOC
Pre-Project SSPE (SSPE1)	85,805	21,023	39,439	170,441	1,844,918
S-1703-79-3 (removed)	0	0	0	0	-19,153
S-1703-204-0 (new)	5,212	2,122	2,234	13,775	4,095
Post Project SSPE (SSPE2)	91,017	23,145	41,673	184,216	1,829,860

#### 5. Major Source Determination

Pursuant to Section 3.24 of District Rule 2201, a Major Source is a stationary source with post-project emissions or a Post Project Stationary Source Potential to Emit (SSPE2), equal to or exceeding one or more of the following threshold values. However, Section 3.24.2 states, "for the purposes of determining major source status, the SSPE2 shall not include the quantity of emission reduction credits (ERC) which have been banked since September 19, 1991 for Actual Emissions Reductions that have occurred at the source, and which have not been used on-site."

<b>Major Source Determination (lb/year)</b>					
	NO <sub>x</sub>	SO <sub>x</sub>	PM <sub>10</sub>	CO	VOC
Pre-Project SSPE (SSPE1)	85,805	21,023	39,439	170,441	1,844,918
Post Project SSPE (SSPE2)	91,017	23,145	41,673	184,216	1,829,860
Major Source Threshold	20,000	140,000	140,000	200,000	20,000
Major Source?	Yes	No	No	No	Yes

As seen in the table above, the facility is an existing major source for NO<sub>x</sub> and VOC and will remain a major source for NO<sub>x</sub> and VOC as a result of this project.

## 6. Baseline Emissions (BE)

The BE calculation (in lbs/year) is performed pollutant-by-pollutant for each unit within the project, to calculate the QNEC and if applicable, to determine the amount of offsets required.

Pursuant to Section 3.8 of District Rule 2201, BE = Pre-project Potential to Emit for:

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

otherwise,

BE = Historic Actual Emissions (HAE), calculated pursuant to Section 3.23 of District Rule 2201.

### S-1703-79 (Tank to be removed)

As shown above, the facility is a major source for VOC. A Clean Emissions Unit is defined as a unit that meets the requirements for achieved-in-practice BACT during the five years immediately prior to the submission of the complete application. Achieved-in-Practice BACT for fixed roof organic liquid storage tanks less than 5,000 bbl in capacity is a P/V vent set to within 10% of maximum allowable pressure. District inspection records show that the tank proposed to be removed has been equipped with a P/V vent for the last five years. Therefore, the tank is a clean emissions unit and BE = PE1.

### S-1703-204 (New Steam Generator)

Since the proposed steam generator is a new unit, PE1 = BE = 0 for all pollutants.

## 7. SB 288 Major Modification

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

Since this facility is a major source for NO<sub>x</sub> and VOC, the project's PE2 is compared to the SB 288 Major Modification Thresholds in the following table in order to determine if the SB 288 Major Modification calculation is required.

SB 288 Major Modification Thresholds			
Pollutant	Project PE2 (lb/year)	Threshold (lb/year)	SB 288 Major Modification Calculation Required?
NO <sub>x</sub>	5,212	50,000	No
VOC	4,095	50,000	No

Since none of the SB 288 Major Modification Thresholds are surpassed with this project, this project does not constitute a SB288 Major Modification.

## 8. Federal Major Modification

District Rule 2201, Section 3.17 states that Federal Major Modifications are the same as "Major Modification" as defined in 40 CFR 51.165 and part D of Title I of the CAA.

The determination of Federal Major Modification is based on a two-step test. The first step is to determine if the project itself results in a significant emissions increase. In this determination, only emissions increases are counted. The second step is to determine if the project results in a significant net emissions increase.

However, for projects involving NO<sub>x</sub> and VOC emission increases (those pollutants for which the District is in extreme non-attainment), only Step 1 is performed as required in the Federal Clean Air Act Section 182 (e)(2). Step 2 does not need to be performed. Notwithstanding the above, a facility with a project that has an emission increase in NO<sub>x</sub> or VOCs can elect to offset the emission increase at a ratio of 1.3:1 using emission reductions that occurred at the same stationary source. Such emission reductions must be surplus of all current Federally enforceable requirements. Such projects shall not constitute a Federal Major Modification.

The project's emission increase for each pollutant is equal to the sum of the differences between the projected actual emissions and the baseline actual emissions (BAE) for existing units or the sum of the potential to emit for new emission units. For new emission units, BAE = 0.

Federal Major Modification Thresholds (lb/yr)		
	NOx	VOC
Project PE**	5,212	4,095
Threshold	0	0
Federal Major Mod?	Yes	Yes

\*\* From Section VII(C)(2)

As shown above, the proposed steam generator has emissions increases over the Federal Major Modification thresholds for NOx and VOC. In addition, MOC is unable to provide offsets from the same stationary source; therefore, the project constitutes a Federal Major Modification.

### 9. Quarterly Net Emissions Change (QNEC)

The QNEC is calculated solely to establish emissions that are used to complete the District's PAS emissions profile screen. The QNEC is calculated as follows:

$$\text{QNEC (lb/qtr)} = [\text{PE2 (lb/yr)} - \text{PE1 (lb/yr)}] / 4$$

QNEC					
	NOx	SOx	PM10	CO	VOC
PE2	5,212	2,122	2,234	13,775	4,095
PE1	0	0	0	0	0
QNEC (lb/qtr)	1,303	531	559	3,444	1,024

## VIII. Compliance

### Rule 2201 New and Modified Stationary Source Review Rule

#### A. Best Available Control Technology (BACT)

##### 1. BACT Applicability

BACT requirements are triggered on a pollutant-by-pollutant basis and on an emissions unit-by-emissions unit basis. Unless exempted pursuant to Section 4.2, BACT shall be required for the following actions:\*

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

\*Except for CO emissions from a new or modified emissions unit at a Stationary Source with an SSPE2 of less than 200,000 pounds per year of CO.

**a. New emissions units – PE > 2 lb/day**

As seen in Section VII.C.2 of this evaluation, the applicant is proposing to install a new steam generator with a PE greater than 2 lb/day for NO<sub>x</sub>, SO<sub>x</sub>, PM<sub>10</sub>, CO, and VOC. BACT is triggered for NO<sub>x</sub>, SO<sub>x</sub>, PM<sub>10</sub>, and VOC only since the PEs are greater than 2 lbs/day; however, BACT is not triggered for CO since the SSPE2 for CO is not greater than 200,000 lbs/year, as demonstrated in Section VII.C.5 of this document.

**b. Relocation of emissions units – PE > 2 lb/day**

As discussed in Section I above, there are no emissions units being relocated from one stationary source to another; therefore, BACT is not triggered.

**c. Modification of emissions units – AIPE > 2 lb/day**

As discussed in Section I above, there are no modified emissions units associated with this project; therefore, BACT is not triggered.

**d. SB 288/Federal Major Modification**

As discussed in Section VII.C.7 above, this project does constitute a Federal Major Modification for NO<sub>x</sub> and VOC emissions; therefore, BACT is triggered for NO<sub>x</sub> and VOC for all emissions units in the project for which there is an emission increase.

**2. BACT Guideline**

A BACT Guideline does not currently exist for natural gas-fired steam generators.

**3. Top-Down BACT Analysis**

Per Permit Services Policies and Procedures for BACT, a Top-Down BACT analysis shall be performed as a part of the application review for each application subject to the BACT requirements pursuant to the District's NSR Rule.

Pursuant to the attached Top-Down BACT Analysis (Appendix D), BACT has been satisfied with the following:

NO<sub>x</sub>: 6 ppmv @ 3% O<sub>2</sub>

SO<sub>x</sub>: Gaseous fuel with sulfur content not to exceed 1 gr/100 scf

PM<sub>10</sub>: Gaseous fuel with sulfur content not to exceed 1 gr/100 scf

VOC: Gaseous fuel

## B. Offsets

### 1. Offset Applicability

Pursuant to Section 4.5.3, offset requirements shall be triggered on a pollutant by pollutant basis and shall be required if the Post Project Stationary Source Potential to Emit (SSPE2) equals to or exceeds the offset threshold levels in Table 4-1 of Rule 2201.

The following table compares the post-project facility-wide annual emissions in order to determine if offsets will be required for this project.

Offset Determination (lb/year)					
	NO <sub>x</sub>	SO <sub>x</sub>	PM <sub>10</sub>	CO	VOC
Post Project SSPE (SSPE2)	91,017	23,145	41,673	184,216	1,829,860
Offset Threshold	20,000	54,750	29,200	200,000	20,000
Offsets triggered?	Yes	No	Yes	No	Yes

### 2. Quantity of Offsets Required

As seen above, the SSPE2 is greater than the offset thresholds for NO<sub>x</sub>, PM10, and VOC; therefore, offset calculations will be required for this project.

Per Sections 4.7.1 and 4.7.3, the quantity of offsets in pounds per year is calculated as follows for sources with an SSPE1 greater than the offset threshold levels before implementing the project being evaluated.

Offsets Required (lb/year) =  $(\sum[PE2 - BE] + ICCE) \times DOR$ , for all new or modified emissions units in the project,

Where,

- PE2 = Post Project Potential to Emit, (lb/year)
- BE = Baseline Emissions, (lb/year) = PE1 (for a new emissions unit)
- ICCE = Increase in Cargo Carrier Emissions, (lb/year)
- DOR = Distance Offset Ratio, determined pursuant to Section 4.8

There are no increases in cargo carrier emissions; therefore, offsets can be determined as follows:

$$\text{Offsets Required (lb/year)} = (\sum PE2 - \sum BE) \times DOR$$

District Rule 2201 Section 4.5.1 states that offsets are required for the "net emission increases resulting from a project". Since offsets are triggered for net emissions increases for a project rather than on a unit by unit basis, decreases in emissions from one unit within a project can be used to counteract increases in emissions from another unit within the project, such that the net emissions increase is equal to or less than zero.

The following table shows quantity of offsets required for the project, based on the net emission increases from the project:

Permit Unit	NO <sub>x</sub> (lb/yr)	PM <sub>10</sub> (lb/yr)	VOC (lb/yr)
S-1703-79-3	0	0	-19,153
S-1703-204-0	5,212	2,234	4,095
<b>Total Net Emissions Increase</b>	<b>5,212</b>	<b>2,234</b>	<b>-15,058</b>

As shown in the above table, there is a net decrease in VOC emissions; therefore, offsets will only be required for increases in NO<sub>x</sub> and PM<sub>10</sub> emissions.

MOC is proposing to use the following ERC certificates:

ERC Certificate	Originally Issued To	Location Generated	Distance Offset Ratio
C-1102-2	Guardian Industries Corp	11535 E. Mountain View Ave, Kingsburg	1.5 : 1
C-1102-5	Guardian Industries Corp	11535 E. Mountain View Ave, Kingsburg	1.5 : 1

The amount of ERCs needed to offset the NO<sub>x</sub> and PM<sub>10</sub> increases from this project are calculated below. The District recognizes a SO<sub>x</sub>:PM<sub>10</sub> interpollutant offset ratio of 1:1 (District Policy APR 14XX).

	Q1	Q2	Q3	Q4
NO <sub>x</sub> offsets req'd (w/o DOR)	1,303	1,303	1,303	1,303
NO <sub>x</sub> offsets req'd (1.5:1 DOR)	1,955	1,955	1,955	1,955
NO <sub>x</sub> ERCs available (from C-1102-2)	2,028	2,028	2,028	2,028
Withdraw NO <sub>x</sub> ERCs	1,955	1,955	1,955	1,955
<b>NO<sub>x</sub> ERCs to be re-issued</b>	<b>73</b>	<b>73</b>	<b>73</b>	<b>73</b>
PM <sub>10</sub> offsets req'd (w/o DOR)	559	559	559	559
PM <sub>10</sub> offsets req'd (1.5:1 DOR)	838	838	838	838
SO <sub>x</sub> offsets req'd (1:1 Interpollutant ratio)	838	838	838	838
SO <sub>x</sub> ERCs available (from C-1102-5)	1,006	1,006	1,006	1,006
Withdraw SO <sub>x</sub> ERCs	839	839	839	839
<b>SO<sub>x</sub> ERCs to be re-issued</b>	<b>167</b>	<b>167</b>	<b>167</b>	<b>167</b>

As shown above, MOC has provided sufficient credits to offset the NO<sub>x</sub> and PM<sub>10</sub> increases from this project. Therefore, the following conditions will be listed on the ATC to ensure compliance:

- Prior to operating equipment under this Authority to Construct, permittee shall surrender emissions reduction credits for the following increases in emissions: NO<sub>x</sub>: 1,303 lb/qr and PM<sub>10</sub>: 559 lb/qr. Offsets shall be provided at the applicable offset ratio specified in Section 4.8 of Rule 2201. [District Rule 2201]

- ERC Certificate Numbers C-1102-2 and C-1102-5 or certificates split from these certificates shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201]

## C. Public Notification

### 1. Applicability

Public noticing is required for:

- a. New Major Sources, Federal Major Modifications, and SB288 Major Modifications,
- b. Any new emissions unit with a Potential to Emit greater than 100 pounds during any one day for any one pollutant,
- c. Any project which results in the offset thresholds being surpassed, and/or
- d. Any project with an SSPE of greater than 20,000 lb/year for any pollutant.

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

New Major Sources are new facilities, which are also Major Sources. Since this is not a new facility, public noticing is not required for this project for New Major Source purposes.

As demonstrated in VII.C.7, this project is a Federal Major Modification; therefore, public noticing for Federal Major Modification purposes is required.

#### **b. PE > 100 lb/day**

Applications which include a new emissions unit with a Potential to Emit greater than 100 pounds during any one day for any pollutant will trigger public noticing requirements. As seen in Section VII.C.2 above, this project does not include a new emissions unit which has daily emissions greater than 100 lb/day for any pollutant; therefore, public noticing for PE > 100 lb/day purposes is not required.

#### **c. Offset Threshold**

The following table compares the SSPE1 with the SSPE2 in order to determine if any offset thresholds have been surpassed with this project.

Offset Threshold				
Pollutant	SSPE1 (lb/year)	SSPE2 (lb/year)	Offset Threshold	Public Notice Required?
NO <sub>x</sub>	85,805	91,017	20,000 lb/year	No
SO <sub>x</sub>	21,023	23,145	54,750 lb/year	No
PM <sub>10</sub>	39,439	41,673	29,200 lb/year	No
CO	170,441	184,216	200,000 lb/year	No
VOC	1,844,918	1,839,420	20,000 lb/year	No

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

**d. SSIPE > 20,000 lb/year**

Public notification is required for any permitting action that results in a Stationary Source Increase in Permitted Emissions (SSIPE) of more than 20,000 lb/year of any affected pollutant. According to District policy, the SSIPE is calculated as the Post Project Stationary Source Potential to Emit (SSPE2) minus the Pre-Project Stationary Source Potential to Emit (SSPE1), i.e.  $SSIPE = SSPE2 - SSPE1$ . The values for SSPE2 and SSPE1 are calculated according to Rule 2201, Sections 4.9 and 4.10, respectively. The SSIPE is compared to the SSIPE Public Notice thresholds in the following table:

Stationary Source Increase in Permitted Emissions [SSIPE] – Public Notice					
Pollutant	SSPE2 (lb/year)	SSPE1 (lb/year)	SSIPE (lb/year)	SSIPE Public Notice Threshold	Public Notice Required?
NO <sub>x</sub>	91,017	85,805	5,212	20,000 lb/year	No
SO <sub>x</sub>	23,145	21,023	2,122	20,000 lb/year	No
PM <sub>10</sub>	41,673	39,439	2,234	20,000 lb/year	No
CO	184,216	170,441	13,775	20,000 lb/year	No
VOC	1,839,420	1,844,918	-5,498	20,000 lb/year	No

As demonstrated above, the SSIPEs for all pollutants were less than 20,000 lb/year; therefore, public noticing for SSIPE purposes is not required.

**2. Public Notice Action**

As discussed above, public noticing is required for this project for Federal Major Modification purposes. Therefore, public notice documents will be submitted to the California Air Resources Board (CARB) and EPA and a public notice will be published in a local newspaper of general circulation prior to the issuance of the ATC for this equipment.

## D. Daily Emission Limits (DELs)

Daily Emissions Limitations (DELs) and other enforceable conditions are required by Section 3.16 to restrict a unit's maximum daily emissions, to a level at or below the emissions associated with the maximum design capacity. Per Sections 3.16.1 and 3.16.2, the DEL must be contained in the latest ATC and contained in or enforced by the latest PTO and enforceable, in a practicable manner, on a daily basis. DELs are also required to enforce the applicability of BACT.

### Proposed Rule 2201 (DEL) Conditions:

- Emissions rates from this unit shall not exceed any of the following: 6 ppmv NO<sub>x</sub> @ 3% O<sub>2</sub> or 0.007 lb-NO<sub>x</sub>/MMBtu, 0.003 lb-PM<sub>10</sub>/MMBtu, 25 ppmv CO @ 3% O<sub>2</sub> or 0.0185 lb-CO/MMBtu, or 0.0055 lb-VOC/MMBtu. [District Rules 2201, 4301, 4305, 4306, and 4320]
- The unit shall only be fired on PUC-quality natural gas with a maximum sulfur content of 1.0 gr S/100scf. [District Rule 2201]

## E. Compliance Assurance

### 1. Source Testing

The new steam generator is subject to District Rule 4305, *Boilers, Steam Generators and Process Heaters, Phase 2*, District Rule 4306, *Boilers, Steam Generators and Process Heaters, Phase 3*, and District Rule 4320, *Advanced Emission Reduction Options for Boilers, Steam Generators, and Process Heaters Greater than 5 MMBtu/hr*. Source testing for NO<sub>x</sub> and CO will be required within 60 days of initial operation and at least once every 12 months thereafter. MOC proposed a PM<sub>10</sub> emission factor that is lower than that specified in AP-42 for external natural gas combustion. Previous source tests of similar steam generators fired on similar fuel resulted in PM<sub>10</sub> emissions of 0.001 lb/MMBtu. The proposed emission limit of 0.003 lb/MMBtu should be readily achievable; therefore, no PM<sub>10</sub> source test will be required. Additional source testing requirements will be discussed in the compliance review section of this evaluation.

### 2. Monitoring

As required by District Rules 4305, 4306, and 4320, the steam generator is subject to monitoring requirements. Monitoring requirements in accordance with District Rules 4305, 4306, and 4320 are addressed in the compliance review section of this evaluation.

### 3. Recordkeeping

As required by District Rules 4305, 4306, and 4320, the steam generator is subject to recordkeeping requirements. Recordkeeping requirements in accordance with District Rules 4305, 4306, and 4320 are addressed in the compliance review section of this evaluation. The following condition will be listed on the permit to ensure compliance:

- All records shall be maintained for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rules 1070, 4305, 4306, and 4320]

**4. Reporting**

No reporting is required to demonstrate compliance with Rule 2201.

**F. Ambient Air Quality Analysis**

Section 4.14.1 of this Rule requires that an ambient air quality analysis (AAQA) be conducted for the purpose of determining whether a new or modified Stationary Source will cause or make worse a violation of an air quality standard. The Technical Services Division of the SJVAPCD conducted the required analysis. Please refer to Appendix E of this document for the AAQA summary sheet.

The results from the Criteria Pollutant Modeling are as follows:

**Criteria Pollutant Modeling Results\***  
Values are in  $\mu\text{g}/\text{m}^3$

	1 Hour	3 Hours	8 Hours	24 Hours	Annual
CO	Pass	X	Pass	X	X
NO <sub>x</sub>	Pass <sup>1</sup>	X	X	X	Pass
SO <sub>x</sub>	Pass <sup>2</sup>	Pass	X	Pass	Pass
PM <sub>10</sub>	X	X	X	Pass <sup>3</sup>	Pass <sup>3</sup>

\*Results were taken from PSD spreadsheet.

<sup>1</sup> The project was compared to the 1-hour NO2 National Ambient Air Quality Standard that became effective on April 12, 2010 using the District's approved procedures. The criteria pollutant 1-hour value passed using TIER I NO2 NAAQS modeling.

<sup>2</sup> The project was compared to the 1-hour SO2 National Ambient Air Quality Standard that became effective on August 23, 2010 using the District's approved procedures.

<sup>3</sup> The maximum predicted concentration for emissions of these criteria pollutants from the proposed unit are below EPA's level of significance as found in 40 CFR Part 51.165 (b)(2).

The emissions from the proposed equipment will not cause or contribute significantly to a violation of the State and National AAQS.

**G. Compliance Certification**

Pursuant to Section 4.15.2, the owner of a proposed new major source or federal major modification shall demonstrate to the satisfaction of the APCO that all major stationary sources owned or operated by such person (or any entity controlling, controlled by, or under common control with such person) in California which are subject to emission limitations are in compliance or on a schedule for compliance with all applicable limitations and standards.

MOC provided verification that all major Stationary Sources owned or operated by MOC in California are in compliance or on a schedule for compliance with all applicable emission limitations and standards (see Appendix F).

#### **H. Alternate Siting Analysis**

Section 4.15.1 of this Rule requires that an analysis of alternative sites, sizes and production processes is required under Section 173 of the Federal Clean Air Act. The applicant is required to prepare an analysis functionally equivalent to the requirements of Division 13, Section 21000 et seq. of the Public Resources Code.

The proposed steam generator represents an expansion at an existing stationary source and cannot be relocated since it is an existing heavy crude oil production operation. Therefore, an alternate location is not viable for this project.

#### **Rule 2520 Federally Mandated Operating Permits**

This facility is subject to this Rule, and has received their Title V Operating Permit. Section 3.29 defines a significant permit modification as a "permit amendment that does not qualify as a minor permit modification or administrative amendment."

The project is a Federal Major Modification and therefore is also a Title V Significant Modification. As discussed above, the facility has applied for a Certificate of Conformity (COC); therefore, the facility must apply to modify their Title V permit with an administrative amendment, prior to operating with the proposed modifications. Included in Appendix F is MOC's Title V Compliance Certification form. The following conditions will be listed on the permit to ensure compliance:

- {1830} This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District Rule 2201]
- {1831} Prior to operating with modifications authorized by this Authority to Construct, the facility shall submit an application to modify the Title V permit with an administrative amendment in accordance with District Rule 2520 Section 5.3.4. [District Rule 2520, 5.3.4]

Continued compliance with this rule is expected.

#### **Rule 4001 New Source Performance Standards (NSPS)**

**40 CFR Part 60, Subpart Dc: Small Industrial-Commercial-Industrial Steam Generators between 10 MMBtu/hr and 100 MMBtu/hr (post-6/9/89 construction, modification, or reconstruction)**

The proposed steam generator has a rating of 85 MMBtu/hr and is fired on gaseous fuel. Subpart Dc has no standards for gas-fired steam generators. Therefore the subject steam generator is not an affected facility and subpart Dc does not apply.

### Rule 4101 Visible Emissions

Per Section 5.0, no person shall discharge into the atmosphere emissions of any air contaminant aggregating more than 3 minutes in any hour which is as dark as or darker than Ringelmann 1 (or 20% opacity). As long as the equipment is operated properly, visible emissions are not expected to exceed Ringelmann 1 or 20% opacity. Therefore, compliance with this rule is expected.

### Rule 4102 Nuisance

Section 4.0 prohibits discharge of air contaminants which could cause injury, detriment, nuisance or annoyance to the public. Public nuisance conditions are not expected as a result of these operations, provided the equipment is well maintained. Therefore, compliance with this rule is expected.

### California Health & Safety Code 41700 (Health Risk Assessment)

District Policy APR 1905 – Risk Management Policy for Permitting New and Modified Sources specifies that for an increase in emissions associated with a proposed new source or modification, the District perform an analysis to determine the possible impact to the nearest resident or worksite.

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

The cancer risk for this project is shown in the following table:

HRA Summary		
Unit	Cancer Risk	T-BACT Required
S-1703-204-0	1.52 per million	Yes

### Discussion of T-BACT

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

For this project T-BACT is triggered for VOC. T-BACT is satisfied with BACT for VOC (see Appendix D), which is the use gaseous fuel; therefore, compliance with the District's Risk Management Policy is expected.

District policy APR 1905 also specifies that the increase in emissions associated with a proposed new source or modification not have acute or chronic indices, or a cancer risk greater than the District's significance levels (i.e. acute and/or chronic indices greater than 1

and a cancer risk greater than 10 in a million). As outlined by the HRA Summary in Appendix E of this report, the emissions increases for this project was determined to be less than significant.

The following condition will be listed on the permit to ensure compliance:

- {1898} The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap (flapper ok), roof overhang, or any other obstruction. [District Rule 4102]

**Rule 4201 Particulate Matter Concentration**

Section 3.1 prohibits discharge of dust, fumes, or total particulate matter into the atmosphere from any single source operation in excess of 0.1 grain per dry standard cubic foot.

F-Factor for NG: 8,578 dscf/MMBtu at 60 °F  
 PM<sub>10</sub> Emission Factor: 0.003 lb-PM<sub>10</sub>/MMBtu  
 Percentage of PM as PM<sub>10</sub> in Exhaust: 100%  
 Exhaust Oxygen (O<sub>2</sub>) Concentration: 3%

$$\text{Excess Air Correction to F Factor} = \frac{20.9}{(20.9 - 3)} = 1.17$$

$$GL = \left( \frac{0.003 \text{ lb} - \text{PM}}{\text{MMBtu}} \times \frac{7,000 \text{ grain}}{\text{lb} - \text{PM}} \right) / \left( \frac{8,578 \text{ ft}^3}{\text{MMBtu}} \times 1.17 \right)$$

$$GL = 0.0024 \text{ grain/dscf} < 0.1 \text{ grain/dscf}$$

Therefore, compliance with District Rule 4201 requirements is expected.

**Rule 4301 Fuel Burning Equipment**

This rule specifies maximum emission rates in lb/hr for SO<sub>2</sub>, NO<sub>2</sub>, and combustion contaminants (defined as total PM in Rule 1020). This rule also limits combustion contaminants to ≤ 0.1 gr/scf. According to AP 42 (Table 1.4-2, footnote c), all PM emissions from natural gas combustion are less than 1 μm in diameter.

The maximum emission rates in lb/hr for the steam generator in this project are as follows:

District Rule 4301 Limits			
Pollutant	NO <sub>2</sub>	Total PM	SO <sub>2</sub>
S-1703-204-0	0.007 lb/MMBtu x 85 MMBtu/hr = 0.60 lb/hr	0.003 lb/MMBtu x 85 MMBtu/hr = 0.26 lb/hr	0.00285 lb/MMBtu x 85 MMBtu/hr = 0.24 lb/hr
Rule Limit (lb/hr)	140	10	200

The above table indicates compliance with the maximum lb/hr emissions limits in this rule; therefore, continued compliance is expected.

### **Rule 4305 Boilers, Steam Generators, and Process Steam Generators – Phase 2**

The proposed steam generator is natural gas-fired with a maximum heat input of 85.0 MMBtu/hr. Pursuant to Section 2.0 of District Rule 4305, the unit is subject to District Rule 4305, *Boilers, Steam Generators and Process Heaters – Phase 2*.

In addition, the unit is also subject to District Rule 4306, *Boilers, Steam Generators and Process Heaters – Phase 3* and Rule 4320, *Advanced Emission Reduction Options for Boilers, Steam Generators and Process Heaters Greater than 5 MMBtu/hr*.

Since the emissions limits and all other requirements of District Rule 4320 are equivalent or more stringent than District Rule 4305 requirements, compliance with District Rule 4320 requirements will satisfy requirements of District Rule 4305.

### **Rule 4306 Boilers, Steam Generators, and Process Heaters – Phase 3**

The proposed steam generator is natural gas-fired with a maximum heat input of 85.0 MMBtu/hr. Pursuant to Section 2.0 of District Rule 4306, the unit is subject to District Rule 4306, *Boilers, Steam Generators and Process Heaters – Phase 3*.

In addition, the unit is also subject to District Rule 4320, *Advanced Emission Reduction Options for Boilers, Steam Generators and Process Heaters Greater than 5 MMBtu/hr*

Since the emissions limits and all other requirements of District Rule 4320 are equivalent or more stringent than District Rule 4306 requirements, compliance with District Rule 4320 requirements will satisfy requirements of District Rule 4306.

### **Rule 4320 Advanced Emission Reduction Options for Boilers, Steam Generators, and Process Heaters Greater than 5 MMBTU/hr**

This rule limits NO<sub>x</sub>, CO, SO<sub>2</sub> and PM<sub>10</sub> emissions from boilers, steam generators and process heaters rated greater than 5 MMBtu/hr. This rule also provides a compliance option of payment of fees in proportion to the actual amount of NO<sub>x</sub> emitted over the previous year.

The unit in this project is rated at greater than 5 MMBtu/hr heat input and is subject to this rule.

### **Section 5.2, NO<sub>x</sub> and CO Emission Limits**

Section 5.2.1 states that on and after the indicated Compliance Deadline, units shall not be operated in a manner which exceeds the applicable NO<sub>x</sub> limit specified in Table 1 of this rule, shown below. On and after October 1, 2008, units shall not be operated in a manner which exceeds a carbon dioxide (CO) emissions limit of 400 ppmv.

<b>Rule 4320 NOx Emission Limits</b>			
<b>C. Oilfield Steam Generators</b>	<b>NOx Limit</b>	<b>Authority to Construct</b>	<b>Compliance Deadline</b>
Units with a total rated heat input >20 MMBtu/hr	a) Standard Schedule 7 ppmv or 0.008 lb/MMBtu; or	July 1, 2009	July 1, 2010
	b) Staged Enhanced Schedule Initial Limit 9 ppmv or 0.011 lb/MMBtu; and	July 1, 2011	July 1, 2012
	Final Limit 5 ppmv or 0.0062 lb/MMBtu	January 1, 2013	January 1, 2014

MOC has proposed to meet the standard schedule NOx emission limit. However, MOC has proposed a NOx limit of 6 ppmv instead of 7 ppmv @ 3% O2. The proposed CO emission factor is 25 ppmvd @ 3% O2 or 0.0185 lb/MMBtu.

Therefore, compliance with Section 5.2 of District Rule 4320 is expected.

A condition listing the emissions limits will be placed on the permit as shown in the DEL section of Rule 2201.

#### **Section 5.4, Particulate Matter Control Requirements**

Section 5.4 of the rule requires one of four options for control of particulate matter: 1) combustion of PUC-quality natural gas, commercial propane, butane, or liquefied petroleum gas, or a combination of such gases, 2) limit fuel sulfur content to no more than five (5) grains of total sulfur per one hundred (100) standard cubic, 3) install and properly operate an emission control system that reduces SO<sub>2</sub> emissions by at least 95% by weight; or limit exhaust SO<sub>2</sub> to less than or equal to 9 ppmv corrected to 3.0% O2 or 4) refinery units, which require modification of refinery equipment to reduce sulfur emissions, shall be in compliance with the applicable requirement in Section 5.4.1 no later than July 1, 2013.

The steam generator will be fired exclusively on purchased natural gas. The steam generator will have a fuel sulfur content limit of no more than 1.0 gr-S/100 scf. Therefore, compliance with Section 5.4 of District Rule 4320 is expected.

#### **Section 5.5, Low-Use Unit**

This section discusses the requirements of low-use units. MOC is not requesting low-use status for the proposed steam generator; therefore, this section of the rule is not applicable to this project.

## Section 5.6, Startup and Shutdown Provisions

Applicable emissions limits are not required during startup and shutdown provided the duration of each start-up or each shutdown shall not exceed two hours, the emission control system shall be in operation, and emissions shall be minimized insofar as technologically feasible during start-up or shutdown or operator has submitted an application for a Permit to Operate condition to allow more than two hours for each start-up or each shutdown provided the operator meets all of the conditions specified in Sections 5.6.3.1 through 5.6.3.3.

MOC has not proposed startup and shutdown provisions; therefore, this section of the rule is not applicable to this project.

## Section 5.7, Monitoring Provisions

Section 5.7 requires either use of an APCO approved Continuous Emissions Monitoring System (CEMS) for NO<sub>x</sub>, CO, and oxygen, or implementation of an APCO-approved Alternate Monitoring System.

In order to satisfy the requirements of District Rule 4320, MOC has proposed to use pre-approved alternate monitoring scheme A (pursuant to District Policy SSP-1105), which requires that monitoring of NO<sub>x</sub>, CO, and O<sub>2</sub> exhaust concentrations shall be conducted at least once per month (in which a source test is not performed) using a portable analyzer. The following conditions will be incorporated into the permit in order to ensure compliance with the requirements of the proposed alternate monitoring plan:

- {4063} The permittee shall monitor and record the stack concentration of NO<sub>x</sub>, CO, and O<sub>2</sub> at least once every month (in which a source test is not performed) using a portable analyzer that meets District specifications. Monitoring shall not be required if the unit is not in operation, i.e. the unit need not be started solely to perform monitoring. Monitoring shall be performed within 5 days of restarting the unit unless monitoring has been performed within the last month. [District Rules 4305, 4306, and 4320]
- {4064} If either the NO<sub>x</sub> or CO concentrations corrected to 3% O<sub>2</sub>, as measured by the portable analyzer, exceed the allowable emissions concentration, the permittee shall return the emissions to within the acceptable range as soon as possible, but no longer than 1 hour of operation after detection. If the portable analyzer readings continue to exceed the allowable emissions concentration after 1 hour of operation after detection, the permittee shall notify the District within the following 1 hour and conduct a certified source test within 60 days of the first exceedance. In lieu of conducting a source test, the permittee may stipulate a violation has occurred, subject to enforcement action. The permittee must then correct the violation, show compliance has been re-established, and resume monitoring procedures. If the deviations are the result of a qualifying breakdown condition pursuant to Rule 1100, the permittee may fully comply with Rule 1100 in lieu of the performing the notification and testing required by this condition. [District Rules 4305, 4306, and 4320]
- {4065} All alternate monitoring parameter emission readings shall be taken with the unit operating either at conditions representative of normal operations or conditions

specified in the permit-to-operate. The analyzer shall be calibrated, maintained, and operated in accordance with the manufacturer's specifications and recommendations or a protocol approved by the APCO. Emission readings taken shall be averaged over a 15 consecutive-minute period by either taking a cumulative 15 consecutive-minute sample reading or by taking at least five (5) readings, evenly spaced out over the 15 consecutive-minute period. [District Rules 4305, 4306, and 4320]

- {4066} The permittee shall maintain records of: (1) the date and time of NO<sub>x</sub>, CO, and O<sub>2</sub> measurements, (2) the O<sub>2</sub> concentration in percent by volume and the measured NO<sub>x</sub> and CO concentrations corrected to 3% O<sub>2</sub>, (3) make and model of exhaust gas analyzer, (4) exhaust gas analyzer calibration records, and (5) a description of any corrective action taken to maintain the emissions within the acceptable range. [District Rules 4305, 4306, and 4320]

#### **5.7.6, Monitoring SO<sub>x</sub> Emissions**

Section 5.7.6 requires the monitoring of SO<sub>x</sub> emissions. The following conditions will be placed on the permit to ensure compliance with the requirements of this section:

- Permittee shall determine sulfur content of combusted gas annually or shall demonstrate that the combusted gas is provided from a PUC or FERC regulated source. [District Rules 1081 and 4320]

#### **Section 5.8 Compliance Determination**

Section 5.8.1 requires that the operator of any unit have the option of complying with either the applicable heat input (lb/MMBtu) emission limits or the concentration (ppmv) emission limits specified in Section 5.2. The emission limits selected to demonstrate compliance shall be specified in the source test proposal pursuant to Rule 1081 (Source Sampling). Therefore, the following condition will be listed on the permit as follows:

- {2976} The source plan shall identify which basis (ppmv or lb/MMBtu) will be used to demonstrate compliance. [District Rules 4305, 4306 and 4320]

Section 5.8.2 requires that all emissions measurements shall be made with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. Unless otherwise specified in the Permit to Operate, no determination of compliance shall be established within two hours after a continuous period in which fuel flow to the unit is shut off for 30 minutes or longer, or within 30 minutes after a re-ignition as defined in Section 3.0. Therefore, the following condition will be listed on the permit as follows:

- {2972} All emissions measurements shall be made with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. Unless otherwise specified in the Permit to Operate, no determination of compliance shall be established within two hours after a continuous period in which fuel flow to the unit is shut off for 30 minutes or longer, or within 30 minutes after a re-ignition as defined in Section 3.0 of District Rule 4320. For the purposes of permittee-performed alternate monitoring, emissions measurements may be performed at any

time after the unit reaches conditions representative of normal operation. [District Rules 4305, 4306 and 4320]

Section 5.8.4 requires that for emissions monitoring pursuant to Sections 5.7.1 and 6.3.1 using a portable NO<sub>x</sub> analyzer as part of an APCO approved Alternate Emissions Monitoring System, emission readings shall be averaged over a 15 consecutive-minute period by either taking a cumulative 15-consecutive-minute sample reading or by taking at least five (5) readings evenly spaced out over the 15-consecutive-minute period. Therefore, the following previously listed condition will be on the permit as follows:

- {2937} All alternate monitoring parameter emission readings shall be taken with the unit operating either at conditions representative of normal operations or conditions specified in the permit-to-operate. The analyzer shall be calibrated, maintained, and operated in accordance with the manufacturer's specifications and recommendations or a protocol approved by the APCO. Emission readings taken shall be averaged over a 15 consecutive-minute period by either taking a cumulative 15 consecutive-minute sample reading or by taking at least five (5) readings, evenly spaced out over the 15 consecutive-minute period. [District Rules 4305, 4306 and 4320]

Section 5.8.5 requires that for emissions source testing performed pursuant to Section 6.3.1 for the purpose of determining compliance with an applicable standard or numerical limitation of this rule, the arithmetic average of three (3) 30-consecutive-minute test runs shall apply. If two (2) of three (3) runs are above an applicable limit the test cannot be used to demonstrate compliance with an applicable limit. Therefore, the following permit condition will be listed on the permit as follows:

- {2980} For emissions source testing, the arithmetic average of three 30-consecutive-minute test runs shall apply. If two of three runs are above an applicable limit the test cannot be used to demonstrate compliance with an applicable limit. [District Rules 4305, 4306 and 4320]

### **Section 6.1, Recordkeeping**

Section 6.1 states that the records required by Sections 6.1.1 through 6.1.5 shall be maintained for five calendar years and shall be made available to the APCO and EPA upon request. Failure to maintain records or information contained in the records that demonstrate noncompliance with the applicable requirements of this rule shall constitute a violation of this rule.

### **Section 6.2, Test Methods**

Section 6.2 identifies test methods to be used when determining compliance with the rule. The following conditions will be listed on the permit as follows:

- {109} Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test, and a source test plan must be submitted for approval at least 15 days prior to testing. [District Rule 1081]

- The following test methods shall be used: NO<sub>x</sub> (ppmv) - EPA Method 7E or ARB Method 100, NO<sub>x</sub> (lb/MMBtu) - EPA Method 19; CO (ppmv) - EPA Method 10 or ARB Method 100; Stack gas oxygen (O<sub>2</sub>) - EPA Method 3 or 3A or ARB Method 100; stack gas velocities - EPA Method 2; Stack gas moisture content - EPA Method 4; SO<sub>x</sub> - EPA Method 6C or 8 or ARB Method 100; fuel gas sulfur as H<sub>2</sub>S content - EPA Method 11 or 15; and fuel hhv (MMBtu) -ASTM D 1826 or D 1945 in conjunction with ASTM D 3588. [District Rules 4305, 4306 and 4320]

### Section 6.3, Compliance Testing

Section 6.3.1 requires that each unit subject to the requirements in Section 5.2 shall be source tested at least once every 12 months, except if two consecutive annual source tests demonstrate compliance, source testing may be performed every 36 months. If such a source test demonstrates non-compliance, source testing shall revert to every 12 months. The following conditions will be listed on the permit as follows:

- A source test to demonstrate compliance with NO<sub>x</sub> and CO emission limits shall be performed within 60 days of startup of this unit. [District Rules 2201 and 4320]
- Source testing to measure NO<sub>x</sub> and CO emissions from this unit shall be conducted at least once every twelve (12) months. After demonstrating compliance on two (2) consecutive annual source tests, the unit shall be tested not less than once every thirty-six (36) months. If the result of the 36-month source test demonstrates that the unit does not meet the applicable emission limits, the source testing frequency shall revert to at least once every twelve (12) months. [District Rules 4305, 4306 and 4320]
- {110} The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081]

### Rule 4801 Sulfur Compounds

A person shall not discharge into the atmosphere sulfur compounds, which would exist as a liquid or gas at standard conditions, exceeding in concentration at the point of discharge: 0.2% by volume calculated as SO<sub>2</sub>, on a dry basis averaged over 15 consecutive minutes.

Using the ideal gas equation and the emission factors presented in Section VII, the sulfur compound emissions are calculated as follows:

$$\text{Volume SO}_2 = \frac{nRT}{P}$$

With:

N = moles SO<sub>2</sub>

T (Standard Temperature) = 60°F = 520°R

P (Standard Pressure) = 14.7 psi

R (Universal Gas Constant) =  $\frac{10.73 \text{ psi} \cdot \text{ft}^3}{\text{lb} \cdot \text{mol} \cdot ^\circ\text{R}}$

$$\frac{0.00285 \text{ lb} - \text{SO}_x}{\text{MMBtu}} \times \frac{\text{MMBtu}}{8,578 \text{ dscf}} \times \frac{1 \text{ lb} \cdot \text{mol}}{64 \text{ lb}} \times \frac{10.73 \text{ psi} \cdot \text{ft}^3}{\text{lb} \cdot \text{mol} \cdot ^\circ\text{R}} \times \frac{520^\circ\text{R}}{14.7 \text{ psi}} \times \frac{1,000,000 \cdot \text{parts}}{\text{million}} = 1.97 \frac{\text{parts}}{\text{million}}$$

$$\text{Sulfur Concentration} = 1.97 \frac{\text{parts}}{\text{million}} < 2,000 \text{ ppmv (or 0.2\%)}$$

Therefore, compliance with District Rule 4801 requirements is expected.

### **California Health & Safety Code 42301.6 (School Notice)**

The District has verified that this site is not located within 1,000 feet of a school. Therefore, pursuant to California Health and Safety Code 42301.6, a school notice is not required.

### **California Environmental Quality Act (CEQA)**

The California Environmental Quality Act (CEQA) requires each public agency to adopt objectives, criteria, and specific procedures consistent with CEQA Statutes and the CEQA Guidelines for administering its responsibilities under CEQA, including the orderly evaluation of projects and preparation of environmental documents. The San Joaquin Valley Unified Air Pollution Control District (District) adopted its *Environmental Review Guidelines* (ERG) in 2001. The basic purposes of CEQA are to:

- Inform governmental decision-makers and the public about the potential, significant environmental effects of proposed activities;
- Identify the ways that environmental damage can be avoided or significantly reduced;
- Prevent significant, avoidable damage to the environment by requiring changes in projects through the use of alternatives or mitigation measures when the governmental agency finds the changes to be feasible; and
- Disclose to the public the reasons why a governmental agency approved the project in the manner the agency chose if significant environmental effects are involved.

### **Greenhouse Gas (GHG) Significance Determination**

It is determined that no other agency has or will prepare an environmental review document for the project. Thus the District is the Lead Agency for this project.

Project specific impacts on global climate change were evaluated consistent with the adopted District policy – *Addressing GHG Emission Impacts for Stationary Source Projects Under CEQA When Serving as the Lead Agency*. The District's engineering evaluation (this document) demonstrates that the project includes Best Performance Standards (BPS) for each class and category of greenhouse gas emissions unit. The District therefore concludes that the project would have a less than cumulatively significant impact on global climate change.

The following condition will be listed on the permit to ensure compliance:

- This unit shall be equipped with horizontal convection section with at least 235 square feet of bare tube surface area (or thermodynamically equivalent number of square feet of finned tube) per MMBtu/hr of heat input and variable frequency drive high efficiency electrical motors driving the blower and water pump. Documentation showing this unit is so equipped shall be retained on site. [Public Resources Code 21000-21177, CEQA]

### District CEQA Findings

The District is the Lead Agency for this project because there is no other agency with broader statutory authority over this project. The District performed an Engineering Evaluation (this document) for the proposed project and determined that the activity will occur at an existing facility and the project involves negligible expansion of the existing use. Furthermore, the District determined that the activity will not have a significant effect on the environment. The District finds that the activity is categorically exempt from the provisions of CEQA pursuant to CEQA Guideline § 15031 (Existing Facilities), and finds that the project is exempt per the general rule that CEQA applies only to projects which have the potential for causing a significant effect on the environment (CEQA Guidelines §15061(b)(3)).

### IX. Recommendation

Compliance with all applicable rules and regulations is expected. Pending a successful NSR Public Noticing period, issue Authority to Construct S-1703-204-0 subject to the permit conditions on the attached draft Authority to Construct in Appendix G.

### X. Billing Information

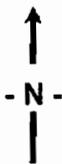
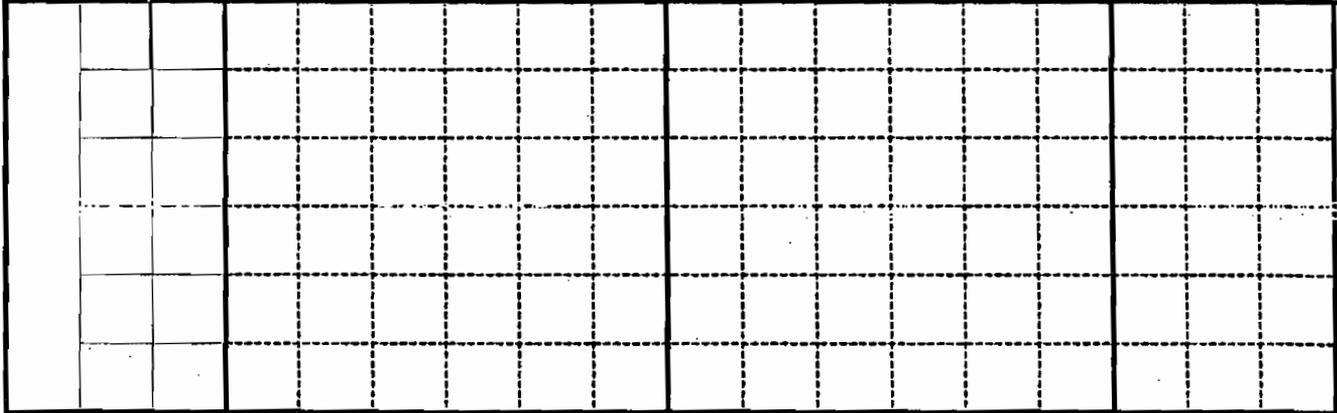
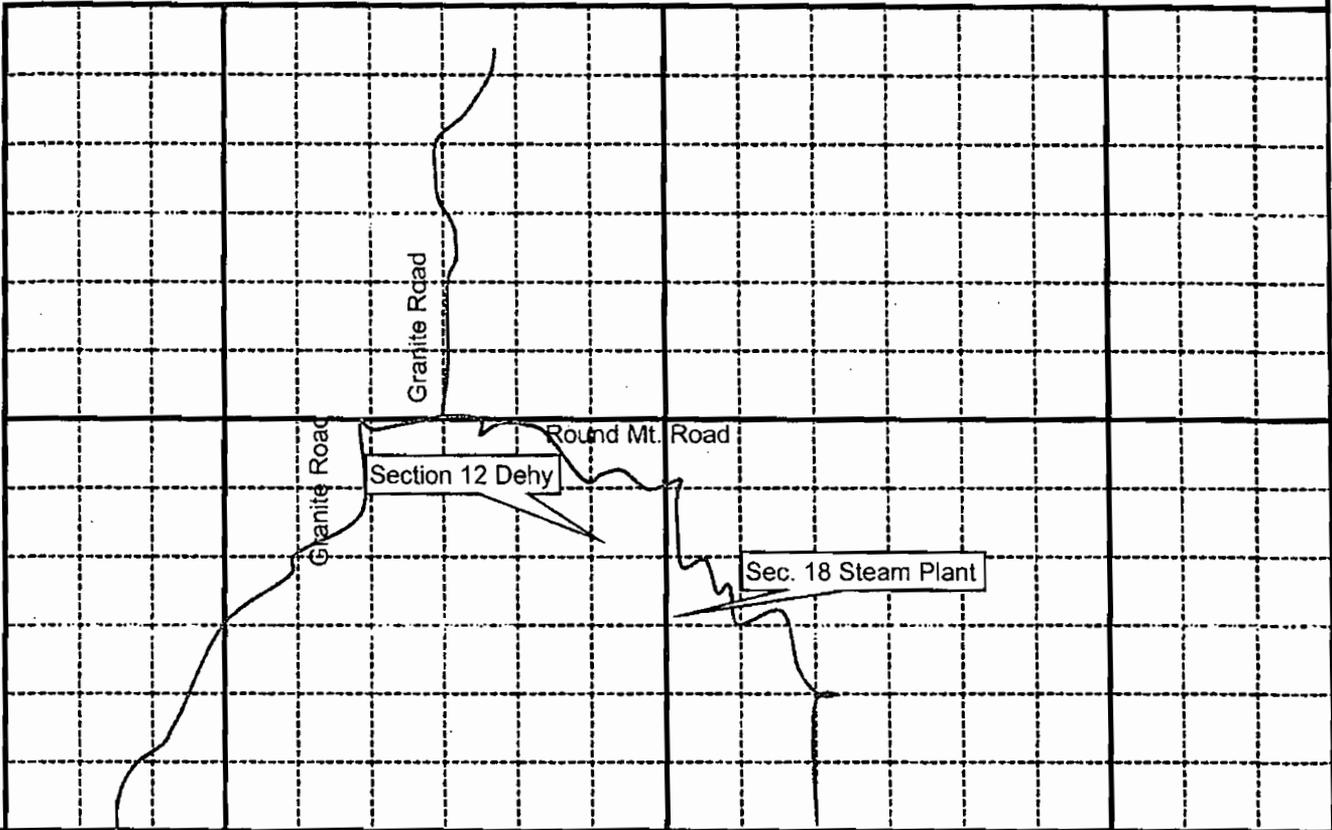
Annual Permit Fees			
Permit Number	Fee Schedule	Fee Description	Annual Fee
S-1703-204-0	3020-02-H	85 MMBtu/hr steam generator	\$1030.00

### Appendices

- A: Project Location Map
- B: Tank S-1703-79 PE1 Calculations
- C: SSPE1 Calculation
- D: BACT Guideline and Top-Down BACT Analysis
- E: HRA and AAQA Summary
- F: Compliance Certifications
- G: Draft Authority to Construct

# Appendix A

## Project Location Map



Macpherson Oil Company

Round Mountain Field

Prepared by:



June 2007

## Appendix B

### Tank S-1703-79 PE1 Calculations

Tank Input Data	
permit number (S-xxxx-xx-xx)	S-1703-79-3
facility tank I.D.	1004
nearest city {1: Bakersfield, 2: Fresno, 3: Stockton}	1
tank ROC vapor pressure (psia)	0.5
liquid bulk storage temperature, Tb (°F)	100
is this a constant-level tank? {yes, no}	no
will flashing losses occur in this tank (only if first-line tank)? {yes, no}	no
breather vent pressure setting range (psi)	0.06
diameter of tank (feet)	21
capacity of tank (bbl)	1,000
conical or dome roof? {c, d}	c
shell height of tank (feet)	16
average liquid height (feet)	8
are the roof and shell the same color? {yes, no}	yes
For roof:	
color {1: Spec Al, 2: Diff Al, 3: Light, 4: Med, 5: Red, 6: White}	4
condition {1: Good, 2: Poor}	1
-----This row only used if shell is different color from roof-----	3
-----This row only used if shell is different color from roof-----	1

Liquid Input Data	A	B
maximum daily fluid throughput (bbl)		1,000
maximum annual fluid throughput (bbl)		365,000
-----This row only used if flashing losses occur in this tank-----		100
-----This row only used if flashing losses occur in this tank-----		36,500
molecular weight, Mw (lb/lb-mol)		100

Calculated Values	A	B
daily maximum ambient temperature, T <sub>ax</sub> (°F)		77.65
daily minimum ambient temperature, T <sub>an</sub> (°F)		53.15
daily total solar insolation factor, I (Btu/ft <sup>2</sup> -day)		1648.9
atmospheric pressure, P <sub>a</sub> (psia)		14.47
water vapor pressure at daily maximum liquid surface temperature (T <sub>lx</sub> ), P <sub>vx</sub> (psia)	99.0	0.9259
water vapor pressure at daily minimum liquid surface temperature (T <sub>ln</sub> ), P <sub>vn</sub> (psia)	88.2	0.6653
water vapor pressure at average liquid surface temperature (T <sub>la</sub> ), P <sub>va</sub> (psia)	93.6	0.7903
roof outage, H <sub>ro</sub> (feet)		0.2188
vapor space volume, V <sub>v</sub> (cubic feet)		2846.65
paint factor, alpha		0.68
vapor density, W <sub>v</sub> (lb/cubic foot)		0.0084
daily vapor temperature range, delta T <sub>v</sub> (degrees Rankine)		49.04
vapor space expansion factor, K <sub>e</sub>		0.1032

Results	lb/year	lb/day
Standing Storage Loss	903	2.47
Working Loss	18,250	50.00
Flashing Loss	N/A	N/A
<b>Total Uncontrolled Tank VOC Emissions</b>	<b>19,153</b>	<b>52.5</b>

Appendix C  
SSPE1 Calculation

## Pre-Project Stationary Source Potential to Emit (SSPE1) Calculation

SSPE1 was calculated using the SSPE2 approved in Project S-1104570, the most recent project for which facility wide emissions were assessed for all criteria pollutants. Adjustments to the SSPE2 from Project S-1104570 were made for units which have been removed since that project was approved. Likewise, adjustments were made for units which have been added. The SSPE1 calculation is detailed in the table below.

<b>SSPE1 Calculation</b>					
	NOx (lb/yr)	SOx (lb/yr)	PM10 (lb/yr)	CO (lb/yr)	VOC (lb/yr)
SSPE2 from Project S-1104570	103,661	49,123	41,541	158,126	2,001,879
<b>Removed Units</b>					
S-1703-5	23,068	30,222	4,336	1,460	292
S-1703-67	--	--	--	--	223
S-1703-95	--	--	--	--	19,157
S-1703-96	--	--	--	--	19,157
S-1703-97	--	--	--	--	9,593
S-1703-99	--	--	--	--	9,593
S-1703-100	--	--	--	--	9,593
S-1703-101	--	--	--	--	9,593
S-1703-105	--	--	--	--	47,240
S-1703-106	--	--	--	--	19,157
S-1703-127	--	--	--	--	4,801
S-1703-172	--	--	--	--	4,801
S-1703-183	--	--	--	--	7,922
<b>Added Units</b>					
S-1703-198	5,212	2,122	2,234	13,775	4,095
S-1703-199	--	--	--	--	66
S-1703-200	--	--	--	--	0
S-1703-201	--	--	--	--	0
S-1703-202	--	--	--	--	0
S-1703-203	--	--	--	--	0
<b>SSPE1</b>	<b>85,805</b>	<b>21,023</b>	<b>39,439</b>	<b>170,441</b>	<b>1,844,918</b>

## Appendix D

### BACT Guideline and Top-Down BACT Analysis

## **Top Down BACT Analysis for NO<sub>x</sub> Emissions:**

### **Step 1 - Identify All Possible Control Technologies**

The District adopted District Rule 4320 on October 16, 2008. The NO<sub>x</sub> emission limits requirements in District Rule 4320 are lower than the limits in BACT Guideline 1.2.1 (Steam Generator ≥ 5 MMBtu/hr; Oilfield), which has been rescinded. Therefore, a project specific BACT analysis will be performed to determine BACT for this project. District Rule 4320 includes a compliance option that limits oilfield steam generators with heat input ratings >20.0 MMBtu/hr to 7 ppm @ 3% O<sub>2</sub>. This emission limit will be considered Achieved in Practice control technology for the BACT analysis. District Rule 4320 also contains an enhanced schedule with initial and final limit options that allows applicants additional time to meet the requirements of the rule. The enhanced schedule allows for an initial NO<sub>x</sub> emission limit of 9 ppmv @ 3% O<sub>2</sub> and a final limit of 5 ppmv @ 3% O<sub>2</sub>. Since this is an enhanced option in the rule, the final limit of 5 ppmv @ 3% O<sub>2</sub> will be considered the Technologically Feasible control technology for the BACT analysis.

The following are possible control technologies for the proposed steam generator:

1. 5 ppmvd @ 3% O<sub>2</sub> - Technologically Feasible
2. 7 ppmvd @ 3% O<sub>2</sub> - Achieved in Practice

### **Step 2 - Eliminate Technologically Infeasible Options**

None of the above listed technologies are technologically infeasible.

### **Step 3 - Rank Remaining Control Technologies by Control Effectiveness**

1. 5 ppmvd @ 3% O<sub>2</sub> – Technologically Feasible
2. 7 ppmvd @ 3% O<sub>2</sub> – Achieved in Practice

### **Step 4 - Cost Effectiveness Analysis**

The applicant has proposed a new steam generator with a NO<sub>x</sub> emission limit of 6 ppmvd @ 3% O<sub>2</sub>. Therefore, a cost analysis for the 5 ppmvd with SCR (0.0061 lb/MMBtu) option is required.

#### **SCR Emission Reductions**

##### **Assumptions:**

- Industry standard is assumed to be a NO<sub>x</sub> emission rate of 15 ppmv @ 3% O<sub>2</sub> (0.018 lb/MMBtu) in accordance with Rule 4306.
- Unit's maximum emissions are defined by the burner size multiplied by the emissions rate and a maximum annual operating schedule of 8,760 hours.

**Calculations:**

$$\begin{aligned} \text{Industry Std NOx Emissions} &= 85 \text{ MMBtu/hr} \times 0.018 \text{ lb/MMBtu} \times 8,760 \text{ hr/yr} \\ &= 13,403 \text{ lb/yr} \end{aligned}$$

$$\begin{aligned} \text{Feasible NOx Emissions} &= 85 \text{ MMBtu/hr} \times 0.0061 \text{ lb/MMBtu} \times 8,760 \text{ hr/yr} \\ &= 4,542 \text{ lb/yr} \end{aligned}$$

**NOx reduction due to SCR:**

$$\begin{aligned} \text{Total reduction} &= \text{Emissions}_{(15 \text{ ppmv})} - \text{Emissions}_{(5 \text{ ppmv})} \\ \text{Total reduction} &= 13,403 \text{ lb/yr} - 4,542 \text{ lb/yr} \\ \text{Total reduction} &= 8,861 \text{ lb/yr} = 4.43 \text{ ton/yr} \end{aligned}$$

**SCR Capital Cost**

Obtained from PCL Construction on September 22, 2010: \$745,000.00 (includes all purchased equipment, taxes, freight and installation of SCR for an 85 MMBtu/hr unit). The detailed quote follows this analysis.

**Equivalent Annual Capital Cost (CC):**

$$A = (P) \left[ \frac{(i)(1+i)^n}{(1+i)^n - 1} \right] \text{ where,}$$

- A: Equivalent annual capital cost of the control equipment
- P: Present value of the control equipment
- i: Interest rate (District policy is to use 10%)
- n: Equipment life (District policy is to use 10 years)

$$A = (\$745,000) \left[ \frac{(0.1)(1+0.1)^{10}}{(1+0.1)^{10} - 1} \right] = \frac{\$121,245}{\text{yr}}$$

**Annual Direct Cost (ADC):**

Operation & Maintenance = \$125,000/yr (PCL quote)

**Annual Indirect Cost (AIC):**

Included in PCL quote.

$$\begin{aligned} \text{Total Annualized Cost} &= \text{CC} + \text{ADC} + \text{AIC} \\ &= \$121,245 + \$125,000 + \$0.00 \\ &= \$ 246,245/\text{yr} \end{aligned}$$

**Cost Effectiveness:**

Cost effectiveness =  $\$246,245/4.43 \text{ ton/yr}$

Cost effectiveness =  $\$55,586/\text{ton}$

The cost effectiveness is greater than the  $\$24,500/\text{ton}$  cost effectiveness threshold specified in the District BACT policy. Therefore, the use of SCR with ammonia injection is not cost effective and is not required as BACT.

**Step 5 – Select BACT for NOx**

BACT for NOx emissions from the oilfield steam generator is 7 ppmvd @ 3% O2. The applicant has proposed to install a steam generator with a NOx limit of 6 ppmvd @ 3% O2; therefore, BACT for NOx emissions is satisfied.



**CONSTRUCTION LEADERS**

September 22, 2010

Mr. Richard Scholl  
Macpherson Oil Company  
24118 Round Mountain Road  
Bakersfield, CA 93308

Re: Steam Generator SCR Retrofits

Dear Mr. Scholl,

In response to your requests, PCL Industrial Services, Inc. offers for your review a budget price to install SCR technology on an 85MM Btu fired once through steam generator. The scope of work as detailed below includes all engineering, materials, labor, and equipment to procure and install a system that will reduce the NOx levels from 9 ppm to sub 5 ppm.

**Project Details**

The SCR system proposed will utilize catalyst which has an optimized operating temperature range of 850 – 925 deg F. Placement of the catalyst housing will require the separation of the economizer to operate in this temperature range . As additional room will be required, the radiant section must also be relocated to accommodate the SCR housing. The SCR unit will add 1 – 2" W.C. additional pressure drop across the steam generator. The added pressure drop will adversely affect the steam generator Lo Nox burner. To offset this additional pressure, an ID fan will be required downstream of the convection section for stable operation.

**Scope of Work**

Remove the convection box from the steam generator

Cut the box frame at row 7 . Add flanges to the cut splices. Repair refractory .

Fabricate SCR flanged FGR housing including refractory and painting

Provide and install approx 200 cubic feet catalyst with associated injection system

Excavate, form, and pour 15 foot extension to the generator foundation for SCR and ID Fan

Disconnect electrical and utilities from radiant and cab section.

Relocate the radiant to accommodate new steam generator length ( avoid pipe rack relocation )

**PCL INDUSTRIAL SERVICES, INC.**

1500 S. Union Ave, Bakersfield, CA 93307  
Telephone: (661) 832-3995 ☎ Fax: (661) 832-3412

Reinstall electrical and utilities.

Supply and modify convection box ASME piping to accommodate SCR housing

Modify electrical conduit and wiring for SCR housing

Provide and install a 75 HP ID fan in 316Lss construction

Provide and install interconnecting ductwork for the ID fan

Provide chemical injection and storage system for SCR

Provide instrumentation and controls for SCR and ID fan

Provide insulation repair and new as required for personnel protection

Provide start up and tuning of ID fan and SCR equipment

**Budget Price**

**\$ 745,000.**

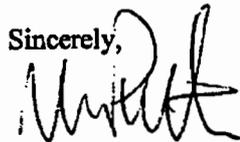
Budget price includes taxes and materials and freight to Kern County, CA

Operating costs are estimated to be \$ 125,000 per annum.

The above budget pricing is good for sixty (60) days from date of letter.

We trust the above will be of assistance at this time. Please feel free to contact our office should you have any questions or further requests.

Sincerely,



Mark Pittser  
Business Development Manager  
PCL Industrial Services, Inc.  
(661) 343-2789 cell  
(661) 835-4440 office

## **Top Down BACT Analysis for VOC Emissions:**

### **Step 1 - Identify all control technologies**

The SJVUAPCD BACT Clearinghouse Guideline 1.2.1 (5/24/04) identifies Achieved in Practice and Technologically Feasible BACT for Oilfield Steam Generators  $\geq 5$  MMbtu/hr as follows:

1. Gaseous fuel – achieved in practice

### **Step 2 - Eliminate Technologically Infeasible Options**

The above listed technology is technologically feasible.

### **Step 3 - Rank Remaining Control Technologies by Control Effectiveness**

1. Gaseous fuel – Achieved in Practice

### **Step 4 - Cost Effectiveness Analysis**

Only one control technology is identified and this technology is Achieved in Practice; therefore, a cost effectiveness analysis is not necessary.

### **Step 5 - Select BACT for VOC**

BACT for VOC emissions from the oilfield steam generator is the use of gaseous fuel. The applicant has proposed to fire the steam generator on natural gas; therefore, BACT for VOC emissions is satisfied.

## **Top Down BACT Analysis for PM<sub>10</sub> and SO<sub>x</sub> Emissions:**

### **Step 1 - Identify all control technologies**

The SJVUAPCD BACT Clearinghouse Guideline 1.2.1 (5/24/04) identifies Achieved in Practice and Technologically Feasible BACT for Oilfield Steam Generators  $\geq 5$  MMBtu/hr as follows:

1. Natural gas, LPG, waste gas treated to remove 95% by weight of sulfur compounds or treated such that the sulfur content does not exceed 1 gr of sulfur compounds (as S) per 100 scf, or use of a continuously operating SO<sub>2</sub> scrubber and either achieving 95% by weight control of sulfur compounds or achieving an emission rate of 30 ppmvd SO<sub>2</sub> at stack O<sub>2</sub> – Achieved in Practice

### **Step 2 - Eliminate Technologically Infeasible Options**

The above listed technology is technologically feasible.

### **Step 3 - Rank Remaining Control Technologies by Control Effectiveness**

1. Natural gas, LPG, waste gas treated to remove 95% by weight of sulfur compounds or treated such that the sulfur content does not exceed 1 gr of sulfur compounds (as S) per 100 scf, or use of a continuously operating SO<sub>2</sub> scrubber and either achieving 95% by weight control of sulfur compounds or achieving an emission rate of 30 ppmvd SO<sub>2</sub> at stack O<sub>2</sub> – Achieved in Practice

### **Step 4 - Cost Effectiveness Analysis**

Only one control technology is identified and this technology is Achieved in Practice; therefore, a cost effectiveness analysis not necessary.

### **Step 5 - Select BACT for SO<sub>x</sub> and PM<sub>10</sub>**

The applicant has proposed the use of natural gas as a primary fuel with a sulfur content not to exceed 1 gr-S/100 scf. This proposal is selected as BACT for SO<sub>x</sub> and PM<sub>10</sub> emissions; therefore, BACT for SO<sub>x</sub> and PM<sub>10</sub> emissions is satisfied.

## Appendix E

### HRA and AAQA Summary

## San Joaquin Valley Air Pollution Control District Risk Management Review

To: Jessica Seifert – Permit Services  
 From: Trevor Joy – Technical Services  
 Date: September 26, 2011  
 Facility Name: MacPherson Oil Company  
 Location: Heavy Oil Central  
 Application #(s): S-1703-204-0  
 Project #: S-1113747

---

### A. RMR SUMMARY

RMR Summary			
Categories	Natural Gas Steam Generator (Unit 204-0)	Project Totals	Facility Totals
Prioritization Score	0.00	0.00	>1
Acute Hazard Index	0.00	0.00	0.01
Chronic Hazard Index	0.00	0.00	0.00
Maximum Individual Cancer Risk	1.52E-06	1.52E-06	3.93E-06
T-BACT Required?	Yes		
Special Permit Conditions?	Yes		

### Proposed Permit Conditions

To ensure that human health risks will not exceed District allowable levels; the following permit conditions must be included for:

#### Units # 204-0

{1898} The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap (flapper ok), roof overhang, or any other obstruction. [District Rule 4102] N

**B. RMR REPORT**

**I. Project Description**

Technical Services received a request on September 14, 2011, to perform an Ambient Air Quality Analysis (AAQA) and a Risk Management Review (RMR) for an 85 MMBtu/hr natural gas steam generator.

**II. Analysis**

For the Risk Management Review, toxic emissions from the generator were calculated using "NG 10-100 MMBtu/hr external combustion" emission factors. In accordance with the District's *Risk Management Policy for Permitting New and Modified Sources* (APR 1905-1, March 2, 2001), risks from the proposed project were prioritized using the procedures in the 1990 CAPCOA Facility Prioritization Guidelines and incorporated in the District's HEART's database. The prioritization score was less than 1.0 (see RMR Summary Table); however, the facility's total cumulative prioritization scores already totaled to over 1.0. Therefore, a refined Health Risk Assessment was required and performed for the project. AERMOD was used with point source parameters outlined below and concatenated 5-year meteorological data from Bakersfield to determine maximum dispersion factors at the nearest residential and business receptors. The dispersion factors were input into the HARP model to calculate the Chronic and Acute Hazard Indices and the Carcinogenic Risk.

The following parameters were used for the review:

Analysis Parameters Unit 204-0			
Source Type	Point	Closest Receptor (m)	1609
Stack Height (m)	4.57	Closest Receptor Type	Residence & Business
Inside Diameter (m)	0.91	Project Location Type	Rural
Gas Exit Temperature (K)	450	Stack Gas Velocity (m/s)	4.38

Technical Services also performed modeling for criteria pollutants CO, NO<sub>x</sub>, SO<sub>x</sub>, and PM<sub>10</sub>, as well as the RMR. The emission rates used for criteria pollutant modeling were 1.57 lb/hr CO, 0.52 lb/hr NO<sub>x</sub>, 0.24 lb/hr SO<sub>x</sub>, and 0.26 lb/hr PM<sub>10</sub>.

The results from the Criteria Pollutant Modeling are as follows:

**Criteria Pollutant Modeling Results\***  
Values are in µg/m<sup>3</sup>

Steam Generator	1 Hour	3 Hours	8 Hours	24 Hours	Annual
CO	Pass	X	Pass	X	X
NO <sub>x</sub>	Pass <sup>1</sup>	X	X	X	Pass
SO <sub>x</sub>	Pass <sup>2</sup>	Pass	X	Pass	Pass
PM <sub>10</sub>	X	X	X	Pass <sup>3</sup>	Pass <sup>3</sup>

\*Results were taken from the attached PSD spreadsheet.

<sup>1</sup>The project was compared to the 1-hour NO<sub>2</sub> National Ambient Air Quality Standard that became effective on April 12, 2010 using the District's approved procedures. The criteria pollutant 1-hour value passed using TIER I NO<sub>2</sub> NAAQS modeling

<sup>2</sup>The project was compared to the 1-hour SO<sub>2</sub> National Ambient Air Quality Standard that became effective on August 23, 2010 using the District's approved procedures.

<sup>3</sup>The maximum predicted concentration for emissions of these criteria pollutants from the proposed unit are below EPA's level of significance as found in 40 CFR Part 51.165 (b)(2).

### III. Conclusion

The criteria modeling runs indicate the emissions from the proposed equipment will not cause or significantly contribute to a violation of a State or National AAQS.

The acute and chronic indices are below 1.0; and the cancer risk is greater than 1 in a million, but less than 10 in a million. In accordance with the District's Risk Management Policy, **the project is approved with Toxic Best Available Control Technology (T-BACT) for VOCs.**

These conclusions are based on the data provided by the applicant and the project engineer. Therefore, this analysis is valid only as long as the proposed data and parameters do not change.

## Appendix F

### Compliance Certifications

**San Joaquin Valley  
Unified Air Pollution Control District**

**TITLE V MODIFICATION - COMPLIANCE CERTIFICATION FORM**

**I. TYPE OF PERMIT ACTION (Check appropriate box)**

- SIGNIFICANT PERMIT MODIFICATION       ADMINISTRATIVE  
 MINOR PERMIT MODIFICATION               AMENDMENT

COMPANY NAME: <b>Macpherson Oil Company</b>		FACILITY ID: <b>S - 1703</b>	
1. Type of Organization:	<input checked="" type="checkbox"/> Corporation	<input type="checkbox"/> Sole Ownership	<input type="checkbox"/> Government
	<input type="checkbox"/> Partnership	<input type="checkbox"/> Utility	
2. Owner's Name:			
3. Agent to the Owner:			

**II. COMPLIANCE CERTIFICATION (Read each statement carefully and initial all circles for confirmation):**

⓪  
⓪  
⓪  
⓪

- Based on information and belief formed after reasonable inquiry, the source identified in this application will continue to comply with the applicable federal requirement(s).
- Based on information and belief formed after reasonable inquiry, the source identified in this application will comply with applicable federal requirement(s) that will become effective during the permit term, on a timely basis.
- Corrected information will be provided to the District when I become aware that incorrect or incomplete information has been submitted.
- Based on information and belief formed after reasonable inquiry, information and statements in the submitted application package, including all accompanying reports, and required certifications are true accurate and complete.

I declare, under penalty of perjury under the laws of the state of California, that the forgoing is correct and true:

  
 \_\_\_\_\_  
 Signature of Responsible Official

8-10-11  
 \_\_\_\_\_  
 Date

Jody Butler  
 \_\_\_\_\_  
 Name of Responsible Official (please print)

Operations Superintendent  
 \_\_\_\_\_  
 Title of Responsible Official (please print)

Add SG 710 to Section 12 Steam Plant.

# CERTIFICATION

Macpherson Oil Company hereby certifies as follows:

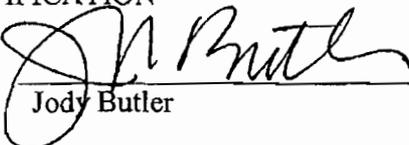
1. Macpherson Oil Company owns or operates certain major stationary sources in the State of California. Such sources are comprised of a vast number of emission points. As used in this certification, the term "major stationary source" shall, with respect to Macpherson Oil Company stationary sources in the SJVUAPCD, have the meaning ascribed thereto in SJVUAPCD Rule 2201, Section 3.23, and shall, with respect to all of Macpherson's other stationary sources in the State of California, have the meaning ascribed thereto in section 302(J) of the Clean Air Act (42 U.S.C. Section 7602 (J)).

2. Subject to paragraphs 3 and 4 below, all major stationary sources owned or operated by Macpherson Oil Company in the State of California are either in compliance, or on an approved schedule of compliance, with all applicable emission limitations and standards under the Clean Air Act and all of the State Implementation Plan approved by the Environmental Protection Agency.

3. This certification is made on information and belief and is based upon a review of Macpherson Oil Company's major stationary sources in the State of California by those employees of Macpherson Oil Company who have operational responsibility for compliance. In conducting such reviews, Macpherson Oil Company and its employees have acted in good faith and have exercised best efforts to identify any exceedance of the emission limitations and standards referred to in paragraph 2 thereof.

4. This certification shall speak as of the time and date of its execution.

## CERTIFICATION

By:   
Jody Butler

Date: 8-10-11

Title: Operations Superintendent

Time: \_\_\_\_\_

## Appendix G

### Draft Authority to Construct

San Joaquin Valley  
Air Pollution Control District

**AUTHORITY TO CONSTRUCT**

ISSUANCE DATE: DRAFT  
**DRAFT**

PERMIT NO: S-1703-204-0

LEGAL OWNER OR OPERATOR: MACPHERSON OIL COMPANY

MAILING ADDRESS: PO BOX 5368  
BAKERSFIELD, CA 93388

LOCATION: HEAVY OIL CENTRAL STATIONARY SOURCE  
CA

**EQUIPMENT DESCRIPTION:**

85.0 MMBTU/HR NATURAL GAS -FIRED STEAM GENERATOR WITH COEN MODEL QLN-II ULTRA-LOW NOX BURNER (OR EQUIVALENT) AND A FLUE GAS RECIRCULATION (FGR) SYSTEM

**CONDITIONS**

1. {1830} This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District Rule 2201] Federally Enforceable Through Title V Permit
2. {1831} Prior to operating with modifications authorized by this Authority to Construct, the facility shall submit an application to modify the Title V permit with an administrative amendment in accordance with District Rule 2520 Section 5.3.4. [District Rule 2520, 5.3.4] Federally Enforceable Through Title V Permit
3. The permittee shall obtain written District approval for the use of any equivalent equipment not specifically approved by this Authority to Construct. Approval of the equivalent equipment shall be made in writing and only after the District's determination that the submitted design and performance of the proposed alternate equipment is equivalent to the authorized equipment. [District Rule 2010] Federally Enforceable Through Title V Permit
4. The permittee's request for approval of equivalent equipment shall include the make, model, manufacturer's maximum rating, manufacturer's guaranteed emissions rates, equipment drawing(s) and operational characteristics/parameters [District Rule 2010] Federally Enforceable Through Title V Permit
5. {1898} The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap (flapper ok), roof overhang, or any other obstruction. [District Rule 4102]

CONDITIONS CONTINUE ON NEXT PAGE

**YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (661) 392-5500 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT.** This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

Seyed Sadredin, Executive Director APCO

**DAVID WARNER**, Director of Permit Services

S-1703-204-0 : Nov 29 2011 4:26PM - SEIFERTJ : Joint Inspection NOT Required

6. This unit shall be equipped with horizontal convection section with at least 235 square feet of bare tube surface area (or thermodynamically equivalent number of square feet of finned tube) per MMBtu/hr of heat input and variable frequency drive high efficiency electrical motors driving the blower and water pump. Documentation showing this unit is so equipped shall be retained on site. [Public Resources Code 21000-21177, CEQA]
7. Prior to operating equipment under this Authority to Construct, permittee shall surrender emissions reduction credits for the following increases in emissions: NOx: 1,303 lb/qtr and PM10: 559 lb/qtr. Offsets shall be provided at the applicable offset ratio specified in Section 4.8 of Rule 2201. [District Rule 2201] Federally Enforceable Through Title V Permit
8. ERC Certificate Numbers C-1102-2 and C-1102-5 (or a certificate split from these certificates) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201] Federally Enforceable Through Title V Permit
9. Within 90 days of startup of the equipment authorized by this Authority to Construct, Permit to Operate S-1703-79 shall be surrendered to the District and the associated equipment shall be removed or rendered inoperable. [District Rule 2201]
10. No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
11. No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity. [District Rule 4101] Federally Enforceable Through Title V Permit
12. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201] Federally Enforceable Through Title V Permit
13. The unit shall only be fired on PUC-quality natural gas with a maximum sulfur content of 1.0 gr S/100 scf. [District Rules 2201 and 4320] Federally Enforceable Through Title V Permit
14. Permittee shall determine sulfur content of combusted gas annually or shall demonstrate that the combusted gas is provided from a PUC or FERC regulated source. [District Rules 1081 and 4320] Federally Enforceable Through Title V Permit
15. Emissions rates from unit shall not exceed any of the following limits: 6 ppmv NOx @ 3% O2 or 0.007 lb-NOx/MMBtu, 0.003 lb-PM10/MMBtu, 25 ppmv CO @ 3% O2 or 0.0185 lb-CO/MMBtu, or 0.0055 lb-VOC/MMBtu. [District Rules 2201, 4301, 4305, 4306, 4320, and 40 CFR 60.43c(e)(1)] Federally Enforceable Through Title V Permit
16. A source test to demonstrate compliance with NOx and CO emission limits shall be performed within 60 days of initial startup of this unit. [District Rules 2201 and 4320] Federally Enforceable Through Title V Permit
17. Source testing to measure NOx and CO emissions from this unit shall be conducted at least once every twelve (12) months. After demonstrating compliance on two (2) consecutive annual source tests, the unit shall be tested not less than once every thirty-six (36) months. If the result of the 36-month source test demonstrates that the unit does not meet the applicable emission limits, the source testing frequency shall revert to at least once every twelve (12) months. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit
18. All emissions measurements shall be made with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. Unless otherwise specified in the Permit to Operate, no determination of compliance shall be established within two hours after a continuous period in which fuel flow to the unit is shut off for 30 minutes or longer, or within 30 minutes after a re-ignition as defined in Section 3.0 of District Rule 4320. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit
19. The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081] Federally Enforceable Through Title V Permit
20. The source test plan shall identify which basis (ppmv or lb/MMBtu) will be used to demonstrate compliance. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

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CONDITIONS CONTINUE ON NEXT PAGE

21. Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test, and a source test plan must be submitted for approval at least 15 days prior to testing. [District Rule 1081] Federally Enforceable Through Title V Permit
22. For emissions source testing, the arithmetic average of three 30-consecutive-minute test runs shall apply. If two of three runs are above an applicable limit the test cannot be used to demonstrate compliance with an applicable limit. [District Rules 4305, 5.5.5, 4306, 5.5.5, and 4320] Federally Enforceable Through Title V Permit
23. The following test methods shall be used: NO<sub>x</sub> (ppmv) - EPA Method 7E or ARB Method 100, NO<sub>x</sub> (lb/MMBtu) - EPA Method 19; CO (ppmv) - EPA Method 10 or ARB Method 100; Stack gas oxygen (O<sub>2</sub>) - EPA Method 3 or 3A or ARB Method 100; stack gas velocities - EPA Method 2; Stack gas moisture content - EPA Method 4; SO<sub>x</sub> - EPA Method 6C or 8 or ARB Method 100; fuel gas sulfur as H<sub>2</sub>S content - EPA Method 11 or 15; and fuel hhv (MMBtu) - ASTM D 1826 or D 1945 in conjunction with ASTM D 3588. [District Rule 1081, 4305, 4306, 4320, and 4351] Federally Enforceable Through Title V Permit
24. The permittee shall monitor and record the stack concentration of NO<sub>x</sub>, CO, and O<sub>2</sub> at least once every month (in which a source test is not performed) using a portable emission monitor that meets District specifications. Monitoring shall not be required if the unit is not in operation, i.e. the unit need not be started solely to perform monitoring. Monitoring shall be performed within 5 days of restarting the unit unless monitoring has been performed within the last month. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit
25. If either the NO<sub>x</sub> or CO concentrations corrected to 3% O<sub>2</sub>, as measured by the portable analyzer, exceed the allowable emissions concentration, the permittee shall return the emissions to within the acceptable range as soon as possible, but no longer than 1 hour of operation after detection. If the portable analyzer readings continue to exceed the allowable emissions concentration after 1 hour of operation after detection, the permittee shall notify the District within the following 1 hour and conduct a certified source test within 60 days of the first exceedance. In lieu of conducting a source test, the permittee may stipulate a violation has occurred, subject to enforcement action. The permittee must then correct the violation, show compliance has been re-established, and resume monitoring procedures. If the deviations are the result of a qualifying breakdown condition pursuant to Rule 1100, the permittee may fully comply with Rule 1100 in lieu of the performing the notification and testing required by this condition. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit
26. All alternate monitoring parameter emission readings shall be taken with the unit operating either at conditions representative of normal operations or conditions specified in the permit-to-operate. The analyzer shall be calibrated, maintained, and operated in accordance with the manufacturer's specifications and recommendations or a protocol approved by the APCO. Emission readings taken shall be averaged over a 15 consecutive-minute period by either taking a cumulative 15 consecutive-minute sample reading or by taking at least five (5) readings, evenly spaced out over the 15 consecutive-minute period. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit
27. The permittee shall maintain records of: (1) the date and time of NO<sub>x</sub>, CO, and O<sub>2</sub> measurements, (2) the O<sub>2</sub> concentration in percent and the measured NO<sub>x</sub> and CO concentrations corrected to 3% O<sub>2</sub>, (3) make and model of exhaust gas analyzer, (4) exhaust gas analyzer calibration records, and (5) a description of any corrective action taken to maintain the emissions within the acceptable range. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit
28. All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rules 1070, 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

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