



# San Joaquin Valley

AIR POLLUTION CONTROL DISTRICT



## HEALTHY AIR LIVING™

JUL 02 2014

Mr. Kenneth Bork  
Freeport-McMoRan Oil and Gas, LLC  
1200 Discovery Drive Suite 100  
Bakersfield, CA 93309

**Re: Proposed ATC / Certificate of Conformity (Significant Mod)  
District Facility # S-1372  
Project # 1140709**

Dear Mr. Bork:

Enclosed for your review is the District's analysis of an application for Authority to Construct for the facility identified above. You requested that a Certificate of Conformity with the procedural requirements of 40 CFR Part 70 be issued with this project. Freeport-McMoRan Oil and Gas, LLC (Freeport) has requested an Authority to Construct (ATC) permit for a new 85 MMbtu/hr natural gas-fired steam generator.

After addressing all comments made during the 30-day public notice and the 45-day EPA comment periods, the District intends to issue the Authority to Construct with a Certificate of Conformity. Please submit your comments within the 30-day public comment period, as specified in the enclosed public notice. 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,

  
Arnaud Marjolle  
Director of Permit Services

AM:DT/st

Enclosures

cc: Mike Tollstrup, CARB (w/enclosure) via email  
cc: Gerardo C. Rios, EPA (w/enclosure) via email

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Executive Director/Air Pollution Control Officer

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California Code of Regulations, Title 14, Division 6, Chapter 3, Sections 15000-15387: CEQA Guidelines

### **III. Project Location**

The equipment will be located at the Bremer Lease in the Midway Sunset Oil Field, within the NW/4 of Section 16, Township 31S, Range 22E in Freeport's Heavy Oil Western stationary source. 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.

### **IV. Process Description**

In thermally enhanced oil recovery (TEOR) operations, steam generators produce steam for injection into heavy crude oil bearing strata via injection wells to reduce the viscosity of the crude oil, thereby facilitating thermally enhanced oil production.

The initial commission period, proposed in this project, is a one-time group of tuning and adjustment procedures that are necessary for newly constructed steam generators. The period begins at first firing and ends with the unit having demonstrated the performance and emission specifications. A periodic refractory curing period is the time required to gradually increase the firing rate and internal temperature of a unit to thermally temper and set the optimal properties of new refractory material.

### **V. Equipment Listing**

S-1372-413-0: 85 MMBTU/HR NATURAL GAS-FIRED STEAM GENERATOR WITH NORTH AMERICAN GLE BURNER AND A FLUE GAS RECIRCULATION SYSTEM

### **VI. Emission Control Technology Evaluation**

Emissions from natural gas-fired steam generators include NO<sub>x</sub>, CO, VOC, PM<sub>10</sub>, and SO<sub>x</sub>.

NO<sub>x</sub> is the major pollutant of concern when burning natural gas. NO<sub>x</sub> formation is either due to thermal fixation of atmospheric nitrogen in the combustion air (thermal NO<sub>x</sub>) or due to conversion of chemically bound nitrogen in the fuel (fuel NO<sub>x</sub>). Due to the low fuel nitrogen content of natural gas, nearly all NO<sub>x</sub> emissions are thermal NO<sub>x</sub>. Formation of thermal NO<sub>x</sub> is affected by four furnace zone factors: (1) nitrogen concentration, (2) oxygen concentration, (3) peak temperature, and (4) time of exposure at peak temperature.

Flue gas recirculation (FGR) reduces NO<sub>x</sub> emissions by recirculating a percentage of the exhaust gas back into the wind box. This reduces the oxygen concentration in the air-fuel mixture and regulates the combustion process, lowering the combustion temperature. The lowered availability of oxygen in conjunction with lowered combustion temperature reduces the formation of NO<sub>x</sub>.

Freeport will comply with Rule 4320 by limiting the burners to 5 ppm-NO<sub>x</sub> @ 3% O<sub>2</sub> (or 0.006 lb-NO<sub>x</sub>/MMBtu) and limiting the fuel sulfur content to 1 gr-S/100 dscf.

### **VII. General Calculations**

**A. Assumptions**

- The maximum operating schedule is 24 hours per day (per applicant)
- Annual potential to emit is calculated based on 8,760 hours of operation per year
- EPA F-factor for natural gas is 8,578 dscf/MMBtu (40 CFR 60, Appendix B)
- Molar specific volume of a gas @ 60 °F is 379.5 ft<sup>3</sup>/lb-mol
- The steam generators are fired on natural gas with a sulfur content not to exceed 1 gr S/100scf.
- Maximum Heat Input: 85.0 MMBtu/hr (per applicant) .
- Startup and shut down of the units occur infrequently and do not affect annual emissions.
- The DEL for NO<sub>x</sub> is based on a worst case day with one startup and one shutdown (total transitional time = 4 hrs).
- All PM<sub>10</sub> emissions are PM<sub>2.5</sub> (PM emissions from gas combustion are all less than 1 micron in diameter)

**B. Emission Factors**

Pollutant	Emission Factors (EF2)		Source
NO <sub>x</sub>	0.006 lb-NO <sub>x</sub> /MMBtu	5 ppmvd NO <sub>x</sub> (@ 3%O <sub>2</sub> )	Proposed
SO <sub>x</sub>	0.00285 lb SO <sub>x</sub> /MMBtu*	1 gr S/100 scf	Proposed
PM <sub>10</sub>	0.003 lb-PM <sub>10</sub> /MMBtu**		Proposed
CO	0.022 lb-CO/MMBtu	30 ppmv CO @3% O <sub>2</sub>	Proposed
VOC	0.003 lb-VOC/MMBtu		Proposed

\* $(1 \text{ gr-S}/100 \text{ scf})(\text{lb}/7000 \text{ gr})(\text{scf}/1000 \text{ btu})(2 \text{ lb-SO}_2/\text{lb-S})(10\text{E}6) = 0.00285 \text{ lb-SO}_x/\text{mmbtu}$

\*\*AP-42 (07/98) Table 1.4-2 lists a value of 0.0076 lb/MMBtu; however, source testing has shown gaseous fuel fired steam generators consistently at or below 0.003 lb/MMBtu.

**Startup/Shutdown (2 hr per occurrence)**

Emission Factors			
Pollutant	Emission Factors		Source
NO <sub>x</sub>	0.018 lb-NO <sub>x</sub> /MMBtu <sup>(1)</sup>	15 ppmv NO <sub>x</sub> (@ 3%O <sub>2</sub> )	Rule 4306 emission limit
CO	0.037	50 ppmv CO (@3% O <sub>2</sub> )	Proposed

**C. Calculations**

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

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

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

The PE2 is calculated as shown below and summarized in the following table:

$$0.00285 \text{ lb-SOx/MMBtu} \times 85.0 \text{ MMBtu/hr} \times 24 \text{ hr/day} = 5.8 \text{ lb-NOx/day}$$

$$0.00285 \text{ lb-SOx/MMBtu} \times 85.0 \text{ MMBtu/hr} \times 8760 \text{ hr/day} = 2122 \text{ lb-SOx/yr}$$

PE2		
	Daily Emissions (lb/day)	Annual Emissions (lb/year)
NO <sub>x</sub>	16.3*	4468
SO <sub>x</sub>	5.8	2122
PM <sub>10</sub>	6.1	2234
PM <sub>2.5</sub>	6.1	2234
CO	50.0	16,381
VOC	6.1	2234

\*Daily NO<sub>x</sub> PE with Startups/Shutdowns

$$\text{NO}_x = (0.006 \text{ lb/MMBtu})(85 \text{ mmbtu/hr})(20 \text{ hrs/day}) + (0.018 \text{ lb/mmbtu})(85 \text{ mmbtu/hr})(4 \text{ hrs/day})$$

$$= 16.3 \text{ lb-NO}_x/\text{day}$$

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

Pursuant to District Rule 2201, the 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 (AER) that have occurred at the source, and which have not been used on-site.

Facility emissions are already above the Offset and Major Source Thresholds for all pollutants; therefore, SSPE1 calculations are not necessary.

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

Pursuant to District Rule 2201, the SSPE2 is the PE from all units with valid ATCs or PTOs at the Stationary Source and the quantity of ERCs which have been banked since September 19, 1991 for AER that have occurred at the source, and which have not been used on-site.

Since facility emissions are already above the Offset and Major Source Thresholds for all pollutants, SSPE2 calculations are not necessary.

### 5. Major Source Determination

#### Rule 2201 Major Source Determination:

Pursuant to District Rule 2201, a Major Source is a stationary source with a SSPE2 equal to or exceeding one or more of the following threshold values. For the purposes of determining major source status the following shall not be included:

- any ERCs associated with the stationary source
- Emissions from non-road IC engines (i.e. IC engines at a particular site at the facility for less than 12 months)
- Fugitive emissions, except for the specific source categories specified in 40 CFR 51.165

This source is an existing Major Source for all pollutants and will remain so. No change in other pollutants are proposed or expected as a result of this project.

**Federal Major Source Determination:**

The unit will be located in Freeport's Midway Sunset oilfield operation which is an existing Federal Major Source for all pollutants and will remain so. No change in other pollutants are proposed or expected as a result of this project.

An ATC application (project S1140710, S-1372) for a new 85 MMBtu/hr steam generator, was received on 2/25/14. The 1140710 unit will be located in Freeport's Belridge oilfield which is not contiguous or adjacent to this project's unit. Therefore, the two projects are at separate stationary sources and therefore are not aggregated for major modification or PSD calculation purposes.

**Rule 2410 Major Source Determination:**

The facility or the equipment evaluated under this project is not listed as one of the categories specified in 40 CFR 52.21 (b)(1)(i). Therefore the following PSD Major Source thresholds are applicable.

PSD Major Source Determination (tons/year)							
	NO2	VOC	SO2	CO	PM	PM10	CO2e
Estimated Facility PE before Project Increase							>100,000
PSD Major Source Thresholds	250	250	250	250	250	250	100,000
PSD Major Source ? (Y/N)							y

As shown above, the facility is an existing major source for PSD for at least one pollutant. Therefore the facility is an existing major source for PSD.

**6. Baseline Emissions (BE)**

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

Pursuant to District Rule 2201, BE = PE1 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 District Rule 2201.

Since this is a new emissions unit, BE = PE1 = 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 all pollutants, 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>	4468	50,000	N
SO <sub>x</sub>	2122	80,000	N
PM <sub>10</sub>	2234	30,000	N
VOC	2234	50,000	N

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

**8. Federal Major Modification**

District Rule 2201 states that a Federal Major Modification is the same as a "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. For the first step, only the emission *increases* are counted. Emission decreases may not cancel out the increases for this determination.

**Step 1**

For new emissions units, the increase in emissions is equal to the PE2 for each new unit included in this project.

The project's combined total emission increases are compared to the Federal Major Modification Thresholds in the following table.

Federal Major Modification Thresholds for Emission Increases			
Pollutant	Total Emissions Increases (lb/yr)	Thresholds (lb/yr)	Federal Major Modification?
NO <sub>x</sub> *	4468	0	Y
VOC*	2234	0	Y
PM <sub>10</sub>	2234	30,000	N
PM <sub>2.5</sub>	2234	20,000	N
SO <sub>x</sub>	2122	80,000	N
NO <sub>x</sub> *	4468	80,000	N
SO <sub>x</sub> *	2122	80,000	N

\*PM2.5 precursor

Since there is an increase in NO<sub>x</sub> and VOC emissions, this project constitutes a Federal Major Modification, and no further analysis is required.

**9. Rule 2410 – Prevention of Significant Deterioration (PSD) Applicability Determination**

Rule 2410 applies to pollutants for which the District is in attainment or for unclassified, pollutants. The pollutants addressed in the PSD applicability determination are listed as follows:

- NO<sub>2</sub> (as a primary pollutant)
- SO<sub>2</sub> (as a primary pollutant)
- CO
- PM
- PM<sub>10</sub>
- Greenhouse gases (GHG): CO<sub>2</sub>, N<sub>2</sub>O, CH<sub>4</sub>, HFCs, PFCs, and SF<sub>6</sub>

**I. Project Location Relative to Class 1 Area**

As demonstrated in the “PSD Major Source Determination” Section above, the facility was determined to be a existing major source for PSD. Because the project is not located within 10 km of a Class 1 area – modeling of the emission increase is not required to determine if the project is subject to the requirements of Rule 2410.

**II. Significance of Project Emission Increase Determination**

**a. Potential to Emit of attainment/unclassified pollutant for New or Modified Emission Units vs PSD Significant Emission Increase Thresholds**

As a screening tool, the potential to emit from all new and modified units is compared to the PSD significant emission increase thresholds, and if total potential to emit from all new and modified units is below this threshold, no further analysis will be needed.

<b>PSD Significant Emission Increase Determination: Potential to Emit (tons/year)</b>						
	NO <sub>2</sub>	SO <sub>2</sub>	CO	PM	PM <sub>10</sub>	CO <sub>2</sub> e
Total PE from New and Modified Units	2.2	1.1	8.2	1.1	2.8	43,559*
PSD Significant Emission Increase Thresholds	40	40	100	25	15	75,000
PSD Significant Emission Increase?	n	n	n	n	n	n

\* $(85 \text{ MMBtu/hr})(117 \text{ lb CO}_2\text{e/MMBtu})(8760 \text{ hr/yr})(\text{ton}/2000) = 43,559 \text{ ton/yr}$

As demonstrated above, because the project has a total potential to emit from all new and modified emission units below the PSD significant emission increase thresholds, this project is not subject to the requirements of Rule 2410 due to a significant emission increase and no further discussion is required.

## 10. 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. Detailed QNEC calculations are included in Appendix A.

## 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 specifically exempted by Rule 2201, 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 SB 288 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, Freeport 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>, CO and VOC because the PEs are greater than 2 lbs/day and the SSPE for CO is greater than 200,000 lb/year.

Additionally, BACT is required for all pollutants for operation during the initial commissioning period.

##### 2. BACT Guideline

Please note that BACT Guideline 1.2.1 [Steam Generator ( $\geq$  5 MMBtu/hr, Oilfield)] has been rescinded. The NO<sub>x</sub> emission limit requirement of District Rule 4320 is lower than the Achieved-in-Practice requirement of BACT Guideline 1.2.1 (14 ppmv @ 3% O<sub>2</sub>); therefore, a project specific BACT analysis will be performed to determine BACT for this project. More details regarding this are provided in Appendix B.

There are no BACT guidelines available for steam generator commissioning activities.

##### 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 (see Appendix B), BACT during **normal operating** periods has been satisfied with the following:

- NO<sub>x</sub>: 5 ppmv @ 3% O<sub>2</sub>
- SO<sub>x</sub>: natural gas with a fuel sulfur content not exceeding 1 gr-S/100 dscf
- PM<sub>10</sub>: natural gas with a fuel sulfur content not exceeding 1 gr-S/100 dscf
- CO: 30 ppmvd or less @ 3% O<sub>2</sub>
- VOC: gaseous fuel

Pursuant to the attached Top-Down BACT Analysis (see Appendix C), BACT during **commissioning** periods has been satisfied with the following:

- NO<sub>x</sub>: Operation of the low NO<sub>x</sub> burner, expeditious completion of commissioning activities and use of good work practice standard to minimize emissions
- CO: 50 ppmvd @ 3% O<sub>2</sub> - achieved in practice
- SO<sub>x</sub>: Utility Grade Natural Gas - achieved in practice
- PM<sub>10</sub>: Utility Grade Natural Gas - achieved in practice
- VOC: Utility Grade Natural Gas - achieved in practice

## B. Offsets

### 1. Offset Applicability

Offset requirements shall be triggered on a pollutant by pollutant basis and shall be required if the SSPE2 equals to or exceeds the offset threshold levels in Table 4-1 of Rule 2201.

The SSPE2 is compared to the offset thresholds in the following table.

Offset Determination (lb/year)					
	NO <sub>x</sub>	SO <sub>x</sub>	PM <sub>10</sub>	CO	VOC
SSPE2	>20,000	>54,750	>29,200	>200,000	>20,000
Offset Thresholds	20,000	54,750	29,200	200,000	20,000
Offsets triggered?	Yes	Yes	Yes	Yes	Yes

### 2. Quantity of Offsets Required

As seen above, the facility is an existing NSR Major Source for NO<sub>x</sub>, SO<sub>x</sub>, PM<sub>10</sub>, CO, VOC, and the SSPE2 is greater than the offset thresholds for these pollutants; therefore, offset calculations will be required for this project.

However, Section 4.6.1 of Rule 2201 states that emissions offsets are not required for increases in CO in attainment areas provided the applicant demonstrates to the satisfaction of the APCO that the Ambient Air Quality (AAQ) Standards are not violated in the areas to be affected, such emissions will be consistent with Reasonable Further Progress, and will not cause or contribute to a violation of AAQ Standards. The District

performed an AAQ Analysis and determined that this project will not result in or contribute to a violation of an AAQ Standard for CO (see Appendix D). Therefore, CO offsets are not required for this project.

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) =  $(\Sigma[PE2 - BE] + ICCE) \times DOR$ , for all new or modified emissions units in the project,

Where,

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

BE = PE1 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 = HAE

The facility is proposing to install a new emission unit; therefore BE = 0. Also, there are no increases in cargo carrier emissions; therefore offsets can be determined as follows:

The applicant proposes to the offset projects 1140709 and 1140710 using the same ERC certificates; therefore, the ERC amounts to be surrendered for project 1140710 will be deducted in the calculation which demonstrates that that the facility has sufficient credits to offset this project.

**NO<sub>x</sub>:**

Offsets Required (lb/year) =  $([PE2 - BE] + ICCE) \times DOR$

- PE2 (NO<sub>x</sub>) = 4468 lb/year
- BE (NO<sub>x</sub>) = 0 lb/year
- ICCE = 0 lb/year

The project is a Federal Major Modification and therefore the correct offset ratio for NO<sub>x</sub> and VOCs is 1.5:1.

As calculated in Section VII.C.6 above, the BE equals zero since the units are new Emissions Unit.

The project is a Federal Major Modification for NO<sub>x</sub> and therefore the correct offset ratio for NO<sub>x</sub> is 1.5:1.

$$\begin{aligned}\text{Offsets Required (lb/year)} &= [(4468 - 0 + 0) \times 1.5] \\ &= 4468 \times 1.5 \\ &= 6702 \text{ lb NO}_x\text{/year}\end{aligned}$$

Calculating the appropriate quarterly emissions to be offset is as follows:

<u>1<sup>st</sup> Quarter</u>	<u>2<sup>nd</sup> Quarter</u>	<u>3<sup>rd</sup> Quarter</u>	<u>4<sup>th</sup> Quarter</u>
1676	1676	1676	1676

The applicant has stated that the facility plans to use ERC certificate S-4193-2 to offset the increases in NO<sub>x</sub> emissions associated with this project. The above certificate has available quarterly NO<sub>x</sub> credits as follows:

	<u>1<sup>st</sup> Quarter</u>	<u>2<sup>nd</sup> Quarter</u>	<u>3<sup>rd</sup> Quarter</u>	<u>4<sup>th</sup> Quarter</u>
ERC #S-4245-2*	1824	1824	1824	1824

\*After deducting the amount to offset NO<sub>x</sub> in project 1140710 (3500- 1676= 1824)

As seen above, the facility has sufficient credits to fully offset the quarterly NO<sub>x</sub> emissions increases associated with this project.

**Proposed Rule 2201 (offset) Conditions:**

- {GC# 4447 - edited} Prior to operating equipment under this Authority to Construct, permittee shall surrender NO<sub>x</sub> emission reduction credits for the following quantity of emissions: 1st quarter – 1676 lb, 2nd quarter - 1676 lb, 3rd quarter - 1676 lb, and fourth quarter - 1676 lb. These amounts include the applicable offset ratio specified in Rule 2201 Section 4.8 (as amended 4/21/11) for the ERC specified below. [District Rule 2201]
- {GC# 1983} ERC Certificate Number S-4170-2 (or a certificate split from this certificate) 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]

**SO<sub>x</sub>:**

$$\text{Offsets Required (lb/year)} = ([\text{PE2} - \text{BE}] + \text{ICCE}) \times \text{DOR}$$

$$\begin{aligned}\text{PE2 (SO}_x\text{)} &= 2122 \text{ lb/year} \\ \text{BE (NO}_x\text{)} &= 0 \text{ lb/year} \\ \text{ICCE} &= 0 \text{ lb/year}\end{aligned}$$

As calculated in Section VII.C.6 above, the BE equals zero since the units are new Emissions Unit.

Owing to the location of the ERC's AER, the ERC is subject to an offset ratio of 1.5:1. The amount of SO<sub>x</sub> ERCs that need to be withdrawn is:

$$\begin{aligned}\text{Offsets Required (lb/year)} &= [(2122 - 0 + 0) \times 1.5] \\ &= 2122 \times 1.5 \\ &= 3183 \text{ lb SO}_x\text{/year}\end{aligned}$$

Calculating the appropriate quarterly emissions to be offset is as follows:

<u>1<sup>st</sup> Quarter</u>	<u>2<sup>nd</sup> Quarter</u>	<u>3<sup>rd</sup> Quarter</u>	<u>4<sup>th</sup> Quarter</u>
796	796	796	796

The applicant has stated that the facility plans to use ERC certificate N-1151-5 to offset the increases in SO<sub>x</sub> emissions associated with this project. The above certificate has available quarterly SO<sub>x</sub> credits as follows:

	<u>1<sup>st</sup> Quarter</u>	<u>2<sup>nd</sup> Quarter</u>	<u>3<sup>rd</sup> Quarter</u>	<u>4<sup>th</sup> Quarter</u>
ERC # N-1151-5*	3721	3721	3721	3721

\*After deducting the amount surrendered for project 1140710 (4517 - 796 = 3721)

As seen above, the facility has sufficient credits to fully offset the quarterly SO<sub>x</sub> emissions increases associated with this project.

**Proposed Rule 2201 (offset) Conditions:**

- {GC# 4447 - edited} Prior to operating equipment under this Authority to Construct, permittee shall surrender SO<sub>x</sub> emission reduction credits for the following quantity of emissions: 1st quarter - 796 lb, 2nd quarter - 796 lb, 3rd quarter - 796 lb, and fourth quarter - 796 lb. These amounts include the applicable offset ratio specified in Rule 2201 Section 4.8 (as amended 4/21/11) for the ERC specified below. [District Rule 2201]
- {GC# 1983} ERC Certificate Number N-1151-5 (or a certificate split from this certificate) 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]

**PM10:**

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

$$\begin{aligned} \text{PE2 (NO}_x\text{)} &= 2234 \text{ lb/year} \\ \text{BE (NO}_x\text{)} &= 0 \text{ lb/year} \\ \text{ICCE} &= 0 \text{ lb/year} \end{aligned}$$

As calculated in Section VII.C.6 above, the BE equals zero since the units are new Emissions Unit.

Owing to the location of the ERC's AER, the ERC is subject to an offset ratio of 1.5:1. The amount of PM10 ERCs that need to be withdrawn is:

$$\begin{aligned} \text{Offsets Required (lb/year)} &= [(2234 - 0 + 0) \times 1.5] \\ &= 2234 \times 1.5 \\ &= 3351 \text{ lb PM10/year} \end{aligned}$$

Calculating the appropriate quarterly emissions to be offset is as follows:

Freeport-McMoRan Oil and Gas, LLC, 1140709, S-1372

<u>1<sup>st</sup> Quarter</u>	<u>2<sup>nd</sup> Quarter</u>	<u>3<sup>rd</sup> Quarter</u>	<u>4<sup>th</sup> Quarter</u>
838	838	838	838

Interpollutant offset ratios for trades between SO<sub>x</sub> and PM<sub>10</sub> are allowed pursuant to Rule 2201, Section 4.13.3.1.2. Pursuant to draft District policy APR 1430, SO<sub>x</sub> ERCs may be used to offset PM<sub>10</sub> at an interpollutant ratio of 1.0 : 1.0. An interpollutant ratio of 1.0 : 1.0 for SO<sub>x</sub> to PM<sub>10</sub> will be applied.

Per section 4.13.7 of Rule 2201, AER for PM that occurred from October through March, inclusive, may be used to offset increases in PM during any period of the year.

The applicant has stated that the facility plans to use SO<sub>x</sub> ERC certificate N-1151-5 to offset the increases in PM<sub>10</sub> emissions associated with this project. The above certificate has available quarterly credits as follows:

	<u>1<sup>st</sup> Quarter</u>	<u>2<sup>nd</sup> Quarter</u>	<u>3<sup>rd</sup> Quarter</u>	<u>4<sup>th</sup> Quarter</u>
ERC # N-1151-5*	2925	2925	2925	2925

\*After deducting the amount to offset SO<sub>x</sub> above (3721 – 796 = 2925)

As seen above, the facility has sufficient credits to fully offset the quarterly PM<sub>10</sub> emissions increases associated with this project.

**Proposed Rule 2201 (offset) Conditions:**

- {GC# 4447 - edited} Prior to operating equipment under this Authority to Construct, permittee shall surrender PM<sub>10</sub> emission reduction credits for the following quantity of emissions: 1st quarter – 838 lb, 2nd quarter – 838 lb, 3rd quarter – 838 lb, and fourth quarter – 838 lb. These amounts include the applicable offset ratio specified in Rule 2201 Section 4.8 (as amended 4/21/11) for the ERC specified below. [District Rule 2201]
- {GC# 1983} ERC Certificate Number N-1151-5 (or a certificate split from this certificate) 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]

**VOC:**

$$\text{Offsets Required (lb/year)} = ([\text{PE2} - \text{BE}] + \text{ICCE}) \times \text{DOR}$$

$$\begin{aligned} \text{PE2 (VOC)} &= 2234 \text{ lb/year} \\ \text{BE (NO}_x\text{)} &= 0 \text{ lb/year} \\ \text{ICCE} &= 0 \text{ lb/year} \end{aligned}$$

As calculated in Section VII.C.6 above, the BE equals zero since the units are new Emissions Unit.

The project is a Federal Major Modification for VOC and therefore the correct offset ratio for VOC is 1.5:1.

$$\begin{aligned}\text{Offsets Required (lb/year)} &= [(2234 - 0 + 0) \times 1.5] \\ &= 2234 \times 1.5 \\ &= 3351 \text{ lb VOC/year}\end{aligned}$$

Calculating the appropriate quarterly emissions to be offset is as follows:

<u>1<sup>st</sup> Quarter</u>	<u>2<sup>nd</sup> Quarter</u>	<u>3<sup>rd</sup> Quarter</u>	<u>4<sup>th</sup> Quarter</u>
838	838	838	838

The applicant has stated that the facility plans to use ERC certificate S-4183-1 to offset the increases in VOC emissions associated with this project. The above certificate has available quarterly VOC credits as follows:

	<u>1<sup>st</sup> Quarter</u>	<u>2<sup>nd</sup> Quarter</u>	<u>3<sup>rd</sup> Quarter</u>	<u>4<sup>th</sup> Quarter</u>
ERC # S-4243-1	862	862	862	862

\*After deducting the amount surrendered for project 1140710 (1700 - 838 = 862)

As seen above, the facility has sufficient credits to fully offset the quarterly SO<sub>x</sub> emissions increases associated with this project.

**Proposed Rule 2201 (offset) Conditions:**

- {GC# 4447 - edited} Prior to operating equipment under this Authority to Construct, permittee shall surrender VOC emission reduction credits for the following quantity of emissions: 1st quarter - 838 lb, 2nd quarter - 838 lb, 3rd quarter - 838 lb, and fourth quarter - 838 lb. These amounts include the applicable offset ratio specified in Rule 2201 Section 4.8 (as amended 4/21/11) for the ERC specified below. [District Rule 2201]
- {GC# 1983} ERC Certificate Number S-4243-1 (or a certificate split from this certificate) 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 SB 288 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 SSIPE of greater than 20,000 lb/year for any pollutant.

**a. New Major Sources, Federal Major Modifications, and SB 288 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 Sections VII.C.7 and VII.C.8, 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 PE 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 SSPE1 and SSPE2 are compared to the offset thresholds in the following table.

Offset Thresholds				
Pollutant	SSPE1 (lb/year)	SSPE2 (lb/year)	Offset Threshold	Public Notice Required?
NO <sub>x</sub>	>20,000	>20,000	20,000 lb/year	No
SO <sub>x</sub>	>54,750	>54,750	54,750 lb/year	No
PM <sub>10</sub>	>29,200	>29,200	29,200 lb/year	No
CO	>200,000	>200,000	200,000 lb/year	No
VOC	>20,000	>20,000	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 SSIPE of more than 20,000 lb/year of any affected pollutant. According to District policy, the SSIPE = SSPE2 – SSPE1. The SSIPE is compared to the SSIPE Public Notice thresholds in the following table.

SSIPE Public Notice Thresholds			
Pollutant	SSIPE (lb/year)	SSIPE Public Notice Threshold	Public Notice Required?
NO <sub>x</sub>	4468	20,000 lb/year	No
SO <sub>x</sub>	2122	20,000 lb/year	No
PM <sub>10</sub>	2234	20,000 lb/year	No
CO	16,381	20,000 lb/year	No
VOC	2234	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 triggering a Federal Major Modification. Therefore, public notice documents will be submitted to the California Air Resources Board (CARB) 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)**

DELs and other enforceable conditions are required by Rule 2201 to restrict a unit's maximum daily emissions, to a level at or below the emissions associated with the maximum design capacity. 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:**

- Emission rates, except during startup and shutdown shall not exceed: NO<sub>x</sub> (as NO<sub>x</sub>): 5 ppmv @ 3% O<sub>2</sub>. [District Rule 2201, 4305, 4306, and 4320] Y
- Emission rates shall not exceed any of the following: SO<sub>x</sub>:0.00285 lb/MMBtu; PM<sub>10</sub>: 0.003 lb/MMBtu; CO: 30 ppmv @ 3% O<sub>2</sub>; or VOC: 0.003 lb/MMBtu. [District Rule 2201] Y
- Emissions rate of NO<sub>x</sub> shall not exceed 16.3 lb/day nor 4468 lb/yr. [District Rule 2201] Y
- Emissions rate of CO shall not exceed 50.0 lb/day nor 4468 lb/yr.[District Rule 2201]

## **E. Compliance Assurance**

### **1. Source Testing**

The unit 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 requirements will be discussed in the compliance review section of this evaluation.

The proposed VOC emission factor is lower than the standard AP-42 emission factor which is used for steam generators; therefore, source testing will be required for VOC emissions.

### **1. Monitoring**

As required by District Rules 4305, 4306 and 4320; the unit is subject to monitoring requirements. Monitoring requirements, in accordance with District Rules will be discussed in the compliance review section of this evaluation.

## **2. Recordkeeping**

As required by District Rules 4305, 4306 and 4320, the units are subject to recordkeeping requirements. Recordkeeping requirements, in accordance with District Rules will be discussed in the compliance review of this evaluation.

The following permit condition will be listed on permit as follows:

- {2983} 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]

## **4. Reporting**

No reporting is required to demonstrate compliance with Rule 2201.

### **F. Ambient Air Quality Analysis (AAQA)**

An AAQA shall 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 District's Technical Services Division conducted the required analysis. Refer to **Appendix D** of this document for the AAQA summary sheet.

The proposed location is in an attainment area for NO<sub>x</sub>, CO, and SO<sub>x</sub>. As shown by the AAQA summary sheet the proposed equipment will not cause a violation of an air quality standard for NO<sub>x</sub>, CO, or SO<sub>x</sub>.

The proposed location is in a non-attainment area for the state's PM<sub>10</sub> as well as federal and state PM<sub>2.5</sub> thresholds. As shown by the AAQA summary sheet the proposed equipment will not cause a violation of an air quality standard for PM<sub>10</sub> and PM<sub>2.5</sub>.

### **G. Compliance Certification**

Section 4.15.2 of this Rule requires the owner of a new Major Source or a source undergoing a Title I Modification to demonstrate to the satisfaction of the District that all other Major Sources owned by such person and operating in California are in compliance or are on a schedule for compliance with all applicable emission limitations and standards. As discussed in Section VIII above, this facility is a new major source and this project does constitute a Title I modification, therefore this requirement is applicable. Corporation Freeport's compliance certification is included in Appendix E.

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

The current project occurs at an existing facility. The applicant proposes to install a steam generator.

Since the project will provide steam to be used at the same location, the existing site will result in the least possible impact from the project. Alternative sites would involve the relocation and/or construction of various support structures on a much greater scale, and would therefore result in a much greater impact.

## **Rule 2410 Prevention Of Significant Deterioration**

As shown above in section VII.C.9 this project does not trigger PSD requirements. No further discussions is required.

#### **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."

Section 3.20.2 states that a minor permit modifications are not Title I modifications (Federal Major Modifications) as defined in District Rule 2520 or modifications as defined in section 111 or 112 of the Federal Clean Air Act. This project is a Federal Major Modification; consequently, the proposed project constitutes a Significant Modification to the Title V Permit pursuant to Section 3.29.

#### **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 subject steam generator has a rating of 85 MMBtu/hr and is gas fired. 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**

District Rule 4101, Section 5.0, indicates that 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 dark or darker than Ringlemann 1 or equivalent to 20% opacity.

A permit condition will be listed on the permit as follows:

- {15} 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]

Therefore, compliance with District Rule 4101 requirements is expected.

#### **Rule 4102 Nuisance**

Rule 4102 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)**

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 D**), the total facility prioritization score including this project was greater than one. Therefore, an HRA was

required to determine the short-term acute and long-term chronic exposure from this project.

The cancer risk for this project is shown below:

<b>RMR Summary</b>			
<b>Categories</b>	<b>NG Steam Generator (Unit 413-0)</b>	<b>Project Totals</b>	<b>Facility Totals</b>
<b>Prioritization Score</b>	9.79	9.79	>1.0
<b>Acute Hazard Index</b>	5.54E-03	5.54E-03	9.21E-02
<b>Chronic Hazard Index</b>	1.76E-02	1.76E-02	5.31E-02
<b>Maximum Individual Cancer Risk (10<sup>-6</sup>)</b>	5.74E-07	5.74E-07	1.89E-06
<b>T-BACT Required?</b>	No		
<b>Special Permit Conditions?</b>	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 not required for this project because the HRA indicates that the risk is not above the District's thresholds for triggering T-BACT requirements; therefore, compliance with the District's Risk Management Policy is expected.

**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  
 PM10 Emission Factor: 0.003 lb-PM10/MMBtu  
 Percentage of PM as PM10 in Exhaust: 100%  
 Exhaust Oxygen (O<sub>2</sub>) Concentration: 3%  
 Excess Air Correction to F Factor =  $\frac{20.9}{(20.9 - 3)} = 1.17$

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

$GL = 0.002 \text{ grain/dscf} < 0.1 \text{ grain/dscf}$

Therefore, compliance with District Rule 4201 requirements is expected and a permit condition will be listed on the permit as follows:

- {14} Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201]

**District 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.

District Rule 4301 Limits			
	NO <sub>2</sub>	Total PM	SO <sub>2</sub>
S-1372-413-0	0.7	0.3	0.2
Rule Limit (lb/hr)	140	10	200

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

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

The units are natural gas-fired with a maximum heat input of 85 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 4320, Advanced Emission Reduction Options for Boilers, Steam Generators, and Process Heaters Greater than 5.0 MMBtu/hr. Since emissions limits of District Rule 4306 and all other requirements are equivalent or more stringent than District Rule 4305 requirements, compliance with District Rule 4320 requirements will satisfy requirements of District Rule 4305.

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

The unit is natural gas-fired with a maximum heat input of 85 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*.

Since emissions limits of District Rule 4320 and all other requirements 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 5.0 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 is rated at greater than 5 MMBtu/hr heat input and is subject to this rule.

### **Section 5.1 NO<sub>x</sub> Emission Limits**

Section 5.1 states that an operator of a unit(s) subject to this rule shall comply with all applicable requirements of the rule and one of the following, on a unit-by-unit basis:

- 5.1.1 Operate the unit to comply with the emission limits specified in Sections 5.2 and 5.4; or
- 5.1.2 Pay an annual emissions fee to the District as specified in Section 5.3 and comply with the control requirements specified in Section 5.4; or

**5.1.3 Comply with the applicable Low-use Unit requirements of Section 5.5.**

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 to which exceeds a carbon dioxide (CO) emissions limit of 400 ppmv.

<b>Rule 4320 Emissions Limits</b>			
<b>Category</b>	<b>Operated on gaseous fuel</b>		
	<b>NO<sub>x</sub> Limit</b>	<b>Authority to Construct</b>	<b>Compliance Deadline</b>
<b>2. Units with a total rated heat input &gt;20.0 MMBtu/hr</b>	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

The proposed NO<sub>x</sub> limit is 5 ppmv; therefore, compliance with Section 5.2 of District Rule 4320 is expected.

A permit condition listing the emissions limit will be listed on permit as shown in the DEL section above.

**Section 5.4 Particulate Matter Control Requirements**

Section 5.4.1 states that to limit particulate matter emissions, an operator shall comply with one of the options listed in the rule.

Section 5.4.1.1 provides option for the operator to comply with the rule by firing the unit exclusively on PUC-quality gas, commercial propane, butane, or liquefied petroleum gas, or a combination of such gases;

Section 5.4.1.2 provides option for the operator to comply with the rule by limiting the fuel sulfur content to no more than five (5) grains of total sulfur per hundred (100) standard cubic feet.

Section 5.4.1.3 provides option for the operator to comply with the rule by installing and properly operating an emissions 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 % O<sub>2</sub>.

The steam generator will be fired on natural gas. Therefore, compliance with this section of the rule is expected.

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

This section discusses the requirements of low-use units. Freeport is not requesting low-use status; therefore, this section of the rule is not applicable to this project.

## **Section 5.7 Monitoring Provisions**

Section 5.7.1 requires that permit units subject to District Rule 4320, Section 5.2 shall either install and maintain an operational APCO approved Continuous Emission Monitoring System (CEMS) for NO<sub>x</sub>, CO and O<sub>2</sub>, or implement an APCO-approved alternate monitoring.

Freeport has proposed to implement Alternate Monitoring Scheme A (pursuant to District Policy SSP-1105), which requires periodic monitoring of NO<sub>x</sub>, CO, and O<sub>2</sub> concentrations at least once a month using a portable analyzer. The following conditions will be placed in the permit to ensure compliance with the requirements of this alternate monitoring plan:

- {2395} 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]
- If either the NO<sub>x</sub> or CO concentrations corrected to 3%, 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 performing the notification and testing required by this condition. [District Rules 4102, 4305, 4306 and 4320]
- All NO<sub>x</sub>, CO, and O<sub>2</sub> 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 NO<sub>x</sub>, CO, and O<sub>2</sub> 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 sample 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 4102, 4305, 4306 and 4320]
- 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]

Section 5.7.6 requires monitoring SO<sub>x</sub> emissions. The following conditions will be placed in the permit to be in compliance with this rule requirement:

- PUC quality natural gas is any gaseous fuel where the sulfur content is no more than one-fourth (0.25) grain of hydrogen sulfide per one hundred (100) standard cubic feet, no more than five (5) grains of total sulfur per one hundred (100) standard cubic feet, and at least 80% methane by volume. [District Rule 4320]
- If the steam generator is not fired on PUC-regulated natural gas and compliance is achieved through fuel sulfur content limitations, then the sulfur content of the fuel shall be determined by testing sulfur content at a location after all fuel sources are combined prior to incineration, or by performing mass balance calculations based on monitoring the sulfur content and volume of each fuel source. The sulfur content of the fuel shall be determined using the test methods referenced in this permit. [District Rule 4320]
- If the unit is fired on PUC-regulated natural gas, valid purchase contracts, supplier certifications, tariff sheets, or transportation contracts may be used to satisfy the fuel sulfur content analysis, provided they establish the fuel sulfur concentration and higher heating value. [District Rule 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 retained or listed on the permits 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 permit condition will be listed on the permits 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 permit condition will be on the permits 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 requires 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. Therefore, the following permit condition will be listed on the permit as follows:

- 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, 4320 and 40 CFR 60.48c(i)]

### **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 permits:

- {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: NOX (ppmv) - EPA Method 7E or ARB Method 100, NOx (lb/MMBtu) - EPA Method 19; CO (ppmv) - EPA Method 10 or ARB Method 100; Stack gas oxygen (O2) - 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; VOC (ppmv) - EPA Method 25A or 25B, or ARB Method 100. [District Rules 2201, 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 included in the permits:

- A source test to demonstrate compliance with NO<sub>x</sub>, CO and VOC emission limits shall be performed within 60 days of startup of this unit. [District Rules 2201 and 4320]
- Source testing to measure natural gas-combustion NO<sub>x</sub> and CO emissions from this unit shall be conducted at least once every twelve (12) months (no more than 30 days before or after the required annual source test date). After demonstrating compliance on two (2) consecutive annual source tests, the unit shall be tested not less than once every thirty-six (36) months (no more than 30 days before or after the required 36-month source test date). 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 2201, 4305, 4306 and 4320]
- {110} The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081]

Sections 6.3.2.1 through 6.3.2.7 address the requirements of group testing which is not proposed in this project. Therefore these sections are not applicable.

### **Conclusion**

Conditions will be incorporated into the permit in order to ensure compliance with each section of this rule, see attached draft permit. Therefore, compliance with District Rule 4320 requirements is expected.

### **District Rule 4351 Boilers, Steam Generators and Process Heaters – Phase 1**

This rule applies to boilers, steam generators, and process heaters at NO<sub>x</sub> Major Sources that are not located west of Interstate 5 in Fresno, Kings, or Kern counties. The facility is located west of Interstate 5 in Kern County. Therefore, this rule does not apply.

### **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:

$$\text{Volume SO}_2 = \frac{n RT}{P}$$

With:

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

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

P (Standard Pressure) = 14.7 psi

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

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

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

Therefore, compliance with District Rule 4801 requirements is expected.

### **Californian 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)**

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 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.

Facilities subject to the Cap and Trade regulation are subject to an industry-wide cap on overall GHG emissions. As such, any growth in emissions must be accounted for under that cap such that a corresponding and equivalent reduction in emissions must occur to allow any increase. Therefore, it is reasonable to conclude that implementation of the Cap and Trade program will and must fully mitigate project-specific GHG emissions.

Regardless of, and independent to, the above significance determination, the District finds that, through compliance with the Cap and Trade regulation, project-specific GHG emissions would be fully mitigated. The District therefore concludes that projects occurring at facilities subject to ARB's Cap and Trade regulation would have a less than significant individual and cumulative impact on global climate change.

Facility S-1372 is subject to the Cap and Trade regulation. The District therefore concludes that the project would have a less than cumulatively significant impact on global climate change.

**Project Independence**

An ATC application (project S1140710, S-1372) for a new 85 MMBtu/hr steam generator was received on 2/25/14. The combined emissions from this project and S1140709 are less than the CEQA significance thresholds; therefore, even if the two projects were considered to be a single larger project they would not trigger CEQA requirements.

**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 ATC S-1372-413-0 subject to the permit conditions on the attached draft ATC in **Appendix F**.

**X. Billing Information**

Annual Permit Fees			
Permit Number	Fee Schedule	Fee Description	Annual Fee
S-1372-413-0	3020-02-H	85 MMBtu/hr	\$1030

**APPENDIX A**  
**Quarterly Net Emissions Change (QNEC)**

Permit #: S-1372-413-0	Last Updated
Facility: FREEPORT-MC MORAN OIL & GAS	03/07/2014 TORID

Equipment Pre-Baselined: NO

	<u>NOX</u>	<u>SOX</u>	<u>PM10</u>	<u>CO</u>	<u>VOC</u>
Potential to Emit (lb/Yr):	4488.0	2122.0	5659.0	16381.0	2234.0
Daily Emis. Limit (lb/Day)	16.3	5.8	15.5	44.9	6.1
Quarterly Net Emissions Change (lb/Qtr)					
Q1:	1117.0	531.0	1415.0	4095.0	559.0
Q2:	1117.0	531.0	1415.0	4095.0	559.0
Q3:	1117.0	531.0	1415.0	4095.0	559.0
Q4:	1117.0	531.0	1415.0	4095.0	559.0
Check if offsets are triggered but exemption applies	N	N	N	Y	N
Offset Ratio	1.5	1.5	1.5		1.5
Quarterly Offset Amounts (lb/Qtr)					
Q1:	1676.0	796.0	2122.0		838.0
Q2:	1676.0	796.0	2122.0		838.0
Q3:	1676.0	796.0	2122.0		838.0
Q4:	1676.0	796.0	2122.0		838.0

## Quarterly Net Emissions Change (QNEC)

The Quarterly Net Emissions Change is used to complete the emission profile screen for the District's PAS database. The QNEC shall be calculated as follows:

$QNEC = PE2 - PE1$ , where:

QNEC = Quarterly Net Emissions Change for each emissions unit, lb/qtr.

PE2 = Post Project Potential to Emit for each emissions unit, lb/qtr.

PE1 = Pre-Project Potential to Emit for each emissions unit, lb/qtr.

Using the values in Sections VII.C.2 and VII.C.6 in the evaluation above, quarterly PE2 and quarterly PE1 can be calculated as follows:

$$\begin{aligned} PE2_{\text{quarterly}} &= PE2_{\text{annual}} \div 4 \text{ quarters/year} \\ &= 5659 \text{ lb/year} \div 4 \text{ qtr/year} \\ &= 1415 \text{ lb PM}_{10}\text{/qtr} \end{aligned}$$

$$\begin{aligned} PE1_{\text{quarterly}} &= PE1_{\text{annual}} \div 4 \text{ quarters/year} \\ &= 0 \text{ lb/year} \div 4 \text{ qtr/year} \\ &= 0 \text{ lb PM}_{10}\text{/qtr} \end{aligned}$$

Quarterly NEC [QNEC]			
	PE2 (lb/qtr)	PE1 (lb/qtr)	QNEC (lb/qtr)
NO <sub>x</sub>	1117	0	1117
SO <sub>x</sub>	531	0	531
PM <sub>10</sub>	559	0	559
CO	4095	0	4095
VOC	559	0	559

# APPENDIX B BACT Analyses

## Top Down BACT Analysis for the Steam Generator

Oxides of nitrogen (NO<sub>x</sub>) are generated from the high temperature combustion of the natural gas fuel. A majority of the NO<sub>x</sub> emissions are formed from the high temperature reaction of nitrogen and oxygen in the inlet air. The rest of the NO<sub>x</sub> emissions are formed from the reaction of fuel-bound nitrogen with oxygen in the inlet air.

### 1. BACT Analysis for NO<sub>x</sub> Emissions:

#### a. Step 1 - Identify all control technologies

The District adopted District Rule 4320 on October 16, 2008. The NO<sub>x</sub> emission limit requirements in District Rule 4320 are lower than the current BACT limits; 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 greater than 20 MMBtu/hr to 7 ppm @ 3% O<sub>2</sub>. This emission limit is Achieved in Practice control technology for the BACT analysis. District Rule 4320 also contains an enhanced schedule option that allows applicants additional time to meet the requirements of the rule. The enhanced schedule NO<sub>x</sub> emission limit requirement is 5 ppmv @ 3% O<sub>2</sub>. Since this is an enhanced option in the rule, it will be considered the Technologically Feasible control technology for the BACT analysis.

The SJVAPCD BACT Clearinghouse guideline 1.2.1 has been rescinded. Therefore a new BACT analysis is required. The following are possible control technologies:

- 1) 5 ppmvd @ 3% O<sub>2</sub> with SCR
- 2) 7 ppmvd @ 3% O<sub>2</sub>

#### b. Step 2 - Eliminate technologically infeasible options

There are no technologically infeasible options to eliminate from step 1.

#### c. Step 3 - Rank remaining options by control effectiveness

- 1) 5 ppmvd @ 3% O<sub>2</sub> with SCR
- 2) 7 ppmvd @ 3% O<sub>2</sub>

#### d. Step 4 - Cost Effectiveness Analysis

A cost effective analysis is required for technologically feasible control options that are not proposed. The applicant is proposing a NO<sub>x</sub> limit of 5 ppmvd @ 3% O<sub>2</sub>; therefore, a cost effective analysis is not required for the 5 ppmvd @ 3% O<sub>2</sub> option (SCR).

## **2. BACT Analysis for SO<sub>x</sub> Emissions:**

Oxides of sulfur (SO<sub>x</sub>) emissions occur from the combustion of the sulfur, which is present in the fuel.

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

The SJVAPCD BACT Clearinghouse guideline 1.2.1, 1<sup>st</sup> quarter 2005, identifies for achieved in practice BACT for SO<sub>x</sub> emissions from oil field steam generators ≥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>

No technologically feasible alternatives or control alternatives identified as alternate basic equipment for this class and category of source are listed.

### **b. Step 2 - Eliminate technologically infeasible options**

There are no technologically infeasible options to eliminate from step 1.

### **c. Step 3 - Rank remaining options 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>

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

The only control technology in the ranking list from Step 3 has been achieved in practice. Therefore, per the District's BACT Policy (dated 11/9/99) Section IX.D.2, the cost effectiveness analysis is not required.

### **e. Step 5 - Select BACT**

The applicant has proposed to combust natural gas with a fuel sulfur content not exceed 1 gr-S/100 dscf; therefore BACT for SO<sub>x</sub> emissions is satisfied.

### **3. BACT Analysis for PM<sub>10</sub> Emissions:**

Particulate matter (PM<sub>10</sub>) emissions result from the incomplete combustion of various elements in the fuel.

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

The SJVAPCD BACT Clearinghouse guideline 1.2.1, 1<sup>st</sup> quarter 2005, identifies for achieved in practice BACT for PM<sub>10</sub> emissions from oil field steam generators ≥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>

No technologically feasible alternatives or control alternatives identified as alternate basic equipment for this class and category of source are listed.

#### **b. Step 2 - Eliminate technologically infeasible options**

There are no technologically infeasible options to eliminate from step 1.

#### **c. Step 3 - Rank remaining options 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>

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

The only control technology in the ranking list from Step 3 has been achieved in practice. Therefore, per the District's BACT Policy (dated 11/9/99) Section IX.D.2, the cost effectiveness analysis is not required.

#### **e. Step 5 - Select BACT**

The applicant has proposed to combust natural gas with a fuel sulfur content not to exceed 1 gr-S/100 dscf; therefore BACT for PM<sub>10</sub> emissions is satisfied.

#### **4. BACT Analysis for CO Emissions:**

Carbon monoxide (CO) emissions are generated from the incomplete combustion of air and fuel.

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

The SJVAPCD BACT Clearinghouse guideline 1.2.1, 1<sup>st</sup> quarter 2005, identifies for achieved in practice BACT for CO emissions from oil field steam generators  $\geq 5$  MMBtu/hr as follows:

- 1) 50 ppmvd @ 3% O<sub>2</sub>

No technologically feasible alternatives or control alternatives identified as alternate basic equipment for this class and category of source are listed.

##### **b. Step 2 - Eliminate technologically infeasible options**

There are no technologically infeasible options to eliminate from step 1.

##### **c. Step 3 - Rank remaining options by control effectiveness**

- 1) 50 ppmvd @ 3% O<sub>2</sub>

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

The only control technology in the ranking list from Step 3 has been achieved in practice. Therefore, per the District's BACT Policy (dated 11/9/99) Section IX.D.2, the cost effectiveness analysis is not required.

##### **e. Step 5 - Select BACT**

BACT for CO emissions from an oil field steam generator is a CO limit of 50 ppmvd @ 3% O<sub>2</sub>. The applicant has proposed to install oil field steam generators with a CO limit of 30 ppmvd @ 3% O<sub>2</sub>; therefore BACT for CO emissions is satisfied.

## **5. BACT Analysis for VOC Emissions:**

Volatile organic compounds (VOC) emissions are generated from the incomplete combustion of the fuel.

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

The SJVAPCD BACT Clearinghouse guideline 1.2.1, 1<sup>st</sup> quarter 2005, identifies for achieved in practice BACT for VOC emissions from oil field steam generators  $\geq 5$  MMBtu/hr as follows:

- 1) Gaseous fuel

No technologically feasible alternatives or control alternatives identified as alternate basic equipment for this class and category of source are listed.

### **b. Step 2 - Eliminate technologically infeasible options**

There are no technologically infeasible options to eliminate from step 1.

### **c. Step 3 - Rank remaining options by control effectiveness**

- 1) Gaseous fuel

### **d. Step 4 - Cost effectiveness analysis**

The only control technology in the ranking list from Step 3 has been achieved in practice. Therefore, per the District's BACT Policy (dated 11/9/99) Section IX.D.2, the cost effectiveness analysis is not required.

### **e. Step 5 - Select BACT**

BACT for VOC emissions from an oil field steam generator is gaseous fuel. The applicant has proposed to install oil field steam generators fired on gaseous fuel; therefore BACT for VOC emissions is satisfied.

**APPENDIX C**  
**BACT Analyses for Commissioning Period Operation**

# Top Down BACT Analysis

## Commissioning Process Description

Steam generator initial commissioning activities are required to complete the installation of a new unit. Commissioning operations can be divided into three phases, consisting of: refractory brick curing, safety checking and emission performance tuning, as explained below.

Safety testing is required by the National Fire Prevention Association to ensure that safety systems will operate properly in the event of a system upset. Safety checks take up to 24 hours to complete and are done with the steam generator firing at approximately one third of rated capacity.

New refractory material must be cured over an extended period of time before the affected unit can be utilized for normal steam generating activities. For the curing process, the refractory material is progressively exposed to higher and higher temperatures over a period that ranges from as little as 8 hours to 30 hours, depending on the type and amount of refractory material installed. This is accomplished by firing the steam generator on progressively higher fuel rates during the curing process.

After a steam generator is safety tested and its refractory material cured it must be tuned to meet its NO<sub>x</sub> and CO emission limits. This can take up to 80 hours.

During these periods of initial commissioning, NO<sub>x</sub> emissions may reach 30 ppmv and CO 50 ppmv at 3% O<sub>2</sub>. Other criteria pollutants (SO<sub>x</sub>, PM<sub>10</sub> and VOC) are expected to be emitted at the same levels during initial commissioning as they are during steady state operation.

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

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

For steam generators of this class and category of source, the District has required units in steady state operation to meet achieved in practice BACT emissions level of 7 ppmv. A NOx limit at 5 ppmv level in steady state operation has been identified as a technologically feasible option, but to date has not been found to be cost effective and has not been required as BACT. These emissions levels have been achieved using ultra low NOx burner designs and/or SCR exhaust gas treatment.

As has previously been explained, given the operational flexibility required to complete initial commissioning activities, it is not practical or necessary to specify emissions limits.

The following have been identified as possible controls or work practice standard that may be employed to reduce emissions of NOx during initial commissioning:

1. SCR
2. Operation of the low NOx burner accommodated by the specific commissioning activity being undertaken, expeditious completion of commissioning activities and use of good work practice standard to minimize emissions

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

All of the above are feasible.

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

1. SCR
2. Operation of the low NOx burner accommodated by the specific commissioning activity being undertaken, expeditious completion of commissioning activities and use of good work practice standard to minimize emissions

### **Step 4 - Eliminate Technologically Infeasible Options**

Both options are feasible.

### **Step 5 - Cost Effectiveness Analysis**

In project S1084433, it was determined that the use of SCR was not cost effective in steady state operation. Based on the high cost effectiveness of > \$70,000/ton of NOx controlled, the short time frame allowed for initial commissioning activities and the small potential increases in NOx emissions that may occur during these activities, it can be concluded that the use of SCR for initial commissioning is likewise not cost effective.

## **Step 6 – Select BACT for NOx**

1. Operation of the low NOx burner accommodated by the specific commissioning activity being undertaken, expeditious completion of commissioning activities and use of good work practice standard to minimize emissions

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

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

The SJVUAPCD BACT Clearinghouse guideline 1.2.1, 3rd quarter 2010, identifies achieved in practice and technologically feasible BACT for Steam Generator  $\geq 5$  MMbtu/hr, at an oil field 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 identified and this technology is achieved in practice, therefore, cost effectiveness analysis not necessary.

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

The use of gaseous fuel (natural gas) is selected as BACT for VOC emissions.

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

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

The SJVUAPCD BACT Clearinghouse guideline 1.2.1, 3rd quarter 2010, identifies achieved in practice and technologically feasible BACT for Steam Generator  $\geq 5$  MMbtu/hr, at an oil field 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 identified and this technology is achieved in practice, therefore, cost effectiveness analysis not necessary.

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

The use of natural gas as a primary fuel with a sulfur content not to exceed 0.75 gr-S/100 scf with no back up fuel is selected as BACT for SO<sub>x</sub> and PM<sub>10</sub> emissions.

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

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

For steam generators of this class and category of source, the District has required units in a steady state operation to meet an achieved in practice BACT emissions level of 50 ppmv. Units with low-NO<sub>x</sub> burners have consistently demonstrated CO emissions levels in steady state operation of low single digits.

CO emissions below 50 ppmv are expected, but cannot be absolutely assumed for all commissioning activities. As has previously been explained, given the operational flexibility required to complete initial commissioning activities, it is not practical or necessary to specify emissions limits.

The following have been identified as possible controls or work practice standards that may be employed to reduce emissions of CO during initial commissioning:

1. Operation of the low-NOx burner with the maximum FGR that can be accommodated by the specific commissioning activity being undertaken, expeditious completion of commissioning activities and use of good work practice standard to minimize emissions

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

The above listed technology is technologically feasible.

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

1. Operation of the low NOx burner with the maximum FGR that can be accommodated by the specific commissioning activity being undertaken, expeditious completion of commissioning activities and use of good work practice standard to minimize emissions

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

Only one control technology has been identified and this technology is considered achieved in practice, therefore, cost effectiveness analysis not necessary.

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

1. Operation of the low NOx burner with the maximum FGR that can be accommodated by the specific commissioning activity being undertaken, expeditious completion of commissioning activities and use of good work practice standards to minimize emissions

**APPENDIX D**  
**HRA/AAQA**

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

To: David Torii – Permit Services  
 From: Kou Thao – Technical Services  
 Date: 4-12-14  
 Facility Name: Freeport – McMoRan Oil and Gas LLC  
 Location: NW/4 of Sec10/T28s/R21E  
 Application #(s): S-1372-413-0  
 Project #: S-1140709

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### A. RMR SUMMARY

RMR Summary			
Categories	NG Steam Generator (Unit 413-0)	Project Totals	Facility Totals
Prioritization Score	9.79	9.79	>1.0
Acute Hazard Index	5.54E-03	5.54E-03	9.21E-02
Chronic Hazard Index	1.76E-02	1.76E-02	5.31E-02
Maximum Individual Cancer Risk (10 <sup>-6</sup> )	5.74E-07	5.74E-07	1.89E-06
T-BACT Required?	No		
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:

#### Unit # 413-0

1. 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]

### B. RMR REPORT

#### I. Project Description

Technical Services received a request on April 13, 2014 to perform a Risk Management Review for a proposed installation of a 85 mmbtu/hr natural gas fired steam generator.

## II. Analysis

Technical Services performed a prioritization using the District's HEARTs database. Since the total facility prioritization score was greater than one, a refined health risk assessment was required.

Toxic emissions for the Petroleum Steam Generator fueled by Natural gas were calculated using emission factors from December 2009 Emission Estimation Protocol for Petroleum Refineries by the American Petroleum Institute and Western States Petroleum Association. The AERMOD model was used, with the parameters outlined below and meteorological data for 2004-2008 from Missouri Triangle to determine the dispersion factors (i.e., the predicted concentration or X divided by the normalized source strength or Q) for a receptor grid. These dispersion factors were input into the Hot Spots Analysis and Reporting Program (HARP) risk assessment module to calculate the chronic and acute hazard indices and the carcinogenic risk for the project.

The following parameters were used for the review:

Analysis Parameters Unit 413-0			
Source Type	Point	Location Type	Rural
Stack Height (m)	6.069	Closest Receptor (m)	1591
Stack Diameter. (m)	1.067	Type of Receptor	Business
Stack Exit Velocity (m/s)	8.976	Max Hours per Year	8760
Stack Exit Temp. (°K)	383.0	Fuel Type	NG
Burner Rating (MMBtu/hr)	85		

In addition to the RMR, Technical Services also performed modeling for criteria pollutants CO, NO<sub>x</sub>, SO<sub>x</sub> and PM<sub>10</sub>. The emission rates used for criteria pollutant modeling were 1.87 lb/hr CO, 0.68 lb/hr NO<sub>x</sub>, 0.24 lb/hr SO<sub>x</sub>, and 0.25 lb/hr PM<sub>10</sub>. The engineer supplied the maximum fuel rate for the IC engine used during the analysis.

The results from the Criteria Pollutant Modeling are as follows:

### Criteria Pollutant Modeling Results\*

Diesel ICE	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	Pass	X	Pass	Pass
PM <sub>10</sub>	X	X	X	Pass <sup>2</sup>	Pass <sup>2</sup>
PM <sub>2.5</sub>	X	X	X	Pass <sup>2</sup>	Pass <sup>2</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.

<sup>2</sup>The criteria pollutants are below EPA's level of significance as found in 40 CFR Part 51.165 (b)(2).

### **III. Conclusion**

The acute and chronic indices are below 1.0 and the cancer risk factor associated with the project is less than 1.0 in a million. **In accordance with the District's Risk Management Policy, the project is approved without Toxic Best Available Control Technology (T-BACT).**

To ensure that human health risks will not exceed District allowable levels; the permit conditions listed on page 1 of this report must be included for this proposed unit.

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.

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

### **IV. Attachments**

- A. RMR request from the project engineer
- B. Additional information from the applicant/project engineer
- C. Toxic emissions summary
- D. Prioritization score
- E. Facility Summary

**APPENDIX E**  
**Compliance Certification**



Freeport-McMoRan Oil & Gas  
201 S. Broadway  
Orcutt, CA 93455

Telephone: 805-739-9111

March 18, 2014

San Joaquin Valley Pollution District  
34946 Flyover Court  
Bakersfield, CA 93308

RECEIVED  
MAR 19 2014  
SJVAPCD  
Southern Region

**RULE 2201 COMPLIANCE STATEMENT  
ATC FEDERAL MAJOR MODIFICATION – TWO STEAM GENERATORS  
FACILITY s-1372 HEAVY OIL WESTERN**

Mr. Torii:

In accordance with Rule 2201, Section 4.15 "Additional Requirements for Major Sources and Federal Major Modifications", FM O&G is providing this compliance statement regarding our ATC applications for two new 85.0 MMBtu/hr steam generators.

All major stationary sources in California owned and operated by FM O&G, or by any entity controlling, controlled by, or under common control with FM O&G, and which are subject to emission limitations are in compliance or on a schedule for compliance with all applicable emission limitations and standards. These sources include one or more of the following oil and gas production facilities:

1. Arroyo Grande Field
2. Inglewood Field
3. Gaviota Oil Heating Facility, Point Arguello Title V Stationary Source
4. Lompoc Oil and Gas Processing Plant, Point Pedernales Title V Stationary Source

Based on information and belief formed after reasonable inquiry, the statements and information in this letter are true, accurate, and complete. Should you have any questions concerning this matter, please contact me at (661) 395-5458 or Charlotte Campbell at (661) 395-5427.

Sincerely,

Steve Rusch  
Vice President of EH&S and Government Affairs

**APPENDIX F**  
**Draft ATC**

San Joaquin Valley  
Air Pollution Control District

**AUTHORITY TO CONSTRUCT**

PERMIT NO: S-1372-413-0

ISSUANCE DATE: DRAFT

LEGAL OWNER OR OPERATOR: FREEPORT-MC MORAN OIL & GAS  
MAILING ADDRESS: 1200 DISCOVERY DR - STE 500  
BAKERSFIELD, CA 93309

LOCATION: HEAVY OIL WESTERN STATIONARY SOURCE  
CA

SECTION: NW16 TOWNSHIP: 31S RANGE: 22E

EQUIPMENT DESCRIPTION:  
85 MMBTU/HR NATURAL GAS-FIRED STEAM GENERATOR WITH NORTH AMERICAN GLE BURNER AND A FLUE GAS RECIRCULATION 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. Prior to operating equipment under this Authority to Construct, permittee shall surrender NOX emission reduction credits for the following quantity of emissions: 1st quarter - 1676 lb, 2nd quarter - 1676 lb, 3rd quarter - 1676 lb, and fourth quarter - 1676 lb. These amounts include the applicable offset ratio specified in Rule 2201 Section 4.8 (as amended 4/21/11) for the ERC specified below. [District Rule]
4. ERC Certificate Number S-4170-2 (or a certificate split from this certificate) 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]

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

Arnaud Marjollet, Director of Permit Services

8-1372-413-0 May 6 2014 12:23PM - TORID Joint Inspection NOT Required

5. Prior to operating equipment under this Authority to Construct, permittee shall surrender SOX emission reduction credits for the following quantity of emissions: 1st quarter - 796 lb, 2nd quarter - 796 lb, 3rd quarter - 796 lb, and fourth quarter - 796 lb. These amounts include the applicable offset ratio specified in Rule 2201 Section 4.8 (as amended 4/21/11) for the ERC specified below. [District Rule]
6. ERC Certificate Number N-1151-5 (or a certificate split from this certificate) 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]
7. Prior to operating equipment under this Authority to Construct, permittee shall surrender PM10 emission reduction credits for the following quantity of emissions: 1st quarter - 838 lb, 2nd quarter - 838 lb, 3rd quarter - 838 lb, and fourth quarter - 838 lb. These amounts include the applicable offset ratio specified in Rule 2201 Section 4.8 (as amended 4/21/11) for the ERC specified below. [District Rule]
8. ERC Certificate Number N-1151-5 (or a certificate split from this certificate) shall be used to supply the required PM10 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]
9. Prior to operating equipment under this Authority to Construct, permittee shall surrender VOC emission reduction credits for the following quantity of emissions: 1st quarter - 838 lb, 2nd quarter - 838 lb, 3rd quarter - 838 lb, and fourth quarter - 838 lb. These amounts include the applicable offset ratio specified in Rule 2201 Section 4.8 (as amended 4/21/11) for the ERC specified below. [District Rule]
10. ERC Certificate Number S-4243-1 (or a certificate split from this certificate) 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]
11. The initial commissioning period is the time required to complete the necessary safety checks, curing of refractory material and the performance tuning of the burner and attendant systems to achieve compliance with the emission limits required by this permit. The commissioning period begins upon first firing of the unit and shall not extend beyond the first 135 hours of actual burner operation. [District Rule 2201] Federally Enforceable Through Title V Permit
12. The refractory curing period is the time required to gradually increase the firing rate and internal temperature of a unit to thermally temper and set the optimal properties of new refractory material that has been installed as part of a unit's initial commissioning or has been replaced as part of a subsequent maintenance or repair procedure. The refractory curing period following the replacement of material as part of a maintenance or repair procedure shall not exceed 30 hours total of actual burner operation per occurrence. [District Rule 2201] Federally Enforceable Through Title V Permit
13. During the initial commissioning period and any refractory curing period, operator shall limit emissions to the extent possible by optimizing the performance of the low NOx burner and flue gas recirculation system as can be accommodated by individual initial commissioning and refractory curing activities, by following good work practices and fuel conserving measures and by completing all work in an expeditious manner. Operator shall keep a record of the specific activities undertaken as part of the initial commissioning period and all refractory curing periods and the duration of each activity and shall make the records available for District inspection upon request. [District Rule 2201] Federally Enforceable Through Title V Permit
14. {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]
15. Particulate matter emissions shall not exceed 0.1 grain/dscf at operating conditions, nor 0.1 grain/dscf calculated to 12% CO2, nor 10 lb/hr. [District Rules 4201, 4301, 5.1 and 5.2.3] Federally Enforceable Through Title V Permit
16. 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

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CONDITIONS CONTINUE ON NEXT PAGE

17. The unit shall only be fired on PUC-quality natural gas. [District Rules 2201 and 4320] Federally Enforceable Through Title V Permit
18. Duration of start-up and shutdown shall not exceed 2 hours each per occurrence. [District Rules 2201, 4305, 4306, and 4320] Federally Enforceable Through Title V Permit
19. Emission rates, except during startup and shutdown shall not exceed: NOx (as NOx): 5 ppmvd @ 3% O<sub>2</sub>. [District Rule 2201, 4305, 4306, and 4320] Federally Enforceable Through Title V Permit
20. Emission rates shall not exceed any of the following: SOx: 0.00285 lb/MMBtu; PM10: 0.003 lb/MMBtu; CO: 30 ppmvd @ 3% O<sub>2</sub>; or VOC: 0.003 lb/MMBtu. [District Rule 2201] Federally Enforceable Through Title V Permit
21. Emissions rate of NOx shall not exceed 16.3 lb/day or 4468 lb/yr. [District Rule 2201] Federally Enforceable Through Title V Permit
22. Emissions rate of CO shall not exceed 50.0 lb/day nor 4468 lb/yr. [District Rule 2201] Federally Enforceable Through Title V Permit
23. Permittee shall maintain records of duration of each start-up and shutdown for a period of five years and make such records readily available for District inspection upon request. [District Rule 4320] Federally Enforceable Through Title V Permit
24. A source test to demonstrate compliance with NOx, CO and VOC emission limits shall be performed within 60 days of startup of this unit. [District Rules 2201 and 4320] Federally Enforceable Through Title V Permit
25. Source testing to measure natural gas-combustion NOx and CO emissions from this unit shall be conducted at least once every twelve (12) months (no more than 30 days before or after the required annual source test date). After demonstrating compliance on two (2) consecutive annual source tests, the unit shall be tested not less than once every thirty-six (36) months (no more than 30 days before or after the required 36-month source test date). 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 2201, 4305, 4306 and 4320] Federally Enforceable Through Title V Permit
26. 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
27. 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 2201, 4305, 4306 and 4320] Federally Enforceable Through Title V Permit
28. The following test methods shall be used: NOx (ppmv) - EPA Method 7E or ARB Method 100, NOx (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; SOx - 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, VOC (ppmv) - EPA Method 25A or 25B, or ARB Method 100. [District Rule 2201, 4305, 4306, 4320] Federally Enforceable Through Title V Permit
29. 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
30. 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
31. The permittee shall monitor and record the stack concentration of NOx, 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] Federally Enforceable Through Title V Permit

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CONDITIONS CONTINUE ON NEXT PAGE

32. If the NO<sub>x</sub> or CO concentrations corrected to 3%, as measured by the portable analyzer, exceed the applicable emission limit, 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 performing the notification and testing required by this condition. [District Rules 4102, 4305, 4306 and 4320] Federally Enforceable Through Title V Permit
33. All NO<sub>x</sub>, CO, and O<sub>2</sub> 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 NO<sub>x</sub>, CO, and O<sub>2</sub> 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 sample 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 4102, 4305, 4306 and 4320] Federally Enforceable Through Title V Permit
34. 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] Federally Enforceable Through Title V Permit
35. 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 PTO, 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] Federally Enforceable Through Title V Permit
36. Shorter time periods for demonstration of compliance after startup or re-ignition may be approved by the APCO by submittal of appropriate technical justification upon implementation of this ATC. [District Rule 2201] Federally Enforceable Through Title V Permit
37. PUC quality natural gas is any gaseous fuel where the sulfur content is no more than one-fourth (0.25) grain of hydrogen sulfide per one hundred (100) standard cubic feet, no more than five (5) grains of total sulfur per one hundred (100) standard cubic feet, and at least 80% methane by volume. [District Rule 4320] Federally Enforceable Through Title V Permit
38. If the steam generator is not fired on PUC-regulated natural gas and compliance is achieved through fuel sulfur content limitations, then the sulfur content of the fuel shall be determined by testing sulfur content at a location after all fuel sources are combined prior to incineration, or by performing mass balance calculations based on monitoring the sulfur content and volume of each fuel source. The sulfur content of the fuel shall be determined using the test methods referenced in this permit. [District Rule 4320] Federally Enforceable Through Title V Permit
39. When complying with sulfur emission limits by fuel analysis or by a combination of source testing and fuel analysis, permittee shall demonstrate compliance at least annually. [District Rule 4320] Federally Enforceable Through Title V Permit
40. If the unit is fired on PUC-regulated natural gas, valid purchase contracts, supplier certifications, tariff sheets, or transportation contracts may be used to satisfy the fuel sulfur content analysis, provided they establish the fuel sulfur concentration and higher heating value. [District Rule 4320] Federally Enforceable Through Title V Permit
41. 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 4070, 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

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