



NOV 23 2009

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

**Re: Notice of Preliminary Decision - ATC / Certificate of Conformity
Facility # Chevron USA Inc
Project # 1084509**

Dear Mr. Rios:

Enclosed for your review is the District's engineering evaluation of an application for Authorities to Construct for S-1128 in the Tulare Flats zone in the Cymric and McKittrick Oilfields within the heavy oil production stationary source in the Kern County fields, CA, which has been issued a Title V permit. S-1128 is requesting that Certificates of Conformity, with the procedural requirements of 40 CFR Part 70, be issued with this project. The project authorizes the installation of 3 new 85 MMBtu/hr natural gas-fired steam generators

Enclosed is the engineering evaluation of this application and proposed Authorities to Construct # S-1128-959-0 through '-961-0 with Certificates of Conformity. After demonstrating compliance with the Authority to Construct, the conditions will be incorporated into the facility's Title V permit through an administrative amendment.

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

Thank you for your cooperation in this matter.

Sincerely,



David Warner
Director of Permit Services

DW:RE/Is

Enclosures

Seyed Sadredin
Executive Director/Air Pollution Control Officer

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

Central Region (Main Office)
1990 E. Gettysburg Avenue
Fresno, CA 93726-0244
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Southern Region
34946 Flyover Court
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NOV 23 2009

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

**Re: Notice of Preliminary Decision - ATC / Certificate of Conformity
Facility # Chevron USA Inc
Project # 1084509**

Dear Mr. Tollstrup:

Enclosed for your review and comment is the District's analysis of an application for Authorities to Construct for S-1128 in the Tulare Flats zone in the Cymric and McKittrick Oilfields within the heavy oil production stationary source in the Kern County fields, CA. The project authorizes the installation of 3 new 85 MMBtu/hr natural gas-fired steam generators

The public notice will be published approximately three days from the date of this letter. Please submit your written comments within the 30-day public comment period which begins on the date of publication of the public notice.

Thank you for your cooperation in this matter. If you have any questions, please contact Mr. Leonard Scandura, Permit Services Manager, at (661) 392-5500.

Thank you for your cooperation in this matter.

Sincerely,



David Warner
Director of Permit Services

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San Joaquin Valley
AIR POLLUTION CONTROL DISTRICT



NOV 23 2009

Mr. William Fall
S-1128
PO Box 1392
Bakersfield, CA 93302

**Re: Notice of Preliminary Decision - ATC / Certificate of Conformity
Facility # Chevron USA Inc
Project # 1084509**

Dear Mr. Fall:

Enclosed for your review and comment is the District's analysis of an application for Authorities to Construct for S-1128 in the Tulare Flats zone in the Cymric and McKittrick Oilfields within the heavy oil production stationary source in the Kern County fields, CA. The project authorizes the installation of 3 new 85 MMBtu/hr natural gas-fired steam generators

After addressing all comments made during the 30-day public notice and the 45-day EPA comment periods, the Authorities to Construct will be issued to the facility with Certificates of Conformity. Prior to operating with modifications authorized by the Authorities 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.

The public notice will be published approximately three days from the date of this letter. Please submit your written comments within the 30-day public comment period, which begins on the date of publication of the public notice.

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

Thank you for your cooperation in this matter.

Sincerely,

David Warner
Director of Permit Services

DW:RE/lis

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Bakersfield Californian

**NOTICE OF PRELIMINARY DECISION
FOR THE PROPOSED ISSUANCE OF
AUTHORITY TO CONSTRUCT**

NOTICE IS HEREBY GIVEN that the San Joaquin Valley Air Pollution Control District solicits public comment on the proposed issuance of Authorities To Construct to S-1128 for its steam production operation in the Tulare Flats zone in the Cymric and McKittrick Oilfields within the heavy oil production stationary source in the Kern County fields, California. The project authorizes the installation of 3 new 85 MMBtu/hr natural gas-fired steam generators

The analysis of the regulatory basis for these proposed actions, Project #1084509, is available for public inspection at http://www.valleyair.org/notices/public_notices_idx.htm and the District office at the address below. Written comments on the proposed initial permit must be submitted within 30 days of the publication date of this notice to **DAVID WARNER, DIRECTOR OF PERMIT SERVICES, SAN JOAQUIN VALLEY AIR POLLUTION CONTROL DISTRICT, 34946 FLYOVER COURT, BAKERSFIELD, CA 93308.**

San Joaquin Valley Air Pollution Control District Authority to Construct

3 new oilfield steam generators

Facility Name: Chevron U.S.A. Inc. **Date:** November 12, 2009
Mailing Address: P O Box 1392 **Engineer:** Richard Edgehill
Bakersfield, CA 93302 **Lead Engineer:** Richard Karrs
Contact Person: John Gruber
Telephone: (661) 654-7144, FAX (661) 654-7606, email john.gruber@chevron.com
Application #(s): S-1128-959-0 through '961-0 (3 units)
Project #: 1084509
Deemed Complete: 11/04/09

I. PROPOSAL

Chevron U.S.A. Inc. (CUSA) is requesting Authorities to Construct (ATCs) authorizing the installation of three 85 MMBtu/hr natural gas-fired steam generators. The proposed steam generators will be equipped with North American GLE low-NOx burner assemblies (or equivalent) capable of achieving NOx emissions of 7 ppmvd @ 3% O₂, flue gas recirculation (FGR), and will be authorized to operate at various specified locations within CUSA's heavy oil western stationary source in the Kern County fields.

Emissions from the installation of the new steam generators will trigger BACT, offsets, and public notice.

CUSA facility S-1128 received their Title V Permit on April 25, 2001. This modification can be classified as a Title V minor modification pursuant to Rule 2520, Section 3.20, and can be processed with a Certificate of Conformity (COC). Since the facility has specifically requested that this project be processed in that manner, the 45-day EPA comment period will be satisfied prior to the issuance of the Authority to Construct. CUSA must apply to administratively amend their Title V Operating Permit to include the requirements of the ATC(s) issued with this project.

II. APPLICABLE RULES

- Rule 2201 New and Modified Stationary Source Review Rule (9/21/06)
- Rule 2520 Federally Mandated Operating Permits (6/21/01)
- Rule 4001 New Source Performance Standards (4/14/99)
- Rule 4101 Visible Emissions (2/17/05)
- Rule 4102 Nuisance (12/17/92)
- Rule 4201 Particulate Matter Concentration (12/17/92)
- Rule 4301 Fuel Burning Equipment (12/17/92)
- Rule 4305 Boilers, Steam Generators & Process Heaters – Phase II (8/21/03)
- Rule 4306 Boilers, Steam Generators & Process Heaters – Phase III (3/17/05)
- Rule 4320 Advanced Emission Reduction Options for Boilers, Steam Generators, and Process Heaters Greater than 5.0 MMBtu/hr (10/16/08)
- Rule 4351 Boilers, Steam Generators & Process Heaters – Phase I (8/21/03); **Not applicable**, located West of I-5.
- Rule 4801 Sulfur Compounds (12/17/92)
- 40 CFR Part 51 - Appendix S
- CH&SC 41700 Health Risk Assessment
- California Health & Safety Code 42301.6
- CH&SC 41700 Health Risk Assessment
- CH&SC 42301.6 School Notice
- Public Resources Code 21000-21177: California Environmental Quality Act (CEQA)
- California Code of Regulations, Title 14, Division 6, Chapter 3, Sections 15000-15387: CEQA Guidelines

III. PROJECT LOCATION

CUSA is requesting to operate the proposed equipment at the various specified locations in the Cymric and McKittrick Oilfields. The specified locations of the steam generators are listed in the table below.

Equipment locations				
ATCs	Section	Township	Range	
S-1128-959-0 through S-1128-961-0	1Y - NE, NW, SE, SW Section 1	30S	21E	MDB&M
	7 Z - NW, SE, SW Section 7	30S	22E	
	8 Z - SE Section 8	30S	22E	
	36 W -NW Section 36	29S	21E	
	NE, NW, SE, SW Section 17	30S	22E	
	18 Z - NE, NW, SE, SW Section 18	30S	22E	

The locations identified above are within CUSA's heavy oil western stationary source. These locations are not within 1,000 feet of a school. Therefore, the public notification requirement of California Health & Safety Code 42301.6 is not applicable to this project. A map of the proposed project area is included in **Attachment I**.

IV. PROCESS DESCRIPTION

The new steam generators will produce steam for thermally enhanced oil recovery (TEOR) operations within the Tulare Flats zone in the Cymric and McKittrick Oilfields within the Western Kern County Heavy Oil Western Production Stationary Source. Applicant has stated that applications for the new steam enhanced wells and production handling facilities are forthcoming.

Please note that the steam generators will not be authorized to burn gas from CUSA's thermally enhanced oil recovery operation (TEOR) casing vent gas collection systems or tank vapor control systems. Only PUC quality natural with a sulfur content no higher than 1.0 grains-S per 100 scf will be used for fuel.

The new steam generators will be equipped with the following equipment and/or features:

- 85.0 MMBtu/hr rated North American model 4231-85-GLE low-NOx burner assembly, or equivalent low-NOx burner design, with flue gas recirculation (FGR) to achieve 7 ppmvd @ 3% O₂ for NO_x.
- Blower fan not to exceed 100 hp and equipped with variable speed drive (VSD).
- PUC quality gas fuel train components and controls to provide adequate pressure to the new burner.
- Incorporation of high-efficiency split-flow (dual-pass) radiant and convection sections. The convection section will consist of the lay-down split-flow style design.

A standard diagram of a steam generator equipped with a lay-down split-flow style convection section is provided in **Attachment II**.

Additionally CUSA has requested that startup and shutdown provisions be added to the ATCs. The following conditions are included on the ATCs to address the startup and shutdown emissions:

- Duration of start-up and shutdown shall not exceed 2 hours each per occurrence. [District Rules 2201, 4305, 4306, and 4320]
- Emission rates during startup and shutdown shall not exceed: NO_x – 116 ppmv @ 3% O₂ or 0.14 lb/MMBtu; CO 400 ppmv @ 3% O₂ or 0.296 lb/MMBtu. [District Rules 4101, 4102, 4301, 4405, 4406 and 4801]

Therefore daily emissions will be based on 116 ppmv NO_x @ 3% O₂ and 400 ppmv CO @ 3% O₂ for 4 hours per day and 7 ppmv NO_x @ 3% O₂ and 25 ppmv CO @ 3% O₂

for 20 hr/day and annual emission will be based on 7 ppmv NO_x @ 3% O₂ and 25 ppmv CO @ 3% O₂.

V. EQUIPMENT LISTING

ATC Equipment Description:

S-1128-959-0 through '961-0: 85 MMBTU/HR NATURAL GAS-FIRED STEAM GENERATOR WITH NORTH AMERICAN MODEL 4231-85-GLE LOW-NOX BURNER ASSEMBLY, OR EQUIVALENT LOW-NOX BURNER, WITH FLUE GAS RECIRCULATION, APPROVED TO OPERATE AT VARIOUS SPECIFIED LOCATIONS

As per District policy 1035 Flexibility in Equipment Descriptions in ATCs, some flexibility in the final specifications of the equipment will be allowed stated in the following ATC conditions:

The permittee shall obtain written District approval for the use of any equivalent equipment not specifically approved by this Authority to Construct. Approval of the equivalent equipment shall be made only after the District's determination that the submitted design and performance of the proposed alternate equipment is equivalent to the specifically authorized equipment. [District Rule 2201] N

The permittee's request for approval of equivalent equipment shall include the make, model, manufacturer's maximum rating, manufacturer's guaranteed emission rates, equipment drawing(s), and operational characteristics/parameters. [District Rule 2010] N

Alternate equipment shall be of the same class and category of source as the equipment authorized by the Authority to Construct. [District Rule 2201] N

No emission factor and no emission shall be greater for the alternate equipment than for the proposed equipment. No changes in the hours of operation, operating rate, throughput, or firing rate may be authorized for any alternate equipment. [District Rule 2201] N

VI. EMISSION CONTROL TECHNOLOGY EVALUATION

The steam generator will be equipped with an ultra low-NO_x burner and FGR capable of achieving NO_x and CO emissions of 7 ppmvd (@ 3% O₂) and 25 ppmvd (@ 3% O₂), respectively and will be fired exclusively on natural gas containing a sulfur content no greater than 1.0 grain-S/100 dscf.

Low NO_x Burner Technology

Low-NO_x burners reduce NO_x formation by producing lower flame temperatures (and longer flames) than conventional burners. Low-NO_x burners delay the mixing of fuel and air by introducing the fuel (or sometimes air) in multiple stages. In the first stage, the air-fuel mixture is fuel-rich in which the oxygen is consumed in reactions with the fuel, thereby limiting excess oxygen available to react with nitrogen to produce thermal NO_x.

The combustion zones in the secondary and tertiary stages are maintained in a fuel-lean environment. The excess air in these stages helps to reduce the flame temperature, which in turn minimizes the reaction between excess oxygen and nitrogen. The North American burner incorporates patented internal mixing elements that premix the fuel and air prior to combustion in the reaction zone. By completing a majority of the combustion in the burner reaction chamber, the low emissions of the burner are protected from process influences.

Flue Gas Recirculation Technology

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

Manufacturer's details on the low NO_x burner are provided in **Attachment III**.

VII. GENERAL CALCULATIONS

A. Assumptions

- The maximum operating schedule is 24 hours per day, 8,760 hr/year (365 days)
- Maximum heat input rating = 85 MMBtu/hr
- Units are fired on PUC quality natural gas with ≤ 1.0 grain-S/100 dscf
- Natural Gas Heating Value: 1,000 Btu/scf
- F-Factor for Natural Gas @ 60°F: 8,578 dscf/MMBtu
- Gas Molar Vol 60 °F = $10.7316 \text{ psia ft}^3/\text{lbmol R} \times 519.67 \text{ R}/(14.696 \text{ psia/atm})$
= 378.61 ft³/lbmol
- Startup and shut down of the units occur infrequently and do not affect annual emissions.
- The DEL for NO_x is based on a worst case day with one startup and one shutdown (total transitional time = 4 hrs).

B. Emission Factors

Emission Factors			
Pollutant	Emission Factors		Source
NO _x	0.00852 lb-NO _x /MMBtu ⁽¹⁾	7 ppmv NO _x (@ 3%O ₂)	Applicant proposed and guaranteed by burner manufacturer (Attachment III)
SO _x	0.00285 lb-SO _x /MMBtu ⁽²⁾	1.0 grain-S/100 scf	Proposed
PM ₁₀	0.006 lb-PM ₁₀ /MMBtu	6.0 lb/10 ⁶ scf	Applicant proposed; based on representative source test (Attachment IV)
CO	0.0185 lb-CO/MMBtu ⁽³⁾	25 ppmv CO (@ 3%O ₂)	Applicant proposed and guaranteed by burner vendor (Attachment III)
VOC	0.0055 lb-VOC/MMBtu	5.5 lb/10 ⁶ scf	AP-42 Table 1.4-2

⁽¹⁾ 0.00852 lb-NO_x/mmbtu = (7 ppmvd/10⁶)(8578 dscf/mmbtu)(lb-mole/378.61 dscf)(46 lb-NO_x/lb-mole)(20.9/20.9-3)]

⁽²⁾ 0.00286 lb-SO_x/mmbtu = (0.01 gr-S/scf)(lb/7000 gr)(scf/1000 btu)(2 lb-SO₂/lb-S)(10⁶)

⁽³⁾ 0.0185 lb-CO/mmbtu = (25 ppmvd/10⁶)(8,578 dscf/MMBtu)(lb-mol/378.61 ft³)(28 lb/lb-mol)[20.9/(20.9-3)]

Startup/Shutdown (2 hr per occurrence)

Emission Factors			
Pollutant	Emission Factors		Source
NO _x	0.14 lb-NO _x /MMBtu ⁽¹⁾	116 ppmv NO _x (@ 3%O ₂)	Rule 4406 emissions limit
CO	0.296 lb-CO/MMBtu ⁽²⁾	400 ppmv CO (@ 3%O ₂)	Applicant proposed and guaranteed by burner vendor (Attachment C)

⁽¹⁾ 0.14 lb-NO_x/mmbtu = (116 ppmvd/10⁶)(8,578 dscf/MMBtu)(lb-mol/378.61 ft³)(46 lb/lb-mol)[20.9/(20.9-3)]

⁽²⁾ 0.296 lb-CO/mmbtu = (400 ppmvd/10⁶)(8,578 dscf/MMBtu)(lb-mol/378.61 ft³)(28 lb/lb-mol)[20.9/(20.9-3)]

C. Calculations

1. Pre-Project Potential to Emit (PE1)

Since these are new emissions units, PE1 = 0 for all criteria pollutants.

2. Post-Project Potential to Emit (PE2)

S-1128-959, '-960, and '-961 (each)

Pollutant	Daily PE2 (per Unit)			
	EF2 (lb/MMBtu)	Heat Input (MMBtu/hr)	Operating Schedule (hr/day)	Daily PE2 (lb/day)
NOx	0.00852	85	24	see below
SOx	0.00285	85	24	5.8
PM10	0.0060	85	24	12.2
CO	0.0185	85	24	see below
VOC	0.0055	85	24	11.2

Pollutant	Annual PE2 (per Unit)			
	EF2 (lb/MMBtu)	Heat Input (MMBtu/hr)	Operating Schedule (hr/day)	Daily PE2 (lb/day)
NOx	0.00852	85	8,760	6,344
SOx	0.00285	85	8,760	2,122
PM10	0.0060	85	8,760	4,468
CO	0.0185	85	8,760	13,775
VOC	0.0055	85	8,760	4,095

Daily NOx & CO PEs with Startups/Shutdowns (per Unit)

$$\text{NOx} = (0.00852 \text{ lb/MMBtu})(85 \text{ mmbtu/hr})(20 \text{ hrs/day}) + (0.14 \text{ lb/mmbtu})(85 \text{ mmbtu/hr})(4 \text{ hrs/day})$$

$$= \mathbf{62.1 \text{ lb-NOx/day}}$$

$$\text{CO} = (0.0185 \text{ lb/MMBtu})(85 \text{ mmbtu/hr})(20 \text{ hrs/day}) + (0.296 \text{ lb/mmbtu})(85 \text{ mmbtu/hr})(4 \text{ hrs/day})$$

$$= \mathbf{132.1 \text{ lb-CO/day}}$$

Emissions profiles are included in **Attachment V**.

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

Pursuant to Section 4.9 of District Rule 2201, the Pre-Project Stationary Source Potential to Emit (SSPE1) is the Potential to Emit (PE) from all units with valid Authorities to Construct (ATC) or Permits to Operate (PTO) at the Stationary Source and the quantity of emission reduction credits (ERC) which have been banked since September 19, 1991 for Actual Emissions Reductions that have occurred at the source, and which have not been used on-site.

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

Facility emissions are already above the Offset and Major Source Thresholds for all criteria air contaminants; therefore, SSPE2 calculations are not necessary.

5. Major Source Determination

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

Facility S-1128 is an existing Major Source for all five criteria air contaminant emissions and will remain a Major Source for all five criteria air contaminants.

6. Baseline Emissions (BE)

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

BE = Pre-project Potential to Emit for:

- Any unit located at a non-Major Source,
- Any Highly-Utilized Emissions Unit, located at a Major Source,

- Any Fully-Offset Emissions Unit, located at a Major Source, or
- Any Clean Emissions Unit, located at a Major Source.

otherwise,

BE = Historic Actual Emissions (HAE), calculated pursuant to Section 3.22

Since these are new emissions units, BE = PE₁ = 0 for all criteria pollutants.

7. Major Modification

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."

As discussed in Section VII.C.5 above, the facility is an existing Major Source for all criteria air contaminants. The emissions units within this project do not have a total potential to emit which is greater than Major Modification thresholds (see table below). Therefore, the project cannot be a significant increase and does not constitute a Major Modification.

Major Modification Thresholds (Existing Major Source)			
Pollutant	Project PE (lb/year)	Threshold (lb/year)	Major Modification?
NO _x	6,344 x 3 = 19,032	50,000	No
SO _x	2,122 x 3 = 6,366	80,000	No
PM ₁₀	4468 x 3 = 13,404	30,000	No
VOC	4095 x 3 = 12,285	50,000	No

8. Federal Major Modification

As shown above, this project does not constitute a Major Modification. Therefore, in accordance with District Rule 2201, Section 3.17, this project does not constitute a Federal Major Modification and no further discussion is required.

9. Quarterly Net Emissions Change (QNEC)

The QNEC is calculated solely to establish emissions that are used to complete the District's PAS emissions profile screen. The QNEC for the new emissions unit was calculated for each pollutant by dividing annual emissions by 4 quarters/year.

Pollutant	QNEC For each steam generator			
	Annual emissions (lb/year)	divided by	4 quarters/yr =	Quarterly emissions (lb/qtr)
NO _x	6,344	/	4 qtr/year	1,586
SO _x	2,122	/	4	531
PM ₁₀	4,468	/	4	1,117
CO	13,775	/	4	3,444
VOC	4,095	/	4	1,024

VIII. COMPLIANCE

Rule 2201 New and Modified Stationary Source Review Rule

A. Best Available Control Technology (BACT)

1. BACT Applicability

BACT requirements are triggered on a pollutant-by-pollutant basis and on an emissions unit-by-emissions unit basis for the following*:

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

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

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

As seen in Section VII.C.2 of this evaluation, the applicant is proposing to install steam generators with a PE greater than 2 lb/day for all air contaminants. BACT is triggered for NO_x, SO_x, PM₁₀, CO and VOC since the PEs are greater than 2 lbs/day.

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

As discussed in Section I above, there are no existing emissions units being relocated from one stationary source to another; therefore BACT is not triggered for relocation of an emissions unit with a PE > 2 lb/day.

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

As discussed in Section I above, there are no modified emissions units associated with this project; therefore BACT is not triggered for modification of an emissions unit with an AIPE > 2 lb/day.

d. Major Modification

As discussed in Section VII.C.7 above, this project does not constitute a Major Modification for any air contaminant; therefore BACT is not triggered for major modification purposes.

2. BACT Guideline

Please note that BACT Guideline 1.2.1 [Steam Generator (\geq 5 MMBtu/hr, Oilfield)] has been rescinded. The NO_x emission limit requirement of District Rule 4320 is lower than the Achieved-in-Practice requirement of BACT Guideline 1.2.1 (14 ppmv @ 3% O₂); therefore a project specific BACT analysis will be performed to determine BACT for this project. More details regarding this are provided in **Attachment VI**.

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 **Attachment VI**), BACT has been satisfied with the following:

NO_x: 7 ppmvd @ 3% O₂

SO_x: Natural gas, LPG and 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 SO₂ scrubber and either achieving 95% by weight control of sulfur compounds or achieving an emission rate of 30 ppmvd SO₂ at stack O₂.

PM₁₀: Natural gas, LPG and 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 SO₂ scrubber and either achieving 95% by weight control of sulfur compounds or achieving an emission rate of 30 ppmvd SO₂ at stack O₂.

CO: 50 ppmvd @ 3% O₂

VOC: Gaseous fuel

B. Offsets

1. Offset Applicability

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

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

Offset Determination (lb/year)					
	NO _x	SO _x	PM ₁₀	CO	VOC
Post Project SSPE (SSPE2)	>20,000	>54,750	>29,200	>200,000	>20,000
Offset Threshold	20,000	54,750	29,200	200,000	20,000
Offsets calculations required?	Yes	Yes	Yes	Yes	Yes

2. Quantity of Offsets Required

As seen above, the SSPE2 is greater than the offset thresholds for NO_x, SO_x, PM₁₀, CO, and VOC; therefore offset calculations will be required for this project.

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

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

Where,

PE2 = Post Project Potential to Emit, (lb/year)

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

BE = Pre-project Potential to Emit for:

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

otherwise,

BE = Historic Actual Emissions (HAE)

The facility is proposing to install a new emissions unit; therefore Baseline Emissions are equal to zero. Also, there are no increases in cargo carrier emissions; therefore offsets can be determined as follows:

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

S-1128-959 through '-961 (each)

NOx
 PE2 (NOx) = 6344 lb/year
 BE (NOx) = 0 lb/year
 ICCE = 0 lb/year

The NOx reductions (ERCs used for offsets in this project) all occurred at the 17Z Gas Plant, facility S-49, which is located less than 15 miles from each of the proposed locations. Therefore the correct DOR is 1.3:1. Assuming an offset ratio of 1.3:1, the amount of VOC ERCs that need to be withdrawn is:

$$\begin{aligned} \text{Offsets Required (lb/year)} &= ([6344 - 0] + 0) \times 1.3 \\ &= 8,247 \text{ lb NOx/year} \end{aligned}$$

Calculating the appropriate quarterly emissions (for each steam generator) to be offset is as follows:

<u>DOR</u>	<u>1st Quarter</u>	<u>2nd Quarter</u>	<u>3rd Quarter</u>	<u>4th Quarter</u>
1.3	2062	2062	2062	2062
1.0	1586	1586	1586	1586

SOx and PM10

The SOx and PM10 reductions all occurred at the heavy oil western stationary source, facilities S-1128, S-1129, and S-1141. Therefore the correct DOR is

1.0:1. Calculating the appropriate quarterly emissions (for each steam generator) to be offset is as follows:

$$\begin{aligned}
 \text{PE2 (SOx)} &= 2122 \text{ lb/year} \\
 \text{BE (SOx)} &= 0 \text{ lb/year} \\
 \text{ICCE} &= 0 \text{ lb/year} \\
 \text{Offsets Required (lb/year)} &= ([2122 - 0] + 0) \times 1.0 \\
 &= 2,122 \text{ lb SOx/year}
 \end{aligned}$$

Calculating the appropriate quarterly emissions (for each steam generator) to be offset is as follows:

SOx	<u>DOR</u>	<u>1st Quarter</u>	<u>2nd Quarter</u>	<u>3rd Quarter</u>	<u>4th Quarter</u>
	1.0	530	530	531	531

$$\begin{aligned}
 \text{PE2 (PM10)} &= 4468 \text{ lb/year} \\
 \text{BE (PM10)} &= 0 \text{ lb/year} \\
 \text{ICCE} &= 0 \text{ lb/year} \\
 \text{Offsets Required (lb/year)} &= ([4468 - 0] + 0) \times 1.0 \\
 &= 4,468 \text{ lb PM10/year}
 \end{aligned}$$

PM10	<u>DOR</u>	<u>1st Quarter</u>	<u>2nd Quarter</u>	<u>3rd Quarter</u>	<u>4th Quarter</u>
	1.0	1117	1117	1117	1117

VOC

$$\begin{aligned}
 \text{PE2 (VOC)} &= 4095 \text{ lb/year} \\
 \text{BE (VOC)} &= 0 \text{ lb/year} \\
 \text{ICCE} &= 0 \text{ lb/year} \\
 \text{Offsets Required (lb/year)} &= ([4095 - 0] + 0) \times 1.5 \\
 &= 6,143 \text{ lb VOC/year}
 \end{aligned}$$

The VOC reductions all occurred at the heavy oil central stationary source, facility S-1127, which is located more than 15 miles from each of the proposed locations. Therefore the correct DOR is 1.5:1. Calculating the appropriate quarterly emissions (for each steam generator) to be offset is as follows:

VOC	<u>DOR</u>	<u>1st Quarter</u>	<u>2nd Quarter</u>	<u>3rd Quarter</u>	<u>4th Quarter</u>
	1.5	1535	1536	1536	1536
	1.0	1023	1024	1024	1024

CO

$$\begin{aligned}
 \text{Offsets Required (lb/year)} &= ([13,775 - 0] + 0) \times \text{DOR} \\
 &= 13,775 \times \text{DOR lb/yr}
 \end{aligned}$$

Notwithstanding the above, Section 4.6.1 of Rule 2201 states that emissions offsets are not required for increases in carbon monoxide in attainment areas provided the applicant demonstrates to the satisfaction of the APCO that the Ambient Air Quality Standards are not violated in the areas to be affected, and such

emissions will be consistent with Reasonable Further Progress, and will not cause or contribute to a violation of Ambient Air Quality Standards. The District performed an Ambient Air Quality Analysis (discussed later) and determined that this project will not result in or contribute to a violation of an Ambient Air Quality Standard for CO (see **Attachment VII**). Therefore, CO offsets are not required for this project.

Offsets required						
Pollutant	PE2 (Each steam generator)		Offsets @ DOR (Each steam generator)		Total Offsets (All 3 steam generators)	
	lb/year	lb/qtr	lb/year	lb/qtr	lb/year	lb/qtr
NOx (DOR = 1.3)	6,344	1,586	8,247	2,062	24,741	6,185
SOx (DOR = 1.0)	2,122	531	2,122	531	6,366	1,592
PM10 (DOR = 1.0)	4,468	1,117	4,468	1,117	13,404	3,351
VOC (DOR = 1.5)	4,095	1,024	6,143	1,536	18,429	4,607

The applicant has stated that the facility plans to use the following certificates to offset the increases in NOx, SO, PM10, and VOC emissions associated with this project:

ERC Certificates to be used as offsets*					
Pollutant	Certificate #	Q1	Q2	Q3	Q4
NOx	Offsets req'd @ DOR = 1.3	6,185	6,185	6,185	6,185
	ERC S-2041024/401 (facility S-49; < 15 miles)	151,178	149,517	149,517	152,840
SOx	Offsets req'd @ DOR = 1.0	1,592	1,592	1,592	1,592
	ERC S-411-5 (facility S-1141)	10,304	20,626	26,873	26,653
PM10	Offsets req'd @ DOR = 1.0	3,351	3,351	3,351	3,351
	ERC S-889-4 (facility S-1128)	4,495	4,545	4,595	4,595
VOCs	Offsets req'd @ DOR = 1.5	4,607	4,607	4,607	4,607
	ERC S-2677-1 (facility S-1127; > 15 miles)	77,040	77,991	78,908	78,942

* ERCs have been reserved in PAS

As seen above, the facility has proposed sufficient credits to fully offset the quarterly emission increases associated with this project.

Proposed Rule 2201 (offset) Conditions:

Prior to operating under this Authority to Construct, permittee shall surrender emission reduction credits for the following quantities of emissions: NOx: 1586 lb/quarter, SOx: 531 lb/quarter, PM10: 1117 lb/quarter, and VOC:1024 lb/quarter. Offset shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 9/21/2006). [District Rule 2201] Y.

ERC Certificate Numbers S-2041024/401 (NOx), S-411-5 (SOx), S-889-4 (PM10), S-2677-1 (VOCs) (or certificates split from these certificates) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201] Y

C. Public Notification

1. Applicability

Public noticing is required for:

- a. Any new Major Source, which is a new facility that is also a Major Source,
- b. Major Modifications,
- c. Any new emissions unit with a Potential to Emit greater than 100 pounds during any one day for any one pollutant,
- d. Any project which results in the offset thresholds being surpassed, and/or
- e. Any project with an SSIPE of greater than 20,000 lb/year for any pollutant.

a. New Major Source

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.

b. Major Modification

As demonstrated in VII.C.7, this project does not constitute a Major Modification; therefore, public noticing for Major Modification purposes is not required.

c. PE > 100 lb/day

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

d. Offset Threshold

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

Offset Threshold				
Pollutant	SSPE1 (lb/year)	SSPE2 (lb/year)	Offset Threshold	Public Notice Required?
NO _x	>20,000	>20,000	20,000 lb/year	No
SO _x	>54,750	>54,750	54,750 lb/year	No
PM ₁₀	>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, no offset thresholds were surpassed; therefore public noticing is not required for offset purposes.

e. SSIPE > 20,000 lb/year

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

Stationary Source Increase in Permitted Emissions [SSIPE] – Public Notice					
Pollutant	SSPE1 (lb/year)	SSPE2 (lb/year)	SSIPE (lb/year)	SSIPE Public Notice Threshold	Public Notice Required?
NO _x	>20,000	>20,000	19,032	20,000 lb/year	No
SO _x	>54,750	>54,750	6,366	20,000 lb/year	No
PM ₁₀	>29,200	>29,200	13,404	20,000 lb/year	No
CO	>200,000	>200,000	41,325	20,000 lb/year	Yes
VOC	>20,000	>20,000	12,285	20,000 lb/year	No

As demonstrated above, the SSIPE for CO was greater than 20,000 lb/year; therefore public noticing for SSIPE purposes is required.

2. Public Notice Action

As discussed above, public notice will not be required for this project.

D. Daily Emission Limits (DELs)

The DELs for the units will be stated in the form of emission factors on the requested ATC documents.

Natural gas fuel sulfur content shall not exceed 1.0 grains-S/100 scf. [District Rule 2201 and 4320] Y

Emission rates, except during startup, shutdown, and the initial shakedown period shall not exceed:
NOx (as NO₂): 7 ppmvd @ 3% O₂; or CO: 25 ppmvd @ 3% O₂ or 0.0185 lb/MMBtu. [District Rule 2201, 4305, 4306, and 4320] Y

Emission rates shall not exceed any of the following: PM₁₀: 0.006 lb/MMBtu; or VOC: 0.0055 lb/MMBtu. [District Rule 2201] Y

Duration of start-up and shutdown shall not exceed 2 hours each per occurrence. [District Rule 4305, 4306, and 4320] Y

Emission rates during startup and shutdown shall not exceed: NOx - 0.14 lb/MMBtu or 116 ppmv @ 3% O₂; CO - 0.296 lb/MMBtu or 400 ppmv @ 3% O₂ [District Rule 2201] Y

Emissions rate of NOx shall not exceed 62.1 lb/day nor 6344 lb/yr. [District Rule 2201] Y

Emissions rate of CO shall not exceed 132.1 lb/day nor 13,775 lb/yr. [District Rule 2201] Y

During an initial shakedown period not to exceed 60 calendar days from initial operation of the equipment authorized by this ATC, NOx emissions shall not exceed 15 ppmvd @ 3% O₂ or 0.018 lb/MMBtu. The shakedown period shall be concluded upon completion of the initial start-up compliance source test, and will not exceed 60 days. Permittee shall maintain a record of the date of initial operation and shall make such records readily available for District inspection upon request. [District Rule 2201] Y

E. Compliance Assurance

1. Source Testing

The units are subject to District Rule 4305, *Boilers, Steam Generators and Process Heaters, Phase II*, District Rule 4306, *Phase III*, and pending new Rule 4320, *Advanced Emission Reduction Options for Boilers, Steam Generators, and Process Heaters Greater than 5.0 MMBtu/hr*. Source testing requirements, in accordance with District Rules 4305, 4306, and 4320 will be discussed in Section VIII, *District Rules 4305, 4306, 4320* of this evaluation.

2. Monitoring

As required by District Rule 4305, *Boilers, Steam Generators and Process Heaters, Phase II*, District Rule 4306, *Boilers, Steam Generators and Process Heaters, Phase III*, and pending new Rule 4320, *Advanced Emission Reduction Options for Boilers, Steam Generators, and Process Heaters Greater than 5.0 MMBtu/hr*, the units are subject to monitoring requirements. Monitoring requirements, in accordance with District Rules 4305, 4306, and

4320 will be discussed in Section VIII, *District Rules 4305, 4306, and 4320* of this evaluation.

3. Record keeping

As required by District Rule 4305, *Boilers, Steam Generators and Process Heaters, Phase II*, District Rule 4306, *Boilers, Steam Generators and Process Heaters, Phase III*, and pending new Rule 4320, *Advanced Emission Reduction Options for Boilers, Steam Generators, and Process Heaters Greater than 5.0 MMBtu/hr*, these units are subject to recordkeeping requirements. Recordkeeping requirements, in accordance with District Rules 4305, 4306, and 4320 will be discussed in Section VIII, *District Rules 4305, 4306, and 4320*, of this evaluation.

4. Reporting

No reporting is required to demonstrate compliance with Rule 2201.

F. Ambient Air Quality Analysis

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

The proposed location is in an attainment area for NO_x, CO, and SO_x. As shown by the AAQA summary sheet the proposed equipment will not cause a violation of an air quality standard for NO_x, CO, or SO_x.

As shown in the table below the increase in the ambient PM₁₀ concentration due to the proposed equipment exceeds the EPA significance level for PM10.

Criteria Pollutant Modeling Results*

Values are in ug/m³

S-1128-959-0 thru 961-0	1 Hour	3 Hours	8 Hours.	24 Hours	Annual
CO	Pass	X	Pass	X	X
NO _x	Pass	X	X	X	Pass
SO _x	Pass	Pass	X	Pass	Pass
PM ₁₀	X	X	X	Pass	Pass

*Results were taken from the attached PSD spreadsheet.

¹The criteria pollutants are above EPA's level of significance as found in 40 CFR Part 51.165 (b)(2).

To mitigate potential adverse affects to Ambient Air Quality, CUSA has proposed to provide sufficient PM₁₀ Emission Reduction Credits (ERCs) to fully offset the PM₁₀ emission increases from the project. Since the PM₁₀ emissions from this project will

be fully mitigated, this project is not expected to cause or make worse a violation of an air quality standard.

District Rule 2520 Federally Mandated Operating Permits

This facility is subject to this Rule, and has received their Title V Operating Permit. The proposed modification may be considered a minor modification to the Title V Permit. As discussed above, the facility has applied for a Certificate of Conformity (COC); therefore, the facility must apply to modify their Title V permit with an administrative amendment, prior to operating with the proposed modifications.

Continued compliance with this rule is expected.

District Rule 4001 New Source Performance Standards

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 generators have a rating of 85 MMBtu/hr and are fired on natural gas only. Subpart Dc has no standards for gas-fired steam generators. Therefore the subject steam generators is not an affected facility and subpart Dc does not apply.

District 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.

Natural gas-fired equipment typically operates without visible emissions

Compliance with District Rule 4101 is expected.

Rule 4102 Nuisance

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

California Health & Safety Code 41700 (Health Risk Assessment)

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

The project's prioritization was less than the District's significance level of 0.05. No further analysis was required. In accordance with the District's Risk Management Policy, the project is approved without Toxic Best Available Control Technology (T-BACT). The results of the HRA are included in **Attachment VII**.

District 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: 0.006 lb-PM₁₀/MMBtu
 Percentage of PM as PM₁₀ in Exhaust: 100%
 Exhaust Oxygen (O₂) Concentration: 3%
 Excess Air Correction to F Factor = $\frac{20.9}{(20.9 - 3)} = 1.17$

$$GL = \left(\frac{0.006 \text{ lb-PM}}{\text{MMBtu}} \times \frac{7,000 \text{ grain}}{\text{lb-PM}} \right) / \left(\frac{8,578 \text{ ft}^3}{\text{MMBtu}} \times 1.17 \right)$$

$$GL = 0.004 \text{ grain/dscf} < 0.1 \text{ grain/dscf}$$

Therefore, compliance with District Rule 4201 requirements is expected.

District Rule 4301 Fuel Burning Equipment

This rule specifies maximum emission rates in lb/hr for SO₂, NO₂, 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			
Pollutant	NO ₂	Total PM	SO ₂
Each steam generator (lb/hr)	11.9 (startup/shutdown)	0.51	0.24
Rule Limit (lb/hr)	140	10	200

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

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

The unit is natural gas-fired with a maximum heat input of 20.0 MMBtu/hr. Pursuant to Section 2.0 of District Rule 4305, the unit is subject to District Rule 4305, *Boilers, Steam Generators and Process Heaters – Phase 2*.

In addition, the unit is also subject to District Rule 4306, *Boilers, Steam Generators and Process Heaters – Phase 3*.

Since emissions limits of District Rule 4320 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 20.0 MMBtu/hr. Pursuant to Section 2.0 of District Rule 4306, the unit is subject to District Rule 4306, *Boilers, Steam Generators and Process Heaters – Phase 3*.

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

Section 5.0 Requirements

Section 5.1 of the rule requires compliance with the NO_x and CO emissions limits listed in Table 1 of Section 5.2 or payment of an annual emissions fee to the District as specified in Section 5.3 and compliance with the control requirements specified in Section 5.4; or as stated in Section 5.1.3, comply with the applicable Low-use Unit requirements of Section 5.5.

Section 5.2 NOx and CO Emission Limits

Oilfield Steam Generators

Rule 4320 Emissions Limits				
Category	Operated on gaseous fuel		Operated on liquid fuel	
	NO _x Limit	CO Limit	NO _x Limit	CO Limit
1. Units with a total rated heat input >20.0 MMBtu/hr	Standard Schedule 7 ppmv or 0.008 lb/MMBtu; or			
	Staged Enhanced Schedule Initial limit: 9 ppmv @ 3% O ₂ , 0.011 lb/MMBtu	400 ppmv @ 3% O ₂	40 ppmv or 0.052 lb/MMBtu	400 ppmv @ 3% O ₂
	Final limit: 5 ppmv @ 3% O ₂ , 0.0062 lb/MMBtu			

- the proposed NO_x emission factor is 7 ppmvd @ 3% O₂ (0.0108 lb/MMBtu), and
- the proposed CO emission factors is 25 ppmvd @ 3% O₂ (0.0185 lb/MMBtu).

Therefore, as both the proposed NO_x and CO emissions factors meet the limits of the rule, compliance with Section 5.1 of District Rule 4320 is expected.

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

Section 5.3 Annual Fee Calculation

Applicant has proposed to meet the emissions limits requirements of Section 5.1 and therefore this section is not applicable.

Section 5.4 Particulate Matter Control Requirements

Section 5.4 of the rule requires one of four options for control of particulate matter: 1) combustion of PUC-quality natural gas, commercial propane, butane, or liquefied petroleum gas, or a combination of such gases; 2) limit fuel sulfur content to no more than five (5) grains of total sulfur per one hundred (100) standard cubic, 3) install and

properly operate an emission control system that reduces SO₂ emissions by at least 95% by weight; or limit exhaust SO₂ to less than or equal to 9 ppmv corrected to 3.0% O₂ or 4) refinery units, which require modification of refinery equipment to reduce sulfur emissions, shall be in compliance with the applicable requirement in Section 5.4.1 no later than July 1, 2013.

The new steam generators have a sulfur emissions limit of 0.00285 lb SO₂/MMBtu (1.0 gr S/100scf) and will be in compliance with the SO_x/PM₁₀ requirements of Section 5.4.1.2 of the rule which states the following:

5.4.1.2 On and after the applicable NO_x Compliance Deadline specified in Section 5.2 Table 1, operators shall limit fuel sulfur content to no more than five (5) grains of total sulfur per one hundred (100) standard cubic feet

Section 5.5 Low Use

Section 5.5 requires that units limited to less than or equal to 1.8 billion Btu per calendar year heat input pursuant to a District Permit to Operate Tune the unit at least twice per calendar year, or if the unit does not operate throughout a continuous six-month period within a calendar year, only one tune-up is required for that calendar year. No tune-up is required for any unit that is not operated during that calendar year; this unit may be test fired to verify availability of the unit for its intended use, but once the test firing is completed the unit shall be shutdown; or operate the unit in a manner that maintains exhaust oxygen concentrations at less than or equal to 3.00 percent by volume on a dry basis.

The subject steam generators are not a low use unit and therefore the requirements of Section 5.5 do not apply.

Section 5.6, Startup and Shutdown Provisions

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

- Duration of start-up and shutdown shall not exceed 2 hours each per occurrence. [District Rules 2201, 4305, 4306, and 4320]
- Emission rates during startup and shutdown shall not exceed: NO_x – 116 ppmv @ 3% O₂ or 0.14 lb/MMBtu; CO 400 ppmv @ 3% O₂ or 0.296 lb/MMBtu. [District Rules 4101, 4102, 4301, 4405, 4406 and 4801]

Section 5.7, Monitoring Provisions

Section 5.7 requires either use of a APCO approved Continuous Emissions Monitoring System (CEMS) for NO_x, CO, and oxygen, or implementation of an APCO-approved Alternate Monitoring System consisting of:

- 5.7.1.1 Periodic NO_x and CO exhaust emission concentrations,
- 5.7.1.2 Periodic exhaust oxygen concentration,
- 5.7.1.3 Flow rate of reducing agent added to exhaust,
- 5.7.1.4 Catalyst inlet and exhaust temperature,
- 5.7.1.5 Catalyst inlet and exhaust oxygen concentration,
- 5.7.1.6 Periodic flue gas recirculation rate, or
- 5.7.1.7 Other operational characteristics.

In order to satisfy the requirements of District Rule 4320, the applicant has proposed to use pre-approved alternate monitoring scheme A (pursuant to District Policy SSP-1105), which requires that monitoring of NO_x, CO, and O₂ exhaust concentrations shall be conducted at least once per month (in which a source test is not performed) using a portable analyzer. The following conditions will be incorporated into the permit in order to ensure compliance with the requirements of the proposed alternate monitoring plan:

- {4063} The permittee shall monitor and record the stack concentration of NO_x, CO, and O₂ at least once every month (in which a source test is not performed) using a portable analyzer that meets District specifications. Monitoring shall not be required if the unit is not in operation, i.e. the unit need not be started solely to perform monitoring. Monitoring shall be performed within 5 days of restarting the unit unless monitoring has been performed within the last month. [District Rules 4305, 4306, and 4320]
- {4064} If either the NO_x or CO concentrations corrected to 3% O₂, as measured by the portable analyzer, exceed the allowable emissions concentration, the permittee shall return the emissions to within the acceptable range as soon as possible, but no longer than 1 hour of operation after detection. If the portable analyzer readings continue to exceed the allowable emissions concentration after 1 hour of operation after detection, the permittee shall notify the District within the following 1 hour and conduct a certified source test within 60 days of the first exceedance. In lieu of conducting a source test, the permittee may stipulate a violation has occurred, subject to enforcement action. The permittee must then correct the violation, show compliance has been re-established, and resume monitoring procedures. If the deviations are the result of a qualifying breakdown condition pursuant to Rule 1100, the permittee may fully comply with Rule 1100 in lieu of the performing the notification and testing required by this condition. [District Rules 4305, 4306, and 4320]
- {4065} All alternate monitoring parameter emission readings shall be taken with the unit operating either at conditions representative of normal operations or conditions specified in the permit-to-operate. The analyzer shall be calibrated, maintained, and operated in accordance with the manufacturer's specifications and recommendations or a protocol approved by the APCO. Emission readings taken shall be averaged over a 15 consecutive-minute period by either taking a cumulative 15 consecutive-minute sample reading or by taking at least five (5) readings, evenly spaced out over the 15 consecutive-minute period. [District Rules 4305, 4306, and 4320]
- {4066} The permittee shall maintain records of: (1) the date and time of NO_x, CO, and O₂ measurements, (2) the O₂ concentration in percent by volume and the measured NO_x and CO concentrations corrected to 3% O₂, (3) make and model of exhaust gas analyzer, (4) exhaust gas analyzer calibration records, and (5) a description of any corrective action taken to maintain the emissions within the acceptable range. [District Rules 4305, 4306, and 4320]

5.7.6 Monitoring SOx Emissions

Section 5.7.6.1 Operators complying with Sections 5.4.1.1 or 5.4.1.2 shall provide an annual fuel analysis to the District unless a more frequent sampling and reporting period is included in the Permit To Operate. Sulfur analysis shall be performed in accordance with the test methods in Section 6.2.

Section 5.7.6.2 Operators complying with Section 5.4.1.3 by installing and operating a control device with 95% SOx reduction shall propose the key system operating parameters and frequency of the monitoring and recording. The monitoring option proposed shall be submitted for approval by the APCO. This option is not proposed and therefore the section is not applicable.

Section 5.7.6.3 Operators complying with Section 5.4.1.3 shall perform an annual source test unless a more frequent sampling and reporting period is included in the Permit To Operate. Source tests shall be performed in accordance with the test methods in Section 6.2. Semi-annual testing of sulfur is required for the new steam generators as stated below.

Sulfur Monitoring

The following conditions will be included on the ATC for the steam generators which are authorized to combust natural gas only:

Natural gas fuel sulfur content shall not exceed 1.0 grains-S/100 scf. [District Rule 2201 and 4320] Y

If the unit is fired on noncertified gaseous fuel and compliance with SOx emission limits is achieved through fuel sulfur content limitations, then the sulfur content of the gaseous fuel being fired in the unit shall be determined using ASTM D 1072, D 3031, D 3246, D 4084, D 4468, D 6667 or grab sample analysis by GC-FPD/TCD or double GC performed in the laboratory. [District Rule 1070, 2201, 2520, and 4320]] Y

When complying with sulfur emission limits by fuel analysis or by a combination of source testing and fuel analysis, each fuel source shall be tested weekly for sulfur content and higher heating value. If compliance with the fuel sulfur content limit and sulfur emission limits has been demonstrated for 8 consecutive weeks for a fuel source, then the fuel testing frequency shall be semi-annually. If a semi-annual fuel content source test fails to show compliance, weekly testing shall resume. [District Rules 1070, 2201, 2520, and 4320] Y

If fuel analysis is used to demonstrate compliance with conditions of this permit, the fuel higher heating value for each fuel shall be certified by a third party fuel supplier or determined by ASTM D 1826 or D 1945 in conjunction with ASTM D 3588 for gaseous fuels. [District Rules 1070, 2201, 2520, and 4320] Y

Section 5.8, Compliance Determination

Section 5.8.1 requires that the operator of any unit shall 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) as stated in the following ATC condition:

{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 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.

{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. 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 4306. [District Rules 4305, 4306, and 4320]

Section 5.8.3 Continuous Emissions Monitoring System (CEMS) emissions measurements shall be averaged over a period of 15 consecutive minutes to demonstrate compliance with the applicable emission limits. Any 15-consecutive-minute block average CEMS measurement exceeding the applicable emission limits shall constitute a violation. The steam generators are not equipped with CEMs and therefore this section is not applicable.

Section 5.8.4 For emissions monitoring pursuant to Sections 5.7.1, and 6.3.1 using a portable NOx 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 readings evenly spaced out over the 15-consecutive-minute period.

{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 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 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.

{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.

A permit condition will be listed on the 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]

Section 6.1.1 requires that a unit operated under the exemption of Section 4.2 shall monitor and record, for each unit, the cumulative annual hours of operation. The units are not Section 4.2 exempt and therefore these records are not required.

Section 6.1.2 requires the operator of any unit that is subject to the requirements of Section 5.5 shall record the amount of fuel use at least on a monthly basis for each unit. On and after the applicable compliance schedule specified in Section 7.0, in the event that such unit exceeds the applicable annual heat input limit specified in Section 5.5, the unit shall be brought into full compliance with this rule as specified in Section 5.2 Table 1. The units are not low use and therefore these records are not necessary.

Section 6.1.3 The operator of any unit subject to Section 5.5.1 or Section 6.3.1 shall maintain records to verify that the required tune-up and the required monitoring of the operational characteristics of the unit have been performed. The units are not low use and therefore these records are not necessary.

Section 6.1.4 The operator performing start-up or shutdown of a unit shall keep records of the duration of start-up or shutdown. The following condition is included on the ATC:

Permittee shall maintain a record of the duration of each startup and shutdown of this unit. [District Rules 4305, 4306, and 4320] Y

Section 6.1.5 The operator of any unit firing on liquid fuel during a PUC-quality natural gas curtailment period pursuant to Section 5.4.2 shall record the sulfur content of the fuel, amount of fuel used, and duration of the natural gas curtailment period. The unit is not authorized to combust liquid fuel. Therefore this section is not applicable.

Section 6.2, Test Methods

Section 6.2 identifies the following test methods as District-approved source testing methods for the pollutants listed:

Pollutant	Units	Test Method Required
NO _x	ppmv	EPA Method 7E or ARB Method 100
NO _x	lb/MMBtu	EPA Method 19
CO	ppmv	EPA Method 10 or ARB Method 100
Stack Gas O ₂	%	EPA Method 3 or 3A, or ARB Method 100
Stack Gas Velocities	ft/min	EPA Method 2
Stack Gas Moisture Content	%	EPA Method 4
Oxides of sulfur		EPA Method 6C, EPA Method 8, or ARB Method 100
Total Sulfur as Hydrogen Sulfide (H ₂ S) Content		EPA Method 11 or EPA Method 15, as appropriate.
Sulfur Content of Liquid Fuel		ASTM D 6920-03 or ASTM D 5453-99

The following test method conditions are included on the ATCs:

{2977} NO_x emissions for source test purposes shall be determined using EPA Method 7E or ARB Method 100 on a ppmv basis, or EPA Method 19 on a heat input basis. [District Rules 4305, 4306, and 4320]

{2978} CO emissions for source test purposes shall be determined using EPA Method 10 or ARB Method 100. [District Rules 4305, 4306, and 4320]

{2979} Stack gas oxygen (O₂) shall be determined using EPA Method 3 or 3A or ARB Method 100. [District Rules 4305, 4306, and 4320]

Section 6.2.8.2. The SO_x emission control system efficiency shall be determined using the following:

$$\% \text{ Control Efficiency} = [(C_{\text{SO}_2, \text{inlet}} - C_{\text{SO}_2, \text{outlet}}) / C_{\text{SO}_2, \text{inlet}}] \times 100$$

where:

C_{SO₂, inlet} = concentration of SO_x (expressed as SO₂) at the inlet side of the SO_x emission control system, in lb/dscf

C_{SO₂, outlet} = concentration of SO_x (expressed as SO₂) at the outlet side of the SO_x emission control system, in lb/dscf

The units are not equipped with a SO₂ scrubber. Therefore this section is not applicable.

Section 6.3 Compliance Testing

Section 6.3.1 requires that this unit be tested to determine compliance with the applicable requirements of section 5.2 not less than once every 12 months (no more than 30 days before or after the required annual source test date). Upon demonstrating compliance on two consecutive compliance source tests, the following source test may be deferred for up to thirty-six months.

Section 6.3.1.1 Units that demonstrate compliance on two consecutive 12-month source tests may defer the following 12-month source test for up to 36 months (no more than 30 days before or after the required 36-month source test date). During the 36-month source testing interval, the operator shall tune the unit in accordance with the provisions of Section 5.5.1, and shall monitor, on a monthly basis, the unit's operational characteristics recommended by the manufacturer to ensure compliance with the applicable emission limits specified in Section 5.2.

Section 6.3.1.2 Tune-ups required by Sections 5.5.1 and 6.3.1 do not need to be performed for units that operate and maintain an APCO approved CEMS or an APCO approved Alternate Monitoring System where the applicable emission limits are periodically monitored. Applicant has proposed to monitor the emissions of NOx and CO Alternate Monitoring Scheme "A" and therefore tuning is not required.

Section 6.3.1.3 If the result of the 36-month source test demonstrates that the unit does not meet the applicable emission limits specified in Section 5.2, the source testing frequency shall revert to at least once every 12 months.

The following conditions are included on the ATC:

{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]

{3467} Source testing to measure NOx and CO emissions from this unit while fired on natural gas shall be conducted within 60 days of initial start-up. [District Rules 2201, 4305, 4306, and 4320]

{3466} Source testing to measure NOx and CO emissions from this unit while fired on natural gas shall be conducted at least once every twelve (12) months. After demonstrating compliance on two (2) consecutive annual source tests, the unit shall be tested not less than once every thirty-six (36) months. If the result of the 36-month source test demonstrates that the unit does not meet the applicable emission limits, the source testing frequency shall revert to at least once every twelve (12) months. [District Rules 4305, 4306, and 4320]

{110} The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081]

Sections 6.3.2.1 through 6.3.2.7 address the requirements of group testing which is not applicable for this project.

Section 6.4, Emission Control Plan (ECP)

Section 6.4.1 requires that the operator of any unit shall submit to the APCO for approval an Emissions Control Plan according to the compliance schedule in Section 7.0 of District Rule 4320.

The proposed units are in compliance with the emissions limits listed in Table 1, Section 5.1 of this rule and with periodic monitoring and source testing requirements. Therefore, this current application for the new proposed unit satisfies the requirements of the Emission Control Plan, as listed in Section 6.4 of District Rule 4320. No further discussion is required.

Section 7.0, Compliance Schedule

Section 7.0 indicates that an operator with multiple units at a stationary source shall comply with this rule in accordance with the schedule specified in Table 1, Section 5.2 of District Rule 4320.

The units will be in compliance with the emissions limits listed in Table 1, Section 5.2 of this rule, and periodic monitoring and source testing as required by District Rule 4320. Therefore, requirements of the compliance schedule, as listed in Section 7.1 of District Rule 4306, are satisfied. No further discussion is required.

Conclusion

Conditions are included on the ATCs in order to ensure compliance with each section of this rule, see attached draft permit(s). Therefore, compliance with District Rule 4320 requirements is expected.

District 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 SO₂, 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 SO₂

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

P (Standard Pressure) = 14.7 psi

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

$$\frac{0.00285 \text{ lb} - \text{SO}_x}{\text{MMBtu}} \times \frac{\text{MMBtu}}{8,578 \text{ dscf}} \times \frac{1 \text{ lb} \cdot \text{mol}}{64 \text{ lb}} \times \frac{10.73 \text{ psi} \cdot \text{ft}^3}{\text{lb} \cdot \text{mol} \cdot ^\circ\text{R}} \times \frac{520^\circ\text{R}}{14.7 \text{ psi}} \times \frac{1,000,000 \cdot \text{parts}}{\text{million}} = 2.0 \frac{\text{parts}}{\text{million}}$$

$$\text{Sulfur Concentration} = 2.0 \frac{\text{parts}}{\text{million}} < 2,000 \text{ ppmv (or 0.2\%)}$$

Therefore, compliance with District Rule 4801 requirements is expected.

California Health & Safety Code 42301.6 (School Notice)

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

California Environmental Quality Act (CEQA)

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

- Inform governmental decision-makers and the public about the potential, significant environmental effects of proposed activities.
- Identify the ways that environmental damage can be avoided or significantly reduced.
- Prevent significant, avoidable damage to the environment by requiring changes in projects through the use of alternatives or mitigation measures when the governmental agency finds the changes to be feasible.
- 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.

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. Make preliminary decision to issue the requested Authorities to Construct subject to the proposed conditions presented in **Attachment VIII**.

X. Billing Information

Annual Permit Fees			
Permit Number	Fee Schedule	Fee Description	Annual Fee
S-1128-959 through '961 (each)	3020-02-H	> 15,000 kBtu/hr	\$1030.00

Attachments

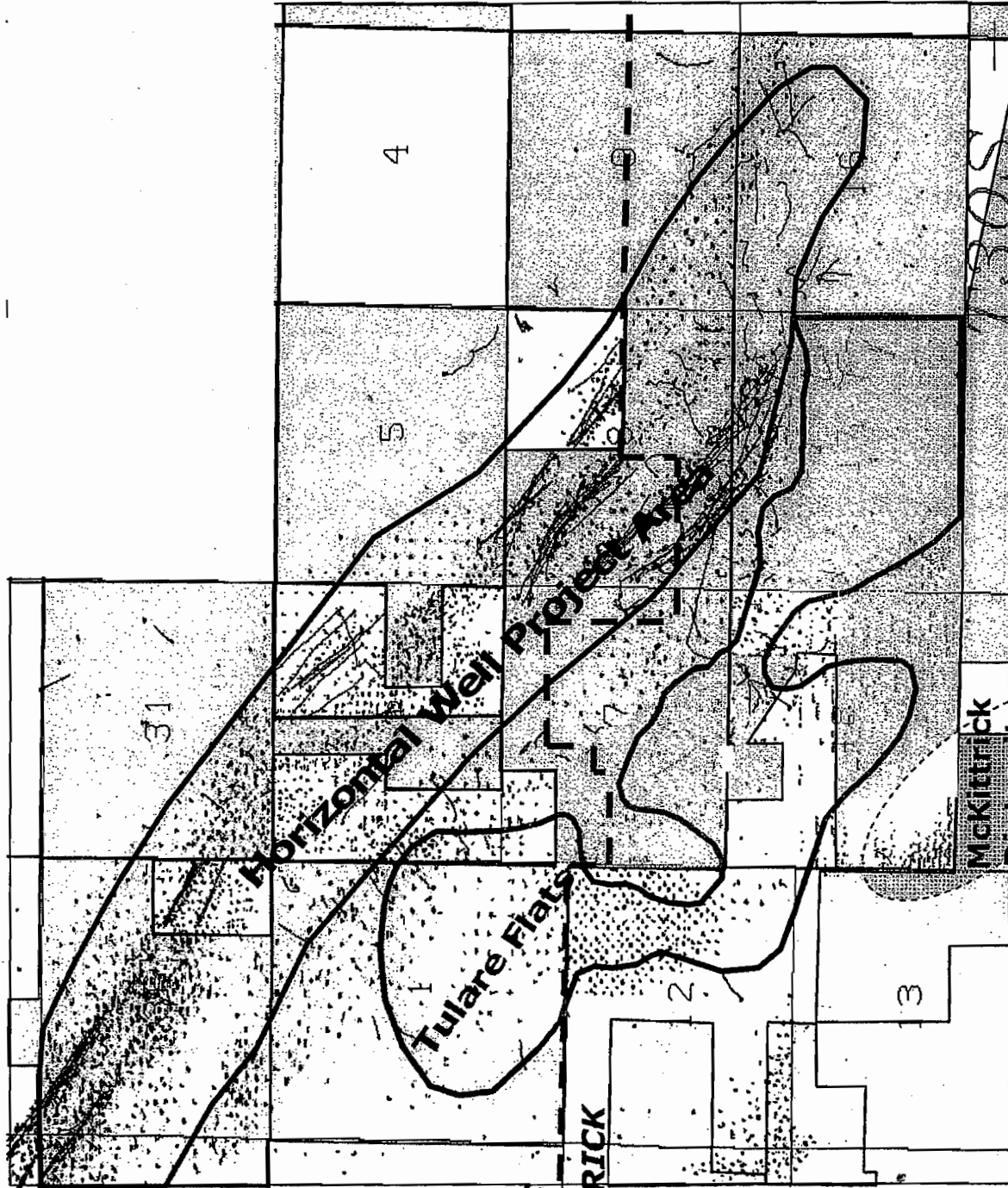
- I: Location Map
- II: Steam Generator Diagram
- III: Manufacturer's Information on Low NOx Burner
- IV: Source Test Results
- V: Emissions Profiles
- VI: BACT Analysis
- VII: HRA and AAQIA
- VIII: Draft ATCs

ATTACHMENT I

Tulare Flats Project Area

Tulare Flats Project

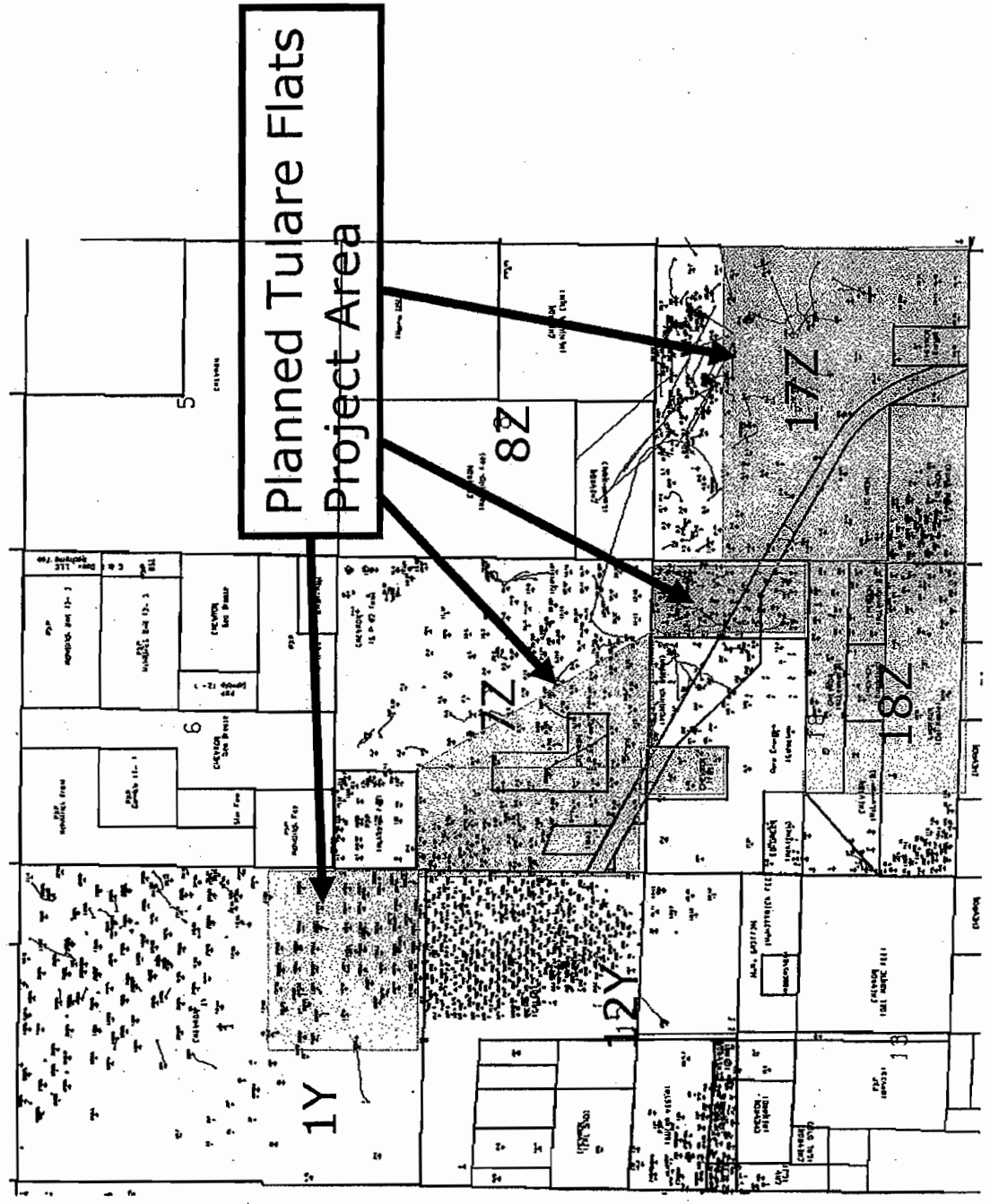
targeted project area



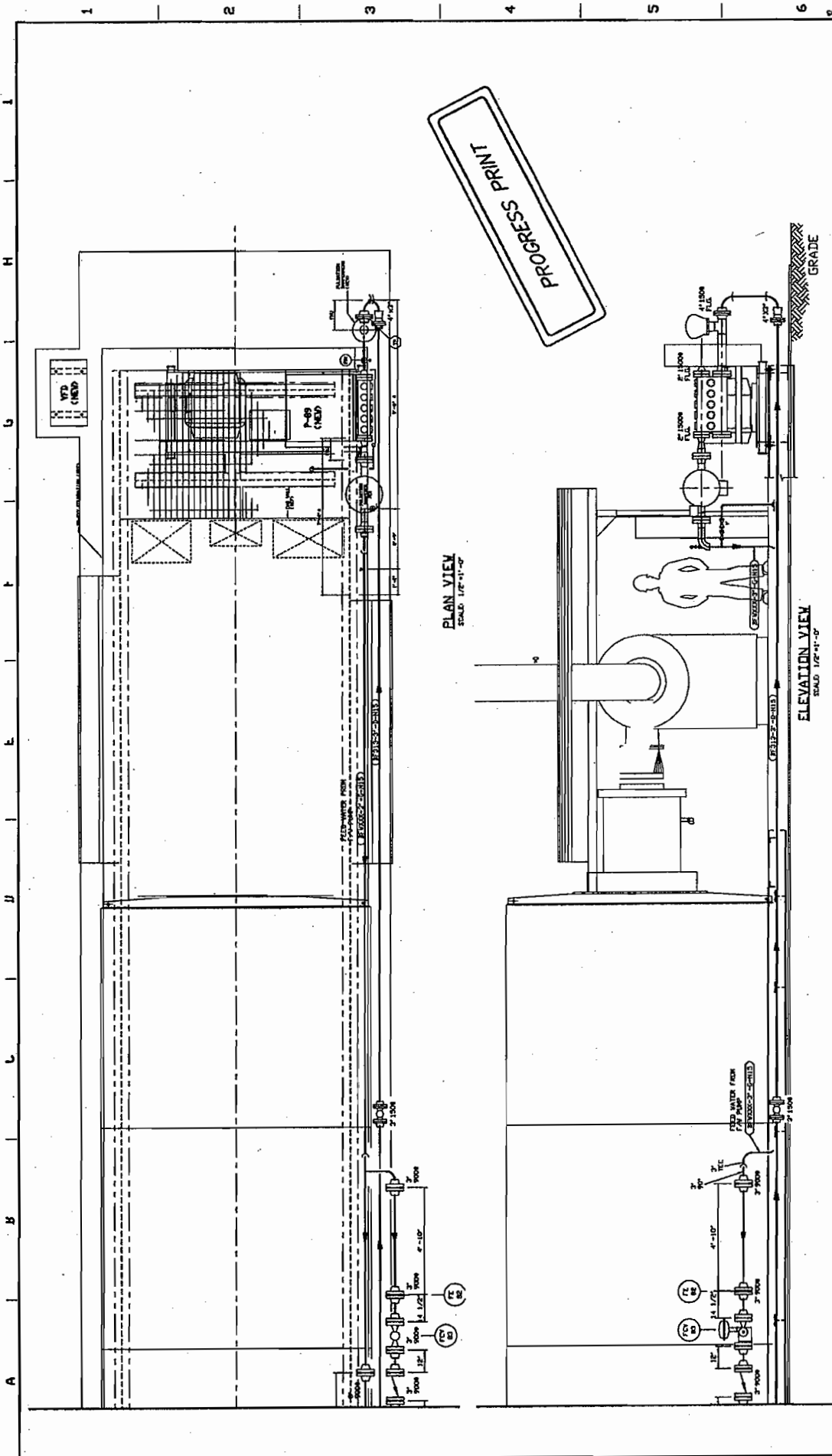
CYMRIC
MCKITTRICK

Legend:
CVX
Aera
PXP

Location Map Tulare Flats Project Area



ATTACHMENT II Steam Generator Diagram

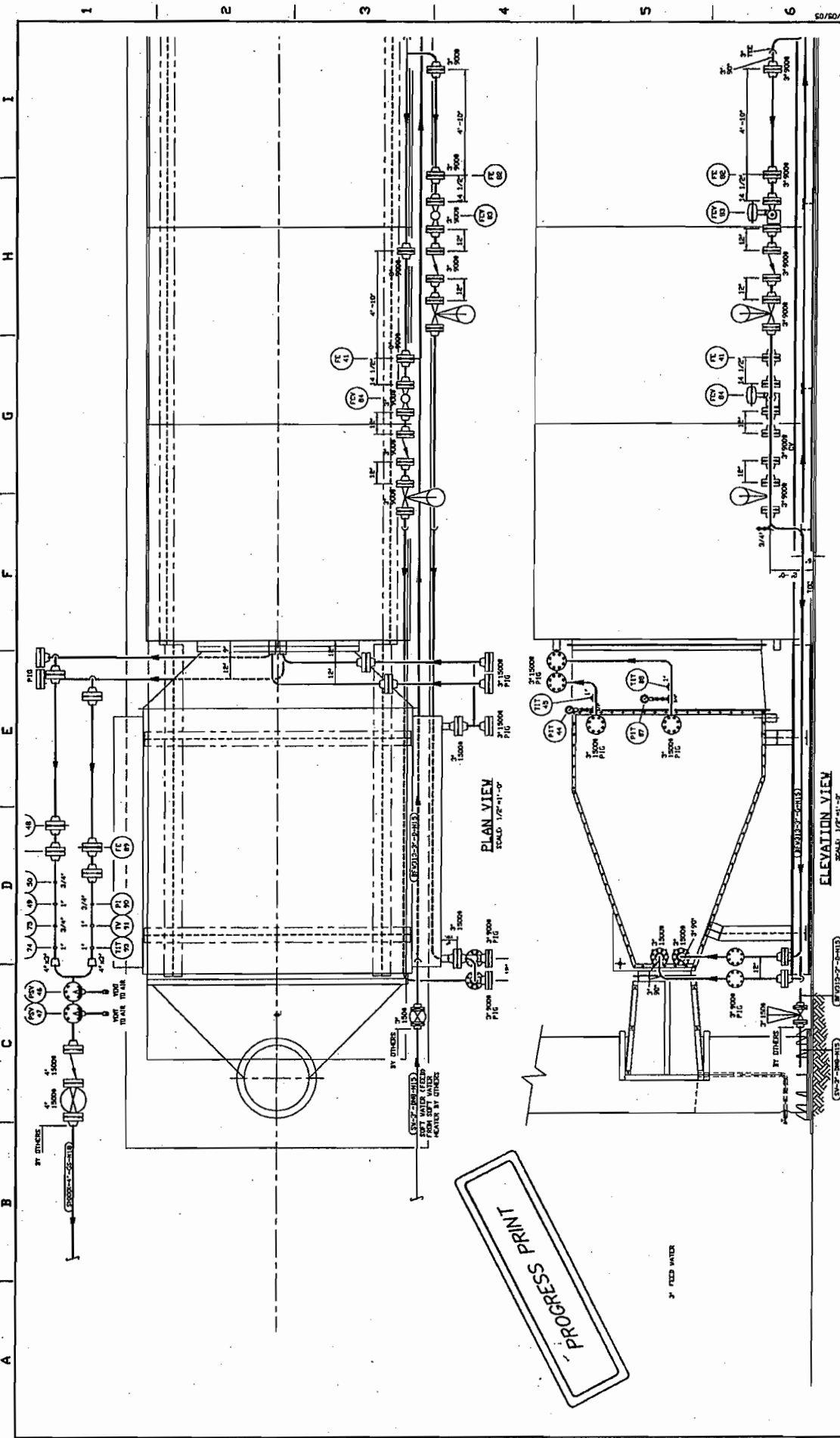


PROGRESS PRINT

PLAN VIEW
SCALE 1/2"=1'-0"

ELEVATION VIEW
SCALE 1/2"=1'-0"

REFERENCE DRAWINGS TITLE SHEET & DRAWING INDEX - NOMINAL 18" X 24" - 2X	TUCROSS ENGINEERS 1000 N. 10th St. Tulsa, Oklahoma 74103 TEL. 336-2362/3627 OWNER BY: JTL DATE ORDERED: 08/05/05 LIST ORDERED: 08/05/05	ISSUED FOR REVIEW 08/05/05 REVISIONS 1. DIMENSION 2.	ChevronTexaco SAN JOAQUIN VALLEY BUSINESS UNIT SCALE 1/2"=1'-0" DATE STARTED: 08/05/05 DR. J. JOHNSON DR. APP. DR. B. BIRD	APPROVED L C C SK-05327-07-A	PIPING LAYOUT FEEDWATER PUMP 1 METERING SHT. 2 SPLIT - FLOW STEAM GENERATOR DESIGN PHASE 4 STEAM PLANTS 6, 9 AND 10 CYCLIC AREA, T. 30S/R. 21E, SECTION 1 08/05/05
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REFERENCE DRAWINGS	SK-05327-01
TITLE SHEET 1 DRAWING INDEX - NOMINAL	SK-05327-01
SCALE	1/2" = 1'-0"
PART NO.	1001
DESIGNED BY	DR
CHECKED BY	DR
DATE STARTED	08/03/03
DATE STOPPED	08/03/03
APPROVED	
ChevronTexaco	
SAN JOAQUIN VALLEY BUSINESS UNIT	
COSTA AREA, FOSSTAR, ETC., SECTION 1	
L.C.C.	SK-05327-06-A
D.S.A.	

PIPING LAYOUT - CORRECTION SECTION INLET & OUTLET
 SPLIT - FLOW STEAM GENERATOR DESIGN PHASE 4
 STEAM PLANTS 6, 9 AND 30
 COSTA AREA, FOSSTAR, ETC., SECTION 1

ATTACHMENT III Manufacturer's Information on Low NOx Burner



North American

Manufacturing Company, Ltd.

4455 East 71st Street Cleveland, OH 44105-5600 USA
Tel 216.271.6000 Fax 216.641.7852 email: sales@namfg.com

August 6, 2008

Chevron North America
Exploration & Production Company
San Joaquin Valley Strategic Business Unit
9525 Camino Media
Bakersfield, CA 93311

Attention: Mr. John Gruber
Air Specialist Engineer

SUBJECT: Emission Guarantee for 62.5 and 85 MM Btu/hr GLE Combustion Systems

Dear Mr. Gruber,

We have reviewed the information that you have provided in the e-mails dated July 31, and August 4, 2008 on the fuels to be fired and the operational/dimensional parameters of the steam generators (both 62.5 and 85 MM Btu/hr units) to be covered in this guarantee of emission performance. Based on this information we can make the following emission guarantees for the two different size 4231-GLE Combustion Systems being considered.

The Guaranteed Emission Levels for these afore mentioned 4231-GLE Combustion Systems installed on standard sized 50,000 lb/hr (62.5 MM Btu/hr HHV gross heat input) and the 70,000 lb/hr (85 MM Btu/hr HHV gross heat input) generators in new or as new condition and outfitted with fully operational Flue Gas Recirculation (FGR) Systems is described as follows:

Guaranteed Emissions

NOx

The burner generated NOx, for either size unit, is guaranteed not to exceed:

- 7 ppmvd corrected to 3% O₂ subject to the conditions and limitations identified below.

Note: We understand that you wish to target 5.5 ppmdv, dry volume basis corrected to 3% O₂, as the emission value desired during low NOx tuning in order to allow yourself a 1.5 ppmdv cushion below the required limit of 7 ppmdv to allow for some variability in daily emission performance and accuracy in portable emission monitors used to tune the burner.

CO

The burner generated CO, for either size unit, is guaranteed not to exceed:

- 25 ppmvd corrected to 3% O₂ subject to the conditions and limitations below.

VOC

The burner generated VOC, for either size unit, is guaranteed not to exceed:

- 0.0055 lb VOC/MMBtu at either 62.5 or 85 MMBtu/hr subject to the conditions and limitations below. These emission values are based on concentration of 13 ppmvd as methane equivalent corrected to 3% O₂, in the flue gas.

The following conditions were also considered in identifying the above emissions guarantee:

1. The system will fire one of the specified Fuel Gases from your email of 7/31/08, having a heating value of between 916 and 1076 BTU/ft³ HHV.
2. A fully functional & automatic FGR flow control system based on oxygen level in the vitiated combustion air providing up to 40% FGR by volume is required.
3. The final steam generator FGR and Excess Air rates will be set by North American in order to achieve the desired compliance targets.
4. The steam generators are to be of standard size with the 50,000 lb/hr (62.5 MM Btu/hr) units having a furnace dimension of 9'-6" ID X 38'-8" long and the 70,000 lb/hr (85 MM Btu/hr) units having a furnace dimension of 11'-3" ID X 38'-8" long (inside the tube bundle). These correspond to the dimensions supplied in your email of 8/04/08 with an additional 7" subtracted from the internal diameter to account for the tube bundle.
5. The above emissions are based on firing either the Model 4231-62.5-GLE or the 4231-85-GLE Combustion Systems controlled by the proprietary patented algorithms in the embedded 8379 CMS code provided with the burner by North American and a fully functional "mass flow control" fuel and air ratio system with Stack O₂ trim.
6. We can meet this emission guarantee contingent upon proper installation in a 50,000 lb/hr or 70,000 lb/hr steam generator in good clean (as new) condition and properly operated
7. Combustion air will be between 32°F – 120°F inlet temperature and 20.9% oxygen for emissions testing purposes. Combustion system fuel/air ratio will be varied on a mass flow basis based on this inlet temperature to ensure emissions compliance across all operating conditions.
8. The combustion air fan must be sufficient to deliver the required combination of FGR and Excess Air at the maximum firing rate.
9. The guarantee is valid over a 3:1 turndown from the high fire rating.
10. The emissions data will be obtained from a sample port at a point downstream of the exit of the burner reaction chamber.
11. The test data will be extracted from a single point and time averaged.

12. North American will verify all emission levels noted above following start-up when the operating mode of the burner and system is at steady state and absent of any pressure spikes in either the field supply or duct systems. North American **must** participate in the start-up/final tuning and emissions test for the guarantees to be valid. Our standard service rates outlined in our Sheet M-9-P-US-NA will apply. If no further testing is conducted as outlined in the attached **CONDITION AND LIMITS OF NORTH AMERICAN MANUFACTURING COMPANY ("NAMCO") EMISSIONS LEVELS GUARANTEE, JULY 2005 (Form 195-GRM12)**, this test will be sufficient to satisfy the guarantee.
13. North American will provide its "best efforts" in meeting the 7 ppmvd NO_x (corrected to 3% O₂) guarantee at the customer request of 10% excess air and approximately 30% FGR. Final operational settings will be made on the basis of environmental compliance. Additional excess air may be required to achieve compliance and will be the first course of remedial action following adjustments in the FGR rate. Other compliance options may present themselves in the particular installation and will be discussed on a case by case basis.

In addition, based on the composition of the fuel being fired we would Expect to see the following emissions for PM10 and SO_x:

Expected Emissions

PM10

The burner generated PM10, for either size unit, is expected to be:

- 0.0032 #PM10/MMBtu at either 62.5 or 85 MMBtu/hr.

The 4231-GLE burner is not an appreciable source of combustion generated particulate matter during normal gas fired operation. Particulate can be introduced in to the system in several ways, such as poor inlet air filtering, particulate or condensable laden fuel gas, and/or from deterioration of surfaces within the process furnace. North American cannot guarantee a burner generated particulate load due to these and other factors that are outside of its control or influence..

SO_x

The burner generated SO_x, for either size unit, is expected to be:

- 0.00285 #SO_x/MMBtu at either 62.5 or 85 MMBtu/hr.

North American does not provide SO_x guarantees as SO_x emissions are solely a function of the sulfur content of the fuel and/or air entering the system. There is no combustion technology that provides reduced SO_x formation, and therefore this is outside North American's control or influence.

Thank you for providing this opportunity to demonstrate the low emission performance of this ultra low NO_x partial lean burn GLE technology when applied to a heat recovery

steam generator. Please feel free to contact me if there are any questions concerning this letter or if we can be of any further assistance with your current combustion equipment needs.

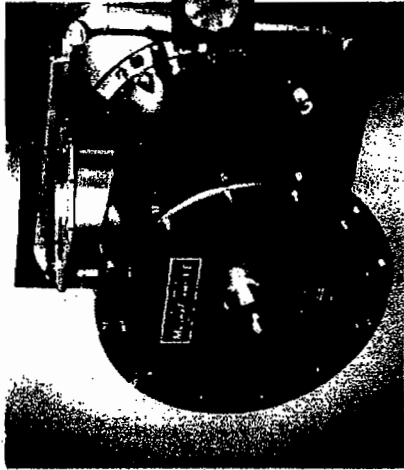
Very truly yours,
NORTH AMERICAN MFG. CO.

John M. Quiel
Manager, Oil Field Sales

The North American Commitment

We continuously provide our customers with innovative solutions for all their production needs. Our skilled experts and engineering resources work together to provide the most advanced technology, supplying solutions that improve your facility's performance and your bottom line.

We leverage our capabilities with local, regional, national, and global resources to deliver the highest quality products and services. North American resources combine to deliver solutions that support the value of your business.



CUTTING EMISSIONS
THROUGH CUTTING EDGE
TECHNOLOGY

MAGNA-FLAME™ LE



**North American
Manufacturing Company**

4455 East 71st Street Cleveland, OH
44105-5600 USA
Tel: 216.271.8000 Fax: 216.641.7852



**North American
Manufacturing Company**



Breckthrough technology for the ultimate in performance.

Ultra Low NO_x without FGR

The Magna Flame LE uses a lean primary mixture, lower and dilute secondary contribution to achieve less than 10 ppm corrected to 3% O₂ NO_x without FGR in many applications.

Low NO_x without sacrificing low CO and VOC's

In many low NO_x burners, CO and VOC emissions increase as NO_x emissions decrease. The Magna Flame LE utilizes a lean primary reaction chamber that changes the relationship and minimizes NO_x, CO, and VOC's simultaneously.

Get Even Lower NO_x with FGR

When FGR is utilized with the Magna Flame LE, the NO_x emissions can be taken to even lower levels, below 8 ppm corrected to 3% O₂, 0.01 b t.u.a per volume (see FIG. 1)

Preheat efficiencies

The LE's lean primary technology also provides low NO_x with preheated air. As the preheat temperature increases, the primary air fuel ratio adjusts to maintain consistent NO_x emissions.

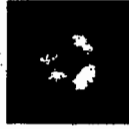
How it works

The unique patented design of the Magna Flame LE uses a preheated lean primary combustion with a controlled reaction zone and dilute secondary contribution in the furnace to achieve ultra low burner NO_x, CO, and VOC emissions.

FIG. 2 illustrates how the LE emissions from a primary burner decrease as the amount of excess air is increased. The Magna Flame LE uses the method to create a single stage NO_x emission, as the reaction chamber.

FIG. 3 illustrates how the LE establishes a lean primary and then combusts the mixture in the primary reaction zone. The fuel and air are introduced separately into the

burner, where they are intimately mixed within the air-fuel-back mixers. This mixture is then directed into the reaction zone where the main combustion takes place.



Secondary air is injected into the furnace where it mixes with furnace gases and the products of combustion from the primary reaction zone. The secondary fuel flow provides near stoichiometric overall ratio for the burner.

The entrained oxygen deficient furnace gases are vital to creating a minimal amount of NO_x with the secondary jets.

FIG. 1

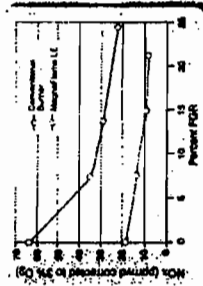


FIG. 2

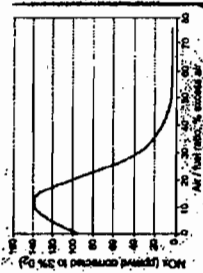
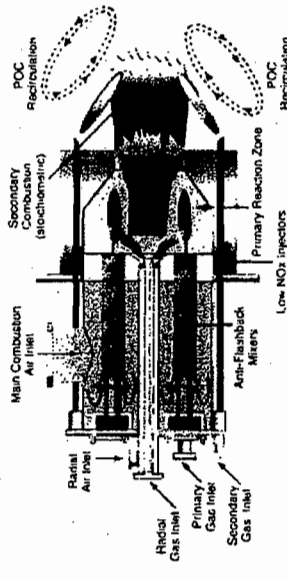


FIG. 3 LE - CROSS SECTION



ATTACHMENT IV PM10 Source Test Results

Chevron U.S.A., Inc.
Cymric
Steam Generator 99

Project 104-6131Z
August 8, 2008

EPA Method 1-5
Particulate Gravimetric Results
@ 68° F & 29.92 "Hg

Run 1	Net mg	gr/dscf	gr/scf	lb/MMBtu	lb/hr
Probe & nozzle wash	0.2	0.00008	0.00007	0.00011	0.007
Filter	0.1	0.00005	0.00004	0.00007	0.004
Total front half	0.3	0.00013	0.00011	0.00018	0.010
Condensables (back half)	0.6	0.00025	0.00021	0.00034	0.020
Total front & back half	0.9	0.00039	0.00032	0.00052	0.030

Run 2	Net mg	gr/dscf	gr/scf	lb/MMBtu	lb/hr
Probe & nozzle wash	1.9	0.00080	0.00066	0.00107	0.062
Filter	0.0	0.00000	0.00000	0.00001	0.000
Total front half	1.9	0.00080	0.00066	0.00107	0.062
Condensables (back half)	1.5	0.00063	0.00052	0.00084	0.049
Total front & back half	3.4	0.00143	0.00118	0.00192	0.111

Run 3	Net mg	gr/dscf	gr/scf	lb/MMBtu	lb/hr
Probe & nozzle wash	1.0	0.00042	0.00034	0.00056	0.033
Filter	0.1	0.00004	0.00003	0.00005	0.003
Total front half	1.1	0.00045	0.00037	0.00061	0.036
Condensables (back half)	0.5	0.00021	0.00017	0.00028	0.016
Total front & back half	1.6	0.00066	0.00055	0.00089	0.052

Supporting Data

Run	Time		%O ₂	%CO ₂	%H ₂ O	Vm _(std)	DSCFM
	Start	Finish					
1	10:43	11:51	1.5	11.0	17.07	36.60	9081
2	12:16	13:22	1.5	11.0	17.51	36.71	9074
3	13:46	14:53	1.5	11.0	17.63	37.00	9126

ATTACHMENT V Emissions Profiles

Permit #: S-1128-959-0	Last Updated
Facility: CHEVRON USA INC	11/09/2009 EDGEHILR

Equipment Pre-Baselined: NO

	<u>NOX</u>	<u>SOX</u>	<u>PM10</u>	<u>CO</u>	<u>VOC</u>
Potential to Emit (lb/Yr):	6344.0	2122.0	4468.0	13775.0	4095.0
Daily Emis. Limit (lb/Day)	62.1	5.8	12.2	132.1	11.2
Quarterly Net Emissions Change (lb/Qtr)					
Q1:	1586.0	530.0	1117.0	3443.0	1023.0
Q2:	1586.0	530.0	1117.0	3444.0	1024.0
Q3:	1586.0	531.0	1117.0	3444.0	1024.0
Q4:	1586.0	531.0	1117.0	3444.0	1024.0
Check if offsets are triggered but exemption applies	N	N	N	N	N
Offset Ratio	1.3	1.0	1.0		1.5
Quarterly Offset Amounts (lb/Qtr)					
Q1:	2062.0	531.0	1117.0		1536.0
Q2:	2062.0	531.0	1117.0		1536.0
Q3:	2062.0	531.0	1117.0		1536.0
Q4:	2062.0	531.0	1117.0		1536.0

Permit #: S-1128-960-0	Last Updated
Facility: CHEVRON USA INC	11/09/2009 EDGEHILR

Equipment Pre-Baselined: NO

	<u>NOX</u>	<u>SOX</u>	<u>PM10</u>	<u>CO</u>	<u>VOC</u>
Potential to Emit (lb/Yr):	6344.0	2122.0	4468.0	13775.0	4095.0
Daily Emis. Limit (lb/Day)	62.1	5.8	12.2	132.9	11.2
Quarterly Net Emissions Change (lb/Qtr)					
Q1:	1586.0	530.0	1117.0	3443.0	1023.0
Q2:	1586.0	530.0	1117.0	3444.0	1024.0
Q3:	1586.0	531.0	1117.0	3444.0	1024.0
Q4:	1586.0	531.0	1117.0	3444.0	1024.0
Check if offsets are triggered but exemption applies	N	N	N	N	N
Offset Ratio	1.3	1.0	1.0		1.5
Quarterly Offset Amounts (lb/Qtr)					
Q1:	2062.0	530.0	1117.0		1536.0
Q2:	2062.0	530.0	1117.0		1536.0
Q3:	2062.0	530.0	1117.0		1536.0
Q4:	2062.0	530.0	1117.0		1536.0

Permit #: S-1128-961-0	Last Updated
Facility: CHEVRON USA INC	11/09/2009 EDGEHILR

Equipment Pre-Baselined: NO

	<u>NOX</u>	<u>SOX</u>	<u>PM10</u>	<u>CO</u>	<u>VOC</u>
Potential to Emit (lb/Yr):	6344.0	2122.0	4468.0	13775.0	4095.0
Daily Emis. Limit (lb/Day)	62.1	5.8	12.2	132.1	11.2
Quarterly Net Emissions Change (lb/Qtr)					
Q1:	1586.0	530.0	1117.0	3443.0	1023.0
Q2:	1586.0	530.0	1117.0	3444.0	1024.0
Q3:	1586.0	531.0	1117.0	3444.0	1024.0
Q4:	1586.0	531.0	1117.0	3444.0	1024.0
Check if offsets are triggered but exemption applies	N	N	N	N	N
Offset Ratio	1.3	1.0	1.0		1.5
Quarterly Offset Amounts (lb/Qtr)					
Q1:	2062.0	531.0	1117.0		1536.0
Q2:	2062.0	531.0	1117.0		1536.0
Q3:	2062.0	531.0	1117.0		1536.0
Q4:	2062.0	531.0	1117.0		1536.0

ATTACHMENT VI BACT Analysis

Top Down BACT Analysis for NO_x Emissions:

Step 1 - Identify All Possible Control Technologies

The District adopted District Rule 4320 on October 16, 2008. The NO_x 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% O₂. 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_x emission limit requirement is 5 ppmv @ 3% O₂. Since this is an enhanced option in the rule, it will be considered the Technologically Feasible control technology for the BACT analysis.

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

1. 7 ppmvd @ 3% O₂ - Achieved in Practice.
2. 5 ppmvd @ 3% O₂ with SCR – Technologically Feasible

Step 2 - Eliminate Technologically Infeasible Options

None of the above listed technologies are technologically infeasible.

Step 3 - Rank Remaining Control Technologies by Control Effectiveness

1. 7 ppmvd @ 3% O₂ - Achieved in Practice.
2. 5 ppmvd @ 3% O₂ with SCR – Technologically Feasible

Step 4 - Cost Effectiveness Analysis

A cost effective analysis is required for technologically feasible control options that are not proposed. The applicant has proposed 7 ppmvd NO_x @ 3% O₂; therefore, a cost effective analysis is required for the 5 ppmvd NO_x @ 3% O₂ with Selective Catalytic Reduction option.

Cost Analysis for 5 ppmv NOx @ 3% O2:

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

Step 1 - Identify All Possible Control Technologies

The SJVUAPCD BACT Clearinghouse guideline 1.2.1, 4th quarter 2009, identifies achieved in practice and technologically feasible BACT for Steam Generator ≥ 5 MMBtu/hr, at an oil field as follows:

1. 7 ppmvd @ 3% O2 - Achieved in Practice.
2. 5 ppmvd @ 3% O2 with SCR – Technologically Feasible

Step 2 - Eliminate Technologically Infeasible Options

None of the above listed technologies are technologically infeasible.

Step 3 - Rank Remaining Control Technologies by Control Effectiveness

1. 5 ppmv @ 3% O2 with SCR – Technologically Feasible
2. 7 ppmvd @ 3% O2 - Achieved in practice.

Step 4 - Cost Effectiveness Analysis

Since the most stringent NOx limit (5 ppmvd @ 3% O2) identified above is not proposed by the applicant, a cost effectiveness analysis necessary. However, the following analysis demonstrates that the use of selective catalytic reduction (SCR) is not cost effective:

SCR Cost Effectiveness Analysis

Assumptions:

Industry standard (IS) assumed to be a NOx emission rate of 15 ppmv @ 3% O₂ in accordance with District Rule 4306.

Unit's maximum emissions are defined by the burner size multiplied by the emissions factor and a maximum annual operating schedule of 8,760 hr/year.

Calculations:

Industrial Standard NOx Emissions = 85 MMBtu/hr x 0.018 lb/MMBtu x 8760 hrs/year
= 13,403 lb/year

Technologically Feasible NOx Emissions = 85 MMBtu/hr x 0.006 lb/MMBtu x 8760 hrs/year
= 4,468 lb/year

Selective Catalytic Reduction system (Detailed costs follow the BACT Analysis Section):

Capital Cost (SCR Vendor & TJ Cross): **\$1,102,046** (includes all purchased equipment, taxes, freight, and installation for a 62.5 MMBtu/hr unit) – detailed costs follow.

Total Estimated Capital Cost: **\$1,102,046**

Equivalent Annual Capital Cost (Capital Recovery)

$$A = P \frac{i(1+i)^n}{(1+i)^n - 1} \quad \text{where;}$$

- A = Equivalent Annual Control Equipment Capital Cost
- P = Present value of the control equipment, including installation cost
- i = interest rate (use 10%, or demonstrate why alternate is more representative of the specific operation).
- n = equipment life (assume 10 years or demonstrate why alternate is more representative of the specific operation)

Where

$$P = \$1,102,046$$

$$i = 10\%$$

$$n = 10 \text{ years}$$

$$A = \$179,303$$

Because the capital recovery and annual costs of ammonia, catalyst replacement, and energy (\$179,303/yr + \$35,583/yr + \$10,512/yr = \$225,398) correspond to a 62.5 MMBtu/hr unit they are adjusted using the "6/10" rule as follows:

$$\$225,398 \times (85/62.5)^{0.6} = \$271,064/\text{yr}$$

$$\text{Operation and Maintenance Labor} = \$7875/\text{yr} + \$1181/\text{yr}$$

$$\begin{aligned} \text{Indirect annual costs} &= \$2 \times 13,120 + 4725 \\ &= \$30,965 \end{aligned}$$

$$\text{Total annualized cost} = \underline{\underline{\$311,085/\text{yr}}}$$

NOx Reduction due to Selective Catalytic Reduction system:

$$\text{Total reduction} = \text{Emissions}_{15 \text{ ppm}} - \text{Emissions}_{5 \text{ ppm}}$$

$$\text{Total reduction} = 13,403 \text{ lb/year} - 4468 \text{ lb/year}$$

$$\text{Total reduction} = 8,935 \text{ lb/year} = 4.5 \text{ ton NOx per year}$$

Cost effectiveness:

Cost effectiveness = \$311,085/ 4.47 tpy
Cost effectiveness = \$69,594/ ton

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

Step 5 - Select BACT

BACT is satisfied by the applicant's proposal to meet a NO_x limit of 7 ppmvd @ 3% O₂ to be achieved with a Low NO_x burner and flue gas recirculation (FGR).

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

Step 1 - Identify all control technologies

The SJVUAPCD BACT Clearinghouse guideline 1.2.1, 3rd quarter 2008, identifies achieved in practice and technologically feasible BACT for Steam Generator ≥ 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 PM₁₀ and SO_x Emissions:**

Step 1 - Identify all control technologies

The SJVUAPCD BACT Clearinghouse guideline 1.2.1, 3rd quarter 2007, identifies achieved in practice and technologically feasible BACT for Steam Generator ≥ 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 SO₂ scrubber and either achieving 95% by weight control of sulfur compounds or achieving an emission rate of 30 ppmvd SO₂ at stack O₂ - 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 SO₂ scrubber and either achieving 95% by weight control of sulfur compounds or achieving an emission rate of 30 ppmvd SO₂ at stack O₂ - 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_x and PM₁₀

The use of natural gas as a primary fuel with a sulfur content not to exceed 1.0 gr-S/100 scf with no back up fuel is selected as BACT for SO_x and PM₁₀ emissions.

❖ Top Down BACT Analysis for CO Emissions:

Step 1 - Identify all control technologies

The SJVUAPCD BACT Clearinghouse guideline 1.2.1, 3rd quarter 2008, identifies achieved in practice and technologically feasible BACT for Steam Generator \geq 5 MMbtu/hr, at an oil field as follows:

1. 50 ppmvd @ 3% O₂ - 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. 50 ppmvd @ 3% O₂ - 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 CO

25 ppmvd CO @ 3% O₂ is proposed and satisfies BACT for CO emissions.

SCR FOR STEAM GENERATOR; CAPITAL & OPERATING COSTS (RE-WORKED)

Direct Installation Costs

	Footnotes	Unit Cost	Amount
SCR Equipment (Purchase Costs)	(1)	A	\$200,000
Instrumentation & Controls (22%)	(2)	0.22 A	\$44,000
Foundation/Supports, Civil/Structural (15%)	(2)	0.15 A	\$30,000
Handling/Erection, Equipment Install (15%)	(2)	0.15 A	\$30,000
Electrical (15%)	(2)	0.15 A	\$30,000
Piping (50%)	(2)	0.50 A	\$100,000

Total Direct Cost B **\$434,000**

Indirect Installation Costs

Sales Tax & Freight (9%)	(2)	0.09 A	\$18,000
FEL Engineering (5%)	(2)	0.05 B	\$21,700
Detailed Engineering (21%)	(2)	0.21 B	\$91,140
Construction Indirects (21%)	(2)	0.21 B	\$91,140

Total Indirect Cost, IC C **\$221,980**

Total Direct + Indirect D **\$655,980**

Contingency (50%) 0.5 D **\$327,990**

Subtotal w/ Contingency E **\$983,970**

G&A at 12% of Subtotal w/contingency 0.12 E **\$118,076**

Grand Total **\$1,102,046**

ANNUALIZED CAPITAL COST (@ I = 10% & N = 10 years) = **\$179,303**

ANNUAL MAINTENANCE & OPERATING COSTS

Description	Suggested Factor	Unit Cost	Cost
<u>Direct Annual Costs, DC</u>			
Op & Main Labor (630 man-hours/year) x 1/2	(3) & (4)	\$25.0/hr	\$7,875
Supervisor (15% of Operator)	(4)		\$1,181
Materials: Catalyst & Ammonia	(4)	\$35,583	\$35,583
Energy (15 kW * \$0.08/kW-hr * 8760 hrs/yr)	(5)	\$0.08/kW-hr	\$10,512
<u>Indirect Annual Costs, DC</u>			
Overhead (60% of O&M Labor)	(4)		\$4,725
Admin Charges (2% of TECC)	(4)		\$13,120
Property Taxes & Ins (2% of TECC)	(4)		\$13,120
TOTAL ANNUAL MAINTENANCE & OPERATING COSTS			\$86,116

TOTAL EQUIVALENT ANNUAL OPERATING COSTS **\$265,419**

References:

- (1) Reflects budgetary estimate from C&C Panasia presented at 10/22/09 Meeting.
- (2) Cost factors used by TJ Cross Engineers Inc. and referenced from "Plant Design and Economics for Chemical Engineers" by Peters and Timmerhaus, Third Edition.
- (3) Hourly labor/maintenance rates typically assumed in BACT analyses. Assumed 50% of one Man.
- (4) Direct/indirect installation costs and hourly labor/maintenance costs are estimated based on procedure OAQPS Control Cost Manual (EPA/452/B-02-001), Section 3.2, Chapter 1.
- (5) Electrical cost of \$0.08/kW-hr is consistent with past BACT reviews and is used to estimate annual energy cost due to added Horsepower requirements of SCR Equipment. Estimated at about 15 KW.

ATTACHMENT VII
HRA and AAQA

REVISED
San Joaquin Valley Air Pollution Control District
Risk Management Review

To: Richard Edgehill, AQE – Permit Services
 From: Ester Davila, SAQS – Technical Services
 Date: November 13, 2009
 Facility Name: Chevron USA, Inc.
 Location: Bakersfield, CA
 Application #(s): S-1128-959-0 thru 961-0
 Project #: S-1084509

A. RMR SUMMARY

Categories	3 Steam Generators (Units 952-0 thru 961-0)	Project Totals	Facility Totals
Prioritization Score	N/A*	N/A	>1.0
Acute Hazard Index	N/A	N/A	0.33
Chronic Hazard Index	N/A	N/A	0.01
Maximum Individual Cancer Risk (10 ⁻⁶)	N/A	N/A	3.87
T-BACT Required?	No		
Special Permit Conditions?	No		

Prioritization score was less than the District's significance level of 0.05. No further analysis was required.

Proposed Permit Conditions

Units 959-0 thru 961-0

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

B. RMR REPORT

I. Project Description

Technical Services received a request on November 9, 2009, to perform a revised Risk Management Review for the proposed installation of 3 (not 12) 85 MMBtu/hr natural gas-fired steam generators. The new steam generators are proposed to operate at any location within the HOWSS. An ambient air quality analysis was also required.

II. Analysis

Technical Services used the Ventura County emission factors for external combustion to calculate the emissions from the combustion of Natural Gas. The maximum fuel consumption was calculated using the burner rating and assuming full time use. The total facility prioritization score is greater than one however the prioritization score for the project was below the District's significance level of 0.05 consequently, a refined health risk assessment was not required. Technical Services also performed an AAQA. AERMOD modeling was used to determine the maximum dispersion factors at the nearest residential and business receptors using the parameters outlined below.

The following parameters were used for the review:

Analysis Parameters Steam Generators			
Source Type	Point	Location Type	Rural
Stack Height (m)	6.1	Closest Receptor (m)	549
Stack Diameter. (m)	1.07	Type of Receptor	Business
Stack Exit Velocity (m/s)	7.5	Max Hours per Year	8760
Stack Exit Temp. (°K)	394	Fuel Types	NG

The results from the Modeling are as follows:

Criteria Pollutant Modeling Results*

Values are in ug/m³

S-1128-959-0 thru 970-0	1 Hour	3 Hours	8 Hours.	24 Hours	Annual
CO	Pass	X	Pass	X	X
NO _x	Pass	X	X	X	Pass
SO _x	Pass	Pass	X	Pass	Pass
PM ₁₀	X	X	X	Pass	Pass

*Results were taken from the attached PSD spreadsheet.

¹The criteria pollutants are below EPA's level of significance as found in 40 CFR Part 51.165 (b)(2).

C. CONCLUSIONS

The Criteria modeling runs indicate that the emissions from the proposed equipment will not have an adverse impact on the State or National AAQS.

The project's prioritization was less than the District's significance level of 0.05. No further analysis was required. **In accordance with the District's Risk Management Policy, the project is approved without Toxic Best Available Control Technology (T-BACT).** These conclusions are based upon 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.

Attachments:

- A. Prioritization Score
- B. AAQA Results
- C. Supplemental Information

ATTACHMENT VIII
Draft ATCs

San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

ISSUANCE DATE: DRAFT
DRAFT

PERMIT NO: S-1128-959-0

LEGAL OWNER OR OPERATOR: CHEVRON USA INC
MAILING ADDRESS: P O BOX 1392
BAKERSFIELD, CA 93302

LOCATION: HEAVY OIL WESTERN STATIONARY SOURCE
KERN COUNTY

SECTION: v TOWNSHIP: v RANGE: v

EQUIPMENT DESCRIPTION:

85 MMBTU/HR NATURAL GAS-FIRED STEAM GENERATOR WITH NORTH AMERICAN MODEL 4231-85-GLE LOW-NOX BURNER ASSEMBLY, OR EQUIVALENT LOW-NOX BURNER, WITH FLUE GAS RECIRCULATION, APPROVED TO OPERATE AT VARIOUS LOCATIONS

CONDITIONS

1. 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 2520] Federally Enforceable Through Title V Permit
2. 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. This steam generator is permitted to operate at the following locations: NE, NW, SE, SW of Sec 1, T30S/R21E; NW, SE, SW of Sec 7, T30S/R22E; NE, NW, SE, SW of Sec 17, T30S/R22E; NE, NW, SE, SW of Sec 18, T30S/R22E; SE Sec 8, T30S, R22E, and NW Sec 36, T29S, R21E. [District Rule 4102]
4. The permittee shall notify the District Compliance Division of each location at which the operation is located in excess of 24 hours. Such notification shall be made no later than 48 hours after starting operation at the location. [District Rule 1070] Federally Enforceable Through Title V Permit

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

DRAFT

DAVID WARNER, Director of Permit Services

S-1128-959-0 : Nov 18 2009 10:03AM - EDGEHILL : Joint Inspection NOT Required

5. The permittee shall obtain written District approval for the use of any equivalent equipment not specifically approved by this Authority to Construct. Approval of the equivalent equipment shall be made only after the District's determination that the submitted design and performance of the proposed alternate equipment is equivalent to the specifically authorized equipment. [District Rule 2201] Federally Enforceable Through Title V Permit
6. The permittee's request for approval of equivalent equipment shall include the make, model, manufacturer's maximum rating, manufacturer's guaranteed emission rates, equipment drawing(s), and operational characteristics/parameters. [District Rule 2010] Federally Enforceable Through Title V Permit
7. Alternate equipment shall be of the same class and category of source as the equipment authorized by the Authority to Construct. [District Rule 2201] Federally Enforceable Through Title V Permit
8. No emission factor and no emission shall be greater for the alternate equipment than for the proposed equipment. No changes in the hours of operation, operating rate, throughput, or firing rate may be authorized for any alternate equipment. [District Rule 2201] Federally Enforceable Through Title V Permit
9. Flue gas recirculation (FGR) shall be utilized in conjunction with low-NOx burner to maintain ongoing compliance with permitted emission limits. [District Rule 2201] Federally Enforceable Through Title V Permit
10. Natural gas fuel sulfur content shall not exceed 1.0 grains-S/100 scf. [District Rules 2201 and 4320] Federally Enforceable Through Title V Permit
11. Emission rates, except during startup, shutdown, and the initial shakedown period shall not exceed: NOx (as NO2): 7 ppmvd @ 3% O2; or CO: 25 ppmvd @ 3% O2 or 0.0185 lb/MMBtu. [District Rule 2201, 4305, 4306, and 4320] Federally Enforceable Through Title V Permit
12. Emission rates shall not exceed any of the following: PM10: 0.006 lb/MMBtu; or VOC: 0.0055 lb/MMBtu. [District Rule 2201] Federally Enforceable Through Title V Permit
13. 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
14. Emission rates during startup and shutdown shall not exceed: NOx - 0.14 lb/MMBtu or 116 ppmv @ 3% O2; CO - 0.296 lb/MMBtu or 400 ppmv @ 3% O2 [District Rule 2201] Federally Enforceable Through Title V Permit
15. Emissions rate of NOx shall not exceed 62.1 lb/day nor 6344 lb/yr. [District Rule 2201] Federally Enforceable Through Title V Permit
16. Emissions rate of CO shall not exceed 132.1 lb/day nor 13,775 lb/yr. [District Rule 2201] Federally Enforceable Through Title V Permit
17. If the unit is fired on noncertified gaseous fuel and compliance with SOx emission limits is achieved through fuel sulfur content limitations, then the sulfur content of the gaseous fuel being fired in the unit shall be determined using ASTM D 1072, D 3031, D 3246, D 4084, D 4468, D 6667 or grab sample analysis by GC-FPD/TCD performed in the laboratory. [District Rule 1070, 2201, 2520, and 4320] Federally Enforceable Through Title V Permit
18. When complying with sulfur emission limits by fuel analysis or by a combination of source testing and fuel analysis, each fuel source shall be tested weekly for sulfur content and higher heating value. If compliance with the fuel sulfur content limit and sulfur emission limits has been demonstrated for 8 consecutive weeks for a fuel source, then the fuel testing frequency shall be semi-annually. If a semi-annual fuel content source test fails to show compliance, weekly testing shall resume. [District Rules 1070, 2201, 2520, and 4320] Federally Enforceable Through Title V Permit
19. If fuel analysis is used to demonstrate compliance with conditions of this permit, the fuel higher heating value for each fuel shall be certified by a third party fuel supplier or determined by ASTM D 1826 or D 1945 in conjunction with ASTM D 3588 for gaseous fuels. [District Rules 1070, 2201, 2520, and 4320] Federally Enforceable Through Title V Permit
20. The permittee shall monitor and record the stack concentration of NOx, CO, and O2 at least once every month (in which a source test is not performed) using a portable emission monitor that meets District specifications. Monitoring shall not be required if the unit is not in operation, i.e. the unit need not be started solely to perform monitoring. Monitoring shall be performed within 5 days of restarting the unit unless monitoring has been performed within the last month. [District Rules 2520, 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

21. If either the NO_x or CO concentrations corrected to 3% O₂, as measured by the portable analyzer, exceed the allowable emissions concentration, the permittee shall return the emissions to within the acceptable range as soon as possible, but no longer than 1 hour of operation after detection. If the portable analyzer readings continue to exceed the allowable emissions concentration after 1 hour of operation after detection, the permittee shall notify the District within the following 1 hour and conduct a certified source test within 60 days of the first exceedance. In lieu of conducting a source test, the permittee may stipulate a violation has occurred, subject to enforcement action. The permittee must then correct the violation, show compliance has been re-established, and resume monitoring procedures. If the deviations are the result of a qualifying breakdown condition pursuant to Rule 1100, the permittee may fully comply with Rule 1100 in lieu of the performing the notification and testing required by this condition. [District Rules 2520, 4305, 4306, and 4320] Federally Enforceable Through Title V Permit
22. 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 2520, 4305, 4306, and 4320]
23. The permittee shall maintain records of: (1) the date and time of NO_x, CO, and O₂ measurements, (2) the O₂ concentration in percent and the measured NO_x and CO concentrations corrected to 3% O₂, (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 2520, 4305, 4306, and 4320]
24. Compliance demonstration (source testing) shall be by District witnessed, or authorized, sample collection by ARB certified laboratory. [District Rule 1081] Federally Enforceable Through Title V Permit
25. All required source testing shall conform to the compliance testing procedures described in District Rule 1081 (Amended December 16, 1993). [District Rule 1081, and County Rules 108 (Kings), 108.1 (Fresno, Merced, San Joaquin, Tulare, Kern, and Stanislaus), and 110 (Madera)] Federally Enforceable Through Title V Permit
26. Source testing to measure NO_x and CO emissions from this unit shall be conducted within 60 days of initial start-up. [District Rules 2201, 4305, 4306, and 4320] Federally Enforceable Through Title V Permit
27. Source testing to measure natural gas-combustion NO_x and CO emissions from this unit shall be conducted at least once every twelve (12) months. After demonstrating compliance on two (2) consecutive annual source tests, the unit shall be tested not less than once every thirty-six (36) months. If the result of the 36-month source test demonstrates that the unit does not meet the applicable emission limits, the source testing frequency shall revert to at least once every twelve (12) months. [District Rules 2201, 4305, 4306, and 4320]
28. 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
29. 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
30. The following test methods shall be used: NO_x (ppmv) - EPA Method 7E or ARB Method 100, NO_x (lb/MMBtu) - EPA Method 19, CO (ppmv) - EPA Method 10 or 10B or ARB Method 100, stack gas oxygen - EPA Method 3 or 3A or ARB Method 100, SO_x (lb/MMBtu) - ARB Method 8 or 100 or EPA Method 6, 6B, 6C, or 8, or fuel gas sulfur content analysis and EPA Method 19, fuel gas sulfur content - ASTM D1072, D3031, D3246, D4084, D4468, D6667 or double GC for H₂S and mercaptans performed in laboratory, fuel gas hhv - ASTM D1826 or D1945 in conjunction with ASTM D3588. [District Rules 1081, 4305, 4306, and 4320] Federally Enforceable Through Title V Permit
31. 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] Federally Enforceable Through Title V Permit

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CONDITIONS CONTINUE ON NEXT PAGE

32. 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. 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 District Rules 4306 and 4320. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit
33. 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
34. Copies of all gas purchase contracts, supplier certifications, and test results to determine compliance with the conditions of this permit shall be maintained. The operator shall record daily amount and type(s) of fuel(s) combusted, fuel sources, and all dates on which unit is fired on any noncertified fuel and record specific type of noncertified fuel used. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
35. Prior to operating under this Authority to Construct, permittee shall surrender emission reduction credits for the following quantities of emissions: NOx: 1586 lb/quarter, SOx: 531 lb/quarter, PM10: 1117 lb/quarter, and VOC:1024 lb/quarter. Offset shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 9/21/2006). [District Rule 2201] Federally Enforceable Through Title V Permit
36. ERC Certificate Numbers S-2041024/401 (NOx), S-411-5 (SOx), S-889-4 (PM10), and S-2677-1 (VOCs) (or certificates split from these certificates) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201] Federally Enforceable Through Title V Permit

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San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

ISSUANCE DATE: DRAFT
DRAFT

PERMIT NO: S-1128-960-0

LEGAL OWNER OR OPERATOR: CHEVRON USA INC
MAILING ADDRESS: P O BOX 1392
BAKERSFIELD, CA 93302

LOCATION: HEAVY OIL WESTERN STATIONARY SOURCE
KERN COUNTY

SECTION: v TOWNSHIP: v RANGE: v

EQUIPMENT DESCRIPTION:

85 MMBTU/HR NATURAL GAS-FIRED STEAM GENERATOR WITH NORTH AMERICAN MODEL 4231-85-GLE LOW-NOX BURNER ASSEMBLY, OR EQUIVALENT LOW-NOX BURNER, WITH FLUE GAS RECIRCULATION, APPROVED TO OPERATE AT VARIOUS LOCATIONS

CONDITIONS

1. 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 2520] Federally Enforceable Through Title V Permit
2. 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. This steam generator is permitted to operate at the following locations: NE, NW, SE, SW of Sec 1, T30S/R21E; NW, SE, SW of Sec 7, T30S/R22E; NE, NW, SE, SW of Sec 17, T30S/R22E; NE, NW, SE, SW of Sec 18, T30S/R22E; SE Sec 8, T30S, R22E, and NW Sec 36, T29S, R21E. [District Rule 4102]
4. The permittee shall notify the District Compliance Division of each location at which the operation is located in excess of 24 hours. Such notification shall be made no later than 48 hours after starting operation at the location. [District Rule 1070] Federally Enforceable Through Title V Permit

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

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DAVID WARNER, Director of Permit Services
S-1128-960-0; Nov 18 2009 10:03AM - EDGEHLR : Joint Inspection NOT Required

5. The permittee shall obtain written District approval for the use of any equivalent equipment not specifically approved by this Authority to Construct. Approval of the equivalent equipment shall be made only after the District's determination that the submitted design and performance of the proposed alternate equipment is equivalent to the specifically authorized equipment. [District Rule 2201] Federally Enforceable Through Title V Permit
6. The permittee's request for approval of equivalent equipment shall include the make, model, manufacturer's maximum rating, manufacturer's guaranteed emission rates, equipment drawing(s), and operational characteristics/parameters. [District Rule 2010] Federally Enforceable Through Title V Permit
7. Alternate equipment shall be of the same class and category of source as the equipment authorized by the Authority to Construct. [District Rule 2201] Federally Enforceable Through Title V Permit
8. No emission factor and no emission shall be greater for the alternate equipment than for the proposed equipment. No changes in the hours of operation, operating rate, throughput, or firing rate may be authorized for any alternate equipment. [District Rule 2201] Federally Enforceable Through Title V Permit
9. Flue gas recirculation (FGR) shall be utilized in conjunction with low-NOx burner to maintain ongoing compliance with permitted emission limits. [District Rule 2201] Federally Enforceable Through Title V Permit
10. Natural gas fuel sulfur content shall not exceed 1.0 grains-S/100 scf. [District Rules 2201 and 4320] Federally Enforceable Through Title V Permit
11. Emission rates, except during startup, shutdown, and the initial shakedown period shall not exceed: NOx (as NO₂): 7 ppmvd @ 3% O₂; or CO: 25 ppmvd @ 3% O₂ or 0.0185 lb/MMBtu. [District Rule 2201, 4305, 4306, and 4320] Federally Enforceable Through Title V Permit
12. Emission rates shall not exceed any of the following: PM₁₀: 0.006 lb/MMBtu; or VOC: 0.0055 lb/MMBtu. [District Rule 2201] Federally Enforceable Through Title V Permit
13. 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
14. Emission rates during startup and shutdown shall not exceed: NOx - 0.14 lb/MMBtu or 116 ppmv @ 3% O₂; CO - 0.296 lb/MMBtu or 400 ppmv @ 3% O₂ [District Rule 2201] Federally Enforceable Through Title V Permit
15. Emissions rate of NOx shall not exceed 62.1 lb/day nor 6344 lb/yr. [District Rule 2201] Federally Enforceable Through Title V Permit
16. Emissions rate of CO shall not exceed 132.1 lb/day nor 13,775 lb/yr. [District Rule 2201] Federally Enforceable Through Title V Permit
17. If the unit is fired on noncertified gaseous fuel and compliance with SOx emission limits is achieved through fuel sulfur content limitations, then the sulfur content of the gaseous fuel being fired in the unit shall be determined using ASTM D 1072, D 3031, D 3246, D 4084, D 4468, D 6667 or grab sample analysis by GC-FPD/TCD performed in the laboratory. [District Rule 1070, 2201, 2520, and 4320] Federally Enforceable Through Title V Permit
18. When complying with sulfur emission limits by fuel analysis or by a combination of source testing and fuel analysis, each fuel source shall be tested weekly for sulfur content and higher heating value. If compliance with the fuel sulfur content limit and sulfur emission limits has been demonstrated for 8 consecutive weeks for a fuel source, then the fuel testing frequency shall be semi-annually. If a semi-annual fuel content source test fails to show compliance, weekly testing shall resume. [District Rules 1070, 2201, 2520, and 4320] Federally Enforceable Through Title V Permit
19. If fuel analysis is used to demonstrate compliance with conditions of this permit, the fuel higher heating value for each fuel shall be certified by a third party fuel supplier or determined by ASTM D 1826 or D 1945 in conjunction with ASTM D 3588 for gaseous fuels. [District Rules 1070, 2201, 2520, and 4320] Federally Enforceable Through Title V Permit
20. The permittee shall monitor and record the stack concentration of NOx, CO, and O₂ at least once every month (in which a source test is not performed) using a portable emission monitor that meets District specifications. Monitoring shall not be required if the unit is not in operation, i.e. the unit need not be started solely to perform monitoring. Monitoring shall be performed within 5 days of restarting the unit unless monitoring has been performed within the last month. [District Rules 2520, 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

21. If either the NO_x or CO concentrations corrected to 3% O₂, as measured by the portable analyzer, exceed the allowable emissions concentration, the permittee shall return the emissions to within the acceptable range as soon as possible, but no longer than 1 hour of operation after detection. If the portable analyzer readings continue to exceed the allowable emissions concentration after 1 hour of operation after detection, the permittee shall notify the District within the following 1 hour and conduct a certified source test within 60 days of the first exceedance. In lieu of conducting a source test, the permittee may stipulate a violation has occurred, subject to enforcement action. The permittee must then correct the violation, show compliance has been re-established, and resume monitoring procedures. If the deviations are the result of a qualifying breakdown condition pursuant to Rule 1100, the permittee may fully comply with Rule 1100 in lieu of the performing the notification and testing required by this condition. [District Rules 2520, 4305, 4306, and 4320] Federally Enforceable Through Title V Permit
22. 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 2520, 4305, 4306, and 4320]
23. The permittee shall maintain records of: (1) the date and time of NO_x, CO, and O₂ measurements, (2) the O₂ concentration in percent and the measured NO_x and CO concentrations corrected to 3% O₂, (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 2520, 4305, 4306, and 4320]
24. Compliance demonstration (source testing) shall be by District witnessed, or authorized, sample collection by ARB certified laboratory. [District Rule 1081] Federally Enforceable Through Title V Permit
25. All required source testing shall conform to the compliance testing procedures described in District Rule 1081 (Amended December 16, 1993). [District Rule 1081, and County Rules 108 (Kings), 108.1 (Fresno, Merced, San Joaquin, Tulare, Kern, and Stanislaus), and 110 (Madera)] Federally Enforceable Through Title V Permit
26. Source testing to measure NO_x and CO emissions from this unit shall be conducted within 60 days of initial start-up. [District Rules 2201, 4305, 4306, and 4320] Federally Enforceable Through Title V Permit
27. Source testing to measure natural gas-combustion NO_x and CO emissions from this unit shall be conducted at least once every twelve (12) months. After demonstrating compliance on two (2) consecutive annual source tests, the unit shall be tested not less than once every thirty-six (36) months. If the result of the 36-month source test demonstrates that the unit does not meet the applicable emission limits, the source testing frequency shall revert to at least once every twelve (12) months. [District Rules 2201, 4305, 4306, and 4320]
28. 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
29. 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
30. The following test methods shall be used: NO_x (ppmv) - EPA Method 7E or ARB Method 100, NO_x (lb/MMBtu) - EPA Method 19, CO (ppmv) - EPA Method 10 or 10B or ARB Method 100, stack gas oxygen - EPA Method 3 or 3A or ARB Method 100, SO_x (lb/MMBtu) - ARB Method 8 or 100 or EPA Method 6, 6B, 6C, or 8, or fuel gas sulfur content analysis and EPA Method 19, fuel gas sulfur content - ASTM D1072, D3031, D3246, D4084, D4468, D6667 or double GC for H₂S and mercaptans performed in laboratory, fuel gas h_hv - ASTM D1826 or D1945 in conjunction with ASTM D3588. [District Rules 1081, 4305, 4306, and 4320] Federally Enforceable Through Title V Permit
31. 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] Federally Enforceable Through Title V Permit

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CONDITIONS CONTINUE ON NEXT PAGE

32. 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. 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 District Rules 4306 and 4320. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit
33. 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
34. Copies of all gas purchase contracts, supplier certifications, and test results to determine compliance with the conditions of this permit shall be maintained. The operator shall record daily amount and type(s) of fuel(s) combusted, fuel sources, and all dates on which unit is fired on any noncertified fuel and record specific type of noncertified fuel used. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
35. Prior to operating under this Authority to Construct, permittee shall surrender emission reduction credits for the following quantities of emissions: NOx: 1586 lb/quarter, SOx: 531 lb/quarter, PM10: 1117 lb/quarter, and VOC:1024 lb/quarter. Offset shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 9/21/2006). [District Rule 2201] Federally Enforceable Through Title V Permit
36. ERC Certificate Numbers S-2041024/401 (NOx), S-411-5 (SOx), S-889-4 (PM10), and S-2677-1 (VOCs) (or certificates split from these certificates) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201] Federally Enforceable Through Title V Permit

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San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

ISSUANCE DATE: DRAFT

PERMIT NO: S-1128-961-0

LEGAL OWNER OR OPERATOR: CHEVRON USA INC
MAILING ADDRESS: P O BOX 1392
BAKERSFIELD, CA 93302

LOCATION: HEAVY OIL WESTERN STATIONARY SOURCE
KERN COUNTY

SECTION: v TOWNSHIP: v RANGE: v

EQUIPMENT DESCRIPTION:

85 MMBTU/HR NATURAL GAS-FIRED STEAM GENERATOR WITH NORTH AMERICAN MODEL 4231-85-GLE LOW-NOX BURNER ASSEMBLY, OR EQUIVALENT LOW-NOX BURNER, WITH FLUE GAS RECIRCULATION, APPROVED TO OPERATE AT VARIOUS LOCATIONS

CONDITIONS

1. 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 2520] Federally Enforceable Through Title V Permit
2. 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. This steam generator is permitted to operate at the following locations: NE, NW, SE, SW of Sec 1, T30S/R21E; NW, SE, SW of Sec 7, T30S/R22E; NE, NW, SE, SW of Sec 17, T30S/R22E; NE, NW, SE, SW of Sec 18, T30S/R22E; SE Sec 8, T30S, R22E, and NW Sec 36, T29S, R21E. [District Rule 4102]
4. The permittee shall notify the District Compliance Division of each location at which the operation is located in excess of 24 hours. Such notification shall be made no later than 48 hours after starting operation at the location. [District Rule 1070] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

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

Seyed Sadredin, Executive Director APCO

DAVID WARNER, Director of Permit Services

S-1128-961-0; Nov 18 2009 10:03AM - EDGEHLR : Joint Inspection NOT Required

5. The permittee shall obtain written District approval for the use of any equivalent equipment not specifically approved by this Authority to Construct. Approval of the equivalent equipment shall be made only after the District's determination that the submitted design and performance of the proposed alternate equipment is equivalent to the specifically authorized equipment. [District Rule 2201] Federally Enforceable Through Title V Permit
6. The permittee's request for approval of equivalent equipment shall include the make, model, manufacturer's maximum rating, manufacturer's guaranteed emission rates, equipment drawing(s), and operational characteristics/parameters. [District Rule 2010] Federally Enforceable Through Title V Permit
7. Alternate equipment shall be of the same class and category of source as the equipment authorized by the Authority to Construct. [District Rule 2201] Federally Enforceable Through Title V Permit
8. No emission factor and no emission shall be greater for the alternate equipment than for the proposed equipment. No changes in the hours of operation, operating rate, throughput, or firing rate may be authorized for any alternate equipment. [District Rule 2201] Federally Enforceable Through Title V Permit
9. Flue gas recirculation (FGR) shall be utilized in conjunction with low-NOx burner to maintain ongoing compliance with permitted emission limits. [District Rule 2201] Federally Enforceable Through Title V Permit
10. Natural gas fuel sulfur content shall not exceed 1.0 grains-S/100 scf. [District Rules 2201 and 4320] Federally Enforceable Through Title V Permit
11. Emission rates, except during startup, shutdown, and the initial shakedown period shall not exceed: NOx (as NO₂): 7 ppmvd @ 3% O₂; or CO: 25 ppmvd @ 3% O₂ or 0.0185 lb/MMBtu. [District Rule 2201, 4305, 4306, and 4320] Federally Enforceable Through Title V Permit
12. Emission rates shall not exceed any of the following: PM₁₀: 0.006 lb/MMBtu; or VOC: 0.0055 lb/MMBtu. [District Rule 2201] Federally Enforceable Through Title V Permit
13. 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
14. Emission rates during startup and shutdown shall not exceed: NOx - 0.14 lb/MMBtu or 116 ppmv @ 3% O₂; CO - 0.296 lb/MMBtu or 400 ppmv @ 3% O₂ [District Rule 2201] Federally Enforceable Through Title V Permit
15. Emissions rate of NOx shall not exceed 62.1 lb/day nor 6344 lb/yr. [District Rule 2201] Federally Enforceable Through Title V Permit
16. Emissions rate of CO shall not exceed 132.1 lb/day nor 13,775 lb/yr. [District Rule 2201] Federally Enforceable Through Title V Permit
17. If the unit is fired on noncertified gaseous fuel and compliance with SOx emission limits is achieved through fuel sulfur content limitations, then the sulfur content of the gaseous fuel being fired in the unit shall be determined using ASTM D 1072, D 3031, D 3246, D 4084, D 4468, D 6667 or grab sample analysis by GC-FPD/TCD performed in the laboratory. [District Rule 1070, 2201, 2520, and 4320] Federally Enforceable Through Title V Permit
18. When complying with sulfur emission limits by fuel analysis or by a combination of source testing and fuel analysis, each fuel source shall be tested weekly for sulfur content and higher heating value. If compliance with the fuel sulfur content limit and sulfur emission limits has been demonstrated for 8 consecutive weeks for a fuel source, then the fuel testing frequency shall be semi-annually. If a semi-annual fuel content source test fails to show compliance, weekly testing shall resume. [District Rules 1070, 2201, 2520, and 4320] Federally Enforceable Through Title V Permit
19. If fuel analysis is used to demonstrate compliance with conditions of this permit, the fuel higher heating value for each fuel shall be certified by a third party fuel supplier or determined by ASTM D 1826 or D 1945 in conjunction with ASTM D 3588 for gaseous fuels. [District Rules 1070, 2201, 2520, and 4320] Federally Enforceable Through Title V Permit
20. The permittee shall monitor and record the stack concentration of NOx, CO, and O₂ at least once every month (in which a source test is not performed) using a portable emission monitor that meets District specifications. Monitoring shall not be required if the unit is not in operation, i.e. the unit need not be started solely to perform monitoring. Monitoring shall be performed within 5 days of restarting the unit unless monitoring has been performed within the last month. [District Rules 2520, 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

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21. If either the NO_x or CO concentrations corrected to 3% O₂, as measured by the portable analyzer, exceed the allowable emissions concentration, the permittee shall return the emissions to within the acceptable range as soon as possible, but no longer than 1 hour of operation after detection. If the portable analyzer readings continue to exceed the allowable emissions concentration after 1 hour of operation after detection, the permittee shall notify the District within the following 1 hour and conduct a certified source test within 60 days of the first exceedance. In lieu of conducting a source test, the permittee may stipulate a violation has occurred, subject to enforcement action. The permittee must then correct the violation, show compliance has been re-established, and resume monitoring procedures. If the deviations are the result of a qualifying breakdown condition pursuant to Rule 1100, the permittee may fully comply with Rule 1100 in lieu of the performing the notification and testing required by this condition. [District Rules 2520, 4305, 4306, and 4320] Federally Enforceable Through Title V Permit
22. 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 2520, 4305, 4306, and 4320]
23. The permittee shall maintain records of: (1) the date and time of NO_x, CO, and O₂ measurements, (2) the O₂ concentration in percent and the measured NO_x and CO concentrations corrected to 3% O₂, (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 2520, 4305, 4306, and 4320]
24. Compliance demonstration (source testing) shall be by District witnessed, or authorized, sample collection by ARB certified laboratory. [District Rule 1081] Federally Enforceable Through Title V Permit
25. All required source testing shall conform to the compliance testing procedures described in District Rule 1081 (Amended December 16, 1993). [District Rule 1081, and County Rules 108 (Kings), 108.1 (Fresno, Merced, San Joaquin, Tulare, Kern, and Stanislaus), and 110 (Madera)] Federally Enforceable Through Title V Permit
26. Source testing to measure NO_x and CO emissions from this unit shall be conducted within 60 days of initial start-up. [District Rules 2201, 4305, 4306, and 4320] Federally Enforceable Through Title V Permit
27. Source testing to measure natural gas-combustion NO_x and CO emissions from this unit shall be conducted at least once every twelve (12) months. After demonstrating compliance on two (2) consecutive annual source tests, the unit shall be tested not less than once every thirty-six (36) months. If the result of the 36-month source test demonstrates that the unit does not meet the applicable emission limits, the source testing frequency shall revert to at least once every twelve (12) months. [District Rules 2201, 4305, 4306, and 4320]
28. 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
29. 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
30. The following test methods shall be used: NO_x (ppmv) - EPA Method 7E or ARB Method 100, NO_x (lb/MMBtu) - EPA Method 19, CO (ppmv) - EPA Method 10 or 10B or ARB Method 100, stack gas oxygen - EPA Method 3 or 3A or ARB Method 100, SO_x (lb/MMBtu) - ARB Method 8 or 100 or EPA Method 6, 6B, 6C, or 8, or fuel gas sulfur content analysis and EPA Method 19, fuel gas sulfur content - ASTM D1072, D3031, D3246, D4084, D4468, D6667 or double GC for H₂S and mercaptans performed in laboratory, fuel gas hhv - ASTM D1826 or D1945 in conjunction with ASTM D3588. [District Rules 1081, 4305, 4306, and 4320] Federally Enforceable Through Title V Permit
31. 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] Federally Enforceable Through Title V Permit

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32. 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. 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 District Rules 4306 and 4320. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit
33. 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
34. Copies of all gas purchase contracts, supplier certifications, and test results to determine compliance with the conditions of this permit shall be maintained. The operator shall record daily amount and type(s) of fuel(s) combusted, fuel sources, and all dates on which unit is fired on any noncertified fuel and record specific type of noncertified fuel used. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
35. Prior to operating under this Authority to Construct, permittee shall surrender emission reduction credits for the following quantities of emissions: NOx: 1586 lb/quarter, SOx: 531 lb/quarter, PM10: 1117 lb/quarter, and VOC:1024 lb/quarter. Offset shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 9/21/2006). [District Rule 2201] Federally Enforceable Through Title V Permit
36. ERC Certificate Numbers S-2041024/401 (NOx), S-411-5 (SOx), S-889-4 (PM10), and S-2677-1 (VOCs) (or certificates split from these certificates) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201] Federally Enforceable Through Title V Permit

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