



NOV 19 2009

William Fall  
Chevron USA, Inc. (CUSA)  
P. O. Box 1392  
Bakersfield, CA 93302

**Re: Notice of Preliminary Decision - Authority to Construct**  
**Project Number: C-1084278**

Dear Mr. Fall:

Enclosed for your review and comment is the District's analysis of Chevron USA, Inc. (CUSA)'s application for an Authority to Construct for modification of six 2.7 MW each cogeneration units for Rule 4703 compliance, at "6C & 25D" site in the Coalinga Oilfield, Heavy Oil Western Stationary Source in Fresno County.

The notice of preliminary decision for this project will be published approximately three days from the date of this letter. Please submit your written comments on this project 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 regarding this matter, please contact Ms. Gurpreet Brar of Permit Services at (559) 230-5926.

Sincerely,



David Warner  
Director of Permit Services

DW:gb

Enclosures

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

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

**Central Region (Main Office)**  
1990 E. Gettysburg Avenue  
Fresno, CA 93726-0244  
Tel: (559) 230-6000 FAX: (559) 230-6061

**Southern Region**  
34946 Flyover Court  
Bakersfield, CA 93308-9725  
Tel: 661-392-5500 FAX: 661-392-5585



NOV 19 2009

Mike Tollstrup, Chief  
Project Assessment Branch  
Stationary Source Division  
California Air Resources Board  
PO Box 2815  
Sacramento, CA 95812-2815

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**Project Number: C-1084278**

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Fresno Bee  
Fresno Bee

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

NOTICE IS HEREBY GIVEN that the San Joaquin Valley Unified Air Pollution Control District solicits public comment on the proposed issuance of Authority to Construct to Chevron USA, Inc. (CUSA) for modification of six 2.7 MW each cogeneration units for Rule 4703 compliance, at "6C & 25D" site in the Coalinga Oilfield, Heavy Oil Western Stationary Source in Fresno County.

The analysis of the regulatory basis for this proposed action, Project #C-1084278, is available for public inspection at [http://www.valleyair.org/notices/public\\_notices\\_idx.htm](http://www.valleyair.org/notices/public_notices_idx.htm) and the District office at the address below. Written comments on this project must be submitted within 30 days of the publication date of this notice to **DAVID WARNER, DIRECTOR OF PERMIT SERVICES, SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT, 1990 EAST GETTYSBURG AVENUE, FRESNO, CA 93726.**

**San Joaquin Valley Air Pollution Control District  
Authority to Construct  
Application Review**

Designate Gas Turbines as Non-Compliant DEU's and  
Retrofit with SCR Systems for Rule 4703 Compliance

Facility Name:	Chevron USA, Inc.	Date:	November 16, 2009
Mailing Address:	P. O. Box 1392 Bakersfield, CA 93302	Engineer:	Gurpreet Brar
Contact Person:	John Gruber	Lead Engineer:	Martin Keast
Telephone:	(661) 654-7144		
Fax:	(661) 654-7606		
E-Mail:	<a href="mailto:john.gruber@chevron.com">john.gruber@chevron.com</a>		
Application #s:	C-311-13-10, -13-11, -15-10, -15-11, -88-10, -88-11, -93-10, -93-11, -95-10, -95-11, -97-10 and -97-11		
Project #:	S-1084278		
Deemed Complete:	December 11, 2008		

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**I. PROPOSAL:**

Chevron USA Inc (Chevron) is requesting Authority to Construct (ATC) permits to replace all of the existing duct burners with 37 MMBtu/hr (nominal rating) duct burners and install selective catalytic reduction (SCR) with ammonia (NH<sub>3</sub>) injection system on six natural gas-fired turbine engines located at Coalinga Hills Oil Field. This installation was proposed to comply with the Tier 3 NOx emission standards of 9.0 ppmvd NOx @ 15% O<sub>2</sub> of Rule 4703 – Stationary Gas Turbines (9/20/07). To ensure compliance at all times with Rule 4703, Chevron has proposed to process the project in the following manner:

- Issue a set of ATCs (C-311-13-10, -15-10, -88-10, -93-10, -95-10 and -97-10) that designate each unit as non-compliant Dormant Emissions Unit (DEU) in accordance with District Policy SSP-1705, Additional Permit Conditions for Dormant Emissions Units (7/15/05).

Designating a unit, as DEU does not meet "Modification" defined in Section 3.25 of Rule 2201 and therefore, a unit cannot be subject to Rule 2201. The following conditions will be added to each ATC:

- No modification to this unit shall be performed without an Authority to Construct for such modification(s), except for changes specified in conditions below. [District Rule 2010]
- The fuel supply line shall be physically disconnected from this unit. [District Rule 4703]
- This equipment shall not be operated for any reason until an Authority to Construct permit is issued approving all necessary retrofits required to comply with the applicable requirements of District Rule 4703 and all other applicable District regulations. [District Rule 4703]

Issuing a set of ATCs with DEU status is a “Minor Modification” to the Title V permit, as this action does not relax any existing source testing, monitoring, recordkeeping and reporting requirements. Chevron has proposed to process these permits without Certificate of Conformity (COC), which is EPA’s 45-day review of the permit before issuing the final ATCs.

- Issue a set of ATCs (C-311-13-11, -15-11, -88-11, -93-11, -95-11 and -97-11) to install an SCR system for each unit and install a single shared continuous emissions monitoring system (CEMS) to monitor the exhaust concentrations of NO<sub>x</sub>, CO and O<sub>2</sub> from each gas turbine.

Currently, NO<sub>x</sub> and CO emissions compliance is demonstrated by comparing the established water-to-fuel ratio with actual water-to-fuel ratio for each unit.

Additional permit specific modifications are detailed in the following section:

C-311-13, -15, -88, -93, -95 through -97:

**Remove permit condition with daily heat input rate.**

- Natural gas consumption by the cogeneration system (turbine and duct burner) shall not exceed 1,812,000 scf/day. Natural gas consumption by the cogeneration system shall not exceed 654 million scf/year. [District Rule 2201]

This condition has been removed from each permits because the daily heat input rate is calculated from the hourly heat input rate of the gas turbine engine (40.9 MMBtu/hr) and the duct burner (36.4 MMBtu/hr), which is stated in each permit’s equipment description and 24 hr/day of operation. In this case, stating a daily heat input rate is irrelevant given that the permit had an hourly heat input rate for the gas turbine and duct burner. Therefore, this condition has been removed from each permit.

**Remove permit conditions that requires establishing, monitoring and recording of water-to-fuel ratio. These conditions are as follows:**

- The owner or operator shall operate and maintain in calibration a system which continuously measures and records: control system operating parameters, elapsed time of operation, the fuel consumption and the ratio of water to fuel being fired in the turbine. [40 CFR 60.334(a) and District Rule 4703, 6.2.2]
- The owner or operator shall develop and keep on-site a parameter monitoring plan which includes the procedures used to document the proper operation of the NOx emissions controls (water injection). This plan shall include the parameter(s) monitored, such as the water-to-fuel ratio, and the acceptable range(s) of the parameter(s) as well as the basis for designating the parameter(s) and acceptable range(s). Any supplemental data such as engineering analyses, design specifications, manufacturers recommendations and other relevant information shall be included in the monitoring plan. [40 CFR 60.334(g)]
- The water to fuel ratio shall not be less than 0.45 on a weight basis. [District Rule 4703, 6.2.5]
- The owner or operator shall submit a semi-annual excess NOx emissions and monitor downtime report to the APCO. Excess emissions shall be reported for all periods of operation, including startup, shutdown and malfunction. The report, post marked by the 30th day following the end of every other calendar quarter, shall include the following: Time intervals, average steam or water-to-fuel ratio, turbine load, nature and cause of excess emissions (if known), and corrective actions taken and preventative measures adopted. [40 CFR 60.334(j), (j)(5) and District Rule 2520, 9.3.2)]
- Excess emissions shall be defined as any operating hour for which the steam or water to fuel ratio, as measured by the continuous monitoring system, falls below the established steam or water to fuel ratio. Any operating hour in which no steam or water is injected into the turbine shall also be considered as excess emissions. [40 CR 60.334(j)(1)(i)(A)]
- Monitor downtime shall be any operating hour in which the water or steam is injected into the turbine, but essential parametric data needed to determine the steam or water to fuel ratio are unavailable or invalid. [40 CFR 60.334(j)(1)(i)(B)]
- Fuel consumption and the water-to-fuel ratio shall be monitored continuously with a system that is accurate to within 5 percent. [District Rule 2201]

These conditions have been removed because Chevron is proposing to install CEMS to measure NO<sub>x</sub>, CO and O<sub>2</sub> concentrations. Water-to-fuel ratio is a parametric approach to verify on-going compliance with NO<sub>x</sub> and CO emissions. This parametric approach is not necessary when they will have a CEMS analyzing NO<sub>x</sub> and CO in the exhaust gas.

**Chevron has proposed to incorporate the following provisions in the permits being processed under this project:**

1. Shakedown period. During the shakedown period the emission limits are set equal to pre-project emissions limits. This period is required to be completed within 60-days of initial startup of a turbine, and it must be concluded prior to the applicable Rule 4703 compliance deadline for each unit. Records of initial startup of each unit, fuel combusted (scf/day) and water-to-fuel ratio or results of NO<sub>x</sub> and CO over 3-hour rolling average period from CEMS (if operational) is required during this period.
2. "Black Start" period provision in each permit. A "Black Start" event is a unit/plant start-up during a time when the cogen plant is electrically de-energized and separated from Pacific Gas & Electric Company grid. In other words, the power cannot be provided to the cogeneration plant for a normal startup and therefore, Chevron has to rely on the emergency generators to begin the cogeneration plant startup. "Black Start" events are relatively rare that may happen once or twice a year. Chevron wants to define "Black Start" event as the startup of a cogeneration unit while the cogen plant is electrically separated from the utility and shall not exceed a time period of 4.5 hours per event. The following condition will be included in each permit:
  - A black start event is defined as the startup of a unit while the cogen plant is electrically separated from the utility grid. A black start event shall not exceed 4.0 hours. [District Rules 2201 and 4703]

Chevron Oilfield received their Title V Permit on September 30, 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). But the facility has not requested that this project be processed in that manner; therefore, Chevron Oilfield will be required to submit a Title V minor modification application prior to operating under the revised provisions of the ATCs 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 (02/17/05)
- Rule 4102 Nuisance (12/17/92)
- Rule 4201 Particulate Matter Concentration (12/17/92)
- Rule 4301 Fuel Burning Equipment (12/17/92)
- Rule 4703 Stationary Gas Turbines (9/20/07)
- Rule 4801 Sulfur Compounds (12/17/92)
- California Health & Safety Code 41700 (Public Nuisance)
- California Health & Safety Code 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:**

These cogeneration turbines are located at Chevron's Coalinga Oilfield in Fresno County. The District has verified that the equipment is not located within 1,000 feet of the outer boundary of a K-12 school. Therefore, the public notification requirement of California Health and Safety Code 42301.6 is not applicable to this project.

The following table summarizes location in Coalinga Oilfield for each unit.

Permit Number	Permitted Location		
	Section	Township	Range
C-311-13	6C	20S	15E
C-311-15	6C	20S	15E
C-311-88	25D	20S	14E
C-311-93	25D	20S	14E
C-311-95	25D	20S	14E
C-311-97	25D	20S	14E

Physical location of each unit is shown on the map included in Appendix IV of this document.

**IV. PROCESS DESCRIPTION:**

Chevron uses the cogeneration units to produce electric power to operate the equipment associated with oil and natural gas production. Steam from these turbines is primarily sent to the distribution system to assist the thermally enhanced oil recovery (TEOR) operations.



**V. EQUIPMENT LISTING:**

Pre-Project Equipment Description:

- C-311-13-9: 86.4 MMBTU/HR COGENERATION SYSTEM WITH A NOMINAL RATED 40.9 MMBTU/HR SOLAR MODEL CENTAUR 40-4500 TURBINE ENGINE #TG-105, DRIVING A 2.7 MW ELECTRICAL GENERATOR AND INCLUDING A STRUTHERS WASTE HEAT RECOVERY STEAM GENERATOR #SG-205, WITH A 36.4 MMBTU/HR COEN DUCT BURNER
- C-311-15-9: 86.4 MMBTU/HR COGENERATION SYSTEM WITH A NOMINAL RATED 40.9 MMBTU/HR SOLAR MODEL CENTAUR 40-4500 TURBINE ENGINE #TG-106, DRIVING A 2.7 MW ELECTRICAL GENERATOR AND INCLUDING A STRUTHERS WASTE HEAT RECOVERY STEAM GENERATOR #SG-206 WITH A 36.4 MMBTU/HR COEN DUCT BURNER
- C-311-88-9: 86.4 MMBTU/HR COGENERATION SYSTEM WITH A NOMINAL RATED 40.9 MMBTU/HR SOLAR MODEL CENTAUR 40-4500 TURBINE ENGINE #TG-104, DRIVING A 2.7 MW ELECTRICAL GENERATOR AND INCLUDING A STRUTHERS WASTE HEAT RECOVERY STEAM GENERATOR #SG-204, WITH A 36.4 MMBTU/HR COEN DUCT BURNER
- C-311-93-9: 86.4 MMBTU/HR COGENERATION SYSTEM WITH A NOMINAL RATED 40.9 MMBTU/HR SOLAR MODEL CENTAUR 40-4500 TURBINE ENGINE #TG-101, DRIVING A 2.7 MW ELECTRICAL GENERATOR AND INCLUDING A STRUTHERS WASTE HEAT RECOVERY STEAM GENERATOR #SG-201, WITH A 36.4 MMBTU/HR COEN DUCT BURNER
- C-311-95-9: 86.4 MMBTU/HR COGENERATION SYSTEM WITH A NOMINAL RATED 40.9 MMBTU/HR SOLAR MODEL CENTAUR 40-4500 TURBINE ENGINE #TG-102, DRIVING A 2.7 MW ELECTRICAL GENERATOR AND INCLUDING A STRUTHERS WASTE HEAT RECOVERY STEAM GENERATOR #SG-202, WITH A 36.4 MMBTU/HR COEN DUCT BURNER
- C-311-97-9: 86.4 MMBTU/HR COGENERATION SYSTEM WITH A NOMINAL RATED 40.9 MMBTU/HR SOLAR MODEL CENTAUR 40-4500 TURBINE ENGINE #TG-103, DRIVING A 2.7 MW ELECTRICAL GENERATOR AND INCLUDING A STRUTHERS WASTE HEAT RECOVERY STEAM GENERATOR #SG-203, WITH A 36.4 MMBTU/HR COEN DUCT BURNER

ATC Equipment Description:

Dormant Emissions Units (DEU):

- C-311-13-10: MODIFICATION OF 86.4 MMBTU/HR COGENERATION SYSTEM WITH A NOMINAL RATED 40.9 MMBTU/HR SOLAR MODEL CENTAUR 40-4500 TURBINE ENGINE #TG-105, DRIVING A 2.7 MW ELECTRICAL GENERATOR AND INCLUDING A STRUTHERS WASTE HEAT RECOVERY STEAM GENERATOR #SG-205, WITH A 36.4 MMBTU/HR COEN DUCT BURNER: DESIGNATE AS A NON-COMPLIANT DORMANT EMISSIONS UNIT FOR TIER-3 NOX STANDARDS OF RULE 4703
- C-311-15-10: MODIFICATION OF 86.4 MMBTU/HR COGENERATION SYSTEM WITH A NOMINAL RATED 40.9 MMBTU/HR SOLAR MODEL CENTAUR 40-4500 TURBINE ENGINE #TG-106, DRIVING A 2.7 MW ELECTRICAL GENERATOR AND INCLUDING A STRUTHERS WASTE HEAT RECOVERY STEAM GENERATOR #SG-206 WITH A 36.4 MMBTU/HR COEN DUCT BURNER: DESIGNATE AS A NON-COMPLIANT DORMANT EMISSIONS UNIT FOR TIER-3 NOX STANDARDS OF RULE 4703
- C-311-88-10: MODIFICATION OF 86.4 MMBTU/HR COGENERATION SYSTEM WITH A NOMINAL RATED 40.9 MMBTU/HR SOLAR MODEL CENTAUR 40-4500 TURBINE ENGINE #TG-104, DRIVING A 2.7 MW ELECTRICAL GENERATOR AND INCLUDING A STRUTHERS WASTE HEAT RECOVERY STEAM GENERATOR #SG-204, WITH A 36.4 MMBTU/HR COEN DUCT BURNER: DESIGNATE AS A NON-COMPLIANT DORMANT EMISSIONS UNIT FOR TIER-3 NOX STANDARDS OF RULE 4703
- C-311-93-10: MODIFICATION OF 86.4 MMBTU/HR COGENERATION SYSTEM WITH A NOMINAL RATED 40.9 MMBTU/HR SOLAR MODEL CENTAUR 40-4500 TURBINE ENGINE #TG-101, DRIVING A 2.7 MW ELECTRICAL GENERATOR AND INCLUDING A STRUTHERS WASTE HEAT RECOVERY STEAM GENERATOR #SG-201, WITH A 36.4 MMBTU/HR COEN DUCT BURNER: DESIGNATE AS A NON-COMPLIANT DORMANT EMISSIONS UNIT FOR TIER-3 NOX STANDARDS OF RULE 4703

- C-311-95-10: MODIFICATION OF 86.4 MMBTU/HR COGENERATION SYSTEM WITH A NOMINAL RATED 40.9 MMBTU/HR SOLAR MODEL CENTAUR 40-4500 TURBINE ENGINE #TG-102, DRIVING A 2.7 MW ELECTRICAL GENERATOR AND INCLUDING A STRUTHERS WASTE HEAT RECOVERY STEAM GENERATOR #SG-202, WITH A 36.4 MMBTU/HR COEN DUCT BURNER: DESIGNATE AS A NON-COMPLIANT DORMANT EMISSIONS UNIT FOR TIER-3 NOX STANDARDS OF RULE 4703
- C-311-97-10: MODIFICATION OF 86.4 MMBTU/HR COGENERATION SYSTEM WITH A NOMINAL RATED 40.9 MMBTU/HR SOLAR MODEL CENTAUR 40-4500 TURBINE ENGINE #TG-103, DRIVING A 2.7 MW ELECTRICAL GENERATOR AND INCLUDING A STRUTHERS WASTE HEAT RECOVERY STEAM GENERATOR #SG-203, WITH A 36.4 MMBTU/HR COEN DUCT BURNER: DESIGNATE AS A NON-COMPLIANT DORMANT EMISSIONS UNIT FOR TIER-3 NOX STANDARDS OF RULE 4703

Retrofit with SCR System:

- C-311-13-11: MODIFICATION OF 86.4 MMBTU/HR COGENERATION SYSTEM WITH A NOMINAL RATED 40.9 MMBTU/HR SOLAR MODEL CENTAUR 40-4500 TURBINE ENGINE #TG-105, DRIVING A 2.7 MW ELECTRICAL GENERATOR AND INCLUDING A STRUTHERS WASTE HEAT RECOVERY STEAM GENERATOR #SG-205, WITH A 36.4 MMBTU/HR COEN DUCT BURNER: REMOVE DAILY HEAT INPUT RATE (MMBTU/DAY); INSTALL A SELECTIVE CATALYTIC REDUCTION (SCR) SYSTEM WITH AMMONIA INJECTION TO COMPLY WITH RULE 4703 TIER 3 EMISSION LIMIT OF 9 PPMVD NOX @ 15% O2; REPLACE STRUTHERS-WELLS HEAT RECOVERY STEAM GENERATOR (HRSG) WITH ANOTHER HRSG (IF NECESSARY); REPLACE THE EXISTING 36.4 MMBTU/HR DUCT BURNER WITH A NEW 36.4 MMBTU/HR (NOMINAL RATING) DUCT BURNER (IF NECESSARY); AND INSTALL A CONTINUOUS EMISSIONS MONITORING SYSTEM (CEMS) TO MEASURE NOX, CO AND O2 CONCENTRATIONS

C-311-15-11: MODIFICATION OF 86.4 MMBTU/HR COGENERATION SYSTEM WITH A NOMINAL RATED 40.9 MMBTU/HR SOLAR MODEL CENTAUR 40-4500 TURBINE ENGINE #TG-106, DRIVING A 2.7 MW ELECTRICAL GENERATOR AND INCLUDING A STRUTHERS WASTE HEAT RECOVERY STEAM GENERATOR #SG-206 WITH A 36.4 MMBTU/HR COEN DUCT BURNER: REMOVE DAILY HEAT INPUT RATE (MMBTU/DAY); INSTALL A SELECTIVE CATALYTIC REDUCTION (SCR) SYSTEM WITH AMMONIA INJECTION TO COMPLY WITH RULE 4703 TIER 3 EMISSION LIMIT OF 9 PPMVD NOX @ 15% O2; REPLACE STRUTHERS-WELLS HEAT RECOVERY STEAM GENERATOR (HRSG) WITH ANOTHER HRSG (IF NECESSARY); REPLACE THE EXISTING 36.4 MMBTU/HR DUCT BURNER WITH A NEW 36.4 MMBTU/HR (NOMINAL RATING) DUCT BURNER (IF NECESSARY); AND INSTALL A CONTINUOUS EMISSIONS MONITORING SYSTEM (CEMS) TO MEASURE NOX, CO AND O2 CONCENTRATIONS

C-311-88-11: MODIFICATION OF 86.4 MMBTU/HR COGENERATION SYSTEM WITH A NOMINAL RATED 40.9 MMBTU/HR SOLAR MODEL CENTAUR 40-4500 TURBINE ENGINE #TG-104, DRIVING A 2.7 MW ELECTRICAL GENERATOR AND INCLUDING A STRUTHERS WASTE HEAT RECOVERY STEAM GENERATOR #SG-204, WITH A 36.4 MMBTU/HR COEN DUCT BURNER: REMOVE DAILY HEAT INPUT RATE (MMBTU/DAY); INSTALL A SELECTIVE CATALYTIC REDUCTION (SCR) SYSTEM WITH AMMONIA INJECTION TO COMPLY WITH RULE 4703 TIER 3 EMISSION LIMIT OF 9 PPMVD NOX @ 15% O2; REPLACE STRUTHERS-WELLS HEAT RECOVERY STEAM GENERATOR (HRSG) WITH ANOTHER HRSG (IF NECESSARY); REPLACE THE EXISTING 36.4 MMBTU/HR DUCT BURNER WITH A NEW 36.4 MMBTU/HR (NOMINAL RATING) DUCT BURNER (IF NECESSARY); AND INSTALL A CONTINUOUS EMISSIONS MONITORING SYSTEM (CEMS) TO MEASURE NOX, CO AND O2 CONCENTRATIONS

C-311-93-11: MODIFICATION OF 86.4 MMBTU/HR COGENERATION SYSTEM WITH A NOMINAL RATED 40.9 MMBTU/HR SOLAR MODEL CENTAUR 40-4500 TURBINE ENGINE #TG-101, DRIVING A 2.7 MW ELECTRICAL GENERATOR AND INCLUDING A STRUTHERS WASTE HEAT RECOVERY STEAM GENERATOR #SG-201, WITH A 36.4 MMBTU/HR COEN DUCT BURNER: REMOVE DAILY HEAT INPUT RATE (MMBTU/DAY); INSTALL A SELECTIVE CATALYTIC REDUCTION (SCR) SYSTEM WITH AMMONIA INJECTION TO COMPLY WITH RULE 4703 TIER 3 EMISSION LIMIT OF 9 PPMVD NOX @ 15% O2; REPLACE STRUTHERS-WELLS HEAT RECOVERY STEAM GENERATOR (HRSG) WITH ANOTHER HRSG (IF NECESSARY); REPLACE THE EXISTING 36.4 MMBTU/HR DUCT BURNER WITH A NEW 36.4 MMBTU/HR (NOMINAL RATING) DUCT BURNER (IF NECESSARY); AND INSTALL A CONTINUOUS EMISSIONS MONITORING SYSTEM (CEMS) TO MEASURE NOX, CO AND O2 CONCENTRATIONS

C-311-95-11: MODIFICATION OF 86.4 MMBTU/HR COGENERATION SYSTEM WITH A NOMINAL RATED 40.9 MMBTU/HR SOLAR MODEL CENTAUR 40-4500 TURBINE ENGINE #TG-102, DRIVING A 2.7 MW ELECTRICAL GENERATOR AND INCLUDING A STRUTHERS WASTE HEAT RECOVERY STEAM GENERATOR #SG-202, WITH A 36.4 MMBTU/HR COEN DUCT BURNER: REMOVE DAILY HEAT INPUT RATE (MMBTU/DAY); INSTALL A SELECTIVE CATALYTIC REDUCTION (SCR) SYSTEM WITH AMMONIA INJECTION TO COMPLY WITH RULE 4703 TIER 3 EMISSION LIMIT OF 9 PPMVD NOX @ 15% O2; REPLACE STRUTHERS-WELLS HEAT RECOVERY STEAM GENERATOR (HRSG) WITH ANOTHER HRSG (IF NECESSARY); REPLACE THE EXISTING 36.4 MMBTU/HR DUCT BURNER WITH A NEW 36.4 MMBTU/HR (NOMINAL RATING) DUCT BURNER (IF NECESSARY); AND INSTALL A CONTINUOUS EMISSIONS MONITORING SYSTEM (CEMS) TO MEASURE NOX, CO AND O2 CONCENTRATIONS

C-311-97-11: MODIFICATION OF 86.4 MMBTU/HR COGENERATION SYSTEM WITH A NOMINAL RATED 40.9 MMBTU/HR SOLAR MODEL CENTAUR 40-4500 TURBINE ENGINE #TG-103, DRIVING A 2.7 MW ELECTRICAL GENERATOR AND INCLUDING A STRUTHERS WASTE HEAT RECOVERY STEAM GENERATOR #SG-203, WITH A 36.4 MMBTU/HR COEN DUCT BURNER: REMOVE DAILY HEAT INPUT RATE (MMBTU/DAY); INSTALL A SELECTIVE CATALYTIC REDUCTION (SCR) SYSTEM WITH AMMONIA INJECTION TO COMPLY WITH RULE 4703 TIER 3 EMISSION LIMIT OF 9 PPMVD NOX @ 15% O2; REPLACE STRUTHERS-WELLS HEAT RECOVERY STEAM GENERATOR (HRSG) WITH ANOTHER HRSG (IF NECESSARY); REPLACE THE EXISTING 36.4 MMBTU/HR DUCT BURNER WITH A NEW 36.4 MMBTU/HR (NOMINAL RATING) DUCT BURNER (IF NECESSARY); AND INSTALL A CONTINUOUS EMISSIONS MONITORING SYSTEM (CEMS) TO MEASURE NOX, CO AND O2 CONCENTRATIONS

Post Project Equipment Description:

After Implementation of DEU ATC's:

C-311-13-XX: NON-COMPLIANT DORMANT EMISSIONS UNIT CONSISTING OF 86.4 MMBTU/HR COGENERATION SYSTEM WITH A NOMINAL RATED 40.9 MMBTU/HR SOLAR MODEL CENTAUR 40-4500 TURBINE ENGINE #TG-105, DRIVING A 2.7 MW ELECTRICAL GENERATOR AND INCLUDING A STRUTHERS WASTE HEAT RECOVERY STEAM GENERATOR #SG-205, WITH A 36.4 MMBTU/HR COEN DUCT BURNER

C-311-15-XX: NON-COMPLIANT DORMANT EMISSIONS UNIT CONSISTING OF 86.4 MMBTU/HR COGENERATION SYSTEM WITH A NOMINAL RATED 40.9 MMBTU/HR SOLAR MODEL CENTAUR 40-4500 TURBINE ENGINE #TG-106, DRIVING A 2.7 MW ELECTRICAL GENERATOR AND INCLUDING A STRUTHERS WASTE HEAT RECOVERY STEAM GENERATOR #SG-206 WITH A 36.4 MMBTU/HR COEN DUCT BURNER

C-311-88-XX: NON-COMPLIANT DORMANT EMISSIONS UNIT CONSISTING OF 86.4 MMBTU/HR COGENERATION SYSTEM WITH A NOMINAL RATED 40.9 MMBTU/HR SOLAR MODEL CENTAUR 40-4500 TURBINE ENGINE #TG-104, DRIVING A 2.7 MW ELECTRICAL GENERATOR AND INCLUDING A STRUTHERS WASTE HEAT RECOVERY STEAM GENERATOR #SG-204, WITH A 36.4 MMBTU/HR COEN DUCT BURNER

- C-311-93-XX: NON-COMPLIANT DORMANT EMISSIONS UNIT CONSISTING OF 86.4 MMBTU/HR COGENERATION SYSTEM WITH A NOMINAL RATED 40.9 MMBTU/HR SOLAR MODEL CENTAUR 40-4500 TURBINE ENGINE #TG-101, DRIVING A 2.7 MW ELECTRICAL GENERATOR AND INCLUDING A STRUTHERS WASTE HEAT RECOVERY STEAM GENERATOR #SG-201, WITH A 36.4 MMBTU/HR COEN DUCT BURNER
- C-311-95-XX: NON-COMPLIANT DORMANT EMISSIONS UNIT CONSISTING OF 86.4 MMBTU/HR COGENERATION SYSTEM WITH A NOMINAL RATED 40.9 MMBTU/HR SOLAR MODEL CENTAUR 40-4500 TURBINE ENGINE #TG-102, DRIVING A 2.7 MW ELECTRICAL GENERATOR AND INCLUDING A STRUTHERS WASTE HEAT RECOVERY STEAM GENERATOR #SG-202, WITH A 36.4 MMBTU/HR COEN DUCT BURNER
- C-311-97-XX: NON-COMPLIANT DORMANT EMISSIONS UNIT CONSISTING OF 86.4 MMBTU/HR COGENERATION SYSTEM WITH A NOMINAL RATED 40.9 MMBTU/HR SOLAR MODEL CENTAUR 40-4500 TURBINE ENGINE #TG-103, DRIVING A 2.7 MW ELECTRICAL GENERATOR AND INCLUDING A STRUTHERS WASTE HEAT RECOVERY STEAM GENERATOR #SG-203, WITH A 36.4 MMBTU/HR COEN DUCT BURNER

After Implementation of SCR Retrofit ATC's:

- C-311-13-XX: 86.4 MMBTU/HR COGENERATION SYSTEM WITH A NOMINAL RATED 40.9 MMBTU/HR SOLAR MODEL CENTAUR 40-4500 TURBINE ENGINE #TG-105, DRIVING A 2.7 MW ELECTRICAL GENERATOR AND INCLUDING A WASTE HEAT RECOVERY STEAM GENERATOR #SG-205, WITH A 36.4 MMBTU/HR DUCT BURNER SERVED BY A SELECTIVE CATALYTIC REDUCTION (SCR) SYSTEM WITH AMMONIA INJECTION AND A CONTINUOUS EMISSIONS MONITORING SYSTEM (CEMS)
- C-311-15-XX: 86.4 MMBTU/HR COGENERATION SYSTEM WITH A NOMINAL RATED 40.9 MMBTU/HR SOLAR MODEL CENTAUR 40-4500 TURBINE ENGINE #TG-106, DRIVING A 2.7 MW ELECTRICAL GENERATOR AND INCLUDING A WASTE HEAT RECOVERY STEAM GENERATOR #SG-206 WITH A 36.4 MMBTU/HR DUCT BURNER SERVED BY A SELECTIVE CATALYTIC REDUCTION (SCR) SYSTEM WITH AMMONIA INJECTION AND A CONTINUOUS EMISSIONS MONITORING SYSTEM (CEMS)

- C-311-88-XX: 86.4 MMBTU/HR COGENERATION SYSTEM WITH A NOMINAL RATED 40.9 MMBTU/HR SOLAR MODEL CENTAUR 40-4500 TURBINE ENGINE #TG-104, DRIVING A 2.7 MW ELECTRICAL GENERATOR AND INCLUDING A WASTE HEAT RECOVERY STEAM GENERATOR #SG-204, WITH A 36.4 MMBTU/HR DUCT BURNER SERVED BY A SELECTIVE CATALYTIC REDUCTION (SCR) SYSTEM WITH AMMONIA INJECTION AND A CONTINUOUS EMISSIONS MONITORING SYSTEM (CEMS)
- C-311-93-XX: 86.4 MMBTU/HR COGENERATION SYSTEM WITH A NOMINAL RATED 40.9 MMBTU/HR SOLAR MODEL CENTAUR 40-4500 TURBINE ENGINE #TG-101, DRIVING A 2.7 MW ELECTRICAL GENERATOR AND INCLUDING A WASTE HEAT RECOVERY STEAM GENERATOR #SG-201, WITH A 36.4 MMBTU/HR DUCT BURNER SERVED BY A SELECTIVE CATALYTIC REDUCTION (SCR) SYSTEM WITH AMMONIA INJECTION AND A CONTINUOUS EMISSIONS MONITORING SYSTEM (CEMS)
- C-311-95-XX: 86.4 MMBTU/HR COGENERATION SYSTEM WITH A NOMINAL RATED 40.9 MMBTU/HR SOLAR MODEL CENTAUR 40-4500 TURBINE ENGINE #TG-102, DRIVING A 2.7 MW ELECTRICAL GENERATOR AND INCLUDING A WASTE HEAT RECOVERY STEAM GENERATOR #SG-202, WITH A 36.4 MMBTU/HR DUCT BURNER SERVED BY A SELECTIVE CATALYTIC REDUCTION (SCR) SYSTEM WITH AMMONIA INJECTION AND A CONTINUOUS EMISSIONS MONITORING SYSTEM (CEMS)
- C-311-97-XX: 86.4 MMBTU/HR COGENERATION SYSTEM WITH A NOMINAL RATED 40.9 MMBTU/HR SOLAR MODEL CENTAUR 40-4500 TURBINE ENGINE #TG-103, DRIVING A 2.7 MW ELECTRICAL GENERATOR AND INCLUDING A WASTE HEAT RECOVERY STEAM GENERATOR #SG-203, WITH A 36.4 MMBTU/HR DUCT BURNER SERVED BY A SELECTIVE CATALYTIC REDUCTION (SCR) SYSTEM WITH AMMONIA INJECTION AND A CONTINUOUS EMISSIONS MONITORING SYSTEM (CEMS)



**VI. EMISSION CONTROL TECHNOLOGY EVALUATION:**

An SCR system operates as an external control device where flue gases and a reagent, in this case ammonia, are passed through an appropriate catalyst. Ammonia, will be injected upstream of the catalyst where it reacts and reduces NO<sub>x</sub>, over the catalyst bed, to form elemental nitrogen and other by-products. The use of a catalyst typically reduces the NO<sub>x</sub> emissions by up to 90%.

**VII. CALCULATIONS:**

**A. Assumptions:**

- All calculations and physical constants used are corrected to Standard Conditions as defined in District Rule 1020, Section 3.47 (60 °F and 1 atm).
- Oxygen based F-factor for natural gas fuel is 8,578 dscf/MMBtu.
- Other assumptions will be stated, as they are made.
- Pre-project emission are calculated by using natural gas consumption by the cogeneration system (turbine and duct burner) of 1,812,000 scf/day and 654 million scf/year
- Post-project emission are based on operation of 24 hr/day and 365 days/year.

**B. Emission Factors (EFs):**

**1. Pre-Project Emission Factors (EF1):**

**C-311-13-9, -15-9, -88-9, -93-9, -95-9 and -97-9:**

Start-up Emission Factor:

Solar Turbines (a Caterpillar Company) has supplied information on potential emissions of NO<sub>x</sub>, CO and VOC during start-up period of 60-minutes per event. Since all the proposed cogeneration turbines are identical, only one set of emissions data is listed in the following table.

Turbine Model	EF1 (lb/event)		
	NO <sub>x</sub>	CO	VOC
Solar Centaur 40	4.1	219.4	13.0

Shutdown Emission Factor:

Solar Turbines (a Caterpillar Company) has supplied information on potential emissions of NO<sub>x</sub>, CO and VOC during shutdown period of 30-minutes per event. Since all the proposed cogeneration turbines are identical, only one set of emissions data is listed in the following table.

Turbine Model	EF1 (lb/event)		
	NOx	CO	VOC
Solar Centaur 40	1.8	121.1	7.1

Steady State Emission Factor:

Since all the proposed units have identical steady state emission factors for each pollutant, only one set of emission data is listed in the following table.

Turbine Model	Duct Burner	NOx	CO	VOC
		ppmvd @ 15 % O <sub>2</sub>		lb/MMBtu
Solar Centaur 40	On	35.0	53	0.026
	Off	35.0	63	0.026

SOx and PM<sub>10</sub> during startup, shutdown and steady state periods are given in the following table.

Turbine Model	Duct Burner	SOx	PM <sub>10</sub>
		lb/MMBtu	lb/MMBtu
Solar Centaur 40	On/Off	0.002	0.026

**2. Post-Project Emission Factors (EF2):**

**C-311-13-10, -15-10, -88-10, -93-10, -95-10 and -97-10:**

Start-up Emission Factor:

The post-project start-up emission factors would remain same as pre-project start-up emission factors.

Shutdown Emission Factor:

The post-project shutdown emission factors would remain same as pre-project shutdown emission factors.

Steady State Emission Factor:

Rule 4703 requires that each gas turbine under this project shall demonstrate compliance with 9.0 ppmvd NOx @ 15% O<sub>2</sub>. Other emission factors will remain same as pre-project emission factors.

Turbine Model	Duct Burner	NOx	CO	VOC
		ppmvd @ 15 % O <sub>2</sub>		lb/MMBtu
Solar Centaur 40	On	9.0	53	0.026
	Off	9.0	63	0.026

NH<sub>3</sub>, SO<sub>x</sub>, PM<sub>10</sub> emissions during startup, shutdown and steady state periods are given in the following table. NH<sub>3</sub> emissions are proposed by the applicant, whereas SO<sub>x</sub> and PM<sub>10</sub> emission factors will remain same as pre-project emission factors.

Turbine Model	Duct Burner	NH <sub>3</sub>	SO <sub>x</sub>	PM <sub>10</sub>
		ppmvd @ 15% O <sub>2</sub>	lb/MMBtu	lb/MMBtu
Solar Centaur 40	On/Off	21.0	0.002	0.026

**C. Calculations:**

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

**C-311-13-9, -15-9, -88-9, -93-9, -95-9 and -97-9:**

Start-up Emissions:

The applicant states that under worst-case operating scenario, three 60-minute startups may occur in a given day. The potential emissions from these startups are determined using the following equation and are summarized in the following table for each gas turbine engine in this project.

$$PE1 = \left( EF1 \frac{\text{lb}}{\text{event}} \right) \left( 3 \frac{\text{startups}}{\text{day}} \right)$$

Turbine Model	PE1 (lb/day)		
	NOx	CO	VOC
Solar Centaur 40	12.3	658.2	39.0

The applicant states that under worst-case operating scenario, fifteen 60-minute startups may occur in a given year. The potential emissions from these startups are determined using the following equation for each gas turbine engine in this project.

$$PE1 = \left( EF1 \frac{\text{lb}}{\text{event}} \right) \left( 15 \frac{\text{startups}}{\text{yr}} \right)$$

Turbine Model	PE1 (lb/yr)		
	NOx	CO	VOC
Solar Centaur 40	62	3,291	195

**Shutdown Emissions:**

The applicant states that under worst-case operating scenario, three 30-minute shutdowns may occur in a given day. The potential emissions from these shutdowns are determined using the following equation and are summarized in the following table for each gas turbine engine in this project.

$$PE1 = \left( EF1 \frac{\text{lb}}{\text{event}} \right) \left( 3 \frac{\text{shutdowns}}{\text{day}} \right)$$

Turbine Model	PE1 (lb/day)		
	NOx	CO	VOC
Solar Centaur 40	5.4	363.3	21.3

The applicant states that under worst-case operating scenario, fifteen 30-minute shutdowns may occur in a given year. The potential emissions from these shutdowns are determined using following equation for each gas turbine engine in this project.

$$PE1 = \left( EF1 \frac{\text{lb}}{\text{event}} \right) \left( 15 \frac{\text{shutdown}}{\text{yr}} \right)$$

Turbine Model	PE1 (lb/yr)		
	NOx	CO	VOC
Solar Centaur 40	27	1,817	107

**Steady State Emissions:**

*Scenario #1: Daily PE1: Turbines operate in a steady-state mode all day without any startup and shutdown events.*

*Annual PE1: Turbines operate in a steady-state mode for 8,737.5 hr/yr in a steady-state mode with an assumption that startups (15 60-minute startups – 15 hours) and shutdowns (15 30-minute shutdowns – 7.5 hours) occur in a given year*

**Daily PE1:**

NOx and CO:

$$PE1 = \frac{(EF1 \text{ ppmvd}) \left( F\text{-Factor} \frac{\text{dscf}}{\text{MMBtu}} \right) \left( MW \frac{\text{lb}}{\text{lb-mol}} \right) \left( HI \frac{\text{MMBtu}}{\text{day}} \right)}{\left( MSV \frac{\text{dscf}}{\text{lb-mol}} \right) (10^6) \left( \frac{20.95 - 15}{20.95} \right)}$$

Where:

- EF1 = pre-project emission factor in ppmvd @ 15% O<sub>2</sub>:
- F-Factor = 8,578 ft<sup>3</sup>-exhaust/MMBtu @ 60 °F
- Molecular Weight = 46 lb-NO<sub>x</sub>/lb-mol; 28 lb-CO/lb-mol
- MSV = 379.5 ft<sup>3</sup>/lb-mol (Ideal Gas @ 60 °F)
- HI = Heat Input rate, MMBtu/hr

VOC:

$$PE1 = \left( EF1 \frac{\text{lb}}{\text{MMBtu}} \right) \left( HI \frac{\text{MMBtu}}{\text{hr}} \right) \left( 24 \frac{\text{hr}}{\text{day}} \right)$$

Turbine Model	Duct Burner	Heat Input (MMBtu/hr)	PE1 (lb/day)		
			NOx	CO	VOC
Solar Centaur 40	On	77.3	237.7	219.1	48.2
	Off	40.9	125.8	137.8	25.5

SOx and PM<sub>10</sub>:

$$PE1 = \left( EF1 \frac{\text{lb}}{\text{MMBtu}} \right) \left( HI \frac{\text{MMBtu}}{\text{hr}} \right) \left( 24 \frac{\text{hr}}{\text{day}} \right)$$

Turbine Model	Duct Burner	Heat Input (MMBtu/hr)	PE1 (lb/day)	
			SOx	PM <sub>10</sub>
Solar Centaur 40	On	77.3	3.7	48.2
	Off	40.9	2.0	25.5

The daily emissions under operating scenario #1 (24 hours steady state) are summarized in the following table:

Permit #	PE1 (lb/day)				
	NOx	SOx	PM <sub>10</sub>	CO	VOC
C-311-13-9	237.7	3.7	48.2	219.1	48.2
C-311-15-9	237.7	3.7	48.2	219.1	48.2
C-311-88-9	237.7	3.7	48.2	219.1	48.2
C-311-93-9	237.7	3.7	48.2	219.1	48.2
C-311-95-9	237.7	3.7	48.2	219.1	48.2
C-311-97-9	237.7	3.7	48.2	219.1	48.2

**Annual PE1:**

It is assumed that these turbines do not operate continuously in steady-state mode for 8,760 hr/yr. Thus, the annual emissions during steady-state are quantified using the following equations. These equations deduct the potential emissions during fifteen 60-minute startups per year (15 hr/yr) and fifteen 30-minute shutdowns per year (7.5 hr/yr) to determine the potential emissions during the steady state period.

NOx and CO:

$$PE1 = \frac{(EF1 \text{ ppmvd}) \left( F \frac{\text{dscf}}{\text{MMBtu}} \right) \left( MW \frac{\text{lb}}{\text{lb-mol}} \right) \left( HI \frac{\text{MMBtu}}{\text{hr}} \right) \left( 8,760 \frac{\text{hr}}{\text{yr}} - 15 \frac{\text{hr}}{\text{yr}} - 7.5 \frac{\text{hr}}{\text{yr}} \right)}{\left( MSV \frac{\text{dscf}}{\text{lb-mol}} \right) (10^6) \left( \frac{20.95 - 15}{20.95} \right)}$$

Where:

- EF1 = pre-project emission factor in ppmvd @ 15% O<sub>2</sub>:
- F-Factor = 8,578 ft<sup>3</sup>-exhaust/MMBtu @ 60 °F
- Molecular Weight = 46 lb-NO<sub>x</sub>/lb-mol; 28 lb-CO/lb-mol
- MSV = 379.5 ft<sup>3</sup>/lb-mol (Ideal Gas @ 60 °F)
- HI = Heat Input rate, MMBtu/hr

VOC:

$$PE1 = \left( EF1 \frac{\text{lb}}{\text{MMBtu}} \right) \left( HI \frac{\text{MMBtu}}{\text{hr}} \right) \left( 8,760 \frac{\text{hr}}{\text{yr}} - 15.0 \frac{\text{hr}}{\text{yr}} - 7.5 \frac{\text{hr}}{\text{yr}} \right)$$

Turbine Model	Duct Burner	Heat Input (MMBtu/hr)	PE1 (lb/yr)		
			NOx	CO	VOC
Solar Centaur 40	On	77.3	86,543	79,770	17,561
	Off	40.9	45,791	50,171	9,291

SOx and PM<sub>10</sub>:

$$PE1 = \left( EF1 \frac{\text{lb}}{\text{MMBtu}} \right) \left( HI \frac{\text{MMBtu}}{\text{hr}} \right) \left( 8,760 \frac{\text{hr}}{\text{yr}} \right)$$

Turbine Model	Duct Burner	Heat Input (MMBtu/hr)	PE1 (lb/yr)	
			SOx	PM <sub>10</sub>
Solar Centaur 40	On	77.3	1,354	17,606
	Off	40.9	717	9,315

The annual emissions under operating scenario #1 are summarized in the following table. NOx, CO and VOC are determined by taking a sum of the potential emissions during startup, shutdown and steady state periods. SOx and PM<sub>10</sub> emissions are based on 8,760 hr/year operation.

Permit #	PE1 (lb/yr)				
	NOx	SOx	PM <sub>10</sub>	CO	VOC
C-311-13-9	86,632	1,354	17,606	84,878	17,863
C-311-15-9	86,632	1,354	17,606	84,878	17,863
C-311-88-9	86,632	1,354	17,606	84,878	17,863
C-311-93-9	86,632	1,354	17,606	84,878	17,863
C-311-95-9	86,632	1,354	17,606	84,878	17,863
C-311-97-9	86,632	1,354	17,606	84,878	17,863

**Scenario #2:**

*Daily PE1: Turbines operate in a steady-state mode for 19.5 hr/day with an assumption that maximum number of startups and shutdowns occurred during a given day any startup and shutdown events*

*Annual PE1: Turbines operate in a steady-state mode for 8,737.5 hr/yr in a steady-state mode with an assumption that startups (15 60-minute startups) and shutdowns (15 30-minute shutdowns) occur in a given year*

**Daily PE1:**

NOx and CO:

$$PE1 = \frac{(EF1 \text{ ppmvd}) \left( F - \text{Factor} \frac{\text{dscf}}{\text{MMBtu}} \right) \left( MW \frac{\text{lb}}{\text{lb-mol}} \right) \left( HI \frac{\text{MMBtu}}{\text{hr}} \right) \left( 24 \frac{\text{hr}}{\text{day}} - 3.0 \frac{\text{hr}}{\text{day}} - 1.5 \frac{\text{hr}}{\text{day}} \right)}{\left( MSV \frac{\text{dscf}}{\text{lb-mol}} \right) (10^6) \left( \frac{20.95 - 15}{20.95} \right)}$$

Where:

- EF1 = pre-project emission factor in ppmvd @ 15% O<sub>2</sub>:  
 F-Factor = 8,578 ft<sup>3</sup>-exhaust/MMBtu @ 60 °F  
 Molecular Weight = 46 lb-NO<sub>x</sub>/lb-mol; 28 lb-CO/lb-mol  
 MSV = 379.5 ft<sup>3</sup>/lb-mol (Ideal Gas @ 60 °F)  
 HI = Heat Input rate, MMBtu/hr

VOC:

$$PE1 = \left( EF1 \frac{\text{lb}}{\text{MMBtu}} \right) \left( HI \frac{\text{MMBtu}}{\text{hr}} \right) \left( 24 \frac{\text{hr}}{\text{day}} - 3.0 \frac{\text{hr}}{\text{day}} - 1.5 \frac{\text{hr}}{\text{day}} \right)$$

Turbine Model	Duct Burner	Heat Input (MMBtu/hr)	PE1 (lb/day)		
			NOx	CO	VOC
Solar Centaur 40	On	77.3	193.1	178.0	39.2
	Off	40.9	102.2	112.0	20.7

SO<sub>x</sub> and PM<sub>10</sub>:

$$PE1 = \left( EF1 \frac{\text{lb}}{\text{MMBtu}} \right) \left( HI \frac{\text{MMBtu}}{\text{hr}} \right) \left( 24 \frac{\text{hr}}{\text{day}} \right)$$

Turbine Model	Duct Burner	Heat Input (MMBtu/hr)	PE1 (lb/day)	
			SOx	PM <sub>10</sub>
Solar Centaur 40	On	77.3	3.7	48.2
	Off	40.9	2.0	25.5

The daily emissions under operating scenario #2 (19.5 hours steady state, three 60-minutes startups, three 30-minute shutdowns) are summarized in the following table:

Permit #	PE1 (lb/day)				
	NOx	SOx	PM <sub>10</sub>	CO	VOC
C-311-13-9	210.8	3.7	48.2	1,199.5	99.5
C-311-15-9	210.8	3.7	48.2	1,199.5	99.5
C-311-88-9	210.8	3.7	48.2	1,199.5	99.5
C-311-93-9	210.8	3.7	48.2	1,199.5	99.5
C-311-95-9	210.8	3.7	48.2	1,199.5	99.5
C-311-97-9	210.8	3.7	48.2	1,199.5	99.5



**Annual PE1:**

It is assumed that these turbines do not operate continuously in steady-state mode for 8,760 hr/yr. Thus, the annual emissions during steady-state are quantified using the following equations. These equations deduct the potential emissions during fifteen 60-minute startups per year (15 hr/yr) and fifteen 30-minute shutdowns per year (7.5 hr/yr) to determine the potential emissions during the steady state period.

*NOx and CO:*

$$PE1 = \frac{(EF1 \text{ ppmvd}) \left( F \frac{\text{dscf}}{\text{MMBtu}} \right) \left( MW \frac{\text{lb}}{\text{lb-mol}} \right) \left( HI \frac{\text{MMBtu}}{\text{hr}} \right) \left( 8,760 \frac{\text{hr}}{\text{yr}} - 15 \frac{\text{hr}}{\text{yr}} - 7.5 \frac{\text{hr}}{\text{yr}} \right)}{\left( MSV \frac{\text{dscf}}{\text{lb-mol}} \right) (10^6) \left( \frac{20.95 - 15}{20.95} \right)}$$

Where:

- EF1 = pre-project emission factor in ppmvd @ 15% O<sub>2</sub>:
- F-Factor = 8,578 ft<sup>3</sup>-exhaust/MMBtu @ 60 °F
- Molecular Weight = 46 lb-NO<sub>x</sub>/lb-mol; 28 lb-CO/lb-mol
- MSV = 379.5 ft<sup>3</sup>/lb-mol (Ideal Gas @ 60 °F)
- HI = Heat Input rate, MMBtu/hr

*VOC:*

$$PE1 = \left( EF1 \frac{\text{lb}}{\text{MMBtu}} \right) \left( HI \frac{\text{MMBtu}}{\text{hr}} \right) \left( 8,760 \frac{\text{hr}}{\text{yr}} - 15.0 \frac{\text{hr}}{\text{yr}} - 7.5 \frac{\text{hr}}{\text{yr}} \right)$$

Turbine Model	Duct Burner	Heat Input (MMBtu/hr)	PE1 (lb/yr)		
			NOx	CO	VOC
Solar Centaur 40	On	77.3	86,543	79,770	17,561
	Off	40.9	45,791	50,171	9,291

*SOx and PM<sub>10</sub>:*

$$PE1 = \left( EF1 \frac{\text{lb}}{\text{MMBtu}} \right) \left( HI \frac{\text{MMBtu}}{\text{hr}} \right) \left( 8,760 \frac{\text{hr}}{\text{yr}} \right)$$

Turbine Model	Duct Burner	Heat Input (MMBtu/hr)	PE1 (lb/yr)	
			SOx	PM <sub>10</sub>
Solar Centaur 40	On	77.3	1,354	17,606
	Off	40.9	717	9,315

The annual emissions under operating scenario #2 are summarized in the following table. NO<sub>x</sub>, CO and VOC are determined by taking a sum of the potential emissions during startup, shutdown and steady state periods. SO<sub>x</sub> and PM<sub>10</sub> emissions are based on 8,760 hr/year operation.

Permit #	PE1 (lb/yr)				
	NO <sub>x</sub>	SO <sub>x</sub>	PM <sub>10</sub>	CO	VOC
C-311-13-9	86,632	1,354	17,606	84,878	17,863
C-311-15-9	86,632	1,354	17,606	84,878	17,863
C-311-88-9	86,632	1,354	17,606	84,878	17,863
C-311-93-9	86,632	1,354	17,606	84,878	17,863
C-311-95-9	86,632	1,354	17,606	84,878	17,863
C-311-97-9	86,632	1,354	17,606	84,878	17,863

Summary:

Worst-case daily potential emissions after comparing Scenario #1 and #2 (given above) are summarized in the following table.

Permit #	PE1 (lb/day)				
	NO <sub>x</sub>	SO <sub>x</sub>	PM <sub>10</sub>	CO	VOC
C-311-13-9	237.7	3.7	48.2	1,199.5	99.5
C-311-15-9	237.7	3.7	48.2	1,199.5	99.5
C-311-88-9	237.7	3.7	48.2	1,199.5	99.5
C-311-93-9	237.7	3.7	48.2	1,199.5	99.5
C-311-95-9	237.7	3.7	48.2	1,199.5	99.5
C-311-97-9	237.7	3.7	48.2	1,199.5	99.5

Worst-case annual potential emissions after comparing Scenario #1 and #2 (given above) are summarized in the following table.

Permit #	PE1 (lb/yr)				
	NO <sub>x</sub>	SO <sub>x</sub>	PM <sub>10</sub>	CO	VOC
C-311-13-9	86,632	1,354	17,606	84,878	17,863
C-311-15-9	86,632	1,354	17,606	84,878	17,863
C-311-88-9	86,632	1,354	17,606	84,878	17,863
C-311-93-9	86,632	1,354	17,606	84,878	17,863
C-311-95-9	86,632	1,354	17,606	84,878	17,863
C-311-97-9	86,632	1,354	17,606	84,878	17,863

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

**C-311-13-10, -15-10, -88-10, -93-10, -95-10 and -97-10:**

Start-up Emissions:

The post-project potential start-up emissions will remain same as pre-project potential start-up emissions.

Shutdown Emissions:

The post-project potential shutdown emissions will remain same as pre-project potential shutdown emissions.

Steady State Emissions:

Chevron has proposed to achieve less than or equal to 9.0 ppmvd NO<sub>x</sub> @ 15% O<sub>2</sub> by installing an SCR system on each turbine. **Therefore, only NO<sub>x</sub> emissions will change in the following calculations. Whereas, CO, VOC, SO<sub>x</sub>, and PM<sub>10</sub> emissions under each of the following scenarios will remain same as the pre-project potential emissions since the applicant is not proposing any changes to these emission factors.**

*Scenario #1:*

*Daily PE2: Turbines operate in a steady-state mode all day without any startup and shutdown events*

*Annual PE2: Turbines operate in a steady-state mode for 8,737.5 hr/yr in a steady-state mode with an assumption that startups (15 60-minute startups) and shutdowns (15 30-minute shutdowns) occur in a given year*

**Daily PE2:**

NO<sub>x</sub> and NH<sub>3</sub>:

$$PE2 = \frac{(EF2 \text{ ppmvd}) \left( F - \text{Factor} \frac{\text{dscf}}{\text{MMBtu}} \right) \left( MW \frac{\text{lb}}{\text{lb-mol}} \right) \left( HI \frac{\text{MMBtu}}{\text{hr}} \right) \left( 24 \frac{\text{hr}}{\text{day}} \right)}{\left( MSV \frac{\text{dscf}}{\text{lb-mol}} \right) (10^6) \left( \frac{20.95 - 15}{20.95} \right)}$$

Where:

EF2	=	post-project emission factor in ppmvd @ 15% O <sub>2</sub> :
F-Factor	=	8,578 ft <sup>3</sup> -exhaust/MMBtu @ 60 °F
Molecular Weight	=	46 lb-NO <sub>x</sub> /lb-mol; 17 lb-NH <sub>3</sub> /lb-mol
MSV	=	379.5 ft <sup>3</sup> /lb-mol (Ideal Gas @ 60 °F)
HI	=	Heat Input rate, MMBtu/hr

Turbine Model	Duct Burner	Heat Input (MMBtu/hr)	PE2 (lb/day)			
			NOx	CO	VOC	NH <sub>3</sub>
Solar Centaur 40	On	77.3	61.1	219.1	48.2	52.7
	Off	40.9	32.3	137.8	25.5	27.9

The daily emissions under operating scenario #1 (24 hours steady state) are summarized in the following table:

Permit #	PE2 (lb/day)					
	NOx	SOx	PM <sub>10</sub>	CO	VOC	NH <sub>3</sub>
C-311-13-11	61.1	3.7	48.2	219.1	48.2	52.7
C-311-15-11	61.1	3.7	48.2	219.1	48.2	52.7
C-311-88-11	61.1	3.7	48.2	219.1	48.2	52.7
C-311-93-11	61.1	3.7	48.2	219.1	48.2	52.7
C-311-95-11	61.1	3.7	48.2	219.1	48.2	52.7
C-311-97-11	61.1	3.7	48.2	219.1	48.2	52.7

**Annual PE2:**

It is assumed that these turbines do not operate continuously in steady-state mode for 8,760 hr/yr. Thus, the annual emissions during steady-state are quantified using the following equations. These equations deduct the potential emissions during fifteen 60-minute startups per year (15 hr/yr) and fifteen 30-minute shutdowns per year (7.5 hr/yr) to determine the potential emissions during the steady state period.

NOx:

$$PE2 = \frac{(EF2 \text{ ppmvd}) \left( F\text{-Factor} \frac{\text{dscf}}{\text{MMBtu}} \right) \left( MW \frac{\text{lb}}{\text{lb-mol}} \right) \left( HI \frac{\text{MMBtu}}{\text{hr}} \right) \left( 8,760 \frac{\text{hr}}{\text{yr}} - 15 \frac{\text{hr}}{\text{yr}} - 7.5 \frac{\text{hr}}{\text{yr}} \right)}{\left( MSV \frac{\text{dscf}}{\text{lb-mol}} \right) (10^6) \left( \frac{20.95 - 15}{20.95} \right)}$$

Where:

EF2	=	post-project emission factor in ppmvd @ 15% O <sub>2</sub> :
F-Factor	=	8,578 ft <sup>3</sup> -exhaust/MMBtu @ 60 °F
Molecular Weight	=	46 lb-NO <sub>x</sub> /lb-mol
MSV	=	379.5 ft <sup>3</sup> /lb-mol (Ideal Gas @ 60 °F)
HI	=	Heat Input rate, MMBtu/hr

Turbine Model	Duct Burner	Heat Input (MMBtu/hr)	PE2 (lb/yr)		
			NOx	CO	VOC
Solar Centaur 40	On	77.3	22,254	79,770	17,561
	Off	40.9	11,775	50,171	9,291

NH<sub>3</sub>:

$$PE2 = \frac{(EF2 \text{ ppmvd}) \left( F - \text{Factor} \frac{\text{dscf}}{\text{MMBtu}} \right) \left( MW \frac{\text{lb}}{\text{lb-mol}} \right) \left( HI \frac{\text{MMBtu}}{\text{hr}} \right) \left( 8,760 \frac{\text{hr}}{\text{yr}} \right)}{\left( MSV \frac{\text{dscf}}{\text{lb-mol}} \right) \left( 10^6 \right) \left( \frac{20.95 - 15}{20.95} \right)}$$

Where:

- EF2 = post-project emission factor in ppmvd @ 15% O<sub>2</sub>:
- F-Factor = 8,578 ft<sup>3</sup>-exhaust/MMBtu @ 60 °F
- Molecular Weight = 17 lb-NH<sub>3</sub>/lb-mol
- MSV = 379.5 ft<sup>3</sup>/lb-mol (Ideal Gas @ 60 °F)
- HI = Heat Input rate, MMBtu/hr

Turbine Model	Duct Burner	Heat Input (MMBtu/hr)	PE2 (lb/yr)		
			NH <sub>3</sub>	SOx	PM <sub>10</sub>
Solar Centaur 40	On	77.3	19,239	1,354	17,606
	Off	40.9	10,180	717	9,315

The annual emissions under operating scenario #1 are summarized in the following table. NOx, CO and VOC are determined by taking a sum of the potential emissions during startup, shutdown and steady state periods. SOx and PM<sub>10</sub> emissions are based on 8,760 hr/year operation.

Permit #	PE2 (lb/yr)					
	NOx	SOx	PM <sub>10</sub>	CO	VOC	NH <sub>3</sub>
C-311-13-11	22,343	1,354	17,606	84,878	17,863	19,239
C-311-15-11	22,343	1,354	17,606	84,878	17,863	19,239
C-311-88-11	22,343	1,354	17,606	84,878	17,863	19,239
C-311-93-11	22,343	1,354	17,606	84,878	17,863	19,239
C-311-95-11	22,343	1,354	17,606	84,878	17,863	19,239
C-311-97-11	22,343	1,354	17,606	84,878	17,863	19,239

**Scenario #2:**

*Daily PE2: Turbines operate in a steady-state mode for 19.5 hr/day with an assumption that maximum number of startups and shutdowns occurred during a given day any startup and shutdown events*

*Annual PE2: Turbines operate in a steady-state mode for 8,737.5 hr/yr in a steady-state mode with an assumption that startups (15 60-minute startups) and shutdowns (15 30-minute shutdowns) occur in a given year*

**Daily PE2:**

NOx:

$$PE2 = \frac{(EF2 \text{ ppmvd}) \left( F - \text{Factor} \frac{\text{dscf}}{\text{MMBtu}} \right) \left( MW \frac{\text{lb}}{\text{lb-mol}} \right) \left( HI \frac{\text{MMBtu}}{\text{hr}} \right) \left( 24 \frac{\text{hr}}{\text{day}} - 3.0 \frac{\text{hr}}{\text{day}} - 1.5 \frac{\text{hr}}{\text{day}} \right)}{\left( MSV \frac{\text{dscf}}{\text{lb-mol}} \right) (10^6) \left( \frac{20.95 - 15}{20.95} \right)}$$

Where:

- EF2 = post-project emission factor in ppmvd @ 15% O<sub>2</sub>:
- F-Factor = 8,578 ft<sup>3</sup>-exhaust/MMBtu @ 60 °F
- Molecular Weight = 46 lb-NO<sub>x</sub>/lb-mol
- MSV = 379.5 ft<sup>3</sup>/lb-mol (Ideal Gas @ 60 °F)
- HI = Heat Input rate, MMBtu/hr

Turbine Model	Duct Burner	Heat Input (MMBtu/hr)	PE2 (lb/day)		
			NOx	CO	VOC
Solar Centaur 40	On	77.3	49.7	178.0	39.2
	Off	40.9	26.3	112.0	20.7

NH<sub>3</sub>:

$$PE2 = \frac{(EF2 \text{ ppmvd}) \left( F - \text{Factor} \frac{\text{dscf}}{\text{MMBtu}} \right) \left( MW \frac{\text{lb}}{\text{lb-mol}} \right) \left( HI \frac{\text{MMBtu}}{\text{hr}} \right) \left( 24 \frac{\text{hr}}{\text{day}} \right)}{\left( MSV \frac{\text{dscf}}{\text{lb-mol}} \right) (10^6) \left( \frac{20.95 - 15}{20.95} \right)}$$

Where:

- EF2 = post-project emission factor in ppmvd @ 15% O<sub>2</sub>:
- F-factor = 8,578 ft<sup>3</sup>-exhaust/MMBtu @ 60 °F
- Molecular Weight = 17 lb-NH<sub>3</sub>/lb-mol
- MSV = 379.5 ft<sup>3</sup>/lb-mol (Ideal Gas @ 60 °F)
- HI = Heat Input rate, MMBtu/hr

Turbine Model	Duct Burner	Heat Input (MMBtu/hr)	PE2 (lb/day)		
			NH <sub>3</sub>	SOx	PM <sub>10</sub>
Solar Centaur 40	On	77.3	52.7	3.7	48.2
	Off	40.9	27.9	2.0	25.5

The daily emissions under operating scenario #2 (19.5 hours steady state, three 60-minutes startups, three 30-minute shutdowns) are summarized in the following table:

Permit #	PE2 (lb/day)					
	NOx	SOx	PM <sub>10</sub>	CO	VOC	NH <sub>3</sub>
C-311-13-11	67.4	3.7	48.2	1,199.5	99.5	52.7
C-311-15-11	67.4	3.7	48.2	1,199.5	99.5	52.7
C-311-88-11	67.4	3.7	48.2	1,199.5	99.5	52.7
C-311-93-11	67.4	3.7	48.2	1,199.5	99.5	52.7
C-311-95-11	67.4	3.7	48.2	1,199.5	99.5	52.7
C-311-97-11	67.4	3.7	48.2	1,199.5	99.5	52.7

**Annual PE2:**

It is assumed that these turbines do not operate continuously in steady-state mode for 8,760 hr/yr. Thus, the annual emissions during steady-state are quantified using the following equations. These equations deduct the potential emissions during fifteen 60-minute startups per year (15 hr/yr) and fifteen 30-minute shutdowns per year (7.5 hr/yr) to determine the potential emissions during the steady state period.

NOx:

$$PE2 = \frac{(EF2 \text{ ppmvd}) \left( F\text{-Factor} \frac{\text{dscf}}{\text{MMBtu}} \right) \left( MW \frac{\text{lb}}{\text{lb-mol}} \right) \left( HI \frac{\text{MMBtu}}{\text{hr}} \right) \left( 8,760 \frac{\text{hr}}{\text{yr}} - 15 \frac{\text{hr}}{\text{yr}} - 7.5 \frac{\text{hr}}{\text{yr}} \right)}{\left( MSV \frac{\text{dscf}}{\text{lb-mol}} \right) (10^6) \left( \frac{20.95 - 15}{20.95} \right)}$$

Where:

- EF2 = post-project emission factor in ppmvd @ 15% O<sub>2</sub>:
- F-Factor = 8,578 ft<sup>3</sup>-exhaust/MMBtu @ 60 °F
- Molecular Weight = 46 lb-NO<sub>x</sub>/lb-mol
- MSV = 379.5 ft<sup>3</sup>/lb-mol (Ideal Gas @ 60 °F)
- HI = Heat Input rate, MMBtu/hr

Turbine Model	Duct Burner	Heat Input (MMBtu/hr)	PE2 (lb/yr)		
			NOx	CO	VOC
Solar Centaur 40	On	77.3	22,254	79,770	17,561
	Off	40.9	11,775	50,171	9,291

NH<sub>3</sub>:

$$PE2 = \frac{(EF2 \text{ ppmvd}) \left( F - \text{Factor} \frac{\text{dscf}}{\text{MMBtu}} \right) \left( MW \frac{\text{lb}}{\text{lb-mol}} \right) \left( HI \frac{\text{MMBtu}}{\text{hr}} \right) \left( 8,760 \frac{\text{hr}}{\text{yr}} \right)}{\left( MSV \frac{\text{dscf}}{\text{lb-mol}} \right) (10^6) \left( \frac{20.95 - 15}{20.95} \right)}$$

Where:

- EF2 = post-project emission factor in ppmvd @ 15% O<sub>2</sub>:  
 F-Factor = 8,578 ft<sup>3</sup>-exhaust/MMBtu @ 60 °F  
 Molecular Weight = 17 lb-NH<sub>3</sub>/lb-mol  
 MSV = 379.5 ft<sup>3</sup>/lb-mol (Ideal Gas @ 60 °F)  
 HI = Heat Input rate, MMBtu/hr

Turbine Model	Duct Burner	Heat Input (MMBtu/hr)	PE2 (lb/yr)		
			NH <sub>3</sub>	SOx	PM <sub>10</sub>
Solar Centaur 40	On	77.3	18,567	1,354	17,606
	Off	40.9	9,358	717	9,315

The annual emissions under operating scenario #2 are summarized in the following table. NOx, CO and VOC are determined by taking a sum of the potential emissions during startup, shutdown and steady state periods. SOx and PM<sub>10</sub> emissions are based on 8,760 hr/year operation.

Permit #	PE2 (lb/yr)					
	NOx	SOx	PM <sub>10</sub>	CO	VOC	NH <sub>3</sub>
C-311-13-11	22,343	1,354	17,606	84,878	17,863	19,239
C-311-15-11	22,343	1,354	17,606	84,878	17,863	19,239
C-311-88-11	22,343	1,354	17,606	84,878	17,863	19,239
C-311-93-11	22,343	1,354	17,606	84,878	17,863	19,239
C-311-95-11	22,343	1,354	17,606	84,878	17,863	19,239
C-311-97-11	22,343	1,354	17,606	84,878	17,863	19,239



Summary:

Worst-case daily potential emissions after comparing Scenario #1 and #2 (given above) are summarized in the following table.

Permit #	PE2 (lb/day)					
	NOx	SOx	PM <sub>10</sub>	CO	VOC	NH <sub>3</sub>
C-311-13-11	67.4	3.7	48.2	1,199.5	99.5	52.7
C-311-15-11	67.4	3.7	48.2	1,199.5	99.5	52.7
C-311-88-11	67.4	3.7	48.2	1,199.5	99.5	52.7
C-311-93-11	67.4	3.7	48.2	1,199.5	99.5	52.7
C-311-95-11	67.4	3.7	48.2	1,199.5	99.5	52.7
C-311-97-11	67.4	3.7	48.2	1,199.5	99.5	52.7

Worst-case annual potential emissions after comparing Scenario #1 and #2 (given above) are summarized in the following table.

Permit #	PE2 (lb/yr)					
	NOx	SOx	PM <sub>10</sub>	CO	VOC	NH <sub>3</sub>
C-311-13-11	22,343	1,354	17,606	84,878	17,863	19,239
C-311-15-11	22,343	1,354	17,606	84,878	17,863	19,239
C-311-88-11	22,343	1,354	17,606	84,878	17,863	19,239
C-311-93-11	22,343	1,354	17,606	84,878	17,863	19,239
C-311-95-11	22,343	1,354	17,606	84,878	17,863	19,239
C-311-97-11	22,343	1,354	17,606	84,878	17,863	19,239

### 3. Quarterly Emissions Changes (QEC)

QEC are determined to complete the emissions profile in District's Permit Administration System (PAS) database. The annual emissions are evenly distributed throughout the quarters using the following equation:  $QEC = (PE2 - PE1) \text{ lb/year} \div 4 \text{ quarters/year}$

Permit #	Annual Emission Changes in NOx emissions		
	PE2	PE1	(PE2-PE1)
C-311-13-11	22,343	86,632	-64,289
C-311-15-11	22,343	86,632	-64,289
C-311-88-11	22,343	86,632	-64,289
C-311-93-11	22,343	86,632	-64,289
C-311-95-11	22,343	86,632	-64,289
C-311-97-11	22,343	86,632	-64,289

Permit #	Quarterly Emission Changes in NOx emissions			
	1 <sup>st</sup> Quarter (lb)	2 <sup>nd</sup> Quarter (lb)	3 <sup>rd</sup> Quarter (lb)	4 <sup>th</sup> Quarter (lb)
C-311-13-11	-16,072	-16,072	-16,072	-16,072
C-311-15-11	-16,072	-16,072	-16,072	-16,072
C-311-88-11	-16,072	-16,072	-16,072	-16,072
C-311-93-11	-16,072	-16,072	-16,072	-16,072
C-311-95-11	-16,072	-16,072	-16,072	-16,072
C-311-97-11	-16,072	-16,072	-16,072	-16,072

QECs for SO<sub>x</sub>, PM<sub>10</sub>, CO and VOC emissions are zero, as PE2 is equal to PE1 for these pollutants. Refer to Appendix VI for emission profiles.

**4. Adjusted increase in Permitted Emissions (AIPE) Calculations:**

The proposed project is exempt from BACT requirements. Therefore, AIPE calculations are not performed. Please refer to Section VIII of this document for discussion on BACT.

**D. Facility Emissions:**

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

Pursuant to Section 4.9 of District Rule 2201, SSPE1 is the Potential to Emit 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 (ERCs) which have been banked since September 19, 1991 for Actual Emissions Reductions (AERs) that have occurred at the source, and which have not been used on-site.

Permit Number	Partial SSPE1 (lb/yr)				
	NOx	SOx	PM <sub>10</sub>	CO	VOC
C-311-13-9	86,632	1,354	17,606	84,878	17,863
C-311-15-9	86,632	1,354	17,606	84,878	17,863
C-311-88-9	86,632	1,354	17,606	84,878	17,863
C-311-93-9	86,632	1,354	17,606	84,878	17,863
C-311-95-9	86,632	1,354	17,606	84,878	17,863
C-311-97-9	86,632	1,354	17,606	84,878	17,863
*ERC	--	--	--	--	--
Total	519,792	8,124	105,636	509,268	107,178

\*ERC amount is not assessed.

**2. 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.

Partial SSPE2 (lb/yr)					
Permit Number	NOx	SOx	PM <sub>10</sub>	CO	VOC
C-311-13-11	22,343	1,354	17,606	84,878	17,863
C-311-15-11	22,343	1,354	17,606	84,878	17,863
C-311-88-11	22,343	1,354	17,606	84,878	17,863
C-311-93-11	22,343	1,354	17,606	84,878	17,863
C-311-95-11	22,343	1,354	17,606	84,878	17,863
C-311-97-11	22,343	1,354	17,606	84,878	17,863
ERC	--	--	--	--	--
Total	134,058	8,124	105,636	509,268	107,178

**3. Stationary Source Increase in Permitted Emissions (SSIPE)**

It is a District Practice to define the SSIPE as the difference of SSPE2 and SSPE1. Negative SSIPE is equated to zero.

C-311-13-11, -15-11, -88-11, -93-11, -95-11 & -97-11:

NOx, SOx, PM<sub>10</sub>, CO and VOC

SSPE2 is less than or equal to SSPE1. Therefore, SSIPE is equal to zero for each pollutant.

NH<sub>3</sub>

$$\begin{aligned} \text{SSIPE} &= \text{SSPE2} - \text{SSPE1} \\ &= 115,434.0 \text{ lb/yr} \end{aligned}$$

**4. Major Modification**

Major Modification was built into Rule 2201 to meet the Federal NSR requirements for pollutants that exceed Major Source Thresholds.

To determine if a project is a Major Modification, first “Stationary Source” must be identified in accordance with 40 CFR Part 51.165(a)(1)(i) and 40 CFR Part 51.165(a)(1)(ii). These sections define “Stationary Source” as any building structure, facility, or installation which emits or may emit any air pollutant subject to regulation under Act. Building structure, facility, or installation means all of the pollutant emitting activities which belongs to the same industrial grouping are located on one or more contiguous or adjacent properties, and are under the control of the same person (or persons under common control) except the activities of any vessel. Pollutant-emitting activities shall be considered as part of the same industrial grouping if they belong to the same Major Group (i.e. which have same two-digit code) as described in the Standard Industrial Classification Manual, 1972, as amended by the 1977 Supplement.

For the oil and gas industry, “Stationary Source” determination becomes difficult when one pollutant emitting activity is miles away from another pollutant emitting activity over a piece of land that appears to be contiguous. EPA wrote a memo on January 12, 2007 titled “Source Determination for Oil and Gas Industry” (Refer to Appendix III of this document) that suggests that proximity of the pollutant-emitting activities from one another is the most informative factor in making source determinations. Two surface sites can be considered in close proximity if they are physically adjacent, or if they are separated by no more than a short distance (e.g. across a highway, separated by a city block or some similar distance).

The permittee has supplied a property map (Refer to Appendix IV of this document) showing the location of each turbine. The guidance from EPA’s memo is applied to the map in determining the “Stationary Sources” for this project. Upon identification of “Stationary Sources”, a stationary source project is determined for which a Net Emissions Increase (NEI) is calculated and is compared with the Major Modification threshold level. If a stationary source project results in a Major Modification, it may trigger:

- A. Federal Major Modification and the project cannot qualify for BACT exemptions (Rule 2201, §4.2.3);
- B. Best Available Control Technology (BACT) (Rule 2201, §4.1.3); and/or
- C. 30-day public notice (Rule 2201, §5.4.1)

**Step 1: Identification of Stationary Sources**

Using the property map in Appendix IV together with EPA’s January 12, 2007 memo, the District has determined that all emission units are part of same stationary source.

## Step 2: Historical Emissions Calculations

Chevron USA supplied the heat input rate to each turbine for two consecutive years beginning 11/1/06 to 10/31/08.

Permit #	Average Heat Input Rate (MMBtu/yr)
	11/1/06 – 10/31/08
C-311-13	538,467.0
C-311-15	561,477.9
C-311-88	549,057.9
C-311-93	517,932.2
C-311-95	548,425.5
C-311-97	569,044.8

For Major Modification calculations, it is assumed that this facility is a Major Source for NO<sub>x</sub>, SO<sub>x</sub>, CO, VOC and PM<sub>10</sub> emissions. No Major Modification Threshold exists for CO. Thus, this project cannot be a Major Modification for CO emissions.

Each gas turbine is source tested with duct burner “on” and “off” configurations. Lowest NO<sub>x</sub> concentration of these two source test scenarios, i.e. with duct burner “on” and “off”, is used here because it will give the highest net emissions increase (NEI = PE2 – HE). Source test results have been obtained from District permit database for NO<sub>x</sub> and SO<sub>x</sub> emissions. PM<sub>10</sub> and VOC emission factors are taken from the existing permits.

Permit #	EF <sub>NOx</sub>	EF <sub>SOx</sub>	EF <sub>PM10</sub>	EF <sub>VOC</sub>
	lb/MMBtu			
	Avg ST EF	Current PTO's		
C-311-13	0.0890	0.002	0.026	0.026
C-311-15	0.1030	0.002	0.026	0.026
C-311-88	0.0926	0.002	0.026	0.026
C-311-93	0.09985	0.002	0.026	0.026
C-311-95	0.09985	0.002	0.026	0.026
C-311-97	0.09985	0.002	0.026	0.026

Historical emissions (HE) are calculated using the following equations:

$$HE_{NOx} = \left( EF_{NOx} \frac{lb}{MMBtu} \right) \left( \text{Average} \frac{MMBtu}{yr} \right)$$

$$HE_{SOx} = \left( EF_{SOx} \frac{lb}{MMBtu} \right) \left( \text{Average} \frac{MMBtu}{yr} \right)$$

$$HE_{PM10} = \left( EF_{PM10} \frac{lb}{MMBtu} \right) \left( \text{Average} \frac{MMBtu}{yr} \right)$$

$$HE_{VOC} = \left( EF_{VOC} \frac{lb}{MMBtu} \right) \left( \text{Average} \frac{MMBtu}{yr} \right)$$

Permit #	HE (lb/yr)			
	NOx	SOx	PM <sub>10</sub>	VOC
C-311-13	47,924	1,077	14,000	14,000
C-311-15	57,832	1,123	14,598	14,598
C-311-88	50,843	1,098	14,276	14,276
C-311-93	51,716	1,036	13,466	13,466
C-311-95	54,760	1,097	14,259	14,259
C-311-97	56,819	1,138	14,795	14,795

**Step 3: Potential to Emit (PE2)**

Per section VII.C.2 of this document,

Permit #	PE2 (lb/yr)			
	NOx	SOx	PM <sub>10</sub>	VOC
C-311-13	22,343	1,354	17,606	17,863
C-311-15	22,343	1,354	17,606	17,863
C-311-88	22,343	1,354	17,606	17,863
C-311-93	22,343	1,354	17,606	17,863
C-311-95	22,343	1,354	17,606	17,863
C-311-97	22,343	1,354	17,606	17,863

**Step 4: Net Emissions Increase (NEI) Calculations**

NEI is sum of the difference of post-project potential emissions (PE2) and historical emissions (HE) for the emissions units involved in a single Stationary Source project.

$$NEI = \Sigma(PE2 - HE)$$

NEI is summarized in the following tables. NEI values are compared with the Major Modification Thresholds given in Table 3-3 of Rule 2201 to determine if a stationary source project triggers a Major Modification or not.

Permit #	NEI (lb/yr)			
	NOx	SOx	PM <sub>10</sub>	VOC
C-311-13	-25,581	277	3,606	3,863
C-311-15	-35,489	231	3,008	3,265
C-311-88	-28,500	256	3,330	3,587
C-311-93	-29,373	318	4,140	4,397
C-311-95	-32,417	257	3,347	3,604
C-311-97	-34,476	216	2,811	3,068
Total (lb/yr):	-84,258	39,871	26,868	24,428
Major Modification Thresholds (lb/yr):	50,000	80,000	30,000	50,000
Major Modification?	No	No	No	No

## Summary

The proposed modification to each gas turbine system does not trigger a Major Modification under District and Federal regulations.

## **VIII. COMPLIANCE:**

### **Rule 1080 Stack Monitoring**

This rule grants the APCO the authority to request the installation, use, maintenance, and inspection of continuous emissions monitors (CEMs), and specifies performance standards for the equipment and administrative requirements for recordkeeping, reporting, and notification.

Chevron has proposed to monitor NO<sub>x</sub>, CO and O<sub>2</sub> concentrations from each gas turbine system using CEMS that meet the requirements of applicable District rules and Federal regulations.

Therefore, the following conditions will be placed on each ATC C-311-13-11, -15-11, -88-11, -93-11, -95-11 & -97-11:

- The owner or operator shall install, certify, maintain, operate, and quality-assure a continuous emission monitor system (CEMS) which continuously measures and records the exhaust gas NO<sub>x</sub>, CO, and O<sub>2</sub> concentrations. Continuous emissions monitors shall be capable of monitoring emissions during normal operating conditions and during startups and shutdowns, provided that CEMS passes the relative accuracy requirement listed in 40 CFR Part 60, Appendix B, Performance Specification 2 (PS-2). If relative accuracy of CEMS cannot be demonstrated during the startup, CEMS results during startup and shutdown events shall be replaced with startup emission rates obtained from the source test conducted by the facility to determine compliance with emission limits contained in this document. [District Rules 1080, 2201 and 4703, 40 CFR 60.334(b)(1)]
- The CEMS shall complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each 15-minute quadrant of the hour or shall meet equivalent specifications established by mutual agreement of the District, the CARB and the EPA. [District Rule 1080 and 40 CFR 60.334(b)(2)]
- The NO<sub>x</sub>, CO and O<sub>2</sub> CEMS shall meet the requirements in 40 CFR 60, Appendix F Procedure 1 and Part 60, Appendix B Performance Specification 2 (PS 2), District approved protocol for startups, or shall meet equivalent specifications established by mutual agreement of the District, the CARB, and the EPA. [District Rule 1080 and 40 CFR 60.334(b)(1)]

- In accordance with 40 CFR Part 60, Appendix F, 5.1, the CEMS must be audited at least once each calendar quarter. The District shall be notified prior to completion of the audits. Audit reports shall be submitted along with quarterly compliance reports to the District. [District Rule 1080]
- NO<sub>x</sub>, CO and O<sub>2</sub> concentrations from the gas turbine systems operating under permits C-311-XXX and C-311-XXX shall be monitored by a common CEMS. The requirements in 40 CFR 60, Appendix F, shall be met through the following EPA and District approved modified procedures: (1) perform annual RATA testing on at least one unit (C-311-XXX or C-311-XXX), and rotate the unit tested so that each unit is tested over two years; (2) perform annual RAA testing for the unit for which the annual RATA is not performed, (3) if a unit fails RAA testing, RATA test must be conducted within 60 days on the failed unit, and 4) for every quarter that RATA or RAA testing is not performed, a CGA is to be performed on each unit. [District Rules 1080 and 4703, 40 CFR 60.334(b)(1)]<sup>1</sup>
- The owner/operator shall perform a RATA for NO<sub>x</sub>, CO and O<sub>2</sub> as specified by 40 CFR Part 60, Appendix F, 5.1.1, at least once every four calendar quarters. The permittee shall comply with the applicable requirements for quality assurance testing and maintenance of the continuous emission monitor equipment in accordance with the procedures and guidance specified in 40 CFR Part 60, Appendix F. [District Rule 1080]<sup>2</sup>
- APCO or an authorized representative shall be allowed to inspect, as determined to be necessary, the required monitoring devices to ensure that such devices are functioning properly. [District Rule 1080]
- The CEMS data shall be reduced to hourly averages as specified in 40 CFR 60.13(h), or by other methods deemed equivalent by mutual agreement with the District, the CARB, and the EPA. [District Rule 1080 and 40 CFR 60.334(b)(3)]
- Upon written notice from the District, the owner or operator shall provide a summary of the data obtained from the CEMS. This summary shall be in the form and the manner prescribed by the District. [District Rule 1080]
- The facility shall install and maintain equipment, facilities, and systems compatible with the District's CEMS data polling software system and shall make CEMS data available to the District's automated polling system on a daily basis. Upon notice by the District that the facility's CEMS is not providing polling data, the facility may continue to operate without providing automated data for a maximum of 30 days per calendar year provided the CEMS data is sent to the District by a District-approved alternative method. [District Rule 1080]

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<sup>1</sup> This condition is placed on the gas turbines in "A" Fee, "C" Fee and "SEKR" sites

<sup>2</sup> This condition is placed on the gas turbine in "B" Fee



- The permittee shall maintain the following records: the date, time and duration of any malfunction of the continuous monitoring equipment; dates of performance testing; dates of evaluations, calibrations, checks, and adjustments of the continuous monitoring equipment; date and time period which a continuous monitoring system or monitoring device was inoperative. [District Rules 1080 and 2201 and 40 CFR 60.8(d)]
- The owner or operator shall submit a written report of CEM operations for each calendar quarter to the District. The report is due on the 30th day following the end of the calendar quarter and shall include the following: Time intervals, data and magnitude of excess NOx emissions, nature and the cause of excess (if known), corrective actions taken and preventive measures adopted; Averaging period used for data reporting corresponding to the averaging period specified in the emission test period used to determine compliance with an emission standard; Applicable time and date of each period during which the CEM was inoperative, except for zero and span checks, and the nature of system repairs and adjustments; A negative declaration when no excess emissions occurred. [District Rule 1080 and 40 CFR 60.334(j)(5)]

#### **Rule 1081 Source Sampling**

This rule requires adequate and safe sampling facilities such as sampling ports, sampling platforms, access to the sampling platforms for use in sampling to determine compliance with emissions limits, and specifies methods and procedures for source testing and sample collection. The following conditions will be placed on each permit to ensure compliance with the requirements of this rule:

- The exhaust stack shall be equipped with permanent provisions to allow collection of stack gas samples consistent with EPA test methods and shall be equipped with safe permanent provisions to sample stack gases with a portable NOx, CO, and O2 analyzer during District inspections. The sampling ports shall be located in accordance with the CARB regulation titled California Air Resources Board Air Monitoring Quality Assurance Volume VI, Standard Operating Procedures for Stationary Emission Monitoring and Testing. [District Rule 1081]
- 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]
- Source testing shall be witnessed or authorized by District personnel and samples shall be collected by a California Air Resources Board (CARB) certified testing laboratory or a CARB certified source testing firm. [District Rule 1081]

- For the purposes of determining compliance with the emissions limits in this permit, the arithmetic mean of three test runs shall apply, unless two of the three results are above an applicable limit. If two of three runs are above the applicable limit the test cannot be used to demonstrate compliance with an applicable limit. [District Rule 1081]
- The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081]

### **Rule 1100 Equipment Breakdown**

This rule defines a breakdown condition and the procedures to follow if one occurs. The corrective action, the issuance of an emergency variance, and the reporting requirements are also specified.

The following conditions are already included on facility-wide permit C-311-0-1, to ensure compliance with the requirements of this rule. Therefore, these conditions are not included on the ATCs being issued under this project.

- The owner or operator shall notify the District of any breakdown condition as soon as reasonably possible, but no later than one hour after its detection, unless the owner or operator demonstrates to the District's satisfaction that the longer reporting period was necessary. [District Rule 1100]
- The District shall be notified in writing within ten days following the correction of any breakdown condition. The breakdown notification shall include a description of the equipment malfunction or failure, the date and cause of the initial failure, the estimated emissions in excess of those allowed, and the methods utilized to restore normal operations. [District Rule 1100]

Compliance is expected with this Rule.

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

#### **1. Best Available Control Technology (BACT)**

Section 4.2.3 of Rule 2201 provides an exemption from BACT requirements. This section states the following:

4.2.3 For existing facilities, the installation or modification of an emission control technique performed solely for the purpose of compliance with the requirements of District, State or Federal air pollution control laws, regulations, or orders, as approved by the APCO, shall be exempt from Best Available Control Technology for all air pollutants, provided all of the following conditions are met:

4.2.3.1 There shall be no increase in the physical or operational design of the existing facility, except for those changes to the design needed for the installation or modification of the emission control technique itself;

4.2.3.2 There shall be no increase in the permitted rating or permitted operating schedule of the permitted unit;

4.2.3.3 There shall be no increase in emissions from the stationary source that will cause or contribute to any violation of a National Ambient Air Quality Standard, Prevention of Significant Deterioration increment, or Air Quality Related Value in Class I areas;

4.2.3.4 The project shall not result in an increase in permitted emissions or potential to emit of more than 25 tons per year of NO<sub>x</sub>, or 25 tons per year of VOC, or 15 tons per year of SO<sub>x</sub>, or 15 tons per year of PM<sub>10</sub>, or 50 tons per year of CO; and

4.2.3.5 The project shall not constitute a federal major modification.

The proposed project is to comply with emission standards in the Rule 4703, and do not result in increase in the physical or operational design or permitted rating of the units. There is no increase in permitted emissions for any affected pollutant for which National Ambient Air Quality Standard (NAAQS) exists at this time<sup>3</sup>. Furthermore, the project does not constitute a federal major modification. Therefore, the proposed project is exempt from BACT requirements.

## 2. Offsets

Section 4.6.8 of Rule 2201 provides an exemption from offsets. This section states the following:

4.6.8 For existing facilities, the installation or modification of an emission control technique performed solely for the purpose of compliance with the requirements of District, State or Federal air pollution control laws, regulations, or orders, as approved by the APCO, shall be exempt from offset requirements for all air pollutants provided all of the following conditions are met:

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<sup>3</sup> Per District Technical Services Division, no NAAQS exist for ammonia at this time.

4.6.8.1 There shall be no increase in the physical or operational design of the existing facility, except for those changes to the design needed for the installation or modification of the emission control technique itself;

4.6.8.2 There shall be no increase in the permitted rating or permitted operating schedule of the permitted unit;

4.6.8.3 There shall be no increase in emissions from the stationary source that will cause or contribute to any violation of a National Ambient Air Quality Standard, Prevention of Significant Deterioration increment, or Air Quality Related Value in Class I areas; and

4.6.8.4 The project shall not result in an increase in permitted emissions or potential to emit of more than 25 tons per year of NO<sub>x</sub>, or 25 tons per year of VOC, or 15 tons per year of SO<sub>x</sub>, or 15 tons per year of PM-10, or 50 tons per year of CO.

The proposed project is to comply with emission standards in the Rule 4703, and do not result in increase in the physical or operational design or permitted rating of the units. There is no increase in permitted emissions for any affected pollutant for which National Ambient Air Quality Standard (NAAQS) exists at this time. Therefore, the proposed project is exempt from offset requirements.

### 3. Public Notice

District Rule 2201, section 5.4, requires a public notification for the affected pollutants from the following types of projects:

- New Major Sources
- Major Modifications
- New emission units with a PE > 100 lb/day of any one pollutant
- Modifications with SSPE1 below an Offset threshold and SSPE2 above an Offset threshold on a pollutant-by-pollutant basis
- New stationary sources with SSPE2 exceeding Offset thresholds
- Any permitting action with a SSPE exceeding 20,000 lb/yr for any one pollutant

New Major Sources: This facility is not a new Major Source. Therefore, public noticing is not required under this section.

Major modifications: Per section VII.D.4 of this document, the proposed project is not a Major Modification. Thus, public notice is not required under this section.

New emission units with a PE>100 lb/day of any one pollutant: Chevron is not installing a new emissions unit under this project. Therefore, public notice is not required under this section.

Modifications with SSPE1 below an Offset threshold and SSPE2 above an Offset threshold on a pollutant-by-pollutant basis: The proposed project does not result an increase in emissions from below offset level to above offset level. Thus, public notice is not required under this section.

New stationary sources with SSPE2 exceeding Offset thresholds: This facility is not a new stationary source. Therefore, this section is not applicable to this project.

Any permitting action with an SSIPE exceeding 20,000 lb/yr for any one pollutant: **Per section VII.D.3 of this document, SSIPE is greater than 20,000 lb/yr for ammonia. Thus, public notice is required under this section.**

Summary:

Public notice is required for this project.

#### **4. Daily Emission Limits (DELs)**

Daily Emissions Limitations (DELs) and other enforceable conditions are required by Section 3.15 to restrict a unit's maximum daily emissions.

- During an initial shakedown period, the emissions shall not exceed any of the following limits: 35.0 ppmvd NO<sub>x</sub> @ 15% O<sub>2</sub> referenced as NO<sub>2</sub>; 53 ppmvd CO @ 15% O<sub>2</sub> when firing both gas turbine and duct burner simultaneously; 63 ppmvd CO @ 15% O<sub>2</sub> when firing gas turbine only; 0.026 lb-PM<sub>10</sub>/MMBtu; 0.026 lb-VOC/MMBtu referenced as methane; and 0.002 lb-SO<sub>x</sub>/MMBtu referenced as SO<sub>2</sub>. The shakedown period shall not exceed 60 calendar days from the initial startup of the unit under this permit. The shakedown period must be concluded prior to the applicable Rule 4703 compliance deadline selected for this unit. The permittee shall maintain a record of the date of initial operation of this unit, fuel combusted (scf/day) on daily basis, and water-to-fuel ratio or results of NO<sub>x</sub> and CO over 3-hour rolling average period from CEMS (if operational). These records shall be made readily available for District inspection upon request. [District Rule 2201]

- Upon concluding the initial shakedown period, emissions from the gas turbine system, when startup or shutdown or black start do not occur, shall not exceed any of the following limits: 9.0 ppmvd NO<sub>x</sub> @ 15% O<sub>2</sub> referenced as NO<sub>2</sub>; 53 ppmvd CO @ 15% O<sub>2</sub> when firing both gas turbine and duct burner simultaneously; 63 ppmvd CO @ 15% O<sub>2</sub> when firing gas turbine only; 0.026 lb-PM<sub>10</sub>/MMBtu; 0.026 lb-VOC/MMBtu referenced as methane; and 0.002 lb-SO<sub>x</sub>/MMBtu referenced as SO<sub>2</sub>. NO<sub>x</sub> and CO emission limits are based on 3-hour rolling average period. [District Rules 2201 and 4703]
- Upon concluding the initial shakedown period, emissions from the gas turbine system, on days when startup, shutdown, or black start occurs, shall not exceed any of the following limits: 67.4 lb-NO<sub>x</sub>/day referenced as NO<sub>2</sub>; 1,199.5 lb-CO/day; 3.7 lb-SO<sub>x</sub>/day; 48.2 lb-PM<sub>10</sub>/day; 99.5 lb-VOC/day referenced as methane; and 50.9 lb-NH<sub>3</sub>/day. [District Rule 2201]
- Ammonia (NH<sub>3</sub>) emissions shall not exceed 21.0 ppmvd @ 15% O<sub>2</sub> over a 24-hour rolling average period. [District Rule 2201]

## 5. Compliance Assurance

### Source Testing

Source test to determine NO<sub>x</sub>, CO and VOC emissions during start-up of each turbine is required to verify the worst-case daily emission rates.

Rule 4703 (Section 6.3.1 and 6.3.3) requires the gas turbine system to be tested on annual basis for NO<sub>x</sub> and CO emissions with duct burners "on" and "off" configurations. The exhaust from each gas turbine will be routed through its own SCR system to minimize NO<sub>x</sub> emissions. For an SCR system, ammonia (NH<sub>3</sub>) slip is an indicator of SCR performance. Therefore, each unit is required to be tested within 60 days of initial startup and annually thereafter for NO<sub>x</sub>, CO and NH<sub>3</sub> emissions.

No additional testing is required to verify VOC, SO<sub>x</sub> and PM<sub>10</sub> emissions from the gas turbines, as this project does not result an increase in any of these pollutants. However, existing source testing requirement (if any) will be replicated on the permits being issued under this project.

### Monitoring

The permittee has proposed to use a continuous emissions monitoring system (CEMS) to monitor NO<sub>x</sub>, CO and O<sub>2</sub> concentrations from each gas turbine system.

Currently, the permittee is required to test fuel sulfur content if a gas turbine is operated on fuel other than PUC-regulated or FERC-regulated natural gas. Based on recent source test, it is expected that each gas turbine system stay in compliance with the permitted SO<sub>x</sub> emissions limit. No separate SO<sub>2</sub> monitor is proposed at this time or is required by the applicable District Rules or Federal regulations.

The permitted emission factor for VOC and PM<sub>10</sub> emissions factors along with the heat input rate could be used to determine daily emissions from each turbine.

#### Recordkeeping

The permittee is required to keep records of as to when startup, shutdown or black start event occurs, daily emissions, source tests and monitoring parameters. These records are required to be kept for at least five years.

#### Reporting

The permittee is required to submit source test results within 60 after each source test.

Compliance is expected with this Rule.

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

Chevron USA Inc possesses a Title V permit. The proposed are considered "Minor Modification" as defined in this rule. The applicant has proposed to receive the Authorities to Construct without Certificates of Conformity. The following condition will be placed on each permit:

- {1829} The facility shall submit an application to modify the Title V permit in accordance with the timeframes and procedures of District Rule 2520. [District Rule 2520] Y

Compliance is expected with this Rule.

#### **Rule 4001 New Source Performance Standards**

##### *40 CFR Part 60 Subpart GG – Standards of Performance for Stationary Gas Turbines*

Based on the conditions in Permits to Operate, each gas turbine engine is subject to the requirements of this subpart. These requirements and their compliance determination are briefly discussed in the following section.

§60.332 Standard for NOx:

§60.332(c) requires that a stationary gas turbine with a heat input rate greater than 10 MMBtu/hr but less than or equal to 100 MMBtu/hr shall comply with the NOx emission limit calculated using the following equation:

$$\text{STD} = 0.0150 \frac{(14.4)}{Y} + F; \text{ where}$$

STD = allowable ISO corrected NOx emission concentration in % by volume @ 15% O<sub>2</sub> on dry basis

Y = Manufacturer's rated heat rate at manufacturer's rated load (kJ/w-hr) or, actual measured heat rate based on lower heating value of fuel as measured at actual peak load for the facility. The Y shall not exceed 14.4 kJ/w-hr.

F = NO<sub>x</sub> emission allowance for fuel-bound nitrogen.

For each gas turbine unit,

Heat input rate = 37.6 x 10<sup>6</sup> Btu/hr  
Power Rating = 2.7 MW

$$Y = \left( 37.6 \times 10^6 \frac{\text{Btu}}{\text{hr}} \right) \times \left( \frac{1 \text{ kJ}}{0.9478 \text{ Btu}} \right) \times \left( \frac{1}{2.7 \times 10^6 \text{ w}} \right) = 14.7 \frac{\text{kJ}}{\text{w-hr}}$$

Since Y exceeds 14.4 kJ/w-hr, Y is set equal to 14.4 kJ/w-hr.

F = 0; for conservative calculations

$$\text{STD} = 0.0150 \frac{(14.4)}{14.4} + 0 = 0.015 \% \text{ by volume @ } 15\% \text{ O}_2 \text{ (150 ppmv @ } 15\% \text{ O}_2)$$

Chevron is required to demonstrate compliance with 9.0 ppmvd @ 15% O<sub>2</sub> on 3-hour rolling average basis for each gas turbine engine. Therefore, each unit is expected to operate in compliance with the NOx standards.

§60.333 Standard for SOx:

§60.333(a) requires that emissions of sulfur dioxide shall not exceed 0.015 percent by volume dry @ 15% O<sub>2</sub> (150 ppmvd @ 15% O<sub>2</sub>).



The 150 ppmvd @ 15% O<sub>2</sub> limit specified in §60.333(a) is equivalent to 0.764 lb-SO<sub>2</sub>/MMBtu. This number is determined as follows:

$$\frac{(150 \times 10^{-6}) \times \left(8,578 \frac{\text{ft}^3}{\text{MMBtu}}\right) \times \left(64 \frac{\text{lb} - \text{SO}_2}{\text{lb} - \text{mol}}\right) \times \left(\frac{20.95}{20.95 - 15}\right)}{\left(379.5 \frac{\text{ft}^3}{\text{lb} - \text{mol}}\right)} = 0.764 \frac{\text{lb} - \text{SO}_2}{\text{MMBtu}}$$

For each unit, the permitted emission factor of 0.002 lb-SO<sub>x</sub>/MMBtu is less than that of the maximum allowable emission standard of 0.764 lb-SO<sub>x</sub>/MMBtu. Thus, compliance is expected with §60.333(a).

#### §60.334 Monitoring of Operations

§60.334(b) states that the owner or operator of a stationary gas turbine constructed between October 3, 1977 and July 8, 2004 and using water or steam to control NO<sub>x</sub> emissions may, as an alternative to operating the continuous emissions monitoring system to monitor and record the fuel consumption and the ratio of water or steam to fuel being fired in the turbine, can install, calibrate, certify, maintain, operate, and quality-assure a continuous monitoring system (CEMS) consisting of NO<sub>x</sub> and O<sub>2</sub> monitors.

These turbines were constructed between October 3, 1977 and July 8, 2004. Chevron has proposed to use CEMS to measure NO<sub>x</sub>, CO and O<sub>2</sub> concentrations.

The following conditions will be placed on each permit:

- The owner or operator shall install, certify, maintain, operate, and quality-assure a continuous emission monitor system (CEMS) which continuously measures and records the exhaust gas NO<sub>x</sub>, CO, and O<sub>2</sub> concentrations. Continuous emissions monitors shall be capable of monitoring emissions during normal operating conditions and during startups and shutdowns, provided that CEMS passes the relative accuracy requirement listed in 40 CFR Part 60, Appendix B, Performance Specification 2 (PS-2). If relative accuracy of CEMS cannot be demonstrated during the startup, CEMS results during startup and shutdown events shall be replaced with startup emission rates obtained from the source test conducted by the facility to determine compliance with emission limits contained in this document. [District Rules 1080, 2201 and 4703, 40 CFR 60.334(b)(1)]
- The CEMS shall complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each 15-minute quadrant of the hour or shall meet equivalent specifications established by mutual agreement of the District, the CARB and the EPA. [District Rule 1080 and 40 CFR 60.334(b)(2)]

- The NO<sub>x</sub>, CO and O<sub>2</sub> CEMS shall meet the requirements in 40 CFR 60, Appendix F Procedure 1 and Part 60, Appendix B Performance Specification 2 (PS 2), or shall meet equivalent specifications established by mutual agreement of the District, the CARB, and the EPA. [District Rule 1080 and 40 CFR 60.334(b)(1)]

§60.334(h)(3)(i) and (ii) requires the owner or operator to keep sulfur content records using valid purchase contract, tariff sheet or transportation contract for the gaseous fuel, specifying that the maximum sulfur content of the fuel is 20 grains/100 scf or less or perform a *representative fuel sampling* to show the sulfur content of gaseous fuel does not exceed 20 grains/100 scf.

Chevron has been complying with the following requirement for each permit unit in this project. Thus, continued compliance is expected.

- If the gas turbine system is not fired on PUC-regulated or FERC-regulated natural gas, the sulfur content of each fuel source shall be tested weekly except that if compliance with the fuel sulfur content limit has been demonstrated for 8 consecutive weeks for a fuel source, then the testing frequency shall be quarterly. If a test shows noncompliance with the sulfur content requirement, the source must return to weekly testing until eight consecutive weeks show compliance. [40 CFR 60.334(h)(3)]

§60.334(j)(1)(iii)(A) defines excess NO<sub>x</sub> emissions shall be any unit-operating hour in which the 4-hour rolling average NO<sub>x</sub> concentration exceeds the NO<sub>x</sub> emission limit calculated in §60.332.

Chevron has proposed to demonstrate compliance with NO<sub>x</sub> emissions of 9.0 ppmvd @ 15% O<sub>2</sub> on 3-hour rolling average basis, which is considered to be more stringent than the NSPS limit (given above under §60.332 Standard for NO<sub>x</sub> for each turbine) over 4-hour rolling average period. Therefore, it is not necessary to define excess NO<sub>x</sub> emissions separately.

§60.334(j)(1)(iii)(B) defines a period of monitor downtime shall be any operating hour in which sufficient data are not obtained to validate the hour for either NO<sub>x</sub> concentration or diluent (or both).

- Monitor downtime for NO<sub>x</sub> shall be any unit operating hour in which sufficient data are not obtained to validate the hour for either NO<sub>x</sub> concentration or diluent O<sub>2</sub> (or both). [40 CFR 60.334(j)(1)(iii)(B)]

§60.334(j)(2)(i) states for samples of gaseous fuel and for oil samples obtained using daily sampling, flow proportional sampling, or sampling for the unit's storage tank, an excess sulfur dioxide emissions occurs each unit operating hour included in the period beginning on the date and hour of any sample for which sulfur content of the fuel fired in the gas turbine exceeds 0.8% (by weight) and ending on the date and hour that a subsequent sample is taken that demonstrate compliance with the sulfur limit.

Each permit unit has been permitted with a SO<sub>x</sub> emission rate of 0.002 lb/MMBtu, which is less than 0.689 lb/MMBtu (0.8 lb-S/100 lb-fuel x 64 lb-SO<sub>2</sub>/32 lb-S x 0.0439 lb-fuel/ft<sup>3</sup> x ft<sup>3</sup>/1,020 Btu x 10<sup>6</sup> Btu/MMBtu). Therefore, it is not necessary to define a less stringent limit.

§60.334(j)(2)(ii) defines excess sulfur dioxide emissions when each delivery of fuel oil has been selected. Each turbine is fired exclusively on natural gas fuel. Thus, requirements of this section are not applicable.

§60.334(j)(2)(iii) defines monitor downtime for sulfur dioxide emissions occur when a required sample is not taken by its due date. Monitor downtime also begins if invalid results are obtained for a fuel sample. The period of monitor downtime shall include only unit operating hours, and ends on the date and hour of the next valid sample.

- Monitor downtime for sulfur dioxide emissions occur when a required sample is not taken by its due date. Monitor downtime also begins if invalid results are obtained for a fuel sample. The period of monitor downtime shall include only unit operating hours, and ends on the date and hour of the next valid sample. [40 CFR 60.334(j)(2)(iii)]

§60.334(j)(5) requires the owner or operator to postmark the reports required under §60.7(c) by the 30<sup>th</sup> day following the end of each 6-month period. The permittee is required to submit quarterly reports. Thus, compliance is expected with this section.

- The owner or operator shall submit a written report of CEM operations for each calendar quarter to the APCO. The report is due on the 30th day following the end of the calendar quarter and shall include the following: Time intervals, data and magnitude of excess emissions, nature and the cause of excess (if known), corrective actions taken and preventive measures adopted; Averaging period used for data reporting corresponding to the averaging period specified in the emission test period used to determine compliance with an emission standard; Applicable time and date of each period during which the CEM was inoperative, except for zero and span checks, and the nature of system repairs and adjustments; A negative declaration when no excess emissions occurred. [District Rule 1080 and 40 CFR 60.334(j)(5)]

### §60.335 Test Methods and Procedure

§60.335(a) states that the owner or operator shall conduct the performance tests required in §60.8 using EPA Method 20, ASTM D6522-00 or EPA Method 7E and either EPA Method 3 or 3A to determine NO<sub>x</sub> and diluent concentration. Sampling traverse points are to be selected following Method 20 or Method 1.

The following condition will be placed on each permit.

- The following test methods shall be used: NO<sub>x</sub> - EPA Method 7E or 20 or CARB Method 100; CO - EPA Method 10 or 10B or CARB Method 100; VOC - EPA Method 18 or 25; PM<sub>10</sub> - EPA Method 5 (front half and back half) or 201 and 202a; ammonia - BAAQMD ST-1B; and O<sub>2</sub> - EPA Method 3, 3A, or 20 or CARB Method 100. NO<sub>x</sub> test results shall be corrected to ISO standard conditions as defined in 40 CFR 60.335. EPA approved alternative test methods as approved by the District may also be used to address the source testing requirements of this permit. [District Rules 1081 and 4703, 40 CFR 60.335(a), and 40 CFR 60.335(b)(1)]

§60.335(b)(1) states that for each run of the performance test, the mean nitrogen oxide emission concentration @ 15% O<sub>2</sub> shall be corrected to ISO standard conditions using the equation listed in this section to demonstrate compliance with NSPS NO<sub>x</sub> standard. Chevron is required to correct NO<sub>x</sub> emission concentration to ISO standard conditions in the condition given above. Thus, compliance is expected with this section.

§60.335(b)(2) states that the 3-run performance test must be performed within +/-5% at 30, 50, 75, and 90-to-100 percent of peak load or at four evenly-spaced load points in the normal operating range of the gas turbine, including the minimum point in the operating range and 90-to-100 percent of peak load, or at the highest achievable load point if 90-to-100 percent of peak load cannot be physically achieved in practice.

The following condition will be placed on the permits to ensure compliance:

- Should the applicant decide to conduct performance evaluation of CEMS with the initial performance test, a minimum of 9 reference method runs, with a minimum time per run of 21 minutes, at a single load level, between 90 and 100 percent of peak (or the highest physically achievable) load shall be performed. The test data obtained during these run can be used to demonstrate compliance with the applicable NO<sub>x</sub> emission limit and to provide reference method data for the RATA of the CEMS. The requirement to test at three additional load levels is waived under this option. [40 CFR 60.335(b)(6)]

§60.335(b)(3) states that for a combined cycle turbine system with duct burner, the owner may elect to measure turbine NO<sub>x</sub> emissions after the duct burner rather than directly after turbine. Rule 4703 requires the facility to test the turbine system with duct burner "on" and "off" configurations. Therefore, no further discussion is required.

§60.335(b)(4) states that if water or steam injection is used to control NO<sub>x</sub> with no additional post-combustion NO<sub>x</sub> control and the owner or operator chooses to monitor the steam or water to fuel ratio then that monitoring system must be operated with each performance test run to determine the fuel consumption and the steam or water to fuel ratio to demonstrate on-going compliance with the NO<sub>x</sub> standard.

Each turbine will be equipped with an SCR system, and will have operational CEMS to directly measure NO<sub>x</sub>, CO and O<sub>2</sub> concentrations. Therefore, the permittee is not required to monitor fuel consumption and water or steam injection during a performance test.

§60.335(b)(5) states that if the owner elects to claim an emission allowance for fuel bound nitrogen, then concurrently with each reference method run, a representative sample of the fuel used shall be collected and analyzed following the applicable procedure described in §60.335(b)(9). These data shall be used to determine the maximum fuel nitrogen content for which the established water or steam to fuel ratio will be valid.

Per <http://www.naturalgas.org/overview/background.asp>, nitrogen content in a natural gas varies between 0-5%. There would not be any significant variation in the NO<sub>x</sub> emission limit if the permittee was given an allowance for fuel bound nitrogen. Furthermore, the proposed NO<sub>x</sub> emission limit of 9.0 ppmvd NO<sub>x</sub> @ 15% O<sub>2</sub> (required by Rule 4703) accounts for the fuel bound nitrogen. Given that this limit is more stringent than that of the NSPS NO<sub>x</sub> emission limit, allowance for fuel bound nitrogen is not considered for the fuel used in units in this project.

§60.335(b)(6) states that if the owner or operator elects to install a CEMS, the performance evaluation of CEMS may either be conducted separately or as part of the initial performance test of the affected unit as described in paragraph (b)(7).

The following conditions will be placed on the permit:

- Should the applicant decide to conduct performance evaluation of CEMS with the initial performance test, a minimum of 9 reference method runs, with a minimum time per run of 21 minutes, at a single load level, between 90 and 100 percent of peak (or the highest physically achievable) load shall be performed. The test data obtained during these run can be used to demonstrate compliance with the applicable NO<sub>x</sub> emission limit and to provide reference method data for the RATA of the CEMS. The requirement to test at three additional load levels is waived under this option. [40 CFR 60.335(b)(6)]

§60.335(b)(7), (b)(8) are not applicable to the turbines in this project.

§60.335(b)(10) if the owner or operator is required to determine the sulfur content of the fuel combusted in the turbine then a minimum of three fuel samples shall be collected during the performance test. The following conditions will be placed on the permit:

- If the gas turbine system is not fired on PUC-regulated or FERC-regulated natural gas during the source test, then the permittee shall collect a minimum of three fuel samples to determine the sulfur content of the fuel combusted in the turbine. The fuel samples shall be analyzed for the total sulfur content using ASTM D1072-80, 90; D2622-81, 92, 96; D4468-85; or D6667-01. The applicable ranges of some ASTM methods are not adequate to measure the levels of sulfur in some fuel gases. Dilution of samples before analysis (with verification of dilution ratio) may be used after getting a prior approval from the District [40 CFR 60.335(b)(10)]

Compliance is expected with this Rule.

#### **40 CFR 60, Subpart KKKK—Standards of Performance for Stationary Combustion Turbines**

The purpose of 40 CFR 60, Subpart KKKK is to establish emission standards and compliance schedules for the control of emissions from stationary combustion turbines that commenced construction, modification, or reconstruction after February 18, 2005. This subpart applies to any stationary combustion turbine with a heat input at peak load equal to or greater than 10.7 gigajoules (10 MMBtu) per hour, based on the higher heating value of the fuel, which commenced construction, modification, or reconstruction after February 18, 2005.

For the purpose of determining applicability with this Subpart, only heat input to the combustion turbine will be included. Any additional heat input to associated heat recovery steam generators (HRSG) or duct burners will not be included when determining the turbine's peak heat input.

Since all of the turbines involved with this project were installed prior to February 18, 2005, this Subpart is not applicable and no further discussion is necessary.

Furthermore, 40 CFR Part 60, Subpart A, section 14, defines the meaning of modification to which the the standards are applicable. §60.14, paragraph (e)(5) states that the following will not be considered as a modification: *"the addition or use of any system or device whose primary function is the reduction of air pollutants, except when an emission control system is removed or replaced by a system which the Administrator determines to be less environmentally beneficial"*.

No newly constructed or reconstructed units are proposed in this project, nor are the units being modified (as defined above). Since Chevron is proposing to retrofit each gas turbine with SCR system solely for compliance with District Rule 4703, the requirements of these sections do not apply to the units.

**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 Ringelmann 1 or equivalent to 20% opacity. The following condition will be placed on the permit:

- No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity. [District Rule 4101]

Compliance is expected with this Rule.

**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. The following condition will be placed on each permit:

- No air contaminant shall be released into the atmosphere, which causes a public nuisance. [District Rule 4102]

**California Health & Safety Code 41700**

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. Risk management review results for each project are summarized in the following tables:

<b>Project C-1084278</b>			
<b>Category</b>	<b>Ammonia Injection (Units 13, 15, 88, 93,95 &amp; 97)</b>	<b>Project Total</b>	<b>Facility Total</b>
Prioritization Score	0.15	0.15	0.15
Acute Hazard Index	N/A <sup>1</sup>	N/A <sup>1</sup>	N/A <sup>1</sup>
Chronic Hazard Index	N/A <sup>1</sup>	N/A <sup>1</sup>	N/A <sup>1</sup>
Maximum Individual Cancer Risk	N/A <sup>1</sup>	N/A <sup>1</sup>	N/A <sup>1</sup>
T-BACT Required?	No		
Special Conditions Required?	No		

\*The prioritization score for this project is less than 1.0; therefore no further analysis is required.

Results Summary:

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

Compliance is expected with this Rule.

**Rule 4201 Particulate Matter Concentration**

Section 3.0 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.

The proposed installation of an SCR system on each turbine does not affect particulate matter emissions. Furthermore, each gas turbine permit contains a condition to comply with the requirements of this Rule. Therefore, continued compliance is expected with this Rule.

**Rule 4301 Fuel Burning Equipment**

The provisions of this rule shall apply to any fuel burning equipment except air pollution control equipment which is exempted according to Section 4.0. Fuel burning equipment is defined as any furnace, boiler, apparatus, stack, and all appurtenances thereto, used in the process of burning fuel for the primary purpose of producing heat or power by indirect heat transfer.

Gas turbines primarily produce power mechanically, i.e. the products of combustion pass directly across the turbine blades which causes the turbine shaft to rotate. The turbine shaft is coupled to an electrical generator shaft, which rotates and produces electricity. Because gas turbines primarily produce power by mechanical means, it does not meet the definition of fuel burning equipment (stated above). Therefore, Rule 4301 does not apply to the affected equipment and no further discussion is required.

**Rule 4703 Stationary Gas Turbines**

Section 2.0 of this rule states that the provisions of this rule apply to all stationary gas turbine systems, which are subject to District permitting requirements, and with ratings equal to or greater than 0.3 megawatt (MW) or a maximum heat input rating of more than 3,000,000 Btu per hour, except as provided in Section 4.0.

Each gas turbine is rated at heat input rate greater than 3 MMBtu/hour. Therefore, each turbine is subject to the requirements of this rule.



### Section 5.1 – NO<sub>x</sub> Emission Requirements

Section 5.1.3, Table 5-3, Tier 3 NO<sub>x</sub> Compliance Limits, requires the owner or operator to achieve less than or equal to 9.0 ppmvd NO<sub>x</sub> @ 15% O<sub>2</sub> to meet Tier-3 compliance schedule listed in Section 7.3.

Chevron has proposed to achieve Tier 3 NO<sub>x</sub> emission standards of 9.0 ppmvd NO<sub>x</sub> @ 15% O<sub>2</sub> using SCR with ammonia injection systems. Therefore, compliance is expected with this section.

### Section 5.2 – CO Emission Requirements

Section 5.2, Table 5-4, CO Compliance Limits, requires the owner or operator to operate and maintain the gas turbine such that CO emissions must be less than 200 ppmvd @ 15% O<sub>2</sub>. Rule 4703 does not include a specific averaging period requirement for demonstrating compliance with the CO emission limit. The District practice is to require CO emissions compliance demonstration on 3-hour rolling average period.

Each turbine is restricted to emit less or equal to 200 ppmvd CO @ 15% O<sub>2</sub> on 3-hour rolling average period. Thus, compliance is expected with this section.

### Section 5.3 – Transitional Operation Periods

NO<sub>x</sub> and CO emission limits (listed above) shall not apply during a transitional operation period, which includes bypass transition period, primary re-ignition period, reduced load period, start-up or shutdown (each term is defined in Section 3.0 of Rule 4703), provided an operator shall meet the following conditions:

- The duration of each startup or each shutdown shall not exceed two hours.
- For each bypass transition period, the requirements specified in Section 3.2 shall be met.
- For each primary re-ignition period, the requirements specified in Section 3.20 shall be met<sup>4</sup>.
- Each reduced load period shall not exceed one hour.

Chevron is expected to complete each startup within 1-hour and each shutdown within 30-minutes. However, under “black start” event, it may take them 4 to 4 ½-hours to achieve the required NO<sub>x</sub> and CO emission limits. Chevron has provided a general overview of the “black start” procedure (Refer to Appendix VII of this document). The following conditions will be placed on each permit:

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<sup>4</sup> This requirement is applicable to a gas turbine with dry low-NO<sub>x</sub> combustors. Each turbine under this project is equipped with water injection system. Thus, this requirement is not applicable to these units.

- Except during black start period, each startup shall not exceed 2.0 hours per event. [District Rule 4703]
- Shutdown shall not exceed 2.0 hours per event. [District Rule 4703]
- A black start event is defined as the startup of a unit while the cogen plant is electrically separated from the utility grid. A black start event shall not exceed 4.0 hours per event. [District Rules 2201 and 4703]
- The emission control systems shall be in operation and emissions shall be minimized insofar as technologically feasible during startup and shutdown. [District Rule 4703]
- Start-up is defined as the period of time during which a unit is brought from a shutdown status to its operating temperature and pressure, including the time required by the unit's emission control system to reach full operation. [District Rule 4703]
- Shutdown is defined as the period of time during which a unit is taken from an operational to a non-operational status by allowing it to cool down from its operating temperature to ambient temperature as the fuel supply to the unit is completely turned off. [District Rule 4703]
- Reduced load period is defined as the time during which a gas turbine is operated at less than rated capacity in order to change the position of the exhaust gas diverter gate. Each reduced load period shall not exceed one hour. [District Rule 4703]

## Section 6.2 - Monitoring and Recordkeeping

Section 6.2.1 requires the owner to operate and maintain continuous emissions monitoring equipment for NO<sub>x</sub> and oxygen, or install and maintain APCO-approved alternate monitoring.

Chevron has proposed to install a Continuous Emissions Monitoring System (CEMS) that will monitor NO<sub>x</sub>, CO and O<sub>2</sub> in the exhaust gas. Therefore, the requirements of this section have been satisfied.

Section 6.2.2 specifies monitoring requirements for turbines without exhaust-gas NO<sub>x</sub> control devices. Each gas turbine will be equipped with an SCR system that is designed to control NO<sub>x</sub> emissions. Therefore, the requirements of this section are not applicable and no further discussion is required.

Section 6.2.3 requires that for units 10 MW and greater that operated an average of more than 4,000 hours per year over the last three years before August 18, 1994, the owner or operator shall monitor the exhaust gas NO<sub>x</sub> emissions. The section is not applicable, as each turbine engine is rated at less than 10 MW.

Section 6.2.4 requires the facility to maintain all records for a period of five years from the date of data entry and shall make such records available to the APCO upon request.

Chevron will be required to maintain all records for at least five years and make them available to the APCO upon request. The following condition will be placed on each permit:

- The owner or operator shall maintain all records of required monitoring data and support information for a period of five years from the date of data entry and shall make such records available to the District upon request. [District Rules 2201 and 4703]

Section 6.2.5 requires that the owner or operator shall submit to the APCO, before issuance of the Permit to Operate, information correlating the control system operating to the associated measured NO<sub>x</sub> output. This information may be used by the APCO to determine compliance when there is no continuous emission monitoring system for NO<sub>x</sub> available or when the continuous emissions monitoring system is not operating properly. The following condition will be placed on the permit:

- The owner or operator shall submit to the District information correlating the NO<sub>x</sub> control system operating parameters to the associated measured NO<sub>x</sub> output. The information must be sufficient to allow the District to determine compliance with the NO<sub>x</sub> emission limits of this permit when the CEMS is not operating properly. [District Rule 4703]

Section 6.2.6 requires the owner or operator to maintain a stationary gas turbine system operating log that includes, on a daily basis, the actual local startup and stop time, length and reason for reduced load periods, total hours of operation, and the type and quantity of fuel used.

Section 6.2.7 requires the owner or operator shall maintain a stationary gas turbine system log for units exempt under Section 4.2 of this Rule. NCPA's gas turbine system is not exempt under Section 4.2 of this Rule. Therefore, no further discussion is required.

Section 6.2.8 requires the operator performing start-up or shutdown of a unit shall keep records of the duration of start-up or shutdown.

Chevron will be required to maintain records of the items listed in above applicable sections. The following conditions will be placed on each permit:

- The owner or operator shall maintain a stationary gas turbine system operating log that includes, on a daily basis, the actual local startup and stop time, length and reason for reduced load periods, total hours of operation, the type and quantity of fuel used, duration of each start-up (or black start) and each shutdown time period. [District Rule 4703]

#### Sections 6.3 and 6.4 - Compliance Testing

Section 6.3.1 states that the owner or operator of any stationary gas turbine system subject to the provisions of Section 5.0 of this rule shall provide source test information annually regarding the exhaust gas NO<sub>x</sub> and CO concentrations.

Each gas turbine is required to be tested annually to ensure compliance with NO<sub>x</sub> and CO concentrations.

The following condition will be placed on the permit:

- Source testing to determine compliance with the NO<sub>x</sub>, CO and NH<sub>3</sub> emission rates (ppmvd @ 15% O<sub>2</sub>) shall be conducted within 60 days of initial startup under this permit and at least once every 12 months thereafter. [District Rules 2201 and 4703, CFR 60.335(a)]

Section 6.3.2 specifies source testing requirements for units operating less than 877 hours per year. As discussed above, each turbine system will be allowed to operate in excess of 877 hours per year. Therefore, the requirements of this section are not applicable and no further discussion is required.

Section 6.3.3 states that units with intermittently operated auxiliary burners shall demonstrate compliance with the auxiliary burner in both "on" and "off" configurations. These gas turbines are not equipped with auxiliary burners. Therefore, this section is not applicable.

Section 6.4 states that the facility must demonstrate compliance annually with the NO<sub>x</sub> and CO emission limits using the following test methods, unless otherwise approved by the APCO and EPA:

- Oxides of nitrogen emissions for compliance tests shall be determined by using EPA Method 7E or EPA Method 20.
- Carbon monoxide emissions for compliance tests shall be determined by using EPA Test Methods 10 or 10B.
- Oxygen content of the exhaust gas shall be determined by using EPA Methods 3, 3A, or 20.
- HHV and LHV of gaseous fuels shall be determined by using ASTM D3588-91, ASTM 1826-88, or ASTM 1945-81.

The following condition will ensure continued compliance with the test method requirements of this section:

- The following test methods shall be used: NO<sub>x</sub> - EPA Method 7E or 20 or CARB Method 100; CO - EPA Method 10 or 10B or CARB Method 100; VOC - EPA Method 18 or 25; PM<sub>10</sub> - EPA Method 5 (front half and back half) or 201 and 202a; ammonia - BAAQMD ST-1B; and O<sub>2</sub> - EPA Method 3, 3A, or 20 or CARB Method 100. EPA approved alternative test methods as approved by the District may also be used to address the source testing requirements of this permit. [District Rules 1081 and 4703, 40 CFR 60.335(a), and 40 CFR 60.335(b)(1)]

Compliance is expected with this Rule.

#### **Rule 4801 Sulfur Compounds**

Section 3.1 states that a person shall not discharge into the atmosphere sulfur compounds, which would exist as a liquid or gas at standard conditions, exceeding a concentration of two-tenths (0.2) percent by volume calculated as sulfur dioxide (SO<sub>2</sub>) at the point of discharge on a dry basis averaged over 15 consecutive minutes.

For the proposed gaseous fuel combustion at a reference state of 60 °F, the Rule 4801 limit of 2,000 ppmvd is equivalent to:

$$\frac{(2000 \text{ ppmvd}) \left( 8,578 \frac{\text{dscf}}{\text{MMBtu}} \right) \left( 64 \frac{\text{lb} - \text{SO}_x}{\text{lb} - \text{mol}} \right)}{\left( 379.5 \frac{\text{dscf}}{\text{lb} - \text{mol}} \right) (10^6)} \cong 2.9 \frac{\text{lb} - \text{SO}_x}{\text{MMBtu}}$$

Each permit unit contains a SO<sub>x</sub> emission rate of 0.002 lb/MMBtu. Since this emission rate is less than 2.9 lb-SO<sub>x</sub>/MMBtu, compliance is expected with this Rule.

**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. Pending a successful NSR Public Noticing period, issue ATCs subject to the permit conditions on the attached draft ATCs in Appendix I.

**X. BILLING INFORMATION**

Permit #	Fee Schedule	Fee Description	Previous Fee Schedule
C-311-13, '-15,' -88, '-93, '-95 & '-97	3020-08A C	2.7 MW	3020-08A C

**APPENDICES**

Appendix I:	Draft Authority to Construct Permits
Appendix II:	Current Permits to Operate
Appendix III:	EPA Memo
Appendix IV:	Property Map
Appendix V:	Risk Management Review
Appendix VI:	Emissions Profile
Appendix VII:	Overview of a Black Start Procedure

## Appendix I

### Draft Authority to Construct Permits



**DEU ATCs**

San Joaquin Valley  
Air Pollution Control District

**AUTHORITY TO CONSTRUCT**

**ISSUANCE DATE: DRAFT**

**PERMIT NO:** C-311-13-10

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

**LOCATION:** HEAVY OIL PRODUCTION  
FRESNO COUNTY, CA

**SECTION:** 6C **TOWNSHIP:** 20S **RANGE:** 15E

**EQUIPMENT DESCRIPTION:**

MODIFICATION OF 86.4 MMBTU/HR COGENERATION SYSTEM WITH A NOMINAL RATED 40.9 MMBTU/HR SOLAR MODEL CENTAUR 40-4500 TURBINE ENGINE #TG-105, DRIVING A 2.7 MW ELECTRICAL GENERATOR AND INCLUDING A STRUTHERS WASTE HEAT RECOVERY STEAM GENERATOR #SG-205, WITH A 36.4 MMBTU/HR COEN DUCT BURNER: DESIGNATE AS A NON-COMPLIANT DORMANT EMISSIONS UNIT FOR TIER-3 NOX STANDARDS OF RULE 4703

**CONDITIONS**

1. {1829} The facility shall submit an application to modify the Title V permit in accordance with the timeframes and procedures of District Rule 2520. [District Rule 2520] Federally Enforceable Through Title V Permit
2. No modification to this unit shall be performed without an Authority to Construct for such modification(s), except for changes specified in conditions below. [District Rule 2010]
3. The fuel supply line shall be physically disconnected from this unit. [District Rule 4703]
4. This equipment shall not be operated for any reason until an Authority to Construct permit is issued approving all necessary retrofits required to comply with the applicable requirements of District Rule 4703 and all other applicable District regulations. [District Rule 4703]
5. {2256} Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201, 3.1] Federally Enforceable Through Title V Permit
6. The Owner/Operator shall maintain a separate fuel meter to the turbine and a fuel meter to the duct burners. [District Rule 2201] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

YOU **MUST** NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (559) 230-5950 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

C-311-13-10 : Nov 16 2009 8:03AM - BRARG : Joint Inspection Required with BRARG

7. Natural gas consumption by the cogeneration system (turbine and duct burner) shall not exceed 1,812,000 scf/day. Natural gas consumption by the cogeneration system shall not exceed 654 million scf/year. [District Rule 2201]
8. Emissions from the cogeneration system shall not exceed any of the following limits: 233.7 lb-NOx/day, 3.6 lb-SOx/day, 47.1 lb-PM10/day, 257.3 lb-CO/day, or 47.1 lb-VOC/day. [District Rule 2201] Federally Enforceable Through Title V Permit
9. The owner or operator shall not operate the gas turbine under load conditions, excluding the thermal stabilization period or reduced load period, which results in the measured NOx emissions concentration exceeding 35 ppmv @ 15% O2. [40 CFR 60.332(a)(1), (a)(2) and District Rules 2201 and 4703, 5.1.2.1] Federally Enforceable Through Title V Permit
10. CO emissions from the cogeneration system with the duct burner firing shall not exceed 53 ppmv CO @ 15% O2 or 0.119 lb-CO/MMBtu, excluding thermal stabilization periods or reduced load periods. [District Rule 4703, 5.2] Federally Enforceable Through Title V Permit
11. CO emissions from the cogeneration system without duct burner firing shall not exceed 63 ppmv CO @ 15% O2 or 0.142 lb CO/MMBtu, excluding thermal stabilization periods or reduced load periods. [District Rule 4703, 5.2] Federally Enforceable Through Title V Permit
12. Emissions from the cogeneration system (with or without duct burner firing) shall not exceed any of the following limits: 0.002 lb-SOx/MMBtu, 0.026 lb-PM10/MMBtu, or 0.026 lb-VOC/MMBtu. [District Rule 2201] Federally Enforceable Through Title V Permit
13. Reduced Load Period shall be defined as the time during which the gas turbine is operated at less than rated capacity in order to change the position of the exhaust gas diverter gate, not exceeding one hour. [District Rule 4703, 3.19] Federally Enforceable Through Title V Permit
14. Thermal Stabilization Period shall be defined as the startup or shutdown, as defined in 40 CFR 60.2, time during which the exhaust gas is not within the normal operating temperature range, not to exceed two hours per startup or shutdown event. [District Rule 4703, 3.25] Federally Enforceable Through Title V Permit
15. This unit shall be fired exclusively on natural gas as defined in 40 CFR 60.331(u) and the natural gas shall have a total sulfur content less than or equal to 1.0 gr/100 scf. [40 CFR 60.333(b) and District Rules 2201 and 4201] Federally Enforceable Through Title V Permit
16. The sulfur fuel content of each fuel source shall be: (i) documented in a valid purchase contract, a supplier certification, a tariff sheet or transportation contract or (ii) monitored weekly using ASTM Methods D4084, D5504, D6228, or Gas Processors Association Standard 2377, or double GC for H2S and mercaptans. If the sulfur fuel content is less than 1.0 gr/100 scf for eight consecutive weeks, then the monitoring frequency shall be every 6 months. If any six-month monitoring tests result in a sulfur fuel content exceedance, weekly monitoring shall resume. [40 CFR 60.334(h)(3)] Federally Enforceable Through Title V Permit
17. Performance testing shall be conducted annually to measure NOx and CO emissions concentrations using the following test methods: EPA Methods 7E or 20 for NOx emissions, EPA Methods 10 or 10B for CO emissions, EPA Methods 3, 3A, or 20 for Oxygen content of the exhaust gas. The test will be comprised of three test runs performed at the highest physically achievable load of the gas turbine. The measured NOx concentrations shall be averaged over a three hour period, using consecutive 15-minute sampling periods. [40 CFR 60.335(a), (b)(2) and District Rule 4703, 5.1, 6.3.1, 6.3.2, and 6.4] Federally Enforceable Through Title V Permit
18. Any gas turbine with an intermittently operated auxiliary burner shall demonstrate compliance with the auxiliary burner both on and off. Source testing shall not be required with the duct burner on if it has not been in operation during the previous 12 months, i.e. the duct burner need not be started to solely perform source testing. Source testing shall not be required with the duct burner off if it has been in continuous operation during the previous 12 months, i.e. the duct burner need not be shut-down solely to perform source testing. Source testing shall be performed within 60 days of startup or shutdown of the duct burner unless source testing of the duct burner has been performed in the previous 12 months. [40 CFR 60.335(b) and District Rule 4703, 6.3.3] Federally Enforceable Through Title V Permit
19. HHV and LHV of the fuel shall be determined using ASTM D3588, ASTM 1826, or ASTM 1945. [40 CFR 60.335(b) and District Rule 4703, 6.4.5] Federally Enforceable Through Title V Permit

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20. The owner or operator shall be required to conform to the sampling facilities and testing procedures described in Rule 1081 (as amended 12/16/93), Sections 3.0 and 6.1. [District Rule 1081] Federally Enforceable Through Title V Permit
21. The District must be notified 30 days prior to any performance testing and a test plan shall be submitted for approval 15 days prior to such testing. [District Rule 1081] Federally Enforceable Through Title V Permit
22. Performance testing shall be witnessed or authorized by District personnel. Test results must be submitted to the District within 60 days of performance testing. [District Rule 1081] Federally Enforceable Through Title V Permit
23. The owner or operator shall operate and maintain in calibration a system which continuously measures and records: control system operating parameters, elapsed time of operation, the fuel consumption and the ratio of water to fuel being fired in the turbine. [40 CFR 60.334(a) and District Rule 4703, 6.2.2] Federally Enforceable Through Title V Permit
24. The owner or operator shall develop and keep on-site a parameter monitoring plan which includes the procedures used to document the proper operation of the NOx emissions controls (water injection). This plan shall include the parameter(s) monitored, such as the water-to-fuel ratio, and the acceptable range(s) of the parameter(s) as well as the basis for designating the parameter(s) and acceptable range(s). Any supplemental data such as engineering analyses, design specifications, manufacturers recommendations and other relevant information shall be included in the monitoring plan. [40 CFR 60.334(g)] Federally Enforceable Through Title V Permit
25. The water to fuel ratio shall not be less than 0.45 on a weight basis. [District Rule 4703, 6.2.5] Federally Enforceable Through Title V Permit
26. The owner or operator shall submit a semi-annual excess NOx emissions and monitor downtime report to the APCO. Excess emissions shall be reported for all periods of operation, including startup, shutdown and malfunction. The report, post marked by the 30th day following the end of every other calendar quarter, shall include the following: Time intervals, average steam or water-to-fuel ratio, turbine load, nature and cause of excess emissions (if known), and corrective actions taken and preventative measures adopted. [40 CFR 60.334(j), (j)(5) and District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
27. Excess emissions shall be defined as any operating hour for which the steam or water to fuel ratio, as measured by the continuous monitoring system, falls below the established steam or water to fuel ratio. Any operating hour in which no steam or water is injected into the turbine shall also be considered as excess emissions. [40 CR 60.334(j)(1)(i)(A)] Federally Enforceable Through Title V Permit
28. Monitor downtime shall be any operating hour in which the water or steam is injected into the turbine, but essential parametric data needed to determine the steam or water to fuel ratio are unavailable or invalid. [40 CFR 60.334(j)(1)(i)(B)] Federally Enforceable Through Title V Permit
29. Fuel consumption and the water-to-fuel ratio shall be monitored continuously with a system that is accurate to within 5 percent. [District Rule 2201] Federally Enforceable Through Title V Permit
30. The cogeneration system shall be equipped with a meter recording the total elapsed operating time. [District NSR Rule] Federally Enforceable Through Title V Permit
31. Permittee shall notify the District of any breakdown condition as soon as reasonably possible, but no later than one hour after its detection, unless the owner or operator demonstrates to the District's satisfaction that the longer reporting period was necessary. [District Rule 1100] Federally Enforceable Through Title V Permit
32. The District shall be notified in writing within ten days following the correction of any breakdown condition. The breakdown notification shall include a description of the equipment malfunction or failure, the date and cause of the initial failure, the estimated emissions in excess of those allowed, and the methods utilized to restore normal operations. [District Rule 1100] Federally Enforceable Through Title V Permit
33. If the water injection system is inoperative when the turbine is running, the operator shall follow procedures pursuant to District Rule 1100 (Equipment Breakdown). [District Rule 1100] Federally Enforceable Through Title V Permit
34. {741} The requirements of 40 CFR 72.6 (b) do not apply to this source because only non-Title IV sources can qualify to use the applicable template. A permit shield is granted from this requirement. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit

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CONDITIONS CONTINUE ON NEXT PAGE

35. If the turbine is fired on PUC-regulated natural gas, then the operator shall maintain a log describing the source of natural gas and quantity used. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
36. Records shall be maintained and shall contain: the occurrence and duration of any start-up, shutdown or malfunction, performance testing, evaluations, calibrations, checks, adjustments and emissions measurements. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
37. The owner or operator shall maintain a record of the cumulative rolling 12 month fuel usage for each turbine. The record shall be updated at the end of each calendar month. [District Rule 2201] Federally Enforceable Through Title V Permit
38. {787} Operator shall maintain a stationary gas turbine operating log that includes, on a daily basis, the actual local start-up and stop time, length and reason for reduced load periods, total hours of operation and quantity of fuel used. [40 CFR 60.332(a),(b) and District Rule 4703, 6.2.4] Federally Enforceable Through Title V Permit
39. {2271} The owner or operator of a stationary gas turbine system shall maintain all records of required monitoring data and support information for inspection at any time for a period of five years. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
40. Compliance with permit conditions in the Title V permit shall be deemed compliance with the following applicable requirements: 40 CFR 60.332(a)(1), (a)(2), 60.333 (b), (g), (h)(3), (j), (j)(1)(i)(A), (j)(1)(i)(b), and (j)(5); 60.335(a), (b)(2), (b)(3); and District Rule 4703 (as amended 4/25/02), Sections 5.1.2.1, 5.2, 6.2.2, 6.4, and 6.2.6. A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit
41. Compliance with permit conditions in the Title V permit shall be deemed compliance with District Rule 1081(as amended 12/16/93), Section 3.0, 6.0, 7.1, 7.2, 7.3 and Rule 4201 (as amended 12/17/92). A permit shield is granted from these requirements. [District Rule 2520, 13.2] 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:** C-311-15-10

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

**LOCATION:** HEAVY OIL PRODUCTION  
FRESNO COUNTY, CA

**SECTION:** 6C **TOWNSHIP:** 20S **RANGE:** 15E

**EQUIPMENT DESCRIPTION:**

MODIFICATION OF 86.4 MMBTU/HR COGENERATION SYSTEM WITH A NOMINAL RATED 40.9 MMBTU/HR SOLAR MODEL CENTAUR 40-4500 TURBINE ENGINE #TG-106, DRIVING A 2.7 MW ELECTRICAL GENERATOR AND INCLUDING A STRUTHERS WASTE HEAT RECOVERY STEAM GENERATOR #SG-206 WITH A 36.4 MMBTU/HR COEN DUCT BURNER: DESIGNATE AS A NON-COMPLIANT DORMANT EMISSIONS UNIT FOR TIER-3 NOX STANDARDS OF RULE 4703

**CONDITIONS**

1. {1829} The facility shall submit an application to modify the Title V permit in accordance with the timeframes and procedures of District Rule 2520. [District Rule 2520] Federally Enforceable Through Title V Permit
2. No modification to this unit shall be performed without an Authority to Construct for such modification(s), except for changes specified in conditions below. [District Rule 2010]
3. The fuel supply line shall be physically disconnected from this unit. [District Rule 4703]
4. This equipment shall not be operated for any reason until an Authority to Construct permit is issued approving all necessary retrofits required to comply with the applicable requirements of District Rule 4703 and all other applicable District regulations. [District Rule 4703]
5. {2256} Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201, 3.1] Federally Enforceable Through Title V Permit
6. The Owner/Operator shall maintain a separate fuel meter to the turbine and a fuel meter to the duct burners. [District Rule 2201] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

**YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (559) 230-5950 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 YAPCO

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DAVID WARNER, Director of Permit Services

C-311-15-10 : Nov 16 2009 8:03AM -- BRARG : Joint Inspection Required with BRARG

7. Natural gas consumption by the cogeneration system (turbine and duct burner) shall not exceed 1,812,000 scf/day. Natural gas consumption by the cogeneration system shall not exceed 654 million scf/year. [District Rule 2201]
8. Emissions from the cogeneration system shall not exceed any of the following limits: 233.7 lb-NOx/day, 3.6 lb-SOx/day, 47.1 lb-PM10/day, 257.3 lb-CO/day, or 47.1 lb-VOC/day. [District Rule 2201] Federally Enforceable Through Title V Permit
9. The owner or operator shall not operate the gas turbine under load conditions, excluding the thermal stabilization period or reduced load period, which results in the measured NOx emissions concentration exceeding 35 ppmv @ 15% O2. [40 CFR 60.332(a)(1), (a)(2) and District Rules 2201 and 4703, 5.1.2.1] Federally Enforceable Through Title V Permit
10. CO emissions from the cogeneration system with the duct burner firing shall not exceed 53 ppmv CO @ 15% O2 or 0.119 lb-CO/MMBtu, excluding thermal stabilization periods or reduced load periods. [District Rule 4703, 5.2] Federally Enforceable Through Title V Permit
11. CO emissions from the cogeneration system without duct burner firing shall not exceed 63 ppmv CO @ 15% O2 or 0.142 lb CO/MMBtu, excluding thermal stabilization periods or reduced load periods. [District Rule 4703, 5.2] Federally Enforceable Through Title V Permit
12. Emissions from the cogeneration system (with or without duct burner firing) shall not exceed any of the following limits: 0.002 lb-SOx/MMBtu, 0.026 lb-PM10/MMBtu, or 0.026 lb-VOC/MMBtu. [District Rule 2201] Federally Enforceable Through Title V Permit
13. Reduced Load Period shall be defined as the time during which the gas turbine is operated at less than rated capacity in order to change the position of the exhaust gas diverter gate, not exceeding one hour. [District Rule 4703, 3.19] Federally Enforceable Through Title V Permit
14. Thermal Stabilization Period shall be defined as the startup or shutdown, as defined in 40 CFR 60.2, time during which the exhaust gas is not within the normal operating temperature range, not to exceed two hours per startup or shutdown event. [District Rule 4703, 3.25] Federally Enforceable Through Title V Permit
15. This unit shall be fired exclusively on natural gas as defined in 40 CFR 60.331(u) and the natural gas shall have a total sulfur content less than or equal to 1.0 gr/100 scf. [40 CFR 60.333(b) and District Rules 2201 and 4201] Federally Enforceable Through Title V Permit
16. The sulfur fuel content of each fuel source shall be: (i) documented in a valid purchase contract, a supplier certification, a tariff sheet or transportation contract or (ii) monitored weekly using ASTM Methods D4084, D5504, D6228, or Gas Processors Association Standard 2377, or double GC for H2S and mercaptans. If the sulfur fuel content is less than 1.0 gr/100 scf for eight consecutive weeks, then the monitoring frequency shall be every 6 months. If any six-month monitoring tests result in a sulfur fuel content exceedance, weekly monitoring shall resume. [40 CFR 60.334(h)(3)] Federally Enforceable Through Title V Permit
17. Performance testing shall be conducted annually to measure NOx and CO emissions concentrations using the following test methods: EPA Methods 7E or 20 for NOx emissions, EPA Methods 10 or 10B for CO emissions, EPA Methods 3, 3A, or 20 for Oxygen content of the exhaust gas. The test will be comprised of three test runs performed at the highest physically achievable load of the gas turbine. The measured NOx concentrations shall be averaged over a three hour period, using consecutive 15-minute sampling periods. [40 CFR 60.335(a), (b)(2) and District Rule 4703, 5.1, 6.3.1, 6.3.2, and 6.4] Federally Enforceable Through Title V Permit
18. Any gas turbine with an intermittently operated auxiliary burner shall demonstrate compliance with the auxiliary burner both on and off. Source testing shall not be required with the duct burner on if it has not been in operation during the previous 12 months, i.e. the duct burner need not be started to solely perform source testing. Source testing shall not be required with the duct burner off if it has been in continuous operation during the previous 12 months, i.e. the duct burner need not be shut-down solely to perform source testing. Source testing shall be performed within 60 days of startup or shutdown of the duct burner unless source testing of the duct burner has been performed in the previous 12 months. [40 CFR 60.335(b) and District Rule 4703, 6.3.3] Federally Enforceable Through Title V Permit
19. HHV and LHV of the fuel shall be determined using ASTM D3588, ASTM 1826, or ASTM 1945. [40 CFR 60.335(b) and District Rule 4703, 6.4.5] Federally Enforceable Through Title V Permit

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CONDITIONS CONTINUE ON NEXT PAGE

20. The owner or operator shall be required to conform to the sampling facilities and testing procedures described in Rule 1081 (as amended 12/16/93), Sections 3.0 and 6.1. [District Rule 1081] Federally Enforceable Through Title V Permit
21. The District must be notified 30 days prior to any performance testing and a test plan shall be submitted for approval 15 days prior to such testing. [District Rule 1081] Federally Enforceable Through Title V Permit
22. Performance testing shall be witnessed or authorized by District personnel. Test results must be submitted to the District within 60 days of performance testing. [District Rule 1081] Federally Enforceable Through Title V Permit
23. The owner or operator shall operate and maintain in calibration a system which continuously measures and records: control system operating parameters, elapsed time of operation, the fuel consumption and the ratio of water to fuel being fired in the turbine. [40 CFR 60.334(a) and District Rule 4703, 6.2.2] Federally Enforceable Through Title V Permit
24. The owner or operator shall develop and keep on-site a parameter monitoring plan which includes the procedures used to document the proper operation of the NOx emissions controls (water injection). This plan shall include the parameter(s) monitored, such as the water-to-fuel ratio, and the acceptable range(s) of the parameter(s) as well as the basis for designating the parameter(s) and acceptable range(s). Any supplemental data such as engineering analyses, design specifications, manufacturers recommendations and other relevant information shall be included in the monitoring plan. [40 CFR 60.334(g)] Federally Enforceable Through Title V Permit
25. The water to fuel ratio shall not be less than 0.45 on a weight basis. [District Rule 4703, 6.2.5] Federally Enforceable Through Title V Permit
26. The owner or operator shall submit a semi-annual excess NOx emissions and monitor downtime report to the APCO. Excess emissions shall be reported for all periods of operation, including startup, shutdown and malfunction. The report, post marked by the 30th day following the end of every other calendar quarter, shall include the following: Time intervals, average steam or water-to-fuel ratio, turbine load, nature and cause of excess emissions (if known), and corrective actions taken and preventative measures adopted. [40 CFR 60.334(j), (j)(5) and District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
27. Excess emissions shall be defined as any operating hour for which the steam or water to fuel ratio, as measured by the continuous monitoring system, falls below the established steam or water to fuel ratio. Any operating hour in which no steam or water is injected into the turbine shall also be considered as excess emissions. [40 CR 60.334(j)(1)(i)(A)] Federally Enforceable Through Title V Permit
28. Monitor downtime shall be any operating hour in which the water or steam is injected into the turbine, but essential parametric data needed to determine the steam or water to fuel ratio are unavailable or invalid. [40 CFR 60.334(j)(1)(i)(B)] Federally Enforceable Through Title V Permit
29. Fuel consumption and the water-to-fuel ratio shall be monitored continuously with a system that is accurate to within 5 percent. [District Rule 2201] Federally Enforceable Through Title V Permit
30. The cogeneration system shall be equipped with a meter recording the total elapsed operating time. [District NSR Rule] Federally Enforceable Through Title V Permit
31. Permittee shall notify the District of any breakdown condition as soon as reasonably possible, but no later than one hour after its detection, unless the owner or operator demonstrates to the District's satisfaction that the longer reporting period was necessary. [District Rule 1100] Federally Enforceable Through Title V Permit
32. The District shall be notified in writing within ten days following the correction of any breakdown condition. The breakdown notification shall include a description of the equipment malfunction or failure, the date and cause of the initial failure, the estimated emissions in excess of those allowed, and the methods utilized to restore normal operations. [District Rule 1100] Federally Enforceable Through Title V Permit
33. If the water injection system is inoperative when the turbine is running, the operator shall follow procedures pursuant to District Rule 1100 (Equipment Breakdown). [District Rule 1100] Federally Enforceable Through Title V Permit
34. {741} The requirements of 40 CFR 72.6 (b) do not apply to this source because only non-Title IV sources can qualify to use the applicable template. A permit shield is granted from this requirement. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit

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CONDITIONS CONTINUE ON NEXT PAGE



35. If the turbine is fired on PUC-regulated natural gas, then the operator shall maintain a log describing the source of natural gas and quantity used. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
36. Records shall be maintained and shall contain: the occurrence and duration of any start-up, shutdown or malfunction, performance testing, evaluations, calibrations, checks, adjustments and emissions measurements. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
37. The owner or operator shall maintain a record of the cumulative rolling 12 month fuel usage for each turbine. The record shall be updated at the end of each calendar month. [District Rule 2201] Federally Enforceable Through Title V Permit
38. {787} Operator shall maintain a stationary gas turbine operating log that includes, on a daily basis, the actual local start-up and stop time, length and reason for reduced load periods, total hours of operation and quantity of fuel used. [40 CFR 60.332(a),(b) and District Rule 4703, 6.2.4] Federally Enforceable Through Title V Permit
39. {2271} The owner or operator of a stationary gas turbine system shall maintain all records of required monitoring data and support information for inspection at any time for a period of five years. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
40. Compliance with permit conditions in the Title V permit shall be deemed compliance with the following applicable requirements: 40 CFR 60.332(a)(1), (a)(2), 60.333 (b), (g), (h)(3), (j), (j)(1)(i)(A), (j)(1)(i)(b), and (j)(5); 60.335(a), (b)(2), (b)(3); and District Rule 4703 (as amended 4/25/02), Sections 5.1.2.1, 5.2, 6.2.2, 6.4, and 6.2.6. A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit
41. Compliance with permit conditions in the Title V permit shall be deemed compliance with District Rule 1081(as amended 12/16/93), Section 3.0, 6.0, 7.1, 7.2, 7.3 and Rule 4201 (as amended 12/17/92). A permit shield is granted from these requirements. [District Rule 2520, 13.2] 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: C-311-88-10

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

LOCATION: HEAVY OIL PRODUCTION  
FRESNO COUNTY, CA

SECTION: 25 TOWNSHIP: 20S RANGE: 14E

**EQUIPMENT DESCRIPTION:**

MODIFICATION OF 86.4 MMBTU/HR COGENERATION SYSTEM WITH A NOMINAL RATED 40.9 MMBTU/HR SOLAR MODEL CENTAUR 40-4500 TURBINE ENGINE #TG-104, DRIVING A 2.7 MW ELECTRICAL GENERATOR AND INCLUDING A STRUTHERS WASTE HEAT RECOVERY STEAM GENERATOR #SG-204, WITH A 36.4 MMBTU/HR COEN DUCT BURNER: DESIGNATE AS A NON-COMPLIANT DORMANT EMISSIONS UNIT FOR TIER-3 NOX STANDARDS OF RULE 4703

**CONDITIONS**

1. {1829} The facility shall submit an application to modify the Title V permit in accordance with the timeframes and procedures of District Rule 2520. [District Rule 2520] Federally Enforceable Through Title V Permit
2. No modification to this unit shall be performed without an Authority to Construct for such modification(s), except for changes specified in conditions below. [District Rule 2010]
3. The fuel supply line shall be physically disconnected from this unit. [District Rule 4703]
4. This equipment shall not be operated for any reason until an Authority to Construct permit is issued approving all necessary retrofits required to comply with the applicable requirements of District Rule 4703 and all other applicable District regulations. [District Rule 4703]
5. {2256} Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201, 3.1] Federally Enforceable Through Title V Permit
6. The Owner/Operator shall maintain a separate fuel meter to the turbine and a fuel meter to the duct burners. [District Rule 2201] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (559) 230-5950 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

C-311-88-10: Nov 16 2009 8:03AM - BRARG : Joint Inspection Required with BRARG

7. Natural gas consumption by the cogeneration system (turbine and duct burner) shall not exceed 1,812,000 scf/day. Natural gas consumption by the cogeneration system shall not exceed 654 million scf/year. [District Rule 2201]
8. Emissions from the cogeneration system shall not exceed any of the following limits: 233.7 lb-NOx/day, 3.6 lb-SOx/day, 47.1 lb-PM10/day, 257.3 lb-CO/day, or 47.1 lb-VOC/day. [District Rule 2201] Federally Enforceable Through Title V Permit
9. The owner or operator shall not operate the gas turbine under load conditions, excluding the thermal stabilization period or reduced load period, which results in the measured NOx emissions concentration exceeding 35 ppmv @ 15% O2. [40 CFR 60.332(a)(1), (a)(2) and District Rules 2201 and 4703, 5.1.2.1] Federally Enforceable Through Title V Permit
10. CO emissions from the cogeneration system with the duct burner firing shall not exceed 53 ppmv CO @ 15% O2 or 0.119 lb-CO/MMBtu, excluding thermal stabilization periods or reduced load periods. [District Rule 4703, 5.2] Federally Enforceable Through Title V Permit
11. CO emissions from the cogeneration system without duct burner firing shall not exceed 63 ppmv CO @ 15% O2 or 0.142 lb CO/MMBtu, excluding thermal stabilization periods or reduced load periods. [District Rule 4703, 5.2] Federally Enforceable Through Title V Permit
12. Emissions from the cogeneration system (with or without duct burner firing) shall not exceed any of the following limits: 0.002 lb-SOx/MMBtu, 0.026 lb-PM10/MMBtu, or 0.026 lb-VOC/MMBtu. [District Rule 2201] Federally Enforceable Through Title V Permit
13. Reduced Load Period shall be defined as the time during which the gas turbine is operated at less than rated capacity in order to change the position of the exhaust gas diverter gate, not exceeding one hour. [District Rule 4703, 3.19] Federally Enforceable Through Title V Permit
14. Thermal Stabilization Period shall be defined as the startup or shutdown, as defined in 40 CFR 60.2, time during which the exhaust gas is not within the normal operating temperature range, not to exceed two hours per startup or shutdown event. [District Rule 4703, 3.25] Federally Enforceable Through Title V Permit
15. This unit shall be fired exclusively on natural gas as defined in 40 CFR 60.331(u) and the natural gas shall have a total sulfur content less than or equal to 1.0 gr/100 scf. [40 CFR 60.333(b) and District Rules 2201 and 4201] Federally Enforceable Through Title V Permit
16. The sulfur fuel content of each fuel source shall be: (i) documented in a valid purchase contract, a supplier certification, a tariff sheet or transportation contract or (ii) monitored weekly using ASTM Methods D4084, D5504, D6228, or Gas Processors Association Standard 2377, or double GC for H2S and mercaptans. If the sulfur fuel content is less than 1.0 gr/100 scf for eight consecutive weeks, then the monitoring frequency shall be every 6 months. If any six-month monitoring tests result in a sulfur fuel content exceedance, weekly monitoring shall resume. [40 CFR 60.334(h)(3)] Federally Enforceable Through Title V Permit
17. Performance testing shall be conducted annually to measure NOx and CO emissions concentrations using the following test methods: EPA Methods 7E or 20 for NOx emissions, EPA Methods 10 or 10B for CO emissions, EPA Methods 3, 3A, or 20 for Oxygen content of the exhaust gas. The test will be comprised of three test runs performed at the highest physically achievable load of the gas turbine. The measured NOx concentrations shall be averaged over a three hour period, using consecutive 15-minute sampling periods. [40 CFR 60.335(a), (b)(2) and District Rule 4703, 5.1, 6.3.1, 6.3.2, and 6.4] Federally Enforceable Through Title V Permit
18. Any gas turbine with an intermittently operated auxiliary burner shall demonstrate compliance with the auxiliary burner both on and off. Source testing shall not be required with the duct burner on if it has not been in operation during the previous 12 months, i.e. the duct burner need not be started to solely perform source testing. Source testing shall not be required with the duct burner off if it has been in continuous operation during the previous 12 months, i.e. the duct burner need not be shut-down solely to perform source testing. Source testing shall be performed within 60 days of startup or shutdown of the duct burner unless source testing of the duct burner has been performed in the previous 12 months. [40 CFR 60.335(b) and District Rule 4703, 6.3.3] Federally Enforceable Through Title V Permit
19. HHV and LHV of the fuel shall be determined using ASTM D3588, ASTM 1826, or ASTM 1945. [40 CFR 60.335(b) and District Rule 4703, 6.4.5] Federally Enforceable Through Title V Permit

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CONDITIONS CONTINUE ON NEXT PAGE

20. The owner or operator shall be required to conform to the sampling facilities and testing procedures described in Rule 1081 (as amended 12/16/93), Sections 3.0 and 6.1. [District Rule 1081] Federally Enforceable Through Title V Permit
21. The District must be notified 30 days prior to any performance testing and a test plan shall be submitted for approval 15 days prior to such testing. [District Rule 1081] Federally Enforceable Through Title V Permit
22. Performance testing shall be witnessed or authorized by District personnel. Test results must be submitted to the District within 60 days of performance testing. [District Rule 1081] Federally Enforceable Through Title V Permit
23. The owner or operator shall operate and maintain in calibration a system which continuously measures and records: control system operating parameters, elapsed time of operation, the fuel consumption and the ratio of water to fuel being fired in the turbine. [40 CFR 60.334(a) and District Rule 4703, 6.2.2] Federally Enforceable Through Title V Permit
24. The owner or operator shall develop and keep on-site a parameter monitoring plan which includes the procedures used to document the proper operation of the NOx emissions controls (water injection). This plan shall include the parameter(s) monitored, such as the water-to-fuel ratio, and the acceptable range(s) of the parameter(s) as well as the basis for designating the parameter(s) and acceptable range(s). Any supplemental data such as engineering analyses, design specifications, manufacturers recommendations and other relevant information shall be included in the monitoring plan. [40 CFR 60.334(g)] Federally Enforceable Through Title V Permit
25. The water to fuel ratio shall not be less than 0.45 on a weight basis. [District Rule 4703, 6.2.5] Federally Enforceable Through Title V Permit
26. The owner or operator shall submit a semi-annual excess NOx emissions and monitor downtime report to the APCO. Excess emissions shall be reported for all periods of operation, including startup, shutdown and malfunction. The report, post marked by the 30th day following the end of every other calendar quarter, shall include the following: Time intervals, average steam or water-to-fuel ratio, turbine load, nature and cause of excess emissions (if known), and corrective actions taken and preventative measures adopted. [40 CFR 60.334(j), (j)(5) and District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
27. Excess emissions shall be defined as any operating hour for which the steam or water to fuel ratio, as measured by the continuous monitoring system, falls below the established steam or water to fuel ratio. Any operating hour in which no steam or water is injected into the turbine shall also be considered as excess emissions. [40 CR 60.334(j)(1)(i)(A)] Federally Enforceable Through Title V Permit
28. Monitor downtime shall be any operating hour in which the water or steam is injected into the turbine, but essential parametric data needed to determine the steam or water to fuel ratio are unavailable or invalid. [40 CFR 60.334(j)(1)(i)(B)] Federally Enforceable Through Title V Permit
29. Fuel consumption and the water-to-fuel ratio shall be monitored continuously with a system that is accurate to within 5 percent. [District Rule 2201] Federally Enforceable Through Title V Permit
30. The cogeneration system shall be equipped with a meter recording the total elapsed operating time. [District NSR Rule] Federally Enforceable Through Title V Permit
31. Permittee shall notify the District of any breakdown condition as soon as reasonably possible, but no later than one hour after its detection, unless the owner or operator demonstrates to the District's satisfaction that the longer reporting period was necessary. [District Rule 1100] Federally Enforceable Through Title V Permit
32. The District shall be notified in writing within ten days following the correction of any breakdown condition. The breakdown notification shall include a description of the equipment malfunction or failure, the date and cause of the initial failure, the estimated emissions in excess of those allowed, and the methods utilized to restore normal operations. [District Rule 1100] Federally Enforceable Through Title V Permit
33. If the water injection system is inoperative when the turbine is running, the operator shall follow procedures pursuant to District Rule 1100 (Equipment Breakdown). [District Rule 1100] Federally Enforceable Through Title V Permit
34. {741} The requirements of 40 CFR 72.6 (b) do not apply to this source because only non-Title IV sources can qualify to use the applicable template. A permit shield is granted from this requirement. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit

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CONDITIONS CONTINUE ON NEXT PAGE

35. If the turbine is fired on PUC-regulated natural gas, then the operator shall maintain a log describing the source of natural gas and quantity used. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
36. Records shall be maintained and shall contain: the occurrence and duration of any start-up, shutdown or malfunction, performance testing, evaluations, calibrations, checks, adjustments and emissions measurements. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
37. The owner or operator shall maintain a record of the cumulative rolling 12 month fuel usage for each turbine. The record shall be updated at the end of each calendar month. [District Rule 2201] Federally Enforceable Through Title V Permit
38. {787} Operator shall maintain a stationary gas turbine operating log that includes, on a daily basis, the actual local start-up and stop time, length and reason for reduced load periods, total hours of operation and quantity of fuel used. [40 CFR 60.332(a),(b) and District Rule 4703, 6.2.4] Federally Enforceable Through Title V Permit
39. {2271} The owner or operator of a stationary gas turbine system shall maintain all records of required monitoring data and support information for inspection at any time for a period of five years. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
40. Compliance with permit conditions in the Title V permit shall be deemed compliance with the following applicable requirements: 40 CFR 60.332(a)(1), (a)(2), 60.333 (b), (g), (h)(3), (j), (j)(1)(i)(A), (j)(1)(i)(b), and (j)(5); 60.335(a), (b)(2), (b)(3); and District Rule 4703 (as amended 4/25/02), Sections 5.1.2.1, 5.2, 6.2.2, 6.4, and 6.2.6. A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit
41. Compliance with permit conditions in the Title V permit shall be deemed compliance with District Rule 1081(as amended 12/16/93), Section 3.0, 6.0, 7.1, 7.2, 7.3 and Rule 4201 (as amended 12/17/92). A permit shield is granted from these requirements. [District Rule 2520, 13.2] 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:** C-311-93-10

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

**LOCATION:** HEAVY OIL PRODUCTION  
FRESNO COUNTY, CA

**SECTION:** 25 **TOWNSHIP:** 20S **RANGE:** 14E

**EQUIPMENT DESCRIPTION:**

MODIFICATION OF 86.4 MMBTU/HR COGENERATION SYSTEM WITH A NOMINAL RATED 40.9 MMBTU/HR SOLAR MODEL CENTAUR 40-4500 TURBINE ENGINE #TG-101, DRIVING A 2.7 MW ELECTRICAL GENERATOR AND INCLUDING A STRUTHERS WASTE HEAT RECOVERY STEAM GENERATOR #SG-201, WITH A 36.4 MMBTU/HR COEN DUCT BURNER: DESIGNATE AS A NON-COMPLIANT DORMANT EMISSIONS UNIT FOR TIER-3 NOX STANDARDS OF RULE 4703

**CONDITIONS**

1. {1829} The facility shall submit an application to modify the Title V permit in accordance with the timeframes and procedures of District Rule 2520. [District Rule 2520] Federally Enforceable Through Title V Permit
2. No modification to this unit shall be performed without an Authority to Construct for such modification(s), except for changes specified in conditions below. [District Rule 2010]
3. The fuel supply line shall be physically disconnected from this unit. [District Rule 4703]
4. This equipment shall not be operated for any reason until an Authority to Construct permit is issued approving all necessary retrofits required to comply with the applicable requirements of District Rule 4703 and all other applicable District regulations. [District Rule 4703]
5. {2256} Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201, 3.1] Federally Enforceable Through Title V Permit
6. The Owner/Operator shall maintain a separate fuel meter to the turbine and a fuel meter to the duct burners. [District Rule 2201] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (559) 230-5950 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

C-311-93-10 : Nov 16 2009 8:03AM -- BRARG : Joint Inspection Required with BRARG

7. Natural gas consumption by the cogeneration system (turbine and duct burner) shall not exceed 1,812,000 scf/day. Natural gas consumption by the cogeneration system shall not exceed 654 million scf/year. [District Rule 2201]
8. Emissions from the cogeneration system shall not exceed any of the following limits: 233.7 lb-NOx/day, 3.6 lb-SOx/day, 47.1 lb-PM10/day, 257.3 lb-CO/day, or 47.1 lb-VOC/day. [District Rule 2201] Federally Enforceable Through Title V Permit
9. The owner or operator shall not operate the gas turbine under load conditions, excluding the thermal stabilization period or reduced load period, which results in the measured NOx emissions concentration exceeding 35 ppmv @ 15% O2. [40 CFR 60.332(a)(1), (a)(2) and District Rules 2201 and 4703, 5.1.2.1] Federally Enforceable Through Title V Permit
10. CO emissions from the cogeneration system with the duct burner firing shall not exceed 53 ppmv CO @ 15% O2 or 0.119 lb-CO/MMBtu, excluding thermal stabilization periods or reduced load periods. [District Rule 4703, 5.2] Federally Enforceable Through Title V Permit
11. CO emissions from the cogeneration system without duct burner firing shall not exceed 63 ppmv CO @ 15% O2 or 0.142 lb CO/MMBtu, excluding thermal stabilization periods or reduced load periods. [District Rule 4703, 5.2] Federally Enforceable Through Title V Permit
12. Emissions from the cogeneration system (with or without duct burner firing) shall not exceed any of the following limits: 0.002 lb-SOx/MMBtu, 0.026 lb-PM10/MMBtu, or 0.026 lb-VOC/MMBtu. [District Rule 2201] Federally Enforceable Through Title V Permit
13. Reduced Load Period shall be defined as the time during which the gas turbine is operated at less than rated capacity in order to change the position of the exhaust gas diverter gate, not exceeding one hour. [District Rule 4703, 3.19] Federally Enforceable Through Title V Permit
14. Thermal Stabilization Period shall be defined as the startup or shutdown, as defined in 40 CFR 60.2, time during which the exhaust gas is not within the normal operating temperature range, not to exceed two hours per startup or shutdown event. [District Rule 4703, 3.25] Federally Enforceable Through Title V Permit
15. This unit shall be fired exclusively on natural gas as defined in 40 CFR 60.331(u) and the natural gas shall have a total sulfur content less than or equal to 1.0 gr/100 scf. [40 CFR 60.333(b) and District Rules 2201 and 4201] Federally Enforceable Through Title V Permit
16. The sulfur fuel content of each fuel source shall be: (i) documented in a valid purchase contract, a supplier certification, a tariff sheet or transportation contract or (ii) monitored weekly using ASTM Methods D4084, D5504, D6228, or Gas Processors Association Standard 2377, or double GC for H2S and mercaptans. If the sulfur fuel content is less than 1.0 gr/100 scf for eight consecutive weeks, then the monitoring frequency shall be every 6 months. If any six-month monitoring tests result in a sulfur fuel content exceedance, weekly monitoring shall resume. [40 CFR 60.334(h)(3)] Federally Enforceable Through Title V Permit
17. Performance testing shall be conducted annually to measure NOx and CO emissions concentrations using the following test methods: EPA Methods 7E or 20 for NOx emissions, EPA Methods 10 or 10B for CO emissions, EPA Methods 3, 3A, or 20 for Oxygen content of the exhaust gas. The test will be comprised of three test runs performed at the highest physically achievable load of the gas turbine. The measured NOx concentrations shall be averaged over a three hour period, using consecutive 15-minute sampling periods. [40 CFR 60.335(a), (b)(2) and District Rule 4703, 5.1, 6.3.1, 6.3.2, and 6.4] Federally Enforceable Through Title V Permit
18. Any gas turbine with an intermittently operated auxiliary burner shall demonstrate compliance with the auxiliary burner both on and off. Source testing shall not be required with the duct burner on if it has not been in operation during the previous 12 months, i.e. the duct burner need not be started to solely perform source testing. Source testing shall not be required with the duct burner off if it has been in continuous operation during the previous 12 months, i.e. the duct burner need not be shut-down solely to perform source testing. Source testing shall be performed within 60 days of startup or shutdown of the duct burner unless source testing of the duct burner has been performed in the previous 12 months. [40 CFR 60.335(b) and District Rule 4703, 6.3.3] Federally Enforceable Through Title V Permit
19. HHV and LHV of the fuel shall be determined using ASTM D3588, ASTM 1826, or ASTM 1945. [40 CFR 60.335(b) and District Rule 4703, 6.4.5] Federally Enforceable Through Title V Permit

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CONDITIONS CONTINUE ON NEXT PAGE



20. The owner or operator shall be required to conform to the sampling facilities and testing procedures described in Rule 1081 (as amended 12/16/93), Sections 3.0 and 6.1. [District Rule 1081] Federally Enforceable Through Title V Permit
21. The District must be notified 30 days prior to any performance testing and a test plan shall be submitted for approval 15 days prior to such testing. [District Rule 1081] Federally Enforceable Through Title V Permit
22. Performance testing shall be witnessed or authorized by District personnel. Test results must be submitted to the District within 60 days of performance testing. [District Rule 1081] Federally Enforceable Through Title V Permit
23. The owner or operator shall operate and maintain in calibration a system which continuously measures and records: control system operating parameters, elapsed time of operation, the fuel consumption and the ratio of water to fuel being fired in the turbine. [40 CFR 60.334(a) and District Rule 4703, 6.2.2] Federally Enforceable Through Title V Permit
24. The owner or operator shall develop and keep on-site a parameter monitoring plan which includes the procedures used to document the proper operation of the NOx emissions controls (water injection). This plan shall include the parameter(s) monitored, such as the water-to-fuel ratio, and the acceptable range(s) of the parameter(s) as well as the basis for designating the parameter(s) and acceptable range(s). Any supplemental data such as engineering analyses, design specifications, manufacturers recommendations and other relevant information shall be included in the monitoring plan. [40 CFR 60.334(g)] Federally Enforceable Through Title V Permit
25. The water to fuel ratio shall not be less than 0.45 on a weight basis. [District Rule 4703, 6.2.5] Federally Enforceable Through Title V Permit
26. The owner or operator shall submit a semi-annual excess NOx emissions and monitor downtime report to the APCO. Excess emissions shall be reported for all periods of operation, including startup, shutdown and malfunction. The report, post marked by the 30th day following the end of every other calendar quarter, shall include the following: Time intervals, average steam or water-to-fuel ratio, turbine load, nature and cause of excess emissions (if known), and corrective actions taken and preventative measures adopted. [40 CFR 60.334(j), (j)(5) and District Rule 2520, 9.3.2)] Federally Enforceable Through Title V Permit
27. Excess emissions shall be defined as any operating hour for which the steam or water to fuel ratio, as measured by the continuous monitoring system, falls below the established steam or water to fuel ratio. Any operating hour in which no steam or water is injected into the turbine shall also be considered as excess emissions. [40 CR 60.334(j)(1)(i)(A)] Federally Enforceable Through Title V Permit
28. Monitor downtime shall be any operating hour in which the water or steam is injected into the turbine, but essential parametric data needed to determine the steam or water to fuel ratio are unavailable or invalid. [40 CFR 60.334(j)(1)(i)(B)] Federally Enforceable Through Title V Permit
29. Fuel consumption and the water-to-fuel ratio shall be monitored continuously with a system that is accurate to within 5 percent. [District Rule 2201] Federally Enforceable Through Title V Permit
30. The cogeneration system shall be equipped with a meter recording the total elapsed operating time. [District NSR Rule] Federally Enforceable Through Title V Permit
31. Permittee shall notify the District of any breakdown condition as soon as reasonably possible, but no later than one hour after its detection, unless the owner or operator demonstrates to the District's satisfaction that the longer reporting period was necessary. [District Rule 1100] Federally Enforceable Through Title V Permit
32. The District shall be notified in writing within ten days following the correction of any breakdown condition. The breakdown notification shall include a description of the equipment malfunction or failure, the date and cause of the initial failure, the estimated emissions in excess of those allowed, and the methods utilized to restore normal operations. [District Rule 1100] Federally Enforceable Through Title V Permit
33. If the water injection system is inoperative when the turbine is running, the operator shall follow procedures pursuant to District Rule 1100 (Equipment Breakdown). [District Rule 1100] Federally Enforceable Through Title V Permit
34. {741} The requirements of 40 CFR 72.6 (b) do not apply to this source because only non-Title IV sources can qualify to use the applicable template. A permit shield is granted from this requirement. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit

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CONDITIONS CONTINUE ON NEXT PAGE



35. If the turbine is fired on PUC-regulated natural gas, then the operator shall maintain a log describing the source of natural gas and quantity used. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
36. Records shall be maintained and shall contain: the occurrence and duration of any start-up, shutdown or malfunction, performance testing, evaluations, calibrations, checks, adjustments and emissions measurements. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
37. The owner or operator shall maintain a record of the cumulative rolling 12 month fuel usage for each turbine. The record shall be updated at the end of each calendar month. [District Rule 2201] Federally Enforceable Through Title V Permit
38. {787} Operator shall maintain a stationary gas turbine operating log that includes, on a daily basis, the actual local start-up and stop time, length and reason for reduced load periods, total hours of operation and quantity of fuel used. [40 CFR 60.332(a),(b) and District Rule 4703, 6.2.4] Federally Enforceable Through Title V Permit
39. {2271} The owner or operator of a stationary gas turbine system shall maintain all records of required monitoring data and support information for inspection at any time for a period of five years. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
40. Compliance with permit conditions in the Title V permit shall be deemed compliance with the following applicable requirements: 40 CFR 60.332(a)(1), (a)(2), 60.333 (b), (g), (h)(3), (j), (j)(1)(i)(A), (j)(1)(i)(b), and (j)(5); 60.335(a), (b)(2), (b)(3); and District Rule 4703 (as amended 4/25/02), Sections 5.1.2.1, 5.2, 6.2.2, 6.4, and 6.2.6. A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit
41. Compliance with permit conditions in the Title V permit shall be deemed compliance with District Rule 1081(as amended 12/16/93), Section 3.0, 6.0, 7.1, 7.2, 7.3 and Rule 4201 (as amended 12/17/92). A permit shield is granted from these requirements. [District Rule 2520, 13.2] 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: C-311-95-10

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

LOCATION: HEAVY OIL PRODUCTION  
FRESNO COUNTY, CA

SECTION: 25 TOWNSHIP: 20S RANGE: 14

**EQUIPMENT DESCRIPTION:**

MODIFICATION OF 86.4 MMBTU/HR COGENERATION SYSTEM WITH A NOMINAL RATED 40.9 MMBTU/HR SOLAR MODEL CENTAUR 40-4500 TURBINE ENGINE #TG-102, DRIVING A 2.7 MW ELECTRICAL GENERATOR AND INCLUDING A STRUTHERS WASTE HEAT RECOVERY STEAM GENERATOR #SG-202, WITH A 36.4 MMBTU/HR COEN DUCT BURNER: DESIGNATE AS A NON-COMPLIANT DORMANT EMISSIONS UNIT FOR TIER-3 NOX STANDARDS OF RULE 4703

**CONDITIONS**

1. {1829} The facility shall submit an application to modify the Title V permit in accordance with the timeframes and procedures of District Rule 2520. [District Rule 2520] Federally Enforceable Through Title V Permit
2. No modification to this unit shall be performed without an Authority to Construct for such modification(s), except for changes specified in conditions below. [District Rule 2010]
3. The fuel supply line shall be physically disconnected from this unit. [District Rule 4703]
4. This equipment shall not be operated for any reason until an Authority to Construct permit is issued approving all necessary retrofits required to comply with the applicable requirements of District Rule 4703 and all other applicable District regulations. [District Rule 4703]
5. {2256} Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201, 3.1] Federally Enforceable Through Title V Permit
6. The Owner/Operator shall maintain a separate fuel meter to the turbine and a fuel meter to the duct burners. [District Rule 2201] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (559) 230-5950 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

C-311-95-10 : Nov 16 2009 8:03AM - BRARG : Joint Inspection Required with BRARG

7. Natural gas consumption by the cogeneration system (turbine and duct burner) shall not exceed 1,812,000 scf/day. Natural gas consumption by the cogeneration system shall not exceed 654 million scf/year. [District Rule 2201]
8. Emissions from the cogeneration system shall not exceed any of the following limits: 233.7 lb-NOx/day, 3.6 lb-SOx/day, 47.1 lb-PM10/day, 257.3 lb-CO/day, or 47.1 lb-VOC/day. [District Rule 2201] Federally Enforceable Through Title V Permit
9. The owner or operator shall not operate the gas turbine under load conditions, excluding the thermal stabilization period or reduced load period, which results in the measured NOx emissions concentration exceeding 35 ppmv @ 15% O2. [40 CFR 60.332(a)(1), (a)(2) and District Rules 2201 and 4703, 5.1.2.1] Federally Enforceable Through Title V Permit
10. CO emissions from the cogeneration system with the duct burner firing shall not exceed 53 ppmv CO @ 15% O2 or 0.119 lb-CO/MMBtu, excluding thermal stabilization periods or reduced load periods. [District Rule 4703, 5.2] Federally Enforceable Through Title V Permit
11. CO emissions from the cogeneration system without duct burner firing shall not exceed 63 ppmv CO @ 15% O2 or 0.142 lb CO/MMBtu, excluding thermal stabilization periods or reduced load periods. [District Rule 4703, 5.2] Federally Enforceable Through Title V Permit
12. Emissions from the cogeneration system (with or without duct burner firing) shall not exceed any of the following limits: 0.002 lb-SOx/MMBtu, 0.026 lb-PM10/MMBtu, or 0.026 lb-VOC/MMBtu. [District Rule 2201] Federally Enforceable Through Title V Permit
13. Reduced Load Period shall be defined as the time during which the gas turbine is operated at less than rated capacity in order to change the position of the exhaust gas diverter gate, not exceeding one hour. [District Rule 4703, 3.19] Federally Enforceable Through Title V Permit
14. Thermal Stabilization Period shall be defined as the startup or shutdown, as defined in 40 CFR 60.2, time during which the exhaust gas is not within the normal operating temperature range, not to exceed two hours per startup or shutdown event. [District Rule 4703, 3.25] Federally Enforceable Through Title V Permit
15. This unit shall be fired exclusively on natural gas as defined in 40 CFR 60.331(u) and the natural gas shall have a total sulfur content less than or equal to 1.0 gr/100 scf. [40 CFR 60.333(b) and District Rules 2201 and 4201] Federally Enforceable Through Title V Permit
16. The sulfur fuel content of each fuel source shall be: (i) documented in a valid purchase contract, a supplier certification, a tariff sheet or transportation contract or (ii) monitored weekly using ASTM Methods D4084, D5504, D6228, or Gas Processors Association Standard 2377, or double GC for H2S and mercaptans. If the sulfur fuel content is less than 1.0 gr/100 scf for eight consecutive weeks, then the monitoring frequency shall be every 6 months. If any six-month monitoring tests result in a sulfur fuel content exceedance, weekly monitoring shall resume. [40 CFR 60.334(h)(3)] Federally Enforceable Through Title V Permit
17. Performance testing shall be conducted annually to measure NOx and CO emissions concentrations using the following test methods: EPA Methods 7E or 20 for NOx emissions, EPA Methods 10 or 10B for CO emissions, EPA Methods 3, 3A, or 20 for Oxygen content of the exhaust gas. The test will be comprised of three test runs performed at the highest physically achievable load of the gas turbine. The measured NOx concentrations shall be averaged over a three hour period, using consecutive 15-minute sampling periods. [40 CFR 60.335(a), (b)(2) and District Rule 4703, 5.1, 6.3.1, 6.3.2, and 6.4] Federally Enforceable Through Title V Permit
18. Any gas turbine with an intermittently operated auxiliary burner shall demonstrate compliance with the auxiliary burner both on and off. Source testing shall not be required with the duct burner on if it has not been in operation during the previous 12 months, i.e. the duct burner need not be started to solely perform source testing. Source testing shall not be required with the duct burner off if it has been in continuous operation during the previous 12 months, i.e. the duct burner need not be shut-down solely to perform source testing. Source testing shall be performed within 60 days of startup or shutdown of the duct burner unless source testing of the duct burner has been performed in the previous 12 months. [40 CFR 60.335(b) and District Rule 4703, 6.3.3] Federally Enforceable Through Title V Permit
19. HHV and LHV of the fuel shall be determined using ASTM D3588, ASTM 1826, or ASTM 1945. [40 CFR 60.335(b) and District Rule 4703, 6.4.5] Federally Enforceable Through Title V Permit

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CONDITIONS CONTINUE ON NEXT PAGE

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22. Performance testing shall be witnessed or authorized by District personnel. Test results must be submitted to the District within 60 days of performance testing. [District Rule 1081] Federally Enforceable Through Title V Permit
23. The owner or operator shall operate and maintain in calibration a system which continuously measures and records: control system operating parameters, elapsed time of operation, the fuel consumption and the ratio of water to fuel being fired in the turbine. [40 CFR 60.334(a) and District Rule 4703, 6.2.2] Federally Enforceable Through Title V Permit
24. The owner or operator shall develop and keep on-site a parameter monitoring plan which includes the procedures used to document the proper operation of the NOx emissions controls (water injection). This plan shall include the parameter(s) monitored, such as the water-to-fuel ratio, and the acceptable range(s) of the parameter(s) as well as the basis for designating the parameter(s) and acceptable range(s). Any supplemental data such as engineering analyses, design specifications, manufacturers recommendations and other relevant information shall be included in the monitoring plan. [40 CFR 60.334(g)] Federally Enforceable Through Title V Permit
25. The water to fuel ratio shall not be less than 0.45 on a weight basis. [District Rule 4703, 6.2.5] Federally Enforceable Through Title V Permit
26. The owner or operator shall submit a semi-annual excess NOx emissions and monitor downtime report to the APCO. Excess emissions shall be reported for all periods of operation, including startup, shutdown and malfunction. The report, post marked by the 30th day following the end of every other calendar quarter, shall include the following: Time intervals, average steam or water-to-fuel ratio, turbine load, nature and cause of excess emissions (if known), and corrective actions taken and preventative measures adopted. [40 CFR 60.334(j), (j)(5) and District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
27. Excess emissions shall be defined as any operating hour for which the steam or water to fuel ratio, as measured by the continuous monitoring system, falls below the established steam or water to fuel ratio. Any operating hour in which no steam or water is injected into the turbine shall also be considered as excess emissions. [40 CR 60.334(j)(1)(i)(A)] Federally Enforceable Through Title V Permit
28. Monitor downtime shall be any operating hour in which the water or steam is injected into the turbine, but essential parametric data needed to determine the steam or water to fuel ratio are unavailable or invalid. [40 CFR 60.334(j)(1)(i)(B)] Federally Enforceable Through Title V Permit
29. Fuel consumption and the water-to-fuel ratio shall be monitored continuously with a system that is accurate to within 5 percent. [District Rule 2201] Federally Enforceable Through Title V Permit
30. The cogeneration system shall be equipped with a meter recording the total elapsed operating time. [District NSR Rule] Federally Enforceable Through Title V Permit
31. Permittee shall notify the District of any breakdown condition as soon as reasonably possible, but no later than one hour after its detection, unless the owner or operator demonstrates to the District's satisfaction that the longer reporting period was necessary. [District Rule 1100] Federally Enforceable Through Title V Permit
32. The District shall be notified in writing within ten days following the correction of any breakdown condition. The breakdown notification shall include a description of the equipment malfunction or failure, the date and cause of the initial failure, the estimated emissions in excess of those allowed, and the methods utilized to restore normal operations. [District Rule 1100] Federally Enforceable Through Title V Permit
33. If the water injection system is inoperative when the turbine is running, the operator shall follow procedures pursuant to District Rule 1100 (Equipment Breakdown). [District Rule 1100] Federally Enforceable Through Title V Permit
34. {741} The requirements of 40 CFR 72.6 (b) do not apply to this source because only non-Title IV sources can qualify to use the applicable template. A permit shield is granted from this requirement. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit

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CONDITIONS CONTINUE ON NEXT PAGE

35. If the turbine is fired on PUC-regulated natural gas, then the operator shall maintain a log describing the source of natural gas and quantity used. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
36. Records shall be maintained and shall contain: the occurrence and duration of any start-up, shutdown or malfunction, performance testing, evaluations, calibrations, checks, adjustments and emissions measurements. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
37. The owner or operator shall maintain a record of the cumulative rolling 12 month fuel usage for each turbine. The record shall be updated at the end of each calendar month. [District Rule 2201] Federally Enforceable Through Title V Permit
38. {787} Operator shall maintain a stationary gas turbine operating log that includes, on a daily basis, the actual local start-up and stop time, length and reason for reduced load periods, total hours of operation and quantity of fuel used. [40 CFR 60.332(a),(b) and District Rule 4703, 6.2.4] Federally Enforceable Through Title V Permit
39. {2271} The owner or operator of a stationary gas turbine system shall maintain all records of required monitoring data and support information for inspection at any time for a period of five years. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
40. Compliance with permit conditions in the Title V permit shall be deemed compliance with the following applicable requirements: 40 CFR 60.332(a)(1), (a)(2), 60.333 (b), (g), (h)(3), (j), (j)(1)(i)(A), (j)(1)(i)(b), and (j)(5); 60.335(a), (b)(2), (b)(3); and District Rule 4703 (as amended 4/25/02), Sections 5.1.2.1, 5.2, 6.2.2, 6.4, and 6.2.6. A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit
41. Compliance with permit conditions in the Title V permit shall be deemed compliance with District Rule 1081(as amended 12/16/93), Section 3.0, 6.0, 7.1, 7.2, 7.3 and Rule 4201 (as amended 12/17/92). A permit shield is granted from these requirements. [District Rule 2520, 13.2] 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: C-311-97-10

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

LOCATION: HEAVY OIL PRODUCTION  
FRESNO COUNTY, CA

SECTION: 25 TOWNSHIP: 20S RANGE: 14E

**EQUIPMENT DESCRIPTION:**

MODIFICATION OF 86.4 MMBTU/HR COGENERATION SYSTEM WITH A NOMINAL RATED 40.9 MMBTU/HR SOLAR MODEL CENTAUR 40-4500 TURBINE ENGINE #TG-103, DRIVING A 2.7 MW ELECTRICAL GENERATOR AND INCLUDING A STRUTHERS WASTE HEAT RECOVERY STEAM GENERATOR #SG-203, WITH A 36.4 MMBTU/HR COEN DUCT BURNER: DESIGNATE AS A NON-COMPLIANT DORMANT EMISSIONS UNIT FOR TIER-3 NOX STANDARDS OF RULE 4703

**CONDITIONS**

1. {1829} The facility shall submit an application to modify the Title V permit in accordance with the timeframes and procedures of District Rule 2520. [District Rule 2520] Federally Enforceable Through Title V Permit
2. No modification to this unit shall be performed without an Authority to Construct for such modification(s), except for changes specified in conditions below. [District Rule 2010]
3. The fuel supply line shall be physically disconnected from this unit. [District Rule 4703]
4. This equipment shall not be operated for any reason until an Authority to Construct permit is issued approving all necessary retrofits required to comply with the applicable requirements of District Rule 4703 and all other applicable District regulations. [District Rule 4703]
5. {2256} Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201, 3.1] Federally Enforceable Through Title V Permit
6. The Owner/Operator shall maintain a separate fuel meter to the turbine and a fuel meter to the duct burners. [District Rule 2201] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

**YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (559) 230-5950 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

C-311-97-10: Nov 16 2009 8:03AM - BRARG : Joint Inspection Required with BRARG

7. Natural gas consumption by the cogeneration system (turbine and duct burner) shall not exceed 1,812,000 scf/day. Natural gas consumption by the cogeneration system shall not exceed 654 million scf/year. [District Rule 2201]
8. Emissions from the cogeneration system shall not exceed any of the following limits: 233.7 lb-NOx/day, 3.6 lb-SOx/day, 47.1 lb-PM10/day, 257.3 lb-CO/day, or 47.1 lb-VOC/day. [District Rule 2201] Federally Enforceable Through Title V Permit
9. The owner or operator shall not operate the gas turbine under load conditions, excluding the thermal stabilization period or reduced load period, which results in the measured NOx emissions concentration exceeding 35 ppmv @ 15% O2. [40 CFR 60.332(a)(1), (a)(2) and District Rules 2201 and 4703, 5.1.2.1] Federally Enforceable Through Title V Permit
10. CO emissions from the cogeneration system with the duct burner firing shall not exceed 53 ppmv CO @ 15% O2 or 0.119 lb-CO/MMBtu, excluding thermal stabilization periods or reduced load periods. [District Rule 4703, 5.2] Federally Enforceable Through Title V Permit
11. CO emissions from the cogeneration system without duct burner firing shall not exceed 63 ppmv CO @ 15% O2 or 0.142 lb CO/MMBtu, excluding thermal stabilization periods or reduced load periods. [District Rule 4703, 5.2] Federally Enforceable Through Title V Permit
12. Emissions from the cogeneration system (with or without duct burner firing) shall not exceed any of the following limits: 0.002 lb-SOx/MMBtu, 0.026 lb-PM10/MMBtu, or 0.026 lb-VOC/MMBtu. [District Rule 2201] Federally Enforceable Through Title V Permit
13. Reduced Load Period shall be defined as the time during which the gas turbine is operated at less than rated capacity in order to change the position of the exhaust gas diverter gate, not exceeding one hour. [District Rule 4703, 3.19] Federally Enforceable Through Title V Permit
14. Thermal Stabilization Period shall be defined as the startup or shutdown, as defined in 40 CFR 60.2, time during which the exhaust gas is not within the normal operating temperature range, not to exceed two hours per startup or shutdown event. [District Rule 4703, 3.25] Federally Enforceable Through Title V Permit
15. This unit shall be fired exclusively on natural gas as defined in 40 CFR 60.331(u) and the natural gas shall have a total sulfur content less than or equal to 1.0 gr/100 scf. [40 CFR 60.333(b) and District Rules 2201 and 4201] Federally Enforceable Through Title V Permit
16. The sulfur fuel content of each fuel source shall be: (i) documented in a valid purchase contract, a supplier certification, a tariff sheet or transportation contract or (ii) monitored weekly using ASTM Methods D4084, D5504, D6228, or Gas Processors Association Standard 2377, or double GC for H2S and mercaptans. If the sulfur fuel content is less than 1.0 gr/100 scf for eight consecutive weeks, then the monitoring frequency shall be every 6 months. If any six-month monitoring tests result in a sulfur fuel content exceedance, weekly monitoring shall resume. [40 CFR 60.334(h)(3)] Federally Enforceable Through Title V Permit
17. Performance testing shall be conducted annually to measure NOx and CO emissions concentrations using the following test methods: EPA Methods 7E or 20 for NOx emissions, EPA Methods 10 or 10B for CO emissions, EPA Methods 3, 3A, or 20 for Oxygen content of the exhaust gas. The test will be comprised of three test runs performed at the highest physically achievable load of the gas turbine. The measured NOx concentrations shall be averaged over a three hour period, using consecutive 15-minute sampling periods. [40 CFR 60.335(a), (b)(2) and District Rule 4703, 5.1, 6.3.1, 6.3.2, and 6.4] Federally Enforceable Through Title V Permit
18. Any gas turbine with an intermittently operated auxiliary burner shall demonstrate compliance with the auxiliary burner both on and off. Source testing shall not be required with the duct burner on if it has not been in operation during the previous 12 months, i.e. the duct burner need not be started to solely perform source testing. Source testing shall not be required with the duct burner off if it has been in continuous operation during the previous 12 months, i.e. the duct burner need not be shut-down solely to perform source testing. Source testing shall be performed within 60 days of startup or shutdown of the duct burner unless source testing of the duct burner has been performed in the previous 12 months. [40 CFR 60.335(b) and District Rule 4703, 6.3.3] Federally Enforceable Through Title V Permit
19. HHV and LHV of the fuel shall be determined using ASTM D3588, ASTM 1826, or ASTM 1945. [40 CFR 60.335(b) and District Rule 4703, 6.4.5] Federally Enforceable Through Title V Permit

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CONDITIONS CONTINUE ON NEXT PAGE

20. The owner or operator shall be required to conform to the sampling facilities and testing procedures described in Rule 1081 (as amended 12/16/93), Sections 3.0 and 6.1. [District Rule 1081] Federally Enforceable Through Title V Permit
21. The District must be notified 30 days prior to any performance testing and a test plan shall be submitted for approval 15 days prior to such testing. [District Rule 1081] Federally Enforceable Through Title V Permit
22. Performance testing shall be witnessed or authorized by District personnel. Test results must be submitted to the District within 60 days of performance testing. [District Rule 1081] Federally Enforceable Through Title V Permit
23. The owner or operator shall operate and maintain in calibration a system which continuously measures and records: control system operating parameters, elapsed time of operation, the fuel consumption and the ratio of water to fuel being fired in the turbine. [40 CFR 60.334(a) and District Rule 4703, 6.2.2] Federally Enforceable Through Title V Permit
24. The owner or operator shall develop and keep on-site a parameter monitoring plan which includes the procedures used to document the proper operation of the NOx emissions controls (water injection). This plan shall include the parameter(s) monitored, such as the water-to-fuel ratio, and the acceptable range(s) of the parameter(s) as well as the basis for designating the parameter(s) and acceptable range(s). Any supplemental data such as engineering analyses, design specifications, manufacturers recommendations and other relevant information shall be included in the monitoring plan. [40 CFR 60.334(g)] Federally Enforceable Through Title V Permit
25. The water to fuel ratio shall not be less than 0.45 on a weight basis. [District Rule 4703, 6.2.5] Federally Enforceable Through Title V Permit
26. The owner or operator shall submit a semi-annual excess NOx emissions and monitor downtime report to the APCO. Excess emissions shall be reported for all periods of operation, including startup, shutdown and malfunction. The report, post marked by the 30th day following the end of every other calendar quarter, shall include the following: Time intervals, average steam or water-to-fuel ratio, turbine load, nature and cause of excess emissions (if known), and corrective actions taken and preventative measures adopted. [40 CFR 60.334(j), (j)(5) and District Rule 2520, 9.3.2)] Federally Enforceable Through Title V Permit
27. Excess emissions shall be defined as any operating hour for which the steam or water to fuel ratio, as measured by the continuous monitoring system, falls below the established steam or water to fuel ratio. Any operating hour in which no steam or water is injected into the turbine shall also be considered as excess emissions. [40 CR 60.334(j)(1)(i)(A)] Federally Enforceable Through Title V Permit
28. Monitor downtime shall be any operating hour in which the water or steam is injected into the turbine, but essential parametric data needed to determine the steam or water to fuel ratio are unavailable or invalid. [40 CFR 60.334(j)(1)(i)(B)] Federally Enforceable Through Title V Permit
29. Fuel consumption and the water-to-fuel ratio shall be monitored continuously with a system that is accurate to within 5 percent. [District Rule 2201] Federally Enforceable Through Title V Permit
30. The cogeneration system shall be equipped with a meter recording the total elapsed operating time. [District NSR Rule] Federally Enforceable Through Title V Permit
31. Permittee shall notify the District of any breakdown condition as soon as reasonably possible, but no later than one hour after its detection, unless the owner or operator demonstrates to the District's satisfaction that the longer reporting period was necessary. [District Rule 1100] Federally Enforceable Through Title V Permit
32. The District shall be notified in writing within ten days following the correction of any breakdown condition. The breakdown notification shall include a description of the equipment malfunction or failure, the date and cause of the initial failure, the estimated emissions in excess of those allowed, and the methods utilized to restore normal operations. [District Rule 1100] Federally Enforceable Through Title V Permit
33. If the water injection system is inoperative when the turbine is running, the operator shall follow procedures pursuant to District Rule 1100 (Equipment Breakdown). [District Rule 1100] Federally Enforceable Through Title V Permit
34. {741} The requirements of 40 CFR 72.6 (b) do not apply to this source because only non-Title IV sources can qualify to use the applicable template. A permit shield is granted from this requirement. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit

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CONDITIONS CONTINUE ON NEXT PAGE



35. If the turbine is fired on PUC-regulated natural gas, then the operator shall maintain a log describing the source of natural gas and quantity used. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
36. Records shall be maintained and shall contain: the occurrence and duration of any start-up, shutdown or malfunction, performance testing, evaluations, calibrations, checks, adjustments and emissions measurements. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
37. The owner or operator shall maintain a record of the cumulative rolling 12 month fuel usage for each turbine. The record shall be updated at the end of each calendar month. [District Rule 2201] Federally Enforceable Through Title V Permit
38. {787} Operator shall maintain a stationary gas turbine operating log that includes, on a daily basis, the actual local start-up and stop time, length and reason for reduced load periods, total hours of operation and quantity of fuel used. [40 CFR 60.332(a),(b) and District Rule 4703, 6.2.4] Federally Enforceable Through Title V Permit
39. {2271} The owner or operator of a stationary gas turbine system shall maintain all records of required monitoring data and support information for inspection at any time for a period of five years. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
40. Compliance with permit conditions in the Title V permit shall be deemed compliance with the following applicable requirements: 40 CFR 60.332(a)(1), (a)(2), 60.333 (b), (g), (h)(3), (j), (j)(1)(i)(A), (j)(1)(i)(b), and (j)(5); 60.335(a), (b)(2), (b)(3); and District Rule 4703 (as amended 4/25/02), Sections 5.1.2.1, 5.2, 6.2.2, 6.4, and 6.2.6. A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit
41. Compliance with permit conditions in the Title V permit shall be deemed compliance with District Rule 1081(as amended 12/16/93), Section 3.0, 6.0, 7.1, 7.2, 7.3 and Rule 4201 (as amended 12/17/92). A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit

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**SCR/CEMS ATCs**

San Joaquin Valley  
Air Pollution Control District

**AUTHORITY TO CONSTRUCT**

ISSUANCE DATE: DRAFT  
**DRAFT**

**PERMIT NO:** C-311-13-11

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

**LOCATION:** HEAVY OIL PRODUCTION  
FRESNO COUNTY, CA

**SECTION:** 6C **TOWNSHIP:** 20S **RANGE:** 15E

**EQUIPMENT DESCRIPTION:**

MODIFICATION OF 86.4 MMBTU/HR COGENERATION SYSTEM WITH A NOMINAL RATED 40.9 MMBTU/HR SOLAR MODEL CENTAUR 40-4500 TURBINE ENGINE #TG-105, DRIVING A 2.7 MW ELECTRICAL GENERATOR AND INCLUDING A STRUTHERS WASTE HEAT RECOVERY STEAM GENERATOR #SG-205, WITH A 36.4 MMBTU/HR COEN DUCT BURNER: REMOVE DAILY HEAT INPUT RATE (MMBTU/DAY); INSTALL A SELECTIVE CATALYTIC REDUCTION (SCR) SYSTEM WITH AMMONIA INJECTION TO COMPLY WITH RULE 4703 TIER 3 EMISSION LIMIT OF 9 PPMVD NOX @ 15% O2; REPLACE STRUTHERS-WELLS HEAT RECOVERY STEAM GENERATOR (HRSG) WITH ANOTHER HRSG (IF NECESSARY); REPLACE THE EXISTING 36.4 MMBTU/HR DUCT BURNER WITH A NEW 36.4 MMBTU/HR (NOMINAL RATING) DUCT BURNER (IF NECESSARY); AND INSTALL A CONTINUOUS EMISSIONS MONITORING SYSTEM (CEMS) TO MEASURE NOX, CO AND O2 CONCENTRATIONS

**CONDITIONS**

1. {1829} The facility shall submit an application to modify the Title V permit in accordance with the timeframes and procedures of District Rule 2520. [District Rule 2520] Federally Enforceable Through Title V Permit
2. {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
3. {2256} Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201, 3.1] Federally Enforceable Through Title V Permit
4. If the gas turbine system is fired on PUC-regulated or FERC regulated natural gas, then maintain on file copies of natural gas bills. [District Rule 2520]
5. This unit shall be fired exclusively on natural gas as defined in 40 CFR 60.331(u) and the natural gas shall have a total sulfur content less than or equal to 1.0 gr/100 scf. [40 CFR 60.333(b) and District Rules 2201 and 4201] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

**YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (559) 230-5950 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

C-311-13-11: Nov 16 2009 8:03AM - BRARG : Joint Inspection Required with BRARG

6. If the gas turbine system is not fired on PUC-regulated or FERC regulated natural gas, the sulfur content of each fuel source shall be tested weekly except that if compliance with the fuel sulfur content limit has been demonstrated for 8 consecutive weeks for a fuel source, then the testing frequency shall be quarterly. If a test shows noncompliance with the sulfur content requirement, the source must return to weekly testing until eight consecutive weeks show compliance. [40 CFR 60.334(h)(3)] Federally Enforceable Through Title V Permit
7. HHV and LHV of the fuel shall be determined by using ASTM D3588, ASTM 1826, or ASTM 1945. [40 CFR 60.335(b), District Rule 4703] Federally Enforceable Through Title V Permit
8. During an initial shakedown period, the emissions shall not exceed any of the following limits: 35 ppmvd NO<sub>x</sub> @ 15% O<sub>2</sub> referenced as NO<sub>2</sub>; 53 ppmvd CO @ 15% O<sub>2</sub> when firing both gas turbine and duct burner simultaneously; 63 ppmvd CO @ 15% O<sub>2</sub> when firing gas turbine only; 0.026 lb-PM<sub>10</sub>/MMBtu; 0.026 lb-VOC/MMBtu referenced as methane; and 0.002 lb-SO<sub>x</sub>/MMBtu referenced as SO<sub>2</sub>. The shakedown period shall not exceed 60 calendar days from the initial startup of the unit under this permit. The shakedown period must be concluded prior to the applicable Rule 4703 compliance deadline selected for this unit. The permittee shall maintain a record of the date of initial operation of this unit, fuel combusted (scf/day) on daily basis, and water-to-fuel ratio or results of NO<sub>x</sub> and CO over 3-hour rolling average period from CEMS (if operational). These records shall be made readily available for District inspection upon request. [District Rule 2201]
9. Upon concluding the initial shakedown period, emissions from the gas turbine system, when startup or shutdown or black start do not occur, shall not exceed any of the following limits: 9 ppmvd NO<sub>x</sub> @ 15% O<sub>2</sub> referenced as NO<sub>2</sub>; 53 ppmvd CO @ 15% O<sub>2</sub> when firing both gas turbine and duct burner simultaneously; 63 ppmvd CO @ 15% O<sub>2</sub> when firing gas turbine only; 0.026 lb-PM<sub>10</sub>/MMBtu; 0.026 lb-VOC/MMBtu referenced as methane; and 0.002 lb-SO<sub>x</sub>/MMBtu referenced as SO<sub>2</sub>. NO<sub>x</sub> and CO emission limits are based on 3-hour rolling average period. If unit is in either startup, shutdown, or black start mode during any portion of a clock hour, the unit will not be subject to the ppmvd limits for NO<sub>x</sub> and CO during that clock hour. [District Rules 2201 and 4703]
10. Upon concluding the initial shakedown period, emissions from the gas turbine system, on days when startup, shutdown, or black start occurs, shall not exceed any of the following limits: 67.4 lb-NO<sub>x</sub>/day referenced as NO<sub>2</sub>; 1199.5 lb-CO/day; 3.7 lb-SO<sub>x</sub>/day; 48.2 lb-PM<sub>10</sub>/day; 99.6 lb-VOC/day referenced as methane; and 52.7 lb-NH<sub>3</sub>/day. [District Rule 2201]
11. Upon concluding the initial shakedown period, the emissions from the gas turbine system shall not exceed any of the following limits: 22,343 lb-NO<sub>x</sub>/year; 84,878 lb-CO/year; 1,354 lb-SO<sub>x</sub>/year; 17,606 lb-PM<sub>10</sub>/year; 17,863 lb-VOC/year; 19,239 lb-NH<sub>3</sub>/year. All annual emission limits are based on 12 consecutive month rolling emissions totals. [District Rule 2201]
12. Ammonia (NH<sub>3</sub>) emissions shall not exceed 21 ppmvd @ 15% O<sub>2</sub> over a 24-hour average period. [District Rule 2201]
13. Each three hour rolling average will be compiled from the three most recent one hour periods. Each one hour period shall commence on the hour. Each one hour period in a twenty-four hour average for ammonia slip will commence on the hour. The twenty-four hour average will be calculated starting and ending at twelve-midnight. [District Rule 2201]
14. Daily emissions shall be compiled for a twenty-four hour period starting and ending at twelve-midnight. Each calendar month in a twelve consecutive month rolling emissions total shall commence at the beginning of the first day of the month. The twelve consecutive month rolling emissions totals used to determine compliance with annual emission limits shall be compiled from the twelve most recent calendar months. [District Rule 2201]
15. The exhaust stack shall be equipped with permanent provisions to allow collection of stack gas samples consistent with EPA test methods and shall be equipped with safe permanent provisions to sample stack gases with a portable NO<sub>x</sub>, CO, and O<sub>2</sub> analyzer during District inspections. The sampling ports shall be located in accordance with the CARB regulation titled California Air Resources Board Air Monitoring Quality Assurance Volume VI, Standard Operating Procedures for Stationary Emission Monitoring and Testing. [District Rule 1081]
16. 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
17. Source testing shall be witnessed or authorized by District personnel and samples shall be collected by a California Air Resources Board (CARB) certified testing laboratory or a CARB certified source testing firm. [District Rule 1081] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

18. Source testing to measure start-up mass emission rates of NO<sub>x</sub>, CO, and VOC shall be conducted for one of the gas turbine engines (C-311-13 or -15) within 60-days of initial startup under this permit and at least once every seven years thereafter. CEMS relative accuracy shall be determined during source testing in accordance with the procedure listed in 40 CFR Part 60, Appendix F with any necessary changes approved by the District. [District Rule 1081]
19. Source testing to determine compliance with the NO<sub>x</sub>, CO and NH<sub>3</sub> emission rates (ppmvd @ 15% O<sub>2</sub>) during normal operation shall be conducted within 60 days of initial startup under this permit and annually thereafter. [District Rules 2201 and 4703, CFR 60.335(a)]
20. For the purpose of determining compliance with the emissions limits (ppmvd @ 15% O<sub>2</sub>) during normal operation in this permit, the arithmetic mean of three test runs shall apply, unless two of the three results are above an applicable limit. If two of three runs are above the applicable limit the test cannot be used to demonstrate compliance with an applicable limit. [District Rule 1081]
21. The following test methods shall be used: NO<sub>x</sub> - EPA Method 7E or 20 or CARB Method 100; CO - EPA Method 10 or 10B or CARB Method 100; VOC - EPA Method 18 or 25; PM<sub>10</sub> - EPA Method 5 (front half and back half) or 201 and 202a; ammonia - BAAQMD ST-1B; and O<sub>2</sub> - EPA Method 3, 3A, or 20 or CARB Method 100. EPA approved alternative test methods as approved by the District may also be used to address the source testing requirements of this permit. [District Rules 1081 and 4703, 40 CFR 60.335(a), and 40 CFR 60.335(b)(1)] Federally Enforceable Through Title V Permit
22. Source test to demonstrate compliance with NO<sub>x</sub> and CO emission limits shall be conducted with duct burner "on" and "off" configurations. An annual demonstration of compliance with the duct burner in operation is not required in any year in which the duct burner is not operated at all in the preceding 12 months, in such case, the unit shall be compliance source tested within 60 days of resumption of operation of the duct burner. An annual demonstration of compliance with the duct burner not in operation is not required in any year in which the duct burner operated continuously in conjunction with the turbine in the preceding 12 months, in such case, the unit shall be compliance source tested within 60 days of shutdown of operation of the duct burner. [District Rule 2201 and 4703] Federally Enforceable Through Title V Permit
23. The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081]
24. The owner or operator shall install, certify, maintain, operate, and quality-assure a continuous emission monitor system (CEMS) which continuously measures and records the exhaust gas NO<sub>x</sub>, CO, and O<sub>2</sub> concentrations. Continuous emissions monitors shall be capable of monitoring emissions during normal operating conditions and during startups and shutdowns, provided that CEMS passes the relative accuracy requirements of 40 CFR Part 60, Appendix B, Performance Specification 2 (PS-2) and District approved protocol for startups. If relative accuracy of CEMS cannot be demonstrated during the startup, CEMS results during startup and shutdown events shall be replaced with startup emission rates obtained from the source test conducted by the facility to determine compliance with emission limits contained in this document. [District Rules 1080, 2201 and 4703, 40 CFR 60.334(b)(1)]
25. The CEMS shall complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each 15-minute quadrant of the hour or shall meet equivalent specifications established by mutual agreement of the District, the CARB and the EPA. [District Rule 1080 and 40 CFR 60.334(b)(2)]
26. The NO<sub>x</sub>, CO and O<sub>2</sub> CEMS shall meet the requirements in 40 CFR 60, Appendix F Procedure 1 and Part 60, Appendix B Performance Specification 2 (PS 2), District approved protocol for startups, or shall meet equivalent specifications established by mutual agreement of the District, the CARB, and the EPA. [District Rule 1080 and 40 CFR 60.334(b)(1)]
27. In accordance with 40 CFR Part 60, Appendix F, 5.1, the CEMS must be audited at least once each calendar quarter. The District shall be notified prior to completion of the audits. Audit reports shall be submitted along with quarterly compliance reports to the District. [District Rule 1080]
28. The requirements in 40 CFR 60, Appendix F, shall be met through the following EPA and District approved modified procedures: 1) annual RATA testing of at least one gas turbine engine (C-311-13 or -15), and rotate the unit tested so that both units are tested over two years, 2) annual RAA testing for the other gas turbine engine for which the annual RATA testing is not performed, 3) if any of the gas turbine engines fail the RAA testing, they must have a RATA test within 60 days, and 4) for every quarter that RATA or RAA testing is not performed, a CGA is to be performed for each gas turbine engine. [District Rules 1080 and 4703, 40 CFR 60.334(b)(1)]

CONDITIONS CONTINUE ON NEXT PAGE

29. APCO or an authorized representative shall be allowed to inspect, as determined to be necessary, the required monitoring devices to ensure that such devices are functioning properly. [District Rule 1080]
30. The CEMS data shall be reduced to hourly averages as specified in 40 CFR 60.13(h), or by other methods deemed equivalent by mutual agreement with the District, the CARB, and the EPA. [District Rule 1080 and 40 CFR 60.334(b)(3)]
31. Upon written notice from the District, the owner or operator shall provide a summary of the data obtained from the CEMS. This summary shall be in the form and the manner prescribed by the District. [District Rule 1080]
32. The facility shall install and maintain equipment, facilities, and systems compatible with the District's CEMS data polling software system, or a District approved alternative polling method, and shall make CEMS data available to the District on a daily basis. Upon notice by the District that the facility's CEMS is not providing polling data, the facility may continue to operate without providing automated data for a maximum of 30 days per calendar year provided the CEMS data is sent to the District by a District-approved alternative method. [District Rule 1080]
33. The permittee shall maintain the following records: the date, time and duration of any malfunction of the continuous monitoring equipment; dates of performance testing; dates of evaluations, calibrations, checks, and adjustments of the continuous monitoring equipment; date and time period which a continuous monitoring system or monitoring device was inoperative. [District Rules 1080 and 2201 and 40 CFR 60.8(d)]
34. The owner or operator shall submit a written report of CEM operations for each calendar quarter to the District. The report is due on the 30th day following the end of the calendar quarter and shall include the following: Time intervals, data and magnitude of excess NO<sub>x</sub> emissions, nature and the cause of excess (if known), corrective actions taken and preventive measures adopted; Averaging period used for data reporting corresponding to the averaging period specified in the emission test period used to determine compliance with an emission standard; Applicable time and date of each period during which the CEM was inoperative, except for zero and span checks, and the nature of system repairs and adjustments; A negative declaration when no excess emissions occurred. [District Rule 1080 and 40 CFR 60.334(j)(5)]
35. Monitor downtime for NO<sub>x</sub> shall be any unit operating hour in which sufficient data are not obtained to validate the hour for either NO<sub>x</sub> concentration or diluent O<sub>2</sub> (or both). [40 CFR 60.334(j)(1)(iii)(B)]
36. If the gas turbine system is not fired on PUC-regulated or FERC regulated natural gas, then a fuel sample shall be collected during the source test to determine sulfur content of the fuel combusted in the turbine. The fuel sample shall be analyzed for the total sulfur content using ASTM D1072; D3031; D3246; D4084; D4468; D6228; or D6667; or double GC for H<sub>2</sub>S and mercaptans. The applicable ranges of some ASTM methods are not adequate to measure the levels of sulfur in some fuel gases. Dilution of samples before analysis (with verification of dilution ratio) may be used after getting a prior approval from the District. [40 CFR 60.335(b)(10)]
37. Should the applicant decide to conduct performance evaluation of CEMS with the initial performance test, a minimum of 9 reference method runs, with a minimum time per run of 21 minutes, at a single load level, between 90 and 100 percent of peak (or the highest physically achievable) load shall be performed. The test data obtained during these runs can be used to demonstrate compliance with the applicable NO<sub>x</sub> emission limit and to provide reference method data for the RATA of the CEMS. The requirement to test at three additional load levels is waived under this option. [40 CFR 60.335(b)(6)]
38. A totalizing mass or volumetric fuel flow computer shall be utilized and maintained to calculate the amount of natural gas combusted based on measured flow meter parameters (fuel pressure and temperature) and gas composition. [District Rules 2201 and 4703]
39. Except during black start, each startup shall not exceed two hours per event. [District Rules 2201 and 4703]
40. Each shutdown shall not exceed two hours per event. [District Rules 2201 and 4703]
41. The emission control systems shall be in operation and emissions shall be minimized insofar as technologically feasible during startup (black start) and shutdown. [District Rule 4703]
42. Start-up is defined as the period of time during which a unit is brought from a shutdown status to its operating temperature and pressure, including the time required by the unit's emission control system to reach full operation. [District Rule 4703]

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CONDITIONS CONTINUE ON NEXT PAGE

43. Shutdown is defined as the period of time during which a unit is taken from an operational to a non-operational status by allowing it to cool down from its operating temperature to ambient temperature as the fuel supply to the unit is completely turned off. [District Rule 4703]
44. Reduced load period is defined as the time during which a gas turbine is operated at less than rated capacity in order to change the position of the exhaust gas diverter gate. Each reduced load period shall not exceed one hour. [District Rule 4703] Federally Enforceable Through Title V Permit
45. A black start event is defined as the startup of a unit while the cogen plant is electrically separated from the utility grid. A black start event shall not exceed 4.0 hours. [District Rules 2201 and 4703]
46. The owner or operator shall submit to the District information correlating the NOx control system operating parameters to the associated measured NOx output. The information must be sufficient to allow the District to determine compliance with the NOx emission limits of this permit when the CEMS is not operating properly. [District Rule 4703]
47. The owner or operator shall maintain a stationary gas turbine system operating log that includes, on a daily basis, the actual local startup and stop time, length and reason for reduced load periods, total hours of operation, the type and quantity of fuel used, duration of each start-up (or black start) and each shutdown time period. [District Rule 4703]
48. The owner or operator shall maintain all records of required monitoring data and support information for a period of five years from the date of data entry and shall make such records available to the District upon request. [District Rules 2201 and 4703] Federally Enforceable Through Title V Permit
49. {741} The requirements of 40 CFR 72.6 (b) do not apply to this source because only non-Title IV sources can qualify to use the applicable template. A permit shield is granted from this requirement. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit
50. Compliance with permit conditions in the Title V permit shall be deemed compliance with the following subsumed requirement: 40 CFR 60.332(a), 60.335 (a), (b) and (c) . A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit
51. Compliance with the permit conditions in the Title V permit shall be deemed compliance with the following applicable requirements: SJVUAPCD Rule 4703, 6.2.4, 6.3, 6.4.1, 6.4.3 and 6.4.5. A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit
52. Compliance with permit conditions in the Title V permit shall be deemed compliance with District Rule 4201 (as amended 12/17/92). A permit shield is granted from these requirements. [District Rule 2520, 13.2] 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: C-311-15-11

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

LOCATION: HEAVY OIL PRODUCTION  
FRESNO COUNTY, CA

SECTION: 6C TOWNSHIP: 20S RANGE: 15E

**EQUIPMENT DESCRIPTION:**

MODIFICATION OF 86.4 MMBTU/HR COGENERATION SYSTEM WITH A NOMINAL RATED 40.9 MMBTU/HR SOLAR MODEL CENTAUR 40-4500 TURBINE ENGINE #TG-106, DRIVING A 2.7 MW ELECTRICAL GENERATOR AND INCLUDING A STRUTHERS WASTE HEAT RECOVERY STEAM GENERATOR #SG-206 WITH A 36.4 MMBTU/HR COEN DUCT BURNER; REMOVE DAILY HEAT INPUT RATE (MMBTU/DAY); INSTALL A SELECTIVE CATALYTIC REDUCTION (SCR) SYSTEM WITH AMMONIA INJECTION TO COMPLY WITH RULE 4703 TIER 3 EMISSION LIMIT OF 9 PPMVD NOX @ 15% O2; REPLACE STRUTHERS-WELLS HEAT RECOVERY STEAM GENERATOR (HRSG) WITH ANOTHER HRSG (IF NECESSARY); REPLACE THE EXISTING 36.4 MMBTU/HR DUCT BURNER WITH A NEW 36.4 MMBTU/HR (NOMINAL RATING) DUCT BURNER (IF NECESSARY); AND INSTALL A CONTINUOUS EMISSIONS MONITORING SYSTEM (CEMS) TO MEASURE NOX, CO AND O2 CONCENTRATIONS

**CONDITIONS**

1. {1829} The facility shall submit an application to modify the Title V permit in accordance with the timeframes and procedures of District Rule 2520. [District Rule 2520] Federally Enforceable Through Title V Permit
2. {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
3. {2256} Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201, 3.1] Federally Enforceable Through Title V Permit
4. If the gas turbine system is fired on PUC-regulated or FERC regulated natural gas, then maintain on file copies of natural gas bills. [District Rule 2520]
5. This unit shall be fired exclusively on natural gas as defined in 40 CFR 60.331(u) and the natural gas shall have a total sulfur content less than or equal to 1.0 gr/100 scf. [40 CFR 60.333(b) and District Rules 2201 and 4201] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (559) 230-5950 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

C-311-15-11 : Nov 16 2009 8:03AM - BRARG : Joint Inspection Required with BRARG



6. If the gas turbine system is not fired on PUC-regulated or FERC regulated natural gas, the sulfur content of each fuel source shall be tested weekly except that if compliance with the fuel sulfur content limit has been demonstrated for 8 consecutive weeks for a fuel source, then the testing frequency shall be quarterly. If a test shows noncompliance with the sulfur content requirement, the source must return to weekly testing until eight consecutive weeks show compliance. [40 CFR 60.334(h)(3)] Federally Enforceable Through Title V Permit
7. HHV and LHV of the fuel shall be determined by using ASTM D3588, ASTM 1826, or ASTM 1945. [40 CFR 60.335(b), District Rule 4703] Federally Enforceable Through Title V Permit
8. During an initial shakedown period, the emissions shall not exceed any of the following limits: 35 ppmvd NO<sub>x</sub> @ 15% O<sub>2</sub> referenced as NO<sub>2</sub>; 53 ppmvd CO @ 15% O<sub>2</sub> when firing both gas turbine and duct burner simultaneously; 63 ppmvd CO @ 15% O<sub>2</sub> when firing gas turbine only; 0.026 lb-PM<sub>10</sub>/MMBtu; 0.026 lb-VOC/MMBtu referenced as methane; and 0.002 lb-SO<sub>x</sub>/MMBtu referenced as SO<sub>2</sub>. The shakedown period shall not exceed 60 calendar days from the initial startup of the unit under this permit. The shakedown period must be concluded prior to the applicable Rule 4703 compliance deadline selected for this unit. The permittee shall maintain a record of the date of initial operation of this unit, fuel combusted (scf/day) on daily basis, and water-to-fuel ratio or results of NO<sub>x</sub> and CO over 3-hour rolling average period from CEMS (if operational). These records shall be made readily available for District inspection upon request. [District Rule 2201]
9. Upon concluding the initial shakedown period, emissions from the gas turbine system, when startup or shutdown or black start do not occur, shall not exceed any of the following limits: 9 ppmvd NO<sub>x</sub> @ 15% O<sub>2</sub> referenced as NO<sub>2</sub>; 53 ppmvd CO @ 15% O<sub>2</sub> when firing both gas turbine and duct burner simultaneously; 63 ppmvd CO @ 15% O<sub>2</sub> when firing gas turbine only; 0.026 lb-PM<sub>10</sub>/MMBtu; 0.026 lb-VOC/MMBtu referenced as methane; and 0.002 lb-SO<sub>x</sub>/MMBtu referenced as SO<sub>2</sub>. NO<sub>x</sub> and CO emission limits are based on 3-hour rolling average period. If unit is in either startup, shutdown, or black start mode during any portion of a clock hour, the unit will not be subject to the ppmvd limits for NO<sub>x</sub> and CO during that clock hour. [District Rules 2201 and 4703]
10. Upon concluding the initial shakedown period, emissions from the gas turbine system, on days when startup, shutdown, or black start occurs, shall not exceed any of the following limits: 67.4 lb-NO<sub>x</sub>/day referenced as NO<sub>2</sub>; 1199.5 lb-CO/day; 3.7 lb-SO<sub>x</sub>/day; 48.2 lb-PM<sub>10</sub>/day; 99.6 lb-VOC/day referenced as methane; and 52.7 lb-NH<sub>3</sub>/day. [District Rule 2201]
11. Upon concluding the initial shakedown period, the emissions from the gas turbine system shall not exceed any of the following limits: 22,343 lb-NO<sub>x</sub>/year; 84,878 lb-CO/year; 1,354 lb-SO<sub>x</sub>/year; 17,606 lb-PM<sub>10</sub>/year; 17,863 lb-VOC/year; 19,239 lb-NH<sub>3</sub>/year. All annual emission limits are based on 12 consecutive month rolling emissions totals. [District Rule 2201]
12. Ammonia (NH<sub>3</sub>) emissions shall not exceed 21 ppmvd @ 15% O<sub>2</sub> over a 24-hour average period. [District Rule 2201]
13. Each three hour rolling average will be compiled from the three most recent one hour periods. Each one hour period shall commence on the hour. Each one hour period in a twenty-four hour average for ammonia slip will commence on the hour. The twenty-four hour average will be calculated starting and ending at twelve-midnight. [District Rule 2201]
14. Daily emissions shall be compiled for a twenty-four hour period starting and ending at twelve-midnight. Each calendar month in a twelve consecutive month rolling emissions total shall commence at the beginning of the first day of the month. The twelve consecutive month rolling emissions totals used to determine compliance with annual emission limits shall be compiled from the twelve most recent calendar months. [District Rule 2201]
15. The exhaust stack shall be equipped with permanent provisions to allow collection of stack gas samples consistent with EPA test methods and shall be equipped with safe permanent provisions to sample stack gases with a portable NO<sub>x</sub>, CO, and O<sub>2</sub> analyzer during District inspections. The sampling ports shall be located in accordance with the CARB regulation titled California Air Resources Board Air Monitoring Quality Assurance Volume VI, Standard Operating Procedures for Stationary Emission Monitoring and Testing. [District Rule 1081]
16. 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
17. Source testing shall be witnessed or authorized by District personnel and samples shall be collected by a California Air Resources Board (CARB) certified testing laboratory or a CARB certified source testing firm. [District Rule 1081] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

18. Source testing to measure start-up mass emission rates of NO<sub>x</sub>, CO, and VOC shall be conducted for one of the gas turbine engines (C-311-13 or -15) within 60-days of initial startup under this permit and at least once every seven years thereafter. CEMS relative accuracy shall be determined during source testing in accordance with the procedure listed in 40 CFR Part 60, Appendix F with any necessary changes approved by the District. [District Rule 1081]
19. Source testing to determine compliance with the NO<sub>x</sub>, CO and NH<sub>3</sub> emission rates (ppmvd @ 15% O<sub>2</sub>) during normal operation shall be conducted within 60 days of initial startup under this permit and annually thereafter. [District Rules 2201 and 4703, CFR 60.335(a)]
20. For the purpose of determining compliance with the emissions limits (ppmvd @ 15% O<sub>2</sub>) during normal operation in this permit, the arithmetic mean of three test runs shall apply, unless two of the three results are above an applicable limit. If two of three runs are above the applicable limit the test cannot be used to demonstrate compliance with an applicable limit. [District Rule 1081]
21. The following test methods shall be used: NO<sub>x</sub> - EPA Method 7E or 20 or CARB Method 100; CO - EPA Method 10 or 10B or CARB Method 100; VOC - EPA Method 18 or 25; PM<sub>10</sub> - EPA Method 5 (front half and back half) or 201 and 202a; ammonia - BAAQMD ST-1B; and O<sub>2</sub> - EPA Method 3, 3A, or 20 or CARB Method 100. EPA approved alternative test methods as approved by the District may also be used to address the source testing requirements of this permit. [District Rules 1081 and 4703, 40 CFR 60.335(a), and 40 CFR 60.335(b)(1)] Federally Enforceable Through Title V Permit
22. Source test to demonstrate compliance with NO<sub>x</sub> and CO emission limits shall be conducted with duct burner "on" and "off" configurations. An annual demonstration of compliance with the duct burner in operation is not required in any year in which the duct burner is not operated at all in the preceding 12 months, in such case, the unit shall be compliance source tested within 60 days of resumption of operation of the duct burner. An annual demonstration of compliance with the duct burner not in operation is not required in any year in which the duct burner operated continuously in conjunction with the turbine in the preceding 12 months, in such case, the unit shall be compliance source tested within 60 days of shutdown of operation of the duct burner. [District Rule 2201 and 4703] Federally Enforceable Through Title V Permit
23. The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081]
24. The owner or operator shall install, certify, maintain, operate, and quality-assure a continuous emission monitor system (CEMS) which continuously measures and records the exhaust gas NO<sub>x</sub>, CO, and O<sub>2</sub> concentrations. Continuous emissions monitors shall be capable of monitoring emissions during normal operating conditions and during startups and shutdowns, provided that CEMS passes the relative accuracy requirements of 40 CFR Part 60, Appendix B, Performance Specification 2 (PS-2) and District approved protocol for startups. If relative accuracy of CEMS cannot be demonstrated during the startup, CEMS results during startup and shutdown events shall be replaced with startup emission rates obtained from the source test conducted by the facility to determine compliance with emission limits contained in this document. [District Rules 1080, 2201 and 4703, 40 CFR 60.334(b)(1)]
25. The CEMS shall complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each 15-minute quadrant of the hour or shall meet equivalent specifications established by mutual agreement of the District, the CARB and the EPA. [District Rule 1080 and 40 CFR 60.334(b)(2)]
26. The NO<sub>x</sub>, CO and O<sub>2</sub> CEMS shall meet the requirements in 40 CFR 60, Appendix F Procedure 1 and Part 60, Appendix B Performance Specification 2 (PS 2), District approved protocol for startups, or shall meet equivalent specifications established by mutual agreement of the District, the CARB, and the EPA. [District Rule 1080 and 40 CFR 60.334(b)(1)]
27. In accordance with 40 CFR Part 60, Appendix F, 5.1, the CEMS must be audited at least once each calendar quarter. The District shall be notified prior to completion of the audits. Audit reports shall be submitted along with quarterly compliance reports to the District. [District Rule 1080]
28. The requirements in 40 CFR 60, Appendix F, shall be met through the following EPA and District approved modified procedures: 1) annual RATA testing of at least one gas turbine engine (C-311-13 or -15), and rotate the unit tested so that both units are tested over two years, 2) annual RAA testing for the other gas turbine engine for which the annual RATA testing is not performed, 3) if any of the gas turbine engines fail the RAA testing, they must have a RATA test within 60 days, and 4) for every quarter that RATA or RAA testing is not performed, a CGA is to be performed for each gas turbine engine. [District Rules 1080 and 4703, 40 CFR 60.334(b)(1)]

CONDITIONS CONTINUE ON NEXT PAGE

29. APCO or an authorized representative shall be allowed to inspect, as determined to be necessary, the required monitoring devices to ensure that such devices are functioning properly. [District Rule 1080]
30. The CEMS data shall be reduced to hourly averages as specified in 40 CFR 60.13(h), or by other methods deemed equivalent by mutual agreement with the District, the CARB, and the EPA. [District Rule 1080 and 40 CFR 60.334(b)(3)]
31. Upon written notice from the District, the owner or operator shall provide a summary of the data obtained from the CEMS. This summary shall be in the form and the manner prescribed by the District. [District Rule 1080]
32. The facility shall install and maintain equipment, facilities, and systems compatible with the District's CEMS data polling software system, or a District approved alternative polling method, and shall make CEMS data available to the District on a daily basis. Upon notice by the District that the facility's CEMS is not providing polling data, the facility may continue to operate without providing automated data for a maximum of 30 days per calendar year provided the CEMS data is sent to the District by a District-approved alternative method. [District Rule 1080]
33. The permittee shall maintain the following records: the date, time and duration of any malfunction of the continuous monitoring equipment; dates of performance testing; dates of evaluations, calibrations, checks, and adjustments of the continuous monitoring equipment; date and time period which a continuous monitoring system or monitoring device was inoperative. [District Rules 1080 and 2201 and 40 CFR 60.8(d)]
34. The owner or operator shall submit a written report of CEM operations for each calendar quarter to the District. The report is due on the 30th day following the end of the calendar quarter and shall include the following: Time intervals, data and magnitude of excess NO<sub>x</sub> emissions, nature and the cause of excess (if known), corrective actions taken and preventive measures adopted; Averaging period used for data reporting corresponding to the averaging period specified in the emission test period used to determine compliance with an emission standard; Applicable time and date of each period during which the CEM was inoperative, except for zero and span checks, and the nature of system repairs and adjustments; A negative declaration when no excess emissions occurred. [District Rule 1080 and 40 CFR 60.334(j)(5)]
35. Monitor downtime for NO<sub>x</sub> shall be any unit operating hour in which sufficient data are not obtained to validate the hour for either NO<sub>x</sub> concentration or diluent O<sub>2</sub> (or both). [40 CFR 60.334(j)(1)(iii)(B)]
36. If the gas turbine system is not fired on PUC-regulated or FERC regulated natural gas, then a fuel sample shall be collected during the source test to determine sulfur content of the fuel combusted in the turbine. The fuel sample shall be analyzed for the total sulfur content using ASTM D1072; D3031; D3246; D4084; D4468; D6228; or D6667; or double GC for H<sub>2</sub>S and mercaptans. The applicable ranges of some ASTM methods are not adequate to measure the levels of sulfur in some fuel gases. Dilution of samples before analysis (with verification of dilution ratio) may be used after getting a prior approval from the District. [40 CFR 60.335(b)(10)]
37. Should the applicant decide to conduct performance evaluation of CEMS with the initial performance test, a minimum of 9 reference method runs, with a minimum time per run of 21 minutes, at a single load level, between 90 and 100 percent of peak (or the highest physically achievable) load shall be performed. The test data obtained during these runs can be used to demonstrate compliance with the applicable NO<sub>x</sub> emission limit and to provide reference method data for the RATA of the CEMS. The requirement to test at three additional load levels is waived under this option. [40 CFR 60.335(b)(6)]
38. A totalizing mass or volumetric fuel flow computer shall be utilized and maintained to calculate the amount of natural gas combusted based on measured flow meter parameters (fuel pressure and temperature) and gas composition. [District Rules 2201 and 4703]
39. Except during black start, each startup shall not exceed two hours per event. [District Rules 2201 and 4703]
40. Each shutdown shall not exceed two hours per event. [District Rules 2201 and 4703]
41. The emission control systems shall be in operation and emissions shall be minimized insofar as technologically feasible during startup (black start) and shutdown. [District Rule 4703]
42. Start-up is defined as the period of time during which a unit is brought from a shutdown status to its operating temperature and pressure, including the time required by the unit's emission control system to reach full operation. [District Rule 4703]

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CONDITIONS CONTINUE ON NEXT PAGE

43. Shutdown is defined as the period of time during which a unit is taken from an operational to a non-operational status by allowing it to cool down from its operating temperature to ambient temperature as the fuel supply to the unit is completely turned off. [District Rule 4703]
44. Reduced load period is defined as the time during which a gas turbine is operated at less than rated capacity in order to change the position of the exhaust gas diverter gate. Each reduced load period shall not exceed one hour. [District Rule 4703] Federally Enforceable Through Title V Permit
45. A black start event is defined as the startup of a unit while the cogen plant is electrically separated from the utility grid. A black start event shall not exceed 4.0 hours. [District Rules 2201 and 4703]
46. The owner or operator shall submit to the District information correlating the NOx control system operating parameters to the associated measured NOx output. The information must be sufficient to allow the District to determine compliance with the NOx emission limits of this permit when the CEMS is not operating properly. [District Rule 4703]
47. The owner or operator shall maintain a stationary gas turbine system operating log that includes, on a daily basis, the actual local startup and stop time, length and reason for reduced load periods, total hours of operation, the type and quantity of fuel used, duration of each start-up (or black start) and each shutdown time period. [District Rule 4703]
48. The owner or operator shall maintain all records of required monitoring data and support information for a period of five years from the date of data entry and shall make such records available to the District upon request. [District Rules 2201 and 4703] Federally Enforceable Through Title V Permit
49. {741} The requirements of 40 CFR 72.6 (b) do not apply to this source because only non-Title IV sources can qualify to use the applicable template. A permit shield is granted from this requirement. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit
50. Compliance with permit conditions in the Title V permit shall be deemed compliance with the following subsumed requirement: 40 CFR 60.332(a), 60.335 (a), (b) and (c) . A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit
51. Compliance with the permit conditions in the Title V permit shall be deemed compliance with the following applicable requirements: SJVUAPCD Rule 4703, 6.2.4, 6.3, 6.4.1, 6.4.3 and 6.4.5. A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit
52. Compliance with permit conditions in the Title V permit shall be deemed compliance with District Rule 4201 (as amended 12/17/92). A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit

DRAFT

San Joaquin Valley  
Air Pollution Control District

**AUTHORITY TO CONSTRUCT**

**ISSUANCE DATE: DRAFT**  
**DRAFT**

**PERMIT NO:** C-311-88-11

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

**LOCATION:** HEAVY OIL PRODUCTION  
FRESNO COUNTY, CA

**SECTION:** 25 **TOWNSHIP:** 20S **RANGE:** 14E

**EQUIPMENT DESCRIPTION:**

MODIFICATION OF 86.4 MMBTU/HR COGENERATION SYSTEM WITH A NOMINAL RATED 40.9 MMBTU/HR SOLAR MODEL CENTAUR 40-4500 TURBINE ENGINE #TG-104, DRIVING A 2.7 MW ELECTRICAL GENERATOR AND INCLUDING A STRUTHERS WASTE HEAT RECOVERY STEAM GENERATOR #SG-204, WITH A 36.4 MMBTU/HR COEN DUCT BURNER. REMOVE DAILY HEAT INPUT RATE (MMBTU/DAY); INSTALL A SELECTIVE CATALYTIC REDUCTION (SCR) SYSTEM WITH AMMONIA INJECTION TO COMPLY WITH RULE 4703 TIER 3 EMISSION LIMIT OF 9 PPMVD NOX @ 15% O2; REPLACE STRUTHERS-WELLS HEAT RECOVERY STEAM GENERATOR (HRSG) WITH ANOTHER HRSG (IF NECESSARY); REPLACE THE EXISTING 36.4 MMBTU/HR DUCT BURNER WITH A NEW 36.4 MMBTU/HR (NOMINAL RATING) DUCT BURNER (IF NECESSARY); AND INSTALL A CONTINUOUS EMISSIONS MONITORING SYSTEM (CEMS) TO MEASURE NOX, CO AND O2 CONCENTRATIONS

**CONDITIONS**

1. {1829} The facility shall submit an application to modify the Title V permit in accordance with the timeframes and procedures of District Rule 2520. [District Rule 2520] Federally Enforceable Through Title V Permit
2. {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
3. {2256} Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201, 3.1] Federally Enforceable Through Title V Permit
4. If the gas turbine system is fired on PUC-regulated or FERC regulated natural gas, then maintain on file copies of natural gas bills. [District Rule 2520]
5. This unit shall be fired exclusively on natural gas as defined in 40 CFR 60.331(u) and the natural gas shall have a total sulfur content less than or equal to 1.0 gr/100 scf. [40 CFR 60.333(b) and District Rules 2201 and 4201] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

**YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (559) 230-5950 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**

C-311-88-11 : Nov 16 2009 8:03AM - BRARG : Joint Inspection Required with BRARG

6. If the gas turbine system is not fired on PUC-regulated or FERC regulated natural gas, the sulfur content of each fuel source shall be tested weekly except that if compliance with the fuel sulfur content limit has been demonstrated for 8 consecutive weeks for a fuel source, then the testing frequency shall be quarterly. If a test shows noncompliance with the sulfur content requirement, the source must return to weekly testing until eight consecutive weeks show compliance. [40 CFR 60.334(h)(3)] Federally Enforceable Through Title V Permit
7. HHV and LHV of the fuel shall be determined by using ASTM D3588, ASTM 1826, or ASTM 1945. [40 CFR 60.335(b), District Rule 4703] Federally Enforceable Through Title V Permit
8. During an initial shakedown period, the emissions shall not exceed any of the following limits: 35 ppmvd NO<sub>x</sub> @ 15% O<sub>2</sub> referenced as NO<sub>2</sub>; 53 ppmvd CO @ 15% O<sub>2</sub> when firing both gas turbine and duct burner simultaneously; 63 ppmvd CO @ 15% O<sub>2</sub> when firing gas turbine only; 0.026 lb-PM<sub>10</sub>/MMBtu; 0.026 lb-VOC/MMBtu referenced as methane; and 0.002 lb-SO<sub>x</sub>/MMBtu referenced as SO<sub>2</sub>. The shakedown period shall not exceed 60 calendar days from the initial startup of the unit under this permit. The shakedown period must be concluded prior to the applicable Rule 4703 compliance deadline selected for this unit. The permittee shall maintain a record of the date of initial operation of this unit, fuel combusted (scf/day) on daily basis, and water-to-fuel ratio or results of NO<sub>x</sub> and CO over 3-hour rolling average period from CEMS (if operational). These records shall be made readily available for District inspection upon request. [District Rule 2201]
9. Upon concluding the initial shakedown period, emissions from the gas turbine system, when startup or shutdown or black start do not occur, shall not exceed any of the following limits: 9 ppmvd NO<sub>x</sub> @ 15% O<sub>2</sub> referenced as NO<sub>2</sub>; 53 ppmvd CO @ 15% O<sub>2</sub> when firing both gas turbine and duct burner simultaneously; 63 ppmvd CO @ 15% O<sub>2</sub> when firing gas turbine only; 0.026 lb-PM<sub>10</sub>/MMBtu; 0.026 lb-VOC/MMBtu referenced as methane; and 0.002 lb-SO<sub>x</sub>/MMBtu referenced as SO<sub>2</sub>. NO<sub>x</sub> and CO emission limits are based on 3-hour rolling average period. If unit is in either startup, shutdown, or black start mode during any portion of a clock hour, the unit will not be subject to the ppmvd limits for NO<sub>x</sub> and CO during that clock hour. [District Rules 2201 and 4703]
10. Upon concluding the initial shakedown period, emissions from the gas turbine system, on days when startup, shutdown, or black start occurs, shall not exceed any of the following limits: 67.4 lb-NO<sub>x</sub>/day referenced as NO<sub>2</sub>; 1199.5 lb-CO/day; 3.7 lb-SO<sub>x</sub>/day; 48.2 lb-PM<sub>10</sub>/day; 99.6 lb-VOC/day referenced as methane; and 52.7 lb-NH<sub>3</sub>/day. [District Rule 2201]
11. Upon concluding the initial shakedown period, the emissions from the gas turbine system shall not exceed any of the following limits: 22,343 lb-NO<sub>x</sub>/year; 84,878 lb-CO/year; 1,354 lb-SO<sub>x</sub>/year; 17,606 lb-PM<sub>10</sub>/year; 17,863 lb-VOC/year; 19,239 lb-NH<sub>3</sub>/year. All annual emission limits are based on 12 consecutive month rolling emissions totals. [District Rule 2201]
12. Ammonia (NH<sub>3</sub>) emissions shall not exceed 21 ppmvd @ 15% O<sub>2</sub> over a 24-hour average period. [District Rule 2201]
13. Each three hour rolling average will be compiled from the three most recent one hour periods. Each one hour period shall commence on the hour. Each one hour period in a twenty-four hour average for ammonia slip will commence on the hour. The twenty-four hour average will be calculated starting and ending at twelve-midnight. [District Rule 2201]
14. Daily emissions shall be compiled for a twenty-four hour period starting and ending at twelve-midnight. Each calendar month in a twelve consecutive month rolling emissions total shall commence at the beginning of the first day of the month. The twelve consecutive month rolling emissions totals used to determine compliance with annual emission limits shall be compiled from the twelve most recent calendar months. [District Rule 2201]
15. The exhaust stack shall be equipped with permanent provisions to allow collection of stack gas samples consistent with EPA test methods and shall be equipped with safe permanent provisions to sample stack gases with a portable NO<sub>x</sub>, CO, and O<sub>2</sub> analyzer during District inspections. The sampling ports shall be located in accordance with the CARB regulation titled California Air Resources Board Air Monitoring Quality Assurance Volume VI, Standard Operating Procedures for Stationary Emission Monitoring and Testing. [District Rule 1081]
16. 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
17. Source testing shall be witnessed or authorized by District personnel and samples shall be collected by a California Air Resources Board (CARB) certified testing laboratory or a CARB certified source testing firm. [District Rule 1081] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE



18. Source testing to measure start-up mass emission rates of NO<sub>x</sub>, CO, and VOC shall be conducted for one of the gas turbine engines (C-311-88, -93, -95 or -97) within 60-days of initial startup under this permit and at least once every seven years thereafter. CEMS relative accuracy shall be determined during source testing in accordance with the procedure listed in 40 CFR Part 60, Appendix F with any necessary changes approved by the District. [District Rule 1081]
19. Source testing to determine compliance with the NO<sub>x</sub>, CO and NH<sub>3</sub> emission rates (ppmvd @ 15% O<sub>2</sub>) during normal operation shall be conducted within 60 days of initial startup under this permit and annually thereafter. [District Rules 2201 and 4703, CFR 60.335(a)]
20. For the purpose of determining compliance with the emissions limits (ppmvd @ 15% O<sub>2</sub>) during normal operation in this permit, the arithmetic mean of three test runs shall apply, unless two of the three results are above an applicable limit. If two of three runs are above the applicable limit the test cannot be used to demonstrate compliance with an applicable limit. [District Rule 1081]
21. The following test methods shall be used: NO<sub>x</sub> - EPA Method 7E or 20 or CARB Method 100; CO - EPA Method 10 or 10B or CARB Method 100; VOC - EPA Method 18 or 25; PM<sub>10</sub> - EPA Method 5 (front half and back half) or 201 and 202a; ammonia - BAAQMD ST-1B; and O<sub>2</sub> - EPA Method 3, 3A, or 20 or CARB Method 100. EPA approved alternative test methods as approved by the District may also be used to address the source testing requirements of this permit. [District Rules 1081 and 4703, 40 CFR 60.335(a), and 40 CFR 60.335(b)(1)] Federally Enforceable Through Title V Permit
22. Source test to demonstrate compliance with NO<sub>x</sub> and CO emission limits shall be conducted with duct burner "on" and "off" configurations. An annual demonstration of compliance with the duct burner in operation is not required in any year in which the duct burner is not operated at all in the preceding 12 months, in such case, the unit shall be compliance source tested within 60 days of resumption of operation of the duct burner. An annual demonstration of compliance with the duct burner not in operation is not required in any year in which the duct burner operated continuously in conjunction with the turbine in the preceding 12 months, in such case, the unit shall be compliance source tested within 60 days of shutdown of operation of the duct burner. [District Rule 2201 and 4703] Federally Enforceable Through Title V Permit
23. The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081]
24. The owner or operator shall install, certify, maintain, operate, and quality-assure a continuous emission monitor system (CEMS) which continuously measures and records the exhaust gas NO<sub>x</sub>, CO, and O<sub>2</sub> concentrations. Continuous emissions monitors shall be capable of monitoring emissions during normal operating conditions and during startups and shutdowns, provided that CEMS passes the relative accuracy requirements of 40 CFR Part 60, Appendix B, Performance Specification 2 (PS-2) and District approved protocol for startups. If relative accuracy of CEMS cannot be demonstrated during the startup, CEMS results during startup and shutdown events shall be replaced with startup emission rates obtained from the source test conducted by the facility to determine compliance with emission limits contained in this document. [District Rules 1080, 2201 and 4703, 40 CFR 60.334(b)(1)]
25. The CEMS shall complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each 15-minute quadrant of the hour or shall meet equivalent specifications established by mutual agreement of the District, the CARB and the EPA. [District Rule 1080 and 40 CFR 60.334(b)(2)]
26. The NO<sub>x</sub>, CO and O<sub>2</sub> CEMS shall meet the requirements in 40 CFR 60, Appendix F Procedure 1 and Part 60, Appendix B Performance Specification 2 (PS 2), District approved protocol for startups, or shall meet equivalent specifications established by mutual agreement of the District, the CARB, and the EPA. [District Rule 1080 and 40 CFR 60.334(b)(1)]
27. In accordance with 40 CFR Part 60, Appendix F, 5.1, the CEMS must be audited at least once each calendar quarter. The District shall be notified prior to completion of the audits. Audit reports shall be submitted along with quarterly compliance reports to the District. [District Rule 1080]

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CONDITIONS CONTINUE ON NEXT PAGE

28. The requirements in 40 CFR 60, Appendix F, shall be met through the following EPA and District approved modified procedures: 1) annual RATA testing of at least one gas turbine engine (C-311-88, -93, -95 or -97), and rotate the unit tested so that all four units are tested over four years, 2) annual RAA testing for the three gas turbine engines for which the annual RATA testing is not performed, 3) if any of the gas turbine engines fail the RAA testing, they must have a RATA test within 60 days, and 4) for every quarter that RATA or RAA testing is not performed, a CGA is to be performed for each gas turbine engine. [District Rules 1080 and 4703, 40 CFR 60.334(b)(1)]
29. APCO or an authorized representative shall be allowed to inspect, as determined to be necessary, the required monitoring devices to ensure that such devices are functioning properly. [District Rule 1080]
30. The CEMS data shall be reduced to hourly averages as specified in 40 CFR 60.13(h), or by other methods deemed equivalent by mutual agreement with the District, the CARB, and the EPA. [District Rule 1080 and 40 CFR 60.334(b)(3)]
31. Upon written notice from the District, the owner or operator shall provide a summary of the data obtained from the CEMS. This summary shall be in the form and the manner prescribed by the District. [District Rule 1080]
32. The facility shall install and maintain equipment, facilities, and systems compatible with the District's CEMS data polling software system, or a District approved alternative polling method, and shall make CEMS data available to the District on a daily basis. Upon notice by the District that the facility's CEMS is not providing polling data, the facility may continue to operate without providing automated data for a maximum of 30 days per calendar year provided the CEMS data is sent to the District by a District-approved alternative method. [District Rule 1080]
33. The permittee shall maintain the following records: the date, time and duration of any malfunction of the continuous monitoring equipment; dates of performance testing; dates of evaluations, calibrations, checks, and adjustments of the continuous monitoring equipment; date and time period which a continuous monitoring system or monitoring device was inoperative. [District Rules 1080 and 2201 and 40 CFR 60.8(d)]
34. The owner or operator shall submit a written report of CEM operations for each calendar quarter to the District. The report is due on the 30th day following the end of the calendar quarter and shall include the following: Time intervals, data and magnitude of excess NO<sub>x</sub> emissions, nature and the cause of excess (if known), corrective actions taken and preventive measures adopted; Averaging period used for data reporting corresponding to the averaging period specified in the emission test period used to determine compliance with an emission standard; Applicable time and date of each period during which the CEM was inoperative, except for zero and span checks, and the nature of system repairs and adjustments; A negative declaration when no excess emissions occurred. [District Rule 1080 and 40 CFR 60.334(j)(5)]
35. Monitor downtime for NO<sub>x</sub> shall be any unit operating hour in which sufficient data are not obtained to validate the hour for either NO<sub>x</sub> concentration or diluent O<sub>2</sub> (or both). [40 CFR 60.334(j)(1)(iii)(B)]
36. If the gas turbine system is not fired on PUC-regulated or FERC regulated natural gas, then a fuel sample shall be collected during the source test to determine sulfur content of the fuel combusted in the turbine. The fuel sample shall be analyzed for the total sulfur content using ASTM D1072; D3031; D3246; D4084; D4468; D6228; or D6667; or double GC for H<sub>2</sub>S and mercaptans. The applicable ranges of some ASTM methods are not adequate to measure the levels of sulfur in some fuel gases. Dilution of samples before analysis (with verification of dilution ratio) may be used after getting a prior approval from the District. [40 CFR 60.335(b)(10)]
37. Should the applicant decide to conduct performance evaluation of CEMS with the initial performance test, a minimum of 9 reference method runs, with a minimum time per run of 21 minutes, at a single load level, between 90 and 100 percent of peak (or the highest physically achievable) load shall be performed. The test data obtained during these runs can be used to demonstrate compliance with the applicable NO<sub>x</sub> emission limit and to provide reference method data for the RATA of the CEMS. The requirement to test at three additional load levels is waived under this option. [40 CFR 60.335(b)(6)]
38. A totalizing mass or volumetric fuel flow computer shall be utilized and maintained to calculate the amount of natural gas combusted based on measured flow meter parameters (fuel pressure and temperature) and gas composition. [District Rules 2201 and 4703]
39. Except during black start, each startup shall not exceed two hours per event. [District Rules 2201 and 4703]
40. Each shutdown shall not exceed two hours per event. [District Rules 2201 and 4703]

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CONDITIONS CONTINUE ON NEXT PAGE



41. The emission control systems shall be in operation and emissions shall be minimized insofar as technologically feasible during startup (black start) and shutdown. [District Rule 4703]
42. Start-up is defined as the period of time during which a unit is brought from a shutdown status to its operating temperature and pressure, including the time required by the unit's emission control system to reach full operation. [District Rule 4703]
43. Shutdown is defined as the period of time during which a unit is taken from an operational to a non-operational status by allowing it to cool down from its operating temperature to ambient temperature as the fuel supply to the unit is completely turned off. [District Rule 4703]
44. Reduced load period is defined as the time during which a gas turbine is operated at less than rated capacity in order to change the position of the exhaust gas diverter gate. Each reduced load period shall not exceed one hour. [District Rule 4703] Federally Enforceable Through Title V Permit
45. A black start event is defined as the startup of a unit while the cogen plant is electrically separated from the utility grid. A black start event shall not exceed 4.0 hours. [District Rules 2201 and 4703]
46. The owner or operator shall submit to the District information correlating the NOx control system operating parameters to the associated measured NOx output. The information must be sufficient to allow the District to determine compliance with the NOx emission limits of this permit when the CEMS is not operating properly. [District Rule 4703]
47. The owner or operator shall maintain a stationary gas turbine system operating log that includes, on a daily basis, the actual local startup and stop time, length and reason for reduced load periods, total hours of operation, the type and quantity of fuel used, duration of each start-up (or black start) and each shutdown time period. [District Rule 4703]
48. The owner or operator shall maintain all records of required monitoring data and support information for a period of five years from the date of data entry and shall make such records available to the District upon request. [District Rules 2201 and 4703] 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:** C-311-93-11

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

**LOCATION:** HEAVY OIL PRODUCTION  
FRESNO COUNTY, CA

**SECTION:** 25 **TOWNSHIP:** 20S **RANGE:** 14E

**EQUIPMENT DESCRIPTION:**

MODIFICATION OF 86.4 MMBTU/HR COGENERATION SYSTEM WITH A NOMINAL RATED 40.9 MMBTU/HR SOLAR MODEL CENTAUR 40-4500 TURBINE ENGINE #TG-101, DRIVING A 2.7 MW ELECTRICAL GENERATOR AND INCLUDING A STRUTHERS WASTE HEAT RECOVERY STEAM GENERATOR #SG-201, WITH A 36.4 MMBTU/HR COEN DUCT BURNER: REMOVE DAILY HEAT INPUT RATE (MMBTU/DAY); INSTALL A SELECTIVE CATALYTIC REDUCTION (SCR) SYSTEM WITH AMMONIA INJECTION TO COMPLY WITH RULE 4703 TIER 3 EMISSION LIMIT OF 9 PPMVD NOX @ 15% O2; REPLACE STRUTHERS-WELLS HEAT RECOVERY STEAM GENERATOR (HRSG) WITH ANOTHER HRSG (IF NECESSARY); REPLACE THE EXISTING 36.4 MMBTU/HR DUCT BURNER WITH A NEW 36.4 MMBTU/HR (NOMINAL RATING) DUCT BURNER (IF NECESSARY); AND INSTALL A CONTINUOUS EMISSIONS MONITORING SYSTEM (CEMS) TO MEASURE NOX, CO AND O2 CONCENTRATIONS

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Seyed Sadredin, Executive Director APCO

**DAVID WARNER**, Director of Permit Services

C-311-93-11 : Nov 16 2009 8:03AM -- BRARG : Joint Inspection Required with BRARG

6. If the gas turbine system is not fired on PUC-regulated or FERC regulated natural gas, the sulfur content of each fuel source shall be tested weekly except that if compliance with the fuel sulfur content limit has been demonstrated for 8 consecutive weeks for a fuel source, then the testing frequency shall be quarterly. If a test shows noncompliance with the sulfur content requirement, the source must return to weekly testing until eight consecutive weeks show compliance. [40 CFR 60.334(h)(3)] Federally Enforceable Through Title V Permit
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11. Upon concluding the initial shakedown period, the emissions from the gas turbine system shall not exceed any of the following limits: 22,343 lb-NO<sub>x</sub>/year; 84,878 lb-CO/year; 1,354 lb-SO<sub>x</sub>/year; 17,606 lb-PM<sub>10</sub>/year; 17,863 lb-VOC/year; 19,239 lb-NH<sub>3</sub>/year. All annual emission limits are based on 12 consecutive month rolling emissions totals. [District Rule 2201]
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14. Daily emissions shall be compiled for a twenty-four hour period starting and ending at twelve-midnight. Each calendar month in a twelve consecutive month rolling emissions total shall commence at the beginning of the first day of the month. The twelve consecutive month rolling emissions totals used to determine compliance with annual emission limits shall be compiled from the twelve most recent calendar months. [District Rule 2201]
15. The exhaust stack shall be equipped with permanent provisions to allow collection of stack gas samples consistent with EPA test methods and shall be equipped with safe permanent provisions to sample stack gases with a portable NO<sub>x</sub>, CO, and O<sub>2</sub> analyzer during District inspections. The sampling ports shall be located in accordance with the CARB regulation titled California Air Resources Board Air Monitoring Quality Assurance Volume VI, Standard Operating Procedures for Stationary Emission Monitoring and Testing. [District Rule 1081]
16. 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
17. Source testing shall be witnessed or authorized by District personnel and samples shall be collected by a California Air Resources Board (CARB) certified testing laboratory or a CARB certified source testing firm. [District Rule 1081] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

18. Source testing to measure start-up mass emission rates of NO<sub>x</sub>, CO, and VOC shall be conducted for one of the gas turbine engines (C-311-88, -93, -95 or -97) within 60-days of initial startup under this permit and at least once every seven years thereafter. CEMS relative accuracy shall be determined during source testing in accordance with the procedure listed in 40 CFR Part 60, Appendix F with any necessary changes approved by the District. [District Rule 1081]
19. Source testing to determine compliance with the NO<sub>x</sub>, CO and NH<sub>3</sub> emission rates (ppmvd @ 15% O<sub>2</sub>) during normal operation shall be conducted within 60 days of initial startup under this permit and annually thereafter. [District Rules 2201 and 4703, CFR 60.335(a)]
20. For the purpose of determining compliance with the emissions limits (ppmvd @ 15% O<sub>2</sub>) during normal operation in this permit, the arithmetic mean of three test runs shall apply, unless two of the three results are above an applicable limit. If two of three runs are above the applicable limit the test cannot be used to demonstrate compliance with an applicable limit. [District Rule 1081]
21. The following test methods shall be used: NO<sub>x</sub> - EPA Method 7E or 20 or CARB Method 100; CO - EPA Method 10 or 10B or CARB Method 100; VOC - EPA Method 18 or 25; PM<sub>10</sub> - EPA Method 5 (front half and back half) or 201 and 202a; ammonia - BAAQMD ST-1B; and O<sub>2</sub> - EPA Method 3, 3A, or 20 or CARB Method 100. EPA approved alternative test methods as approved by the District may also be used to address the source testing requirements of this permit. [District Rules 1081 and 4703, 40 CFR 60.335(a), and 40 CFR 60.335(b)(1)] Federally Enforceable Through Title V Permit
22. Source test to demonstrate compliance with NO<sub>x</sub> and CO emission limits shall be conducted with duct burner "on" and "off" configurations. An annual demonstration of compliance with the duct burner in operation is not required in any year in which the duct burner is not operated at all in the preceding 12 months, in such case, the unit shall be compliance source tested within 60 days of resumption of operation of the duct burner. An annual demonstration of compliance with the duct burner not in operation is not required in any year in which the duct burner operated continuously in conjunction with the turbine in the preceding 12 months, in such case, the unit shall be compliance source tested within 60 days of shutdown of operation of the duct burner. [District Rule 2201 and 4703] Federally Enforceable Through Title V Permit
23. The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081]
24. The owner or operator shall install, certify, maintain, operate, and quality-assure a continuous emission monitor system (CEMS) which continuously measures and records the exhaust gas NO<sub>x</sub>, CO, and O<sub>2</sub> concentrations. Continuous emissions monitors shall be capable of monitoring emissions during normal operating conditions and during startups and shutdowns, provided that CEMS passes the relative accuracy requirements of 40 CFR Part 60, Appendix B, Performance Specification 2 (PS-2) and District approved protocol for startups. If relative accuracy of CEMS cannot be demonstrated during the startup, CEMS results during startup and shutdown events shall be replaced with startup emission rates obtained from the source test conducted by the facility to determine compliance with emission limits contained in this document. [District Rules 1080, 2201 and 4703, 40 CFR 60.334(b)(1)]
25. The CEMS shall complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each 15-minute quadrant of the hour or shall meet equivalent specifications established by mutual agreement of the District, the CARB and the EPA. [District Rule 1080 and 40 CFR 60.334(b)(2)]
26. The NO<sub>x</sub>, CO and O<sub>2</sub> CEMS shall meet the requirements in 40 CFR 60, Appendix F Procedure 1 and Part 60, Appendix B Performance Specification 2 (PS 2), District approved protocol for startups, or shall meet equivalent specifications established by mutual agreement of the District, the CARB, and the EPA. [District Rule 1080 and 40 CFR 60.334(b)(1)]
27. In accordance with 40 CFR Part 60, Appendix F, 5.1, the CEMS must be audited at least once each calendar quarter. The District shall be notified prior to completion of the audits. Audit reports shall be submitted along with quarterly compliance reports to the District. [District Rule 1080]

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CONDITIONS CONTINUE ON NEXT PAGE

28. The requirements in 40 CFR 60, Appendix F, shall be met through the following EPA and District approved modified procedures: 1) annual RATA testing of at least one gas turbine engine (C-311-88, -93, -95 or -97), and rotate the unit tested so that all four units are tested over four years, 2) annual RAA testing for the three gas turbine engines for which the annual RATA testing is not performed, 3) if any of the gas turbine engines fail the RAA testing, they must have a RATA test within 60 days, and 4) for every quarter that RATA or RAA testing is not performed, a CGA is to be performed for each gas turbine engine. [District Rules 1080 and 4703, 40 CFR 60.334(b)(1)]
29. APCO or an authorized representative shall be allowed to inspect, as determined to be necessary, the required monitoring devices to ensure that such devices are functioning properly. [District Rule 1080]
30. The CEMS data shall be reduced to hourly averages as specified in 40 CFR 60.13(h), or by other methods deemed equivalent by mutual agreement with the District, the CARB, and the EPA. [District Rule 1080 and 40 CFR 60.334(b)(3)]
31. Upon written notice from the District, the owner or operator shall provide a summary of the data obtained from the CEMS. This summary shall be in the form and the manner prescribed by the District. [District Rule 1080]
32. The facility shall install and maintain equipment, facilities, and systems compatible with the District's CEMS data polling software system, or a District approved alternative polling method, and shall make CEMS data available to the District on a daily basis. Upon notice by the District that the facility's CEMS is not providing polling data, the facility may continue to operate without providing automated data for a maximum of 30 days per calendar year provided the CEMS data is sent to the District by a District-approved alternative method. [District Rule 1080]
33. The permittee shall maintain the following records: the date, time and duration of any malfunction of the continuous monitoring equipment; dates of performance testing; dates of evaluations, calibrations, checks, and adjustments of the continuous monitoring equipment; date and time period which a continuous monitoring system or monitoring device was inoperative. [District Rules 1080 and 2201 and 40 CFR 60.8(d)]
34. The owner or operator shall submit a written report of CEM operations for each calendar quarter to the District. The report is due on the 30th day following the end of the calendar quarter and shall include the following: Time intervals, data and magnitude of excess NOx emissions, nature and the cause of excess (if known), corrective actions taken and preventive measures adopted; Averaging period used for data reporting corresponding to the averaging period specified in the emission test period used to determine compliance with an emission standard; Applicable time and date of each period during which the CEM was inoperative, except for zero and span checks, and the nature of system repairs and adjustments; A negative declaration when no excess emissions occurred. [District Rule 1080 and 40 CFR 60.334(j)(5)]
35. Monitor downtime for NOx shall be any unit operating hour in which sufficient data are not obtained to validate the hour for either NOx concentration or diluent O2 (or both). [40 CFR 60.334(j)(1)(iii)(B)]
36. If the gas turbine system is not fired on PUC-regulated or FERC regulated natural gas, then a fuel sample shall be collected during the source test to determine sulfur content of the fuel combusted in the turbine. The fuel sample shall be analyzed for the total sulfur content using ASTM D1072; D3031; D3246; D4084; D4468; D6228; or D6667; or double GC for H2S and mercaptans. The applicable ranges of some ASTM methods are not adequate to measure the levels of sulfur in some fuel gases. Dilution of samples before analysis (with verification of dilution ratio) may be used after getting a prior approval from the District. [40 CFR 60.335(b)(10)]
37. Should the applicant decide to conduct performance evaluation of CEMS with the initial performance test, a minimum of 9 reference method runs, with a minimum time per run of 21 minutes, at a single load level, between 90 and 100 percent of peak (or the highest physically achievable) load shall be performed. The test data obtained during these runs can be used to demonstrate compliance with the applicable NOx emission limit and to provide reference method data for the RATA of the CEMS. The requirement to test at three additional load levels is waived under this option. [40 CFR 60.335(b)(6)]
38. A totalizing mass or volumetric fuel flow computer shall be utilized and maintained to calculate the amount of natural gas combusted based on measured flow meter parameters (fuel pressure and temperature) and gas composition. [District Rules 2201 and 4703]
39. Except during black start, each startup shall not exceed two hours per event. [District Rules 2201 and 4703]
40. Each shutdown shall not exceed two hours per event. [District Rules 2201 and 4703]

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CONDITIONS CONTINUE ON NEXT PAGE

41. The emission control systems shall be in operation and emissions shall be minimized insofar as technologically feasible during startup (black start) and shutdown. [District Rule 4703]
42. Start-up is defined as the period of time during which a unit is brought from a shutdown status to its operating temperature and pressure, including the time required by the unit's emission control system to reach full operation. [District Rule 4703]
43. Shutdown is defined as the period of time during which a unit is taken from an operational to a non-operational status by allowing it to cool down from its operating temperature to ambient temperature as the fuel supply to the unit is completely turned off. [District Rule 4703]
44. Reduced load period is defined as the time during which a gas turbine is operated at less than rated capacity in order to change the position of the exhaust gas diverter gate. Each reduced load period shall not exceed one hour. [District Rule 4703] Federally Enforceable Through Title V Permit
45. A black start event is defined as the startup of a unit while the cogen plant is electrically separated from the utility grid. A black start event shall not exceed 4.0 hours. [District Rules 2201 and 4703]
46. The owner or operator shall submit to the District information correlating the NOx control system operating parameters to the associated measured NOx output. The information must be sufficient to allow the District to determine compliance with the NOx emission limits of this permit when the CEMS is not operating properly. [District Rule 4703]
47. The owner or operator shall maintain a stationary gas turbine system operating log that includes, on a daily basis, the actual local startup and stop time, length and reason for reduced load periods, total hours of operation, the type and quantity of fuel used, duration of each start-up (or black start) and each shutdown time period. [District Rule 4703]
48. The owner or operator shall maintain all records of required monitoring data and support information for a period of five years from the date of data entry and shall make such records available to the District upon request. [District Rules 2201 and 4703] Federally Enforceable Through Title V Permit
49. {741} The requirements of 40 CFR 72.6 (b) do not apply to this source because only non-Title IV sources can qualify to use the applicable template. A permit shield is granted from this requirement. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit
50. Compliance with permit conditions in the Title V permit shall be deemed compliance with the following subsumed requirement: 40 CFR 60.332(a), 60.335 (a), (b) and (c) . A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit
51. Compliance with the permit conditions in the Title V permit shall be deemed compliance with the following applicable requirements: SJVUAPCD Rule 4703, 6.2.4, 6.3, 6.4.1, 6.4.3 and 6.4.5. A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit
52. Compliance with permit conditions in the Title V permit shall be deemed compliance with District Rule 4201 (as amended 12/17/92). A permit shield is granted from these requirements. [District Rule 2520, 13.2] 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: C-311-95-11

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

LOCATION: HEAVY OIL PRODUCTION  
FRESNO COUNTY, CA

SECTION: 25 TOWNSHIP: 20S RANGE: 14

**EQUIPMENT DESCRIPTION:**

MODIFICATION OF 86.4 MMBTU/HR COGENERATION SYSTEM WITH A NOMINAL RATED 40.9 MMBTU/HR SOLAR MODEL CENTAUR 40-4500 TURBINE ENGINE #TG-102, DRIVING A 2.7 MW ELECTRICAL GENERATOR AND INCLUDING A STRUTHERS WASTE HEAT RECOVERY STEAM GENERATOR #SG-202, WITH A 36.4 MMBTU/HR COEN DUCT BURNER: REMOVE DAILY HEAT INPUT RATE (MMBTU/DAY); INSTALL A SELECTIVE CATALYTIC REDUCTION (SCR) SYSTEM WITH AMMONIA INJECTION TO COMPLY WITH RULE 4703 TIER 3 EMISSION LIMIT OF 9 PPMVD NOX @ 15% O2; REPLACE STRUTHERS-WELLS HEAT RECOVERY STEAM GENERATOR (HRSG) WITH ANOTHER HRSG (IF NECESSARY); REPLACE THE EXISTING 36.4 MMBTU/HR DUCT BURNER WITH A NEW 36.4 MMBTU/HR (NOMINAL RATING) DUCT BURNER (IF NECESSARY); AND INSTALL A CONTINUOUS EMISSIONS MONITORING SYSTEM (CEMS) TO MEASURE NOX, CO AND O2 CONCENTRATIONS

**CONDITIONS**

1. {1829} The facility shall submit an application to modify the Title V permit in accordance with the timeframes and procedures of District Rule 2520. [District Rule 2520] Federally Enforceable Through Title V Permit
2. {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
3. {2256} Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201, 3.1] Federally Enforceable Through Title V Permit
4. If the gas turbine system is fired on PUC-regulated or FERC regulated natural gas, then maintain on file copies of natural gas bills. [District Rule 2520]
5. This unit shall be fired exclusively on natural gas as defined in 40 CFR 60.331(u) and the natural gas shall have a total sulfur content less than or equal to 1.0 gr/100 scf. [40 CFR 60.333(b) and District Rules 2201 and 4201] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (559) 230-5950 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

C-311-95-11: Nov 16 2006 8:03AM - BRARG : Joint Inspection Required with BRARG



6. If the gas turbine system is not fired on PUC-regulated or FERC regulated natural gas, the sulfur content of each fuel source shall be tested weekly except that if compliance with the fuel sulfur content limit has been demonstrated for 8 consecutive weeks for a fuel source, then the testing frequency shall be quarterly. If a test shows noncompliance with the sulfur content requirement, the source must return to weekly testing until eight consecutive weeks show compliance. [40 CFR 60.334(h)(3)] Federally Enforceable Through Title V Permit
7. HHV and LHV of the fuel shall be determined by using ASTM D3588, ASTM 1826, or ASTM 1945. [40 CFR 60.335(b), District Rule 4703] Federally Enforceable Through Title V Permit
8. During an initial shakedown period, the emissions shall not exceed any of the following limits: 35 ppmvd NO<sub>x</sub> @ 15% O<sub>2</sub> referenced as NO<sub>2</sub>; 53 ppmvd CO @ 15% O<sub>2</sub> when firing both gas turbine and duct burner simultaneously; 63 ppmvd CO @ 15% O<sub>2</sub> when firing gas turbine only; 0.026 lb-PM<sub>10</sub>/MMBtu; 0.026 lb-VOC/MMBtu referenced as methane; and 0.002 lb-SO<sub>x</sub>/MMBtu referenced as SO<sub>2</sub>. The shakedown period shall not exceed 60 calendar days from the initial startup of the unit under this permit. The shakedown period must be concluded prior to the applicable Rule 4703 compliance deadline selected for this unit. The permittee shall maintain a record of the date of initial operation of this unit, fuel combusted (scf/day) on daily basis, and water-to-fuel ratio or results of NO<sub>x</sub> and CO over 3-hour rolling average period from CEMS (if operational). These records shall be made readily available for District inspection upon request. [District Rule 2201]
9. Upon concluding the initial shakedown period, emissions from the gas turbine system, when startup or shutdown or black start do not occur, shall not exceed any of the following limits: 9 ppmvd NO<sub>x</sub> @ 15% O<sub>2</sub> referenced as NO<sub>2</sub>; 53 ppmvd CO @ 15% O<sub>2</sub> when firing both gas turbine and duct burner simultaneously; 63 ppmvd CO @ 15% O<sub>2</sub> when firing gas turbine only; 0.026 lb-PM<sub>10</sub>/MMBtu; 0.026 lb-VOC/MMBtu referenced as methane; and 0.002 lb-SO<sub>x</sub>/MMBtu referenced as SO<sub>2</sub>. NO<sub>x</sub> and CO emission limits are based on 3-hour rolling average period. If unit is in either startup, shutdown, or black start mode during any portion of a clock hour, the unit will not be subject to the ppmvd limits for NO<sub>x</sub> and CO during that clock hour. [District Rules 2201 and 4703]
10. Upon concluding the initial shakedown period, emissions from the gas turbine system, on days when startup, shutdown, or black start occurs, shall not exceed any of the following limits: 67.4 lb-NO<sub>x</sub>/day referenced as NO<sub>2</sub>; 1199.5 lb-CO/day; 3.7 lb-SO<sub>x</sub>/day; 48.2 lb-PM<sub>10</sub>/day; 99.6 lb-VOC/day referenced as methane; and 52.7 lb-NH<sub>3</sub>/day. [District Rule 2201]
11. Upon concluding the initial shakedown period, the emissions from the gas turbine system shall not exceed any of the following limits: 22,343 lb-NO<sub>x</sub>/year; 84,878 lb-CO/year; 1,354 lb-SO<sub>x</sub>/year; 17,606 lb-PM<sub>10</sub>/year; 17,863 lb-VOC/year; 19,239 lb-NH<sub>3</sub>/year. All annual emission limits are based on 12 consecutive month rolling emissions totals. [District Rule 2201]
12. Ammonia (NH<sub>3</sub>) emissions shall not exceed 21 ppmvd @ 15% O<sub>2</sub> over a 24-hour average period. [District Rule 2201]
13. Each three hour rolling average will be compiled from the three most recent one hour periods. Each one hour period shall commence on the hour. Each one hour period in a twenty-four hour average for ammonia slip will commence on the hour. The twenty-four hour average will be calculated starting and ending at twelve-midnight. [District Rule 2201]
14. Daily emissions shall be compiled for a twenty-four hour period starting and ending at twelve-midnight. Each calendar month in a twelve consecutive month rolling emissions total shall commence at the beginning of the first day of the month. The twelve consecutive month rolling emissions totals used to determine compliance with annual emission limits shall be compiled from the twelve most recent calendar months. [District Rule 2201]
15. The exhaust stack shall be equipped with permanent provisions to allow collection of stack gas samples consistent with EPA test methods and shall be equipped with safe permanent provisions to sample stack gases with a portable NO<sub>x</sub>, CO, and O<sub>2</sub> analyzer during District inspections. The sampling ports shall be located in accordance with the CARB regulation titled California Air Resources Board Air Monitoring Quality Assurance Volume VI, Standard Operating Procedures for Stationary Emission Monitoring and Testing. [District Rule 1081]
16. 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
17. Source testing shall be witnessed or authorized by District personnel and samples shall be collected by a California Air Resources Board (CARB) certified testing laboratory or a CARB certified source testing firm. [District Rule 1081] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE



18. Source testing to measure start-up mass emission rates of NO<sub>x</sub>, CO, and VOC shall be conducted for one of the gas turbine engines (C-311-88, -93, -95 or -97) within 60-days of initial startup under this permit and at least once every seven years thereafter. CEMS relative accuracy shall be determined during source testing in accordance with the procedure listed in 40 CFR Part 60, Appendix F with any necessary changes approved by the District. [District Rule 1081]
19. Source testing to determine compliance with the NO<sub>x</sub>, CO and NH<sub>3</sub> emission rates (ppmvd @ 15% O<sub>2</sub>) during normal operation shall be conducted within 60 days of initial startup under this permit and annually thereafter. [District Rules 2201 and 4703, CFR 60.335(a)]
20. For the purpose of determining compliance with the emissions limits (ppmvd @ 15% O<sub>2</sub>) during normal operation in this permit, the arithmetic mean of three test runs shall apply, unless two of the three results are above an applicable limit. If two of three runs are above the applicable limit the test cannot be used to demonstrate compliance with an applicable limit. [District Rule 1081]
21. The following test methods shall be used: NO<sub>x</sub> - EPA Method 7E or 20 or CARB Method 100; CO - EPA Method 10 or 10B or CARB Method 100; VOC - EPA Method 18 or 25; PM<sub>10</sub> - EPA Method 5 (front half and back half) or 201 and 202a; ammonia - BAAQMD ST-1B; and O<sub>2</sub> - EPA Method 3, 3A, or 20 or CARB Method 100. EPA approved alternative test methods as approved by the District may also be used to address the source testing requirements of this permit. [District Rules 1081 and 4703, 40 CFR 60.335(a), and 40 CFR 60.335(b)(1)] Federally Enforceable Through Title V Permit
22. Source test to demonstrate compliance with NO<sub>x</sub> and CO emission limits shall be conducted with duct burner "on" and "off" configurations. An annual demonstration of compliance with the duct burner in operation is not required in any year in which the duct burner is not operated at all in the preceding 12 months, in such case, the unit shall be compliance source tested within 60 days of resumption of operation of the duct burner. An annual demonstration of compliance with the duct burner not in operation is not required in any year in which the duct burner operated continuously in conjunction with the turbine in the preceding 12 months, in such case, the unit shall be compliance source tested within 60 days of shutdown of operation of the duct burner. [District Rule 2201 and 4703] Federally Enforceable Through Title V Permit
23. The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081]
24. The owner or operator shall install, certify, maintain, operate, and quality-assure a continuous emission monitor system (CEMS) which continuously measures and records the exhaust gas NO<sub>x</sub>, CO, and O<sub>2</sub> concentrations. Continuous emissions monitors shall be capable of monitoring emissions during normal operating conditions and during startups and shutdowns, provided that CEMS passes the relative accuracy requirements of 40 CFR Part 60, Appendix B, Performance Specification 2 (PS-2) and District approved protocol for startups. If relative accuracy of CEMS cannot be demonstrated during the startup, CEMS results during startup and shutdown events shall be replaced with startup emission rates obtained from the source test conducted by the facility to determine compliance with emission limits contained in this document. [District Rules 1080, 2201 and 4703, 40 CFR 60.334(b)(1)]
25. The CEMS shall complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each 15-minute quadrant of the hour or shall meet equivalent specifications established by mutual agreement of the District, the CARB and the EPA. [District Rule 1080 and 40 CFR 60.334(b)(2)]
26. The NO<sub>x</sub>, CO and O<sub>2</sub> CEMS shall meet the requirements in 40 CFR 60, Appendix F Procedure 1 and Part 60, Appendix B Performance Specification 2 (PS 2), District approved protocol for startups, or shall meet equivalent specifications established by mutual agreement of the District, the CARB, and the EPA. [District Rule 1080 and 40 CFR 60.334(b)(1)]
27. In accordance with 40 CFR Part 60, Appendix F, 5.1, the CEMS must be audited at least once each calendar quarter. The District shall be notified prior to completion of the audits. Audit reports shall be submitted along with quarterly compliance reports to the District. [District Rule 1080]

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36. If the gas turbine system is not fired on PUC-regulated or FERC regulated natural gas, then a fuel sample shall be collected during the source test to determine sulfur content of the fuel combusted in the turbine. The fuel sample shall be analyzed for the total sulfur content using ASTM D1072; D3031; D3246; D4084; D4468; D6228; or D6667; or double GC for H2S and mercaptans. The applicable ranges of some ASTM methods are not adequate to measure the levels of sulfur in some fuel gases. Dilution of samples before analysis (with verification of dilution ratio) may be used after getting a prior approval from the District. [40 CFR 60.335(b)(10)]
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CONDITIONS CONTINUE ON NEXT PAGE

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42. Start-up is defined as the period of time during which a unit is brought from a shutdown status to its operating temperature and pressure, including the time required by the unit's emission control system to reach full operation. [District Rule 4703]
43. Shutdown is defined as the period of time during which a unit is taken from an operational to a non-operational status by allowing it to cool down from its operating temperature to ambient temperature as the fuel supply to the unit is completely turned off. [District Rule 4703]
44. Reduced load period is defined as the time during which a gas turbine is operated at less than rated capacity in order to change the position of the exhaust gas diverter gate. Each reduced load period shall not exceed one hour. [District Rule 4703] Federally Enforceable Through Title V Permit
45. A black start event is defined as the startup of a unit while the cogen plant is electrically separated from the utility grid. A black start event shall not exceed 4.0 hours. [District Rules 2201 and 4703]
46. The owner or operator shall submit to the District information correlating the NOx control system operating parameters to the associated measured NOx output. The information must be sufficient to allow the District to determine compliance with the NOx emission limits of this permit when the CEMS is not operating properly. [District Rule 4703]
47. The owner or operator shall maintain a stationary gas turbine system operating log that includes, on a daily basis, the actual local startup and stop time, length and reason for reduced load periods, total hours of operation, the type and quantity of fuel used, duration of each start-up (or black start) and each shutdown time period. [District Rule 4703]
48. The owner or operator shall maintain all records of required monitoring data and support information for a period of five years from the date of data entry and shall make such records available to the District upon request. [District Rules 2201 and 4703] Federally Enforceable Through Title V Permit
49. {741} The requirements of 40 CFR 72.6 (b) do not apply to this source because only non-Title IV sources can qualify to use the applicable template. A permit shield is granted from this requirement. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit
50. Compliance with permit conditions in the Title V permit shall be deemed compliance with the following subsumed requirement: 40 CFR 60.332(a), 60.335 (a), (b) and (c) . A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit
51. Compliance with the permit conditions in the Title V permit shall be deemed compliance with the following applicable requirements: SJVUAPCD Rule 4703, 6.2.4, 6.3, 6.4.1, 6.4.3 and 6.4.5. A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit
52. Compliance with permit conditions in the Title V permit shall be deemed compliance with District Rule 4201 (as amended 12/17/92). A permit shield is granted from these requirements. [District Rule 2520, 13.2] 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:** C-311-97-11

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

**LOCATION:** HEAVY OIL PRODUCTION  
FRESNO COUNTY, CA

**SECTION:** 25 **TOWNSHIP:** 20S **RANGE:** 14E

**EQUIPMENT DESCRIPTION:**

MODIFICATION OF 86.4 MMBTU/HR COGENERATION SYSTEM WITH A NOMINAL RATED 40.9 MMBTU/HR SOLAR MODEL CENTAUR 40-4500 TURBINE ENGINE #TG-103, DRIVING A 2.7 MW ELECTRICAL GENERATOR AND INCLUDING A STRUTHERS WASTE HEAT RECOVERY STEAM GENERATOR #SG-203, WITH A 36.4 MMBTU/HR COEN DUCT BURNER: REMOVE DAILY HEAT INPUT RATE (MMBTU/DAY); INSTALL A SELECTIVE CATALYTIC REDUCTION (SCR) SYSTEM WITH AMMONIA INJECTION TO COMPLY WITH RULE 4703 TIER 3 EMISSION LIMIT OF 9 PPMVD NOX @ 15% O2; REPLACE STRUTHERS-WELLS HEAT RECOVERY STEAM GENERATOR (HRSG) WITH ANOTHER HRSG (IF NECESSARY); REPLACE THE EXISTING 36.4 MMBTU/HR DUCT BURNER WITH A NEW 36.4 MMBTU/HR (NOMINAL RATING) DUCT BURNER (IF NECESSARY); AND INSTALL A CONTINUOUS EMISSIONS MONITORING SYSTEM (CEMS) TO MEASURE NOX, CO AND O2 CONCENTRATIONS

**CONDITIONS**

1. {1829} The facility shall submit an application to modify the Title V permit in accordance with the timeframes and procedures of District Rule 2520. [District Rule 2520] Federally Enforceable Through Title V Permit
2. {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
3. {2256} Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201, 3.1] Federally Enforceable Through Title V Permit
4. If the gas turbine system is fired on PUC-regulated or FERC regulated natural gas, then maintain on file copies of natural gas bills. [District Rule 2520]
5. This unit shall be fired exclusively on natural gas as defined in 40 CFR 60.331(u) and the natural gas shall have a total sulfur content less than or equal to 1.0 gr/100 scf. [40 CFR 60.333(b) and District Rules 2201 and 4201] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

**YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (559) 230-5950 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

C-311-97-11: Nov 16 2009 8:03AM - BRARG : Joint Inspection Required with BRARG

6. If the gas turbine system is not fired on PUC-regulated or FERC regulated natural gas, the sulfur content of each fuel source shall be tested weekly except that if compliance with the fuel sulfur content limit has been demonstrated for 8 consecutive weeks for a fuel source, then the testing frequency shall be quarterly. If a test shows noncompliance with the sulfur content requirement, the source must return to weekly testing until eight consecutive weeks show compliance. [40 CFR 60.334(h)(3)] Federally Enforceable Through Title V Permit
7. HHV and LHV of the fuel shall be determined by using ASTM D3588, ASTM 1826, or ASTM 1945. [40 CFR 60.335(b), District Rule 4703] Federally Enforceable Through Title V Permit
8. During an initial shakedown period, the emissions shall not exceed any of the following limits: 35 ppmvd NO<sub>x</sub> @ 15% O<sub>2</sub> referenced as NO<sub>2</sub>; 53 ppmvd CO @ 15% O<sub>2</sub> when firing both gas turbine and duct burner simultaneously; 63 ppmvd CO @ 15% O<sub>2</sub> when firing gas turbine only; 0.026 lb-PM<sub>10</sub>/MMBtu; 0.026 lb-VOC/MMBtu referenced as methane; and 0.002 lb-SO<sub>x</sub>/MMBtu referenced as SO<sub>2</sub>. The shakedown period shall not exceed 60 calendar days from the initial startup of the unit under this permit. The shakedown period must be concluded prior to the applicable Rule 4703 compliance deadline selected for this unit. The permittee shall maintain a record of the date of initial operation of this unit, fuel combusted (scf/day) on daily basis, and water-to-fuel ratio or results of NO<sub>x</sub> and CO over 3-hour rolling average period from CEMS (if operational). These records shall be made readily available for District inspection upon request. [District Rule 2201]
9. Upon concluding the initial shakedown period, emissions from the gas turbine system, when startup or shutdown or black start do not occur, shall not exceed any of the following limits: 9 ppmvd NO<sub>x</sub> @ 15% O<sub>2</sub> referenced as NO<sub>2</sub>; 53 ppmvd CO @ 15% O<sub>2</sub> when firing both gas turbine and duct burner simultaneously; 63 ppmvd CO @ 15% O<sub>2</sub> when firing gas turbine only; 0.026 lb-PM<sub>10</sub>/MMBtu; 0.026 lb-VOC/MMBtu referenced as methane; and 0.002 lb-SO<sub>x</sub>/MMBtu referenced as SO<sub>2</sub>. NO<sub>x</sub> and CO emission limits are based on 3-hour rolling average period. If unit is in either startup, shutdown, or black start mode during any portion of a clock hour, the unit will not be subject to the ppmvd limits for NO<sub>x</sub> and CO during that clock hour. [District Rules 2201 and 4703]
10. Upon concluding the initial shakedown period, emissions from the gas turbine system, on days when startup, shutdown, or black start occurs, shall not exceed any of the following limits: 67.4 lb-NO<sub>x</sub>/day referenced as NO<sub>2</sub>; 1199.5 lb-CO/day; 3.7 lb-SO<sub>x</sub>/day; 48.2 lb-PM<sub>10</sub>/day; 99.6 lb-VOC/day referenced as methane; and 52.7 lb-NH<sub>3</sub>/day. [District Rule 2201]
11. Upon concluding the initial shakedown period, the emissions from the gas turbine system shall not exceed any of the following limits: 22,343 lb-NO<sub>x</sub>/year; 84,878 lb-CO/year; 1,354 lb-SO<sub>x</sub>/year; 17,606 lb-PM<sub>10</sub>/year; 17,863 lb-VOC/year; 19,239 lb-NH<sub>3</sub>/year. All annual emission limits are based on 12 consecutive month rolling emissions totals. [District Rule 2201]
12. Ammonia (NH<sub>3</sub>) emissions shall not exceed 21 ppmvd @ 15% O<sub>2</sub> over a 24-hour average period. [District Rule 2201]
13. Each three hour rolling average will be compiled from the three most recent one hour periods. Each one hour period shall commence on the hour. Each one hour period in a twenty-four hour average for ammonia slip will commence on the hour. The twenty-four hour average will be calculated starting and ending at twelve-midnight. [District Rule 2201]
14. Daily emissions shall be compiled for a twenty-four hour period starting and ending at twelve-midnight. Each calendar month in a twelve consecutive month rolling emissions total shall commence at the beginning of the first day of the month. The twelve consecutive month rolling emissions totals used to determine compliance with annual emission limits shall be compiled from the twelve most recent calendar months. [District Rule 2201]
15. The exhaust stack shall be equipped with permanent provisions to allow collection of stack gas samples consistent with EPA test methods and shall be equipped with safe permanent provisions to sample stack gases with a portable NO<sub>x</sub>, CO, and O<sub>2</sub> analyzer during District inspections. The sampling ports shall be located in accordance with the CARB regulation titled California Air Resources Board Air Monitoring Quality Assurance Volume VI, Standard Operating Procedures for Stationary Emission Monitoring and Testing. [District Rule 1081]
16. 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
17. Source testing shall be witnessed or authorized by District personnel and samples shall be collected by a California Air Resources Board (CARB) certified testing laboratory or a CARB certified source testing firm. [District Rule 1081] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

18. Source testing to measure start-up mass emission rates of NO<sub>x</sub>, CO, and VOC shall be conducted for one of the gas turbine engines (C-311-88, -93, -95 or -97) within 60-days of initial startup under this permit and at least once every seven years thereafter. CEMS relative accuracy shall be determined during source testing in accordance with the procedure listed in 40 CFR Part 60, Appendix F with any necessary changes approved by the District. [District Rule 1081]
19. Source testing to determine compliance with the NO<sub>x</sub>, CO and NH<sub>3</sub> emission rates (ppmvd @ 15% O<sub>2</sub>) during normal operation shall be conducted within 60 days of initial startup under this permit and annually thereafter. [District Rules 2201 and 4703, CFR 60.335(a)]
20. For the purpose of determining compliance with the emissions limits (ppmvd @ 15% O<sub>2</sub>) during normal operation in this permit, the arithmetic mean of three test runs shall apply, unless two of the three results are above an applicable limit. If two of three runs are above the applicable limit the test cannot be used to demonstrate compliance with an applicable limit. [District Rule 1081]
21. The following test methods shall be used: NO<sub>x</sub> - EPA Method 7E or 20 or CARB Method 100; CO - EPA Method 10 or 10B or CARB Method 100; VOC - EPA Method 18 or 25; PM<sub>10</sub> - EPA Method 5 (front half and back half) or 201 and 202a; ammonia - BAAQMD ST-1B; and O<sub>2</sub> - EPA Method 3, 3A, or 20 or CARB Method 100. EPA approved alternative test methods as approved by the District may also be used to address the source testing requirements of this permit. [District Rules 1081 and 4703, 40 CFR 60.335(a), and 40 CFR 60.335(b)(1)] Federally Enforceable Through Title V Permit
22. Source test to demonstrate compliance with NO<sub>x</sub> and CO emission limits shall be conducted with duct burner "on" and "off" configurations. An annual demonstration of compliance with the duct burner in operation is not required in any year in which the duct burner is not operated at all in the preceding 12 months, in such case, the unit shall be compliance source tested within 60 days of resumption of operation of the duct burner. An annual demonstration of compliance with the duct burner not in operation is not required in any year in which the duct burner operated continuously in conjunction with the turbine in the preceding 12 months, in such case, the unit shall be compliance source tested within 60 days of shutdown of operation of the duct burner. [District Rule 2201 and 4703] Federally Enforceable Through Title V Permit
23. The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081]
24. The owner or operator shall install, certify, maintain, operate, and quality-assure a continuous emission monitor system (CEMS) which continuously measures and records the exhaust gas NO<sub>x</sub>, CO, and O<sub>2</sub> concentrations. Continuous emissions monitors shall be capable of monitoring emissions during normal operating conditions and during startups and shutdowns, provided that CEMS passes the relative accuracy requirements of 40 CFR Part 60, Appendix B, Performance Specification 2 (PS-2) and District approved protocol for startups. If relative accuracy of CEMS cannot be demonstrated during the startup, CEMS results during startup and shutdown events shall be replaced with startup emission rates obtained from the source test conducted by the facility to determine compliance with emission limits contained in this document. [District Rules 1080, 2201 and 4703, 40 CFR 60.334(b)(1)]
25. The CEMS shall complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each 15-minute quadrant of the hour or shall meet equivalent specifications established by mutual agreement of the District, the CARB and the EPA. [District Rule 1080 and 40 CFR 60.334(b)(2)]
26. The NO<sub>x</sub>, CO and O<sub>2</sub> CEMS shall meet the requirements in 40 CFR 60, Appendix F Procedure 1 and Part 60, Appendix B Performance Specification 2 (PS 2), District approved protocol for startups, or shall meet equivalent specifications established by mutual agreement of the District, the CARB, and the EPA. [District Rule 1080 and 40 CFR 60.334(b)(1)]
27. In accordance with 40 CFR Part 60, Appendix F, 5.1, the CEMS must be audited at least once each calendar quarter. The District shall be notified prior to completion of the audits. Audit reports shall be submitted along with quarterly compliance reports to the District. [District Rule 1080]

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CONDITIONS CONTINUE ON NEXT PAGE



28. The requirements in 40 CFR 60, Appendix F, shall be met through the following EPA and District approved modified procedures: 1) annual RATA testing of at least one gas turbine engine (C-311-88, -93, -95 or -97), and rotate the unit tested so that all four units are tested over four years, 2) annual RAA testing for the three gas turbine engines for which the annual RATA testing is not performed, 3) if any of the gas turbine engines fail the RAA testing, they must have a RATA test within 60 days, and 4) for every quarter that RATA or RAA testing is not performed, a CGA is to be performed for each gas turbine engine. [District Rules 1080 and 4703, 40 CFR 60.334(b)(1)]
29. APCO or an authorized representative shall be allowed to inspect, as determined to be necessary, the required monitoring devices to ensure that such devices are functioning properly. [District Rule 1080]
30. The CEMS data shall be reduced to hourly averages as specified in 40 CFR 60.13(h), or by other methods deemed equivalent by mutual agreement with the District, the CARB, and the EPA. [District Rule 1080 and 40 CFR 60.334(b)(3)]
31. Upon written notice from the District, the owner or operator shall provide a summary of the data obtained from the CEMS. This summary shall be in the form and the manner prescribed by the District. [District Rule 1080]
32. The facility shall install and maintain equipment, facilities, and systems compatible with the District's CEMS data polling software system, or a District approved alternative polling method, and shall make CEMS data available to the District on a daily basis. Upon notice by the District that the facility's CEMS is not providing polling data, the facility may continue to operate without providing automated data for a maximum of 30 days per calendar year provided the CEMS data is sent to the District by a District-approved alternative method. [District Rule 1080]
33. The permittee shall maintain the following records: the date, time and duration of any malfunction of the continuous monitoring equipment; dates of performance testing; dates of evaluations, calibrations, checks, and adjustments of the continuous monitoring equipment; date and time period which a continuous monitoring system or monitoring device was inoperative. [District Rules 1080 and 2201 and 40 CFR 60.8(d)]
34. The owner or operator shall submit a written report of CEM operations for each calendar quarter to the District. The report is due on the 30th day following the end of the calendar quarter and shall include the following: Time intervals, data and magnitude of excess NO<sub>x</sub> emissions, nature and the cause of excess (if known), corrective actions taken and preventive measures adopted; Averaging period used for data reporting corresponding to the averaging period specified in the emission test period used to determine compliance with an emission standard; Applicable time and date of each period during which the CEM was inoperative, except for zero and span checks, and the nature of system repairs and adjustments; A negative declaration when no excess emissions occurred. [District Rule 1080 and 40 CFR 60.334(j)(5)]
35. Monitor downtime for NO<sub>x</sub> shall be any unit operating hour in which sufficient data are not obtained to validate the hour for either NO<sub>x</sub> concentration or diluent O<sub>2</sub> (or both). [40 CFR 60.334(j)(1)(iii)(B)]
36. If the gas turbine system is not fired on PUC-regulated or FERC regulated natural gas, then a fuel sample shall be collected during the source test to determine sulfur content of the fuel combusted in the turbine. The fuel sample shall be analyzed for the total sulfur content using ASTM D1072; D3031; D3246; D4084; D4468; D6228; or D6667; or double GC for H<sub>2</sub>S and mercaptans. The applicable ranges of some ASTM methods are not adequate to measure the levels of sulfur in some fuel gases. Dilution of samples before analysis (with verification of dilution ratio) may be used after getting a prior approval from the District. [40 CFR 60.335(b)(10)]
37. Should the applicant decide to conduct performance evaluation of CEMS with the initial performance test, a minimum of 9 reference method runs, with a minimum time per run of 21 minutes, at a single load level, between 90 and 100 percent of peak (or the highest physically achievable) load shall be performed. The test data obtained during these runs can be used to demonstrate compliance with the applicable NO<sub>x</sub> emission limit and to provide reference method data for the RATA of the CEMS. The requirement to test at three additional load levels is waived under this option. [40 CFR 60.335(b)(6)]
38. A totalizing mass or volumetric fuel flow computer shall be utilized and maintained to calculate the amount of natural gas combusted based on measured flow meter parameters (fuel pressure and temperature) and gas composition. [District Rules 2201 and 4703]
39. Except during black start, each startup shall not exceed two hours per event. [District Rules 2201 and 4703]
40. Each shutdown shall not exceed two hours per event. [District Rules 2201 and 4703]

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CONDITIONS CONTINUE ON NEXT PAGE

41. The emission control systems shall be in operation and emissions shall be minimized insofar as technologically feasible during startup (black start) and shutdown. [District Rule 4703]
42. Start-up is defined as the period of time during which a unit is brought from a shutdown status to its operating temperature and pressure, including the time required by the unit's emission control system to reach full operation. [District Rule 4703]
43. Shutdown is defined as the period of time during which a unit is taken from an operational to a non-operational status by allowing it to cool down from its operating temperature to ambient temperature as the fuel supply to the unit is completely turned off. [District Rule 4703]
44. Reduced load period is defined as the time during which a gas turbine is operated at less than rated capacity in order to change the position of the exhaust gas diverter gate. Each reduced load period shall not exceed one hour. [District Rule 4703] Federally Enforceable Through Title V Permit
45. A black start event is defined as the startup of a unit while the cogen plant is electrically separated from the utility grid. A black start event shall not exceed 4.0 hours. [District Rules 2201 and 4703]
46. The owner or operator shall submit to the District information correlating the NOx control system operating parameters to the associated measured NOx output. The information must be sufficient to allow the District to determine compliance with the NOx emission limits of this permit when the CEMS is not operating properly. [District Rule 4703]
47. The owner or operator shall maintain a stationary gas turbine system operating log that includes, on a daily basis, the actual local startup and stop time, length and reason for reduced load periods, total hours of operation, the type and quantity of fuel used, duration of each start-up (or black start) and each shutdown time period. [District Rule 4703]
48. The owner or operator shall maintain all records of required monitoring data and support information for a period of five years from the date of data entry and shall make such records available to the District upon request. [District Rules 2201 and 4703] Federally Enforceable Through Title V Permit
49. {741} The requirements of 40 CFR 72.6 (b) do not apply to this source because only non-Title IV sources can qualify to use the applicable template. A permit shield is granted from this requirement. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit
50. Compliance with permit conditions in the Title V permit shall be deemed compliance with the following subsumed requirement: 40 CFR 60.332(a), 60.335 (a), (b) and (c) . A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit
51. Compliance with the permit conditions in the Title V permit shall be deemed compliance with the following applicable requirements: SJVUAPCD Rule 4703, 6.2.4, 6.3, 6.4.1, 6.4.3 and 6.4.5. A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit
52. Compliance with permit conditions in the Title V permit shall be deemed compliance with District Rule 4201 (as amended 12/17/92). A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit

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## Appendix II

### Current Permits to Operate

# San Joaquin Valley Air Pollution Control District

**PERMIT UNIT:** C-311-13-9

**EXPIRATION DATE:** 12/31/2005

**SECTION:** 6C **TOWNSHIP:** 20S **RANGE:** 15E

## **EQUIPMENT DESCRIPTION:**

86.4 MMBTU/HR COGENERATION SYSTEM WITH A NOMINAL RATED 40.9 MMBTU/HR SOLAR MODEL CENTAUR 40-4500 TURBINE ENGINE #TG-105, DRIVING A 2.7 MW ELECTRICAL GENERATOR AND INCLUDING A STRUTHERS WASTE HEAT RECOVERY STEAM GENERATOR #SG-205, WITH A 36.4 MMBTU/HR COEN DUCT BURNER

## **PERMIT UNIT REQUIREMENTS**

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1. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201, 3.1] Federally Enforceable Through Title V Permit
2. The Owner/Operator shall maintain a separate fuel meter to the turbine and a fuel meter to the duct burners. [District Rule 2201] Federally Enforceable Through Title V Permit
3. Natural gas consumption by the cogeneration system (turbine and duct burner) shall not exceed 1,812,000 scf/day. Natural gas consumption by the cogeneration system shall not exceed 654 million scf/year. [District Rule 2201]
4. Emissions from the cogeneration system shall not exceed any of the following limits: 233.7 lb-NOx/day, 3.6 lb-SOx/day, 47.1 lb-PM10/day, 257.3 lb-CO/day, or 47.1 lb-VOC/day. [District Rule 2201] Federally Enforceable Through Title V Permit
5. The owner or operator shall not operate the gas turbine under load conditions, excluding the thermal stabilization period or reduced load period, which results in the measured NOx emissions concentration exceeding 35 ppmv @ 15% O2. [40 CFR 60.332(a)(1), (a)(2) and District Rules 2201 and 4703, 5.1.2.1] Federally Enforceable Through Title V Permit
6. CO emissions from the cogeneration system with the duct burner firing shall not exceed 53 ppmv CO @ 15% O2 or 0.119 lb-CO/MMBtu, excluding thermal stabilization periods or reduced load periods. [District Rule 4703, 5.2] Federally Enforceable Through Title V Permit
7. CO emissions from the cogeneration system without duct burner firing shall not exceed 63 ppmv CO @ 15% O2 or 0.142 lb CO/MMBtu, excluding thermal stabilization periods or reduced load periods. [District Rule 4703, 5.2] Federally Enforceable Through Title V Permit
8. Emissions from the cogeneration system (with or without duct burner firing) shall not exceed any of the following limits: 0.002 lb-SOx/MMBtu, 0.026 lb-PM10/MMBtu, or 0.026 lb-VOC/MMBtu. [District Rule 2201] Federally Enforceable Through Title V Permit
9. Reduced Load Period shall be defined as the time during which the gas turbine is operated at less than rated capacity in order to change the position of the exhaust gas diverter gate, not exceeding one hour. [District Rule 4703, 3.19] Federally Enforceable Through Title V Permit
10. Thermal Stabilization Period shall be defined as the startup or shutdown, as defined in 40 CFR 60.2, time during which the exhaust gas is not within the normal operating temperature range, not to exceed two hours per startup or shutdown event. [District Rule 4703, 3.25] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE  
These terms and conditions are part of the Facility-wide Permit to Operate.

11. This unit shall be fired exclusively on natural gas as defined in 40 CFR 60.331(u) and the natural gas shall have a total sulfur content less than or equal to 1.0 gr/100 scf. [40 CFR 60.333(b) and District Rules 2201 and 4201] Federally Enforceable Through Title V Permit
12. The sulfur fuel content of each fuel source shall be: (i) documented in a valid purchase contract, a supplier certification, a tariff sheet or transportation contract or (ii) monitored weekly using ASTM Methods D4084, D5504, D6228, or Gas Processors Association Standard 2377, or double GC for H<sub>2</sub>S and mercaptans. If the sulfur fuel content is less than 1.0 gr/100 scf for eight consecutive weeks, then the monitoring frequency shall be every 6 months. If any six-month monitoring tests result in a sulfur fuel content exceedance, weekly monitoring shall resume. [40 CFR 60.334(h)(3)] Federally Enforceable Through Title V Permit
13. Performance testing shall be conducted annually to measure NO<sub>x</sub> and CO emissions concentrations using the following test methods: EPA Methods 7E or 20 for NO<sub>x</sub> emissions, EPA Methods 10 or 10B for CO emissions, EPA Methods 3, 3A, or 20 for Oxygen content of the exhaust gas. The test will be comprised of three test runs performed at the highest physically achievable load of the gas turbine. The measured NO<sub>x</sub> concentrations shall be averaged over a three hour period, using consecutive 15-minute sampling periods. [40 CFR 60.335(a), (b)(2) and District Rule 4703, 5.1, 6.3.1, 6.3.2, and 6.4] Federally Enforceable Through Title V Permit
14. Any gas turbine with an intermittently operated auxiliary burner shall demonstrate compliance with the auxiliary burner both on and off. Source testing shall not be required with the duct burner on if it has not been in operation during the previous 12 months, i.e. the duct burner need not be started to solely perform source testing. Source testing shall not be required with the duct burner off if it has been in continuous operation during the previous 12 months, i.e. the duct burner need not be shut-down solely to perform source testing. Source testing shall be performed within 60 days of startup or shutdown of the duct burner unless source testing of the duct burner has been performed in the previous 12 months. [40 CFR 60.335(b) and District Rule 4703, 6.3.3] Federally Enforceable Through Title V Permit
15. HHV and LHV of the fuel shall be determined using ASTM D3588, ASTM 1826, or ASTM 1945. [40 CFR 60.335(b) and District Rule 4703, 6.4.5] Federally Enforceable Through Title V Permit
16. The owner or operator shall be required to conform to the sampling facilities and testing procedures described in Rule 1081 (as amended 12/16/93), Sections 3.0 and 6.1. [District Rule 1081] Federally Enforceable Through Title V Permit
17. The District must be notified 30 days prior to any performance testing and a test plan shall be submitted for approval 15 days prior to such testing. [District Rule 1081] Federally Enforceable Through Title V Permit
18. Performance testing shall be witnessed or authorized by District personnel. Test results must be submitted to the District within 60 days of performance testing. [District Rule 1081] Federally Enforceable Through Title V Permit
19. The owner or operator shall operate and maintain in calibration a system which continuously measures and records: control system operating parameters, elapsed time of operation, the fuel consumption and the ratio of water to fuel being fired in the turbine. [40 CFR 60.334(a) and District Rule 4703, 6.2.2] Federally Enforceable Through Title V Permit
20. The owner or operator shall develop and keep on-site a parameter monitoring plan which includes the procedures used to document the proper operation of the NO<sub>x</sub> emissions controls (water injection). This plan shall include the parameter(s) monitored, such as the water-to-fuel ratio, and the acceptable range(s) of the parameter(s) as well as the basis for designating the parameter(s) and acceptable range(s). Any supplemental data such as engineering analyses, design specifications, manufacturers recommendations and other relevant information shall be included in the monitoring plan. [40 CFR 60.334(g)] Federally Enforceable Through Title V Permit
21. The water to fuel ratio shall not be less than 0.45 on a weight basis. [District Rule 4703, 6.2.5] Federally Enforceable Through Title V Permit
22. The owner or operator shall submit a semi-annual excess NO<sub>x</sub> emissions and monitor downtime report to the APCO. Excess emissions shall be reported for all periods of operation, including startup, shutdown and malfunction. The report, post marked by the 30th day following the end of every other calendar quarter, shall include the following: Time intervals, average steam or water-to-fuel ratio, turbine load, nature and cause of excess emissions (if known), and corrective actions taken and preventative measures adopted. [40 CFR 60.334(j), (j)(5) and District Rule 2520, 9.3.2]] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

These terms and conditions are part of the Facility-wide Permit to Operate.

23. Excess emissions shall be defined as any operating hour for which the steam or water to fuel ratio, as measured by the continuous monitoring system, falls below the established steam or water to fuel ratio. Any operating hour in which no steam or water is injected into the turbine shall also be considered as excess emissions. [40 CR 60.334(j)(1)(i)(A)] Federally Enforceable Through Title V Permit
24. Monitor downtime shall be any operating hour in which the water or steam is injected into the turbine, but essential parametric data needed to determine the steam or water to fuel ratio are unavailable or invalid. [40 CFR 60.334(j)(1)(i)(B)] Federally Enforceable Through Title V Permit
25. Fuel consumption and the water-to-fuel ratio shall be monitored continuously with a system that is accurate to within 5 percent. [District Rule 2201] Federally Enforceable Through Title V Permit
26. The cogeneration system shall be equipped with a meter recording the total elapsed operating time. [District NSR Rule] Federally Enforceable Through Title V Permit
27. Permittee shall notify the District of any breakdown condition as soon as reasonably possible, but no later than one hour after its detection, unless the owner or operator demonstrates to the District's satisfaction that the longer reporting period was necessary. [District Rule 1100] Federally Enforceable Through Title V Permit
28. The District shall be notified in writing within ten days following the correction of any breakdown condition. The breakdown notification shall include a description of the equipment malfunction or failure, the date and cause of the initial failure, the estimated emissions in excess of those allowed, and the methods utilized to restore normal operations. [District Rule 1100] Federally Enforceable Through Title V Permit
29. If the water injection system is inoperative when the turbine is running, the operator shall follow procedures pursuant to District Rule 1100 (Equipment Breakdown). [District Rule 1100] Federally Enforceable Through Title V Permit
30. The requirements of 40 CFR 72.6 (b) do not apply to this source because only non-Title IV sources can qualify to use the applicable template. A permit shield is granted from this requirement. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit
31. If the turbine is fired on PUC-regulated natural gas, then the operator shall maintain a log describing the source of natural gas and quantity used. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
32. Records shall be maintained and shall contain: the occurrence and duration of any start-up, shutdown or malfunction, performance testing, evaluations, calibrations, checks, adjustments and emissions measurements. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
33. The owner or operator shall maintain a record of the cumulative rolling 12 month fuel usage for each turbine. The record shall be updated at the end of each calendar month. [District Rule 2201] Federally Enforceable Through Title V Permit
34. Operator shall maintain a stationary gas turbine operating log that includes, on a daily basis, the actual local start-up and stop time, length and reason for reduced load periods, total hours of operation and quantity of fuel used. [40 CFR 60.332(a),(b) and District Rule 4703, 6.2.4] Federally Enforceable Through Title V Permit
35. The owner or operator of a stationary gas turbine system shall maintain all records of required monitoring data and support information for inspection at any time for a period of five years. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
36. Compliance with permit conditions in the Title V permit shall be deemed compliance with the following applicable requirements: 40 CFR 60.332(a)(1), (a)(2), 60.333 (b), (g), (h)(3), (j), (j)(1)(i)(A), (j)(1)(i)(b), and (j)(5); 60.335(a), (b)(2), (b)(3); and District Rule 4703 (as amended 4/25/02), Sections 5.1.2.1, 5.2, 6.2.2, 6.4, and 6.2.6. A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit
37. Compliance with permit conditions in the Title V permit shall be deemed compliance with District Rule 1081(as amended 12/16/93), Section 3.0, 6.0, 7.1, 7.2, 7.3 and Rule 4201 (as amended 12/17/92). A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit

These terms and conditions are part of the Facility-wide Permit to Operate.

# San Joaquin Valley Air Pollution Control District

**PERMIT UNIT:** C-311-15-9

**EXPIRATION DATE:** 12/31/2005

**SECTION:** 6C **TOWNSHIP:** 20S **RANGE:** 15E

## **EQUIPMENT DESCRIPTION:**

86.4 MMBTU/HR COGENERATION SYSTEM WITH A NOMINAL RATED 40.9 MMBTU/HR SOLAR MODEL CENTAUR 40-4500 TURBINE ENGINE #TG-106, DRIVING A 2.7 MW ELECTRICAL GENERATOR AND INCLUDING A STRUTHERS WASTE HEAT RECOVERY STEAM GENERATOR #SG-206 WITH A 36.4 MMBTU/HR COEN DUCT BURNER

## **PERMIT UNIT REQUIREMENTS**

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1. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201, 3.1] Federally Enforceable Through Title V Permit
2. The Owner/Operator shall maintain a separate fuel meter to the turbine and a fuel meter to the duct burners. [District Rule 2201] Federally Enforceable Through Title V Permit
3. Natural gas consumption by the cogeneration system (turbine and duct burner) shall not exceed 1,812,000 scf/day. Natural gas consumption by the cogeneration system shall not exceed 654 million scf/year. [District Rule 2201]
4. Emissions from the cogeneration system shall not exceed any of the following limits: 233.7 lb-NOx/day, 3.6 lb-SOx/day, 47.1 lb-PM10/day, 257.3 lb-CO/day, or 47.1 lb-VOC/day. [District Rule 2201] Federally Enforceable Through Title V Permit
5. The owner or operator shall not operate the gas turbine under load conditions, excluding the thermal stabilization period or reduced load period, which results in the measured NOx emissions concentration exceeding 35 ppmv @ 15% O2. [40 CFR 60.332(a)(1), (a)(2) and District Rules 2201 and 4703, 5.1.2.1] Federally Enforceable Through Title V Permit
6. CO emissions from the cogeneration system with the duct burner firing shall not exceed 53 ppmv CO @ 15% O2 or 0.119 lb-CO/MMBtu, excluding thermal stabilization periods or reduced load periods. [District Rule 4703, 5.2] Federally Enforceable Through Title V Permit
7. CO emissions from the cogeneration system without duct burner firing shall not exceed 63 ppmv CO @ 15% O2 or 0.142 lb CO/MMBtu, excluding thermal stabilization periods or reduced load periods. [District Rule 4703, 5.2] Federally Enforceable Through Title V Permit
8. Emissions from the cogeneration system (with or without duct burner firing) shall not exceed any of the following limits: 0.002 lb-SOx/MMBtu, 0.026 lb-PM10/MMBtu, or 0.026 lb-VOC/MMBtu. [District Rule 2201] Federally Enforceable Through Title V Permit
9. Reduced Load Period shall be defined as the time during which the gas turbine is operated at less than rated capacity in order to change the position of the exhaust gas diverter gate, not exceeding one hour. [District Rule 4703, 3.19] Federally Enforceable Through Title V Permit
10. Thermal Stabilization Period shall be defined as the startup or shutdown, as defined in 40 CFR 60.2, time during which the exhaust gas is not within the normal operating temperature range, not to exceed two hours per startup or shutdown event. [District Rule 4703, 3.25] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE  
These terms and conditions are part of the Facility-wide Permit to Operate.

11. This unit shall be fired exclusively on natural gas as defined in 40 CFR 60.331(u) and the natural gas shall have a total sulfur content less than or equal to 1.0 gr/100 scf. [40 CFR 60.333(b) and District Rules 2201 and 4201] Federally Enforceable Through Title V Permit
12. The sulfur fuel content of each fuel source shall be: (i) documented in a valid purchase contract, a supplier certification, a tariff sheet or transportation contract or (ii) monitored weekly using ASTM Methods D4084, D5504, D6228, or Gas Processors Association Standard 2377, or double GC for H<sub>2</sub>S and mercaptans. If the sulfur fuel content is less than 1.0 gr/100 scf for eight consecutive weeks, then the monitoring frequency shall be every 6 months. If any six-month monitoring tests result in a sulfur fuel content exceedance, weekly monitoring shall resume. [40 CFR 60.334(h)(3)] Federally Enforceable Through Title V Permit
13. Performance testing shall be conducted annually to measure NO<sub>x</sub> and CO emissions concentrations using the following test methods: EPA Methods 7E or 20 for NO<sub>x</sub> emissions, EPA Methods 10 or 10B for CO emissions, EPA Methods 3, 3A, or 20 for Oxygen content of the exhaust gas. The test will be comprised of three test runs performed at the highest physically achievable load of the gas turbine. The measured NO<sub>x</sub> concentrations shall be averaged over a three hour period, using consecutive 15-minute sampling periods. [40 CFR 60.335(a), (b)(2) and District Rule 4703, 5.1, 6.3.1, 6.3.2, and 6.4] Federally Enforceable Through Title V Permit
14. Any gas turbine with an intermittently operated auxiliary burner shall demonstrate compliance with the auxiliary burner both on and off. Source testing shall not be required with the duct burner on if it has not been in operation during the previous 12 months, i.e. the duct burner need not be started to solely perform source testing. Source testing shall not be required with the duct burner off if it has been in continuous operation during the previous 12 months, i.e. the duct burner need not be shut-down solely to perform source testing. Source testing shall be performed within 60 days of startup or shutdown of the duct burner unless source testing of the duct burner has been performed in the previous 12 months. [40 CFR 60.335(b) and District Rule 4703, 6.3.3] Federally Enforceable Through Title V Permit
15. HHV and LHV of the fuel shall be determined using ASTM D3588, ASTM 1826, or ASTM 1945. [40 CFR 60.335(b) and District Rule 4703, 6.4.5] Federally Enforceable Through Title V Permit
16. The owner or operator shall be required to conform to the sampling facilities and testing procedures described in Rule 1081 (as amended 12/16/93), Sections 3.0 and 6.1. [District Rule 1081] Federally Enforceable Through Title V Permit
17. The District must be notified 30 days prior to any performance testing and a test plan shall be submitted for approval 15 days prior to such testing. [District Rule 1081] Federally Enforceable Through Title V Permit
18. Performance testing shall be witnessed or authorized by District personnel. Test results must be submitted to the District within 60 days of performance testing. [District Rule 1081] Federally Enforceable Through Title V Permit
19. The owner or operator shall operate and maintain in calibration a system which continuously measures and records: control system operating parameters, elapsed time of operation, the fuel consumption and the ratio of water to fuel being fired in the turbine. [40 CFR 60.334(a) and District Rule 4703, 6.2.2] Federally Enforceable Through Title V Permit
20. The owner or operator shall develop and keep on-site a parameter monitoring plan which includes the procedures used to document the proper operation of the NO<sub>x</sub> emissions controls (water injection). This plan shall include the parameter(s) monitored, such as the water-to-fuel ratio, and the acceptable range(s) of the parameter(s) as well as the basis for designating the parameter(s) and acceptable range(s). Any supplemental data such as engineering analyses, design specifications, manufacturers recommendations and other relevant information shall be included in the monitoring plan. [40 CFR 60.334(g)] Federally Enforceable Through Title V Permit
21. The water to fuel ratio shall not be less than 0.45 on a weight basis. [District Rule 4703, 6.2.5] Federally Enforceable Through Title V Permit
22. The owner or operator shall submit a semi-annual excess NO<sub>x</sub> emissions and monitor downtime report to the APCO. Excess emissions shall be reported for all periods of operation, including startup, shutdown and malfunction. The report, post marked by the 30th day following the end of every other calendar quarter, shall include the following: Time intervals, average steam or water-to-fuel ratio, turbine load, nature and cause of excess emissions (if known), and corrective actions taken and preventative measures adopted. [40 CFR 60.334(j), (j)(5) and District Rule 2520, 9.3.2)] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE  
These terms and conditions are part of the Facility-wide Permit to Operate.

23. Excess emissions shall be defined as any operating hour for which the steam or water to fuel ratio, as measured by the continuous monitoring system, falls below the established steam or water to fuel ratio. Any operating hour in which no steam or water is injected into the turbine shall also be considered as excess emissions. [40 CR 60.334(j)(1)(i)(A)] Federally Enforceable Through Title V Permit
24. Monitor downtime shall be any operating hour in which the water or steam is injected into the turbine, but essential parametric data needed to determine the steam or water to fuel ratio are unavailable or invalid. [40 CFR 60.334(j)(1)(i)(B)] Federally Enforceable Through Title V Permit
25. Fuel consumption and the water-to-fuel ratio shall be monitored continuously with a system that is accurate to within 5 percent. [District Rule 2201] Federally Enforceable Through Title V Permit
26. The cogeneration system shall be equipped with a meter recording the total elapsed operating time. [District NSR Rule] Federally Enforceable Through Title V Permit
27. Permittee shall notify the District of any breakdown condition as soon as reasonably possible, but no later than one hour after its detection, unless the owner or operator demonstrates to the District's satisfaction that the longer reporting period was necessary. [District Rule 1100] Federally Enforceable Through Title V Permit
28. The District shall be notified in writing within ten days following the correction of any breakdown condition. The breakdown notification shall include a description of the equipment malfunction or failure, the date and cause of the initial failure, the estimated emissions in excess of those allowed, and the methods utilized to restore normal operations. [District Rule 1100] Federally Enforceable Through Title V Permit
29. If the water injection system is inoperative when the turbine is running, the operator shall follow procedures pursuant to District Rule 1100 (Equipment Breakdown). [District Rule 1100] Federally Enforceable Through Title V Permit
30. The requirements of 40 CFR 72.6 (b) do not apply to this source because only non-Title IV sources can qualify to use the applicable template. A permit shield is granted from this requirement. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit
31. If the turbine is fired on PUC-regulated natural gas, then the operator shall maintain a log describing the source of natural gas and quantity used. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
32. Records shall be maintained and shall contain: the occurrence and duration of any start-up, shutdown or malfunction, performance testing, evaluations, calibrations, checks, adjustments and emissions measurements. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
33. The owner or operator shall maintain a record of the cumulative rolling 12 month fuel usage for each turbine. The record shall be updated at the end of each calendar month. [District Rule 2201] Federally Enforceable Through Title V Permit
34. Operator shall maintain a stationary gas turbine operating log that includes, on a daily basis, the actual local start-up and stop time, length and reason for reduced load periods, total hours of operation and quantity of fuel used. [40 CFR 60.332(a),(b) and District Rule 4703, 6.2.4] Federally Enforceable Through Title V Permit
35. The owner or operator of a stationary gas turbine system shall maintain all records of required monitoring data and support information for inspection at any time for a period of five years. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
36. Compliance with permit conditions in the Title V permit shall be deemed compliance with the following applicable requirements: 40 CFR 60.332(a)(1), (a)(2), 60.333 (b), (g), (h)(3), (j), (j)(1)(i)(A), (j)(1)(i)(b), and (j)(5); 60.335(a), (b)(2), (b)(3); and District Rule 4703 (as amended 4/25/02), Sections 5.1.2.1, 5.2, 6.2.2, 6.4, and 6.2.6. A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit
37. Compliance with permit conditions in the Title V permit shall be deemed compliance with District Rule 1081(as amended 12/16/93), Section 3.0, 6.0, 7.1, 7.2, 7.3 and Rule 4201 (as amended 12/17/92). A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit

These terms and conditions are part of the Facility-wide Permit to Operate.

# San Joaquin Valley Air Pollution Control District

**PERMIT UNIT:** C-311-88-9

**EXPIRATION DATE:** 12/31/2005

**SECTION:** 25 **TOWNSHIP:** 20S **RANGE:** 14E

**EQUIPMENT DESCRIPTION:**

86.4 MMBTU/HR COGENERATION SYSTEM WITH A NOMINAL RATED 40.9 MMBTU/HR SOLAR MODEL CENTAUR 40-4500 TURBINE ENGINE #TG-104, DRIVING A 2.7 MW ELECTRICAL GENERATOR AND INCLUDING A STRUTHERS WASTE HEAT RECOVERY STEAM GENERATOR #SG-204, WITH A 36.4 MMBTU/HR COEN DUCT BURNER

## PERMIT UNIT REQUIREMENTS

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1. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201, 3.1] Federally Enforceable Through Title V Permit
2. The Owner/Operator shall maintain a separate fuel meter to the turbine and a fuel meter to the duct burners. [District Rule 2201] Federally Enforceable Through Title V Permit
3. Natural gas consumption by the cogeneration system (turbine and duct burner) shall not exceed 1,812,000 scf/day. Natural gas consumption by the cogeneration system shall not exceed 654 million scf/year. [District Rule 2201]
4. Emissions from the cogeneration system shall not exceed any of the following limits: 233.7 lb-NOx/day, 3.6 lb-SOx/day, 47.1 lb-PM10/day, 257.3 lb-CO/day, or 47.1 lb-VOC/day. [District Rule 2201] Federally Enforceable Through Title V Permit
5. The owner or operator shall not operate the gas turbine under load conditions, excluding the thermal stabilization period or reduced load period, which results in the measured NOx emissions concentration exceeding 35 ppmv @ 15% O2. [40 CFR 60.332(a)(1), (a)(2) and District Rules 2201 and 4703, 5.1.2.1] Federally Enforceable Through Title V Permit
6. CO emissions from the cogeneration system with the duct burner firing shall not exceed 53 ppmv CO @ 15% O2 or 0.119 lb-CO/MMBtu, excluding thermal stabilization periods or reduced load periods. [District Rule 4703, 5.2] Federally Enforceable Through Title V Permit
7. CO emissions from the cogeneration system without duct burner firing shall not exceed 63 ppmv CO @ 15% O2 or 0.142 lb CO/MMBtu, excluding thermal stabilization periods or reduced load periods. [District Rule 4703, 5.2] Federally Enforceable Through Title V Permit
8. Emissions from the cogeneration system (with or without duct burner firing) shall not exceed any of the following limits: 0.002 lb-SOx/MMBtu, 0.026 lb-PM10/MMBtu, or 0.026 lb-VOC/MMBtu. [District Rule 2201] Federally Enforceable Through Title V Permit
9. Reduced Load Period shall be defined as the time during which the gas turbine is operated at less than rated capacity in order to change the position of the exhaust gas diverter gate, not exceeding one hour. [District Rule 4703, 3.19] Federally Enforceable Through Title V Permit
10. Thermal Stabilization Period shall be defined as the startup or shutdown, as defined in 40 CFR 60.2, time during which the exhaust gas is not within the normal operating temperature range, not to exceed two hours per startup or shutdown event. [District Rule 4703, 3.25] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE  
These terms and conditions are part of the Facility-wide Permit to Operate.



11. This unit shall be fired exclusively on natural gas as defined in 40 CFR 60.331(u) and the natural gas shall have a total sulfur content less than or equal to 1.0 gr/100 scf. [40 CFR 60.333(b) and District Rules 2201 and 4201] Federally Enforceable Through Title V Permit
12. The sulfur fuel content of each fuel source shall be: (i) documented in a valid purchase contract, a supplier certification, a tariff sheet or transportation contract or (ii) monitored weekly using ASTM Methods D4084, D5504, D6228, or Gas Processors Association Standard 2377, or double GC for H<sub>2</sub>S and mercaptans. If the sulfur fuel content is less than 1.0 gr/100 scf for eight consecutive weeks, then the monitoring frequency shall be every 6 months. If any six-month monitoring tests result in a sulfur fuel content exceedance, weekly monitoring shall resume. [40 CFR 60.334(h)(3)] Federally Enforceable Through Title V Permit
13. Performance testing shall be conducted annually to measure NO<sub>x</sub> and CO emissions concentrations using the following test methods: EPA Methods 7E or 20 for NO<sub>x</sub> emissions, EPA Methods 10 or 10B for CO emissions, EPA Methods 3, 3A, or 20 for Oxygen content of the exhaust gas. The test will be comprised of three test runs performed at the highest physically achievable load of the gas turbine. The measured NO<sub>x</sub> concentrations shall be averaged over a three hour period, using consecutive 15-minute sampling periods. [40 CFR 60.335(a), (b)(2) and District Rule 4703, 5.1, 6.3.1, 6.3.2, and 6.4] Federally Enforceable Through Title V Permit
14. Any gas turbine with an intermittently operated auxiliary burner shall demonstrate compliance with the auxiliary burner both on and off. Source testing shall not be required with the duct burner on if it has not been in operation during the previous 12 months, i.e. the duct burner need not be started to solely perform source testing. Source testing shall not be required with the duct burner off if it has been in continuous operation during the previous 12 months, i.e. the duct burner need not be shut-down solely to perform source testing. Source testing shall be performed within 60 days of startup or shutdown of the duct burner unless source testing of the duct burner has been performed in the previous 12 months. [40 CFR 60.335(b) and District Rule 4703, 6.3.3] Federally Enforceable Through Title V Permit
15. HHV and LHV of the fuel shall be determined using ASTM D3588, ASTM 1826, or ASTM 1945. [40 CFR 60.335(b) and District Rule 4703, 6.4.5] Federally Enforceable Through Title V Permit
16. The owner or operator shall be required to conform to the sampling facilities and testing procedures described in Rule 1081 (as amended 12/16/93), Sections 3.0 and 6.1. [District Rule 1081] Federally Enforceable Through Title V Permit
17. The District must be notified 30 days prior to any performance testing and a test plan shall be submitted for approval 15 days prior to such testing. [District Rule 1081] Federally Enforceable Through Title V Permit
18. Performance testing shall be witnessed or authorized by District personnel. Test results must be submitted to the District within 60 days of performance testing. [District Rule 1081] Federally Enforceable Through Title V Permit
19. The owner or operator shall operate and maintain in calibration a system which continuously measures and records: control system operating parameters, elapsed time of operation, the fuel consumption and the ratio of water to fuel being fired in the turbine. [40 CFR 60.334(a) and District Rule 4703, 6.2.2] Federally Enforceable Through Title V Permit
20. The owner or operator shall develop and keep on-site a parameter monitoring plan which includes the procedures used to document the proper operation of the NO<sub>x</sub> emissions controls (water injection). This plan shall include the parameter(s) monitored, such as the water-to-fuel ratio, and the acceptable range(s) of the parameter(s) as well as the basis for designating the parameter(s) and acceptable range(s). Any supplemental data such as engineering analyses, design specifications, manufacturers recommendations and other relevant information shall be included in the monitoring plan. [40 CFR 60.334(g)] Federally Enforceable Through Title V Permit
21. The water to fuel ratio shall not be less than 0.45 on a weight basis. [District Rule 4703, 6.2.5] Federally Enforceable Through Title V Permit
22. The owner or operator shall submit a semi-annual excess NO<sub>x</sub> emissions and monitor downtime report to the APCO. Excess emissions shall be reported for all periods of operation, including startup, shutdown and malfunction. The report, post marked by the 30th day following the end of every other calendar quarter, shall include the following: Time intervals, average steam or water-to-fuel ratio, turbine load, nature and cause of excess emissions (if known), and corrective actions taken and preventative measures adopted. [40 CFR 60.334(j), (j)(5) and District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

These terms and conditions are part of the Facility-wide Permit to Operate.

23. Excess emissions shall be defined as any operating hour for which the steam or water to fuel ratio, as measured by the continuous monitoring system, falls below the established steam or water to fuel ratio. Any operating hour in which no steam or water is injected into the turbine shall also be considered as excess emissions. [40 CR 60.334(j)(1)(i)(A)] Federally Enforceable Through Title V Permit
24. Monitor downtime shall be any operating hour in which the water or steam is injected into the turbine, but essential parametric data needed to determine the steam or water to fuel ratio are unavailable or invalid. [40 CFR 60.334(j)(1)(i)(B)] Federally Enforceable Through Title V Permit
25. Fuel consumption and the water-to-fuel ratio shall be monitored continuously with a system that is accurate to within 5 percent. [District Rule 2201] Federally Enforceable Through Title V Permit
26. The cogeneration system shall be equipped with a meter recording the total elapsed operating time. [District NSR Rule] Federally Enforceable Through Title V Permit
27. Permittee shall notify the District of any breakdown condition as soon as reasonably possible, but no later than one hour after its detection, unless the owner or operator demonstrates to the District's satisfaction that the longer reporting period was necessary. [District Rule 1100] Federally Enforceable Through Title V Permit
28. The District shall be notified in writing within ten days following the correction of any breakdown condition. The breakdown notification shall include a description of the equipment malfunction or failure, the date and cause of the initial failure, the estimated emissions in excess of those allowed, and the methods utilized to restore normal operations. [District Rule 1100] Federally Enforceable Through Title V Permit
29. If the water injection system is inoperative when the turbine is running, the operator shall follow procedures pursuant to District Rule 1100 (Equipment Breakdown). [District Rule 1100] Federally Enforceable Through Title V Permit
30. The requirements of 40 CFR 72.6 (b) do not apply to this source because only non-Title IV sources can qualify to use the applicable template. A permit shield is granted from this requirement. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit
31. If the turbine is fired on PUC-regulated natural gas, then the operator shall maintain a log describing the source of natural gas and quantity used. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
32. Records shall be maintained and shall contain: the occurrence and duration of any start-up, shutdown or malfunction, performance testing, evaluations, calibrations, checks, adjustments and emissions measurements. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
33. The owner or operator shall maintain a record of the cumulative rolling 12 month fuel usage for each turbine. The record shall be updated at the end of each calendar month. [District Rule 2201] Federally Enforceable Through Title V Permit
34. Operator shall maintain a stationary gas turbine operating log that includes, on a daily basis, the actual local start-up and stop time, length and reason for reduced load periods, total hours of operation and quantity of fuel used. [40 CFR 60.332(a),(b) and District Rule 4703, 6.2.4] Federally Enforceable Through Title V Permit
35. The owner or operator of a stationary gas turbine system shall maintain all records of required monitoring data and support information for inspection at any time for a period of five years. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
36. Compliance with permit conditions in the Title V permit shall be deemed compliance with the following applicable requirements: 40 CFR 60.332(a)(1), (a)(2), 60.333 (b), (g), (h)(3), (j), (j)(1)(i)(A), (j)(1)(i)(b), and (j)(5); 60.335(a), (b)(2), (b)(3); and District Rule 4703 (as amended 4/25/02), Sections 5.1.2.1, 5.2, 6.2.2, 6.4, and 6.2.6. A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit
37. Compliance with permit conditions in the Title V permit shall be deemed compliance with District Rule 1081(as amended 12/16/93), Section 3.0, 6.0, 7.1, 7.2, 7.3 and Rule 4201 (as amended 12/17/92). A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit

These terms and conditions are part of the Facility-wide Permit to Operate.

# San Joaquin Valley Air Pollution Control District

**PERMIT UNIT:** C-311-93-9

**EXPIRATION DATE:** 12/31/2005

**SECTION:** 25 **TOWNSHIP:** 20S **RANGE:** 14E

## **EQUIPMENT DESCRIPTION:**

86.4 MMBTU/HR COGENERATION SYSTEM WITH A NOMINAL RATED 40.9 MMBTU/HR SOLAR MODEL CENTAUR 40-4500 TURBINE ENGINE #TG-101, DRIVING A 2.7 MW ELECTRICAL GENERATOR AND INCLUDING A STRUTHERS WASTE HEAT RECOVERY STEAM GENERATOR #SG-201, WITH A 36.4 MMBTU/HR COEN DUCT BURNER

## **PERMIT UNIT REQUIREMENTS**

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1. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201, 3.1] Federally Enforceable Through Title V Permit
2. The Owner/Operator shall maintain a separate fuel meter to the turbine and a fuel meter to the duct burners. [District Rule 2201] Federally Enforceable Through Title V Permit
3. Natural gas consumption by the cogeneration system (turbine and duct burner) shall not exceed 1,812,000 scf/day. Natural gas consumption by the cogeneration system shall not exceed 654 million scf/year. [District Rule 2201]
4. Emissions from the cogeneration system shall not exceed any of the following limits: 233.7 lb-NOx/day, 3.6 lb-SOx/day, 47.1 lb-PM10/day, 257.3 lb-CO/day, or 47.1 lb-VOC/day. [District Rule 2201] Federally Enforceable Through Title V Permit
5. The owner or operator shall not operate the gas turbine under load conditions, excluding the thermal stabilization period or reduced load period, which results in the measured NOx emissions concentration exceeding 35 ppmv @ 15% O2. [40 CFR 60.332(a)(1), (a)(2) and District Rules 2201 and 4703, 5.1.2.1] Federally Enforceable Through Title V Permit
6. CO emissions from the cogeneration system with the duct burner firing shall not exceed 53 ppmv CO @ 15% O2 or 0.119 lb-CO/MMBtu, excluding thermal stabilization periods or reduced load periods. [District Rule 4703, 5.2] Federally Enforceable Through Title V Permit
7. CO emissions from the cogeneration system without duct burner firing shall not exceed 63 ppmv CO @ 15% O2 or 0.142 lb CO/MMBtu, excluding thermal stabilization periods or reduced load periods. [District Rule 4703, 5.2] Federally Enforceable Through Title V Permit
8. Emissions from the cogeneration system (with or without duct burner firing) shall not exceed any of the following limits: 0.002 lb-SOx/MMBtu, 0.026 lb-PM10/MMBtu, or 0.026 lb-VOC/MMBtu. [District Rule 2201] Federally Enforceable Through Title V Permit
9. Reduced Load Period shall be defined as the time during which the gas turbine is operated at less than rated capacity in order to change the position of the exhaust gas diverter gate, not exceeding one hour. [District Rule 4703, 3.19] Federally Enforceable Through Title V Permit
10. Thermal Stabilization Period shall be defined as the startup or shutdown, as defined in 40 CFR 60.2, time during which the exhaust gas is not within the normal operating temperature range, not to exceed two hours per startup or shutdown event. [District Rule 4703, 3.25] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

These terms and conditions are part of the Facility-wide Permit to Operate.

11. This unit shall be fired exclusively on natural gas as defined in 40 CFR 60.331(u) and the natural gas shall have a total sulfur content less than or equal to 1.0 gr/100 scf. [40 CFR 60.333(b) and District Rules 2201 and 4201] Federally Enforceable Through Title V Permit
12. The sulfur fuel content of each fuel source shall be: (i) documented in a valid purchase contract, a supplier certification, a tariff sheet or transportation contract or (ii) monitored weekly using ASTM Methods D4084, D5504, D6228, or Gas Processors Association Standard 2377, or double GC for H<sub>2</sub>S and mercaptans. If the sulfur fuel content is less than 1.0 gr/100 scf for eight consecutive weeks, then the monitoring frequency shall be every 6 months. If any six-month monitoring tests result in a sulfur fuel content exceedance, weekly monitoring shall resume. [40 CFR 60.334(h)(3)] Federally Enforceable Through Title V Permit
13. Performance testing shall be conducted annually to measure NO<sub>x</sub> and CO emissions concentrations using the following test methods: EPA Methods 7E or 20 for NO<sub>x</sub> emissions, EPA Methods 10 or 10B for CO emissions, EPA Methods 3, 3A, or 20 for Oxygen content of the exhaust gas. The test will be comprised of three test runs performed at the highest physically achievable load of the gas turbine. The measured NO<sub>x</sub> concentrations shall be averaged over a three hour period, using consecutive 15-minute sampling periods. [40 CFR 60.335(a), (b)(2) and District Rule 4703, 5.1, 6.3.1, 6.3.2, and 6.4] Federally Enforceable Through Title V Permit
14. Any gas turbine with an intermittently operated auxiliary burner shall demonstrate compliance with the auxiliary burner both on and off. Source testing shall not be required with the duct burner on if it has not been in operation during the previous 12 months, i.e. the duct burner need not be started to solely perform source testing. Source testing shall not be required with the duct burner off if it has been in continuous operation during the previous 12 months, i.e. the duct burner need not be shut-down solely to perform source testing. Source testing shall be performed within 60 days of startup or shutdown of the duct burner unless source testing of the duct burner has been performed in the previous 12 months. [40 CFR 60.335(b) and District Rule 4703, 6.3.3] Federally Enforceable Through Title V Permit
15. HHV and LHV of the fuel shall be determined using ASTM D3588, ASTM 1826, or ASTM 1945. [40 CFR 60.335(b) and District Rule 4703, 6.4.5] Federally Enforceable Through Title V Permit
16. The owner or operator shall be required to conform to the sampling facilities and testing procedures described in Rule 1081 (as amended 12/16/93), Sections 3.0 and 6.1. [District Rule 1081] Federally Enforceable Through Title V Permit
17. The District must be notified 30 days prior to any performance testing and a test plan shall be submitted for approval 15 days prior to such testing. [District Rule 1081] Federally Enforceable Through Title V Permit
18. Performance testing shall be witnessed or authorized by District personnel. Test results must be submitted to the District within 60 days of performance testing. [District Rule 1081] Federally Enforceable Through Title V Permit
19. The owner or operator shall operate and maintain in calibration a system which continuously measures and records: control system operating parameters, elapsed time of operation, the fuel consumption and the ratio of water to fuel being fired in the turbine. [40 CFR 60.334(a) and District Rule 4703, 6.2.2] Federally Enforceable Through Title V Permit
20. The owner or operator shall develop and keep on-site a parameter monitoring plan which includes the procedures used to document the proper operation of the NO<sub>x</sub> emissions controls (water injection). This plan shall include the parameter(s) monitored, such as the water-to-fuel ratio, and the acceptable range(s) of the parameter(s) as well as the basis for designating the parameter(s) and acceptable range(s). Any supplemental data such as engineering analyses, design specifications, manufacturers recommendations and other relevant information shall be included in the monitoring plan. [40 CFR 60.334(g)] Federally Enforceable Through Title V Permit
21. The water to fuel ratio shall not be less than 0.45 on a weight basis. [District Rule 4703, 6.2.5] Federally Enforceable Through Title V Permit
22. The owner or operator shall submit a semi-annual excess NO<sub>x</sub> emissions and monitor downtime report to the APCO. Excess emissions shall be reported for all periods of operation, including startup, shutdown and malfunction. The report, post marked by the 30th day following the end of every other calendar quarter, shall include the following: Time intervals, average steam or water-to-fuel ratio, turbine load, nature and cause of excess emissions (if known), and corrective actions taken and preventative measures adopted. [40 CFR 60.334(j), (j)(5) and District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

These terms and conditions are part of the Facility-wide Permit to Operate.

23. Excess emissions shall be defined as any operating hour for which the steam or water to fuel ratio, as measured by the continuous monitoring system, falls below the established steam or water to fuel ratio. Any operating hour in which no steam or water is injected into the turbine shall also be considered as excess emissions. [40 CR 60.334(j)(1)(i)(A)] Federally Enforceable Through Title V Permit
24. Monitor downtime shall be any operating hour in which the water or steam is injected into the turbine, but essential parametric data needed to determine the steam or water to fuel ratio are unavailable or invalid. [40 CFR 60.334(j)(1)(i)(B)] Federally Enforceable Through Title V Permit
25. Fuel consumption and the water-to-fuel ratio shall be monitored continuously with a system that is accurate to within 5 percent. [District Rule 2201] Federally Enforceable Through Title V Permit
26. The cogeneration system shall be equipped with a meter recording the total elapsed operating time. [District NSR Rule] Federally Enforceable Through Title V Permit
27. Permittee shall notify the District of any breakdown condition as soon as reasonably possible, but no later than one hour after its detection, unless the owner or operator demonstrates to the District's satisfaction that the longer reporting period was necessary. [District Rule 1100] Federally Enforceable Through Title V Permit
28. The District shall be notified in writing within ten days following the correction of any breakdown condition. The breakdown notification shall include a description of the equipment malfunction or failure, the date and cause of the initial failure, the estimated emissions in excess of those allowed, and the methods utilized to restore normal operations. [District Rule 1100] Federally Enforceable Through Title V Permit
29. If the water injection system is inoperative when the turbine is running, the operator shall follow procedures pursuant to District Rule 1100 (Equipment Breakdown). [District Rule 1100] Federally Enforceable Through Title V Permit
30. The requirements of 40 CFR 72.6 (b) do not apply to this source because only non-Title IV sources can qualify to use the applicable template. A permit shield is granted from this requirement. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit
31. If the turbine is fired on PUC-regulated natural gas, then the operator shall maintain a log describing the source of natural gas and quantity used. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
32. Records shall be maintained and shall contain: the occurrence and duration of any start-up, shutdown or malfunction, performance testing, evaluations, calibrations, checks, adjustments and emissions measurements. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
33. The owner or operator shall maintain a record of the cumulative rolling 12 month fuel usage for each turbine. The record shall be updated at the end of each calendar month. [District Rule 2201] Federally Enforceable Through Title V Permit
34. Operator shall maintain a stationary gas turbine operating log that includes, on a daily basis, the actual local start-up and stop time, length and reason for reduced load periods, total hours of operation and quantity of fuel used. [40 CFR 60.332(a),(b) and District Rule 4703, 6.2.4] Federally Enforceable Through Title V Permit
35. The owner or operator of a stationary gas turbine system shall maintain all records of required monitoring data and support information for inspection at any time for a period of five years. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
36. Compliance with permit conditions in the Title V permit shall be deemed compliance with the following applicable requirements: 40 CFR 60.332(a)(1), (a)(2), 60.333 (b), (g), (h)(3), (j), (j)(1)(i)(A), (j)(1)(i)(b), and (j)(5); 60.335(a), (b)(2), (b)(3); and District Rule 4703 (as amended 4/25/02), Sections 5.1.2.1, 5.2, 6.2.2, 6.4, and 6.2.6. A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit
37. Compliance with permit conditions in the Title V permit shall be deemed compliance with District Rule 1081(as amended 12/16/93), Section 3.0, 6.0, 7.1, 7.2, 7.3 and Rule 4201 (as amended 12/17/92). A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit

These terms and conditions are part of the Facility-wide Permit to Operate.

# San Joaquin Valley Air Pollution Control District

**PERMIT UNIT:** C-311-95-9

**EXPIRATION DATE:** 12/31/2005

**SECTION:** 25 **TOWNSHIP:** 20S **RANGE:** 14

**EQUIPMENT DESCRIPTION:**

86.4 MMBTU/HR COGENERATION SYSTEM WITH A NOMINAL RATED 40.9 MMBTU/HR SOLAR MODEL CENTAUR 40-4500 TURBINE ENGINE #TG-102, DRIVING A 2.7 MW ELECTRICAL GENERATOR AND INCLUDING A STRUTHERS WASTE HEAT RECOVERY STEAM GENERATOR #SG-202, WITH A 36.4 MMBTU/HR COEN DUCT BURNER

## PERMIT UNIT REQUIREMENTS

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1. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201, 3.1] Federally Enforceable Through Title V Permit
2. The Owner/Operator shall maintain a separate fuel meter to the turbine and a fuel meter to the duct burners. [District Rule 2201] Federally Enforceable Through Title V Permit
3. Natural gas consumption by the cogeneration system (turbine and duct burner) shall not exceed 1,812,000 scf/day. Natural gas consumption by the cogeneration system shall not exceed 654 million scf/year. [District Rule 2201]
4. Emissions from the cogeneration system shall not exceed any of the following limits: 233.7 lb-NOx/day, 3.6 lb-SOx/day, 47.1 lb-PM10/day, 257.3 lb-CO/day, or 47.1 lb-VOC/day. [District Rule 2201] Federally Enforceable Through Title V Permit
5. The owner or operator shall not operate the gas turbine under load conditions, excluding the thermal stabilization period or reduced load period, which results in the measured NOx emissions concentration exceeding 35 ppmv @ 15% O2. [40 CFR 60.332(a)(1), (a)(2) and District Rules 2201 and 4703, 5.1.2.1] Federally Enforceable Through Title V Permit
6. CO emissions from the cogeneration system with the duct burner firing shall not exceed 53 ppmv CO @ 15% O2 or 0.119 lb-CO/MMBtu, excluding thermal stabilization periods or reduced load periods. [District Rule 4703, 5.2] Federally Enforceable Through Title V Permit
7. CO emissions from the cogeneration system without duct burner firing shall not exceed 63 ppmv CO @ 15% O2 or 0.142 lb CO/MMBtu, excluding thermal stabilization periods or reduced load periods. [District Rule 4703, 5.2] Federally Enforceable Through Title V Permit
8. Emissions from the cogeneration system (with or without duct burner firing) shall not exceed any of the following limits: 0.002 lb-SOx/MMBtu, 0.026 lb-PM10/MMBtu, or 0.026 lb-VOC/MMBtu. [District Rule 2201] Federally Enforceable Through Title V Permit
9. Reduced Load Period shall be defined as the time during which the gas turbine is operated at less than rated capacity in order to change the position of the exhaust gas diverter gate, not exceeding one hour. [District Rule 4703, 3.19] Federally Enforceable Through Title V Permit
10. Thermal Stabilization Period shall be defined as the startup or shutdown, as defined in 40 CFR 60.2, time during which the exhaust gas is not within the normal operating temperature range, not to exceed two hours per startup or shutdown event. [District Rule 4703, 3.25] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

These terms and conditions are part of the Facility-wide Permit to Operate.



11. This unit shall be fired exclusively on natural gas as defined in 40 CFR 60.331(u) and the natural gas shall have a total sulfur content less than or equal to 1.0 gr/100 scf. [40 CFR 60.333(b) and District Rules 2201 and 4201] Federally Enforceable Through Title V Permit
12. The sulfur fuel content of each fuel source shall be: (i) documented in a valid purchase contract, a supplier certification, a tariff sheet or transportation contract or (ii) monitored weekly using ASTM Methods D4084, D5504, D6228, or Gas Processors Association Standard 2377, or double GC for H<sub>2</sub>S and mercaptans. If the sulfur fuel content is less than 1.0 gr/100 scf for eight consecutive weeks, then the monitoring frequency shall be every 6 months. If any six-month monitoring tests result in a sulfur fuel content exceedance, weekly monitoring shall resume. [40 CFR 60.334(h)(3)] Federally Enforceable Through Title V Permit
13. Performance testing shall be conducted annually to measure NO<sub>x</sub> and CO emissions concentrations using the following test methods: EPA Methods 7E or 20 for NO<sub>x</sub> emissions, EPA Methods 10 or 10B for CO emissions, EPA Methods 3, 3A, or 20 for Oxygen content of the exhaust gas. The test will be comprised of three test runs performed at the highest physically achievable load of the gas turbine. The measured NO<sub>x</sub> concentrations shall be averaged over a three hour period, using consecutive 15-minute sampling periods. [40 CFR 60.335(a), (b)(2) and District Rule 4703, 5.1, 6.3.1, 6.3.2, and 6.4] Federally Enforceable Through Title V Permit
14. Any gas turbine with an intermittently operated auxiliary burner shall demonstrate compliance with the auxiliary burner both on and off. Source testing shall not be required with the duct burner on if it has not been in operation during the previous 12 months, i.e. the duct burner need not be started to solely perform source testing. Source testing shall not be required with the duct burner off if it has been in continuous operation during the previous 12 months, i.e. the duct burner need not be shut-down solely to perform source testing. Source testing shall be performed within 60 days of startup or shutdown of the duct burner unless source testing of the duct burner has been performed in the previous 12 months. [40 CFR 60.335(b) and District Rule 4703, 6.3.3] Federally Enforceable Through Title V Permit
15. HHV and LHV of the fuel shall be determined using ASTM D3588, ASTM 1826, or ASTM 1945. [40 CFR 60.335(b) and District Rule 4703, 6.4.5] Federally Enforceable Through Title V Permit
16. The owner or operator shall be required to conform to the sampling facilities and testing procedures described in Rule 1081 (as amended 12/16/93), Sections 3.0 and 6.1. [District Rule 1081] Federally Enforceable Through Title V Permit
17. The District must be notified 30 days prior to any performance testing and a test plan shall be submitted for approval 15 days prior to such testing. [District Rule 1081] Federally Enforceable Through Title V Permit
18. Performance testing shall be witnessed or authorized by District personnel. Test results must be submitted to the District within 60 days of performance testing. [District Rule 1081] Federally Enforceable Through Title V Permit
19. The owner or operator shall operate and maintain in calibration a system which continuously measures and records: control system operating parameters, elapsed time of operation, the fuel consumption and the ratio of water to fuel being fired in the turbine. [40 CFR 60.334(a) and District Rule 4703, 6.2.2] Federally Enforceable Through Title V Permit
20. The owner or operator shall develop and keep on-site a parameter monitoring plan which includes the procedures used to document the proper operation of the NO<sub>x</sub> emissions controls (water injection). This plan shall include the parameter(s) monitored, such as the water-to-fuel ratio, and the acceptable range(s) of the parameter(s) as well as the basis for designating the parameter(s) and acceptable range(s). Any supplemental data such as engineering analyses, design specifications, manufacturers recommendations and other relevant information shall be included in the monitoring plan. [40 CFR 60.334(g)] Federally Enforceable Through Title V Permit
21. The water to fuel ratio shall not be less than 0.45 on a weight basis. [District Rule 4703, 6.2.5] Federally Enforceable Through Title V Permit
22. The owner or operator shall submit a semi-annual excess NO<sub>x</sub> emissions and monitor downtime report to the APCO. Excess emissions shall be reported for all periods of operation, including startup, shutdown and malfunction. The report, post marked by the 30th day following the end of every other calendar quarter, shall include the following: Time intervals, average steam or water-to-fuel ratio, turbine load, nature and cause of excess emissions (if known), and corrective actions taken and preventative measures adopted. [40 CFR 60.334(j), (j)(5) and District Rule 2520, 9.3.2]] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

These terms and conditions are part of the Facility-wide Permit to Operate.

23. Excess emissions shall be defined as any operating hour for which the steam or water to fuel ratio, as measured by the continuous monitoring system, falls below the established steam or water to fuel ratio. Any operating hour in which no steam or water is injected into the turbine shall also be considered as excess emissions. [40 CR 60.334(j)(1)(i)(A)] Federally Enforceable Through Title V Permit
24. Monitor downtime shall be any operating hour in which the water or steam is injected into the turbine, but essential parametric data needed to determine the steam or water to fuel ratio are unavailable or invalid. [40 CFR 60.334(j)(1)(i)(B)] Federally Enforceable Through Title V Permit
25. Fuel consumption and the water-to-fuel ratio shall be monitored continuously with a system that is accurate to within 5 percent. [District Rule 2201] Federally Enforceable Through Title V Permit
26. The cogeneration system shall be equipped with a meter recording the total elapsed operating time. [District NSR Rule] Federally Enforceable Through Title V Permit
27. Permittee shall notify the District of any breakdown condition as soon as reasonably possible, but no later than one hour after its detection, unless the owner or operator demonstrates to the District's satisfaction that the longer reporting period was necessary. [District Rule 1100] Federally Enforceable Through Title V Permit
28. The District shall be notified in writing within ten days following the correction of any breakdown condition. The breakdown notification shall include a description of the equipment malfunction or failure, the date and cause of the initial failure, the estimated emissions in excess of those allowed, and the methods utilized to restore normal operations. [District Rule 1100] Federally Enforceable Through Title V Permit
29. If the water injection system is inoperative when the turbine is running, the operator shall follow procedures pursuant to District Rule 1100 (Equipment Breakdown). [District Rule 1100] Federally Enforceable Through Title V Permit
30. The requirements of 40 CFR 72.6 (b) do not apply to this source because only non-Title IV sources can qualify to use the applicable template. A permit shield is granted from this requirement. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit
31. If the turbine is fired on PUC-regulated natural gas, then the operator shall maintain a log describing the source of natural gas and quantity used. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
32. Records shall be maintained and shall contain: the occurrence and duration of any start-up, shutdown or malfunction, performance testing, evaluations, calibrations, checks, adjustments and emissions measurements. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
33. The owner or operator shall maintain a record of the cumulative rolling 12 month fuel usage for each turbine. The record shall be updated at the end of each calendar month. [District Rule 2201] Federally Enforceable Through Title V Permit
34. Operator shall maintain a stationary gas turbine operating log that includes, on a daily basis, the actual local start-up and stop time, length and reason for reduced load periods, total hours of operation and quantity of fuel used. [40 CFR 60.332(a),(b) and District Rule 4703, 6.2.4] Federally Enforceable Through Title V Permit
35. The owner or operator of a stationary gas turbine system shall maintain all records of required monitoring data and support information for inspection at any time for a period of five years. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
36. Compliance with permit conditions in the Title V permit shall be deemed compliance with the following applicable requirements: 40 CFR 60.332(a)(1), (a)(2), 60.333 (b), (g), (h)(3), (j), (j)(1)(i)(A), (j)(1)(i)(b), and (j)(5); 60.335(a), (b)(2), (b)(3); and District Rule 4703 (as amended 4/25/02), Sections 5.1.2.1, 5.2, 6.2.2, 6.4, and 6.2.6. A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit
37. Compliance with permit conditions in the Title V permit shall be deemed compliance with District Rule 1081(as amended 12/16/93), Section 3.0, 6.0, 7.1, 7.2, 7.3 and Rule 4201 (as amended 12/17/92). A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit

These terms and conditions are part of the Facility-wide Permit to Operate.



# San Joaquin Valley Air Pollution Control District

**PERMIT UNIT:** C-311-97-9

**EXPIRATION DATE:** 12/31/2005

**SECTION:** 25 **TOWNSHIP:** 20S **RANGE:** 14E

**EQUIPMENT DESCRIPTION:**

86.4 MMBTU/HR COGENERATION SYSTEM WITH A NOMINAL RATED 40.9 MMBTU/HR SOLAR MODEL CENTAUR 40-4500 TURBINE ENGINE #TG-103, DRIVING A 2.7 MW ELECTRICAL GENERATOR AND INCLUDING A STRUTHERS WASTE HEAT RECOVERY STEAM GENERATOR #SG-203, WITH A 36.4 MMBTU/HR COEN DUCT BURNER

## PERMIT UNIT REQUIREMENTS

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1. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201, 3.1] Federally Enforceable Through Title V Permit
2. The Owner/Operator shall maintain a separate fuel meter to the turbine and a fuel meter to the duct burners. [District Rule 2201] Federally Enforceable Through Title V Permit
3. Natural gas consumption by the cogeneration system (turbine and duct burner) shall not exceed 1,812,000 scf/day. Natural gas consumption by the cogeneration system shall not exceed 654 million scf/year. [District Rule 2201]
4. Emissions from the cogeneration system shall not exceed any of the following limits: 233.7 lb-NOx/day, 3.6 lb-SOx/day, 47.1 lb-PM10/day, 257.3 lb-CO/day, or 47.1 lb-VOC/day. [District Rule 2201] Federally Enforceable Through Title V Permit
5. The owner or operator shall not operate the gas turbine under load conditions, excluding the thermal stabilization period or reduced load period, which results in the measured NOx emissions concentration exceeding 35 ppmv @ 15% O2. [40 CFR 60.332(a)(1), (a)(2) and District Rules 2201 and 4703, 5.1.2.1] Federally Enforceable Through Title V Permit
6. CO emissions from the cogeneration system with the duct burner firing shall not exceed 53 ppmv CO @ 15% O2 or 0.119 lb-CO/MMBtu, excluding thermal stabilization periods or reduced load periods. [District Rule 4703, 5.2] Federally Enforceable Through Title V Permit
7. CO emissions from the cogeneration system without duct burner firing shall not exceed 63 ppmv CO @ 15% O2 or 0.142 lb CO/MMBtu, excluding thermal stabilization periods or reduced load periods. [District Rule 4703, 5.2] Federally Enforceable Through Title V Permit
8. Emissions from the cogeneration system (with or without duct burner firing) shall not exceed any of the following limits: 0.002 lb-SOx/MMBtu, 0.026 lb-PM10/MMBtu, or 0.026 lb-VOC/MMBtu. [District Rule 2201] Federally Enforceable Through Title V Permit
9. Reduced Load Period shall be defined as the time during which the gas turbine is operated at less than rated capacity in order to change the position of the exhaust gas diverter gate, not exceeding one hour. [District Rule 4703, 3.19] Federally Enforceable Through Title V Permit
10. Thermal Stabilization Period shall be defined as the startup or shutdown, as defined in 40 CFR 60.2, time during which the exhaust gas is not within the normal operating temperature range, not to exceed two hours per startup or shutdown event. [District Rule 4703, 3.25] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE  
These terms and conditions are part of the Facility-wide Permit to Operate.

11. This unit shall be fired exclusively on natural gas as defined in 40 CFR 60.331(u) and the natural gas shall have a total sulfur content less than or equal to 1.0 gr/100 scf. [40 CFR 60.333(b) and District Rules 2201 and 4201] Federally Enforceable Through Title V Permit
12. The sulfur fuel content of each fuel source shall be: (i) documented in a valid purchase contract, a supplier certification, a tariff sheet or transportation contract or (ii) monitored weekly using ASTM Methods D4084, D5504, D6228, or Gas Processors Association Standard 2377, or double GC for H<sub>2</sub>S and mercaptans. If the sulfur fuel content is less than 1.0 gr/100 scf for eight consecutive weeks, then the monitoring frequency shall be every 6 months. If any six-month monitoring tests result in a sulfur fuel content exceedance, weekly monitoring shall resume. [40 CFR 60.334(h)(3)] Federally Enforceable Through Title V Permit
13. Performance testing shall be conducted annually to measure NO<sub>x</sub> and CO emissions concentrations using the following test methods: EPA Methods 7E or 20 for NO<sub>x</sub> emissions, EPA Methods 10 or 10B for CO emissions, EPA Methods 3, 3A, or 20 for Oxygen content of the exhaust gas. The test will be comprised of three test runs performed at the highest physically achievable load of the gas turbine. The measured NO<sub>x</sub> concentrations shall be averaged over a three hour period, using consecutive 15-minute sampling periods. [40 CFR 60.335(a), (b)(2) and District Rule 4703, 5.1, 6.3.1, 6.3.2, and 6.4] Federally Enforceable Through Title V Permit
14. Any gas turbine with an intermittently operated auxiliary burner shall demonstrate compliance with the auxiliary burner both on and off. Source testing shall not be required with the duct burner on if it has not been in operation during the previous 12 months, i.e. the duct burner need not be started to solely perform source testing. Source testing shall not be required with the duct burner off if it has been in continuous operation during the previous 12 months, i.e. the duct burner need not be shut-down solely to perform source testing. Source testing shall be performed within 60 days of startup or shutdown of the duct burner unless source testing of the duct burner has been performed in the previous 12 months. [40 CFR 60.335(b) and District Rule 4703, 6.3.3] Federally Enforceable Through Title V Permit
15. HHV and LHV of the fuel shall be determined using ASTM D3588, ASTM 1826, or ASTM 1945. [40 CFR 60.335(b) and District Rule 4703, 6.4.5] Federally Enforceable Through Title V Permit
16. The owner or operator shall be required to conform to the sampling facilities and testing procedures described in Rule 1081 (as amended 12/16/93), Sections 3.0 and 6.1. [District Rule 1081] Federally Enforceable Through Title V Permit
17. The District must be notified 30 days prior to any performance testing and a test plan shall be submitted for approval 15 days prior to such testing. [District Rule 1081] Federally Enforceable Through Title V Permit
18. Performance testing shall be witnessed or authorized by District personnel. Test results must be submitted to the District within 60 days of performance testing. [District Rule 1081] Federally Enforceable Through Title V Permit
19. The owner or operator shall operate and maintain in calibration a system which continuously measures and records: control system operating parameters, elapsed time of operation, the fuel consumption and the ratio of water to fuel being fired in the turbine. [40 CFR 60.334(a) and District Rule 4703, 6.2.2] Federally Enforceable Through Title V Permit
20. The owner or operator shall develop and keep on-site a parameter monitoring plan which includes the procedures used to document the proper operation of the NO<sub>x</sub> emissions controls (water injection). This plan shall include the parameter(s) monitored, such as the water-to-fuel ratio, and the acceptable range(s) of the parameter(s) as well as the basis for designating the parameter(s) and acceptable range(s). Any supplemental data such as engineering analyses, design specifications, manufacturers recommendations and other relevant information shall be included in the monitoring plan. [40 CFR 60.334(g)] Federally Enforceable Through Title V Permit
21. The water to fuel ratio shall not be less than 0.45 on a weight basis. [District Rule 4703, 6.2.5] Federally Enforceable Through Title V Permit
22. The owner or operator shall submit a semi-annual excess NO<sub>x</sub> emissions and monitor downtime report to the APCO. Excess emissions shall be reported for all periods of operation, including startup, shutdown and malfunction. The report, post marked by the 30th day following the end of every other calendar quarter, shall include the following: Time intervals, average steam or water-to-fuel ratio, turbine load, nature and cause of excess emissions (if known), and corrective actions taken and preventative measures adopted. [40 CFR 60.334(j), (j)(5) and District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

These terms and conditions are part of the Facility-wide Permit to Operate.

23. Excess emissions shall be defined as any operating hour for which the steam or water to fuel ratio, as measured by the continuous monitoring system, falls below the established steam or water to fuel ratio. Any operating hour in which no steam or water is injected into the turbine shall also be considered as excess emissions. [40 CR 60.334(j)(1)(i)(A)] Federally Enforceable Through Title V Permit
24. Monitor downtime shall be any operating hour in which the water or steam is injected into the turbine, but essential parametric data needed to determine the steam or water to fuel ratio are unavailable or invalid. [40 CFR 60.334(j)(1)(i)(B)] Federally Enforceable Through Title V Permit
25. Fuel consumption and the water-to-fuel ratio shall be monitored continuously with a system that is accurate to within 5 percent. [District Rule 2201] Federally Enforceable Through Title V Permit
26. The cogeneration system shall be equipped with a meter recording the total elapsed operating time. [District NSR Rule] Federally Enforceable Through Title V Permit
27. Permittee shall notify the District of any breakdown condition as soon as reasonably possible, but no later than one hour after its detection, unless the owner or operator demonstrates to the District's satisfaction that the longer reporting period was necessary. [District Rule 1100] Federally Enforceable Through Title V Permit
28. The District shall be notified in writing within ten days following the correction of any breakdown condition. The breakdown notification shall include a description of the equipment malfunction or failure, the date and cause of the initial failure, the estimated emissions in excess of those allowed, and the methods utilized to restore normal operations. [District Rule 1100] Federally Enforceable Through Title V Permit
29. If the water injection system is inoperative when the turbine is running, the operator shall follow procedures pursuant to District Rule 1100 (Equipment Breakdown). [District Rule 1100] Federally Enforceable Through Title V Permit
30. The requirements of 40 CFR 72.6 (b) do not apply to this source because only non-Title IV sources can qualify to use the applicable template. A permit shield is granted from this requirement. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit
31. If the turbine is fired on PUC-regulated natural gas, then the operator shall maintain a log describing the source of natural gas and quantity used. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
32. Records shall be maintained and shall contain: the occurrence and duration of any start-up, shutdown or malfunction, performance testing, evaluations, calibrations, checks, adjustments and emissions measurements. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
33. The owner or operator shall maintain a record of the cumulative rolling 12 month fuel usage for each turbine. The record shall be updated at the end of each calendar month. [District Rule 2201] Federally Enforceable Through Title V Permit
34. Operator shall maintain a stationary gas turbine operating log that includes, on a daily basis, the actual local start-up and stop time, length and reason for reduced load periods, total hours of operation and quantity of fuel used. [40 CFR 60.332(a),(b) and District Rule 4703, 6.2.4] Federally Enforceable Through Title V Permit
35. The owner or operator of a stationary gas turbine system shall maintain all records of required monitoring data and support information for inspection at any time for a period of five years. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
36. Compliance with permit conditions in the Title V permit shall be deemed compliance with the following applicable requirements: 40 CFR 60.332(a)(1), (a)(2), 60.333 (b), (g), (h)(3), (j), (j)(1)(i)(A), (j)(1)(i)(b), and (j)(5); 60.335(a), (b)(2), (b)(3); and District Rule 4703 (as amended 4/25/02), Sections 5.1.2.1, 5.2, 6.2.2, 6.4, and 6.2.6. A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit
37. Compliance with permit conditions in the Title V permit shall be deemed compliance with District Rule 1081(as amended 12/16/93), Section 3.0, 6.0, 7.1, 7.2, 7.3 and Rule 4201 (as amended 12/17/92). A permit shield is granted from these requirements. [District Rule 2520, 13.2] Federally Enforceable Through Title V Permit

These terms and conditions are part of the Facility-wide Permit to Operate.

Appendix III

EPA Memo



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

JAN 12 2007

OFFICE OF  
AIR AND RADIATION

**MEMORANDUM**

**SUBJECT:** Source Determinations for Oil and Gas Industries

**FROM:** William L. Wehrum  
Acting Assistant Administrator (6101A)

A handwritten signature in black ink, appearing to read "W. L. Wehrum", written over the printed name and title.

**TO:** Regional Administrators I-X

The purpose of this memorandum is to provide guidance to assist permitting authorities in making major stationary source determinations for the oil and gas industry. This guidance extends to oil and gas operations on land, in state waters, and on the federal Outer Continental Shelf (OCS).<sup>1</sup>

Currently, significant oil and gas development is occurring in the Western United States. With this development, we expect issues to arise related to whether exploration, extraction or production activities need to be aggregated together to determine whether the activities qualify as a "major stationary source" for purposes of the major New Source Review (NSR) and the Title V permitting programs.<sup>2</sup> As explained in detail below, we suggest that permitting authorities begin the analysis by evaluating whether each individual surface site qualifies as a separate stationary source, and then aggregating two or more surface sites only if the surface sites are under common control and are located in close proximity to each other. The term "surface site" generally refers to a single area of development and includes any combination of one or more graded pad sites, gravel pad sites, foundations, platforms, or the immediate physical location upon which equipment is physically affixed. *See e.g.* 40 CFR 63.761.

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<sup>1</sup> On the OCS, "emissions from any vessel servicing or associated with an OCS source, including emissions while at the OCS source or en route to or from the source within 25 miles of the OCS source, shall be considered direct emissions from the OCS source." See CAA §328(a)(4)(C). This memorandum does not supercede our existing interpretation of this regulatory language.

<sup>2</sup> Oil and gas development activities include such things as geological and geophysical exploration for petroleum deposits, drilling oil and gas wells, and separating natural gas liquids from crude oil. The activities generally fall into the major Standard Industrial Code (SIC) 13 including SIC 1311, 1321, 1381, 1382, and 1389.

The Federal NSR regulations define a “major stationary source” as any “stationary source” that emits or has the potential to emit above certain specified emissions thresholds (ranging from 10-250 tons per year) depending on the attainment status of the area. The Federal NSR regulations define “stationary source” to mean “any building, structure, facility, or installation which emits or may emit any air pollutant subject to regulation under the Act.”<sup>3</sup> The regulations establish three criteria for identifying emissions activities that belong to the same “building,” “structure,” “facility,” or “installation”: (1) whether the activities are under common control, (2) whether the activities are located on one or more contiguous or adjacent properties; and (3) whether the activities belong to the same major industrial grouping.<sup>4</sup> The Title V program also considers whether activities are under common control and located on contiguous or adjacent property.<sup>5</sup>

In implementing the stationary source definition for the major NSR and Title V permit programs, the foremost principle that guides our decision-making is that we should apply a “common sense notion” of a plant. In *Alabama Power v. Costle*, the court cautioned that “...EPA cannot treat contiguous and commonly owned units as a single source unless they fit within the four permissible statutory terms,” and that “EPA should ...provide for the aggregation, where appropriate, of industrial activities according to considerations such as proximity and ownership.”<sup>6</sup> In 1980, we expressed the view that *Alabama Power* set boundaries on our discretion to interpret the component terms of “stationary source.” Specifically, we indicated that we must (1) reasonably carry out the purposes of Prevention of Significant Deterioration (PSD); (2) approximate a common sense notion of a “plant”; and (3) avoid aggregating pollutant-emitting activities that as a group would not fit within the ordinary meaning of “building,” “structure,” “facility” or “installation.”<sup>7</sup> Accordingly, we follow these overarching principles in interpreting the three regulatory criteria in context of a given source determination.

Source determinations within the oil and gas industries are not always straightforward. Even when two or more pollutant-emitting activities are clearly under common control and belong to the same 2-digit SIC code, the unique geographical attributes of the oil and gas industry necessitate a detailed evaluation of whether the activities are contiguous and adjacent. For example, well sites can be located hundreds of miles from the natural gas processing plant, and some oil and gas operations (e.g., a production field) can cover many square miles. Moreover, unlike many industries, land ownership and control are not easily distinguished in this industry, because subsurface and surface property rights are often owned and leased by different entities, and drilling and exploration activities are contracted to third parties. While it is not uncommon for a single company to gain the use of a large area of contiguous property through

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<sup>3</sup> See e.g. 40 CFR 52.21(b)(5)

<sup>4</sup> Under this definition, activities are within the same industrial grouping if they share the same two-digit Standard Industrial Classification (SIC). Exploration, extraction or production activities in the oil and natural gas development industry share the same two-digit SIC code – “13”.

<sup>5</sup> 40 CFR 70.2 also includes a SIC reference which is not contained in the statute. We have proposed to delete this reference from the title V regulations.

<sup>6</sup> *Alabama Power Co. v. Costle* 636 F.2d 323, 397 (D.C. Cir. 1979)

<sup>7</sup> 45 FR 52676, 52695 (August 7, 1980)

these lease and mineral rights agreements, owners or operators of production field facilities typically control only the surface area necessary to operate the physical structures used in oil and gas production, and not the land between well drill sites.<sup>8</sup>

The concept of “contiguous and adjacent” considers whether the land associated with the pollutant-emitting activity is connected to, or is nearby, land associated with another pollutant-emitting activity. Historically, we also have used such factors as operational dependence and proximity to inform our analysis of whether two properties are contiguous or adjacent.<sup>9</sup> The concept of “operational dependence” considers the extent to which each activity relies on the other for its operations. In the oil and gas industries, materials are transferred between pollutant-emitting points and many activities are physically connected via pipelines, but the extent of the operational reliance may vary widely from point to point.

Notably, in 1980, we declined to add a specific “functionality” criteria to the definition of source because we believed that “assessments of functional interrelationships would be highly subjective” and “embroil[] the Agency in fine-grained analysis.”<sup>10</sup> We also made clear that we do not intend “source” to encompass activities that would be many miles apart along a long-line. For instance, EPA would not treat all of the pumping stations along a pipeline as one source.<sup>11</sup> Accordingly, for this industry, we do not believe determining whether two activities are operationally dependent drives the determination as to whether two properties are contiguous or adjacent, because it would embroil the Agency in precisely the fine-grained analysis we intended to avoid, and it would potentially lead to results which do not adhere to the common sense notion of a plant.

The concept of proximity considers the physical distance between two activities. EPA has not specifically defined an exact separation of distance that would cause two activities to be considered contiguous or adjacent. Nonetheless, we have stated that proximity can be the most informative factor in determining whether two activities are contiguous or adjacent. For example, we stated that when two facilities are close together, a permitting authority can consider the two facilities as a single source irrespective of an absence of physical connection and operational dependence.<sup>12</sup> We also think that the opposite is equally true. A permitting authority can find that two pollutant-emitting activities are separate sources when they are located far apart, irrespective of the presence of physical connections and operational dependence between the sites.

Given the diverse nature of the oil and gas activities, we believe that proximity is the most informative factor in making source determinations for these industries. We do not believe that it is reasonable to aggregate well site activities, and other production field activities that

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<sup>8</sup> We recognized the unique challenges this industry presents in our discussion of the facility definition in the section 112 rulemaking. 64 FR 32620, 32617 (June 17, 1999).

<sup>9</sup> See e.g. Memo. from Winston Smith, Director Air, Pesticides and Toxics Management Division to Randy C. Poole, Air Hygienist II, *Applicability of Title V Permitting Requirements to Gasoline Bulk Terminals Owned by Williams Energy Ventures, Inc.* (May 19, 1999)

<sup>10</sup> 45 FR 52676, 52694 (August 7, 1980).

<sup>11</sup> *Id* at 52695

<sup>12</sup> Memo. from Winston Smith at 6.

occur over large geographic distances, with the downstream processing plant into a single major stationary source. Aggregation of such geographically-dispersed activities defies the concept of contiguous and adjacent. While the land mass may be “contiguous or adjacent” when viewed as a whole, the limited portion of the properties physically associated with the pollutant-emitting activity are not necessarily nearby, connected, or in any way proximate to each other.

Congress also recognized the unique geographic attributes of the oil and gas industries when it provided specific direction on how emission sources in the oil and gas exploration and production industry should be grouped together for purposes of defining a major source under the Section 112 Air Toxics Program.<sup>13</sup> Specifically, Section 112(n)(4) of the Act states:

[E]missions from any pipeline compressor or pump station shall not be aggregated with emissions from other similar units, whether or not such units are in a contiguous area or under common control, to determine whether such units or stations are major sources, and in the case of any oil or gas exploration or production well (with its associated equipment), such emissions shall not be aggregated for any purpose under this section.

Applying our interpretation of the Section 112(a)(1) and (n)(4) statutory language, and our understanding of hazardous air pollutant (HAP) emission sources, we defined the major source under Section 112, for purposes of these industries, in reference to individual surface sites.<sup>14</sup>

For purposes of making source determinations for NSR and Title V, we recommend that permitting authorities first look to the Section 112 approach of segregating each individual surface site.<sup>15</sup> While we do not believe that permitting authorities should strictly apply the Section 112 definition of major stationary source for purposes of the NSR and Title V permit programs, we do believe that the “surface site” is a reasonable place to begin the source determination analysis. This is because we have already determined that a surface site fits within a reasonable interpretation of the term stationary source in context of one regulatory program, and administratively, we think it reasonable for a permitting authority to at least consider whether the same boundaries are appropriate in administering other regulatory programs.

After identifying the individual surface site, the permitting authority should consider aggregating pollutant-emitting activities at multiple surface sites, when the surface sites are under common control and located in close proximity to each other. A reviewing authority can consider two surface sites to be in close proximity if they are physically adjacent, or if they are separated by no more than a short distance (e.g. across a highway, separated by a city block or

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<sup>13</sup> Although Congress provided direction in Section 112(n)(4) absent a specific finding related to whether the activities are within a “contiguous area,” notably, the Congressional Record shows that Congress explained its basis for creating special treatment for these industries under Section 112 partially based on a finding that emissions, “are typically located in widely dispersed geographic areas, rather than concentrated in a single area.” 136 Cong.Rec H12848-01.

<sup>14</sup> See 64 FR 32618 and 40 C.F.R. Part 63, Subpart HH.

<sup>15</sup> It is common practice, when making NSR source determinations, to first look at a small group of pollutant-emitting activities, and then determine whether it is appropriate to aggregate these activities with other activities to define the major stationary source. In the oil and gas industries, we think that a surface site contains an appropriate collection of pollutant-emitting activities to begin this analysis.



some similar distance).<sup>16</sup> Once the stationary source is identified, the permitting authority should consider the emissions from all equipment located either temporarily or permanently on the surface site(s) collectively to determine whether the surface site(s) qualifies as a major stationary source for NSR and Title V.<sup>17,18</sup>

In a great majority of cases, we expect that permitting authorities will find that a single surface site is the most-suitable industrial grouping because it correlates best with the definition of a stationary source. Accordingly, permitting authorities could treat each surface site as a separate stationary source and generally would not need to aggregate activities located on different oil and gas properties (oil and gas lease, mineral fee tract, subsurface unit area, surface fee trace or surface lease tract) or located on the same lease, when the sites are not located in close proximity to each other.

Whether or not a permitting authority should aggregate two or more pollutant-emitting activities into a single major stationary source for purposes of NSR and Title V remains a case-by-case decision considering the factors relevant to the specific circumstances. Nonetheless, today's guidance provides permitting authorities a reasonable analytical approach that simplifies the determination process and assures greater uniformity in permitting decisions. Unless unique factors (such as proximity or interdependence) indicate otherwise, permitting authorities can consider oil and gas exploration and production activity located on a single surface site to be an individual stationary source.

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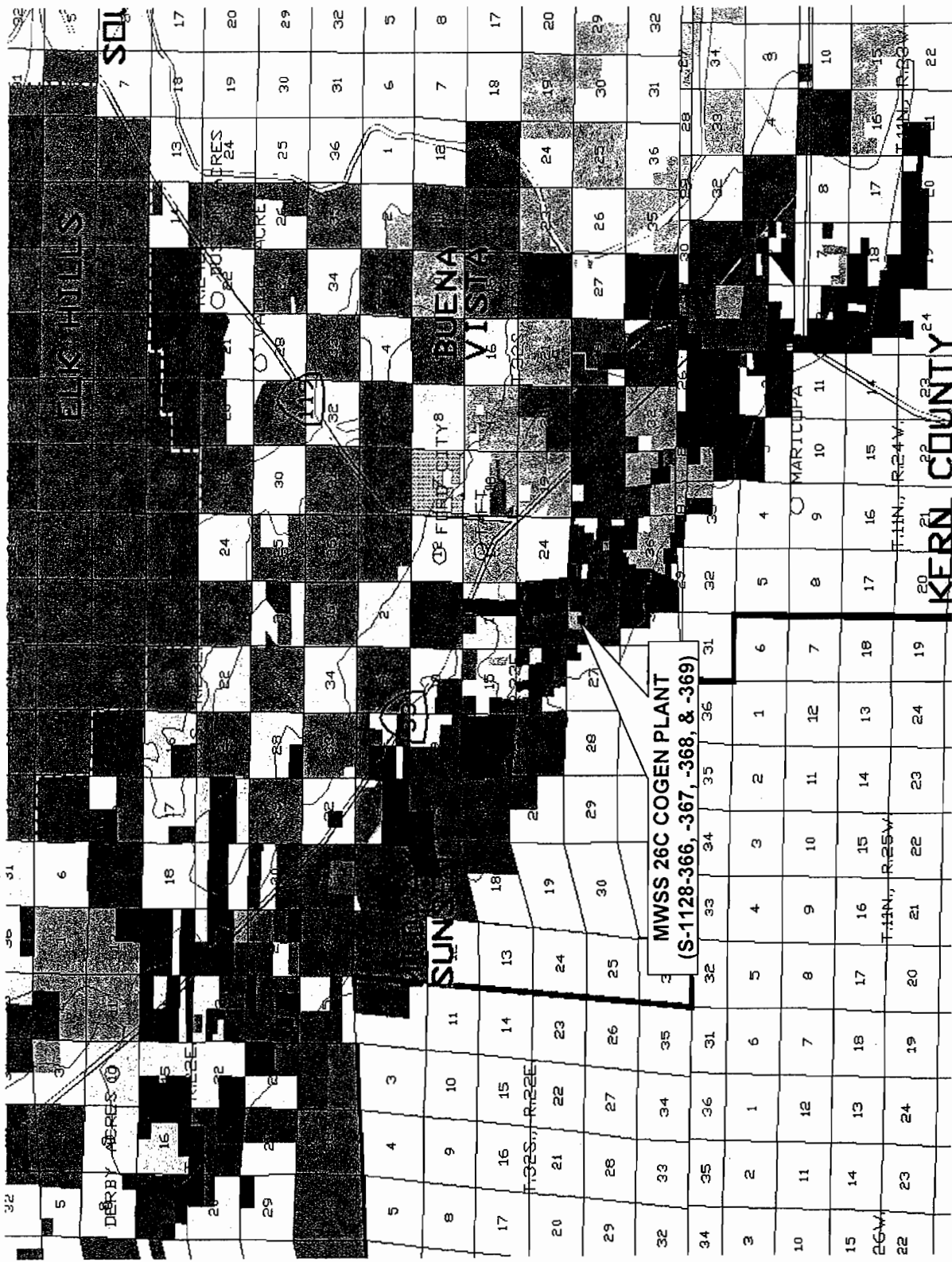
<sup>16</sup> In making major stationary source determinations for this industry, some southern States apply a rule that generally results in separating pollutant-emitting activities located outside a ¼ mile radius.

<sup>17</sup> This approach differs from the Section 112 approach for these industries. The Section 112 approach exempts activities at the well and its associated equipment from the regulations. 64 FR 32610. Congress' based its direction to disaggregate these emission points for purposes of Section 112 on a finding that these emissions points generally have low HAP emissions.<sup>17</sup> 136 Cong.Rec H12848-01. This is not necessarily the case for criteria pollutants. Drilling sites can contribute high levels of CO, NO<sub>x</sub>, and SO<sub>2</sub> emissions from internal combustion engines. Accordingly, a potential to impact ambient air quality exists if these pollutant-emitting activities are closely located, and we believe it appropriate to consider these emissions points in defining the major stationary source for the NSR and Title V permitting programs.

<sup>18</sup> Temporary emissions include emissions from a portable stationary source that would be less than two years in duration, unless the Administrator determines that a longer period would be appropriate. 45 FR 52728. Temporary emissions, however, do not include emissions from non-road engines.

Appendix IV

Property Map



## Midway Sunset Oilfield Cogens Subject to Rule 4703 Tier 3

- LEGEND**
- DEVELOPER-SEE 49004
  - SUNSET COGEN PLANT
  - BUENA VISTA
  - MARIQUITA
  - DERBY ACRES
  - ELK HILLS
  - UNDEVELOPED
  - STATE LAND
  - FEDERAL LAND
  - PRIVATE LAND
  - OTHER



## Appendix V

### Risk Management Review

# San Joaquin Valley Air Pollution Control District Risk Management Review

To: Steve Roeder, AQE – Permit Services  
 From: Jaime Horio, AQS – Technical Services  
 Date: December 18, 2008  
 Facility Name: Chevron USA Inc  
 Location: Coalinga Heavy Oil Production Source  
 Application #(s): C-311-13-11, -15-11, -88-11, -93-11, -95-11, -97-11  
 Project #: C-1084278

## A. RMR SUMMARY

<b>RMR Summary</b>			
<b>Categories</b>	<b>Ammonia Injection (Unit 13, 15, 88, 93, 95, 97)</b>	<b>Project Totals</b>	<b>Facility Totals</b>
<b>Prioritization Score</b>	0.15	0.15	0.15
<b>Acute Hazard Index</b>	NA <sup>1</sup>	NA <sup>1</sup>	NA <sup>1</sup>
<b>Chronic Hazard Index</b>	NA <sup>1</sup>	NA <sup>1</sup>	NA <sup>1</sup>
<b>Maximum Individual Cancer Risk (10<sup>-6</sup>)</b>	NA <sup>1</sup>	NA <sup>1</sup>	NA <sup>1</sup>
<b>T-BACT Required?</b>	<b>No</b>		
<b>Special Permit Conditions?</b>	<b>No</b>		

<sup>1</sup> The prioritization score for this project is less than 1.0, therefore no further analysis is required.

### Proposed Permit Conditions

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

Units # 13, 15, 88, 93, 95, 97

No special conditions are required.

## B. RMR REPORT

### I. Project Description

Technical Services received a request on December 11, 2008, to perform a Risk Management Review for a proposed modification to 6 large turbine engines. The modification consisted of the installation of: installation of ammonia SCR with 21 ppm ammonia slip.

## II. Analysis

Toxic emissions for this proposed unit were calculated using ammonia emissions rates provided by the project engineer. In accordance with the District's *Risk Management Policy for Permitting New and Modified Sources* (APR 1905, March 2, 2001), risks from the proposed unit's toxic emissions were prioritized using the procedure in the 1990 CAPCOA Facility Prioritization Guidelines and incorporated in the District's HEARTs database. The prioritization score for this proposed unit was less than 1.0 (see RMR Summary Table). Therefore, no further analysis was necessary.

The following parameters were used for the review:

<b>Analysis Parameters</b>			
<b>Units 13, 15, 88, 93, 95, 97</b>			
<b>Ammonia (pounds/yr/engine)</b>	18,396	<b>Max Hours per Year</b>	8760
<b>Closest Receptor (m)</b>	483		

## III. Conclusion

The prioritization score is less than 1.0. **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 on the data provided by the applicant and the project engineer. Therefore, this analysis is valid only as long as the proposed data and parameters do not change.

### Attachments:

- A. RMR request from the project engineer
- B. Prioritization score
- C. Facility Score Summary

**Appendix VI**  
**Emissions Profile**



**DEU ATCs**

Permit #: C-311-13-10	<b>Last Updated</b>
Facility: CHEVRON USA INC	10/22/2009 BRARG

Equipment Pre-Baselined: NO

	<u>NOX</u>	<u>SOX</u>	<u>PM10</u>	<u>CO</u>	<u>VOC</u>
Potential to Emit (lb/Yr):	84366.0	1308.0	17004.0	87900.0	17004.0
Daily Emis. Limit (lb/Day)	233.7	3.6	47.1	257.3	47.1
Quarterly Net Emissions Change (lb/Qtr)					
Q1:	0.0	0.0	0.0	0.0	0.0
Q2:	0.0	0.0	0.0	0.0	0.0
Q3:	0.0	0.0	0.0	0.0	0.0
Q4:	0.0	0.0	0.0	0.0	0.0
Check if offsets are triggered but exemption applies	N	N	N	N	N
Offset Ratio					
Quarterly Offset Amounts (lb/Qtr)					
Q1:					
Q2:					
Q3:					
Q4:					

Permit #: C-311-15-10	<b>Last Updated</b>
Facility: CHEVRON USA INC	10/22/2009 BRARG

Equipment Pre-Baselined: NO

	<u>NOX</u>	<u>SOX</u>	<u>PM10</u>	<u>CO</u>	<u>VOC</u>
Potential to Emit (lb/Yr):	84366.0	1308.0	17004.0	87900.0	17004.0
Daily Emis. Limit (lb/Day)	233.7	3.6	47.1	257.3	47.1
Quarterly Net Emissions Change (lb/Qtr)					
Q1:	0.0	0.0	0.0	0.0	0.0
Q2:	0.0	0.0	0.0	0.0	0.0
Q3:	0.0	0.0	0.0	0.0	0.0
Q4:	0.0	0.0	0.0	0.0	0.0
Check if offsets are triggered but exemption applies	N	N	N	N	N
Offset Ratio					
Quarterly Offset Amounts (lb/Qtr)					
Q1:					
Q2:					
Q3:					
Q4:					

Permit #: C-311-88-10	<b>Last Updated</b>
Facility: CHEVRON USA INC	10/22/2009 BRARG

Equipment Pre-Baselined: NO

	<u>NOX</u>	<u>SOX</u>	<u>PM10</u>	<u>CO</u>	<u>VOC</u>
Potential to Emit (lb/Yr):	84366.0	1308.0	17004.0	87900.0	17004.0
Daily Emis. Limit (lb/Day)	233.7	3.6	47.1	257.3	47.1
Quarterly Net Emissions Change (lb/Qtr)					
Q1:	0.0	0.0	0.0	0.0	0.0
Q2:	0.0	0.0	0.0	0.0	0.0
Q3:	0.0	0.0	0.0	0.0	0.0
Q4:	0.0	0.0	0.0	0.0	0.0
Check if offsets are triggered but exemption applies	N	N	N	N	N
Offset Ratio					
Quarterly Offset Amounts (lb/Qtr)					
Q1:					
Q2:					
Q3:					
Q4:					

Permit #: C-311-93-10	<b>Last Updated</b>
Facility: CHEVRON USA INC	10/22/2009 BRARG

Equipment Pre-Baselined: NO

	<u>NOX</u>	<u>SOX</u>	<u>PM10</u>	<u>CO</u>	<u>VOC</u>
Potential to Emit (lb/Yr):	84366.0	1308.0	17004.0	87900.0	17004.0
Daily Emis. Limit (lb/Day)	233.7	3.6	47.1	257.3	47.1
Quarterly Net Emissions Change (lb/Qtr)					
Q1:	0.0	0.0	0.0	0.0	0.0
Q2:	0.0	0.0	0.0	0.0	0.0
Q3:	0.0	0.0	0.0	0.0	0.0
Q4:	0.0	0.0	0.0	0.0	0.0
Check if offsets are triggered but exemption applies	N	N	N	N	N
Offset Ratio					
Quarterly Offset Amounts (lb/Qtr)					
Q1:					
Q2:					
Q3:					
Q4:					

Permit #: C-311-95-10	<b>Last Updated</b>
Facility: CHEVRON USA INC	10/22/2009 BRARG

Equipment Pre-Baselined: NO

	<u>NOX</u>	<u>SOX</u>	<u>PM10</u>	<u>CO</u>	<u>VOC</u>
Potential to Emit (lb/Yr):	84366.0	1308.0	17004.0	87900.0	17004.0
Daily Emis. Limit (lb/Day)	233.7	3.6	47.1	257.3	47.1
Quarterly Net Emissions Change (lb/Qtr)					
Q1:	0.0	0.0	0.0	0.0	0.0
Q2:	0.0	0.0	0.0	0.0	0.0
Q3:	0.0	0.0	0.0	0.0	0.0
Q4:	0.0	0.0	0.0	0.0	0.0
Check if offsets are triggered but exemption applies	N	N	N	N	N
Offset Ratio					
Quarterly Offset Amounts (lb/Qtr)					
Q1:					
Q2:					
Q3:					
Q4:					

Permit #: C-311-97-10	<b>Last Updated</b>
Facility: CHEVRON USA INC	10/22/2009 BRARG

Equipment Pre-Baselined: NO

	<u>NOX</u>	<u>SOX</u>	<u>PM10</u>	<u>CO</u>	<u>VOC</u>
Potential to Emit (lb/Yr):	84366.0	1308.0	17004.0	87900.0	17004.0
Daily Emis. Limit (lb/Day)	233.7	3.6	47.1	257.3	47.1
Quarterly Net Emissions Change (lb/Qtr)					
Q1:	0.0	0.0	0.0	0.0	0.0
Q2:	0.0	0.0	0.0	0.0	0.0
Q3:	0.0	0.0	0.0	0.0	0.0
Q4:	0.0	0.0	0.0	0.0	0.0
Check if offsets are triggered but exemption applies	N	N	N	N	N
Offset Ratio					
Quarterly Offset Amounts (lb/Qtr)					
Q1:					
Q2:					
Q3:					
Q4:					

**SCR/CEMS ATCs**



Permit #: C-311-13-11	<b>Last Updated</b>
Facility: CHEVRON USA INC	10/22/2009 BRARG

Equipment Pre-Baselined: NO

	<u>NOX</u>	<u>SOX</u>	<u>PM10</u>	<u>CO</u>	<u>VOC</u>
Potential to Emit (lb/Yr):	22343.0	1354.0	17606.0	84878.0	17869.0
Daily Emis. Limit (lb/Day)	67.4	3.7	48.2	1199.5	99.5
Quarterly Net Emissions Change (lb/Qtr)					
Q1:	-16072.0	0.0	0.0	0.0	0.0
Q2:	-16072.0	0.0	0.0	0.0	0.0
Q3:	-16073.0	0.0	0.0	0.0	0.0
Q4:	-16073.0	0.0	0.0	0.0	0.0
Check if offsets are triggered but exemption applies	N	N	N	N	N
Offset Ratio					
Quarterly Offset Amounts (lb/Qtr)					
Q1:					
Q2:					
Q3:					
Q4:					

Permit #: C-311-15-11	<b>Last Updated</b>
Facility: CHEVRON USA INC	10/22/2009 BRARG

Equipment Pre-Baselined: NO

	<u>NOX</u>	<u>SOX</u>	<u>PM10</u>	<u>CO</u>	<u>VOC</u>
Potential to Emit (lb/Yr):	22343.0	1354.0	17606.0	84878.0	17863.0
Daily Emis. Limit (lb/Day)	67.4	3.7	48.2	1199.5	99.5
Quarterly Net Emissions Change (lb/Qtr)					
Q1:	-16072.0	0.0	0.0	0.0	0.0
Q2:	-16072.0	0.0	0.0	0.0	0.0
Q3:	-16073.0	0.0	0.0	0.0	0.0
Q4:	-16073.0	0.0	0.0	0.0	0.0
Check if offsets are triggered but exemption applies	N	N	N	N	N
Offset Ratio					
Quarterly Offset Amounts (lb/Qtr)					
Q1:					
Q2:					
Q3:					
Q4:					

Permit #: C-311-88-11	<b>Last Updated</b>
Facility: CHEVRON USA INC	10/22/2009 BRARG

Equipment Pre-Baselined: NO

	<u>NOX</u>	<u>SOX</u>	<u>PM10</u>	<u>CO</u>	<u>VOC</u>
Potential to Emit (lb/Yr):	22343.0	1354.0	17606.0	84878.0	17863.0
Daily Emis. Limit (lb/Day)	67.8	3.7	48.2	1199.5	99.5
Quarterly Net Emissions Change (lb/Qtr)					
Q1:	-16072.0	0.0	0.0	0.0	0.0
Q2:	-16072.0	0.0	0.0	0.0	0.0
Q3:	-16073.0	0.0	0.0	0.0	0.0
Q4:	-16073.0	0.0	0.0	0.0	0.0
Check if offsets are triggered but exemption applies	N	N	N	N	N
Offset Ratio					
Quarterly Offset Amounts (lb/Qtr)					
Q1:					
Q2:					
Q3:					
Q4:					

Permit #: C-311-93-11	<b>Last Updated</b>
Facility: CHEVRON USA INC	10/22/2009 BRARG

Equipment Pre-Baselined: NO

	<u>NOX</u>	<u>SOX</u>	<u>PM10</u>	<u>CO</u>	<u>VOC</u>
Potential to Emit (lb/Yr):	22343.0	1354.0	17606.0	84878.0	17863.0
Daily Emis. Limit (lb/Day)	67.4	3.7	48.2	1199.5	99.5
Quarterly Net Emissions Change (lb/Qtr)					
Q1:	-16072.0	0.0	0.0	0.0	0.0
Q2:	-16072.0	0.0	0.0	0.0	0.0
Q3:	-16073.0	0.0	0.0	0.0	0.0
Q4:	-16073.0	0.0	0.0	0.0	0.0
Check if offsets are triggered but exemption applies	N	N	N	N	N
Offset Ratio					
Quarterly Offset Amounts (lb/Qtr)					
Q1:					
Q2:					
Q3:					
Q4:					

Permit #: C-311-95-11	<b>Last Updated</b>
Facility: CHEVRON USA INC	10/22/2009 BRARG

Equipment Pre-Baselined: NO

	<u>NOX</u>	<u>SOX</u>	<u>PM10</u>	<u>CO</u>	<u>VOC</u>
Potential to Emit (lb/Yr):	22343.0	1354.0	17606.0	84878.0	17863.0
Daily Emis. Limit (lb/Day)	67.4	3.7	48.2	1199.5	99.5
Quarterly Net Emissions Change (lb/Qtr)					
Q1:	-16072.0	0.0	0.0	0.0	0.0
Q2:	-16072.0	0.0	0.0	0.0	0.0
Q3:	-16073.0	0.0	0.0	0.0	0.0
Q4:	-16073.0	0.0	0.0	0.0	0.0
Check if offsets are triggered but exemption applies	N	N	N	N	N
Offset Ratio					
Quarterly Offset Amounts (lb/Qtr)					
Q1:					
Q2:					
Q3:					
Q4:					

Permit #: C-311-97-11	<b>Last Updated</b>
Facility: CHEVRON USA INC	10/22/2009 BRARG

Equipment Pre-Baselined: NO

	<u>NOX</u>	<u>SOX</u>	<u>PM10</u>	<u>CO</u>	<u>VOC</u>
Potential to Emit (lb/Yr):	22343.0	1354.0	17606.0	84878.0	17863.0
Daily Emis. Limit (lb/Day)	233.7	3.6	47.1	257.3	47.1
Quarterly Net Emissions Change (lb/Qtr)					
Q1:	-16072.0	0.0	0.0	0.0	0.0
Q2:	-16072.0	0.0	0.0	0.0	0.0
Q3:	-16073.0	0.0	0.0	0.0	0.0
Q4:	-16073.0	0.0	0.0	0.0	0.0
Check if offsets are triggered but exemption applies	N	N	N	N	N
Offset Ratio					
Quarterly Offset Amounts (lb/Qtr)					
Q1:					
Q2:					
Q3:					
Q4:					

## Appendix VII

### Overview of a Black Start Procedure

A "Black Start" event is a unit/plant start-up during a time when the cogen plant is electrically de-energized and separated from the utility. In other words, utility power cannot be provided to the cogen plant for a normal startup and we therefore have to rely on emergency generators to begin the cogen plant startup. Basically, the black start has to happen from a condition where the cogen plant has no electrical supply (from either the utility or an operating cogen plant).

These are relatively rare events that might happen one or two times in a year in a given oilfield, and sometime not all in some years. The black start procedure is much more involved and time consuming than a normal startup. The 4 hour period requested is necessary to cover the time required to bring the affected cogens up to the conditions so that the procedures for a normal startup can then be performed (all within the 4 hour period requested).

Rather than trying to answer each question independently, the following general overview of the black start procedure addresses the questions along with the steps involved (taking into account the proposed SCR equipment):

1. Since the Idle cogen plant and oil field are electrically separated from PG&E, no equipment is operating in the oil field. This includes the produced water treatment plant that supplies feed water to the cogen unit Heat Recovery Steam Generators (HRSG). We cannot put cogen unit engine exhaust heat into the HRSG (and SCR) until the field is re-energized and the water treatment plant is operating.
2. Verify that the field 12kV electrical system is ready to energize and that the cogen plant is separated from the field electrical system. This step includes inspection of the field electrical system to be sure that no damage was caused during the separation from PG&E.
3. Set up the Cogen Plant electrical system for Black Start.
4. Start the Cogen Plant emergency generator. Close the proper breakers to connect the emergency generator to the appropriate 480V bus. Start the first cogen unit.
5. Synchronize the first unit to the plant 12kV bus and close the unit 4160V breaker. The plant 12kV bus is now energized.
6. Separate the emergency generator from the 480V bus that was used to start the first cogen unit. Connect this same 480V bus to the plant 12kV bus by closing the appropriate breaker.
7. Shut down the emergency generator.
8. Start the remaining units in the cogen plant. Synchronize and close the 4160V breakers on all running units. This will connect all operating units to the plant 12kV bus. The units will be sharing the internal plant load (approximately 400kW total, or 100kW per unit). Since the Solar Centaur 40 engines require a minimum of 800kW load before water injection can be initiated, water injection will not be on at this point.
9. Reconnect cogen plant 12 kV bus to the field load. This will add the loads in the field (that automatically return to operation) to the cogen plant.
10. Manually return additional field loads to service to bring the plant load above the 4MW level and assure that water injection is operating on all running cogen units.
11. Continue to return field loads to service until all loads are on-line.



12. Under Black Start conditions, it can take 2 to 3 hours to get to the point where we are starting the HRSG's. Under normal starting conditions, it would only take 10 to 30 minutes to be at the point where the HRSG can be started.
13. Starting the HRSG includes pumping the feed water through the heat exchanger tubes and directing the engine exhaust through the heat exchanger tubes. At this point, the feed water and steel piping will begin heating, from the engine exhaust heat. Over a 15 to 60 minute period, the HRSG will reach its normal operating temperature. 30 to 60 minutes after the engine exhaust heat begins entering the HRSG, the SCR catalyst temperature reaches the 450 F level, allowing for the injection of ammonia and the reduction of NOx. After the catalyst modules are sufficiently saturated with ammonia, the NOx reduction efficiency is reached and the unit is capable of meeting the Rule 4703 NOx limits.

Fresno Bee  
Fresno Bee

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

NOTICE IS HEREBY GIVEN that the San Joaquin Valley Unified Air Pollution Control District solicits public comment on the proposed issuance of Authority to Construct to Chevron USA, Inc. (CUSA) for modification of six 2.7 MW each cogeneration units for Rule 4703 compliance, at "6C & 25D" site in the Coalinga Oilfield, Heavy Oil Western Stationary Source in Fresno County.

The analysis of the regulatory basis for this proposed action, Project #C-1084278, is available for public inspection at [http://www.valleyair.org/notices/public\\_notices\\_idx.htm](http://www.valleyair.org/notices/public_notices_idx.htm) and the District office at the address below. Written comments on this project must be submitted within 30 days of the publication date of this notice to **DAVID WARNER, DIRECTOR OF PERMIT SERVICES, SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT, 1990 EAST GETTYSBURG AVENUE, FRESNO, CA 93726.**