



**APR. 25 2014**

Mr. Bob Bond  
Elk Hills Power LLC  
P O Box 460 / 4026 Skyline Rd.  
Tupman, CA 93276

**Re: Proposed Authority to Construct/Certificate of Conformity (Minor Mod)  
District Facility # S-3523  
Project # 1140276**

Dear Mr. Bond:

Enclosed for your review is the District's analysis of an application for Authorities to Construct for the facility identified above. You requested that Certificates of Conformity with the procedural requirements of 40 CFR Part 70 be issued with this project. Elk Hills Power LLC has requested Authority to Construct permits for modifying two natural gas fired combined cycle gas turbine engine/electrical generators by increasing their startup and shutdown duration and authorizing one hour duration for aborted shutdowns.

After addressing all comments made during the 45-day EPA comment period, the District intends to issue the Authorities to Construct with Certificates of Conformity. Prior to operating with modifications authorized by the Authorities to Construct, the facility must submit an application to modify the Title V permit as an administrative amendment, in accordance with District Rule 2520, Section 11.5.

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

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

---

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

**Central Region (Main Office)**  
1990 E. Gettysburg Avenue  
Fresno, CA 93726-0244  
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

APR 25 2014

Mr. Bond  
Page 2

Thank you for your cooperation in this matter.

Sincerely,

A handwritten signature in black ink, appearing to read "Arnaud Marjollet".

Arnaud Marjollet  
Director of Permit Services

Enclosures

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



The project site is located at northwest corner of Elk Hills Road and Skyline Road, near Tupman, California, within the NE/4 of Section 31, Township 29S, Range 21E. Access to the site from Bakersfield is provided by traveling south on State Highway 99 to State Route (SR) 119, west on SR 119 to Elk Hills Road, and north on Elk Hills Road to the site. The equipment is not located within 1,000 feet of the outer boundary of a K-12 school. Therefore, the public notification requirement of California Health and Safety Code 42301.6 is not applicable to this project.

#### **IV. Process Description**

The EHP facility is a natural gas-fired combined-cycle power generating plant. The plant is powered by two General Electric (GE) 7FA technology combustion turbine generators (CTGs). Exhaust gas from the CTGs is directed to two supplementary fired heat recovery steam generators (HRSGs) for the generation of high-pressure, intermediate-pressure, and low-pressure steam that drives the steam turbine generator (STG). Supplementary firing (duct burner firing) capability is provided in each HRSG to generate additional steam for peak power production (permit units S-3523-1 and 3-3523-2). The EHP facility utilizes Selective Catalytic Reduction (SCR) systems for the control of NO<sub>x</sub> emissions and oxidation catalysts for the control of CO and VOC emissions. Fuel for the CTGs and duct burners is exclusively natural gas.

During the life of the plant, EHP has been able to operate almost continuously, and hence has had only a limited number of extended startups. However, during extended startups the current six hour limitation for the complete startup cycle has been met by employing techniques that are recommended by vendor specifications and/or implementing abnormal operating procedures. During these times EHP has pushed the equipment to operating conditions for which it was not designed to meet. These abnormal operations have, over time, exhausted the equipment and it has become an increasing challenge to meet current PTO conditions in both extended and regular startup operations. Therefore, EHP requests an increase in the allowed duration for extended startup and alignment in aborted shutdown conditions. A description of the requested changes is provided below.

In a combined-cycle system, bringing a power block online is a complicated process. EHP consists of two combustion turbines (CT's), two heat recovery steam generators (HRSGs), and one steam turbine. The two CT's share a common starting system and only one CT can be started at a time. The startup sequence includes multiple steps in which the equipment power output is "ramped up" until it reaches normal operating conditions (defined as Mode 6). Operating Modes are defined by General Electric (GE), the manufacturer of the turbines. This consists of carefully increasing the CT's speed and load as the HRSG's, steam drums, steam piping, emissions control equipment, steam turbine, and other equipment are heated and brought to a stable operating condition. Operating the systems within these vendor specified boundaries is required to protect personnel and equipment, as well as maintain warranties. During a typical extended startup at EHP, one CT is started and ramped up to low load where it is held until the exhaust gases bring the respective HRSG and steam systems to a specified temperature. The second CT is allowed to start following synchronization of the first CT and is also held at low load for warm up of its HRSG and steam systems. Both CT's are required to supply an adequate (maximum output) amount of steam for the steam turbine and its auxiliary equipment. One CT is dedicated to run in temperature matching mode for steam turbine warm up and utilized for auxiliary uses, primarily for the air ejectors, which establish and maintain steam turbine condenser vacuum..

The HRSG's have three separate pressure sections, each with temperature increase rate limitations. As soon as the HRSG's achieve the proper temperature, the steam turbine and its auxiliaries are started and gradually heated as steam becomes available to drive the systems. Increases in steam turbine speed are constrained by the temperature differential between the metal surfaces and the steam and cannot be exceeded. Both CT's must be held at low load until the HRSG's can provide sufficient heat for operating the associated fuel gas heaters required for the Dry Low-NO<sub>x</sub> combustion system. The CT load cannot be raised again until the fuel gas reaches the vendor specified set point. Loads are increased gradually until eventually normal operating loads and conditions are reached.

During the startup process the Oxidation Catalyst, for CO/VOC control, increases in effectiveness as the exhaust gas temperature increases. The Selective Catalytic Reduction (SCR) system for NO<sub>x</sub> control does not become effective until the proper exhaust gas temperature is reached and ammonia injection begins. EHP has continued to optimize the SCR effectiveness and minimize emissions during startup by lowering the ammonia injection temperature within allowable vendor specifications and permit limits. Currently ammonia injection begins when the exhaust gas temperature reaches 500 F. The early introduction of ammonia reduces NO<sub>x</sub> emissions through the remainder of the startup process but cannot achieve compliance with the 2.5 ppmv @ 15% Oz NO<sub>x</sub> permit limit until the CT begins operating in Mode 6 (Dry Low-NO<sub>x</sub> Mode).

During regular start up operations, similar procedures are followed, however, having one unit online decreases the time necessary to bring the second unit online. Similarly, during regular start up operations care and following recommended start up procedures need to be maintained to protect the unit, life, and manufacturer warranties.

EHP has, during the life of the plant, taken the necessary measures to maintain compliance with its operating permits. However, as the plant and equipment age it has become more difficult to meet these requirements while maintaining the integrity of its equipment. An example where straining the equipment to meet both regular and extended start up duration is of high concern is potentially overheating the high pressure section of the boiler. This may result in the compromise of the internal tube system causing a complete integrity failure. Another example is ramping up faster than recommended which has the potential effect of increasing the eccentricity of the rotor bow. The forced ramp up pushes the eccentricity increasing the risk of the bow not maintaining proper clearance. In addition, EHP has had to force the steam and metal temperature differential requirements to minimize startup duration. Similarly, EHP has had to take significant measures to limit the vibration of the rotor during start ups. One such measure is employing balancing shots on the rotor. Mechanical integrity inspections have revealed stresses throughout the steam turbine caused by the forced operations. These examples, along with other early indicators demonstrate that the need for startup duration to be increased to the requested duration. It should be noted that the system ramp up and the time it takes to reach normal operating conditions are limited by various factors, such as the physical equipment limitations discussed above and the temperature of the equipment prior to commencing combustion (i.e., regular start vs. extended start). There can also be limitations on how fast electrical power can be added to, or subtracted from, the electrical grid. These requirements are external to EHP (and in fact to all other operators within the CA-ISO control area), and may cause extended startups, since these requirements limit a facility's ability to efficiently reach optimum operating conditions.

Aborted Shutdowns

During normal operations conditions may arise where a trip of the unit occurs. The trip prompts an immediate response from the operator to stabilize the unit and prevent a full shutdown. During these incidents, the permit to operate does not provide an allowance to recover from these aborted shutdowns and similarly avoid unnecessary shutdown and start up emissions.

Examples of when a trip can occur are a change in fuel quality, a false reading, a valve failing close, a mechanical or instrumentation malfunctions, etc. During these events plant operators may be able to take immediate corrective actions to stabilize the unit in lieu of shutting down.

**V. Equipment Listing**

Pre-Project Equipment Description (see PTOs in Appendix A):

S-3523-1-9: GE FRAME 7 MODEL PG7241FA NATURAL GAS FIRED COMBINED CYCLE GAS TURBINE ENGINE/ELECTRICAL GENERATOR #2 WITH DRY LOW NOX COMBUSTORS, 250.5 MMBTU/HR NATURAL GAS FIRED DUCT BURNER, HEAT RECOVERY STEAM GENERATOR, SELECTIVE CATALYTIC REDUCTION, OXIDATION CATALYST, AND STEAM TURBINE SHARED WITH S-3523-1 (503 MW TOTAL PLANT NOMINAL RATING)

S-3523-2-9: GE FRAME 7 MODEL PG7241FA NATURAL GAS FIRED COMBINED CYCLE GAS TURBINE ENGINE/ELECTRICAL GENERATOR #2 WITH DRY LOW NOX COMBUSTORS, 250.5 MMBTU/HR NATURAL GAS FIRED DUCT BURNER, HEAT RECOVERY STEAM GENERATOR, SELECTIVE CATALYTIC REDUCTION, OXIDATION CATALYST, AND STEAM TURBINE SHARED WITH S-3523-1 (503 MW TOTAL PLANT NOMINAL RATING)

Proposed ATC:

S-3523-1-10: MODIFICATION OF GE FRAME 7 MODEL PG7241FA NATURAL GAS FIRED COMBINED CYCLE GAS TURBINE ENGINE/ELECTRICAL GENERATOR #1 WITH DRY LOW NOX COMBUSTORS, 250.5 MMBTU/HR NATURAL GAS FIRED DUCT BURNER, HEAT RECOVERY STEAM GENERATOR, SELECTIVE CATALYTIC REDUCTION, OXIDATION CATALYST, AND STEAM TURBINE SHARED WITH S-3523-2 (503 MW TOTAL PLANT NOMINAL RATING): INCREASE REGULAR STARTUP TIME FROM 2 TO 3 HOURS, INCREASE EXTENDED STARTUP TIME FROM 6 TO 7 HOURS, AND AUTHORIZE A ONE HOUR DURATION FOR ABORTED SHUTDOWNS

S-3523-2-10: MODIFICATION OF GE FRAME 7 MODEL PG7241FA NATURAL GAS FIRED COMBINED CYCLE GAS TURBINE ENGINE/ELECTRICAL GENERATOR #2 WITH DRY LOW NOX COMBUSTORS, 250.5 MMBTU/HR NATURAL GAS FIRED DUCT BURNER, HEAT RECOVERY STEAM GENERATOR, SELECTIVE CATALYTIC REDUCTION, OXIDATION CATALYST, AND STEAM TURBINE SHARED WITH S-3523-1 (503 MW TOTAL PLANT NOMINAL RATING): INCREASE REGULAR STARTUP TIME FROM 2 TO 3 HOURS, INCREASE EXTENDED STARTUP TIME FROM 6 TO 7 HOURS, AND AUTHORIZE A ONE HOUR DURATION FOR ABORTED SHUTDOWNS

Post Project Equipment Description:

- S-3523-1-10: GE FRAME 7 MODEL PG7241FA NATURAL GAS FIRED COMBINED CYCLE GAS TURBINE ENGINE/ELECTRICAL GENERATOR #2 WITH DRY LOW NOX COMBUSTORS, 250.5 MMBTU/HR NATURAL GAS FIRED DUCT BURNER, HEAT RECOVERY STEAM GENERATOR, SELECTIVE CATALYTIC REDUCTION, OXIDATION CATALYST, AND STEAM TURBINE SHARED WITH S-3523-1 (503 MW TOTAL PLANT NOMINAL RATING)
- S-3523-2-10: GE FRAME 7 MODEL PG7241FA NATURAL GAS FIRED COMBINED CYCLE GAS TURBINE ENGINE/ELECTRICAL GENERATOR #2 WITH DRY LOW NOX COMBUSTORS, 250.5 MMBTU/HR NATURAL GAS FIRED DUCT BURNER, HEAT RECOVERY STEAM GENERATOR, SELECTIVE CATALYTIC REDUCTION, OXIDATION CATALYST, AND STEAM TURBINE SHARED WITH S-3523-1 (503 MW TOTAL PLANT NOMINAL RATING)

**VI. Emission Control Technology Evaluation**

The CTGs utilize dry low NOx (DLN) combustors. Steam injection may also be utilized, however, the steam injection system is only designed for power augmentation (steam is injected into the compressor discharge ports, not at the combustor). The exhaust systems of the CTGs/HRSG's are equipped with selective catalytic reduction (SCR) with ammonia injection to reduce NOx emissions to 2.5 ppmv @ 15% O<sub>2</sub>. Ammonia slip is limited to 10 ppmv @ 15% O<sub>2</sub>. The exhaust systems are also equipped with oxidation catalysts to reduce VOC and CO emissions. VOC emission are limited to 2 ppmvd @ 15% O<sub>2</sub>, and CO emissions are limited to 4 ppmvd @ 15% O<sub>2</sub>.

Continuous emissions monitoring systems (CEMs) sample, analyze, and record NOx, CO, and O<sub>2</sub> concentrations in the exhaust gas following the oxidation catalyst. One CEM is employed per CTG. NOx concentrations are measured before and after the SCR unit. The ammonia (NH<sub>3</sub>) slip is determined using NOx reduction measurements and NH<sub>3</sub> consumption.

**VII. General Calculations**

**A. Assumptions**

No change in daily or annual emission limits will occur as a result of this project.

An hourly emission increase is expected during startup, shut down and aborted shutdown periods.

**B. Emission Factors**

Daily and annual emissions are based on current limits in permits.

**C. Calculations**

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

PEs are from current permits S-3523-1-9 and '2.

<b>Pre-Project Potential to Emit (PE1)</b>					
Daily Emissions (lb/day)					
	NO <sub>x</sub>	SO <sub>x</sub>	PM <sub>10</sub>	CO	VOC
S-3523-1-9	752.0	86.4	360.0	3948.0	184.0
S-3523-2-9	752.0	86.4	360.0	3948.0	184.0
S-3523-1-9 & '29 (permit condition)	1103.0	172.8	720.0	4297.0	269.0

<b>Pre-Project Potential to Emit (PE1)</b>					
Annual Emissions (lb/yr)					
	NO <sub>x</sub>	SO <sub>x</sub>	PM <sub>10</sub>	CO	VOC
S-3523-1-9 & '2-9 (permit condition)	335,022	57,468	262,800	831,008	64,478

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

No change in PE is proposed; therefore, PE1 = PE2.

<b>Post-Project Potential to Emit (PE2)</b>					
Daily Emissions (lb/day)					
	NO <sub>x</sub>	SO <sub>x</sub>	PM <sub>10</sub>	CO	VOC
S-3523-1-10	752.0	86.4	360.0	3948.0	184.0
S-3523-2-10	752.0	86.4	360.0	3948.0	184.0
S-3523-1-7-10 & '2-10 (permit condition)	1103.0	172.8	720.0	4297.0	269.0

<b>Post-Project Potential to Emit (PE2)</b>					
Annual Emissions (lb/yr)					
	NO <sub>x</sub>	SO <sub>x</sub>	PM <sub>10</sub>	CO	VOC
S-3523-1-10 & -2-10 (permit condition)	335,022	57,468	262,800	831,008	64,478

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

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

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

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

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

**5. Major Source Determination**

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

**Rule 2410 Major Source Determination:**

The facility or the equipment evaluated under this project is listed as one of the categories specified in 40 CFR 52.21 (b)(1)(i). Therefore the following PSD Major Source thresholds are applicable.

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

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

**6. Baseline Emissions (BE)**

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

Pursuant to District Rule 2201, BE = PE1 for:

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

otherwise,

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

**a. Clean Emissions Unit**

Pursuant to Rule 2201, a Clean Emissions Unit is defined as an emissions unit that is “equipped with an emissions control technology with a minimum control efficiency of at least 95% or is equipped with emission control technology that meets the requirements for achieved-in-practice BACT as accepted by the APCO during the five years immediately prior to the submission of the complete application.

The units are "equipped" with Achieved in Practice BACT for all pollutants based on current BACT guideline 3.4.2. Therefore, BE=PE1..

**7. SB 288 Major Modification**

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

Since this facility is a major source for all pollutants, the project's PE2 is compared to the SB 288 Major Modification Thresholds in the following table in order to determine if the SB 288 Major Modification calculation is required.

SB 288 Major Modification Thresholds			
Pollutant	Project PE2 (lb/year)	Threshold (lb/year)	SB 288 Major Modification Calculation Required?
NO <sub>x</sub>	335,022	50,000	Y
SO <sub>x</sub>	57,468	80,000	N
PM <sub>10</sub>	262,800	30,000	Y
VOC	64,478	50,000	Y

Since the project's PE2 surpasses the SB 288 Major Modification Thresholds for NO<sub>x</sub>, PM<sub>10</sub> and VOC, the Net Emissions Increase (NEI) will be compared to the SB 288 Major Modification thresholds in order to determine if this project constitutes an SB 288 Major Modification.

The NEI is the total of emission increases for every permit unit addressed in this project and is calculated as follows:

$$NEI = PE2 - BAE$$

Where: PE2 = the sum of all the PE2s for each permit unit in this project  
 BAE = for units that are fully offset, the BAE = the PE1 for every unit, otherwise, the BAE is the actual annual emissions averaged over the baseiine period for every unit.

Pursuant to project S1163470 the units are fully offset; therefore their BAE = PE1.

SB 288 Major Modification Calculation and Determination					
Pollutant	PE2 (lb/yr)	PE1 (lb/yr)	NEI (lb/yr)	Thresholds (lb/yr)	SB2 88 Major Modification?
NO <sub>x</sub>	335,022	335,022	0	50,000	N
SO <sub>x</sub>	57,468	57,468	0	80,000	N
PM <sub>10</sub>	262,800	262,800	0	30,000	N
VOC	64,478	64,478	0	50,000	N

As demonstrated in the preceding table, this project does not constitute an SB 288 Major Modification.

## 8. Federal Major Modification

District Rule 2201 states that a Federal Major Modification is the same as a “Major Modification” as defined in 40 CFR 51.165 and part D of Title I of the CAA.

The determination of Federal Major Modification is based on a two-step test. For the first step, only the emission *increases* are counted. Emission decreases may not cancel out the increases for this determination.

### Step 1

For existing emissions units, the increase in emissions is calculated as follows.

$$\text{Emission Increase} = \text{PAE} - \text{BAE} - \text{UBC}$$

Where: PAE = Projected Actual Emissions, and  
 BAE = Baseline Actual Emissions  
 UBC = Unused baseline capacity

If there is no increase in design capacity or potential to emit, the PAE is equal to the annual emission rate at which the unit is projected to emit in any one year, selected by the operator, within 5 years after the unit resumes normal operation (10 years for existing units with an increase in design capacity or potential to emit). If detailed PAE are not provided, the PAE is equal to the PE2 for each permit unit.

The BAE is calculated based on historical emissions and operating records for any 24 month period, selected by the operator, within the previous 10 year period (5 years for electric utility steam generating units). The BAE must be adjusted to exclude any non-compliant operation emissions and emissions that are no longer allowed due to lower applicable emission limits that were in effect when this application was deemed complete.

The applicant has provided the required historical and projected operation data (see Appendix B).

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

Federal Major Modification Thresholds for Emission Increases					
Pollutant	PAE	BAE	Total Emissions Increases (lb/yr)	Thresholds (lb/yr)	Federal Major Modification?
NO <sub>x</sub>	146,737	146,737	0	0	N
VOC	3649	3649	0	0	N
PM <sub>10</sub>	52,918	52,918	0	30,000	N
PM <sub>2.5</sub>	52,918	52,918	0	20,000	N
SO <sub>x</sub>	24,090	24,090	0	80,000	N

Since none of the Federal Major Modification Thresholds are being surpassed with this project, this project does not constitute a Federal Major Modification and no further analysis is required.

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

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

- NO2 (as a primary pollutant)
- SO2 (as a primary pollutant)
- CO
- PM
- PM10
- Greenhouse gases (GHG): CO2, N2O, CH4, HFCs, PFCs, and SF6

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

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

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

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

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

<b>PSD Significant Emission Increase Determination: Potential to Emit (tons/year)</b>						
	NO2	SO2	CO	PM	PM10	CO2e
Total PE from New and Modified Units	168					
PSD Significant Emission Increase Thresholds	40	40	100	25	15	75,000
PSD Significant Emission Increase?	Y					

As demonstrated in the table above, because the post-project potential to emit from all new and modified emission units is greater than at least one PSD significant emission increase threshold, further analysis is required to determine

if the project will result in an increase greater than the PSD significant emission increase thresholds, see step b. below for further analysis.

**b. Emission Increase for Each Attainment/Unclassified Pollutant with a Significant Emission Increase vs PSD Significant Emission Increase Thresholds**

In this step, the emission increase for each attainment/unclassified pollutant is compared to the PSD significant emission increase thresholds, and if emission increase for each attainment pollutant is below this threshold, no further analysis is needed.

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

For existing emissions units, the increase in emissions is calculated as follows:

$$\text{Emission Increase} = \text{PAE} - \text{BAE} - \text{UBC}$$

Where: PAE = Projected Actual Emissions, and  
 BAE = Baseline Actual Emissions  
 UBC = Unused baseline capacity

The applicant has provided the required baseline actual emissions and projected actual emissions (see **Appendix B**).

The project's combined total emission increases are compared to the PSD significant emission increase thresholds in the following table.

<b>PSD Significant Emission Increase Determination: Emission Increase (tons/year)</b>						
	NO2	SO2	CO	PM	PM10	CO2e
Emission Increases (only)	0	0	0	0	0	0
PSD Significant Emission Increase Thresholds	40	40	100	25	15	75,000
PSD Significant Emission Increase?	n	n	n	n	n	n

As shown in the table above, the project emission increase, for all new and modified emission units, does not exceed any of the PSD significant emission increase thresholds. Therefore the project does not result in a PSD major modification due to a significant emission increase and no further discussion is required.

**VIII. Compliance**

## Rule 2201 New and Modified Stationary Source Review Rule

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

#### 1. BACT Applicability

BACT requirements are triggered on a pollutant-by-pollutant basis and on an emissions unit-by-emissions unit basis. Unless specifically exempted by Rule 2201, BACT shall be required for the following actions\*:

- a. Any new emissions unit with a potential to emit exceeding two pounds per day,
- b. The relocation from one Stationary Source to another of an existing emissions unit with a potential to emit exceeding two pounds per day,
- c. Modifications to an existing emissions unit with a valid Permit to Operate resulting in an AIPE exceeding two pounds per day, and/or
- d. Any new or modified emissions unit, in a stationary source project, which results in an SB 288 Major Modification or a Federal Major Modification, as defined by the rule.

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

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

As discussed in Section I above, there are no new emissions units associated with this project; therefore BACT for new units with PE > 2 lb/day purposes is not triggered.

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

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

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

$$\text{AIPE} = \text{PE2} - \text{HAPE}$$

Where,

AIPE = Adjusted Increase in Permitted Emissions, (lb/day)

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

HAPE = Historically Adjusted Potential to Emit, (lb/day)

$$\text{HAPE} = \text{PE1} \times (\text{EF2}/\text{EF1})$$

Where,

PE1 = The emissions unit's Potential to Emit prior to modification or relocation, (lb/day)

EF2 = The emissions unit's permitted emission factor for the pollutant after modification or relocation. If EF2 is greater than EF1 then EF2/EF1 shall be set to 1

EF1 = The emissions unit's permitted emission factor for the pollutant before the modification or relocation

$$AIPE = PE2 - (PE1 \times (EF2 / EF1))$$

The turbines can have unlimited emissions during startup, shut down and aborted shutdown periods; therefore, the IPE for the additional hour of startup or shutdowns is > 2 lb for all pollutants. Therefore BACT is triggered for all pollutants during startup, shut down and aborted shutdown periods. Please note, there are no equipment changes and no changes to emissions during normal operation; only startup emissions are increased. Because of the transient nature of startups and shutdowns, control of emissions during this time is very difficult. BACT for startups has been determined to be getting the emission control equipment functioning as soon as possible. For these reason, EHP is required to initiate ammonia injection into the exhaust stream when the catalyst reaches the threshold temperature of 500°F where NOx reduction starts to occur. The oxidation catalyst requires no additional adjustment to initiate VOC and CO reduction. As the oxidation catalyst warms, VOC and CO-control progressively increases. The gradual functionality of the SCR and oxidation catalyst systems as the exhaust temperature increases during a startup sequence constitute BACT for control of the EHP CTGs during startup, shut down and aborted shutdown periods.

**B. Offsets**

**1. Offset Applicability**

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

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

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

**2. Quantity of Offsets Required**

As seen above, the SSPE2 is greater than the offset thresholds for . Therefore offset calculations will be required for this project.

The quantity of offsets in pounds per year for NO<sub>x</sub> is calculated as follows for sources with an SSPE1 less than the offset threshold levels before implementing the project being evaluated.

$$\text{Offsets Required (lb/year)} = [(SSPE2 - ROT + ICCE) \times DOR]$$

Where,

- SSPE2 = Post Project Stationary Source Potential to Emit
- ROT = Respective Offset Threshold, for the respective pollutant
- ICCE = Increase in Cargo Carrier Emissions
- DOR = Distance Offset Ratio, determined pursuant to Section 4.8

As calculated in Section VII.C.6 above, the Baseline Emissions (BE) from these units are equal to the Pre-Project Potential to Emit (PE1) since they are Clean Emissions Units.

Also, the annual emissions for the CTGs are bubbled (S-3523-1 and -2 have combined annual emission limits) and there are no increases in cargo carrier emissions; therefore offsets can be determined as follows:

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

$$\begin{aligned} \text{PE2} &= \text{BE} \\ \text{ICCE} &= 0 \text{ lb/year} \end{aligned}$$

$$\text{Offsets Required (lb/year)} = ([\text{PE2} - \text{PE2}] + 0) \times \text{DOR} = 0$$

As demonstrated in the calculation above, the amount of offsets is zero; therefore, offsets will not be required for this project.

## **C. Public Notification**

### **1. Applicability**

Public noticing is required for:

- a. New Major Sources, Federal Major Modifications, and SB 288 Major Modifications,
- b. Any new emissions unit with a Potential to Emit greater than 100 pounds during any one day for any one pollutant,
- c. Any project which results in the offset thresholds being surpassed, and/or
- d. Any project with an SSIPE of greater than 20,000 lb/year for any pollutant.

#### **a. New Major Sources, Federal Major Modifications, and SB 288 Major Modifications**

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

As demonstrated in Sections VII.C.7 and VII.C.8, this project does not constitute an SB 288 or Federal Major Modification; therefore, public noticing for SB 288 or Federal Major Modification purposes is not required.

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

Applications which include a new emissions unit with a PE greater than 100 pounds during any one day for any pollutant will trigger public noticing requirements. There

are no new emissions units associated with this project. Therefore public noticing is not required for this project for PE > 100 lb/day.

**c. Offset Threshold**

The SSPE1 and SSPE2 are compared to the offset thresholds in the following table.

<b>Offset Thresholds</b>				
Pollutant	SSPE1 (lb/year)	SSPE2 (lb/year)	Offset Threshold	Public Notice Required?
NO <sub>x</sub>	>20,000	>20,000	20,000 lb/year	No
SO <sub>x</sub>	>54,750	>54,750	54,750 lb/year	No
PM <sub>10</sub>	>9,200	>9,200	29,200 lb/year	No
CO	>20,000	>20,000	he Rule 4301	No
VOC	>20,000	>20,000	20,000 lb/year	No

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

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

Public notification is required for any permitting action that results in a SSIPE of more than 20,000 lb/year of any affected pollutant. According to District policy, the SSIPE = SSPE2 – SSPE1. The SSIPE is compared to the SSIPE Public Notice thresholds in the following table.

<b>SSIPE Public Notice Thresholds</b>			
Pollutant	SSIPE (lb/year)	SSIPE Public Notice Threshold	Public Notice Required?
NO <sub>x</sub>	0	20,000 lb/year	No
SO <sub>x</sub>	0	20,000 lb/year	No
PM <sub>10</sub>	0	20,000 lb/year	No
CO	0	20,000 lb/year	No
VOC	0	20,000 lb/year	No

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

**2. Public Notice Action**

As discussed above, this project will not result in emissions, for any pollutant, which would subject the project to any of the noticing requirements listed above. Therefore, public notice will not be required for this project.

**D. Daily Emission Limits (DELs)**

DELs and other enforceable conditions are required by Rule 2201 to restrict a unit's maximum daily emissions, to a level at or below the emissions associated with the maximum design capacity. The DEL must be contained in the latest ATC and contained in or enforced by the latest PTO and enforceable, in a practicable manner, on a daily basis. DELs are also required to enforce the applicability of BACT.

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

- Emission rates from CTG/HRSG, except during startup and/or shutdown, shall not exceed any of the following: PM10 - 15.0 lb/hr, SOx (as SO2) - 3.6 lb/hr, NOx (as NO2) - 15.8 lb/hr and 2.5 ppmvd @ 15% O2, VOC - 4.0 lb/hr and 2.0 ppmvd @ 15% O2, CO - 12.5 lb/hr and 4 ppmvd @ 15% O2, ammonia - 10 ppmvd @ 15% O2. NOx ppmv and lb/hr limits are a one-hour rolling average. Ammonia emission limit is a twenty-four hour rolling average. All other ppmv and lb/hr limits are three-hour rolling averages. [District NSR Rule, District Rules 4001, and 4703, 5.1.2, 5.2 and SJ-99-02] Y
- Emission rates from CTG/HRSG shall not exceed any of the following: PM10 - 360.0 lb/day, SOx (as SO2) - 86.4 lb/day, NOx (as NO2) - 752.0 lb/day, VOC - 184.0 lb/day, and CO - 3948.0 lb/day. [District NSR Rule] Y
- Emission rates from both CTG/HRSG S-3523-1 and -2 combined shall not exceed any of the following: PM10 - 720.0 lb/day, SOx (as SO2) - 172.8 lb/day, NOx (as NO2) - 1103.0 lb/day, VOC - 269.0 lb/day, and CO - 4297 lb/day. [District NSR Rule] Y
- Annual emissions from both CTGs/HRSGs S-3523-1 and -2 combined calculated on a twelve consecutive month rolling basis shall not exceed any of the following: PM10 - 261,960 lb/year, SOx (as SO2) - 57,468 lb/year, NOx (as NO2) - 335,022 lb/year, VOC - 64,478 lb/year, and CO - 831,008 lb/year. [District NSR Rule and SJ-99-02] Y
- Emission rates from the duct burner shall not exceed any of the following limits: 0.20 lb-NOx/MMBtu (expressed as NO2); 0.20 lb-SOx/MMBtu (expressed as SO2); 0.03 lb-PM/MMBtu. [40 CFR 60.42(a)(1); 40 CFR 60.43(b)(2) and (g); 40 CFR 60.44(a)(1)]

**E. Compliance Assurance**

**1. Source Testing**

Compliance with the short term emission limits (lb/hr and ppmv @ 15% O2) shall be demonstrated annually by District witnessed in situ sampling of exhaust gas by a qualified independent source test firm at full load conditions as follows - NOx: ppmvd @ 15% O2 and lb/hr, CO: ppmvd @ 15% O2 and lb/hr, VOC: ppmvd @ 15% O2 and lb/hr, PM10: lb/hr, and ammonia: ppmvd @ 15% O2. Sample collection to demonstrate compliance with ammonia emission limit shall be based on three consecutive test runs of thirty minutes each.

Compliance with the start-up NOx, CO, and VOC mass emission limits shall be demonstrated for one of the CTGs (S-3523-1 or -2) at least once every five years by District witnessed in situ sampling of exhaust gases by a qualified independent source test firm.

## **2. Monitoring**

The CTGs are required to maintain continuous emission monitors (CEMs) to document compliance with NO<sub>x</sub>, CO, and ammonia emission limits.

## **3. Recordkeeping**

For the CTGs, records of all source tests, CEM results, CEM maintenance, etc. are required.

## **4. Reporting**

Elk Hills Power LLC must report to the District any breakdowns, including those covered by District Rules 1080 and 1100.

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

As shown above in section VII.C.9.II.b this project does not result in a PSD major modification due to a significant emission increase and no further discussion is required.

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

This facility is subject to this Rule, and has received their Title V Operating Permit. The proposed modification is a Minor Modification to the Title V Permit.

In accordance with Rule 2520, these modifications:

1. Do not violate requirements of any applicable federally enforceable local or federal requirement;
2. Do not relax monitoring, reporting, or recordkeeping requirements in the permit and are not significant changes in existing monitoring permit terms or conditions;
3. Do not require or change a case-by-case determination of an emission limitation or other standard, or a source-specific determination for temporary sources of ambient impacts, or a visibility or increment analysis;
4. Do not seek to establish or change a permit term or condition for which there is no corresponding underlying applicable requirement and that the source has assumed to avoid an applicable requirement to which the source would otherwise be subject. Such terms and conditions include:
  - a. A federally enforceable emission cap assumed to avoid classification as a modification under any provisions of Title I of the Federal Clean Air Act; and
  - b. An alternative emissions limit approved pursuant to regulations promulgated under section 112(i)(5) of the Federal Clean Air Act; and
5. Are not Title I modifications as defined in District Rule 2520 or modifications as defined in section 111 or 112 of the Federal Clean Air Act; and
6. Do not seek to consolidate overlapping applicable requirements.

As discussed above, the facility has applied for a Certificate of Conformity (COC). Therefore, the facility must apply to modify their Title V permit with an administrative amendment, prior to operating with the proposed modifications. Continued compliance with this rule is expected.

The facility may construct/operate under the ATC upon submittal of the Title V administrative amendment/minor modification application.

#### **Rule 2540 Acid Rain Program**

The subject CTGs are subject to the acid rain program as phase II units, i.e. they were installed after November 15, 1990 and have a generator nameplate rating greater than 25 MW.

The acid rain program will be implemented through a Title V operating permit. Federal regulations require submission of an acid rain permit application at least 24 months before the later of January 1, 2000 or the date the unit expects to generate electricity. The facility submitted the acid rain program application on October 4, 2000.

The acid rain program requirements for this facility are relatively minimal. Monitoring of the NO<sub>x</sub> and SO<sub>x</sub> emissions and a relatively small quantity of SO<sub>x</sub> allowances (from a national SO<sub>x</sub> allowance bank) are required as well as the use of a NO<sub>x</sub> CEM. Continued compliance is expected.

#### **Rule 4001 New Source Performance Standards (NSPS), 40 CFR 60 – Subpart Da (Standards of Performance for Electric Utility Steam Generators for Which Construction is Commenced After September 18, 1978)**

The duct burners are subject to 40 CFR Part 60 Subpart Da requirements since the duct burners are fossil fuel fired steam generating units with a heat input rating greater than 250 MMBtu/hr. Subpart Da limits emissions of NO<sub>x</sub> to 0.2 lb/MMBtu, PM to 0.03 lb/MMBtu, and SO<sub>2</sub> to 0.8 lb/MMBtu. The subpart also restricts the NO<sub>x</sub> emissions from the units to no greater than 1.6 lb/MW-hr on a 30-day rolling average. These limits do not apply during start-up and shutdown. The units are currently in compliance with this subpart and the proposed modification is not expected to affect compliance. Continued compliance is expected.

#### **Rule 4001 New Source Performance Standards (NSPS), 40 CFR 60 – Subpart GG (Standards of Performance for Stationary Gas Turbines)**

The CTGs are subject to subpart GG which limits oxides of nitrogen and sulfur from stationary gas turbines. The units are currently in compliance with this subpart and the proposed modification is not expected to affect compliance. Continued compliance is expected.

#### **Rule 4101 Visible Emissions**

Per Section 5.0, no person shall discharge into the atmosphere emissions of any air contaminant aggregating more than 3 minutes in any hour which is as dark as or darker than Ringelmann 1 (or 20% opacity). The units are currently in compliance with this rule and the proposed modification is not expected to affect compliance. Continued compliance is expected.

#### **Rule 4102 Nuisance**

Rule 4102 prohibits discharge of air contaminants which could cause injury, detriment, nuisance or annoyance to the public. Public nuisance conditions are not expected as a result of these operations, provided the equipment is well maintained. Therefore, compliance with this rule is expected.

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

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.

As demonstrated above, there are no increases in emissions associated with this project, therefore a health risk assessment is not necessary and no further risk analysis is required.

### Rule 4201 Particulate Matter Concentration

Rule 4201 limits PM emissions from any source operation to 0.1 gr/dscf (standard conditions are 60 degrees F and 1 atmosphere pressure).

#### CTGs

The PM exhaust concentration for the CTGs was determined at worst-case conditions for exhaust gr/scf, i.e. low exhaust flow and high PM emission rate (15.0 lb/hr). The worst-case condition is 45% load and 115 degrees F. Although all PM emitted is expected to be 10 microns or smaller, the following calculation was done using a PM emission rate of 30.0 lb/hr PM per CTG (double the PM10 emission limit).

Summary of PM gr/scf:

PM Emissions = 30.0 lb/hr (double the actual PM10 emission limit)  
Heat Rate at 45% load and 115 °F = 917.8 MMBtu/hr  
EPA F-Factor for natural gas combustion = 8710 dscf/MMBtu  
Assume 12.8% O<sub>2</sub> in exhaust

Exhaust Gas Flow, dscfm  
= 917.8 MMBtu/hr x 8710 dscf/MMBtu x (20.9%/20.9% - 15%) x 1 hr/60 min  
= 471,964 dscfm

Grain Loading  
= (30.0 lb/hr x 1 hour/60 min x 7000 grains/lb) / (471,964 dscf/min)  
= 0.0074 gr/dscf

As shown above, even with double the PM10 emission limit, PM emissions for the CTGs will be less than 0.1 gr/dscf. Compliance is expected.

### Rule 4301 Fuel Burning Equipment

Rule 4301 limits air contaminant emissions from fuel burning equipment as defined in the rule. Section 3.1 defines fuel burning equipment 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”.

The CTG/HRSG's fail to meet the Rule 4301 definition of fuel burning equipment because they primarily (both initially and chiefly) produce power mechanically, i.e. the products of

combustion pass across the power turbine blades which causes the turbine shaft to rotate, and not through indirect heat transfer. The turbine shaft is coupled to an electrical generator shaft which is rotated to produce electricity.

Because the CTGs primarily produce power by mechanical means, it does not meet the definition of fuel burning equipment. Rule 4301 does not apply to the affected equipment.

### **Rule 4703 Stationary Gas Turbines**

Rule 4703 limits NOx and CO emissions from stationary gas turbines.

The NOx emissions of the CTGs are limited to 2.5 ppmvd @ 15% O<sub>2</sub>, in compliance with the Enhanced Option of Table 2 (Tier 2 NOx emissions limits) of 3 ppmvd @ 15% O<sub>2</sub>. The CO emissions of the CTGs are limited to 4 ppmvd @ 15% O<sub>2</sub>, in compliance with the Table 5-4 of 25 ppmvd @ 15% O<sub>2</sub> for General Electric Frame 7 CTGs. The following condition will remain on the permits:

- Emission rates from CTG/HRSG, except during startup and/or shutdown, shall not exceed any of the following: PM<sub>10</sub> - 15.0 lb/hr, SO<sub>x</sub> (as SO<sub>2</sub>) - 3.6 lb/hr, NO<sub>x</sub> (as NO<sub>2</sub>) - 15.8 lb/hr and 2.5 ppmvd @ 15% O<sub>2</sub>, VOC - 4.0 lb/hr and 2.0 ppmvd @ 15% O<sub>2</sub>, CO - 12.5 lb/hr and 4 ppmvd @ 15% O<sub>2</sub>, ammonia - 10 ppmvd @ 15% O<sub>2</sub>. NO<sub>x</sub> ppmv and lb/hr limits are a one-hour rolling average. Ammonia emission limit is a twenty-four hour rolling average. All other ppmv and lb/hr limits are three-hour rolling averages. [District NSR Rule, District Rules 4001, and 4703 and SJ-99-02]

With this application the applicant proposes to extend the CTGs' regular start up from two hours to three hours, and the extended start-up duration from six hours to seven hours for purposes of Rule 4703 compliance. Section 5.3.3 allows for more than two hours for each start-up or shutdown or more than one hour for each reduced load period provided the operator meets all of the conditions specified in Sections 5.3.3.1 through 5.3.3.2.

- 5.3.3.1 *The maximum allowable duration of start-up, shutdown, or reduced load period will be determined by the APCO, ARB, and EPA.*
- 5.3.3.2 *At a minimum, a justification for the increased duration shall include the following:*
  - 5.3.3.2.1 *A clear identification of the control technologies or strategies to be utilized; and*
  - 5.3.3.2.2 *A description of what physical conditions prevail during the period that prevent the controls from being effective; and*
  - 5.3.3.2.3 *A reasonably precise estimate as to when the physical conditions will have reached a state that allows for the effective control of emissions; and*
  - 5.3.3.2.4 *A detailed list of activities to be performed during the period and a reasonable explanation for the length of time needed to complete each activity; and*
  - 5.3.3.2.5 *A description of the material process flow rates and system operating parameters, etc., the operator plans to evaluate during the process optimization; and an explanation of how the activities and process flow affect the operation of the emissions control equipment; and*
  - 5.3.3.2.6 *The basis for the requested additional duration.*

The applicant has provided adequate justification for each point in Subsections 5.3.3.2 identified above (see Appendix C) for the three hours of regular startup and seven hours of extended start-up. The following permit condition will be placed on the permits:

Startup is defined as the period beginning with turbine initial firing until the unit meets the lb/hr and ppmv emission limits. Shutdown is defined the period beginning with initiation of turbine shutdown sequence and ending with cessation of firing of the gas turbine engine. Aborted shutdown is defined the period beginning with initiation of turbine shutdown and ends when the unit has ramped up and is meeting the lb/hr and ppmv emission limits. Startup durations shall not exceed three hours for a regular startup, and 7 hours for an extended startup, per occurrence. Shutdown and aborted shutdown durations shall not exceed one hour, per occurrence. [District Rules 2201, 4001 and 4703, 5.3.3 and SJ-99-02]

In accordance with Section 6.2 the CTGs are maintained with continuous emissions monitoring equipment for NOx and oxygen, as identified in Rule 1080 (Stack Monitoring). The following conditions will remain on the permits:

- CTG exhaust after the SCR unit shall be equipped with continuously recording emissions monitors dedicated to this unit for NOx, CO, and O2. Continuous emissions monitors shall meet the requirements of 40 CFR Part 60, Appendices B and F, and 40 CFR Part 75, and shall be capable of monitoring emissions during startups and shutdowns as well as normal operating conditions. If relative accuracy of CEM(s) cannot be demonstrated during startup conditions, CEM results during startup and shutdown events shall be replaced with startup emission rates obtained from source testing to determine compliance with emission limits. [40 CFR 60.334(c), District Rules 1080 and 4703, 6.2.1 and District NSR Rule and SJ-99-02]
- The CEMS shall complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive 15-minute period or shall meet equivalent specifications established by mutual agreement of the District, the ARB and the EPA. [District Rule 1080, 6.4]
- CTG shall be equipped with a continuously recording emission monitor preceding the SCR module measuring NOx concentration for the purposes of calculating ammonia slip. Permittee shall check, record, and quantify the calibration drift (CD) at two concentration values at least once daily (approximately 24 hours). The calibration shall be adjusted whenever the daily zero or high-level CD exceeds 5%. If either the zero or high-level CD exceeds 5% for five consecutive daily periods, the analyzer shall be deemed out-of-control. If either the zero or high-level CD exceeds 10% during any CD check, analyzer shall be deemed out-of-control. If the analyzer is out-of-control, the permittee shall take appropriate corrective action and then repeat the CD check. [District NSR Rule and District Rule 1080] Y
- The facility shall install and maintain equipment, facilities, and systems compatible with the District's CEM data polling software system and shall make CEM data available to the District's automated polling system on a daily basis. [District Rule 1080]

Per Section 6.3.1, source test information regarding the exhaust gas NOx and CO concentrations shall be provided annually. The following condition will remain on the permits:

- Compliance with the short term emission limits (lb/hr and ppmv @ 15% O2) shall be demonstrated annually by District witnessed in situ sampling of exhaust gas by a qualified independent source test firm at full load conditions as follows - NOx: ppmvd @ 15% O2 and lb/hr, CO: ppmvd @ 15% O2 and lb/hr, VOC: ppmvd @ 15% O2 and lb/hr, PM10: lb/hr, and ammonia: ppmvd @ 15% O2. Sample collection to demonstrate compliance with ammonia emission limit shall be based on three consecutive test runs of thirty minutes each. [District Rule 1081 and SJ-99-02]

The units are currently in compliance with this rule. Continued compliance is expected.

### **Rule 4801 Sulfur Compounds**

Rule 4801 limits sulfur compound emissions to 0.2% (2,000 ppm) dry volume. CTG and fuel gas heater SO<sub>x</sub> emissions are based on combusting natural gas consisting principally of methane with a fuel S content of 0.75 gr/100 scf. This fuel sulfur content results in a SO<sub>x</sub> emissions concentration from the CTG's and fuel gas heater well under the 2000 ppmvd limit allowed by the rule. Therefore, continued compliance is expected.

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

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

#### **California Health & Safety Code 44300 (Air Toxic "Hot Spots")**

Section 44300 of the California Health and Safety Code requires submittal of an air toxics "Hot Spot" information and assessment report for sources with criteria pollutant emissions greater than 10 tons per year. However, Section 44344.5 (b) states that a new facility shall not be required to submit such a report if all of the following conditions are met:

- The facility is subject to a district permit program established pursuant to Section 42300.
- The district conducts an assessment of the potential emissions or their associated risks, and finds that the emissions will not result in a significant risk.
- The district issues a permit authorizing construction or operation of the new facility.

A health risk screening assessment is not required for the proposed project as there is no increase in hazardous air pollutants as compared to previous health risk screenings performed for this equipment. This project qualifies for exemption per the above exemption criteria.

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

The District has verified that this site is located within 1,000 feet of a school. However, pursuant to California Health and Safety Code 42301.6, since this project will not result in an increase in emissions, a school notice is not required.

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

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

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

The District performed an Engineering Evaluation (this document) for the proposed project and determined that all project specific emission unit(s) are exempt from Best Available Control Technology (BACT) requirements. Furthermore, the District has determined that potential emission increases would have a less than significant health impact on sensitive receptors.

Issuance of permits for emissions units not subject to BACT requirements and with health impact less than significant is a matter of ensuring conformity with applicable District rules and regulations and does not require discretionary judgment or deliberation. Thus, the District concludes that this permitting action constitutes a ministerial approval. Section 21080 of the Public Resources Code exempts from the application of CEQA those projects over which a public agency exercises only ministerial approval. Therefore, the District finds that this project is exempt from the provisions of CEQA.

#### **IX. Recommendation**

Compliance with all applicable rules and regulations is expected. Pending a successful EPA Public Noticing period, issue ATC S-3523-1-10 and '2-10 subject to the permit conditions on the attached draft ATCs in **Appendix D**.

#### **X. Billing Information**

<b>Annual Permit Fees</b>			
<b>Permit Number</b>	<b>Fee Schedule</b>	<b>Fee Description</b>	<b>Annual Fee</b>
S-3523-1-10	3020-08B-H	251.5 MW	\$13,208
S-3523-2-10	3020-08B-H	251.5 MW	\$13,208

**APPENDIX A**  
**Current PTOs**

# San Joaquin Valley Air Pollution Control District

**PERMIT UNIT:** S-3523-1-9

**EXPIRATION DATE:** 02/29/2016

**SECTION:** NE35 **TOWNSHIP:** 30S **RANGE:** 23E

## **EQUIPMENT DESCRIPTION:**

GE FRAME 7 MODEL PG7241FA NATURAL GAS FIRED COMBINED CYCLE GAS TURBINE ENGINE/ELECTRICAL GENERATOR #1 WITH DRY LOW NOX COMBUSTORS, 250.5 MMBTU/HR NATURAL GAS FIRED DUCT BURNER, HEAT RECOVERY STEAM GENERATOR, SELECTIVE CATALYTIC REDUCTION, OXIDATION CATALYST, AND STEAM TURBINE SHARED WITH S-3523-2 (503 MW TOTAL PLANT NOMINAL RATING)

## **PERMIT UNIT REQUIREMENTS**

---

1. Combustion turbine generator (CTG) and electrical generator lube oil vents shall be equipped with mist eliminators to maintain visible emissions from lube oil vents no greater than 5% opacity, except for three minutes in any hour. [District NSR Rule] Federally Enforceable Through Title V Permit
2. CTG shall be equipped with continuously recording non resettable fuel gas flowmeter. [District NSR Rule and SJ-99-02] Federally Enforceable Through Title V Permit
3. CTG exhaust after the SCR unit shall be equipped with continuously recording emissions monitors dedicated to this unit for NOx, CO, and O2. Continuous emissions monitors shall meet the requirements of 40 CFR Part 60, Appendices B and F, and 40 CFR Part 75, and shall be capable of monitoring emissions during startups and shutdowns as well as normal operating conditions. If relative accuracy of CEM(s) cannot be demonstrated during startup conditions, CEM results during startup and shutdown events shall be replaced with startup emission rates obtained from source testing to determine compliance with emission limits. [40 CFR 60.334(c), 40 CFR 64.3, District Rules 1080 and 4703, 6.2.1 and District NSR Rule and SJ-99-02] Federally Enforceable Through Title V Permit
4. The CEMS shall complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive 15-minute period or shall meet equivalent specifications established by mutual agreement of the District, the ARB and the EPA. [40 CFR 64.3 and District Rule 1080, 6.4] Federally Enforceable Through Title V Permit
5. The monitoring of CO emissions with the CEMS shall serve as a surrogate for monitoring of VOC emissions as required by 40 CFR 64 (Compliance Assurance Monitoring). Operation of the unit with CO concentration within the allowable range shall be indicative of VOC concentrations which are less than the allowed maximum. The relationship between concentration of VOC and concentration of CO shall be demonstrated at each annual source test. [40 CFR 64.3] Federally Enforceable Through Title V Permit
6. The permittee shall comply with the compliance assurance monitoring operation and maintenance requirements of 40 CFR part 64.7. [40 CFR Part 64.7] Federally Enforceable Through Title V Permit
7. The permittee shall comply with the recordkeeping and reporting requirements of 40 CFR part 64.9. [40 CFR Part 64.9] Federally Enforceable Through Title V Permit
8. If the District or EPA determine that a Quality Improvement Plan is required under 40 CFR 64.7(d)(2), the permittee shall develop and implement the Quality Improvement Plan in accordance with 40 CFR part 64.8. [40 CFR Part 64.8] 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.

9. CTG shall be equipped with a continuously recording emission monitor preceding the SCR module measuring NOx concentration for the purposes of calculating ammonia slip. Permittee shall check, record, and quantify the calibration drift (CD) at two concentration values at least once daily (approximately 24 hours). The calibration shall be adjusted whenever the daily zero or high-level CD exceeds 5%. If either the zero or high-level CD exceeds 5% for five consecutive daily periods, the analyzer shall be deemed out-of-control. If either the zero or high-level CD exceeds 10% during any CD check, analyzer shall be deemed out-of-control. If the analyzer is out-of-control, the permittee shall take appropriate corrective action and then repeat the CD check. [District NSR Rule and District Rule 1080] Federally Enforceable Through Title V Permit
10. The facility shall install and maintain equipment, facilities, and systems compatible with the District's CEM data polling software system and shall make CEM data available to the District's automated polling system on a daily basis. [District Rule 1080] Federally Enforceable Through Title V Permit
11. Upon notice by the District that the facility's CEM system 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 CEM data is sent to the District by a District-approved alternative method. [District Rule 1080] Federally Enforceable Through Title V Permit
12. APCO or an authorized representative shall be allowed to inspect, as determined to be necessary, the monitoring devices required by this rule to ensure that such devices are functioning properly. [District Rule 1080, 11.0 and SJ-99-02] Federally Enforceable Through Title V Permit
13. Exhaust stack shall be equipped with permanent provisions to allow collection of stack gas samples consistent with 40 CFR 60.8 (e). [District Rule 1081 and SJ-99-02] Federally Enforceable Through Title V Permit
14. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201, 3.0] Federally Enforceable Through Title V Permit
15. Ammonia injection grid shall be equipped with operational ammonia flowmeter and injection pressure indicator. [District NSR Rule] Federally Enforceable Through Title V Permit
16. Ammonia shall be injected when the selective catalytic reduction system catalyst temperature exceeds 500 degrees F. Permittee shall monitor and record catalyst temperature during periods of startup. [District NSR Rule and SJ-99-02] Federally Enforceable Through Title V Permit
17. Permittee shall monitor and record exhaust gas temperature at selective catalytic reduction and oxidation catalyst inlets. [District NSR Rule] Federally Enforceable Through Title V Permit
18. Permittee shall comply with all applicable requirements of 40 CFR 60.8 and 40 CFR Subpart Da. [District Rule 4001] Federally Enforceable Through Title V Permit
19. CTG and duct burner shall be fired exclusively on natural gas, consisting primarily of methane and ethane, with a sulfur content no greater than 0.75 grains of sulfur compounds (as S) per 100 dry scf of natural gas. [District NSR Rule and SJ-99-02] Federally Enforceable Through Title V Permit
20. The sulfur 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 at least annually using ASTM Methods D4084, D5504, D6228, or Gas Processors Association Standard 2377. [40 CFR 60.334(h)(3); 40 CFR 60.48(g)(1) and District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
21. Results of the CEM system shall be averaged over the applicable time period, using consecutive 15-minute sampling periods. [District Rule 4703, 5.1, 6.4] Federally Enforceable Through Title V Permit
22. Startup is defined as the period beginning with turbine initial firing until the unit meets the lb/hr and ppmv emission limits. Shutdown is defined the period beginning with initiation of turbine shutdown sequence and ending with cessation of firing of the gas turbine engine. Startup and shutdown durations shall not exceed two hours for a regular startup, and six hours for an extended startup, and one hour for a shutdown, per occurrence. [District NSR Rule, District Rules 4001 and 4703, 5.3.3 and SJ-99-02] 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. During startup or shutdown of any gas turbine engine(s), combined emissions from both gas turbine engines' heat recovery steam generator exhausts (S-3523-1 and -2) shall not exceed any of the following: NO<sub>x</sub> (as NO<sub>2</sub>) - 400 lb and CO - 3600 lb in any one hour. If any CTG is in either startup or shutdown during any portion of a clock hour, the facility will be subject to the aforementioned limits during that clock hour. [District NSR Rule] Federally Enforceable Through Title V Permit
24. An extended startup shall be defined as a startup that occurs after the steam turbine has been shutdown for 72 hours or more. The duration of extended startup events shall not exceed 6 hours. [SJ-99-02] Federally Enforceable Through Title V Permit
25. During an extended startup, the combined emissions from both the CTG and HRSG exhausts shall not exceed either 800 lb NO<sub>x</sub> or 3600 lb CO per event. [SJ-99-02] Federally Enforceable Through Title V Permit
26. During shutdown of CTG, the combined emissions from both the CTG and HRSG exhausts shall not exceed either 102.5 lb NO<sub>x</sub> or 222.0 lb CO per event. [SJ-99-02] Federally Enforceable Through Title V Permit
27. Duct burning must not be employed during startup or shutdown events. [SJ-99-02] Federally Enforceable Through Title V Permit
28. Emission rates from CTG/HRSG, except during startup and/or shutdown, shall not exceed any of the following: PM<sub>10</sub> - 15.0 lb/hr, SO<sub>x</sub> (as SO<sub>2</sub>) - 3.6 lb/hr, NO<sub>x</sub> (as NO<sub>2</sub>) - 15.8 lb/hr and 2.5 ppmvd @ 15% O<sub>2</sub>, VOC - 4.0 lb/hr and 2.0 ppmvd @ 15% O<sub>2</sub>, CO - 12.5 lb/hr and 4 ppmvd @ 15% O<sub>2</sub>, ammonia - 10 ppmvd @ 15% O<sub>2</sub>. NO<sub>x</sub> ppmv and lb/hr limits are a one-hour rolling average. Ammonia emission limit is a twenty-four hour rolling average. All other ppmv and lb/hr limits are three-hour rolling averages. [District NSR Rule, District Rules 4001, and 4703, 5.1.2, 5.2 and SJ-99-02] Federally Enforceable Through Title V Permit
29. Emission rates from CTG/HRSG shall not exceed any of the following: PM<sub>10</sub> - 360.0 lb/day, SO<sub>x</sub> (as SO<sub>2</sub>) - 86.4 lb/day, NO<sub>x</sub> (as NO<sub>2</sub>) - 752.0 lb/day, VOC - 184.0 lb/day, and CO - 3948.0 lb/day. [District NSR Rule] Federally Enforceable Through Title V Permit
30. Emission rates from both CTG/HRSG S-3523-1 and -2 combined shall not exceed any of the following: PM<sub>10</sub> - 720.0 lb/day, SO<sub>x</sub> (as SO<sub>2</sub>) - 172.8 lb/day, NO<sub>x</sub> (as NO<sub>2</sub>) - 1103.0 lb/day, VOC - 269.0 lb/day, and CO - 4297 lb/day. [District NSR Rule] Federally Enforceable Through Title V Permit
31. Annual emissions from both CTGs/HRSGs S-3523-1 and -2 combined calculated on a twelve consecutive month rolling basis shall not exceed any of the following: PM<sub>10</sub> - 261,960 lb/year, SO<sub>x</sub> (as SO<sub>2</sub>) - 57,468 lb/year, NO<sub>x</sub> (as NO<sub>2</sub>) - 335,022 lb/year, VOC - 64,478 lb/year, and CO - 831,008 lb/year. [District NSR Rule and SJ-99-02] Federally Enforceable Through Title V Permit
32. Emission rates from the duct burner shall not exceed any of the following limits: 0.20 lb-NO<sub>x</sub>/MMBtu (expressed as NO<sub>2</sub>); 0.20 lb-SO<sub>x</sub>/MMBtu (expressed as SO<sub>2</sub>); 0.03 lb-PM/MMBtu. [40 CFR 60.42(a)(1); 40 CFR 60.43(b)(2) and (g); 40 CFR 60.44(a)(1)] Federally Enforceable Through Title V Permit
33. NO<sub>x</sub> emission rate from the duct burner shall not exceed 1.6 lb/MWh based on a 30-day rolling average. [40 CFR 60.44(d)(1)] Federally Enforceable Through Title V Permit
34. Each one-hour period will commence on the hour. The three-hour average will be compiled from the three most recent one-hour periods. 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 NSR Rule] Federally Enforceable Through Title V Permit
35. 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 shall commence at the beginning of the first day of the month. The twelve-consecutive-month rolling emissions total to determine compliance with annual emissions shall be compiled from the twelve most recent calendar months. [District NSR Rule] Federally Enforceable Through Title V Permit
36. The monitoring of NO<sub>x</sub> emissions from the duct burner shall be in accordance with the applicable requirements of 40 CFR Subpart Da. [40 CFR 60.49] 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.

37. Compliance with ammonia slip limit shall be demonstrated by using the following calculation procedure: ammonia slip ppmv @ 15% O<sub>2</sub> = ((a-(bxc/1,000,000)) x 1,000,000 / b) x d, where a = ammonia injection rate(lb/hr)/17(lb/lb. mol), b = dry exhaust gas flow rate (lb/hr)/(29(lb/lb. mol), c = change in measured NO<sub>x</sub> concentration ppmv at 15% O<sub>2</sub> across catalyst, and d = correction factor. The correction factor shall be derived annually during compliance testing by comparing the measured and calculated ammonia slip. Alternatively, permittee may utilize a continuous in-stack ammonia monitor, acceptable to the District, to monitor compliance. At least 60 days prior to using a NH<sub>3</sub> CEM, the permittee must submit a monitoring plan for District review and approval [District Rules 2520, 9.3.2 and 4102] Federally Enforceable Through Title V Permit
38. Compliance with the short term emission limits (lb/hr and ppmv @ 15% O<sub>2</sub>) shall be demonstrated annually by District witnessed in situ sampling of exhaust gas by a qualified independent source test firm at full load conditions as follows - NO<sub>x</sub>: ppmvd @ 15% O<sub>2</sub> and lb/hr, CO: ppmvd @ 15% O<sub>2</sub> and lb/hr, VOC: ppmvd @ 15% O<sub>2</sub> and lb/hr, PM10: lb/hr, and ammonia: ppmvd @ 15% O<sub>2</sub>. Sample collection to demonstrate compliance with ammonia emission limit shall be based on three consecutive test runs of thirty minutes each. [District Rule 1081 and SJ-99-02] Federally Enforceable Through Title V Permit
39. Compliance with the startup NO<sub>x</sub>, CO, and VOC mass emission limits shall be demonstrated for one of the CTGs (S-3523-1, or -2) at least once every five years by District witnessed in situ sampling of exhaust gases by a qualified independent source test firm. [District Rule 1081] Federally Enforceable Through Title V Permit
40. Compliance with the emission limit for NO<sub>x</sub> (lb-NO<sub>x</sub>/MMBtu) for the duct burner shall be demonstrated per the methods of 40 CFR Subpart Da. [40 CFR 60.48Da (g)(1),(j) and (k)] Federally Enforceable Through Title V Permit
41. Any gas turbine with an intermittently operated auxiliary burner shall demonstrate compliance with the auxiliary burner both on and off. [40 CFR 60 Subpart Da, and District Rule 4703, 6.3.3] Federally Enforceable Through Title V Permit
42. The District must be notified 30 days prior to any compliance source test, and a source test plan must be submitted for approval 15 days prior to testing. Official test results and field data collected by source tests required by conditions on this permit shall be submitted to the District within 60 days of testing. [District Rule 1081] Federally Enforceable Through Title V Permit
43. The following test methods shall be used EPA Methods 1-4, PM10: EPA Method 5 (front half and back half), NO<sub>x</sub>: EPA Method 7E, CO: EPA Method 10, O<sub>2</sub>: EPA Method 3, 3A, or 20, VOC: EPA Method 18 or 25, ammonia: BAAQMD ST-1B, and fuel gas sulfur content: ASTM D3246. 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, 4001, and 4703 and SJ-99-02] Federally Enforceable Through Title V Permit
44. Procedures and methods for determining emissions from the duct burner shall be in accordance with the applicable requirements of 40 CFR Subpart Da. [40 CFR 60.50] Federally Enforceable Through Title V Permit
45. The permittee shall maintain hourly records of NO<sub>x</sub>, CO, and ammonia emission concentrations (ppmv @ 15% O<sub>2</sub>), and hourly, daily, and twelve month rolling average records of NO<sub>x</sub> and CO emissions. [District NSR Rule] Federally Enforceable Through Title V Permit
46. The permittee shall maintain records of SO<sub>x</sub> lb/hr, lb/day, and lb/twelve month rolling average emission. SO<sub>x</sub> emissions shall be based on fuel use records, natural gas sulfur content, and mass balance calculations. [40 CFR 60.48(g)(1) and District NSR Rule] Federally Enforceable Through Title V Permit
47. Permittee shall maintain the following records for the CTG: occurrence, duration, and type of any startup, shutdown, or malfunction; emission measurements; total daily and annual hours of operation; and hourly quantity of fuel used. [District NSR Rule and 4703 and SJ-99-02] Federally Enforceable Through Title V Permit
48. Permittee shall maintain the following records for the continuous emissions monitoring system (CEMS): the occurrence and duration of any start-up, shutdown or malfunction, performance testing, evaluations, calibrations, checks, maintenance, adjustments, any period of non-operation of any continuous emissions monitor and emission measurements. [District NSR Rule and District Rule 4703 and 40 CFR 60 60.7(b) and SJ-99-02] 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.

49. Cylinder gas audits of continuous emission monitors shall be conducted quarterly, except during quarters in which relative accuracy and total accuracy testing is performed, in accordance with EPA guidelines. 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] Federally Enforceable Through Title V Permit
50. The permittee shall submit a written report to the APCO for each calendar quarter, within 30 days of the end of the quarter, including: time intervals, data and magnitude of excess emissions, nature and cause of excess (if known), corrective actions taken and preventive measures adopted; averaging period used for data reporting shall correspond to the averaging period for each respective 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; and a negative declaration when no excess emissions occurred. [District Rule 1080] Federally Enforceable Through Title V Permit
51. The reporting requirements pertaining to the testing and monitoring of the duct burner operation shall be in accordance with the applicable requirements of 40 CFR Subpart Da. [40 CFR 60.51] Federally Enforceable Through Title V Permit
52. All records required to be maintained by this permit shall be maintained for a period of five years and shall be made readily available for District inspection upon request. [District NSR Rule and 2520, 9.4.2] Federally Enforceable Through Title V Permit
53. The owners and operators of each affected source shall have an Acid Rain permit and operate in compliance with all permit requirements. [40 CFR 72] Federally Enforceable Through Title V Permit
54. The owners and operators and, to the extent applicable, designated representative of each affected source and each affected unit at the source shall comply with the monitoring requirements as provided in 40 CFR part 75. [40 CFR 75] Federally Enforceable Through Title V Permit
55. The emissions measurements recorded and reported in accordance with 40 CFR part 75 shall be used to determine compliance by the unit with the Acid Rain emissions limitations and emissions reduction requirements for sulfur dioxide and nitrogen oxides under the Acid Rain Program. [40 CFR 75] Federally Enforceable Through Title V Permit
56. The owners and operators of each source and each affected unit at the source shall: (i) hold allowances, as of the allowance transfer deadline, in the unit's compliance subaccount (after deductions under 40 CFR 73.34(c)) not less than the total annual emissions of sulfur dioxide for the previous calendar year from the unit; and (ii) comply with the applicable Acid Rain emissions limitations for sulfur dioxide. [40 CFR 72] Federally Enforceable Through Title V Permit
57. Each ton of sulfur dioxide emitted in excess of the Acid Rain emissions limitations for sulfur dioxide shall constitute a separate violation of the Act. [40 CFR 72] Federally Enforceable Through Title V Permit
58. Allowances shall be held in, deducted from, or transferred among Allowance Tracking System accounts in accordance with the Acid Rain Program. [40 CFR 72] Federally Enforceable Through Title V Permit
59. An allowance shall not be deducted in order to comply with the requirements under 40 CFR part 73, prior to the calendar year for which the allowance was allocated. [40 CFR 73] Federally Enforceable Through Title V Permit
60. The designated representative of an affected unit that has excess emissions in any calendar year shall submit a proposed offset plan, as required under 40 CFR Part 77. [40 CFR 77] Federally Enforceable Through Title V Permit
61. The owners and operators of an affected unit that has excess emissions in any calendar year shall: (i) pay without demand the penalty required, and pay up on demand the interest on that penalty; and (ii) comply with the terms of an approved offset plan, as required by 40 CFR Part 72. [40 CFR 72] 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.

62. The owners and operators of the each affected unit at the source shall keep on site the following documents for a period of five years from the date the document is created. This period may be extended for cause, at any time prior to the end of five years, in writing by the Administrator or permitting authority: (i) The certificate of representation for the designated representative for the source and all documents that demonstrate the truth of the statements in the certificate of representation, in accordance with 40 CFR 72.24; provided that the certificate and documents shall be retained on site beyond such five-year period until such documents are superseded because of the submission of a new certificate of representation changing the designated representative. [40 CFR 72] Federally Enforceable Through Title V Permit
63. The owners and operators of each affected unit at the source shall keep on site each of the following documents for a period of five years from the date the document is created. This period may be extended for cause, at any time prior to the end of five years, in writing by the Administrator or permitting authority; (ii) All emissions monitoring information, in accordance with 40 CFR part 75; (iii) Copies of all reports, compliance certifications and other submissions and all records made or required under the Acid Rain Program; (iv) Copies of all documents used to complete an Acid Rain permit application and any other submission that demonstrates compliance with the requirements of the Acid Rain Program. [40 CFR 72, 40 CFR 75] Federally Enforceable Through Title V Permit
64. The designated representative of an affected source and each affected unit at the source shall submit the reports and compliance certifications required under the Acid Rain Program, including those under 40 CFR 75 Subpart I. [40 CFR 75] 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: S-3523-2-9

EXPIRATION DATE: 02/29/2016

SECTION: NE35 TOWNSHIP: 30S RANGE: 23E

## EQUIPMENT DESCRIPTION:

GE FRAME 7 MODEL PG7241FA NATURAL GAS FIRED COMBINED CYCLE GAS TURBINE ENGINE/ELECTRICAL GENERATOR #2 WITH DRY LOW NOX COMBUSTORS, 250.5 MMBTU/HR NATURAL GAS FIRED DUCT BURNER, HEAT RECOVERY STEAM GENERATOR, SELECTIVE CATALYTIC REDUCTION, OXIDATION CATALYST, AND STEAM TURBINE SHARED WITH S-3523-1 (503 MW TOTAL PLANT NOMINAL RATING)

## PERMIT UNIT REQUIREMENTS

---

1. Combustion turbine generator (CTG) and electrical generator lube oil vents shall be equipped with mist eliminators to maintain visible emissions from lube oil vents no greater than 5% opacity, except for three minutes in any hour. [District NSR Rule] Federally Enforceable Through Title V Permit
2. CTG shall be equipped with continuously recording non resettable fuel gas flowmeter. [District NSR Rule and SJ-99-02] Federally Enforceable Through Title V Permit
3. CTG exhaust after the SCR unit shall be equipped with continuously recording emissions monitors dedicated to this unit for NOx, CO, and O2. Continuous emissions monitors shall meet the requirements of 40 CFR Part 60, Appendices B and F, and 40 CFR Part 75, and shall be capable of monitoring emissions during startups and shutdowns as well as normal operating conditions. If relative accuracy of CEM(s) cannot be demonstrated during startup conditions, CEM results during startup and shutdown events shall be replaced with startup emission rates obtained from source testing to determine compliance with emission limits. [40 CFR 60.334(c), 40 CFR 64.3, District Rules 1080 and 4703, 6.2.1 and District NSR Rule and SJ-99-02] Federally Enforceable Through Title V Permit
4. The CEMS shall complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive 15-minute period or shall meet equivalent specifications established by mutual agreement of the District, the ARB and the EPA. [40 CFR 64.3 and District Rule 1080, 6.4] Federally Enforceable Through Title V Permit
5. The monitoring of CO emissions with the CEMS shall serve as a surrogate for monitoring of VOC emissions as required by 40 CFR 64 (Compliance Assurance Monitoring). Operation of the unit with CO concentration within the allowable range shall be indicative of VOC concentrations which are less than the allowed maximum. The relationship between concentration of VOC and concentration of CO shall be demonstrated at each annual source test. [40 CFR 64.3] Federally Enforceable Through Title V Permit
6. The permittee shall comply with the compliance assurance monitoring operation and maintenance requirements of 40 CFR part 64.7. [40 CFR Part 64.7] Federally Enforceable Through Title V Permit
7. The permittee shall comply with the recordkeeping and reporting requirements of 40 CFR part 64.9. [40 CFR Part 64.9] Federally Enforceable Through Title V Permit
8. If the District or EPA determine that a Quality improvement Plan is required under 40 CFR 64.7(d)(2), the permittee shall develop and implement the Quality Improvement Plan in accordance with 40 CFR part 64.8. [40 CFR Part 64.8] 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.

9. CTG shall be equipped with a continuously recording emission monitor preceding the SCR module measuring NOx concentration for the purposes of calculating ammonia slip. Permittee shall check, record, and quantify the calibration drift (CD) at two concentration values at least once daily (approximately 24 hours). The calibration shall be adjusted whenever the daily zero or high-level CD exceeds 5%. If either the zero or high-level CD exceeds 5% for five consecutive daily periods, the analyzer shall be deemed out-of-control. If either the zero or high-level CD exceeds 10% during any CD check, analyzer shall be deemed out-of-control. If the analyzer is out-of-control, the permittee shall take appropriate corrective action and then repeat the CD check. [District NSR Rule and District Rule 1080] Federally Enforceable Through Title V Permit
10. The facility shall install and maintain equipment, facilities, and systems compatible with the District's CEM data polling software system and shall make CEM data available to the District's automated polling system on a daily basis. [District Rule 1080] Federally Enforceable Through Title V Permit
11. Upon notice by the District that the facility's CEM system 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 CEM data is sent to the District by a District-approved alternative method. [District Rule 1080] Federally Enforceable Through Title V Permit
12. APCO or an authorized representative shall be allowed to inspect, as determined to be necessary, the monitoring devices required by this rule to ensure that such devices are functioning properly. [District Rule 1080, 11.0 and SJ-99-02] Federally Enforceable Through Title V Permit
13. Exhaust stack shall be equipped with permanent provisions to allow collection of stack gas samples consistent with 40 CFR 60.8 (e). [District Rule 1081 and SJ-99-02] Federally Enforceable Through Title V Permit
14. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201, 3.0] Federally Enforceable Through Title V Permit
15. Ammonia injection grid shall be equipped with operational ammonia flowmeter and injection pressure indicator. [District NSR Rule] Federally Enforceable Through Title V Permit
16. Ammonia shall be injected when the selective catalytic reduction system catalyst temperature exceeds 500 degrees F. Permittee shall monitor and record catalyst temperature during periods of startup. [District NSR Rule and SJ-99-02] Federally Enforceable Through Title V Permit
17. Permittee shall monitor and record exhaust gas temperature at selective catalytic reduction and oxidation catalyst inlets. [District NSR Rule] Federally Enforceable Through Title V Permit
18. Permittee shall comply with all applicable requirements of 40 CFR 60.8 and 40 CFR Subpart Da. [District Rule 4001] Federally Enforceable Through Title V Permit
19. CTG and duct burner shall be fired exclusively on natural gas, consisting primarily of methane and ethane, with a sulfur content no greater than 0.75 grains of sulfur compounds (as S) per 100 dry scf of natural gas. [District NSR Rule and SJ-99-02] Federally Enforceable Through Title V Permit
20. The sulfur 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 at least annually using ASTM Methods D4084, D5504, D6228, or Gas Processors Association Standard 2377. [40 CFR 60.334(h)(3); 40 CFR 60.48(g)(1) and District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
21. Results of the CEM system shall be averaged over the applicable time period, using consecutive 15-minute sampling periods. [District Rule 4703, 5.1, 6.4] Federally Enforceable Through Title V Permit
22. Startup is defined as the period beginning with turbine initial firing until the unit meets the lb/hr and ppmv emission limits. Shutdown is defined the period beginning with initiation of turbine shutdown sequence and ending with cessation of firing of the gas turbine engine. Startup and shutdown durations shall not exceed two hours for a regular startup, and six hours for an extended startup, and one hour for a shutdown, per occurrence. [District NSR Rule, District Rules 4001 and 4703, 5.3.3 and SJ-99-02] 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. During startup or shutdown of any gas turbine engine(s), combined emissions from both gas turbine engines' heat recovery steam generator exhausts (S-3523-1 and -2) shall not exceed any of the following: NO<sub>x</sub> (as NO<sub>2</sub>) - 400 lb and CO - 3600 lb in any one hour. If any CTG is in either startup or shutdown during any portion of a clock hour, the facility will be subject to the aforementioned limits during that clock hour. [District NSR Rule] Federally Enforceable Through Title V Permit
24. An extended startup shall be defined as a startup that occurs after the steam turbine has been shutdown for 72 hours or more. The duration of extended startup events shall not exceed 6 hours. [SJ-99-02] Federally Enforceable Through Title V Permit
25. During an extended startup, the combined emissions from both the CTG and HRSG exhausts shall not exceed either 800 lb NO<sub>x</sub> or 3600 lb CO per event. [SJ-99-02] Federally Enforceable Through Title V Permit
26. During shutdown of CTG, the combined emissions from both the CTG and HRSG exhausts shall not exceed either 102.5 lb NO<sub>x</sub> or 222.0 lb CO per event. [SJ-99-02] Federally Enforceable Through Title V Permit
27. Duct burning must not be employed during startup or shutdown events. [SJ-99-02] Federally Enforceable Through Title V Permit
28. Emission rates from CTG/HRSG, except during startup and/or shutdown, shall not exceed any of the following: PM<sub>10</sub> - 15.0 lb/hr, SO<sub>x</sub> (as SO<sub>2</sub>) - 3.6 lb/hr, NO<sub>x</sub> (as NO<sub>2</sub>) - 15.8 lb/hr and 2.5 ppmvd @ 15% O<sub>2</sub>, VOC - 4.0 lb/hr and 2.0 ppmvd @ 15% O<sub>2</sub>, CO - 12.5 lb/hr and 4 ppmvd @ 15% O<sub>2</sub>, ammonia - 10 ppmvd @ 15% O<sub>2</sub>. NO<sub>x</sub> ppmv and lb/hr limits are a one-hour rolling average. Ammonia emission limit is a twenty-four hour rolling average. All other ppmv and lb/hr limits are three-hour rolling averages. [District NSR Rule, District Rules 4001, and 4703, 5.1.2, 5.2 and SJ-99-02] Federally Enforceable Through Title V Permit
29. Emission rates from CTG/HRSG shall not exceed any of the following: PM<sub>10</sub> - 360.0 lb/day, SO<sub>x</sub> (as SO<sub>2</sub>) - 86.4 lb/day, NO<sub>x</sub> (as NO<sub>2</sub>) - 752.0 lb/day, VOC - 184.0 lb/day, and CO - 3948.0 lb/day. [District NSR Rule] Federally Enforceable Through Title V Permit
30. Emission rates from both CTG/HRSG S-3523-1 and -2 combined shall not exceed any of the following: PM<sub>10</sub> - 720.0 lb/day, SO<sub>x</sub> (as SO<sub>2</sub>) - 172.8 lb/day, NO<sub>x</sub> (as NO<sub>2</sub>) - 1103.0 lb/day, VOC - 269.0 lb/day, and CO - 4297 lb/day. [District NSR Rule] Federally Enforceable Through Title V Permit
31. Annual emissions from both CTGs/HRSGs S-3523-1 and -2 combined calculated on a twelve consecutive month rolling basis shall not exceed any of the following: PM<sub>10</sub> - 261,960 lb/year, SO<sub>x</sub> (as SO<sub>2</sub>) - 57,468 lb/year, NO<sub>x</sub> (as NO<sub>2</sub>) - 335,022 lb/year, VOC - 64,478 lb/year, and CO - 831,008 lb/year. [District NSR Rule and SJ-99-02] Federally Enforceable Through Title V Permit
32. Emission rates from the duct burner shall not exceed any of the following limits: 0.20 lb-NO<sub>x</sub>/MMBtu (expressed as NO<sub>2</sub>); 0.20 lb-SO<sub>x</sub>/MMBtu (expressed as SO<sub>2</sub>); 0.03 lb-PM/MMBtu. [40 CFR 60.42(a)(1); 40 CFR 60.43(b)(2) and (g); 40 CFR 60.44(a)(1)] Federally Enforceable Through Title V Permit
33. NO<sub>x</sub> emission rate from the duct burner shall not exceed 1.6 lb/MWh based on a 30-day rolling average. [40 CFR 60.44(d)(1)] Federally Enforceable Through Title V Permit
34. Each one-hour period will commence on the hour. The three-hour average will be compiled from the three most recent one-hour periods. 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 NSR Rule] Federally Enforceable Through Title V Permit
35. 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 shall commence at the beginning of the first day of the month. The twelve-consecutive-month rolling emissions total to determine compliance with annual emissions shall be compiled from the twelve most recent calendar months. [District NSR Rule] Federally Enforceable Through Title V Permit
36. The monitoring of NO<sub>x</sub> emissions from the duct burner shall be in accordance with the applicable requirements of 40 CFR Subpart Da. [40 CFR 60.49] 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.

37. Compliance with ammonia slip limit shall be demonstrated by using the following calculation procedure: ammonia slip ppmv @ 15% O<sub>2</sub> =  $((a-(bxc/1,000,000)) \times 1,000,000 / b) \times d$ , where a = ammonia injection rate(lb/hr)/17(lb/lb. mol), b = dry exhaust gas flow rate (lb/hr)/(29(lb/lb. mol), c = change in measured NO<sub>x</sub> concentration ppmv at 15% O<sub>2</sub> across catalyst, and d = correction factor. The correction factor shall be derived annually during compliance testing by comparing the measured and calculated ammonia slip. Alternatively, permittee may utilize a continuous in-stack ammonia monitor, acceptable to the District, to monitor compliance. At least 60 days prior to using a NH<sub>3</sub> CEM, the permittee must submit a monitoring plan for District review and approval [District Rules 2520, 9.3.2 and 4102] Federally Enforceable Through Title V Permit
38. Compliance with the short term emission limits (lb/hr and ppmv @ 15% O<sub>2</sub>) shall be demonstrated annually by District witnessed in situ sampling of exhaust gas by a qualified independent source test firm at full load conditions as follows - NO<sub>x</sub>: ppmvd @ 15% O<sub>2</sub> and lb/hr, CO: ppmvd @ 15% O<sub>2</sub> and lb/hr, VOC: ppmvd @ 15% O<sub>2</sub> and lb/hr, PM<sub>10</sub>: lb/hr, and ammonia: ppmvd @ 15% O<sub>2</sub>. Sample collection to demonstrate compliance with ammonia emission limit shall be based on three consecutive test runs of thirty minutes each. [District Rule 1081 and SJ-99-02] Federally Enforceable Through Title V Permit
39. Compliance with the startup NO<sub>x</sub>, CO, and VOC mass emission limits shall be demonstrated for one of the CTGs (S-3523-1, or -2) at least once every five years by District witnessed in situ sampling of exhaust gases by a qualified independent source test firm. [District Rule 1081] Federally Enforceable Through Title V Permit
40. Compliance with the emission limit for NO<sub>x</sub> (lb-NO<sub>x</sub>/MMBtu) for the duct burner shall be demonstrated per the methods of 40 CFR Subpart Da. [40 CFR 60.48Da (g)(1),(j) and (k)] Federally Enforceable Through Title V Permit
41. Any gas turbine with an intermittently operated auxiliary burner shall demonstrate compliance with the auxiliary burner both on and off. [40 CFR 60 Subpart Da, and District Rule 4703, 6.3.3] Federally Enforceable Through Title V Permit
42. The District must be notified 30 days prior to any compliance source test, and a source test plan must be submitted for approval 15 days prior to testing. Official test results and field data collected by source tests required by conditions on this permit shall be submitted to the District within 60 days of testing. [District Rule 1081] Federally Enforceable Through Title V Permit
43. The following test methods shall be used EPA Methods 1-4, PM<sub>10</sub>: EPA Method 5 (front half and back half), NO<sub>x</sub>: EPA Method 7E, CO: EPA Method 10, O<sub>2</sub>: EPA Method 3, 3A, or 20, VOC: EPA Method 18 or 25, ammonia: BAAQMD ST-1B, and fuel gas sulfur content: ASTM D3246. 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, 4001, and 4703 and SJ-99-02] Federally Enforceable Through Title V Permit
44. Procedures and methods for determining emissions from the duct burner shall be in accordance with the applicable requirements of 40 CFR Subpart Da. [40 CFR 60.50] Federally Enforceable Through Title V Permit
45. The permittee shall maintain hourly records of NO<sub>x</sub>, CO, and ammonia emission concentrations (ppmv @ 15% O<sub>2</sub>), and hourly, daily, and twelve month rolling average records of NO<sub>x</sub> and CO emissions. [District NSR Rule] Federally Enforceable Through Title V Permit
46. The permittee shall maintain records of SO<sub>x</sub> lb/hr, lb/day, and lb/twelve month rolling average emission. SO<sub>x</sub> emissions shall be based on fuel use records, natural gas sulfur content, and mass balance calculations. [40 CFR 60.48(g)(1) and District NSR Rule] Federally Enforceable Through Title V Permit
47. Permittee shall maintain the following records for the CTG: occurrence, duration, and type of any startup, shutdown, or malfunction; emission measurements; total daily and annual hours of operation; and hourly quantity of fuel used. [District NSR Rule and 4703 and SJ-99-02] Federally Enforceable Through Title V Permit
48. Permittee shall maintain the following records for the continuous emissions monitoring system (CEMS): the occurrence and duration of any start-up, shutdown or malfunction, performance testing, evaluations, calibrations, checks, maintenance, adjustments, any period of non-operation of any continuous emissions monitor and emission measurements. [District NSR Rule and District Rule 4703 and 40 CFR 60.60.7(b) and SJ-99-02] 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.

49. Cylinder gas audits of continuous emission monitors shall be conducted quarterly, except during quarters in which relative accuracy and total accuracy testing is performed, in accordance with EPA guidelines. 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] Federally Enforceable Through Title V Permit
50. The permittee shall submit a written report to the APCO for each calendar quarter, within 30 days of the end of the quarter, including: time intervals, data and magnitude of excess emissions, nature and cause of excess (if known), corrective actions taken and preventive measures adopted; averaging period used for data reporting shall correspond to the averaging period for each respective 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; and a negative declaration when no excess emissions occurred. [District Rule 1080] Federally Enforceable Through Title V Permit
51. The reporting requirements pertaining to the testing and monitoring of the duct burner operation shall be in accordance with the applicable requirements of 40 CFR Subpart Da. [40 CFR 60.51] Federally Enforceable Through Title V Permit
52. All records required to be maintained by this permit shall be maintained for a period of five years and shall be made readily available for District inspection upon request. [District NSR Rule and 2520, 9.4.2] Federally Enforceable Through Title V Permit
53. The owners and operators of each affected source shall have an Acid Rain permit and operate in compliance with all permit requirements. [40 CFR 72] Federally Enforceable Through Title V Permit
54. The owners and operators and, to the extent applicable, designated representative of each affected source and each affected unit at the source shall comply with the monitoring requirements as provided in 40 CFR part 75. [40 CFR 75] Federally Enforceable Through Title V Permit
55. The emissions measurements recorded and reported in accordance with 40 CFR part 75 shall be used to determine compliance by the unit with the Acid Rain emissions limitations and emissions reduction requirements for sulfur dioxide and nitrogen oxides under the Acid Rain Program. [40 CFR 75] Federally Enforceable Through Title V Permit
56. The owners and operators of each source and each affected unit at the source shall: (i) hold allowances, as of the allowance transfer deadline, in the unit's compliance subaccount (after deductions under 40 CFR 73.34(c)) not less than the total annual emissions of sulfur dioxide for the previous calendar year from the unit; and (ii) comply with the applicable Acid Rain emissions limitations for sulfur dioxide. [40 CFR 72] Federally Enforceable Through Title V Permit
57. Each ton of sulfur dioxide emitted in excess of the Acid Rain emissions limitations for sulfur dioxide shall constitute a separate violation of the Act. [40 CFR 72] Federally Enforceable Through Title V Permit
58. Allowances shall be held in, deducted from, or transferred among Allowance Tracking System accounts in accordance with the Acid Rain Program. [40 CFR 72] Federally Enforceable Through Title V Permit
59. An allowance shall not be deducted in order to comply with the requirements under 40 CFR part 73, prior to the calendar year for which the allowance was allocated. [40 CFR 73] Federally Enforceable Through Title V Permit
60. The designated representative of an affected unit that has excess emissions in any calendar year shall submit a proposed offset plan, as required under 40 CFR Part 77. [40 CFR 77] Federally Enforceable Through Title V Permit
61. The owners and operators of an affected unit that has excess emissions in any calendar year shall: (i) pay without demand the penalty required, and pay up on demand the interest on that penalty; and (ii) comply with the terms of an approved offset plan, as required by 40 CFR Part 72. [40 CFR 72] 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.

62. The owners and operators of the each affected unit at the source shall keep on site the following documents for a period of five years from the date the document is created. This period may be extended for cause, at any time prior to the end of five years, in writing by the Administrator or permitting authority: (i) The certificate of representation for the designated representative for the source and all documents that demonstrate the truth of the statements in the certificate of representation, in accordance with 40 CFR 72.24; provided that the certificate and documents shall be retained on site beyond such five-year period until such documents are superseded because of the submission of a new certificate of representation changing the designated representative. [40 CFR 72] Federally Enforceable Through Title V Permit
63. The owners and operators of each affected unit at the source shall keep on site each of the following documents for a period of five years from the date the document is created. This period may be extended for cause, at any time prior to the end of five years, in writing by the Administrator or permitting authority; (ii) All emissions monitoring information, in accordance with 40 CFR part 75; (iii) Copies of all reports, compliance certifications and other submissions and all records made or required under the Acid Rain Program; (iv) Copies of all documents used to complete an Acid Rain permit application and any other submission that demonstrates compliance with the requirements of the Acid Rain Program. [40 CFR 72, 40 CFR 75] Federally Enforceable Through Title V Permit
64. The designated representative of an affected source and each affected unit at the source shall submit the reports and compliance certifications required under the Acid Rain Program, including those under 40 CFR 75 Subpart I. [40 CFR 75] Federally Enforceable Through Title V Permit

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

**APPENDIX B**  
**Historical and Projected Emissions**

## **CALCULATIONS**

### **A. Assumptions**

Operating Schedule: 24 hours/day, 7 days/week, 365 days/year

### **B. Proposed Modifications**

Regular Startup: Increase from two to three hours.  
Extended Startup: Increase from six to seven hours.  
Add operational flexibility for aborted shutdowns.

### **C. Emission Factors**

EHP is not proposing to alter current hourly emission limits. Only the number of hours of regular and extended startup is proposed.

### **C. Emission Calculations**

Emission Calculations

---

#### Pre-Project Emissions (PE1)

NOTE: EHP is not proposing to alter the current daily emissions limits included in the PTO and PSD permits.

#### IPE

EHP is not proposing to increase the Daily Emissions Limits in the PTO or PSD permits, therefore there is not increase in emissions associated with this project and the IPE for this project is equal to 0.

### **D. Major Source Determination**

EHP is a major source of NO<sub>x</sub>, VOC, CO and PM<sub>10</sub>/PM<sub>2.5</sub>. EHP is not a major source of SO<sub>x</sub> emissions.

### **E. Major Modification Determination**

There is no increase in design capacity or potential to emit, therefore the emission increase is equal to the sum of the difference between the projected actual emissions (PAE) and the baseline actual emissions (BAE).

#### **BAE**

EHP reviewed emissions for the previous 5 years and selected 2012 and 2013 for calculation of BAE. The following table tabulates the previous 5-years emissions.

Baseline Actual Emissions

*Emissions selected for BAE within the last 5 years are shown in bold italic font.*

S-3523-1

Year	OPHR	HSCF	MMBTU	NOX	VOC	SOX	CO	PM10	NH3
2009	7,097	105,517,175	11,573,848	49,768	11,574	1,774	2,315	72,915	8,658
2010	8,247	122,236,504	13,009,197	57,240	13,009	2,056	2,602	27,319	21,690
2011	8,079	112,109,530	11,658,231	46,633	10,492	1,717	4,663	30,458	12,603
<b>2012</b>	<b>7,306</b>	<b>106,057,340</b>	<b>11,020,616</b>	<b>60,613</b>	<b>9,919</b>	<b>1,624</b>	<b>0</b>	<b>12,123</b>	<b>34,777</b>
<b>2013</b>	<b>8,464</b>	<b>130,370,515</b>	<b>13,366,956</b>	<b>62,825</b>	<b>13,367</b>	<b>1,996</b>	<b>1,337</b>	<b>53,468</b>	<b>9,903</b>
<b>BAE, lb/yr</b>				<b>61,719</b>	<b>11,643</b>	<b>1,810</b>	<b>668</b>	<b>32,795</b>	<b>22,340</b>

S-3523-2

Year	OPHR	HSCF	MMBTU	NOX	VOC	SOX	CO	PM10	NH3
2009	7,575	106,747,374	12,398,886	57,035	11,159	1,795	2,480	24,798	69,387
2010	8,042	120,916,552	12,867,531	61,764	12,868	2,033	2,574	68,198	58,867
2011	7,845	106,656,469	11,081,680	44,327	9,974	1,633	2,216	47,933	87,080
<b>2012</b>	<b>7,462</b>	<b>111,170,140</b>	<b>11,507,920</b>	<b>92,063</b>	<b>10,357</b>	<b>1,702</b>	<b>0</b>	<b>9,206</b>	<b>52,906</b>
<b>2013</b>	<b>8,373</b>	<b>128,981,023</b>	<b>13,215,696</b>	<b>77,973</b>	<b>14,537</b>	<b>1,975</b>	<b>7,929</b>	<b>33,039</b>	<b>16,662</b>
<b>BAE, lb/yr</b>				<b>85,018</b>	<b>12,447</b>	<b>1,839</b>	<b>3,965</b>	<b>21,123</b>	<b>34,784</b>

**PAE**

EHP believes that the following emissions, which are the average of the last two years of actual emissions, is a reasonable estimate of projected actual emissions for the following reasons:

Projected Actual Emissions, lb/yr

	NOX	VOC	SOX	CO	PM10	NH3
S-3523-1	61,719	11,643	1,810	668	32,795	22,340
S-3523-2	85,018	12,447	1,839	3,965	21,123	34,784

- EHP anticipates that demand for steam will remain constant for the foreseeable future. EHP has no plans to add additional steam hosts and existing steam hosts have been installing steam generators to meet additional steam demand if required.
- Both CTG/HRSG's have been operated at 90% or greater utilization on average over the past two years. While this varies from year to year, EHP anticipates future operations will be similar.
- Electrical generation from this facility is expected to remain constant in future years. EHP supplies electricity to the grid which has been a reliable user of power from the facility in the past, and is expected to continue in the future.

**IPE**

The baseline actual emissions and projected future emissions are equal; therefore the IPE is equal to zero for this project.

**APPENDIX C**  
**Rule 4703 Subsection 5.3.3.2 Justification**



March 5, 2014

Mr. Leonard Scandura  
Permit Services Manager  
San Joaquin Valley Air Pollution Control District  
34946 Flyover Court  
Bakersfield, CA 93308

**Subject: Application for Permit Modification for Elk Hills Power (PTO#S-3523)  
Project Number: S-1140276**

Please find enclosed the detail justification for the proposed increased duration of the regular and extended startup events as required by Rule 4703 Sections 5.3.3.2.1 through 5.3.3.2.5:

5.3.3.2.1 A clear identification of the control technologies or strategies to be utilized;

The EHP facility utilizes Selective Catalytic Reduction (SCR) systems for the control of NO<sub>x</sub> emissions and oxidation catalysts for the control of CO and VOC emissions. Fuel for the CTGs and duct burners is exclusively natural gas. EHP has continued to optimize the SCR effectiveness and minimize emissions during startup by lowering the ammonia injection temperature within allowable vendor specifications and permit limits. Currently ammonia injection begins when the exhaust gas temperature reaches approximately 500° F.

5.3.3.2.2 A description of what physical conditions prevail during the period that prevent the controls from being effective;

During a typical extended startup at EHP, one CT is started and ramped up to low load where it is held until the exhaust gases bring the respective HRSG and steam systems to a specified temperature. The second CT is allowed to start following synchronization of the first CT and is also held at low load for warm up of its HRSG and steam systems. Both CT's are required to supply an adequate (maximum output) amount of steam for the steam turbine and its auxiliary equipment. One CT is dedicated to run in temperature matching mode for steam turbine warm-up and utilized for auxiliary uses, primarily for the air ejectors, which establish and maintain steam turbine condenser vacuum.

The HRSG's have three separate pressure sections, each with temperature increase rate limitations. As soon as the HRSG's achieve the proper temperature, the steam turbine and its auxiliaries are started and gradually heated as steam becomes available to drive the systems. Increases in steam turbine speed are constrained by the temperature differential between the metal surfaces and the steam and cannot be exceeded. Both CT's must be held at low load until the HRSG's can provide sufficient heat for operating the associated fuel gas heaters required for the Dry Low-NO<sub>x</sub> combustion system. The CT load cannot be raised again until the fuel gas reaches the vendor specified set point. Loads are increased gradually until eventually normal operating loads and conditions are reached.

Examples of physical conditions that occur during regular and extended startup that may affect controls include:

- The potential for overheating the high pressure section of the boiler. This may result in the compromise of the internal tube system causing a complete integrity failure,
- Ramping up faster than recommended which has the potential effect of the increasing the eccentricity of the rotor bow. The forced ramp up pushes the eccentricity increasing the risk of the bow not maintaining proper clearance, increasing vibration and potential failure.

5.3.3.2.3 A reasonably precise estimate as to when the physical conditions will have reached a state that allows for the effective control of emissions; and

During the startup process the Oxidation Catalyst, for CO/VOC control, increases in effectiveness as the exhaust gas temperature increases. The Selective Catalytic Reduction (SCR) system for NO<sub>x</sub> control does not become effective until the proper exhaust gas temperature is reached and ammonia injection begins, 3 hours for a regular start and 7 hours for an extended start up.

5.3.3.2.4 A detailed list of activities to be performed during the period and a reasonable explanation for the length of time needed to complete each activity;

<i>Regular Start</i>			
<b>Step No.</b>	<b>Duration (hrs)</b>	<b>Activity</b>	<b>Explanation</b>
1.0	0.0 to 0.5	Combustion Turbine (CT) Start and synchronize	Boiler Purge, Light off, Acceleration to synchronous speed and Synchronizing to the grid.
2.0	0.5 to 0.75	HRSG and Steam systems start and warm-up	Initiate steam flow from the HRSG to establish condenser vacuum to allow the rolling of the steam turbine. To preheat and



<i>Regular Start</i>			
<b>Step No.</b>	<b>Duration (hrs)</b>	<b>Activity</b>	<b>Explanation</b>
		CT raise load	remove condensate from the steam turbine supply lines.
3.0	0.5 to 0.75	Steam Turbine (ST) Roll-up and synchronize Start second CT and synchronize	Initiate start on the steam turbine allowing steam to flow in and warm up the metals evenly to reduce case rubs. Increase steam flow until it reaches synchronous speed and Synchronize to the grid. Increase CT and ST loads to emission compliant levels.
4.0	0.5 to 0.75	Raise CT and ST Load, bring CT's to emission compliance mode	

<i>Extended Start</i>			
<b>Step No.</b>	<b>Duration (hrs)</b>	<b>Activity</b>	<b>Explanation</b>
1.0	0.0 to 0.5	Combustion Turbine (CT) Start and synchronize	Boiler Purge, Light off, Acceleration to synchronous speed and Synchronizing to the grid.
2.0	0.5 to 1.0	HRSG and Steam systems start and warm-up CT raise load	Initiate steam flow from the HRSG to establish condenser vacuum to allow the rolling of the steam turbine. To preheat and remove condensate from the steam turbine supply lines.
3.0	1.0 to 2.0	HRSG, Steam Systems, and Steam Turbine (ST) warm up.	
4.0	2.0 to 4.0	Steam Turbine Heat Soak, Starting and Loading process	
5.0	0.0 to 0.5	ST Generator synchronize	Increase steam flow until it reaches synchronous speed and Synchronize to the grid.
6.0	0.5 to 1.0	Raise CT and ST Load	During the cold start, a long hold at minimum load will be necessary. This is necessary to reduce rotor stress.

<i>Extended Start</i>			
<b>Step No.</b>	<b>Duration (hrs)</b>	<b>Activity</b>	<b>Explanation</b>
7.0	0.5 to 1.0	Start second CT	Boiler Purge, Light off, Acceleration to synchronous speed and Synchronizing to the grid. Initiate steam flow from the HRSG to preheat and remove condensate from the steam supply lines. Match steam pressure and temperature of first CT and blend the units.

5.3.3.2.5 A description of the material process flow rates and system operating parameters, etc., the operator plans to evaluate during the process optimization; and an explanation of how the activities and process flow affect the operation of the emissions control equipment;

EHP has, during the life of the plant, taken the necessary measures to maintain compliance with its operating permits. However, as the plant and equipment age it has become more difficult to meet these requirements while maintaining the integrity of its equipment. An example where straining the equipment to meet both regular and extended start up duration is of high concern is potentially overheating the high pressure section of the boiler. This may result in the compromise of the internal tube system causing a complete integrity failure. Another example is ramping up faster than recommended which has the potential effect of increasing the eccentricity of the rotor bow. The forced ramp up pushes the eccentricity increasing the risk of the bow not maintaining proper clearance. In addition, EHP has had to force the steam and metal temperature differential requirements to minimize startup duration. Similarly, EHP has had to take significant measures to limit the vibration of the rotor during start ups. One such measure is employing balancing shots on the rotor. Mechanical integrity inspections have revealed stresses throughout the Steam Turbine caused by the forced operations. These examples, along with other early indicators demonstrate that the need for startup duration to be increased to the requested duration.



March 5, 2014  
Project S-1140276

Page 5 of 5

---

#### 5.3.3.2.6 The basis for the requested additional duration.

The system ramp up and the time it takes to reach normal operating conditions are limited by various factors, such as the physical equipment limitations discussed above and the temperature of the equipment prior to commencing combustion (i.e., regular start vs. extended start). There can also be limitations on how fast electrical power can be added to, or subtracted from, the electrical grid. These requirements are external to EHP (and in fact to all other operators within the CA-ISO control area), and may cause extended startups, since these requirements limit a facility's ability to efficiently reach optimum operating conditions. The increase in startup duration will avoid the need to shutdown and restart when the current time limits cannot be met and consequently reduce total emissions, see Attachment 1 of submittal package for benefits in emission reduction.

Please call me at (661) 763-2725 if you have any questions or need additional information. We appreciate your assistance with this matter.

Sincerely,

Juan Campos  
Environmental Advisor

Cc  
Bob Bond, OEHI ecopy

Submitted by email to [Homero.Ramirez@valleyair.org](mailto:Homero.Ramirez@valleyair.org)

**APPENDIX D**  
**Draft ATCs**

San Joaquin Valley  
Air Pollution Control District

**AUTHORITY TO CONSTRUCT**

ISSUANCE DATE: DRAFT  
**DRAFT**

**PERMIT NO:** S-3523-1-10

**LEGAL OWNER OR OPERATOR:** ELK HILLS POWER LLC  
**MAILING ADDRESS:** PO BOX 460  
TUPMAN, CA 93276

**LOCATION:** 4026 SKYLINE RD  
TUPMAN, CA 93276

**SECTION:** NE35 **TOWNSHIP:** 30S **RANGE:** 23E

**EQUIPMENT DESCRIPTION:**

MODIFICATION OF GE FRAME 7 MODEL PG7241FA NATURAL GAS FIRED COMBINED CYCLE GAS TURBINE ENGINE/ELECTRICAL GENERATOR #1 WITH DRY LOW NOX COMBUSTORS, 250.5 MMBTU/HR NATURAL GAS FIRED DUCT BURNER, HEAT RECOVERY STEAM GENERATOR, SELECTIVE CATALYTIC REDUCTION, OXIDATION CATALYST, AND STEAM TURBINE SHARED WITH S-3523-2 (503 MW TOTAL PLANT NOMINAL RATING): INCREASE REGULAR STARTUP TIME FROM 2 TO 3 HOURS, INCREASE EXTENDED STARTUP TIME FROM 6 TO 7 HOURS, AND AUTHORIZE A ONE HOUR DURATION FOR ABORTED SHUTDOWNS

**CONDITIONS**

1. {1830} This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District Rule 2201] Federally Enforceable Through Title V Permit
2. {1831} Prior to operating with modifications authorized by this Authority to Construct, the facility shall submit an application to modify the Title V permit with an administrative amendment in accordance with District Rule 2520 Section 5.3.4. [District Rule 2520, 5.3.4] Federally Enforceable Through Title V Permit
3. Combustion turbine generator (CTG) and electrical generator lube oil vents shall be equipped with mist eliminators to maintain visible emissions from lube oil vents no greater than 5% opacity, except for three minutes in any hour. [District NSR Rule] Federally Enforceable Through Title V Permit
4. CTG shall be equipped with continuously recording non resettable fuel gas flowmeter. [District NSR Rule and SJ-99-02] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

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

Seyed Sadredin, Executive Director APCO

**ARNAUD MARJOLLET, Director of Permit Services**

S-3523-1-10 : Apr 9 2014 9:17AM -- TORID : Joint Inspection NOT Required

5. CTG exhaust after the SCR unit shall be equipped with continuously recording emissions monitors dedicated to this unit for NO<sub>x</sub>, CO, and O<sub>2</sub>. Continuous emissions monitors shall meet the requirements of 40 CFR Part 60, Appendices B and F, and 40 CFR Part 75, and shall be capable of monitoring emissions during startups and shutdowns as well as normal operating conditions. If relative accuracy of CEM(s) cannot be demonstrated during startup conditions, CEM results during startup and shutdown events shall be replaced with startup emission rates obtained from source testing to determine compliance with emission limits. [40 CFR 60.334(c), 40 CFR 64.3, District Rules 1080 and 4703, 6.2.1 and District NSR Rule and SJ-99-02] Federally Enforceable Through Title V Permit
6. The CEMS shall complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive 15-minute period or shall meet equivalent specifications established by mutual agreement of the District, the ARB and the EPA. [40 CFR 64.3 and District Rule 1080, 6.4] Federally Enforceable Through Title V Permit
7. The monitoring of CO emissions with the CEMS shall serve as a surrogate for monitoring of VOC emissions as required by 40 CFR 64 (Compliance Assurance Monitoring). Operation of the unit with CO concentration within the allowable range shall be indicative of VOC concentrations which are less than the allowed maximum. The relationship between concentration of VOC and concentration of CO shall be demonstrated at each annual source test. [40 CFR 64.3] Federally Enforceable Through Title V Permit
8. The permittee shall comply with the compliance assurance monitoring operation and maintenance requirements of 40 CFR part 64.7. [40 CFR Part 64.7] Federally Enforceable Through Title V Permit
9. The permittee shall comply with the recordkeeping and reporting requirements of 40 CFR part 64.9. [40 CFR Part 64.9] Federally Enforceable Through Title V Permit
10. If the District or EPA determine that a Quality improvement Plan is required under 40 CFR 64.7(d)(2), the permittee shall develop and implement the Quality Improvement Plan in accordance with 40 CFR part 64.8. [40 CFR Part 64.8] Federally Enforceable Through Title V Permit
11. CTG shall be equipped with a continuously recording emission monitor preceding the SCR module measuring NO<sub>x</sub> concentration for the purposes of calculating ammonia slip. Permittee shall check, record, and quantify the calibration drift (CD) at two concentration values at least once daily (approximately 24 hours). The calibration shall be adjusted whenever the daily zero or high-level CD exceeds 5%. If either the zero or high-level CD exceeds 5% for five consecutive daily periods, the analyzer shall be deemed out-of-control. If either the zero or high-level CD exceeds 10% during any CD check, analyzer shall be deemed out-of-control. If the analyzer is out-of-control, the permittee shall take appropriate corrective action and then repeat the CD check. [District NSR Rule and District Rule 1080] Federally Enforceable Through Title V Permit
12. The facility shall install and maintain equipment, facilities, and systems compatible with the District's CEM data polling software system and shall make CEM data available to the District's automated polling system on a daily basis. [District Rule 1080] Federally Enforceable Through Title V Permit
13. Upon notice by the District that the facility's CEM system 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 CEM data is sent to the District by a District-approved alternative method. [District Rule 1080] Federally Enforceable Through Title V Permit
14. APCO or an authorized representative shall be allowed to inspect, as determined to be necessary, the monitoring devices required by this rule to ensure that such devices are functioning properly. [District Rule 1080, 11.0 and SJ-99-02] Federally Enforceable Through Title V Permit
15. Exhaust stack shall be equipped with permanent provisions to allow collection of stack gas samples consistent with 40 CFR 60.8 (e). [District Rule 1081 and SJ-99-02] Federally Enforceable Through Title V Permit
16. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201, 3.0] Federally Enforceable Through Title V Permit
17. Ammonia injection grid shall be equipped with operational ammonia flowmeter and injection pressure indicator. [District NSR Rule] Federally Enforceable Through Title V Permit
18. Ammonia shall be injected when the selective catalytic reduction system catalyst temperature exceeds 500 degrees F. Permittee shall monitor and record catalyst temperature during periods of startup. [District NSR Rule and SJ-99-02] Federally Enforceable Through Title V Permit

DRAFT  
CONDITIONS CONTINUE ON NEXT PAGE

19. Permittee shall monitor and record exhaust gas temperature at selective catalytic reduction and oxidation catalyst inlets. [District NSR Rule] Federally Enforceable Through Title V Permit
20. Permittee shall comply with all applicable requirements of 40 CFR 60.8 and 40 CFR Subpart Da. [District Rule 4001] Federally Enforceable Through Title V Permit
21. CTG and duct burner shall be fired exclusively on natural gas, consisting primarily of methane and ethane, with a sulfur content no greater than 0.75 grains of sulfur compounds (as S) per 100 dry scf of natural gas. [District NSR Rule and SJ-99-02] Federally Enforceable Through Title V Permit
22. The sulfur 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 at least annually using ASTM Methods D4084, D5504, D6228, or Gas Processors Association Standard 2377. [40 CFR 60.334(h)(3); 40 CFR 60.48(g)(1) and District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
23. Results of the CEM system shall be averaged over the applicable time period, using consecutive 15-minute sampling periods. [District Rule 4703, 5.1, 6.4] Federally Enforceable Through Title V Permit
24. Startup is defined as the period beginning with turbine initial firing until the unit meets the lb/hr and ppmv emission limits. An extended startup shall be defined as a startup that occurs after the steam turbine has been shutdown for 72 hours or more. Shutdown is defined the period beginning with initiation of turbine shutdown sequence and ending with cessation of firing of the gas turbine engine. Aborted shutdown is defined the period beginning with initiation of turbine shutdown and ends when the unit has ramped up and is meeting the lb/hr and ppmv emission limits. Startup durations shall not exceed three hours for a regular startup, and 7 hours for an extended startup, per occurrence. Shutdown and aborted shutdown durations shall not exceed one hour, per occurrence. [District Rules 2201, 4001 and 4703, 5.3.3 and SJ-99-02] Federally Enforceable Through Title V Permit
25. During startup or shutdown of any gas turbine engine(s), combined emissions from both gas turbine engines' heat recovery steam generator exhausts (S-3523-1 and -2) shall not exceed any of the following: NOx (as NO<sub>2</sub>) - 400 lb and CO - 3600 lb in any one hour. If any CTG is in either startup or shutdown during any portion of a clock hour, the facility will be subject to the aforementioned limits during that clock hour. [District Rule 2201] Federally Enforceable Through Title V Permit
26. During an extended startup, the combined emissions from both the CTG and HRSG exhausts shall not exceed either 800 lb NOx or 3600 lb CO per event. [SJ-99-02] Federally Enforceable Through Title V Permit
27. During shutdown, or aborted shutdown, of CTG, the combined emissions from both the CTG and HRSG exhausts shall not exceed either 102.5 lb NOx or 222.0 lb CO per event. [SJ-99-02] Federally Enforceable Through Title V Permit
28. Duct burning must not be employed during startup or shutdown events. [SJ-99-02] Federally Enforceable Through Title V Permit
29. Emission rates from CTG/HRSG, except during startup, shut down or aborted shutdown, shall not exceed any of the following: PM<sub>10</sub> - 15.0 lb/hr, SOx (as SO<sub>2</sub>) - 3.6 lb/hr, NOx (as NO<sub>2</sub>) - 15.8 lb/hr and 2.5 ppmvd @ 15% O<sub>2</sub>, VOC - 4.0 lb/hr and 2.0 ppmvd @ 15% O<sub>2</sub>, CO - 12.5 lb/hr and 4 ppmvd @ 15% O<sub>2</sub>, ammonia - 10 ppmvd @ 15% O<sub>2</sub>. NOx ppmv and lb/hr limits are a one-hour rolling average. Ammonia emission limit is a twenty-four hour rolling average. All other ppmv and lb/hr limits are three-hour rolling averages. [District NSR Rule, District Rules 4001, and 4703, 5.1.2, 5.2 and SJ-99-02] Federally Enforceable Through Title V Permit
30. Emission rates from CTG/HRSG shall not exceed any of the following: PM<sub>10</sub> - 360.0 lb/day, SOx (as SO<sub>2</sub>) - 86.4 lb/day, NOx (as NO<sub>2</sub>) - 752.0 lb/day, VOC - 184.0 lb/day, and CO - 3948.0 lb/day. [District NSR Rule] Federally Enforceable Through Title V Permit
31. Emission rates from both CTG/HRSG S-3523-1 and -2 combined shall not exceed any of the following: PM<sub>10</sub> - 720.0 lb/day, SOx (as SO<sub>2</sub>) - 172.8 lb/day, NOx (as NO<sub>2</sub>) - 1103.0 lb/day, VOC - 269.0 lb/day, and CO - 4297 lb/day. [District NSR Rule] Federally Enforceable Through Title V Permit
32. Annual emissions from both CTGs/HRSGs S-3523-1 and -2 combined calculated on a twelve consecutive month rolling basis shall not exceed any of the following: PM<sub>10</sub> - 261,960 lb/year, SOx (as SO<sub>2</sub>) - 57,468 lb/year, NOx (as NO<sub>2</sub>) - 335,022 lb/year, VOC - 64,478 lb/year, and CO - 831,008 lb/year. [District NSR Rule and SJ-99-02] Federally Enforceable Through Title V Permit

DRAFT  
CONDITIONS CONTINUE ON NEXT PAGE

33. Emission rates from the duct burner shall not exceed any of the following limits: 0.20 lb-NO<sub>x</sub>/MMBtu (expressed as NO<sub>2</sub>); 0.20 lb-SO<sub>x</sub>/MMBtu (expressed as SO<sub>2</sub>); 0.03 lb-PM/MMBtu. [40 CFR 60.42(a)(1); 40 CFR 60.43(b)(2) and (g); 40 CFR 60.44(a)(1)] Federally Enforceable Through Title V Permit
34. NO<sub>x</sub> emission rate from the duct burner shall not exceed 1.6 lb/MWh based on a 30-day rolling average. [40 CFR 60.44(d)(1)] Federally Enforceable Through Title V Permit
35. Each one-hour period will commence on the hour. The three-hour average will be compiled from the three most recent one-hour periods. 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 NSR Rule] Federally Enforceable Through Title V Permit
36. 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 shall commence at the beginning of the first day of the month. The twelve-consecutive-month rolling emissions total to determine compliance with annual emissions shall be compiled from the twelve most recent calendar months. [District NSR Rule] Federally Enforceable Through Title V Permit
37. The monitoring of NO<sub>x</sub> emissions from the duct burner shall be in accordance with the applicable requirements of 40 CFR Subpart Da. [40 CFR 60.49] Federally Enforceable Through Title V Permit
38. Compliance with ammonia slip limit shall be demonstrated by using the following calculation procedure: ammonia slip ppmv @ 15% O<sub>2</sub> = ((a-(bxc/1,000,000)) x 1,000,000 / b) x d, where a = ammonia injection rate(lb/hr)/17(lb/lb. mol), b = dry exhaust gas flow rate (lb/hr)/(29(lb/lb. mol), c = change in measured NO<sub>x</sub> concentration ppmv at 15% O<sub>2</sub> across catalyst, and d = correction factor. The correction factor shall be derived annually during compliance testing by comparing the measured and calculated ammonia slip. Alternatively, permittee may utilize a continuous in-stack ammonia monitor, acceptable to the District, to monitor compliance. At least 60 days prior to using a NH<sub>3</sub> CEM, the permittee must submit a monitoring plan for District review and approval [District Rules 2520, 9.3.2 and 4102] Federally Enforceable Through Title V Permit
39. Compliance with the short term emission limits (lb/hr and ppmv @ 15% O<sub>2</sub>) shall be demonstrated annually by District witnessed in situ sampling of exhaust gas by a qualified independent source test firm at full load conditions as follows - NO<sub>x</sub>: ppmvd @ 15% O<sub>2</sub> and lb/hr, CO: ppmvd @ 15% O<sub>2</sub> and lb/hr, VOC: ppmvd @ 15% O<sub>2</sub> and lb/hr, PM<sub>10</sub>: lb/hr, and ammonia: ppmvd @ 15% O<sub>2</sub>. Sample collection to demonstrate compliance with ammonia emission limit shall be based on three consecutive test runs of thirty minutes each. [District Rule 1081 and SJ-99-02] Federally Enforceable Through Title V Permit
40. Compliance with the startup NO<sub>x</sub>, CO, and VOC mass emission limits shall be demonstrated for one of the CTGs (S-3523-1, or -2) at least once every five years by District witnessed in situ sampling of exhaust gases by a qualified independent source test firm. [District Rule 1081] Federally Enforceable Through Title V Permit
41. Compliance with the emission limit for NO<sub>x</sub> (lb-NO<sub>x</sub>/MMBtu) for the duct burner shall be demonstrated per the methods of 40 CFR Subpart Da. [40 CFR 60.48Da (g)(1),(j) and (k)] Federally Enforceable Through Title V Permit
42. Any gas turbine with an intermittently operated auxiliary burner shall demonstrate compliance with the auxiliary burner both on and off. [40 CFR 60 Subpart Da, and District Rule 4703, 6.3.3] Federally Enforceable Through Title V Permit
43. The District must be notified 30 days prior to any compliance source test, and a source test plan must be submitted for approval 15 days prior to testing. Official test results and field data collected by source tests required by conditions on this permit shall be submitted to the District within 60 days of testing. [District Rule 1081] Federally Enforceable Through Title V Permit
44. The following test methods shall be used EPA Methods 1-4, PM<sub>10</sub>: EPA Method 5 (front half and back half), NO<sub>x</sub>: EPA Method 7E, CO: EPA Method 10, O<sub>2</sub>: EPA Method 3, 3A, or 20, VOC: EPA Method 18 or 25, ammonia: BAAQMD ST-1B, and fuel gas sulfur content: ASTM D3246. 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, 4001, and 4703 and SJ-99-02] Federally Enforceable Through Title V Permit
45. Procedures and methods for determining emissions from the duct burner shall be in accordance with the applicable requirements of 40 CFR Subpart Da. [40 CFR 60.50] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

46. The permittee shall maintain hourly records of NO<sub>x</sub>, CO, and ammonia emission concentrations (ppmv @ 15% O<sub>2</sub>), and hourly, daily, and twelve month rolling average records of NO<sub>x</sub> and CO emissions. [District NSR Rule] Federally Enforceable Through Title V Permit
47. The permittee shall maintain records of SO<sub>x</sub> lb/hr, lb/day, and lb/twelve month rolling average emission. SO<sub>x</sub> emissions shall be based on fuel use records, natural gas sulfur content, and mass balance calculations. [40 CFR 60.48(g)(1) and District NSR Rule] Federally Enforceable Through Title V Permit
48. Permittee shall maintain the following records for the CTG: occurrence, duration, and type of any startup, shutdown, or malfunction; emission measurements; total daily and annual hours of operation; and hourly quantity of fuel used. [District NSR Rule and 4703 and SJ-99-02] Federally Enforceable Through Title V Permit
49. Permittee shall maintain the following records for the continuous emissions monitoring system (CEMS): the occurrence and duration of any start-up, shutdown or malfunction, performance testing, evaluations, calibrations, checks, maintenance, adjustments, any period of non-operation of any continuous emissions monitor and emission measurements. [District NSR Rule and District Rule 4703 and 40 CFR 60.7(b) and SJ-99-02] Federally Enforceable Through Title V Permit
50. Cylinder gas audits of continuous emission monitors shall be conducted quarterly, except during quarters in which relative accuracy and total accuracy testing is performed, in accordance with EPA guidelines. 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] Federally Enforceable Through Title V Permit
51. The permittee shall submit a written report to the APCO for each calendar quarter, within 30 days of the end of the quarter, including: time intervals, data and magnitude of excess emissions, nature and cause of excess (if known), corrective actions taken and preventive measures adopted; averaging period used for data reporting shall correspond to the averaging period for each respective 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; and a negative declaration when no excess emissions occurred. [District Rule 1080] Federally Enforceable Through Title V Permit
52. The reporting requirements pertaining to the testing and monitoring of the duct burner operation shall be in accordance with the applicable requirements of 40 CFR Subpart Da. [40 CFR 60.51] Federally Enforceable Through Title V Permit
53. All records required to be maintained by this permit shall be maintained for a period of five years and shall be made readily available for District inspection upon request. [District NSR Rule and 2520, 9.4.2] Federally Enforceable Through Title V Permit
54. The owners and operators of each affected source shall have an Acid Rain permit and operate in compliance with all permit requirements. [40 CFR 72] Federally Enforceable Through Title V Permit
55. The owners and operators and, to the extent applicable, designated representative of each affected source and each affected unit at the source shall comply with the monitoring requirements as provided in 40 CFR part 75. [40 CFR 75] Federally Enforceable Through Title V Permit
56. The emissions measurements recorded and reported in accordance with 40 CFR part 75 shall be used to determine compliance by the unit with the Acid Rain emissions limitations and emissions reduction requirements for sulfur dioxide and nitrogen oxides under the Acid Rain Program. [40 CFR 75] Federally Enforceable Through Title V Permit
57. The owners and operators of each source and each affected unit at the source shall: (i) hold allowances, as of the allowance transfer deadline, in the unit's compliance subaccount (after deductions under 40 CFR 73.34(c)) not less than the total annual emissions of sulfur dioxide for the previous calendar year from the unit; and (ii) comply with the applicable Acid Rain emissions limitations for sulfur dioxide. [40 CFR 72] Federally Enforceable Through Title V Permit
58. Each ton of sulfur dioxide emitted in excess of the Acid Rain emissions limitations for sulfur dioxide shall constitute a separate violation of the Act. [40 CFR 72] Federally Enforceable Through Title V Permit
59. Allowances shall be held in, deducted from, or transferred among Allowance Tracking System accounts in accordance with the Acid Rain Program. [40 CFR 72] Federally Enforceable Through Title V Permit

DRAFT  
CONDITIONS CONTINUE ON NEXT PAGE

60. An allowance shall not be deducted in order to comply with the requirements under 40 CFR part 73, prior to the calendar year for which the allowance was allocated. [40 CFR 73] Federally Enforceable Through Title V Permit
61. The designated representative of an affected unit that has excess emissions in any calendar year shall submit a proposed offset plan, as required under 40 CFR Part 77. [40 CFR 77] Federally Enforceable Through Title V Permit
62. The owners and operators of an affected unit that has excess emissions in any calendar year shall: (i) pay without demand the penalty required, and pay up on demand the interest on that penalty; and (ii) comply with the terms of an approved offset plan, as required by 40 CFR Part 72. [40 CFR 72] Federally Enforceable Through Title V Permit
63. The owners and operators of the each affected unit at the source shall keep on site the following documents for a period of five years from the date the document is created. This period may be extended for cause, at any time prior to the end of five years, in writing by the Administrator or permitting authority: (i) The certificate of representation for the designated representative for the source and all documents that demonstrate the truth of the statements in the certificate of representation, in accordance with 40 CFR 72.24; provided that the certificate and documents shall be retained on site beyond such five-year period until such documents are superceded because of the submission of a new certificate of representation changing the designated representative. [40 CFR 72] Federally Enforceable Through Title V Permit
64. The owners and operators of each affected unit at the source shall keep on site each of the following documents for a period of five years from the date the document is created. This period may be extended for cause, at any time prior to the end of five years, in writing by the Administrator or permitting authority; (ii) All emissions monitoring information, in accordance with 40 CFR part 75; (iii) Copies of all reports, compliance certifications and other submissions and all records made or required under the Acid Rain Program; (iv) Copies of all documents used to complete an Acid Rain permit application and any other submission that demonstrates compliance with the requirements of the Acid Rain Program. [40 CFR 72, 40 CFR 75] Federally Enforceable Through Title V Permit
65. The designated representative of an affected source and each affected unit at the source shall submit the reports and compliance certifications required under the Acid Rain Program, including those under 40 CFR 75 Subpart I. [40 CFR 75] Federally Enforceable Through Title V Permit

DRAFT

San Joaquin Valley  
Air Pollution Control District

**AUTHORITY TO CONSTRUCT**

ISSUANCE DATE: DRAFT  
**DRAFT**

**PERMIT NO:** S-3523-2-10

**LEGAL OWNER OR OPERATOR:** ELK HILLS POWER LLC  
**MAILING ADDRESS:** PO BOX 460  
TUPMAN, CA 93276

**LOCATION:** 4026 SKYLINE RD  
TUPMAN, CA 93276

**SECTION:** NE35 **TOWNSHIP:** 30S **RANGE:** 23E

**EQUIPMENT DESCRIPTION:**

MODIFICATION OF GE FRAME 7 MODEL PG7241FA NATURAL GAS FIRED COMBINED CYCLE GAS TURBINE ENGINE/ELECTRICAL GENERATOR #2 WITH DRY LOW NOX COMBUSTORS, 250.5 MMBTU/HR NATURAL GAS FIRED DUCT BURNER, HEAT RECOVERY STEAM GENERATOR, SELECTIVE CATALYTIC REDUCTION, OXIDATION CATALYST, AND STEAM TURBINE SHARED WITH S-3523-1 (503 MW TOTAL PLANT NOMINAL RATING): INCREASE REGULAR STARTUP TIME FROM 2 TO 3 HOURS, INCREASE EXTENDED STARTUP TIME FROM 6 TO 7 HOURS, AND AUTHORIZE A ONE HOUR DURATION FOR ABORTED SHUTDOWNS

**CONDITIONS**

1. Combustion turbine generator (CTG) and electrical generator lube oil vents shall be equipped with mist eliminators to maintain visible emissions from lube oil vents no greater than 5% opacity, except for three minutes in any hour. [District NSR Rule] Federally Enforceable Through Title V Permit
2. CTG shall be equipped with continuously recording non resettable fuel gas flowmeter. [District NSR Rule and SJ-99-02] Federally Enforceable Through Title V Permit
3. CTG exhaust after the SCR unit shall be equipped with continuously recording emissions monitors dedicated to this unit for NO<sub>x</sub>, CO, and O<sub>2</sub>. Continuous emissions monitors shall meet the requirements of 40 CFR Part 60, Appendices B and F, and 40 CFR Part 75, and shall be capable of monitoring emissions during startups and shutdowns as well as normal operating conditions. If relative accuracy of CEM(s) cannot be demonstrated during startup conditions, CEM results during startup and shutdown events shall be replaced with startup emission rates obtained from source testing to determine compliance with emission limits. [40 CFR 60.334(c), 40 CFR 64.3, District Rules 1080 and 4703, 6.2.1 and District NSR Rule and SJ-99-02] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

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

Seyed Sadredin, Executive Director APCO

**ARNAUD MARJOLLET, Director of Permit Services**

S-3523-2-10 Apr 9 2014 9:17AM -- TORID : Joint Inspection NOT Required

4. The CEMS shall complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive 15-minute period or shall meet equivalent specifications established by mutual agreement of the District, the ARB and the EPA. [40 CFR 64.3 and District Rule 1080, 6.4] Federally Enforceable Through Title V Permit
5. The monitoring of CO emissions with the CEMS shall serve as a surrogate for monitoring of VOC emissions as required by 40 CFR 64 (Compliance Assurance Monitoring). Operation of the unit with CO concentration within the allowable range shall be indicative of VOC concentrations which are less than the allowed maximum. The relationship between concentration of VOC and concentration of CO shall be demonstrated at each annual source test. [40 CFR 64.3] Federally Enforceable Through Title V Permit
6. The permittee shall comply with the compliance assurance monitoring operation and maintenance requirements of 40 CFR part 64.7. [40 CFR Part 64.7] Federally Enforceable Through Title V Permit
7. The permittee shall comply with the recordkeeping and reporting requirements of 40 CFR part 64.9. [40 CFR Part 64.9] Federally Enforceable Through Title V Permit
8. If the District or EPA determine that a Quality improvement Plan is required under 40 CFR 64.7(d)(2), the permittee shall develop and implement the Quality Improvement Plan in accordance with 40 CFR part 64.8. [40 CFR Part 64.8] Federally Enforceable Through Title V Permit
9. CTG shall be equipped with a continuously recording emission monitor preceding the SCR module measuring NOx concentration for the purposes of calculating ammonia slip. Permittee shall check, record, and quantify the calibration drift (CD) at two concentration values at least once daily (approximately 24 hours). The calibration shall be adjusted whenever the daily zero or high-level CD exceeds 5%. If either the zero or high-level CD exceeds 5% for five consecutive daily periods, the analyzer shall be deemed out-of-control. If either the zero or high-level CD exceeds 10% during any CD check, analyzer shall be deemed out-of-control. If the analyzer is out-of-control, the permittee shall take appropriate corrective action and then repeat the CD check. [District NSR Rule and District Rule 1080] Federally Enforceable Through Title V Permit
10. The facility shall install and maintain equipment, facilities, and systems compatible with the District's CEM data polling software system and shall make CEM data available to the District's automated polling system on a daily basis. [District Rule 1080] Federally Enforceable Through Title V Permit
11. Upon notice by the District that the facility's CEM system 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 CEM data is sent to the District by a District-approved alternative method. [District Rule 1080] Federally Enforceable Through Title V Permit
12. APCO or an authorized representative shall be allowed to inspect, as determined to be necessary, the monitoring devices required by this rule to ensure that such devices are functioning properly. [District Rule 1080, 11.0 and SJ-99-02] Federally Enforceable Through Title V Permit
13. Exhaust stack shall be equipped with permanent provisions to allow collection of stack gas samples consistent with 40 CFR 60.8 (e). [District Rule 1081 and SJ-99-02] Federally Enforceable Through Title V Permit
14. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201, 3.0] Federally Enforceable Through Title V Permit
15. Ammonia injection grid shall be equipped with operational ammonia flowmeter and injection pressure indicator. [District NSR Rule] Federally Enforceable Through Title V Permit
16. Ammonia shall be injected when the selective catalytic reduction system catalyst temperature exceeds 500 degrees F. Permittee shall monitor and record catalyst temperature during periods of startup. [District NSR Rule and SJ-99-02] Federally Enforceable Through Title V Permit
17. Permittee shall monitor and record exhaust gas temperature at selective catalytic reduction and oxidation catalyst inlets. [District NSR Rule] Federally Enforceable Through Title V Permit
18. Permittee shall comply with all applicable requirements of 40 CFR 60.8 and 40 CFR Subpart Da. [District Rule 4001] Federally Enforceable Through Title V Permit

**DRAFT**  
CONDITIONS CONTINUE ON NEXT PAGE

19. CTG and duct burner shall be fired exclusively on natural gas, consisting primarily of methane and ethane, with a sulfur content no greater than 0.75 grains of sulfur compounds (as S) per 100 dry scf of natural gas. [District NSR Rule and SJ-99-02] Federally Enforceable Through Title V Permit
20. The sulfur 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 at least annually using ASTM Methods D4084, D5504, D6228, or Gas Processors Association Standard 2377. [40 CFR 60.334(h)(3); 40 CFR 60.48(g)(1) and District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
21. Results of the CEM system shall be averaged over the applicable time period, using consecutive 15-minute sampling periods. [District Rule 4703, 5.1, 6.4] Federally Enforceable Through Title V Permit
22. Startup is defined as the period beginning with turbine initial firing until the unit meets the lb/hr and ppmv emission limits. An extended startup shall be defined as a startup that occurs after the steam turbine has been shutdown for 72 hours or more. Shutdown is defined the period beginning with initiation of turbine shutdown sequence and ending with cessation of firing of the gas turbine engine. Aborted shutdown is defined the period beginning with initiation of turbine shutdown and ends when the unit has ramped up and is meeting the lb/hr and ppmv emission limits. Startup durations shall not exceed three hours for a regular startup, and 7 hours for an extended startup, per occurrence. Shutdown and aborted shutdown durations shall not exceed one hour, per occurrence. [District Rules 2201, 4001 and 4703, 5.3.3 and SJ-99-02] Federally Enforceable Through Title V Permit
23. During startup or shutdown of any gas turbine engine(s), combined emissions from both gas turbine engines' heat recovery steam generator exhausts (S-3523-1 and -2) shall not exceed any of the following: NO<sub>x</sub> (as NO<sub>2</sub>) - 400 lb and CO - 3600 lb in any one hour. If any CTG is in either startup or shutdown during any portion of a clock hour, the facility will be subject to the aforementioned limits during that clock hour. [District NSR Rule] Federally Enforceable Through Title V Permit
24. During an extended startup, the combined emissions from both the CTG and HRSG exhausts shall not exceed either 800 lb NO<sub>x</sub> or 3600 lb CO per event. [SJ-99-02] Federally Enforceable Through Title V Permit
25. During shutdown, or aborted shutdown, of CTG, the combined emissions from both the CTG and HRSG exhausts shall not exceed either 102.5 lb NO<sub>x</sub> or 222.0 lb CO per event. [SJ-99-02] Federally Enforceable Through Title V Permit
26. Duct burning must not be employed during startup or shutdown events. [SJ-99-02] Federally Enforceable Through Title V Permit
27. Emission rates from CTG/HRSG, except during startup, shut down or aborted shutdown, shall not exceed any of the following: PM<sub>10</sub> - 15.0 lb/hr, SO<sub>x</sub> (as SO<sub>2</sub>) - 3.6 lb/hr, NO<sub>x</sub> (as NO<sub>2</sub>) - 15.8 lb/hr and 2.5 ppmvd @ 15% O<sub>2</sub>, VOC - 4.0 lb/hr and 2.0 ppmvd @ 15% O<sub>2</sub>, CO - 12.5 lb/hr and 4 ppmvd @ 15% O<sub>2</sub>, ammonia - 10 ppmvd @ 15% O<sub>2</sub>. NO<sub>x</sub> ppmv and lb/hr limits are a one-hour rolling average. Ammonia emission limit is a twenty-four hour rolling average. All other ppmv and lb/hr limits are three-hour rolling averages. [District NSR Rule, District Rules 4001, and 4703, 5.1.2, 5.2 and SJ-99-02] Federally Enforceable Through Title V Permit
28. Emission rates from CTG/HRSG shall not exceed any of the following: PM<sub>10</sub> - 360.0 lb/day, SO<sub>x</sub> (as SO<sub>2</sub>) - 86.4 lb/day, NO<sub>x</sub> (as NO<sub>2</sub>) - 752.0 lb/day, VOC - 184.0 lb/day, and CO - 3948.0 lb/day. [District NSR Rule] Federally Enforceable Through Title V Permit
29. Emission rates from both CTG/HRSG S-3523-1 and -2 combined shall not exceed any of the following: PM<sub>10</sub> - 720.0 lb/day, SO<sub>x</sub> (as SO<sub>2</sub>) - 172.8 lb/day, NO<sub>x</sub> (as NO<sub>2</sub>) - 1103.0 lb/day, VOC - 269.0 lb/day, and CO - 4297 lb/day. [District NSR Rule] Federally Enforceable Through Title V Permit
30. Annual emissions from both CTGs/HRSGs S-3523-1 and -2 combined calculated on a twelve consecutive month rolling basis shall not exceed any of the following: PM<sub>10</sub> - 261,960 lb/year, SO<sub>x</sub> (as SO<sub>2</sub>) - 57,468 lb/year, NO<sub>x</sub> (as NO<sub>2</sub>) - 335,022 lb/year, VOC - 64,478 lb/year, and CO - 831,008 lb/year. [District NSR Rule and SJ-99-02] Federally Enforceable Through Title V Permit
31. Emission rates from the duct burner shall not exceed any of the following limits: 0.20 lb-NO<sub>x</sub>/MMBtu (expressed as NO<sub>2</sub>); 0.20 lb-SO<sub>x</sub>/MMBtu (expressed as SO<sub>2</sub>); 0.03 lb-PM/MMBtu. [40 CFR 60.42(a)(1); 40 CFR 60.43(b)(2) and (g); 40 CFR 60.44(a)(1)] Federally Enforceable Through Title V Permit
32. NO<sub>x</sub> emission rate from the duct burner shall not exceed 1.6 lb/MWh based on a 30-day rolling average. [40 CFR 60.44(d)(1)] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

33. Each one-hour period will commence on the hour. The three-hour average will be compiled from the three most recent one-hour periods. 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 NSR Rule] Federally Enforceable Through Title V Permit
34. 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 shall commence at the beginning of the first day of the month. The twelve-consecutive-month rolling emissions total to determine compliance with annual emissions shall be compiled from the twelve most recent calendar months. [District NSR Rule] Federally Enforceable Through Title V Permit
35. The monitoring of NO<sub>x</sub> emissions from the duct burner shall be in accordance with the applicable requirements of 40 CFR Subpart Da. [40 CFR 60.49] Federally Enforceable Through Title V Permit
36. Compliance with ammonia slip limit shall be demonstrated by using the following calculation procedure: ammonia slip ppmv @ 15% O<sub>2</sub> = ((a-(bxc/1,000,000)) x 1,000,000 / b) x d, where a = ammonia injection rate(lb/hr)/17(lb/lb. mol), b = dry exhaust gas flow rate (lb/hr)/(29(lb/lb. mol), c = change in measured NO<sub>x</sub> concentration ppmv at 15% O<sub>2</sub> across catalyst, and d = correction factor. The correction factor shall be derived annually during compliance testing by comparing the measured and calculated ammonia slip. Alternatively, permittee may utilize a continuous in-stack ammonia monitor, acceptable to the District, to monitor compliance. At least 60 days prior to using a NH<sub>3</sub> CEM, the permittee must submit a monitoring plan for District review and approval [District Rules 2520, 9.3.2 and 4102] Federally Enforceable Through Title V Permit
37. Compliance with the short term emission limits (lb/hr and ppmv @ 15% O<sub>2</sub>) shall be demonstrated annually by District witnessed in situ sampling of exhaust gas by a qualified independent source test firm at full load conditions as follows - NO<sub>x</sub>: ppmvd @ 15% O<sub>2</sub> and lb/hr, CO: ppmvd @ 15% O<sub>2</sub> and lb/hr, VOC: ppmvd @ 15% O<sub>2</sub> and lb/hr, PM<sub>10</sub>: lb/hr, and ammonia: ppmvd @ 15% O<sub>2</sub>. Sample collection to demonstrate compliance with ammonia emission limit shall be based on three consecutive test runs of thirty minutes each. [District Rule 1081 and SJ-99-02] Federally Enforceable Through Title V Permit
38. Compliance with the startup NO<sub>x</sub>, CO, and VOC mass emission limits shall be demonstrated for one of the CTGs (S-3523-1, or -2) at least once every five years by District witnessed in situ sampling of exhaust gases by a qualified independent source test firm. [District Rule 1081] Federally Enforceable Through Title V Permit
39. Compliance with the emission limit for NO<sub>x</sub> (lb-NO<sub>x</sub>/MMBtu) for the duct burner shall be demonstrated per the methods of 40 CFR Subpart Da. [40 CFR 60.48Da (g)(1),(j) and (k)] Federally Enforceable Through Title V Permit
40. Any gas turbine with an intermittently operated auxiliary burner shall demonstrate compliance with the auxiliary burner both on and off. [40 CFR 60 Subpart Da, and District Rule 4703, 6.3.3] Federally Enforceable Through Title V Permit
41. The District must be notified 30 days prior to any compliance source test, and a source test plan must be submitted for approval 15 days prior to testing. Official test results and field data collected by source tests required by conditions on this permit shall be submitted to the District within 60 days of testing. [District Rule 1081] Federally Enforceable Through Title V Permit
42. The following test methods shall be used EPA Methods 1-4, PM<sub>10</sub>: EPA Method 5 (front half and back half), NO<sub>x</sub>: EPA Method 7E, CO: EPA Method 10, O<sub>2</sub>: EPA Method 3, 3A, or 20, VOC: EPA Method 18 or 25, ammonia: BAAQMD ST-1B, and fuel gas sulfur content: ASTM D3246. 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, 4001, and 4703 and SJ-99-02] Federally Enforceable Through Title V Permit
43. Procedures and methods for determining emissions from the duct burner shall be in accordance with the applicable requirements of 40 CFR Subpart Da. [40 CFR 60.50] Federally Enforceable Through Title V Permit
44. The permittee shall maintain hourly records of NO<sub>x</sub>, CO, and ammonia emission concentrations (ppmv @ 15% O<sub>2</sub>), and hourly, daily, and twelve month rolling average records of NO<sub>x</sub> and CO emissions. [District NSR Rule] Federally Enforceable Through Title V Permit

45. The permittee shall maintain records of SO<sub>x</sub> lb/hr, lb/day, and lb/twelve month rolling average emission. SO<sub>x</sub> emissions shall be based on fuel use records, natural gas sulfur content, and mass balance calculations. [40 CFR 60.48(g)(1) and District NSR Rule] Federally Enforceable Through Title V Permit
46. Permittee shall maintain the following records for the CTG: occurrence, duration, and type of any startup, shutdown, or malfunction; emission measurements; total daily and annual hours of operation; and hourly quantity of fuel used. [District NSR Rule and 4703 and SJ-99-02] Federally Enforceable Through Title V Permit
47. Permittee shall maintain the following records for the continuous emissions monitoring system (CEMS): the occurrence and duration of any start-up, shutdown or malfunction, performance testing, evaluations, calibrations, checks, maintenance, adjustments, any period of non-operation of any continuous emissions monitor and emission measurements. [District NSR Rule and District Rule 4703 and 40 CFR 60.7(b) and SJ-99-02] Federally Enforceable Through Title V Permit
48. Cylinder gas audits of continuous emission monitors shall be conducted quarterly, except during quarters in which relative accuracy and total accuracy testing is performed, in accordance with EPA guidelines. 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] Federally Enforceable Through Title V Permit
49. The permittee shall submit a written report to the APCO for each calendar quarter, within 30 days of the end of the quarter, including: time intervals, data and magnitude of excess emissions, nature and cause of excess (if known), corrective actions taken and preventive measures adopted; averaging period used for data reporting shall correspond to the averaging period for each respective 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; and a negative declaration when no excess emissions occurred. [District Rule 1080] Federally Enforceable Through Title V Permit
50. The reporting requirements pertaining to the testing and monitoring of the duct burner operation shall be in accordance with the applicable requirements of 40 CFR Subpart Da. [40 CFR 60.51] Federally Enforceable Through Title V Permit
51. All records required to be maintained by this permit shall be maintained for a period of five years and shall be made readily available for District inspection upon request. [District NSR Rule and 2520, 9.4.2] Federally Enforceable Through Title V Permit
52. The owners and operators of each affected source shall have an Acid Rain permit and operate in compliance with all permit requirements. [40 CFR 72] Federally Enforceable Through Title V Permit
53. The owners and operators and, to the extent applicable, designated representative of each affected source and each affected unit at the source shall comply with the monitoring requirements as provided in 40 CFR part 75. [40 CFR 75] Federally Enforceable Through Title V Permit
54. The emissions measurements recorded and reported in accordance with 40 CFR part 75 shall be used to determine compliance by the unit with the Acid Rain emissions limitations and emissions reduction requirements for sulfur dioxide and nitrogen oxides under the Acid Rain Program. [40 CFR 75] Federally Enforceable Through Title V Permit
55. The owners and operators of each source and each affected unit at the source shall: (i) hold allowances, as of the allowance transfer deadline, in the unit's compliance subaccount (after deductions under 40 CFR 73.34(c)) not less than the total annual emissions of sulfur dioxide for the previous calendar year from the unit; and (ii) comply with the applicable Acid Rain emissions limitations for sulfur dioxide. [40 CFR 72] Federally Enforceable Through Title V Permit
56. Each ton of sulfur dioxide emitted in excess of the Acid Rain emissions limitations for sulfur dioxide shall constitute a separate violation of the Act. [40 CFR 72] Federally Enforceable Through Title V Permit
57. Allowances shall be held in, deducted from, or transferred among Allowance Tracking System accounts in accordance with the Acid Rain Program. [40 CFR 72] Federally Enforceable Through Title V Permit
58. An allowance shall not be deducted in order to comply with the requirements under 40 CFR part 73, prior to the calendar year for which the allowance was allocated. [40 CFR 73] Federally Enforceable Through Title V Permit

59. The designated representative of an affected unit that has excess emissions in any calendar year shall submit a proposed offset plan, as required under 40 CFR Part 77. [40 CFR 77] Federally Enforceable Through Title V Permit
60. The owners and operators of an affected unit that has excess emissions in any calendar year shall: (i) pay without demand the penalty required, and pay up on demand the interest on that penalty; and (ii) comply with the terms of an approved offset plan, as required by 40 CFR Part 72. [40 CFR 72] Federally Enforceable Through Title V Permit
61. The owners and operators of the each affected unit at the source shall keep on site the following documents for a period of five years from the date the document is created. This period may be extended for cause, at any time prior to the end of five years, in writing by the Administrator or permitting authority: (i) The certificate of representation for the designated representative for the source and all documents that demonstrate the truth of the statements in the certificate of representation, in accordance with 40 CFR 72.24; provided that the certificate and documents shall be retained on site beyond such five-year period until such documents are superceded because of the submission of a new certificate of representation changing the designated representative. [40 CFR 72] Federally Enforceable Through Title V Permit
62. The owners and operators of each affected unit at the source shall keep on site each of the following documents for a period of five years from the date the document is created. This period may be extended for cause, at any time prior to the end of five years, in writing by the Administrator or permitting authority; (ii) All emissions monitoring information, in accordance with 40 CFR part 75; (iii) Copies of all reports, compliance certifications and other submissions and all records made or required under the Acid Rain Program; (iv) Copies of all documents used to complete an Acid Rain permit application and any other submission that demonstrates compliance with the requirements of the Acid Rain Program. [40 CFR 72, 40 CFR 75] Federally Enforceable Through Title V Permit
63. The designated representative of an affected source and each affected unit at the source shall submit the reports and compliance certifications required under the Acid Rain Program, including those under 40 CFR 75 Subpart I. [40 CFR 75] Federally Enforceable Through Title V Permit

DRAFT