



MOJAVE DESERT AIR QUALITY MANAGEMENT DISTRICT

14306 Park Avenue Victorville, CA 92392-2310
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INACTIVE

B013230

Inactive type Permit has no description information.

EXPIRES LAST DAY OF: JULY 2019

OWNER OF OPERATOR (Co.#2222)

Palmdale Energy, LLC
801 2nd Avenue
Seattle, WA 98104

EQUIPMENT LOCATION (Fac.#3582)

Palmdale Energy LLC
950 East Avenue M
Palmdale, CA 93550

Description:

COMBUSTION TURBINE GENERATOR #1 consisting of: Siemens Model SGT6-5000F, max heat input 2,467 MMBtu/hr (184.5 MW), 2 x 1 combined cycle unit having steam turbine rated at 276 MW (nominal ISO baseload)

CONDITIONS:

1. Operation of this equipment shall be conducted in compliance with all data and specifications submitted with the application under which this permit is issued unless otherwise noted below.

[Rule 204]

2. This equipment shall be exclusively fueled with pipeline quality natural gas with a sulfur content not exceeding 0.2 grains per 100 dscf on a rolling twelve month average basis, and shall be operated and maintained in accordance with the recommendations of its manufacturer or supplier and/or sound engineering principles. Compliance with this limit shall be demonstrated by providing evidence of a contract, tariff sheet or other approved documentation that shows that the fuel meets the definition of pipeline quality gas and records of monthly fuel sulfur content.

[Rule 1303; Rule 431.1; 40 CFR 60.4365; 40 CFR 60.5520(d)(1)]

3. This equipment is subject to the Federal NSPS codified at 40 CFR Part 60, Subparts A (General Provisions), KKKK (Standards of Performance for New Stationary Gas Turbines), and TTTT (Standards of Performance for Greenhouse Gas Emissions from New Stationary Gas Turbines). This facility is also subject to the Prevention of Significant Deterioration (40 CFR 52.21) and Federal Acid Rain (Title IV) programs. Compliance with all applicable provisions of these regulations is required.

4. Emissions from this equipment (including its associated duct burner) shall not exceed the following emission limits at any firing rate, except for CO, NO_x and VOC during periods of startup and shutdown:

Fee Schedule: K2 (N/A) Rating: 2467000000 Btu SIC: 491 SCC: 20100201 Location/UTM(Km): 425E/3830N

This permit does not authorize the emission of air contaminants in excess of those allowed by law, including Division 26 of the Health and Safety Code of the State of California and the Rules and Regulations of the District. This permit cannot be construed as permission to violate existing laws, ordinances, statutes or regulations of this or other governmental agencies. This permit must be renewed by the expiration date above. If billing for renewal fee required by Rule 301(c) is not received by expiration date above, please contact the District.

Palmdale Energy, LLC
801 2nd Avenue

Seattle, WA 98104

By: **COPY**
Brad Poiriez
Air Pollution Control Officer

- a. Hourly rates, computed every 15 minutes, verified by CEMS and annual compliance tests:
 - i. NOx as NO2 - 2.0 ppmvd corrected to 15% O2 and 18.50 lb/hr, based on a 1-hr average
 - ii. CO - 2.0 ppmvd corrected to 15% O2 and 11.30 lb/hr, based on a 1-hr average.
- b. Hourly rates, verified by compliance tests or other compliance methods in the case of SOx:
 - i. VOC as CH4 - 2.0 ppmvd corrected to 15% O2 and 6.36 lb/hr
 - ii. SOx as SO2 - 5.63 lb/hr (based on 0.75 grains/100 dscf fuel sulfur)
 - iii. PM10/2.5 - 11.80 lb/hr

Emissions from this equipment (not including the associated duct burner) shall not exceed the following emission limits at any firing rate, except for CO, NOx and VOC during periods of startup and shutdown:

- c. Hourly rates, computed every 15 minutes, verified by CEMS and annual compliance tests:
 - i. NOx as NO2 - 2.0 ppmvd corrected to 15% O2 and 17.10 lb/hr, averaged over one hour
 - ii. CO - 2.0 ppmvd corrected to 15% O2 and 10.40 lb/hr, averaged over one hour
- d. Hourly rates, verified by compliance tests or other compliance methods in the case of SOx:
 - i. VOC as CH4 - 1 ppmvd corrected to 15% O2 and 3.00 lb/hr
 - ii. SOx as SO2 - 5.25 lb/hr (based on 0.75 grains/100 dscf fuel sulfur)
 - iii. PM10/2.5 - 9.80 lb/hr

[Rule 404; Rule 407; Rule 409; Rule 475; Rule 1134; Rule 1303; NSPS Subpart KKKK]

5. Emissions of CO and NOx from this equipment shall only exceed the limits contained in Condition 4 during startup and shutdown periods as follows. Transient conditions shall not exceed the following durations:

- a. Cold Startup- A gas turbine (GT) startup (SU) that occurs when the steam turbine (ST) rotor temperature is less than 485°F after a GT shutdown (SD), and is limited in time to the lesser of:
 - i. the first 39 minutes of continuous fuel flow to the GT after ignition; or
 - ii. the period of time from GT ignition until the GT achieves the first of two consecutive CEM data points in compliance with the emission concentration limits of Parts 4(a) and 4(b).
- b. Warm Startup- A GT SU that occurs when the ST rotor temperature is greater than or equal to 485°F but less than 685°F after a GT SD, and is limited in time to the lesser of:
 - i. the first 35 minutes of continuous fuel flow to the GT after ignition; or
 - ii. the period of time from GT ignition until the GT achieves the first of two consecutive CEM data points in compliance with the emission concentration limits of Parts 4(a) and 4(b).
- c. Hot Startup- A GT SU that occurs when the ST rotor temperature is greater than 685°F after a GT SD, and is limited in time to the lesser of:
 - i. the first 30 minutes of continuous fuel flow to the GT after ignition; or
 - ii. the period of time from GT ignition until the GT achieves the first of two consecutive CEM data points in compliance with the emission concentration limits of Parts 4(a) and 4(b).
- d. Shutdown- The lesser of the 25-minute period immediately prior to the termination of fuel flow to the GT or the period of time from non-compliance with any requirement listed in Parts 4(a) and 4(b) until termination of fuel flow to the GT.
- e. During a cold startup emissions shall not exceed the following, verified by CEMS:
 - i. NOx - 52 lb
 - ii. CO - 416 lb
- f. During a warm startup emissions shall not exceed the following, verified by CEMS:
 - i. NOx - 47 lb
 - ii. CO - 378 lb
- g. During a hot startup emissions shall not exceed the following, verified by CEMS:
 - i. NOx - 43 lb
 - ii. CO - 305 lb
- h. During a shutdown emissions shall not exceed the following, verified by CEMS:
 - i. NOx - 33 lb
 - ii. CO - 76 lb

[Rule 1303]

6. Emissions (including startup, shutdown, and malfunction) from this facility, including the duct burner, auxiliary boiler, and engines, shall not exceed the following emission limits, based on a calendar day summary:

- a. NOx - 1141 lb/day, verified by turbine CEMS
- b. CO - 2179 lb/day, verified by turbine CEMS
- c. VOC as CH4 - 472 lb/day, verified by compliance tests, fuel use data and hours of operation in mode
- d. SOx as SO2 - 271 lb/day, verified by fuel sulfur content and fuel use data
- e. PM10/2.5 - 568 lb/day, verified by compliance tests, fuel use data and hours of operation

[Rule 1303]

7. Emissions (including startup, shutdown, and malfunction) from this facility, including the duct burner, auxiliary boiler, and engines, shall not exceed the following emission limits, based on a rolling 12 month summary:

- a. NO_x - 138.99 tons/year, verified by turbine CEMS
- b. CO - 351.09 tons/year, verified by turbine CEMS
- c. VOC as CH₄ - 51.65 tons/year, verified by compliance tests, fuel use data and hours of operation in mode
- d. SO_x as SO₂ - 11.39 tons/year, verified by fuel sulfur content and fuel use data
- e. PM₁₀ - 81.01 tons/year, verified by compliance tests, fuel use data and hours of operation
- f. PM_{2.5} - 81.01 tons/year, verified by compliance tests, fuel use data and hours of operation

[Rule 1303]

8. Particulate emissions from this equipment shall not exceed an opacity equal to or greater than twenty percent (20%) for a period aggregating more than three (3) minutes in any one (1) hour, excluding uncombined water vapor.

[Rule 401]

9. This equipment shall exhaust through a stack at a minimum height of 160 feet.

[Rule 1303]

10. The owner/operator (o/o) shall not operate this equipment after the initial commissioning period without the oxidation catalyst, with valid District permit C013234, and the selective catalytic reduction system, with valid District permit C013236, installed.

[Rule 1303]

11. The o/o shall provide stack sampling ports and platforms necessary to perform source tests required to verify compliance with District rules, regulations and permit conditions. The location of these ports and platforms shall be subject to District approval.

[Rule 1303]

12. Emissions of NO_x and CO, and oxygen shall be monitored using a Continuous Emissions Monitoring System (CEMS). Ammonia slip shall be monitored using Parametric Emissions Monitoring System (PEMS). Turbine fuel consumption shall be monitored using a continuous monitoring system. Stack gas flow rate shall be monitored using either a Continuous Emission Rate Monitoring System (CERMS) meeting the requirements of 40 CFR 75 Appendix A or a stack flow rate calculation method. The o/o shall install, calibrate, maintain, and operate these monitoring systems according to a District-approved monitoring plan, AVAQMD Rule 218, 40 CFR 60 and/or 40 CFR 75 as applicable. Where 40 CFR 60 and 40 CFR 75 are applicable but inconsistent, 40 CFR 75 shall take precedent.

[Rule 1134; Rule 1303; NSPS KKKK]

13. The o/o shall conduct all required compliance/certification tests in accordance with a District-approved test plan. Thirty (30) days prior to the compliance/certification tests the operator shall provide a written test plan for District review and approval. Written notice of the compliance/certification test shall be provided to the District ten (10) days prior to the tests so that an observer may be present. A written report with the results of such compliance/certification tests shall be submitted to the District within forty-five (45) days after testing.

[District Compliance Test Procedural Manual; Rule 1303; Rule 1134]

14. After the initial compliance test, the o/o shall perform the following compliance tests at least as often as once every three years on this equipment in accordance with the AVAQMD Compliance Test Procedural Manual. The test report shall be submitted to the District no later than six weeks prior to the expiration date of this permit. The following compliance tests are required:

- a. NO_x as NO₂ in ppmvd at 15% oxygen and lb/hr (measured per USEPA Reference Methods 19 and 20).
- b. VOC as CH₄ in ppmvd at 15% oxygen and lb/hr (measured per USEPA Reference Methods 25A and 18).
- c. SO_x as SO₂ in ppmvd at 15% oxygen and lb/hr (measured per USEPA Reference Method 6 or 6C or equivalent).
- d. CO in ppmvd at 15% oxygen and lb/hr (measured per USEPA Reference Method 10).
- e. PM₁₀ and PM_{2.5} in mg/m³ at 15% oxygen and lb/hr (measured per USEPA Reference Methods 5 and 202 or CARB Method 5).
- f. Flue gas flow rate in dscf per minute (measured per USEPA Method 2B).
- g. Opacity (measured per USEPA reference Method 9).
- h. Ammonia slip in ppmvd at 15% oxygen. (measured per BAAQMD ST-1B)

[Rule 1134; Rule 1303]

15. The o/o shall, at least as often as once every three years following planned facility outages (commencing with the initial compliance test), include the following supplemental source tests:

- a. Characterization of cold startup VOC emissions;
- b. Characterization of other startup VOC emissions; and
- c. Characterization of shutdown VOC emissions.

[Rule 1303]

16. Continuous monitoring systems shall meet the following acceptability testing requirements from 40 CFR 60 Appendix B (or otherwise District approved):

- a. For NO_x, 40 CFR 75.
- b. For O₂, Performance Specification 3.
- c. For CO, Performance Specification 4.
- d. For stack gas flow rate, 40 CFR 75.
- e. For ammonia, a District approved procedure that is to be submitted by the o/o.
- f. For stack gas flow rate (without CERMS), a District approved procedure that is to be submitted by the o/o.

[Rule 218; Rule 1134]

17. The o/o shall submit to the APCO and USEPA Region IX the following information for the preceding calendar quarter by January 30, April 30, July 30 and October 30 of each year this permit is in effect. Each January 30 submittal shall include a summary of the reported information for the previous year. This information shall be maintained on site and current for a minimum of five (5) years and shall be provided to District personnel on request:

- a. Operating parameters of emission control equipment, including but not limited to ammonia injection rate, NO_x emission rate and ammonia slip.
- b. Total plant operation time (hours), duct burner operation time (hours), number of startups, hours in cold startup, hours in warm startup, hours in hot startup, and hours in shutdown.
- c. Date and time of the beginning and end of each startup and shutdown period.
- d. Average plant operation schedule (hours per day, days per week, weeks per year).
- e. All continuous emissions data reduced and reported in accordance with the District-approved CEMS protocol.
- f. Maximum hourly, maximum daily, total quarterly, and total calendar year emissions of NO_x, CO, PM₁₀, PM_{2.5}, VOC and SO_x (including calculation protocol).
- g. Fuel sulfur content (monthly laboratory analyses, monthly natural gas sulfur content reports from the natural gas supplier(s), or the results of a custom fuel monitoring schedule approved by USEPA for compliance with the fuel monitoring provisions of 40 CFR 60 Subpart KKKK and 40 CFR Part 72 as applicable)
- h. A log of all excess emissions, including the information regarding malfunctions/breakdowns required by Rule 430.
- i. Any permanent changes made in the plant process or production which would affect air pollutant emissions, and indicate when changes were made.
- j. Any maintenance to any air pollutant control system (recorded on an as-performed basis).
- k. Records of steam turbine rotor temperature.

[Rule 1303; NSPS KKKK; Rule 431.1; Rule 430; Rule 1134]

18. The o/o must surrender to the District sufficient valid Emission Reduction Credits for this equipment before the start of construction of any part of the project for which this equipment is intended to be used. In accordance with Regulation XIII the operator shall obtain 180.7 tons of NO_x, 77.5 tons of VOC, and 81.0 tons of PM₁₀ offsets.

[Rule 1303(B); Rule 1305; Rule 1309]

19. During an initial commissioning period of no more than 180 days, commencing with the first firing of fuel in this equipment, NO_x, CO, VOC and ammonia concentration limits shall not apply. The o/o shall minimize emission of NO_x, CO, VOC and ammonia to the maximum extent possible during the initial commissioning period.

[Rule 1303]

20. The o/o shall tune each CTG and HRSG to minimize emissions of criteria pollutants at the earliest feasible opportunity in accordance with the recommendations of the equipment manufacturers and the construction contractor.

[Rule 1303]

21.The o/o shall install, adjust and operate each SCR system to minimize emissions of NOx from the CTG and HRSG at the earliest feasible opportunity in accordance with the recommendations of the equipment manufacturers and the construction contractor. The NOx and ammonia concentration limits of condition #4 above, and condition #4 Permit C013237, respectively, shall apply coincident with the steady state operation of the SCR systems.

[Rule 1303]

22.The o/o shall submit a commissioning plan to the District and the CEC at least four weeks prior to the first firing of fuel in this equipment. The commissioning plan shall describe the procedures to be followed during the commissioning of the CTGs, HRSGs and steam turbine. The commissioning plan shall include a description of each commissioning activity, the anticipated duration of each activity in hours, the purpose of the activity, and emissions monitoring . The activities described shall include, but not be limited to, the tuning of the dry low NOx combustors, the installation and testing of the CEMS, and any activities requiring the firing of the CTGs and HRSGs without abatement by an SCR system.

[Rule 1303]

23.The total number of firing hours of each CTG and HRSG without abatement of NOx by the SCR shall not exceed 639 hours during the initial commissioning period. Such operation without NOx abatement shall be limited to discrete commissioning activities that can only be properly executed without the SCR system in place and operating. Upon completion of these activities, the o/o shall provide written notice to the District and CEC and the unused balance of the unabated firing hours shall expire.

[Rule 1303]

24.During the initial commissioning period, emissions from this facility shall not exceed the following emission limits (verified by PEMS):

- a. NOx - 30 tons, and 132 pounds/hour/CTG
- b. CO - 185 tons, and 4500 pounds/hour/CTG

[Rule 1303]

25.No later than 180 days after initial startup, the operator shall perform an initial compliance test. This test shall demonstrate that this equipment is capable of operation at 100% load in compliance with the emission limits in Condition 4 above.

[Rule 1303]

26.The initial compliance test shall include tests for the following:

- a. Formaldehyde;
- b. Certification of CEMS, PEMS, and CERMS (or stack gas flow calculation method) at 100% load, startup modes and shutdown mode;
- c. Characterization of cold startup VOC emissions;
- d. Characterization of other startup VOC emissions; and
- e. Characterization of shutdown VOC emissions.

[Rule 1303]

27.This equipment is subject to 40 CFR 60 Subpart TTTT - Standards of Performance for Greenhouse Gas Emissions for Electric Generating Units. Carbon dioxide emissions from this turbine shall not exceed 1,000 lb CO2/MWh (gross) or 1,030 lb CO2/MWh (net).

[40 CFR 60 Subpart TTTT §60.5520]