ENGINEERING EVALUATION REPORT
MARTINEZ COGEN LIMITED PARTNERSHIP
APPLICATION NUMBER 023485

BACKGROUND:

Martinez Cogen Limited Partnership (MCLP) has applied for an Administrative Change of Permit Conditions for the Gas Turbines S-10 and S-11. They have requested the following changes to Permit Condition #13422:

- Modify Part 1 to allow maximum fuel input to the turbines to be based on the operating daily average instead of hourly maximum.
- Update Parts 3 and 5 to coincide with regulatory changes made to Regulation 9, Rule 9.
- Remove H_2S monitoring requirements in related to Parts 4 and 5 for natural gas only operation.

DISCUSSION:

Allow daily averaging for maximum fuel usage requirement: The basis for the fuel usage limitation placed on the Gas Turbines S-10 and S-11 is "Cumulative Increase", the fuel limits effectively set a cap for all pollutant emissions. For the purposes of all applicable emissions limits for the turbines, a daily fuel use limit is equivalent to an hourly limit. Therefore, the condition can be changed as requested without it being a relaxation of a requirement.

Update Regulation 9, Rule 9 requirements in Parts 4 and 5: This request is clearly an administrative change to the conditions. No further discussion is required.

Removal of H_2S monitoring requirements when firing natural gas: The Gas Turbines S-10 and S-11 are permitted to be fueled by either natural gas or refinery gas. Due to the variability of sulfur compounds that may exist in refinery process gas, H_2S monitoring has been a permit requirement for the turbines in order to demonstrate on-going compliance with SO_2 emissions limits. However, MCLP has not actually used refinery gas as a fuel for several years, but must continue monitoring for H_2S when exclusively firing natural gas. Since the allowable amount of sulfur in commercial natural gas is limited by the Public Utilities Commission (PUC), continuous monitoring for sulfur is not a necessary requirement when only natural gas is being fired. Since the requested modification will save unnecessary expense and recordkeeping for both MCLP and the BAAQMD; and will have no impact on emissions, it is recommended that the conditions be changed as proposed.

CHANGES TO PERMIT CONDITIONS:

It is recommended that the existing permit conditions for the Gas Turbines S-10 and S-11 (Condition #13422) be modified as follows in strikeout/underline format:

Permit Condition #13422

S-10, S-11: Gas Turbines

1. The total fuel usage rate at each of the gas turbines S-10 and S-11 shall not exceed 500 million BTU/hr (operating day average). The turbines shall be fired on natural gas or refinery gas exclusively. (Basis: Cumulative Increase)

2. The combined emissions from the two turbines shall not exceed the following: (Basis: Cumulative Increase)

Particulate	240 lbs/day and 43.8 TPY
Non-Methane Hydrocarbon	210 lbs/day and 35 TPY
Sulfur Dioxides	550 lbs/day and 36 TPY
Carbon Monoxide	1,248 lbs/day and 228 TPY
Nitrogen Oxides	1,512 lbs/day and 198.5 TPY

(Additional Basis for NOx Limit: Offsets)

If the emissions of sulfur dioxide emissions in a calendar year reach 36 tons, these turbines shall be fired exclusively on natural gas for the remainder of the year. (Basis: Cumulative Increase)

3. The oxides of nitrogen (NOx) concentration in the gas turbine exhaust shall not exceed ~~17 ppmv (15 ppm adjusted based on efficiency per Regulation 9-9-401) at 15% oxygen (dry basis) averaged over any consecutive 3-hour period whether firing refinery and/or natural gas. This limit~~ the applicable limits in Regulation 9, Rule 9, Section 301.2 for turbines with input ratings of >250 – 500 MMBTU. Compliance with these limits shall be determined in accordance with Part 13. These limits shall not apply during the start-up, which is not to exceed three hours, or during the shutdown procedure, which is not to exceed one hour. (Basis: Regulation 9, Rule 9)

4. The concentration of hydrogen sulfide (H2S) in the fuel gas to both turbines shall not exceed 62 ppm annual average. This average shall not include periods when both turbines are not operating. The annual average shall be determined by summing daily averages and dividing by the number of days that at least one turbine was operating. H2S reports shall be submitted to the District on a monthly basis. (Basis: Cumulative Increase)

4A. When firing natural gas at S-10 and S-11, the owner/operator shall use PG&E specification or equivalent pipeline quality natural gas and shall maintain records from the supplier that show the total sulfur content of the gas. The supplier provided sulfur content shall be used to determine compliance with the H2S limit in Part 4 and with the sulfur dioxide limits in Part 2. (basis: NSPS, Cumulative Increase)

4B. Prior to firing refinery gas at S-10 and S-11, the owner/operator shall install, calibrate, and operate a District approved monitor for H2S. (basis: NSPS, Cumulative Increase)

5. The operator shall install, calibrate and operate District-approved monitors for NOx, oxygen, ~~H2S,~~ fuel gas usage, and electricity production. The monitoring system shall be designed to calculate and record NOx mass emissions from S-10 and S-11 on an hourly, daily, monthly, and rolling 12 month basis, as well as demonstrating 3 hour average compliance with the applicable Regulation 9, Rule 9 ~~adjusted~~ section 301.2 NOx limits ~~of 17 ppmv @ 15% O2 dry~~. Compliance with these limits shall be determined in accordance with Part 13. Emissions reports shall be submitted to the District on a monthly basis. (Basis: Cumulative Increase, Offsets)

6. Deleted.

7. In order to demonstrate NOx mass reductions for banked emissions credits during periods of monitor downtime, the owner/operator of the gas turbines S-10 and S-11 shall substitute average hourly NOx mass emissions for the missing period with the higher of the following: (Basis: Offsets)

   1) Previous month average NOx mass emission rate.
   2) Average of the NOx mass emission rates for the hour before and the hour after the missing period.

In the event that such data is not available, the highest allowable NOx mass emission rate (i.e. 31.5 lb/hour per turbine) shall be substituted for the missing period.

8. Data shall be substituted on an average hourly basis each time NOx mass emissions cannot be measured because a monitor is out of service. Substituted emissions data shall be added to the monthly reports and shall include: (Basis: Offsets)

   a. monthly total hours of substituted data resulting from monitor downtime
   b. substituted NOx mass emissions and method of substitution for each downtime period during the month
   c. monthly total of substituted NOx mass emissions
   d. rolling 12 month total of substituted NOx mass emissions

9. In the event that NOx mass emissions from S-10 and S-11 exceed 198.5 tons in any calendar year, the facility owner/operator shall apply for a modification of their permit to operate and shall reimburse the District with emission reduction credits for the amount of the exceedance. All emission credit reimbursements shall be permanent until such time that the facility owner/operator reapplies for and is granted credits by the District. (Basis: Offsets)

10. Copies of all continuous emission monitor and data substitution records shall be kept on site and be made available for inspection by District personnel upon request for a period of 5 years from the date that a record is made. (Basis: Regulation 2-6-501)

11. The facility owner/operator shall ensure that an annual performance test is conducted on each turbine in accordance with the District test procedures to demonstrate compliance with the CO limit. The owner/operator may submit an alternative monitoring plan to the District for approval. If the alternative monitoring plan is approved, the plan shall supersede the annual source test requirement. Approvals shall be processed using the permit modification procedure contained in Regulation 2, Rule 6. (Basis: Regulation 2-6-409.2)

12. The owner or operator shall conduct weekly hydrogen sulfide leak equipment inspection either visually, or by audible or olfactory detection methods. Hydrogen sulfide leaks as indicated by visual, audible, or olfactory methods, shall be repaired as soon as practicable, but no later than 7 days after the leak is detected. The owner or operator shall monitor and record the following information: (Basis: Regulation 9, Rule 2)

    a. For each inspection during which a leak is detected, a record of the date, operator name, and identification of the equipment where the leak occurred.
    b. For each inspection during which no leak is detected, a record that the inspection was performed, the date of the inspection, and a statement that no leaks were detected.

13. ~~Effective January 1, 2010, f~~For the purposes of demonstrating compliance with Regulation 9 Rule 9 Section 301.4 and for Title V compliance certification, the permit holder is considered to be in compliance with Section 301.2, if either the NOx corrected concentration or the output based NOx emission calculations in Section 9 9 605 are below the limits in 301.2. The permit holder shall identify an exceedance only if both the NOx corrected concentration and the output based NOx calculated emission rate exceed the standards in 9 9 301.2. An exceedance of both standards will be reported to the BAAQMD using the compliance procedures specified in the Title V permit. (Basis: Regulation 9-9-301.4)

RECOMMENDATION:

It is recommended that a Change of Permit Conditions be issued to Martinez Cogen L.P. as noted above

Signed By: Ted Hull, Senior Air Quality Engineer, 8/17/2011