South Coast
Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-4178
(909) 396-2000 · http://www.aqmd.gov

March 7, 2008

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Steve Sciortino
Integrated Resources Manager
City of Anaheim
Public Utilities Dept., Integrated Resources Div.
201 S. Anaheim Blvd., Suite 802
Anaheim, CA 92805

Subject: Canyon Power Plant, AQMD ID# 153992
3071 E. Miraloma Ave., Anaheim, CA 92806

Dear Mr. Sciortino:

The South Coast Air Quality Management District (AQMD) received on February 12, 2008 your February 8 letter in response to our letter dated January 25, 2008. As indicated in this letter, AQMD deemed the application package ("Application") for Canyon Power Plant submitted on December 26, 2007 as incomplete because of missing information. Additional information on emissions calculations and the missing Form 400-E-18 for the ammonia tank were provided by John Lague of URS on February 19, 2008.

Based on preliminary review of the present information that you provided, AQMD cannot deem the application package complete as explained below. Our comments are provided in the same sequence as the information requirements specified in our original letter. (Although items 9 through 12 are not in the original letter, these are added to assist AQMD in determining required RTCs and offsets.)

1. Application No. 476650—Initial Title V

d. Wastewater oil water separator

Your response stated that the proposed wastewater oil/water separator is exempt from permitting pursuant to Rule 219(p)(16) because it will use gravity separation. Since Rule 219(p)(16) further states that this exemption does not include treatment processes where VOC and/or toxic materials are emitted, please confirm that there will be no VOC and/or toxic materials emitted from the proposed separator. If the exemption from permitting is inapplicable, please submit an application no later than three weeks after the deemed complete date for the original application package.

2. Application Nos. 476651, 476656, 476659, 476661 – Gas Turbines

c. Equipment specifications and diagrams

Your letter indicated the vendor guarantees for emissions rates and catalyst life and the equipment specifications will be available after the purchase orders for the equipment are executed in July 2008. The emissions guarantees, operating schedules, and emissions calculations for RTC and offset purposes are required

before the applications may be deemed complete. All other requested information should be submitted by April 23, 2008.

d. ***Vendor emission guarantees***
Please see item 2c above.

e. ***Number of startup/shutdown cycles per year per turbine***
In response to our request for the number of startup/shutdown cycles per year per gas turbine, your response stated the applicant is requesting 514 startup/shutdown cycles per year among all four turbines.

For New Source Review purposes, maximum emissions are calculated for each turbine. Permit conditions are drafted to limit the operation of each turbine to ensure it will not exceed the maximum emissions requested. Therefore, a permit condition will be included to limit the startup/shutdown cycles for each turbine. Based on the information submitted, the maximum number of startup/shutdown cycles per year for each turbine will be limited to 129 (not 128.5), unless the applicant requests otherwise.

f. ***Turbine commissioning hours***
As explained in items 9 through12 below, the increase in commissioning time from 104 hours to 156 hours will result in an increase in emissions, which are required to be taken into account in calculating the RTCs and emissions offsets.

3. **Application Nos. 476654, 476657, 476660, 476663 – SCR and Oxidation Catalyst**

a., b. ***Forms 400-E-5***
c. ***SCR and CO Catalyst Information Attachments***
d. ***Equipment specifications and diagrams***

a., b. As in your original submittal, the revised forms list the manufacturer as "Cormetech or Equal." Please specify one manufacturer. Otherwise, an additional application is required for another manufacturer.

c. Your response to c. provided "Data provided as typical values by an Emission Control Module Vendor." Please provide the specific data as previously requested.

d. Your response provided a "typical" SCR/CO catalyst control technology module for gas turbines. Any additional equipment specifications and/or diagrams required by the District may be provided following execution of procurement contracts in the July 2008 timeframe. Please provide the specific data as previously requested.

e. ***Vendor guarantees for emission rates and catalyst life***
Your response stated that vendors have indicated that they are willing to guarantee the emission rates and catalyst life per SCAQMD requirements, but written guarantees are not yet available until the applicant executes the equipment procurement contract with the selected vendor. Further, Anaheim expects to complete the procurement process by July, 2008. Please note that the vendor emission guarantees are required before the application package may be deemed complete.

4. Application No. 476666 –Blackstart Engine

c. Equipment specifications and diagrams

Your response stated the specifications and diagrams will be requested and provided following execution of a purchase order with the selected vendor. As the engine indicated in your response to 4.a. is an AQMD-certified engine, we have access to the equipment specifications.

d. Operating hours for testing and maintenance

Your response explained the applicant is not required to provide the maximum total operating hours, which include testing and maintenance hours, because the engine will be used for emergencies only.

The BACT Guidelines for Non-Major Polluting Facilities for I.C. Engine, Stationary, Emergency, Rev. 3., dated 7-14-2006, restrict total operation of emergency engines to 200 hours in footnote 3. Further, emergency standby engines that operate 200 hours or less per year are exempt from Rule 1110.2, Rule 1303(b)(1) for modeling and 1303(b)(2) for offsets for non-NOx pollutants, and Rule 1401. Still further, Rule 2005(b)(2) requires an applicant for a new facility to hold sufficient NOx RTCs to offset the total facility emissions. The required amount of RTCs is calculated based on the maximum hourly potential to emit, over an operating schedule of 24 hours per day and 365 days per year, or based on a permit condition limiting the source's emissions. Consequently, a permit condition limiting total operating hours is required. Accordingly, a permit condition will limit the maximum total operating hours to the maximum allowable 200 hours, unless the applicant requests a lower number.

5. Application No. 476665 – Aqueous Ammonia Tank

a. Form 400-E-18

As in the original submittal, the revised form 400-E-18, which was submitted as an attachment to your 2/19/08 e-mail, still does not provide entries for Section B: Operation Information. Specifically, the vapor control and the vent valve data information are required to determine whether there will be ammonia and PM_{10} emissions as ammonia is a precursor to PM_{10}. Moreover, ammonia is listed in Rule 1401 as an acute and chronic compound.

6. Rule 1309.1 – Priority Reserve

a. NOx Turbine Emission Limit Guarantee, Rule 1309.1(b)(5)(A)(iii)(e)

Your response stated the SCR vendors have given verbal assurances to meeting the NOx emission rate specified in Rule 1309.1 of 0.08 lb/MW-hr at 59 degrees Fahrenheit ambient temperature, 60% ambient relative humidity and 14.7 psia ambient pressure. However, vendor emission guarantees will not be available until after the applicant executes the equipment procurement contract with the selected vendor, expected to be completed by July, 2008.

Please note that the vendor emission guarantees are required before the application package may be deemed complete. <u>In addition to the NOx turbine emission limit guarantee, a guarantee also is required to assure that the PM_{10} emissions from each turbine at full load will meet the limit of 0.060 lb/MW-hr, corrected to 59 deg F , 60% relative humidity, and 14.7 psia set forth in Rule 1309.1(b)(5)(A)(iii)(d)</u>.

b. ***Rule 1309.1(d)(14) Discussion of CPP Compliance with Power Sales Limitations***

Discussion on page 8-19 of the Application is unclear. Please discuss compliance or exemption using the rule language of Rule 1309.1(d)(14). For example, if CPP is asserting exemption based on the provision that a municipal-owned EGF need not enter into a long-term contract, provided such EGF is designed and constructed to not exceed its native demand load based upon future year projections to 2016 or earlier, it would be helpful if your discussion explain the 200 MW provided by CPP will not exceed the native demand load projected for 2016 (or an earlier year), as well as provide the projected load for the specific year.

7. Offsets

Detailed questions regarding operating schedule and emissions calculations are set forth in items 9 through 12.

8. Permit Fees

The overpayment for the exempt cooling tower ($1,865.02) will be refunded by the Finance Dept. after the applications are deemed complete and accepted in the AQMD permitting database.

9. NOx Emissions Calculations and RTC Requirements

Table 7-2—Estimated Emission Offset Requirements for the Proposed Project Emissions on pg. 7-2 of the Application provided estimated RTC requirements for a normal operating year only. The RTCs required for the initial commissioning year, however, may be different than for subsequent normal operating years. The annual RTC requirements for the entire facility (four turbines and black start engine) for both scenarios, if different, shall be specified in the permit conditions. To assists us in formulating an appropriate permit condition, please explain in detail the operating schedule for the commissioning year for <u>each</u> turbine. The likely scenarios are illustrated below in order to account for the required RTCs:

a. ***Turbines, Commissioning Year***

The Application did not specify the operating schedule for the commissioning year. Assuming each turbine will operate 156 hours for commissioning, then operate for a maximum of 1001.5 hours with 129 start-ups and shut-downs the remainder of the year, the emissions calculations are as follows:

NOx = normal operation + commissioning period
= 21,286 lb/yr for 4 turbines +
[(2256 lb per turbine for 104-hr commissioning period) (156 hr/104 hr) (4 turbines)]
= 34,822 lb/yr

Note: The 2256 lb for the commissioning period is from the table entitled "Commissioning" in Appendix B of the Application. The table is for an 104-hour commissioning period, but the applicant has requested an increase to 156 hours. All commissioning emissions used in this letter are from the above-referenced table.

i. A permit condition shall be imposed to limit the total commissioning period to 156 hours, with 132 hours with no control and 24 hours with water injection. The 2256 lb for the commissioning period is stated to be based on no control. If you wish to take into account the water injection control, then please revise the commissioning period emissions.

ii. The RTC required for the turbines will be 34,822 lb/yr for the commissioning year, unless the applicant requests a different operating schedule or provides clarifying information.

b. ***Turbines, Normal Operation, Years Subsequent to Commissioning Year***
Please note that exact NOx emissions must be ascertained in order to determine the required RTCs.

i. Table 7-2 indicates the RTCs required for the four turbines are 21,259 lb/yr. With back-calculation, it appears that this value was based on **4004 hrs** per year for 4 turbines. However, the table entitled "Turbine Operating Scenarios Average Annual Emissions," found in Appendix B indicates emissions are based on **4006 total operating hours** for 4 turbines. Table 3-1—Maximum Proposed CTG Operating Schedule on pg. 3-2 of the Application states the normal operating hours (combined hours for four CTGs) are 4006 hours. Moreover, Table 7-1—Basis for Estimating Emission Credit Requirements to Offset Proposed Project Emissions, however, states the combined annual operating hours at 100% capacity for CTGs 1-4 are **4000 hours**. Table 3-6—Estimated Total Project Annual Emissions of Criteria Pollutant on pg. 3-9 of the Application indicates the CTG emissions are based on 1001.5 hours per turbine. Please clarify the apparent discrepancies.

ii. As explained in item 2.e., the number of start-up and shut-downs shall be limited to 129, unless requested otherwise by the applicant. The remaining operating hours shall be limited to 1001.5 hours based on Table 3-6—Estimated Total Project Annual Emissions of Criteria Pollutant on pg. 3-9 of the Application.

Thus, the emissions calculations are as follows:

NOx = {[(129 start-up/yr) (6.96 lb/start-up) + (129 shut-downs/yr) (2.85 lb/shut-down) + (4.05 lb/hr controlled) (1001.5 hrs/yr)] for each turbine} {4 turbines} = 21,286 lb/yr

The required RTCs for all turbines will be 21,286 lb/yr for a normal operating year, unless the applicant requests a different operating schedule or provides clarifying information.

c. ***Black Start Engine, Commissioning Year and Subsequent Normal Operation Years: Scenarios 1 and 2***

i. Table 7-2 indicates the RTCs required for the black start engine is 126.99 lb/yr, based on the 12 hours requested for testing and monitoring. Recent

permit evaluation on the Caterpillar Model C-27, 1141 hp, shows that NOx emissions rate is 4.08 g/bhp-hr, or 10.27 lb/hr. We will make the correction on your calculation unless you provide alternative documentation.

As explained in item no. 4.d., the RTCs required are based on total operating hours, not the maintenance and operating hours. Assuming the total operating hours is the maximum allowable 200 hours, the emissions calculations are as follows:

NOx = (10.27 lb/hr) (200 hr/yr) = 2054 lb/yr

Thus, the RTCs required will be 2054 lb/yr, unless the applicant requests a total operating hours that is less than 200 hrs.

10. Emissions Calculations and Offset Requirements for ROG

For a peaker plant, if the maximum total facility emissions for ROG, SO_X, or PM10 for all years are less than 4 tpy, then offsets are not required for the particular pollutant. However, annual and monthly limits for commissioning year, and annual and monthly limits for a normal operation year, are required for each turbine.

The following are possible scenarios in order to account for the required emission offsets:

a. ***Four Turbines***

The Application did not specify the operating schedule for the commissioning year. Assuming each turbine will operate 156 hours for commissioning, then operate for a maximum of 1001.5 hours with 129 start-ups and shut-downs the remainder of the year, we estimate the emissions as follows:

Normal operation

{[(129 start-up/yr) (**0.25 lb/start-up**, *to be confirmed*) + (129 shut-downs/yr) (0.052 lb/shut-down) + (1.20 lb/hr controlled) (1001.5 hrs/yr)] for each turbine} {4 turbines} = 4963 lb/yr

Commissioning

[(66 lb per turbine for 104-hr commissioning period) (156 hr/104 hr) (4 turbines)] = 396 lb/yr

Total = Normal + Commissioning

4963 lb/yr + 396 lb/yr = 5359 lb/yr

i. Please confirm if you concur with the above assumptions.

ii. Table 3-3—Criteria Pollutant Emission Rates During CTG Startup and Shutdown (per turbine) on pg. 3-5 of the Application indicates the start-up VOC emissions are **0.25 lbs/start-up**. However, the start-up emissions integration table found in Appendix B indicate the start-up emissions are **0.10 lb/start-up**, based on 0.049 lbs for the first 10 minutes and 0.050 lb for the second 10 minutes. Please clarify the discrepancy.

b. ***Black Start Engine Emissions***

Table 7-2 indicates the ROG emissions from the black start engine is 19.84 lb/yr, based on the 12 hours requested for testing and monitoring. According to the table entitled "Emissions from the Black Start Engine Generator," in Appendix B, the emission rate of 1.65 lb/hr is based on an assumed emission factor of 1.0 g/kW-hr. Recent permit evaluation on the Caterpillar Model C-27, 1141 hp, shows that the VOC emissions rate is 0.02 g/bhp-hr, or 0.05 lb/hr. We will make the correction on your calculation unless you provide alternative documentation.

As explained in item no. 4.d., the VOC emissions are based on total operating hours, not the maintenance and operating hours. Assuming the total operating hours is the maximum allowable 200 hours, the emissions calculations are as follows:

VOC = (0.05 lb/hr) (200 hr/yr) = 10 lb/yr

Please confirm if you concur with the above assumptions.

c. ***Total Facility Emissions***

Total = Turbines + Black Start Engine
= 5359 lb/yr + 10 lb/yr = 5369 lb/yr

As the total facility emissions of 5369 lb/yr is less than 4 TPY, offsets are not required. However, annual and monthly emissions limit are required for a normal operating year and the commissioning year.

i. Annual Emissions Limits

For each turbine, there will be permit conditions limiting the annual emissions for a normal operating year and annual emissions for commissioning year. These will be based on the same operating schedules, which are requested in item 9 for NOx emissions.

ii. Monthly Emissions Limit

This limit will be based on the maximum operating schedule in any one month. This schedule will be the same as the maximum operating schedule provided in response to item 12.a.ii for PM_{10}, below.

11. Emissions Calculations and Offset Requirements for SOx

Table 7-2 indicates the total SOx emissions for the four turbines are 5676 lb/yr. The likely scenarios are illustrated below to verify the maximum total facility emissions are less than 4 TPY:

a. ***Four Turbines***

From the information provided in the "Turbine Operating Scenario" table found in Appendix B, the calculations are based on 1001.5 hours of operation and 128.5 start-ups and shut-downs as follows:

{[(128.5 start-up/yr) (0.36 lb/start-up) + (128.5 shut-downs/yr) (0.11 lb/shut-down) + (1.36 lb/hr short-term rate) (1001.5 hrs/yr)] for each turbine} {4 turbines} = 5690 lb/yr

i. The emissions, based on 129 start-ups and shutdowns, will be 5691 lb/yr, unless the applicant provides a different operating schedule or clarifying information.

ii. As with the ROG emissions, the total facility emissions for SOx will be enforced with annual and monthly permit condition limits.

b. ***Black Start Engine***

Table 7-2 states the black start emissions are 0.07 lbs/yr based on 12 hours of operation, with an emission factor of 0.01 lb/hr according to Table 3-4. The emission factor is correct, but the total emissions will depend on the total operating time.

12. Emissions Calculations and Offset Requirements for PM_{10}

If the total facility emissions for any year, including the commissioning year, exceed 4 tpy, then offsets are calculated using the 30-day average. The 30-day average is calculated for the maximum emissions in <u>any</u> one month, whether it occurs during commissioning or during normal operation. Table 7-2 indicates the PM_{10} emissions for 4 turbines are 112.6 lbs/day, which will require 136 lbs/day of PM_{10} offsets from the Priority Reserve because the emissions are over 4 tpy. We are unable to find the supporting emission calculations in the information submitted. Therefore, we proceeded to calculate the 30-day average for the turbines only, as the black start engine is exempt from offsets pursuant to Rule 1304, if a permit condition limiting total operating hours to less than 200 hours is accepted.

a. ***Normal Operating Month***

In the absence of permit conditions limiting operation for each month, maximum monthly emissions are calculated based on 31 days of operation, assuming 1 start up and 1 shutdown per day, with the remaining operation at full load.

[(1 start-up/day) (0.67 lb/start-up) + (1 shut-down/day) (0.15 lb/shut-down) + (3.04 lb/hr) (24 hrs – 0.33 hr for start-up – 0.13 hr for shut-down)] [31 days] / 30 days = 74.79 lb/day, which rounds up to 75 lb/day. With an offset ratio of 1.2 to 1, 90 lbs/day will be required for each turbine.

i. Unless already provided, please provide emissions calculations for the 112.6 lb/day for four turbines indicated in Table 7-2, which would translate to 28.15 lb/day for each turbine. Your response should include how the maximum limits indicated in Table 7-1 are incorporated in your emissions calculations. The table indicates the daily operating hours at 100% capacity for worse month is 36 hours and the daily startups/shutdowns for worst month (CTGs only) is 4.

ii. Please confirm the maximum operating schedule in any one month.

b. ***Commissioning Month***

The emissions calculation for the commissioning month is calculated as follows.

(416 lb per turbine for 104-hr commissioning period) (156 hr/104 hr) / 30 days = 20.8 lb/day

Please confirm the engine will not be operated the remainder of the commissioning month. If that is the case, the maximum emissions will occur during a normal operating month.

13. Modeling Results

a. Table 4-6

On pg. 4-18 of the Application, Table 4-6 AERMOD Modeling Results for Normal Project Operations (Impacts due to Individual CTGs) sets forth results for NO_2, CO, and PM_{10}, but not SO_2. Please revise the table to add SO_2.

b. Revised Modeling

Please submit revised modeling results based on the revised emissions calculations.

Please submit the information requested in this letter according to the schedule set forth above. If you have any questions regarding your permit applications please contact Ms. Vicky Lee at (909) 396-2284 or vlee1@aqmd.gov.

Sincerely,

Michael D. Mills

Michael D. Mills, P.E
Senior Manager
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