TETRA TECH EC, INC.

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March 30, 2012

Mr. Eric Solorio
California Energy Commission
Docket No. 11-AFC-3
1516 9th St.
Sacramento, CA 95814

Cogentrix Quail Brush Generation Project - Docket Number 11-AFC-3, CEC SCR Process Conference Call Notes and Responses (March 20, 2012 Technical Conference Call)

Docket Clerk:

Pursuant to the provisions of Title 20, California Code of Regulation, and on behalf of Quail Brush Genco, LLC, a wholly owned subsidiary of Cogentrix Energy, LLC, Tetra Tech hereby submits the CEC SCR Process Conference Call Notes and Responses in response to technical questions posed by CEC staff to Tetra Tech on the March 20, 2012 conference call regarding the SCR system. The Quail Brush generation Project is a 100 megawatt natural gas fired electric generation peaking facility to be located in the City of San Diego, California.

If you have any questions regarding this submittal, please contact Rick Neff at (704) 525-3800 or me at (303) 980.3653.

Sincerely,

Constance E. Farmer

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Project Manager/Tetra Tech

COGENTRIX QUAIL BRUSH PROJECT CONFERENCE CALL NOTES

DATE: March 30, 2012

SUBJECT: **California Energy Commission SCR Process and Urea Technical Conference Call**

ATTENDEES:

California Energy Commission
Eric Solorio
Rick Tyler
Gerry Beamis
Joe Hughes

Cogentrix
Mark Chaffee
John Arnold
Greg Krause

Tetra Tech
Barry McDonald
Sarah McCall

MEETING NOTES:

1. Urea to ammonia conversion process discussion
    a. Direct injection of 40% urea solution into the flue gas stream.
    b. Injected between engine and SCR catalyst.
    c. Just inside the building wall on plant layout.
    d. This is a principally vanadium, tungsten, and titanium oxide catalyst, similar to any SCR. This is provided by Wartsilla.
    e. Urea solution is decomposing in flue gas on the way to the SCR. It is upstream and will be well mixed before entering catalyst bed. From the engine wall to SCR is an 18 foot mixing duct with static mixing elements inside.
    f. Decomposition would break down into ammonia, CO_2 and water. In the past it will break into NH_2 radicals. In terms of the chemistry, we see it getting fully utilized with both NH_2 radicals being effective.
    g. Urea can be supplied either with or without formaldehyde. Cogentrix will get back to Rick Tyler regarding formaldehyde in the urea used in the past. Cogentrix has not established contracts regarding purchase. From CEC's standpoint, it could be a condition that would state that the contracts would specify formaldehyde-free urea.
    h. CEC asked if the CO_2 that would be generated in process was included in the GHG quantification. Barry McDonald will check with Rick Booth and get back to Rick Tyler.
    i. CEC would also like to check with Rick Booth to determine if there is any SF_6 onsite. Mark Chaffee will check into this and get back to CEC. If there is any SF_6, this needs to be quantified and included in the GHG quantification.
    j. This will be rolled up through Sarah to provide to CEC.
2. Summary of CEC requests and Cogentrix responses
    a. Rick Tyler was under the impression that the urea solution was decomposed in a separate vessel prior to injection in the engine exhaust gas. John Arnold said that the 40% solution is injected directly into the engine exhaust about 18 feet upstream of the SCR catalyst. He further stated that the 18-foot transition piece between the engine exhaust and the SCR is a static mixer, with internal vanes to ensure uniform distribution of the reagent.
        i. Response: Attached is a brochure for an SCR supplied on a similar Wartsila installation. Also included is a photograph of a static mixer supplied for the same facility.

b. Rick Tyler asked if the urea solution contained any formaldehyde.
    i. Response: Common urea supply for SCR applications is ultra-high purity and is formaldehyde free. Quail Brush will specify that the urea supplied will be formaldehyde free.

c. Rick Tyler wants Cogentrix to state that the CO_2 generated as a by-product of the urea decomposition process was included in the GHG calculations. Cogentrix explained that it is a very tiny amount of CO_2 and while he agreed, he wants to be able to say that we were thorough and included it in the calculations.
    i. Response: The 362,780 gallons per year of urea will cause the release of 484 tons per year (TPY) of CO_2. Combustion of natural gas will cause the release of 189,000 TPY of CO_2. Therefore, the urea generated CO_2 will increase the overall CO_2 emissions by 0.3%. The urea generated CO_2 emissions were not included in the original GHG calculations but will be added in an upcoming amendment.
    The current levels of GHG emissions are as follows:

Wartsila engines	189,600 metric tons CO_2e/yr
Fire pump engine	5.11 metric tons CO_2e/yr
Heaters (3)	1,953.4 metric tons CO_2e/yr
SF_6 breaker	31.5 metric tons CO_2e/yr
Mobile equipment	26 metric tons CO_2e/yr
Total	191,616 metric tons CO_2e/yr or 210,778 short tons CO_2e/yr

    New level accounting for a lower SF6 breaker amount and added CO_2 for the urea contribution is as follows:

Wartsila engines	189,600 metric tons CO_2e/yr
Urea contribution	~441 metric tons CO_2e/yr
Fire pump engine	5.11 metric tons CO_2e/yr
Heaters (3)	1,953.4 metric tons CO_2e/yr
SF_6 breaker	8.96 metric tons CO_2e/yr
Mobile equipment	26 metric tons CO_2e/yr
Total	192,034 metric tons CO_2e/yr or 211,237 short tons CO_2e/yr

    These changes do not result in any significant changes to CO_2e, and do not impact any of the BACT determinations.

d. The CEC asked if there was any SF_6 onsite. If any is used Cogentrix needs to include the appropriate calculations in the GHG inventory.
    i. Response: The only equipment containing SF_6 of the Quail Brush Generation Project is the High Voltage (138-kV) Circuit Breaker. This breaker will be located inside the facility switchyard and connects the high side of the generator step-up transformer with the interconnecting 138-kV transmission line. The quantity of SF_6 gas in the HVCB will be 75 poundss. SF_6 is fully discussed in the GHG BACT text in Appendix F.6 of the AFC. The discussion is for the 238 kV breaker at 290 pounds of SF_6 storage. In the current air (GHG) emissions calculations, 290 pounds of SF6 is used because it was based on the 230 kV HVCB associated with the initial Point of Interconnection (POI). This quantity has not yet been reduced for the 138 kV POI. This text will have to be amended for the new breaker at 75 pounds SF_5.