CALIFORNIA ENERGY COMMISSION
1516 NINTH STREET
SACRAMENTO, CA 95814-5512

November 15, 2002

Jeff Hansen Project Manager
CE Obsidian Energy, LLC
302 South 36th Street, Suite 400
Omaha, Nebraska 68131-3845

Dear Mr. Hansen:

SALTON SEA UNIT 6 GEOTHERMAL POWER PROJECT (02-AFC-2) DATA REQUESTS

Pursuant to Title 20, California Code of Regulations, section 1716, the California Energy Commission (Energy Commission) staffs requests that the CE Obsidian Energy supply the information specified in the enclosed data requests.

The subject areas addressed in the eight attached data requests, numbered 99 through 106, are air quality and transmission system engineering. Other data requests may be submitted at a later date. The information requested is necessary to: 1) understand the project, 2) assess whether the project will result in significant environmental effects, and 3) assess project alternatives and mitigation measures.

Written responses to the enclosed data requests are due to the Energy Commission by December 16, 2002 or at such later date as may be agreed upon by the Energy Commission staff and the applicant.

If you are unable to provide the information requested in the data requests or object to providing it, you must contact the committee assigned to the project, and the project manager, within 10 days of receiving these requests stating your reason for delay or objections.

If you have any questions regarding the enclosed data requests, please call me at (916) 651-8853.

Sincerely,

Robert Worl
Siting Project Manager

Enclosure
cc: Proof of Service 02-AFC-2
Agency Distribution List

Salton Sea Unit #6 Project (02-AFC-2)
Data Requests

Technical Area: Air Quality
Authors: William Walters/Lisa Blewitt
Senior: Keith Golden

BACKGROUND

Commissioning Emissions Estimate

Plant commissioning emissions are presented in AFC Table 5.1-22, Page 5.1-75, based on Appendix G, Table G-5. Using the information presented in Table G-5, staff was unable to verify the total (tons/period) estimated commissioning emissions for the criteria pollutants. Below is an example calculation using the values provided in Table G-5 and the estimated hours per activity.

For Ammonia:

Total (tons/period) = [PTU (lbs/period) + LP Vent Tank (lbs/hr) * 159 hrs + SP Vent Tank (lbs/hr) * 159 hrs + HP Vent Tank (lbs/hr) * 87 hrs + DWHs (lbs/hr) *167 hrs + Cooling Tower (lbs/hr) * 114 hrs + Steamblow (lbs/period)] / 2000 lbs/ton

Total NH_3 = [11470 + 17.2*159 + 68.8*159 + 700*87 + 16.5*167 + 712*114 + 5942] / 2000 = 87.95 tons/period

Table G-5 shows that the total ammonia equals 113.2 tons/period.

DATA REQUEST

99. Please provide detailed calculations to verify the total (tons/period) estimated commissioning emissions.

BACKGROUND

Well Flow Run Emissions Estimate

Well Flow Run emissions are presented in AFC Table 5.1-33, Page 5.1-81, Appendix G, Table G-14, and the basis for emissions calculations are described in Section 5.1.2.4.2 on page 5.1-19 of the AFC. Section 5.1.2.4.2 explains that re-drilling or coiled tubing cleanout of one production well and three injection wells is anticipated each year. These actions occur within the existing well bore, and are for purposes of cleaning out obstructions such as siltation or mineral deposition that restricts the well flow. Using this information, Staff was unable to verify the total (tons/year) estimated well flow run emissions for the criteria pollutants. Below is an example calculation using the values provided in Table G-14 and the estimated hours per activity.

For PM_{10}:

Total (tons/year) = [Production Single Well (lbs/hr) * 232 hrs/year + Injection Single Well (lbs/hr) * 54 hours/year * 3 wells/year] / 2000 lbs/ton

Total PM_{10} = [97*232 + 56*54*3] / 2000 = 15.79 tons/year

Table G-14 shows that the total PM_{10} equals 18.0 tons/year.

DATA REQUEST

100. Please provide detailed calculations to verify the annual emissions basis (tons/year) used for estimating well flow run emissions.

BACKGROUND

Plant Startup Emissions Estimate

Plant Startup emissions are presented in AFC Table 5.1-36, page 5.1-83, and Appendix G, Table G-16. Using this information, Staff was unable to verify the total (tons/period) estimated plant startup emissions for the criteria pollutants. Below is an example calculation using the values provided in Table G-16 and the estimated hours per activity as provided in the notes section of Table G-16.

For PM_{10}:

Total (tons/year) = [PTU (lbs/hr) * 45 hrs/year + 100% LP Vent Tank (lbs/hr) * 5 hrs/year * (7% of full flow) + SP Vent Tank (lbs/hr) * 5 hrs/year * (7% of full flow) + 100% of Cooling Tower (lbs/hr) * 40 hrs * (7% to 63% of full flow) + DWHs (lbs/hr) * 40 hrs * (7% to 63% of full flow)] / 2000 lbs/ton

Total NH_3 = [70.8*45 + 17.2*5*0.07 + 68.8*5*0.07 + 546*40*0.63 (assumed) + 16.54*40*(0.63 assumed)] / 2000 = 8.70 tons/period

Table G-16 shows that the total PM_{10} equals 5.15 tons/year.

The notes provided with Table G-16 state that emissions from the Cooling Towers and Dilution Water Heaters (DWH) range from 7% to 63% of the full flow. The actual percentages used in the calculation are not provided.

DATA REQUEST

101. Please provide detailed calculations to verify the annual emissions basis (tons/period) used for estimating plant startup emissions.

BACKGROUND

Air Dispersion Modeling Analyses

Staff's review of the air dispersion modeling analyses has found some inconsistencies between the modeling inputs and emission estimates. Staff also needs additional description regarding the assumptions used in the modeling analyses. For example, it appears that Cell "A", the first cell in the tower, may account for higher emissions of hydrogen sulfide than the other cells in the array. This needs clarification and explanation.

DATA REQUEST

102. Staff calculations show that the hydrogen sulfide modeling input files for operation use an emission rate that is equivalent to 7.20 tons/yr, while the AFC indicates that the annual operating hydrogen sulfide emissions are 10.75 tons/yr. Please confirm the model emission inputs and remodel the hydrogen sulfide emissions, if necessary.

103. The modeling files indicate that Cell "A" of the cooling towers will emit significantly more hydrogen sulfide than the other 19 cells of the cooling towers. Please provide an explanation of the hydrogen sulfide emissions partitioning within in the cooling tower.

104. The applicant's modeling analysis indicates that the construction emissions have the potential to cause exceedances of the 1-hour NO_2 standard. Please identify if the NOx-OLM modeling analysis used hourly ozone and concurrent hourly background NO_2 data, and if not please remodel with hourly ozone and concurrent hourly background NO_2 data.

Technical Area: Transmission System Engineering
Author: Sudath Arachchige and Demy Bucaneg P.E.
Technical Senior: Al McCuen

BACKGROUND

Staff needs a complete and coordinated interconnection study. This study should analyze the reliability impacts including the feasibility of selected mitigation measures necessary to support interconnection of the 185 MW Salton Sea Unit 6 Project (SSU6) to the Imperial Irrigation District (IID) transmission system. By considering the latest IID system configuration and utilizing the 2005 Base Case with or without Blythe Energy Project Phase II, new and fully coordinated studies are necessary to assess the system reliability impacts at the interconnection and downstream facilities due to the addition of the Salton Sea Energy Project. The System Impact Study (SIS) should be coordinated with adjacent transmission owners. The SSU6 interconnection should comply with the Utility Reliability and Planning Criteria, North American Electric Reliability Council (NERC) Planning Standards, NERC/Western Systems Coordinating Council (WSCC) Planning Standards, and California Independent System Operator (Cal-ISO) Planning Standards.

DATA REQUESTS

105. Please submit a SIS Report considering the 185 MW net output of SSU6. Include all system impacts and mitigation alternatives considered and then selected for 2005 summer peak and for 2005 off-peak.

    a. For the Western Area Power Authority (Western), IID, San Diego Gas & Electric (SDG&E) and Southern California Edison (SCE) systems, identify and list in a table format major assumptions in the base cases. Include system load, major path (East of the Colorado River, West of the Colorado River, Path 42) and line flows, imports or exports, and the amount of queue and system generation in each system.

    b. Identify the planning criteria utilized in the SIS to determine the reliability criteria violations for overload, over-voltage, system instability, and for excessive fault currents.

    c. Analyze the Western, IID, SDG&E and SCE systems for power flow impacts with and without the SSU6 under N-0 (normal condition), N-1 (single contingencies & Cal-ISO Category B contingencies) and N-2 (double contingencies & Cal-ISO Category C contingencies) conditions. In all studies consider established normal and emergency transmission line ratings according to seasons. Submit the following along with a summary of the study results:

        (1) one-line diagrams showing the study areas of Western, IID, SDG&E and SCE systems including the new switchyard and interconnection facilities for the SSU6.

(2) Where modification of switchyards, substations or switching stations are proposed or under consideration, before and after plan and profile sketches.

(3) Electronic copies of GE PSLF Power Flow base cases (*sav, *drw files) and EPCL or Autocon contingency (for N-1 & N-2) and comparison files. Also provide a hard copy of the list of contingencies evaluated.

(4) Power flow diagrams (in MVA, percentage loading and P. U. voltage) with and without SSU6 for base case normal conditions and for all overload criteria violations under N-1 and N-2 contingency conditions.

(5) Lists of all overload criteria violations in a table format showing the contingency, overloaded element, rating of the overloaded element in MVA or amperes, and the loadings of the overloaded element in MVA or amperes & percentage before and after adding SSU6 generation and their differences (incremental and decremental loading) in percentage side by side. Include all pre-project overload criteria violations.

(6) Discuss candidate mitigation measures considered to eliminate each overload criteria violation and select a mitigation measure for each criteria violation in consultation with the transmission owner and, where applicable, the Cal-ISO. Provide a letter or state in a report from the respective transmission owner and, where applicable, the Cal-ISO verifying the rationale and feasibility of the mitigation measure and implementation of the mitigation measure prior to the on-line date of the new plant.

d. Analyze the Western, IID, SDG&E and SCE systems for Transient Stability (20 second dynamic simulation required) with SSU6. Analysis should be conducted for three-phase and single line to ground faults with delayed clearing at strategic buses under critical N-1 & N-2 contingency conditions. In addition, consider a three phase five-cycle fault at the SSU6 switchyard 161(230) kV bus followed by full load rejection of the plant. Submit the following along with a summary of the study results:

(1) Hard copies of the switching files and dynamic plots.

(2) Electronic copies of the *dyd & *swt files and dynamic plots.

(3) The results in table format showing the bus name with kV faulted, type of fault (3-phase or line to ground), duration (cycles) for clearing, lines tripped, reference diagram and comments (stable, unstable or marginally stable).

(4) For stability criteria violations, discuss candidate mitigation measures and select one for each violation in consultation with the affected transmission owner and Cal-ISO if applicable. Provide revised dynamic plots and switching file showing stable condition with the selected mitigation measure. Provide a letter or state in the report from the respective transmission owner or the Cal-ISO where applicable verifying the rationale and feasibility of the mitigation measure and implementation of the selected mitigation measure prior to the on-line date of SSU6.

e. Analyze Western, IID, SDG&E and SCE systems for Short Circuit currents with and without the SSU6 at strategic buses for three-phase and single line to ground faults. Submit the following along with a summary of the results:

(1) Results in table format showing the bus name with kV faulted, type of fault (three-phase/line to ground), existing breaker size and interrupting rating (kA), fault currents (kA) before and after addition of the SSU6 and their differences (incremental fault currents) side by side.

(2) Identify the substation breakers, which would be considered overstressed for incremental fault currents due to the addition of SSU6 and would need replacement with higher capacity or other mitigation to eliminate overstressing. Provide proposed ratings of the breakers to be replaced in the table. Provide a letter or state in the report from the respective transmission owner or the Cal-ISO where applicable verifying the rationale and feasibility of implementing the selected mitigation measure before the on-line date of SSU6.

106. For any mitigation measure selected per Item 105 above that would include new interconnection facilities or new downstream facilities, or downstream facilities requiring modifications, reconductoring or any other change, provide a full description of the project with one-line diagrams, plans and profiles showing pre-project and post-project facilities. Where new or modified linear facilities are proposed outside a substation fence line, provide in consultation with the transmission owner the routes, construction methods, environmental setting, environmental impacts and recommended mitigation measures to offset any adverse environmental impacts.