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August 29, 2003

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RETURN RECEIPT REQUESTED

Mr. Larry Messinger
Mustang Energy Company, L.L.C.
701 Market Street, Suite 953
St. Louis, MO 63101

Permit Application No. 2663
Mustang Generating Station
Revised BACT Analysis

Dear Mr. Messinger:

This letter is in response to the revised best available control technology (BACT) analysis submitted by Mustang Energy Company, L.L.C. (Mustang) for the proposed Mustang Generating Station. The revised BACT analysis, which was received by the New Mexico Environment Department (Department) on June 20, 2003, was required by the Department's letter to Mustang of December 23, 2002. In that letter the Department informed Mustang that the BACT analysis must include an evaluation of integrated gasification combined cycle (IGCC) and circulating fluidized bed (CFB) combustion systems as alternative pollution control options to the proposed pulverized coal (PC) boiler design.

The Department has completed its preliminary review of the revised BACT analysis. As requested, the revised BACT analysis includes an evaluation of IGCC and CFB. The revised BACT analysis also more closely follows the five step "top-down" BACT determination methodology described in Chapter B of the US Environmental Protection Agency 1990 Draft New Source Review Workshop Manual (NSR Manual). Mustang should continue to adhere to this methodology in order to ensure a defensible BACT determination.

Although the revised BACT analysis is an improvement, it remains deficient in certain areas. In order for the Department to continue its review of the BACT analysis, Mustang must correct these deficiencies as outlined below.

1. In Step 1, Mustang includes IGCC and CFB as alternative pollution control options. The Department agrees that IGCC and CFB should be included with other more traditional pollution control approaches. Mustang indicates that the analysis of these control options is

based on the fuel specified in Mustang's March 5, 2002 application, as amended. The Department also agrees with the fuel choice, but notes that the revised BACT analysis alternatively uses coal with 15.5% and 20 % ash content without explaining the basis for the distinction. Because coal ash content is an important consideration in the design of coal fired units, Mustang must identify and use the correct coal ash content expected at the Mustang site.

2. In Step 2, Mustang concludes that neither IGCC nor CFB are technically feasible control options for the Mustang site. After careful review of the revised BACT analysis, as well as information gathered from independent sources, the Department determines that Mustang's conclusion is not supported by the evidence. Accordingly, the Department finds that Mustang has not demonstrated the technical infeasibility of IGCC and CFB. Moreover, applying the criteria in the NSR Manual, the Department determines that IGCC and CFB are technically feasible at the Mustang site, and must be evaluated in the remaining steps of the top down BACT methodology.

   (a) IGCC and CFB are technically feasible at the Mustang site. A technology is considered to be technically feasible if it is commercially available and applicable to the source under consideration. *See* NSR Manual at B.17-18. A technology is commercially available if it has reached a licensing and commercial sales stage of development. *Id.* A technology is applicable if it has been specified in a permit for the same or a similar source type. *Id.* Mustang's revised BACT analysis indicates that IGCC is commercially available, and IGCC has been specified in air quality permits for coal-fired power plants. *See, e.g.*, Lima Energy Facility, 580 megawatt coal-fired power plant. Similarly, CFB is commercially available and has been specified in air quality permits for coal-fired power plants. *See, e.g.*, AES Puerto Rico 454 megawatt coal-fired power plant; Reliant Energy Seward 584 megawatt coal-fired power plant.

   (b) For both IGCC and CFB, Mustang improperly relies on cost to determine technical infeasibility. A technology is technically feasible when the resolution of technical difficulties is a matter of cost. *See* NSR Manual at B.19-20. Mustang's revised BACT analysis indicates that the resolution of technical difficulties for both IGCC and CFB are a matter of cost. These costs do not support a finding of technical infeasibility, but may be considered during Step 4 of the top down BACT methodology. *See* NSR Manual at B.26.

   (c) For IGCC, Mustang's reliance on historical operating availability, coal quality, and altitude to determine technical infeasibility is not persuasive. With respect to

historical operating availability, IGCC can reliably generate 300 megawatts at the Mustang site, although the cost may be higher than at other locations. With respect to coal quality and altitude, fluxing agents such as limestone could be used to compensate for higher ash and fusion temperatures, and the specifications for combustion turbines, including those burning syngas, are adjustable for altitude.

(d) For CFB, Mustang's reliance on coal quality and altitude to determine technical infeasibility is not persuasive. With respect to coal quality, the erosion of surfaces in the back-pass and boiler also would be harmful to a PC boiler, and since Mustang contends that a PC boiler is technically feasible, there is no basis in the revised BACT analysis to reach a different conclusion for CFB. With respect to altitude, CFB has demonstrated excellent levels of performance at lower elevations (e.g., Jacksonville Electric Authority 265 megawatt coal-fired power plant), and can be sized to compensate for Mustang's assumed 25% output loss (e.g., multiple boiler systems at AES Puerto Rico 454 megawatt coal-fired power plant and the Reliant Energy 584 megawatt coal-fired power plant).

To ensure that Mustang's revised analysis contains sufficient information for the Department to continue its review, please be sure to address the following requirements for Steps 3, 4, and 5 of the top down BACT methodology.

3. In Step 3, Mustang ranks the technically feasible control options by average control effectiveness. This step must be amended to include the control effectiveness (including economics) for IGCC and CFB, as well as the other options presented by Mustang. For the purpose of calculating control effectiveness, a baseline emission rate for each pollutant should be calculated based on the emissions typical of an uncontrolled PC boiler firing the coal specified in Mustang's March 5, 2002 application, as amended. Emissions calculated for each control option should be expressed in both pounds per million Btu of coal feed and pounds per megawatt-hour of electricity generated, and emissions reductions should be calculated as the baseline emission rate less the emission rate for the particular control option. Results so derived should be tabulated for each pollutant subject to the analysis. For a control option that controls multiple pollutants, the total control of all pollutants subject to the analysis (e.g., NOx and SO2) also should be summed. The results tabulated in this step must include relevant information developed in Step 4 of the analysis;

4. In Step 4, Mustang must address the energy, economic and environmental impacts of the control options tabulated in Step 3. In order to facilitate comparison between a PC boiler, IGCC, and CFB, the control system battery limits should be the entire generating station project, including all required air pollution controls, and the control option costs should be

measured in terms of total cost of electricity production for the process and control option less the cost of this same production for the typical uncontrolled PC boiler. The cost of electricity production should include annualized capital and operation and maintenance costs, and the average cost effectiveness for each control option should be calculated as the control option cost (in dollars per megawatt-hour of electricity produced) divided by the emission reduction for the control option (in tons per megawatt-hour of electricity produced). For a control option that controls multiple pollutants, the cost effectiveness should be based on the sum of reductions calculated in Step 3, with the costs apportioned to each pollutant according to the relative mass of that pollutant removed. Incremental cost effectiveness also should be calculated if necessary to differentiate between add-on controls. In addition, for each control option, Mustang should evaluate the water use requirements and potential emissions of carbon dioxide (both expressed per megawatt-hour of electricity generated). Mustang should tabulate this information with the average cost effectiveness in Step 3 of the analysis;

5. In Step 5, BACT is selected as the most stringent option tabulated in Step 3 that has not been eliminated after consideration of energy, economic, and environmental impacts. The Department will specify in the permit for the facility both the BACT emission limit and the control technology (proposed by Mustang and approved by the Department after consideration of technical issues and collateral impacts as appropriate) to be used to ensure that the facility will meet the BACT limit.

Please amend the revised analysis as requested and provide the amended material to the Department no later than October 29, 2003. Also, please be advised that the Department is aware of emissions levels expected at several facilities that are lower than those currently specified by Mustang. The Department expects that Mustang will meet or exceed these emissions levels unless a deviation is adequately justified. In particular, the AES Puerto Rico 454 megawatt CFB facility has been permitted at 0.022 lb SO_2 per MMBtu (3-hour basis), 0.10 lb NOx per MMBtu (24-hour basis) and 0.015 lb PM per MMBtu (3-hour basis), while the Wisconsin Electric 615 megawatt IGCC facility has committed to 0.030 lb SO_2 per MMBtu, 0.07 lb NOx per MMBtu, and 0.011 lb PM per MMBtu.

If you have any questions about these requirements please call me in Santa Fe at (505) 955-8041.

Sincerely,

Mike Fowler
Permitting Section
Air Quality Bureau