

Lopas, Sarah

From: Lopas, Sarah
Sent: Friday, May 20, 2011 3:42 PM
To: 'Wylie, Robert R'
Subject: Lee Alternative Audit Info Needs Rev 1.docx
Attachments: Lee Alternative Audit Info Needs Rev 1.docx

Hi Robert,

Please see the attached information needs for the June 2-3 audit. We can schedule a clarification call for next week at your convenience.

Thanks,
Sarah Lopas

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Duke Energy Carolinas, LLC
William States Lee III Nuclear Station, Units 1 and 2
Combined License Environmental Review
Alternatives Audit Information Needs
June 2-3, 2011

Background:

As the Nuclear Regulatory Commission (NRC) staff conducts its independent evaluation and prepares its draft EIS, additional insights are needed from the applicant regarding the proposed cooling system and its reasonable range of alternatives, as well as the reasonable range of alternative energy technologies that could fulfill the purpose and need. In its amendment to the combined license application to include a new cooling reservoir (i.e., "Make-Up Pond C"), Duke's revised plans reflect different judgments regarding water demands and reliability of water supplies from that considered in its original application. This revision to the application provides operational benefits at an environmental cost that may need to be explored in greater detail to ensure that the Staff can represent the cost-benefit balancing required of the NRC by the National Environmental Policy Act of 1969, as amended (NEPA), in an adequate manner. Should additional information be needed from the applicant, the Staff will develop requests for additional information (RAIs) to be submitted following the audit.

Information Needs:

- 1) Duke should be prepared to discuss its implementation of Federal Energy Regulatory Commission (FERC) flow requirements, withdrawal restrictions, inter-pond transfers, and refill operations within the water budget spreadsheet already provided. Provide a subject matter expert (SME) familiar with the water budget calculations used in Duke's evaluation of the Make-Up Ponds B and C drawdowns for the proposed design, the hybrid cooling tower and Pond B expansion alternatives, and the natural gas-fired combined cycle energy alternative and its water demands (in the context of Make-Up Ponds B and C).
- 2) Provide an SME familiar with Duke's proposed implementation of the Environmental Protection Agency's (EPA) Clean Water Act Section 316(b) cooling water withdrawal requirements and how intake flows would not disrupt natural thermal stratification or turnover patterns in Make-Up Ponds B and C, consistent with EPA's requirements for lakes and reservoirs. The discussion should include Duke's consideration of Title 40 of the *Code of Federal Regulations* Part 125 (Criteria and Standards for the National Pollutant Discharge Elimination System) in their proposed Broad River and make-up pond withdrawals.

- 3) Provide an SME familiar with operation of the Ninety-Nine Islands Hydroelectric Station, in particular potential thermal impacts to the Broad River during low-flow river conditions when the hydroelectric station would operate under a “pulsed flow” format as discussed on pg. 9 of the Computational Fluid Dynamics Thermal Modeling report (ML092730481).
- 4) One or more National Pollutant Discharge Elimination System (NPDES) permits would be required for the different phases of the project. Provide an SME familiar with all aspects of the draft NPDES permit application(s), particularly with regard to nominal and intermittent flows and prospective terms and conditions that would meet the requirements of the State of South Carolina.
- 5) Provide an SME familiar with the development of the hybrid tower water-use characterization curve provided in the response to RAI 128 (ML103070311), particularly with regard to the assumptions of the time necessary to shift between various operating modes and the sensitivity of the curve to the proportion of the time that reliance will be on the dry cooling capability.
- 6) With respect to the water balance described in Duke’s response to RAI No. 216 (ML103070311), provide an SME to discuss Duke’s evaluation of the forced evaporation rate from cooling towers and the natural evaporation rate from the make-up ponds, particularly with regard to anticipated inter-annual variability in the evaporation rates from the ponds.
- 7) Provide an SME to discuss the *Broad River Water Supply Study* (ML103360421), particularly with regard to estimates of future upstream and downstream users. The SME should be prepared to discuss the sensitivity to the evaluation that the effects of climate change could have on the *Broad River Water Supply Study’s* water supply conclusions, particularly with regard to the time period near the end of the proposed license period.
- 8) In the environmental report (ER) Rev. 0, Duke determined that had a hypothetical Lee Nuclear Station operated during the 81-year period of record from 1926-2006, service would have been curtailed for 42 days from June-September 2002 due to water unavailability. In the Make-Up Pond C Supplement to ER Rev. 1 (ML092810257), Duke included more recent Broad River flow data in its determination of days of curtailed service and concluded that Make-Up Pond C was required to provide supplemental cooling water. Based on the reanalysis using reconstructed historical flows and the proposed Make-Up Pond C, in the Supplement to ER Rev. 1 Duke predicts no days of curtailed service due to water unavailability. Provide an SME to discuss the rate of service curtailment in both ER Rev. 0 and the Supplement to ER Rev. 1, and the rationale for creating Make-Up Pond C in the size proposed—the NRC would like to understand if there is an acceptable rate of service curtailment.

- 9) In its response to RAI 123 dated July 22, 2010 (ML102070357), Duke provided additional details regarding consumptive make-up water requirements for a natural gas-fired combined cycle (NGCC) energy alternative. Considering the NGCC energy alternative absent Make-Up Pond C but accounting for the more recent Broad River flow data, Duke indicates that it would have experienced 46 days of curtailed service (i.e., 37 days in 2002 and 9 days in 2008). Similar to information need number 8 above, provide an SME to discuss the difference between the potential risk of 42 days of curtailed service for Lee Nuclear Station determined in Rev. 0, and the potential risk of 46 days of curtailed service projected for the NGCC energy alternative, and how that difference was considered in the development of the proposed strategy for make-up water.
- 10) Provide an SME to discuss Duke's operational strategy for curtailed service in the absence of sufficient make-up water.
- 11) Duke's response to RAI 128 (ML103070311) and ER Rev. 1 (pg. 9.2-18) provided land use impacts of the hybrid cooling and NGCC energy alternative. Provide an SME familiar with the land requirements for alternatives and reasonable combinations of alternatives at the Lee Nuclear Station site.
- 12) Provide an SME to discuss the economic bases considered by Duke in its analysis of the NGCC energy alternative.