

January 25, 2011

MEMORANDUM TO: Robert G. Schaaf, Chief
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Division of Site and Environmental Reviews
Office of New Reactors

FROM: Sarah L. Lopas, Project Manager */RA/*
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Office of New Reactors

SUBJECT: SUMMARY OF PUBLIC TELECONFERENCE HELD ON
NOVEMBER 17, 2010, BETWEEN THE U.S. NUCLEAR
REGULATORY COMMISSION AND DUKE ENERGY CAROLINAS,
LLC, REGARDING THE WILLIAM STATES LEE III NUCLEAR
STATION, UNITS 1 AND 2 COMBINED LICENSE APPLICATION
ENVIRONMENTAL REVIEW

The U.S. Nuclear Regulatory Commission (NRC or the staff), NRC contractor representatives, representatives of Duke Energy Carolinas, LLC (Duke), Duke contractors, and members of the public and State regulatory agencies participated in a telephone conference on November 17, 2010, regarding the William States Lee III Nuclear Station, Units 1 and 2 combined license application environmental review. The purpose of the public teleconference was to discuss Duke's response to a request for additional information (RAI) regarding an analysis of hybrid wet-dry cooling as a potential alternative to the proposed Make-Up Pond C. The RAI response, dated October 29, 2010, can be found in NRC's Agencywide Documents Access and Management System (ADAMS) under Accession Number ML103070311. ADAMS is accessible at <http://www.nrc.gov/reading-rm/adams.html>. Persons who do not have access to ADAMS or who encounter problems in accessing documents located in ADAMS should contact the NRC's Public Document Room staff by telephone at 1-800-397-4209/301-415-4737, or via e-mail to PDR.Resource@nrc.gov.

The public teleconference was noticed on the NRC's public meeting website on November 5, 2010 (ML103070537). In preparation for the teleconference, the staff transmitted discussion questions via e-mail to Duke on November 16, 2010, (ML103260471). Duke provided answers to the discussion questions and clarified portions of the RAI response.

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NRC requested follow-up information to the response to RAI 128:

- A revised description of Figure 3 – Control Philosophy for Hybrid Cooling System to Maximize Water Savings (Attachment 128-10, page 39, RAI 128 response)
- A more detailed breakdown of Table 3 – Other Considerations Associated with a Hybrid Cooling System – Incremental Capital Costs – Dry Cooling Towers for Hybrid Cooling System – 2 Units (Attachment 128-15, page 51, RAI 128 response)

The NRC staff requested that this follow-up information be submitted by Duke within 30 days of the publication of this meeting summary. On December 17, 2010, the NRC received the detailed breakdown of Table 3 (ML103550032).

A list of participants on the call is included as Enclosure 1, and a summary of the discussion is included as Enclosure 2.

Docket Nos.: 52-018 and 52-019

Enclosures:
As stated

cc: See next page

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November 17, 2010, Public Teleconference
RAI Response 128 Regarding Hybrid Wet-Dry Cooling Alternative Analysis
William States Lee III Nuclear Station, Units 1 and 2
Docket Nos. 52-018 and 52-019

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November 17, 2010, Public Teleconference
RAI Response 128 Regarding Hybrid Wet-Dry Cooling Alternative Analysis
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SUMMARY OF DISCUSSION QUESTIONS

In preparation for the teleconference, the staff transmitted discussion questions via e-mail to Duke on November 16, 2010 (ML103260471). These questions and Duke's responses, provided during the teleconference, are summarized below.

1. In the Environmental Report (ER) Revision 0 submitted by Duke Energy Carolinas, LLC (Duke), Duke proposed two units with the acknowledgement that the plants would experience forced shutdown with some non-zero frequency. During the May 2008 site audit, the staff requested that Duke include recent low water years in their water budget analysis. After the associated reanalysis, Duke declared that the ER needed to be supplemented to include Make-Up Pond C in the plant design. Subsequent analyses all appear to be predicated on a zero-frequency of forced outage due low water conditions. Why does Duke now think a zero forced outage frequency is appropriate, whereas in the original ER, they did not?

Duke Response: In ER Revisions 0 and 1, prior to updating the water budget analysis to include the severe drought years of 2007 and 2008, Duke estimated there would be on the order of one forced outage per the 81 year period of record due to a shortage of water. This frequency of forced outages related to a shortage of water was assumed by Duke to not be significant. However, upon revision of the water budget analysis to include the 2007 and 2008 drought years, the number of forced outages due to a water shortage (and relying just on Pond B for supplemental water) increased on the order of five per the 83 year period of record. The total number of days of each forced outage also increased with the inclusion of the recent drought. The duration and frequency of forced outages related to a shortage of water was unacceptable to Duke and drove the need for an additional supplemental water source. Duke did not have a clear threshold on the number of forced outages that would be acceptable or unacceptable. There also would be little-to-no flexibility in scheduling routine outages (e.g., for refueling or maintenance) so they could coincide with periods of low water availability.

2. Why did Duke rely on a single year for its alternative hybrid cooling system analysis? Why was this single year 2002?

Duke Response: Both droughts and temperatures were considered in the hybrid cooling analysis. In 2002 Duke would have had to draw from Ponds B and C for the longest period of time—this was the most severe drought year on record. The hottest year in the last ten years was 2007. Considering the impact from both droughts and temperatures, 2002 was determined to be the worst year and was therefore presented as a bounding analysis.

3. Duke, in response to RAI 128, apparently performs all analyses based on mean daily temperatures. Wouldn't the hybrid system be able to adjust at smaller timescales (e.g., hourly) to changes in air temperature? Why was this analysis not run at sub-daily time scales?

Duke Response: Page 5 of the RAI 128 response explains that the consumptive water demand of the hybrid cooling system was calculated on an hourly basis, and these hourly demands were summed to daily water consumption demands.

4. Please explain Figure 3 – Control Philosophy for Hybrid Cooling System to Maximize Water Savings (Attachment 128-10, page 39, RAI 128 response).

Duke Response: As an AP1000 design parameter, circulating water system supply temperature must be maintained at 91 degrees Fahrenheit or lower. However, Figure 3 of RAI 128 response appears to contain an error. The figure should illustrate that the circulating water system supply temperature would be maintained at 91° F when all three wet towers are operating. Duke agreed to evaluate the figure, and correct and resubmit it as necessary.

Subsequent to the teleconference, Duke clarified that this figure, for its intent (to illustrate the control philosophy of the hybrid towers), is not in error. However Duke intends to provide additional information to explain this figure.

5. Please confirm that the statement on Page 2 of RAI 128 response, “The volume of Make-Up Pond A would be maintained for station shutdown cooling water needs” was not intended to imply that Pond A has a safety-related function.

Duke Response: This is confirmed—there is no safety function for Pond A; Pond A would be maintained for a normal, non-emergency shutdown.

6. Why did the hybrid wet-dry cooling analysis not include the year 2009? (Page 2 of RAI 128 response, 83-year period of record, 1926 through 2008.)

Duke Response: Duke used the 83-year period of record in the hybrid cooling analysis so that the analysis would be consistent with the time span/period of record for the water budget analysis contained in the Supplemental ER regarding Make-Up Pond C. Duke has 2009 and 2010 water data. These are not significant drought years and would not have impacted the analysis.

7. For the period of record for the Broad River, did Duke evaluate if the historical measurement to determine if upstream flows and diversions have results in changes in flow patterns?

Duke Response: In the Broad River Study (which was submitted to the NRC on October 14, 2010, ML103360421), Duke reviewed historical flow data, which correlated primarily with precipitation. The Broad River basin has very little upstream water storage; as such, the data is mostly run-of-the-river.

8. On page 3 of RAI 128 response, what is the basis for the 20-day margin of safety in water supply?

Duke Response: In sizing Make-Up Pond C, Duke applied a 25% design margin to account for uncertainty in the length and severity of future droughts. This design margin was carried through to the hybrid cooling analysis; the 20-day margin of water supply is intended to provide a buffer against a forced outage.

9. On page 4 of RAI 128 response, what was [the] rationale for dry cooling sized at 50% indirect dry at design dry bulb temperature?

Duke Response: Duke wanted to maximize the water savings associated with using dry cooling in order to properly evaluate the hybrid cooling alternative. Duke looked at the largest footprint for dry cooling towers that the Lee site could accommodate.

10. On page 4 of RAI 128 response, Duke mentions “The potential for higher temperatures” in the future? Does this refer to extreme outlier events or systematic changes in climate (i.e., global climate change)?

Duke Response: The potential for higher temperatures in the future refers to outlier events; this statement is not referring to uncertainty with regard to global climate change. The potential for higher temperatures in the future is not credited in the 25% design margin.

11. On page 9 of RAI 128 response, when Duke asserts that the impacts of dredging and raising pool elevation in Pond B would result in significant additional environmental impacts, does ‘additional significant’ imply relative to impacts associated with creating Pond C? Does Duke assert that Pond B is ‘Waters of the United States’?

Duke Response: ‘Significant environmental impacts’ was not meant as a comparison to the environmental impacts resulting from the creation of Make-Up Pond C; rather, this statement referred to the existing Pond B. During construction of the Pond B dam, virtually all available material (i.e., suitable soil) from the impounded area was used as fill material in the dam. To enlarge Pond B, the pond would have to be completely dewatered and then a combination of excavation/ripping and blasting (i.e., removal of rock) would be required. This would create significant environmental impacts at Pond B. The banks of this additional excavation would have to be sloped which would further enlarge the footprint of Pond B and its environmental impacts.

Pond B is currently considered Waters of the United States pursuant to the 2007 U.S. Army Corps of Engineers (USACE) jurisdictional determination. Duke is working with USACE to confirm this is the appropriate determination given the history of the pond and its anticipated use at the Lee Nuclear Station.

12. What is the basis of the \$1.04 billion cost estimate in Table 3 – Other Considerations Associated with a Hybrid Cooling System – Incremental Capital Costs – Dry Cooling Towers for Hybrid Cooling System – 2 Units (Attachment 128-15, page 51, RAI 128 response)?

Duke Response: Duke has a more detailed breakdown of costs that correspond to the line items in Table 3. Duke will provide these costs as a supplement to the RAI 128 response. These costs are proprietary information and Duke will request withholding of that information from public disclosure.

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