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September 10, 2008

Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Subject: Duke Energy Carolinas, LLC.
William States Lee III Nuclear Station - Docket Nos. 52-018 and 52-019
AP1000 Combined License Application for the William States Lee III
Nuclear Station Units 1 and 2
Response to Request for Additional Information
Ltr # WLG2008.09-02

- References: (1) Letter from Brian C. Anderson (NRC) to Peter S. Hastings (Duke Energy), *Request for Additional Information Letter No. 002 Related to SRP Section 10.04.05 for the William States Lee III Units 1 and 2 Combined License Application*, dated August 11, 2008.
- (2) Letter from Brian C. Anderson (NRC) to Peter S. Hastings (Duke Energy), *Request for Additional Information Letter No. 003 Related to SRP Section 10.04.05 for the William States Lee III Units 1 and 2 Combined License Application*, dated August 11, 2008.

This letter provides the Duke Energy response to the Nuclear Regulatory Commission's requests for additional information (RAIs) included in the reference letters.

Responses to the NRC information requests described in reference letters (1) and (2) are addressed in separate enclosures, which also identify associated changes, when appropriate, that will be made in a future revision of the Final Safety Analysis Report for the Lee Nuclear Station.

If you have any questions or need any additional information, please contact Peter S. Hastings, Nuclear Plant Development Licensing Manager, at 704-373-7820.

Bryan J. Dolan
Vice President
Nuclear Plant Development

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Enclosures:


- 1) Duke Energy Response to Request for Additional Information Letter 002, RAI 10.04.05-1.
- 2) Duke Energy Response to Request for Additional Information Letter 003, RAI 10.04.05-2.

AFFIDAVIT OF BRYAN J. DOLAN

Bryan J. Dolan, being duly sworn, states that he is Vice President, Nuclear Plant Development, Duke Energy Carolinas, LLC, that he is authorized on the part of said Company to sign and file with the U. S. Nuclear Regulatory Commission this supplement to the combined license application for the William States Lee III Nuclear Station and that all the matter and facts set forth herein are true and correct to the best of his knowledge.


Bryan J. Dolan

Subscribed and sworn to me on September 10, 2008


Notary Public

My commission expires: June 26, 2011



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xc (w/o enclosures):

Michael Johnson, Director, Office of New Reactors
Gary Holahan, Deputy Director, Office of New Reactors
David Matthews, Director, Division of New Reactor Licensing
Scott Flanders, Director, Site and Environmental Reviews
Glenn Tracy, Director, Division of Construction Inspection and Operational Programs
Charles Ader, Director, Division of Safety Systems and Risk Assessment
Michael Mayfield, Director, Division of Engineering
Luis Reyes, Regional Administrator, Region II
Loren Plisco, Deputy Regional Administrator, Region II
Thomas Bergman, Deputy Division Director, DNRL
Stephanie Coffin, Branch Chief, DNRL

xc (w/enclosures):

Brian Hughes, Senior Project Manager, DNRL

Lee Nuclear Station Response to Request for Additional Information (RAI)

RAI Letter No. 003

NRC Technical Review Branch: Balance of Plant Branch 1

Reference NRC RAI Number(s): 10.04.05-1

NRC RAI:

FSAR Section 10.4.5.2.1 states that the circulating water system (CWS) design parameters are provided in Table 10.4-202, "Supplemental Design Parameters for Major Circulating Water System Components." The staff compared these site-specific design parameters to the corresponding data in the DCD Tier 2 Table 10.4.5-1 and noted that the following design parameters for the cooling towers are not included in FSAR Table 10.4-202:

- Approach temperature (°F)
- Outlet temperature (°F)
- Approximate temperature range (°F)
- Heat transfer rate (Btu/hr)
- Wind velocity design (mph) and seismic criteria per Uniform Building Code

In reference to the STD COL 10.4-1 item, and with respect to FSAR Table 10.4-202, "Supplemental Design Parameters for Major Circulating Water System Components," please provide information to address all parameters from the corresponding Table 10.4.5-1 in AP1000 DCD, Revision 16, or justify its exclusion.

Duke Energy Response:

FSAR Table 10.4-202 is a supplement to DCD Table 10.4.5-1, as reflected by the footnote to the table, "This table supplements DCD Table 10.4.5-4." The design parameters listed in the RAI (approach temperature, outlet temperature, approximate temperature range, heat transfer rate, and wind velocity design and the seismic design criteria) are unchanged from the values listed in the DCD. Since the DCD information is typically not repeated in the FSAR, but rather is incorporated by reference, only the FSAR supplementary information was provided in FSAR 10.4-202, Rev 0. The parameters listed in the RAI pertain to the plant specific analysis, based on DCD heat transfer performance requirements. Thus, all parameters from the corresponding DCD Table 10.4.5-1 are addressed, either through incorporation by reference from DCD Table 10.4.5-1 or by the supplemental information in FSAR Table 10.4-202.

To improve clarity, FSAR Table 10.4-202 will be revised to address all design parameters listed in DCD Table 10.4.5-1 regardless of whether the parameter values change or remained consistent with the DCD Table 10.4.5-1 value.

Associated Revision to the Lee Nuclear Station Combined License Application:

FSAR Table 10.4-202.

Attachment:

Attachment 1: FSAR Table 10.4-202 Markup

ATTACHMENT 1

MARKUP OF FSAR TABLE 10.4-202

TABLE 10.4-202
DESIGN PARAMETERS FOR MAJOR
CIRCULATING WATER SYSTEM COMPONENTS⁽¹⁾

Circulating Water Pump

Quantity	Three per unit
Flow rate (gal/min)	190,000 ⁽²⁾

Mechanical Draft Cooling Towers

Quantity	Three per unit
Approach temperature (°F)	10
Inlet temperature (°F)	116.2 ⁽²⁾
Outlet temperature (°F)	91
Approximate temperature range (°F)	25.2
Flow rate (gal/min)	560,050 ⁽²⁾
Heat Transfer (Btu/hr)	7,628 x 10 ⁶
Wind velocity design (mph)	110
Seismic design criteria per Uniform Building Code	

Notes: (1) This table replaces DCD Table 10.4.5-1.

_____ (2) WLS site-specific values; all other values are the same as those provided in the DCD.

Lee Nuclear Station Response to Request for Additional Information (RAI)

RAI Letter No. 003

NRC Technical Review Branch: Balance of Plant Branch 1

Reference NRC RAI Number(s): 10.04.05-2

NRC RAI:

In FSAR Section 10.4.5.2.2, the applicant stated that little or no water would reach the plant from a cooling tower basin wall breach due to the remote location of the tower and the grading of the site. However, the staff could not find any further details regarding the location and proximity of the mechanical draft cooling towers with respect to the plant and safety-related equipment. Regarding the circulating water system (CWS), the regulatory basis for acceptance of COL Information Item 10.4-1 (COL Action Item 10.5-3) is established in General Design Criterion (GDC 4), "Environmental and Dynamic Effects Design Bases," as it relates to design provisions to accommodate the effects of discharging water that may result from a failure of a component or piping in the CWS. In addition, Item 1.A of SRP Acceptance Criteria in SRP Section 10.4.5, "Circulating Water System," states that means should be provided to prevent or detect and control flooding of safety-related areas so that the intended safety function of a system or component will not be precluded due to leakage from the CWS.

Therefore, the staff requests additional information regarding the effects of cooling tower failure on safety-related equipment and structures of the plant. Please provide clarification and/or additional information regarding the location of the cooling towers with respect to the plant and confirm that failure of these towers will not affect the structures, systems, or components that perform or support a safety-related function.

Duke Energy Response:

Duke Energy has modified the text of FSAR Subsection 10.4.5.2.2 to provide a description of the cooling tower locations with respect to the plant. A break in the cooling tower basin or the associated circulating water system piping will not have an adverse affect on safety-related systems, structures, or components resulting from external plant flooding. The grading of the site combined with the location of the cooling towers and the associated circulating water system piping will preclude adverse interactions. A markup of the FSAR Subsection 10.4.5.2.2 text is provided as Attachment 1. Attachment 1 will be incorporated into a future revision of the Final Safety Analysis Report.

The AP1000 Design Control Document (DCD) evaluates the impact of large leaks from the circulating water system due to pipe failures within the turbine building. DCD Section 10.4.5.2.3 concludes, "The effects of flooding due to a circulating water system failure, such as a rupture or an expansion joint, will not result in detrimental effects on safety-related equipment since there is no safety-related equipment in the turbine building and the base slab of the turbine building is located at grade elevation. Water from a system rupture will run out of the building through a relief panel in the turbine building west wall before the level could rise high enough to cause damage. Site grading will carry water away from safety-related buildings." DCD Section

Duke Letter Dated: September 10, 2008

10.4.5.2.3 also states "Large circulating water system leaks due to pipe failures will be indicated in the control room by a loss of condenser vacuum in the condenser shell."

Associated Revision to the Lee Nuclear Station Combined License Application:

FSAR Subsection 10.4.5.2.2

Attachment:

- 1) Revised FSAR Subsection 10.4.5.2.2

Lee Nuclear Station Response to Request for Additional Information (RAI)

Attachment 1 to RAI 10.04.05-2

Mark-up of FSAR Section 10.4.5.2.2

Revise COLA Part 2, FSAR Chapter 10, Section 10.4.5.2.2, by modifying the third paragraph under the heading "Cooling Towers" as follows:

Cooling Towers

The cooling tower basins serve as storage for the circulating water inventory and allow bypassing of the cooling tower during cold weather operations. The cooling tower nearest to the Unit 1 safety-related structures, systems and components (SSCs) is located over 700 ft. west of the Unit 1 auxiliary building. The cooling tower nearest to the Unit 2 safety-related SSCs is located over 600 ft. east of the Unit 2 containment building. The elevation of the cooling tower berms is 40 ft. above plant grade. The site is graded to direct surface water flow away from the nuclear islands. ~~Should a cooling tower basin wall breach, little if any water would reach the plant due to the remote location of the tower and the grading of the site.~~ A break in the cooling tower basin or the associated circulating water system piping will not have an adverse affect on safety-related systems, structures, or components resulting from external plant flooding. The grading of the site combined with the location of the cooling towers and the associated circulating water system piping will preclude adverse interactions.