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December 17, 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
(RAI No. 451)
Ltr# WLG2008.12-22

Reference: Letter from Brian Hughes (NRC) to Peter Hastings (Duke Energy),
*Request for Additional Information Letter No. 040 Related To SRP Section
2.3.5 for the William States Lee III Units 1 And 2 Combined License
Application*, dated October 20, 2008

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

Responses to the NRC information requests described in the referenced letter 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 980-373-7820.

Bryan J. Dolan
Vice President
Nuclear Plant Development

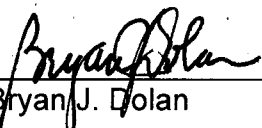
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Enclosures:

- 1) Duke Energy Response to Request for Additional Information Letter 040,
RAI 02.03.05-001
- 2) Duke Energy Response to Request for Additional Information Letter 040,
RAI 02.03.05-002
- 3) Duke Energy Response to Request for Additional Information Letter 040,
RAI 02.03.05-003

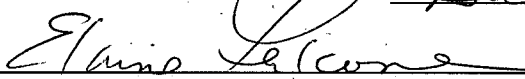
AFFIDAVIT OF BRYAN J. DOLAN

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 December 17, 2008



Notary Public

My commission expires: Feb 27 2011

SEAL

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xc (w/o enclosures):

Loren Plisco, Deputy Regional Administrator, Region II
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. 040

NRC Technical Review Branch: Siting and Accident Consequences Branch (RSAC)

Reference NRC RAI Number(s): RAI 02.03.05-001

NRC RAI:

Please provide a reference to the AP1000 DCD section for the building cross-sectional area and containment height used as input to the XOQDOQ model.

Duke Energy Response:

Regulatory Guide 1.111 states that for ground-level releases, an adjustment may be made that takes into consideration initial mixing of the effluent plume within the building wake. Two inputs are necessary to determine the effect of building wake: the maximum adjacent building height, and the smallest vertical-plane cross-sectional area of the reactor building. In the AP1000 design, the Shield Building, which surrounds the containment, is the tallest adjacent building. Therefore, the Shield Building height and smallest vertical-plane cross-sectional area are used. The following dimensions from AP1000 DCD Tier 1, Revision 15, Table 3.3-1, and Westinghouse drawing APP-1000-P2-902, Revision 0 (Reference 1), are used to calculate the height and cross-sectional area of the Shield Building.

Design Plant Grade – El. 100'-0"

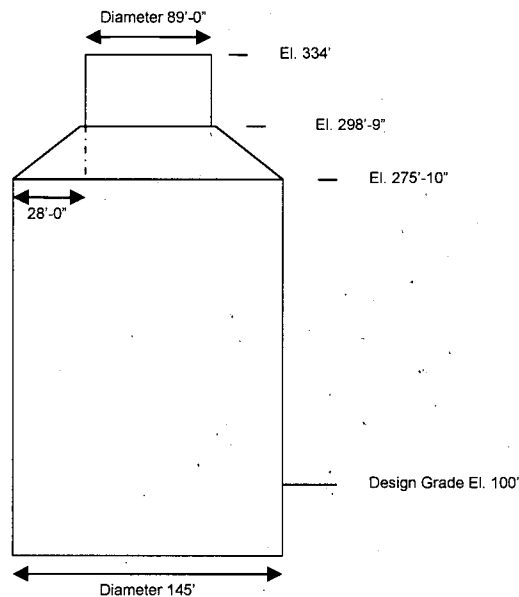
Passive Containment Cooling System (PCS) Tank Roof – El. 334'-0"

Outside Surface of Shield Building Wall to Shield Building Centerline – 72'-6"

Elevation Range of Shield Building Conical Roof – 275'-10" to 298'-9"

Outside Diameter of PCS Tank Roof – 89'-0"

Using these dimensions from AP1000 DCD, Revision 15, the following outline of the Shield Building can be determined:



Using this figure, the Shield Building above grade cross-sectional area is 31,313 ft² (2,909 m²), and the above grade Shield Building height is 234 ft (71.3 m).

Some of the Shield Building dimensions changed between Revision 15 and Revision 16 of the AP1000 DCD. The dimensions based on AP1000 DCD Tier 1, Revision 16, Table 3.3-1, and Westinghouse drawing APP-1000-P2-902, Revision 1 (Reference 2), are given below:

Design Plant Grade – El. 100'-0"

PCS Tank Roof – 329'-0"

Outside Surface of Shield Building Wall to Shield Building Centerline – 72'-6"

Elevation Range of Shield Building Conical Roof – 271' to 293'-9"

Outside Diameter of PCS Tank Roof – 89'-0"

Using these dimensions from AP1000 DCD, Revision 16, the Shield Building above grade cross-sectional area is 30,594 ft² (2,842 m²), and the above grade Shield Building height is 229 ft (69.8 m).

A sensitivity study was performed to determine the effects of the changes in Shield Building cross-sectional area and height on the routine X/Q values. Based on the sensitivity study, the effects were determined to be negligible. Therefore, the X/Q values calculated using the Shield Building cross-sectional area and height determined from AP1000 DCD, Revision 15, and Westinghouse drawing APP-1000-P2-902, Revision 0 (Reference 1), were maintained in the FSAR (Note that the Shield Building dimensions are unchanged from DCD Revision 16 to Revision 17).

References:

1. Westinghouse Electric Company LLC, AP1000 Drawing, APP-1000-P2-902, "Nuclear Island General Arrangement Section B-B", Revision 0
2. Westinghouse Electric Company LLC, AP1000 Drawing, APP-1000-P2-902, "Nuclear Island General Arrangement Section B-B", Revision 1

Associated Revision to the Lee Nuclear Station Final Safety Analysis Report:

None

Attachments:

None

Duke Letter Dated: December 17, 2008

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

RAI Letter No. 040

NRC Technical Review Branch: Siting and Accident Consequences Branch (RSAC)

Reference NRC RAI Number(s): RAI 02.03.05-002

NRC RAI:

RG 1.206, Section C.I.2.3.5.2, states that a COL applicant should discuss the suitability of input parameters, source configuration, and topography relating to long-term dispersion estimates. Please discuss the impact of the Broad River, McKowns Mountain, and other nearby topographical features on long-term dispersion estimates in FSAR Section 2.3.5, or justify an alternative approach.

Duke Energy Response:

The Lee Nuclear Station Final Safety Analysis Report (FSAR), Subsection 2.3.5.1, is revised to provide reference to FSAR Subsection 2.3.4.1 for discussion of the impact of the Broad River and McKowns Mountain on the calculation of atmospheric dispersion (X/Q) values. FSAR Subsection 2.3.4.1, which was revised in response to FSAR RAI Number 02.03.04-001 (Reference 1) and Environmental Report RAI 49 (Reference 2), provides discussion of the terrain in the vicinity of the Lee Nuclear Station site including McKowns Mountain and the Broad River valley. The elevation difference between McKowns Mountain and site grade for the Lee Nuclear Station is approximately 220 ft. In addition, revised FSAR Subsection 2.3.4.1 includes cross-references to FSAR Subsections that address the representativeness of the Lee Nuclear Station meteorological data and regional topography. As indicated in FSAR Subsection 2.3.2, local site meteorological conditions generally reflect the synoptic-scale atmospheric processes, and are consistent with the regional meteorology. Additional information on this topic is provided in the response to FSAR RAI 02.03.02-009 (Reference 3).

The FSAR revisions described above will be included in a future FSAR revision.

References:

1. Letter from Bryan J. Dolan to Document Control Desk, U.S. Nuclear Regulatory Commission, WLG2008.10-06, *William States Lee III Nuclear Station Units 1 and 2 Response to Request for Additional Information (RAI #449)*, dated October 10, 2008.
2. Letter from Bryan J. Dolan to Document Control Desk, U.S. Nuclear Regulatory Commission, WLG2008.09-11, *William States Lee III Nuclear Station Units 1 and 2 Response to Request for Additional Information*, dated September 26, 2008.
3. Letter from Bryan J. Dolan to Document Control Desk, U.S. Nuclear Regulatory Commission, WLG2008.11-08, *William States Lee III Nuclear Station Units 1 and 2 Response to Request for Additional Information (RAI No. 447)*, dated November 25, 2008.

Enclosure 2

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Duke Letter Dated: December 17, 2008

Associated Revision to the Lee Nuclear Station Final Safety Analysis Report:

FSAR Subsection 2.3.5.1

Attachments:

- 1) Revision to FSAR Subsection 2.3.5.1

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

Attachment 1 to RAI 02.03.05-002

Revision to FSAR Subsection 2.3.5.1

Duke Letter Dated: December 17, 2008

COLA Part 2, FSAR, Chapter 2, Subsection 2.3.5.1, last paragraph, will be revised as follows:

As described in Subsection 2.3.4.1, the gently rolling terrain in the vicinity of the Lee Nuclear Station site would not have a significant effect on atmospheric dispersion estimates. The shallow river valley in which the Lee Nuclear Station site is located does not create a significant topographic barrier to air dispersion. In addition, the wind characteristics of the site are representative of the vicinity. Therefore, terrain recirculation adjustments as described in Regulatory Guide 1.111 were not considered applied for the Lee Nuclear Station site.

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

RAI Letter No. 040

NRC Technical Review Branch: Siting and Accident Consequences Branch (RSAC)

Reference NRC RAI Number(s): RAI 02.03.05-003

NRC RAI:

Please provide a copy of the input files for XOQDOQ so the staff may conduct a confirmatory analysis of the information presented in FSAR Section 2.3.5.

Duke Energy Response:

The following XOQDOQ input files were used to evaluate the atmospheric dispersion (X/Q) values and atmospheric deposition (D/Q) values for Lee Nuclear Station routine releases presented in FSAR Subsection 2.3.5:

LEE NO DECAY.IN

LEE DECAY.IN

These files used inputs from AP1000 DCD, Revision 15, to determine the height of the plant vent and the cross-sectional area and height of the Shield Building for evaluating building wake effects. As discussed in the response to RAI 02.03.05-001 included in Enclosure 1 of this letter, these inputs changed from Revision 15 to Revision 16 of the AP1000 DCD.

The following XOQDOQ input files were used in a sensitivity study to evaluate the X/Q and D/Q values for routine releases using inputs from AP1000 DCD, Revision 16:

LEE NO DECAY SENS.IN

LEE DECAY SENS.IN

A complete discussion of input parameters affecting atmospheric dispersion that changed from AP1000 DCD Revision 15 to Revision 16 is provided in the response to Environmental Report RAI 99 (Reference 1). The differences in Shield Building dimensions between AP1000 DCD Revision 15 to Revision 16, and the resulting impact on the calculation of routine X/Q and D/Q values, are discussed further in the response to RAI 02.03.05-001 included in Enclosure 1 of this letter. Based on the results of the sensitivity study described in Reference 1 using inputs from AP1000 DCD, Revision 16, the differences between Revision 15 and Revision 16 of the AP1000 DCD were determined to have a negligible impact on the X/Q and D/Q values for routine releases. Therefore, the results using inputs from AP1000 DCD, Revision 15, were maintained in FSAR Subsection 2.3.5.

The Shield Building dimensions necessary for this analysis are unchanged from AP1000 DCD Revision 16 to Revision 17.

Electronic copies of the XOQDOQ input files identified above are provided in Attachment 1.

Reference:

1. Letter from Bryan J. Dolan to Document Control Desk, U.S. Nuclear Regulatory Commission, WLG2008.10-08, *William States Lee III Nuclear Station Units 1 and 2 Response to Request for Additional Information*, dated October 17, 2008.

Associated Revision to the Lee Nuclear Station Final Safety Analysis Report:

None

Attachment:

- 1) CD Containing Lee Nuclear Station XOQDOQ Input Files

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

Attachment 1 to RAI 02.03.05-003

CD Containing Lee Nuclear Station XOQDOQ Input Files

The attached CD contains the following XOQDOQ input files used to calculate the routine atmospheric dispersion (X/Q) and deposition (D/Q) values for Lee Nuclear Station.

Inputs from AP1000 DCD, Revision 15:

LEE NO DECAY.IN

LEE DECAY.IN

Inputs from AP1000 DCD, Revision 16, to perform a sensitivity study:

LEE NO DECAY SENS.IN

LEE DECAY SENS.IN