

## LeeRAIsPEm Resource

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**From:** Hughes, Brian  
**Sent:** Wednesday, March 12, 2014 2:03 PM  
**To:** LeeRAIsPEm Resource  
**Subject:** LEE-RAI-LTR-112 related to the stability of the subsurface M and F for William S Lee Units 1 and 2 COLA  
**Attachments:** LEE-RAI-LTR-112.docx

**Hearing Identifier:** Lee\_COL\_RAI  
**Email Number:** 143

**Mail Envelope Properties** (3D388D66E29B124A910BAC867C3A359D0229A90B8F89)

**Subject:** LEE-RAI-LTR-112 related to the stability of the subsurface M and F for William S Lee Units 1 and 2 COLA  
**Sent Date:** 3/12/2014 2:03:26 PM  
**Received Date:** 3/12/2014 2:03:28 PM  
**From:** Hughes, Brian

**Created By:** Brian.Hughes@nrc.gov

**Recipients:**  
"LeeRAIsPEm Resource" <LeeRAIsPEm.Resource@nrc.gov>  
Tracking Status: None

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MESSAGE	3	3/12/2014 2:03:28 PM
LEE-RAI-LTR-112.docx	68276	

**Options**  
**Priority:** Standard  
**Return Notification:** No  
**Reply Requested:** No  
**Sensitivity:** Normal  
**Expiration Date:**  
**Recipients Received:**

March 12, 2014

Mr. Robert Kitchen  
Licensing Manager, Nuclear Plant Development  
Duke Energy  
526 South Church Street  
Charlotte, NC 28201-1006

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION LETTER NO. 112, RELATED TO  
SRP SECTION 02.05.04 - STABILITY OF SUBSURFACE MATERIALS  
AND FOUNDATIONS APPLICATION SECTION: 02.05.04 FOR THE  
WILLIAM STATES LEE III UNITS 1 AND 2 COMBINED LICENSE  
APPLICATION (RAI – 7436)

Dear Mr. Kitchen:

By letter dated December 12, 2007, as supplemented by letters dated January 28, 2008, February 6, 2008 and February 8, 2008, Duke Energy submitted its application to the U. S. Nuclear Regulatory Commission (NRC) for a combined license (COL) for two AP1000 advanced passive pressurized water reactors pursuant to 10 CFR Part 52. The NRC staff is performing a detailed review of this application to enable the staff to reach a conclusion on the safety of the proposed application.

The NRC staff has identified that additional information is needed to continue portions of the review. The staff's request for additional information (RAI) is contained in the enclosure to this letter.

To support the review schedule, you are requested to respond within 30 days of the date of this letter. If changes are needed to the final safety analysis report, the staff requests that the RAI response include the proposed wording changes.

R. Kitchen

If you have any questions or comments concerning this matter, you may contact me at 301-415-6582.

Sincerely,

**/RA/**

Brian Hughes, Senior Project Manager  
Licensing Branch 4 - AP1000 Projects  
Division of New Reactor Licensing  
Office of New Reactors

Docket Nos. 52-018  
52-019

Enclosure:  
Request for Additional Information

CC: see next page

R. Kitchen

If you have any questions or comments concerning this matter, you may contact me at 301-415-3199.

Sincerely,

/RA/

Brian Hughes, Senior Project Manager  
Licensing Branch 4 - AP1000 Projects  
Division of New Reactor Licensing  
Office of New Reactors

Docket Nos. 52-018  
52-019

eRAI Tracking No. 7436

Enclosure:  
Request for Additional Information

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DATE	2/21/14	2/21/14	2/20/14	3/12/14

\*Approval captured electronically in the electronic RAI system.

**OFFICIAL RECORD COPY**

## **Request for Additional Information 112**

Issue Date: 03/12/2014

Application Title: William States Lee III, Units 1 and 2 - Dockets 52-018 and 52-019

Operating Company: Duke Energy Carolinas, LLC

Docket No. 52-018 and 52-019

Review Section: 02.05.04 - Stability of Subsurface Materials and Foundations

Application Section: 02.05.04

### **QUESTIONS**

#### **02.05.04-18**

RAI 2.5.4 -17

In revised COLA Part 2, FSAR Chapter 2, Subsection 2.5.4.8, it indicates that the immediate underlying material for some non-seismic portions of the annex and turbine buildings will be saprolite soils, instead of compacted engineered granular fill over saprolite soils as originally planned. Because the SPT N60 values of the saprolite soil are between 11 and 30 as listed in Table 2.5.4-211, and the possible maximum groundwater level will be above this layer of soil, this saprolite soil is not totally liquefaction potential free. Since AP1000 DC Tier I specifies differential settlement requirements between the nuclear island and adjacent buildings, in accordance with 10 CFR 100.23 and 10 CFR Part 50, Appendix S, please: 1) provide an estimate of the maximum thickness of saprolite soil under the aforementioned buildings; 2) address its liquefaction potential; and 3) discuss the impact of such materials underneath portions of the foundation on the differential settlement between the nuclear island and adjacent buildings.

#### **02.05.04-19**

RAI 2.5.4-18

In revised COLA Part 2, FSAR Chapter 2, Subsection 2.5.4.10.1.1, it states that "[t]he applied seismic loading may exceed, by a relatively small amount, the DCD value as a result of the site-specific seismic loading. The results described above show that a large margin of bearing capacity is available above the DCD requirement, and therefore the factor of safety under the site-specific seismic loading requirement will remain high and the available bearing pressure will exceed the site specific requirement by a significant amount." Since the dynamic bearing capacity site parameter is a Tier 1 requirement, any exceedance will result a departure. In accordance with 10 CFR 100.23 and 10 CFR Part 50, Appendix S, please: 1) provide details on how the calculated loading differs from the DCD value; and 2) properly address this departure in this COL application.

#### **02.05.04-20**

RAI 2.5.4 -19

In revised COLA Part 2, FSAR Chapter 2, Subsection 2.5.4.10.3, it states that "Westinghouse has evaluated the Lee Nuclear Station site-specific lateral earth pressures and has determined that they are bounded by the standard AP1000 design pressures." Although the related table and figure are also updated, table(s) or figure(s) were not provided to show that the site-specific lateral earth pressures are bounded by the standard AP1000 design. In accordance with 10 CFR 100.23 and 10 CFR Part 50, Appendix S, please provide necessary table(s) or figure(s) to confirm that the site-specific lateral earth pressures are bounded by the standard AP1000 design.