PMVogtleCOLPEm Resource

From: John-Chau Nguyen
Sent: Wednesday, March 11, 2009 9:26 AM
To: PMVogtleCOLPEm Resource
Subject: FW: RAI-LTR-030 RELATED TO SRP Section 02-05-04 for the Vogtle Nuclear Site Units 3 and 4 COLA
Attachments: VOG-RAI-LTR-30_ML0907000440.pdf

From: Brian Hughes
Sent: Wednesday, March 11, 2009 8:53 AM
To: agaughtm; Brian Anderson; Christian Araguas; Manny Comar; Sharon Haggerty; WASparkm
Cc: Frankie Vega; Rebecca Karas; John-Chau Nguyen
Subject: RAI-LTR-030 RELATED TO SRP Section 02-05-04 for the Vogtle Nuclear Site Units 3 and 4 COLA

To All:

Attached please find RAI Letter 030, Transmitting the site specific RAI 2171, regarding SRP Section 2.5.4. (ML090700044).

Thank you,

Brian Hughes
Project Manager
NRO/DNRL/NWE1
US NRC
301-415-6582

Hearing Identifier: Vogtle_COL_Public
Email Number: 44

Mail Envelope Properties (21707AE0BEC04F4BB5502E2483D69D6A2554E3B136)

Subject: FW: RAI-LTR-030 RELATED TO SRP Section 02-05-04 for the Vogtle Nuclear Site Units 3 and 4 COLA
Sent Date: 3/11/2009 9:25:49 AM
Received Date: 3/11/2009 9:25:49 AM
From: John-Chau Nguyen

Created By: John-Chau.Nguyen@nrc.gov

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

Post Office: HQCLSTR02.nrc.gov

Files	**Size**	**Date & Time**
MESSAGE	573	3/11/2009 9:25:49 AM
VOG-RAI-LTR-30_ML0907000440.pdf	164022	

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

VogtlecolRAIsPEm Resource

From: Brian Hughes
Sent: Wednesday, March 11, 2009 7:13 AM
To: VogtlecolRAIsPEm Resource
Subject: RAI-LTR-030 RELATED TO SRP Section 02-05-04 for the Vogtle Nuclear Site Units 3 and 4 COLA
Attachments: VOG-RAI-LTR-030.doc

Hearing Identifier: Vogtle_COL_eRAIs
Email Number: 33

Mail Envelope Properties (D841D501B2C4D244B75AB897F70C1494862DE71581)

Subject: RAI-LTR-030 RELATED TO SRP Section 02-05-04 for the Vogtle Nuclear Site Units 3 and 4 COLA
Sent Date: 3/11/2009 7:13:06 AM
Received Date: 3/11/2009 7:13:07 AM
From: Brian Hughes

Created By: Brian.Hughes@nrc.gov

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

Post Office: HQCLSTR01.nrc.gov

Files	**Size**	**Date & Time**
MESSAGE	3	3/11/2009 7:13:07 AM
VOG-RAI-LTR-030.doc	52334	

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

March 10, 2009

Mr. Joseph A. (Buzz) Miller
Senior Vice President
Southern Nuclear Operating Company
P.O. Box 1295
Birmingham, AL 35201

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION LETTER NO. 030 RELATED TO SRP SECTIONS 02.05.04 FOR THE VOGTLE ELECTRIC GENERATING PLANT UNITS 3 AND 4 COMBINED LICENSE APPLICATION

Dear Mr. Miller:

By letter dated March 28, 2008, Southern Nuclear Operating Company (SNC), submitted its application to the U. S. Nuclear Regulatory Commission (NRC) for a combined license (COL) for two AP1000 advance 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.

If you have any questions or comments concerning this matter, you may contact me for the Vogtle Electric Generating Plant combined license at 301-415-3637.

Sincerely,

/**RA**/

For CA, Brian Hughes, Acting
Lead Project Manager
AP1000 Projects Branch 1
Division of New Reactor Licensing
Office of New Reactors

Docket Nos. 52-025
52-026

Enclosure:
Request for Additional Information

CC: see next page

If you have any questions or comments concerning this matter, you may contact me for the Vogtle Electric Generating Plant combined license at 301-415-3637.

Sincerely,

/**RA**/

For CA, Brian Hughes, Acting
Lead Project Manager
AP1000 Projects Branch 1
Division of New Reactor Licensing
Office of New Reactors

Docket Nos. 52-025
52-026
eRAI Tracking No. 2171

Enclosure:
Request for Additional Information

Distribution:

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NRO-008

OFFICE	RGS1/BC	NWE1/PM	OGC	NWE1/L-PM
NAME	RKaras	CAraguas*	AHodgdon*	CAraguas*
DATE	02/11/2009*	10/07/08	02/25/2009	03/10/2009

*Approval captured electronically in the electronic RAI system.

OFFICIAL RECORD COPY

Request for Additional Information No. 2171

3/10/2009

Vogtle
Southern Nuclear Operating Co.
Docket No. 52-0025 and 52-0026
SRP Section: 02.05.04 - Stability of Subsurface Materials and Foundations
Application Section: 2.5.4

QUESTIONS for Geosciences and Geotechnical Engineering Branch 1 (RGS1)

02.05.04-3

SSAR Section 2.5.4 does not include a discussion of the lateral earth pressures or hydrostatic pressures at the site. RAI 2.5.4-1 requested an explanation of the methodologies used to determine the lateral earth pressures and the hydrostatic pressures acting on the safety-related structures at the VEGP Units 3 and 4 site. The response to RAI 2.5.4-1 stated that the static lateral earth pressures were evaluated using Rankine's theory for active, at-rest, and passive conditions; seismic lateral earth pressures for active and at-rest conditions were evaluated using methods presented by Mononobe-Okabe and ASCE 4-98, respectively; and lateral earth pressures resulting from an areal surcharge applied at the ground surface alongside below-grade walls were evaluated for active and at-rest conditions. Sample earth pressure diagrams for active and at-rest conditions were provided.

As a result of the response to RAI 2.5.4-1, the following concerns were noted:

1) It appears the ASCE 4-98 reference for at-rest conditions is not for the case of Rankine at-rest conditions but rather refers to the Wood solution for dynamic pressures against a rigid wall, as Figure 2 of the response to the RAI resembles the Wood dynamic pressure solution. It is not obvious how this relates to the at-rest pressure conditions, as an at-rest condition is associated with a static overburden condition where pressures increase with depth due to dead weight of the soil under a presumed zero displacement assumption of the wall.

2) The M-O active pressure solution presumes that the rigid wall moves enough under the soil loads to generate shear failure in the soil along a potential failure surface, and the M-O solution assumes that the failure surface is a simple linear one emanating from the base of the wall. The guidance provided in ASCE 4-98 is to not use this approach unless the wall displacements are expected to be enough to generate this reduction. Previous discussions had indicated that the use of tie-back construction of the MSE walls was intended to ensure that wall displacements would be minimal during backfill operations behind the walls. Additionally, backfill placement and construction methods would be such that the displacements of the wall during backfill operations would be such as to minimize the shear wave velocity

contrasts between the compacted soil immediately behind the wall and the soils compacted away from the MSE wall by heavy equipment.

3) When comparing the resulting seismic force against the wall computed by the M-O method and the dynamic Wood solution, the M-O solution is less than half of the Wood solution for walls away from other adjacent walls.

4) The AP1000 exterior walls of the nuclear island were designed to resist the envelope of both the dynamic Wood solution and the peak passive pressure solution. The envelope pressure may be very much larger than the M-O solution, particularly along the lower two-thirds of the wall. The lateral seismic pressures acting on the vertical walls will be generated in SASSI and are typically approximated by the Wood solution.

Please address each of the concerns listed above and provide justification for the use of or any reference made to wall pressure calculations discussing active soil pressures conditions employing the Mononobe-Okabe method.

02.05.04-4

AP1000 DCD, Revision 17, Table 2.5-1, provides the limits of acceptable settlement without additional evaluation. The table provides that the total settlement for the nuclear island foundation mat is three (3) inches, and the differential settlement across the nuclear island foundation mat is limited to ½ inch in fifty (50) feet. Additionally, the differential settlement between the nuclear island and the turbine building is limited to 3 inch, and the differential settlement between the nuclear island and other buildings is also limited to 3 inch.

In the case of the nuclear island foundations, turbine buildings, and other surrounding buildings supported on structural backfill, please provide a description of the program and/or method that will be implemented to ensure that the actual settlement and differential settlement of structures does not exceed the AP1000 DCD settlement criteria.

Relates to AP1000 DCD Revision 17.