Vogtle PEmails

From: Reyes-Maldonado, Ruth
Sent: Thursday, September 07, 2017 2:45 PM
To: Vogtle PEmails
Cc: Patel, Chandu
Subject: Second Set of Request for Additional Information (RAI) in support of the staff's review of LAR 16-031, Shield Building Roof Changes.
Attachments: Second Set of RAI for Vogtle LAR 16-031.pdf

SNC
On June 16, 2017, Southern Nuclear Operating Company (SNC) submitted Revision 1 of License Amendment and Exemption Request (LAR 16-031R1), Shield Building Roof Changes. The staff reviewed SNC LAR 16-031 R1, and as a result of this review the staff identified the need for additional information. The attachment contains the subject request for additional information (RAI). Your licensing review schedule assumes technically correct and complete responses within 30 days of receipt of RAIs. As a result of needing additional information, staff will not be able to complete the review until a minimum of 3 months after receipt of an acceptable supplement to the request. If the change is needed sooner than that date to support construction, please consider submitting a request for a PAR.

Attachment: Second Set Request for Additional Information (RAI) in support of the staff's review of LAR 16-031, Shield Building Roof Changes.

Thanks,

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Subject: Second Set of Request for Additional Information (RAI) in support of the staff's review of LAR 16-031, Shield Building Roof Changes.
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From: Reyes-Maldonado, Ruth

Created By: Ruth.Reyes-Maldonado@nrc.gov

Recipients:
"Patel, Chandu" <Chandu.Patel@nrc.gov>
Tracking Status: None
"Vogtle PEmails" <Vogtle.PEmails@nrc.gov>
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Request for Additional Information

Vogtle Electric Generating Plant Units 3 and 4

License Amendment Request, LAR 16-031

Shield Building Roof Changes

Appendix D, "Design Certification Rule for the AP1000 Design," of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 52, "Licenses, Certifications, and Approvals for Nuclear Power Plants," Section VIII.B.6 requires NRC approval for departures from Tier 2* information. The proposed changes affect Tier 2* information, and therefore requires NRC approval. In addition to the above requirement, 10 CFR Part 52.79 establishes the minimum requirements as principal design criteria for light water reactor in Appendix A to 10 CFR Part 50 GDC "General Design Criteria for Nuclear Power Plants."

The NRC staff considered the following regulatory requirements in reviewing the license amendment request (LAR) that included the proposed UFSAR changes.

- GDC 2 "Design Bases for Protection against Natural Phenomena," in 10 CFR Part 50, Appendix A, "General Design Criteria for Nuclear Power Plants," requires that structures, systems, and components important to safety shall be designed to withstand the effects of natural phenomena such as earthquakes, tornadoes, hurricanes, floods, tsunami, and seiches without loss of capability to perform their safety functions.

- GDC 4 "Environmental and Dynamic Effects Design Bases," in 10 CFR Part 50, Appendix A, "General Design Criteria for Nuclear Power Plants," requires that structures, systems, and components important to safety shall be designed to accommodate the effects of and to be compatible with the environmental conditions associated with normal operation, maintenance, testing and postulated accidents, including loss-of-coolant accidents.

Consistent with Standard Review Plan Section 3.8.4, the staff reviews the descriptive information, including plans and sections of each structure, to establish that there is sufficient information to define the primary structural aspects and elements relied upon for the structure to perform the intended safety function.

The staff reviewed Vogtle LAR 16-031 R1, submitted by Southern Nuclear Operating Company (SNC). As a result of this review the staff identified the need for the following additional information:

(1) In the licensee's response to Question 2d for Change Activity (CA) #3 on Pages 3 and 4 of 4, Enclosure 6, LAR 16-031 R1, states "It is confirmed that there is no input change to the analysis model, including loading, geometry or load combinations. Further, it is confirmed that the cumulative impact of changes in the nuclear island structure in other areas …. are considered negligible to the seismic loading input applied in the supporting calculation. Therefore, there is no large response change in the roof analysis model." LAR 16-031 R1, also states "the changes in demands are caused by: a) the update of analysis data post-process due to a few macro typographical discrepancies resolved under the Corrective Action Process (CAP) and evaluated in accordance with QA

program; and b) update of calculations to implement Note 2 in UFSAR Table 3.8.4-2 by using load combination factor of 0.9 for dead load when combined with upward seismic loads".

a. Given this information that the model, analysis, and seismic response of the roof analysis model have not been changed, and that the cause for the changes in demands in LAR 16-031, Rev. 0 is invalidated in Rev 1, the staff requests the licensee to explain in the LAR how the changes in demands were calculated in LAR 16-031, Rev. 0 and 1, where the demands increased as high as 40% and 96% respectively by comparing with the demands in plant-specific DCD.

b. Since the LAR has identified a significant flaw with the demand computation for the shield building structural components, the staff requests the licensee to confirm that actions have been taken to ensure that the macro discrepancies have been evaluated and rectified in a global manner for the shield building wherever the macro is used.

c. Note 2 in UFSAR Table 3.8.4-2 is the same as Note 2 in Table 3.8.4-2 of AP1000 DCD, Revision 19 (ML11171A431), and Note 2 states: "Where any load reduces the effects of other loads, the corresponding coefficient for that load is taken as 0.9 if it can be demonstrated that the load is always present or occurs simultaneously with the other loads. Otherwise the coefficient for the load is taken as zero." Since the load combination factor of 0.9 for dead load when combined with upward seismic loads was cited in the plant-specific DCD, the staff request the licensee to explain why the licensee wants to use this load combination factor again in the LAR R1? If it is deemed necessary to use this load combination factor, the staff requests the licensee to confirm that the same has been done globally for the shield building.

(2) LAR 16-031 R1 on Page 3 of 4, Enclosure 6, states "It is confirmed that there is no input change to the analysis model, including loading, geometry or load combinations." The LAR also states on Page 4 of 4, Enclosure 6 and Page 14 of 28, Enclosure 7, "irrespective of the magnitude of each load change, the demands were found to be smaller than the capacities," which implies that input loading changes were made and therefore conflicts with the previous statement. The staff requests the licensee to address the inconsistency regarding the loading.

(3) On Page 4 of 28, Enclosure 7, LAR 16-031 R1 currently does not specify material and grade for the built-up plate girder except using ASTM A572 as an example. Therefore, the staff requests the licensee to provide material specification and grade for the built-up plate girders, which are required for the girder design and Charpy V-Notch impact test.

(4) On Pages 16 and 17 of 22, Enclosure 11 in UFSAR Figure 3H.5-11, Sheet 3, the staff did not find the information in CA #4 item H on Page 15 of 28, Enclosure 7 that identifies which structural elements are changed in the design finalization with the exception of one rebar change that was identified.

a. The staff requests the licensee to clarify in the LAR which structural elements have been changed, and the associated technical basis for all changes.

b. The staff requests the licensee to correct the discrepancy of roof tie changes above radial roof beams between the INSERT 9 texts on Page 12 of 12, Enclosure 8 and the UFSAR Figure 3H.5-11, Sheet 3.

(5) In Change Item 6 in Table 1 on Page 5 of 12, Enclosure 8 to UFSAR Figure 3H.5-11,

Sheet 5, [
] should be removed. In addition, the staff requests the licensee to provide the designation of the mechanical coupler for the vertical reinforcement in PCS tank exterior wall in UFSAR Figure 3H.5-11, Sheet 5 on Page 19 of 22, Enclosure 11.

(6) For the Table 2 on Pages 8-11 of 28, Enclosure 7 to UFSAR Figure 3H.5-11, Sheet 6 on Page 12 of 28, Enclosure 7, the staff requests the licensee to clarify the following:

a. In Change Item 6, "PCS Tank Interior Wall to Roof Intersection – Tie Bars," the current tie bar reinforcement label (1#5@3.6°) lacks the dimension in the radial direction while the proposed reinforcement (#4@3.75°x12" between radial roof beams and 3#5 stirrups @6" above radial roof beams) has the dimension in the radial direction. The staff cannot determine whether the steel areas has increased or decreased. Therefore, the staff requests the licensee to provide the dimension in the radial direction for the current tie bar reinforcement, and explain the basis for the change.

b. In Change Item 10, "Roof Slab – Top and Bottom Radial Reinforcement," the licensee described that top and bottom radial reinforcement represents roof radial reinforcement at half way between the PCS interior and exterior walls, which it has been removed from UFSAR Figure 3H.5-11, Sheet 6. The staff requests the licensee to clarify in the LAR where this top and bottom radial reinforcement is located in other UFSAR Figures.