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Docket No.: 52-025

ND-12-1600
10 CFR 50.90

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

Southern Nuclear Operating Company
Vogtle Electric Generating Plant Unit 3
Preliminary Amendment Request (PAR):
Basemat Concrete/Rebar Details (PAR-12-007)

Ladies and Gentlemen:

The U.S. Nuclear Regulatory Commission (NRC) issued the Vogtle Electric Generating Plant (VEGP) Unit 3 combined license (COL) (License No. NPF-91) to Southern Nuclear Operating Company (SNC) on February 10, 2012. In accordance with the provisions of VEGP Unit 3 COL Condition 2.D. (1), Changes during Construction, SNC hereby requests a preliminary amendment to the VEGP Unit 3 COL Number NPF-91. By letter ND-12-1601, dated August 1, 2012, SNC requested an amendment (LAR-12-007) to the COLs for VEGP Units 3 and 4 to revise the details associated with the nuclear island basemat concrete and reinforcement bar.

The requested revisions are necessary to support resolution of issues identified during an inspection of the reinforcement bar configuration for the basemat. A description, a reason for the change, and associated regulatory evaluations are contained in Enclosure 1 to this letter. To facilitate the staff's review of this activity, proposed markups depicting the requested changes to the licensing basis document are contained in Enclosure 2 to this letter. This PAR has been developed in accordance with guidance provided in Interim Staff Guidance on Changes during Construction Under 10 CFR Part 52, COL-ISG-25 [ML111530026], and corresponds accurately and technically with the above-mentioned LAR-12-007. The technical scope of this PAR is consistent with the technical scope of the LAR.

Construction activities associated with installation of reinforcement bar in accordance with code requirements for the nuclear island basemat structure affected by the proposed license amendment are scheduled to proceed August 6, 2012. SNC submits this Preliminary Amendment Request, PAR-12-007, to allow construction activities to proceed in accordance with the current integrated project schedule for Units 3 and 4. In order to avoid unnecessary construction delays during the NRC's evaluation of the related license amendment request (LAR), the determination of whether the NRC has any objection to SNC proceeding with the installation of the proposed plant licensing basis modification identified in the PAR/LAR is requested to be provided by

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August 6, 2012. Delayed determination regarding this PAR could result in an additional delay in the construction of the nuclear island basemat structure and subsequent construction activities that are dependent upon the completion of the basemat structure.

This letter does not contain any NRC commitments. Should you have any questions, please contact Mr. Wesley Sparkman at (205) 992-5061.

Mr. C. R. Pierce states that he is the Regulatory Affairs Director of Southern Nuclear Operating Company, is authorized to execute this oath on behalf of Southern Nuclear Operating Company and to the best of his knowledge and belief, the facts set forth in this letter are true.

Respectfully submitted,

SOUTHERN NUCLEAR OPERATING COMPANY

C. R. Pierce

C. R. Pierce

CRP/ERG/kms

Sworn to and subscribed before me this 1 day of August 2012

Notary Public: Mary J. Shubert

My commission expires: 12-1-2012

NOTARY PUBLIC STATE OF ALABAMA AT LARGE
MY COMMISSION EXPIRES: Dec 1, 2012
BONDED THRU NOTARY PUBLIC UNDERWRITERS

- Enclosures:
1. Vogtle Electric Generating Plant (VEGP) Unit 3 – Preliminary Amendment Request Regarding Basemat Concrete/Rebar Details (PAR-12-007)
 2. Vogtle Electric Generating Plant (VEGP) Units 3 and 4 – LAR Licensing Basis Document Proposed Changes (LAR-12-007)

cc: Southern Nuclear Operating Company

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Mr. P. A. Russ, Director, AP1000 Global Licensing
Mr. R. A. DeLong, Director of U.S. & International Licensing (acting)
Mr. S. A. Bradley, Vogtle Project Licensing Manager
Mr. T. J. Ray, Manager, AP1000 COL Licensing Support

Southern Nuclear Operating Company

ND-12-1600

Enclosure 1

Vogtle Electric Generating Plant (VEGP) Unit 3

**Preliminary Amendment Request
Regarding
Basemat Concrete/Rebar Details**

Pursuant to 10 CFR 50.90, Southern Nuclear Operating Company (SNC) is currently preparing a license amendment request (LAR) to change the Vogtle Electric Generating Plant (VEGP), Units 3 and 4, licensing basis documents associated with Combined License Nos. NPF-91 and NPF-92, respectively. Accordingly, SNC requests the determination of whether the NRC has any objection to proceeding with the installation of the proposed plant modification identified in the Preliminary Amendment Request (PAR) provided below which is consistent with the LAR to be provided by the date shown below.

PAR Request Number: PAR-12-007	Station Name: VEGP	Unit Number(s): <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 4	PAR Request Date: August 1, 2012
1. NRC PAR Notification Requested Date (see Block 9 for basis): August 6, 2012			
2. License Amendment Request References (as applicable): <input checked="" type="checkbox"/> LAR submittal date and SNC Correspondence Number: August 1, 2012, ND-12-1601 <input type="checkbox"/> Expected LAR submittal date: _____			
3. Brief Description of Proposed Change: <p>The proposed changes will amend the Combined Licenses in regard to the concrete and reinforcement details for the nuclear island basemat. The basemat is the common 6-foot-thick, cast-in-place, reinforced concrete foundation for the nuclear island structures, consisting of the containment, shield building, and auxiliary building. The departure from Tier 2* information involves changing the concrete specified compressive strength from 4000 psi to 5000 psi for basemat in Updated Final Safety Analysis Report (UFSAR) Subsection 3.8.4.6.1.1 and removing the 0" dimension from the Lower-Section detail that represents the basemat below the exterior wall in UFSAR Figure 3H.5-3.</p>			
4. Reason for License Amendment Request: <p>The AP1000 nuclear island consists of three seismic Category I structures founded on a common basemat. The three structures that make up the nuclear island are the coupled auxiliary and shield buildings, the steel containment vessel, and the containment internal structures. The nuclear island basemat design is described in UFSAR Subsection 3.8.5.4.4. This design description is identified as Tier 2* information. The design of the basemat reinforcement must satisfy requirements in American Concrete Institute (ACI) 349-01 Chapters 13, 15, and 21.</p> <p>One key requirement from these chapters of ACI 349 is that the embedment of the reinforcing bars must be sufficient to fully develop the yield strength of the reinforcement bar at the inside face of the associated wall. Following an inspection and extended discussion, the detailing of the bottom side layers of the basemat longitudinal reinforcement has been determined to not satisfy the ACI 349 requirements for embedment using the specified compressive strength for the concrete included in the certified design. ACI 349 refers to the design strength of the concrete as the specified compressive strength of concrete. Increased specified compressive strength for the basemat concrete has been determined to permit the design reinforcement detailing to</p>			

satisfy the requirement for full development of the longitudinal reinforcement.

The description of the basemat concrete, identified in UFSAR Subsection 3.8.4.6.1.1 as having a specified compressive strength of 4000 psi is proposed to be revised to require a 5000 psi specified compressive strength for the basemat under the nuclear island.

5. Is Exemption Request Required? ☐ Yes ☒ No

If Yes, Briefly Describe the Reason for the Exemption. Not Applicable

6. Identify Applicable Precedents: No precedent identified.

7. Preliminary Assessment of Significant Hazards Consideration [10 CFR 50.92(c)]:

The proposed changes would amend the Combined Licenses in regard to the concrete specified compressive strength for the nuclear island basemat and reinforcement details. The basemat is the common 6-foot-thick, cast-in-place, reinforced concrete foundation for the nuclear island structures, consisting of the containment, shield building, and auxiliary building. The departure from Tier 2* information involves changing the concrete specified compressive strength from 4000 psi to 5000 psi for the basemat in Updated Final Safety Analysis Report (UFSAR) Subsection 3.8.4.6.1.1 and removing the 0" dimension from the Lower-Section detail that represents the basemat below the exterior wall in UFSAR Figure 3H.5-3.

An evaluation to determine whether or not a significant hazards consideration is involved with the proposed amendment was completed by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below:

1. Does the proposed amendment involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: No

The design function of the basemat is to provide the interface between the nuclear island structures and the supporting soil. The basemat transfers the load of nuclear island structures to the supporting soil. The basemat transmits seismic motions from the supporting soil to the nuclear island.

The change to the concrete/rebar details for the basemat does not have an adverse impact on the response of the basemat and nuclear island structures to safe shutdown earthquake ground motions or loads due to anticipated transients or postulated accident conditions because there is not an adverse change to the seismic floor response spectra and transient and postulated accidents are not affected by seismic motions. The change to the concrete/rebar details for the basemat does not impact the support, design, or operation of mechanical and fluid systems because change in the loads on these systems due to seismic motions is negligible. There is no change to the design of plant systems or the response of systems to anticipated transients and postulated accident conditions. The basemat supports the structures and the mechanical system and component supports. There is no change to this function. Because the change to the concrete/rebar details does not change the response of systems to postulated accident conditions and is unrelated to any accident source term parameters, there is no change to the predicted radioactive releases due to postulated accident conditions. Therefore, there is no change to the consequences of an

accident before or after implementation of the proposed amendment. The plant response to previously evaluated accidents or external events is not adversely affected, nor does the change described create any new accident precursors. Therefore, there is no difference between the probability of a seismically induced event before or after the implementation of the proposed amendment. The concrete specified compressive strength and 0" dimension are not parameters considered as an initiator for any accident previously evaluated. Therefore, there is no difference in the probability or consequences of a seismically induced event before or after implementation of the proposed amendment. Based on the considerations outlined above, there is no significant increase in the probability or consequences of an accident previously evaluated.

2. Does the proposed amendment create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No

The proposed change is an increase in the concrete specified compressive strength for the basemat and a change in the reinforcement details. The change to the concrete/rebar details does not change the design function of the basemat or nuclear island structures. The change to the concrete/rebar details does not change the design function, support, design, or operation of mechanical and fluid systems. Because the basemat will be designed to the American Concrete Institute (ACI) Codes specified in the UFSAR and the concrete will be specified, mixed, batched and placed to the same codes and standards specified in the UFSAR, the change to the concrete/rebar details does not result in a new failure mechanism for the basemat or new accident precursors. As a result, the design function of the basemat is not adversely affected by the proposed change. Therefore, the proposed change will not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does the proposed amendment involve a significant reduction in a margin of safety?

Response: No

The margin of safety for the design of the seismic Category I structures including the basemat is determined by the use of the ACI-349 code and the analyses of the structures required by the UFSAR. The change to the concrete/rebar details does not have an adverse impact on the strength of the basemat. The change to the concrete/rebar details does not have an adverse impact on the seismic design spectra or the structural analysis of the basemat or other nuclear island structures. The change to the concrete/rebar details does not significantly impact the analysis requirements or results for the nuclear island for bearing, settlement, construction sequence, sliding, or overturning, because there is no change in the analysis assumptions for density, weight, friction, or seismic motions due to the increase in the concrete specified compressive strength. There is no increase in the portions of the basemat subject to predicted lift-off (zero contact force) during seismic motions analyzed for the safe shutdown earthquake. There is minimal change to soil pressures on the basemat due to the change in stiffness of the basemat. As a result, the design function of the basemat is not adversely affected by the proposed change. Therefore,

the proposed change will not involve a significant reduction in a margin of safety.

Based on the above, it is concluded that the proposed amendment does not involve a significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and, accordingly, a finding of "no significant hazards consideration" is justified.

8. Preliminary Assessment of Categorical Exclusion from Environmental Review [10 CFR 51.22]:

This document supports a departure from the Combined Licenses for Vogtle Electric Generating Plant Units 3 & 4 in regard to concrete/rebar details for the basemat. The proposed departure from Tier 2* information involves change to the concrete and reinforcement details for the basemat in UFSAR Subsection 3.8.4.6.1.1 and UFSAR Figure 3H.5-3.

It has been determined that the proposed departure would change a requirement with respect to installation or use of a facility component within the restricted area, as defined by 10 CFR 20, or would change an inspection or surveillance requirement; however, a review of the anticipated construction and operational effects of the proposed amendment has determined that the proposed amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9), in that:

(i) There is no significant hazards consideration.

As documented in Block 7, Preliminary Assessment of Significant Hazards Consideration [10 CFR 50.92(c)], of this preliminary amendment request, an evaluation was completed to determine whether or not a significant hazards consideration is involved by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment." The Significant Hazards Consideration determined that (1) the proposed amendment does not involve a significant increase in the probability or consequences of an accident previously evaluated; (2) the proposed amendment does not create the possibility of a new or different kind of accident from any accident previously evaluated; and (3) the proposed amendment does not involve a significant reduction in a margin of safety. Therefore, it is concluded that the proposed amendment does not involve a significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and accordingly, a finding of "no significant hazards consideration" is justified.

(ii) There is no significant change in the types or significant increase in the amounts of any effluents that may be released offsite.

The basemat is located approximately 40 feet below grade beneath the nuclear island. The change to the concrete/rebar details will not change the types of materials used in the basemat or the construction methods. The change in the concrete mix will include small changes in the amounts or ratios of some of these materials used to batch the concrete. These changes will not change the overall amounts of concrete and reinforcing steel used in construction and assumed in the evaluation of environmental effects. The proposed amendment changes to the nuclear island basemat are unrelated to any aspects of plant construction or operation that would introduce any changes to effluent types (e.g., effluents containing chemicals or biocides, sanitary system effluents, and other effluents) or affect any plant radiological or non-radiological effluent release quantities. Furthermore, these changes do not diminish

the functionality of any design or operational features that are credited with controlling the release of effluents during plant operation.

Therefore, it is concluded that the proposed amendment does not involve a significant change in the types or a significant increase in the amounts of any effluents that may be released offsite.

(iii) *There is no significant increase in individual or cumulative occupational radiation exposure.*

This change would only affect the basemat and would have no effect on any aspects of plant design or operation that would affect individual or cumulative occupational radiation exposure during plant operation.

Based on the above review of the proposed amendment, it has been determined that facility construction and operation following implementation of the proposed amendment does not involve (i) a significant hazards consideration, (ii) a significant change in the types or a significant increase in the amounts of any effluents that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

9. Impact of Change on Installation and Testing Schedules:

The project schedule currently identifies a near-term impact to the scheduled Nuclear Island (NI) basemat work for Vogtle Unit 3.

By letter ND-12-1139 dated June 18, 2012, SNC responded to a Notice of Violation (NOV) related to the Vogtle Unit 3 nuclear island basemat reinforcement. As a follow-up to that response, SNC is now submitting the requested license amendment request with a proposed revised design for the nuclear island basemat. This proposed revised design meets the requirements of ACI 349-01 and the licensing basis identified in the NOV. Upon receipt and incorporation of the requested LAR into the licensing basis documents, SNC will have restored compliance with the licensing basis.

The project schedule currently identifies the continuation of reinforcement bar installation in the Vogtle Unit 3 NI basemat for August 6, 2012. This installation is based on the revised licensing basis identified in this PAR. The inability to accept the requested change to the NI basemat concrete specified compressive strength and to the UFSAR figure depicting the basemat figure detail below the exterior wall would result in a delay in the construction of the basemat and subsequent construction activities that are dependent upon the completion of the basemat.

No testing is impacted by the change to the basemat concrete specified compressive strength.

10. Impact of Change on ITAAC:

The change is specific to Tier 2* information in the FSAR (DCD) and does not change the description of the ITAAC related to the NI structure basemat. However, this PAR should

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Enclosure 1

Preliminary Amendment Request (PAR-12-007): Basemat Concrete/Rebar Details

be considered for any inspections related to ITAAC 3.3.00.02a.i.a (item No. 760) of the Vogtle Unit 3 COL Appendix C Table 3.3-6.

11. Additional Information: None.
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Southern Nuclear Operating Company

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Enclosure 2

Vogtle Electric Generating Plant (VEGP) Units 3 and 4

LAR

Licensing Basis Document Proposed Changes

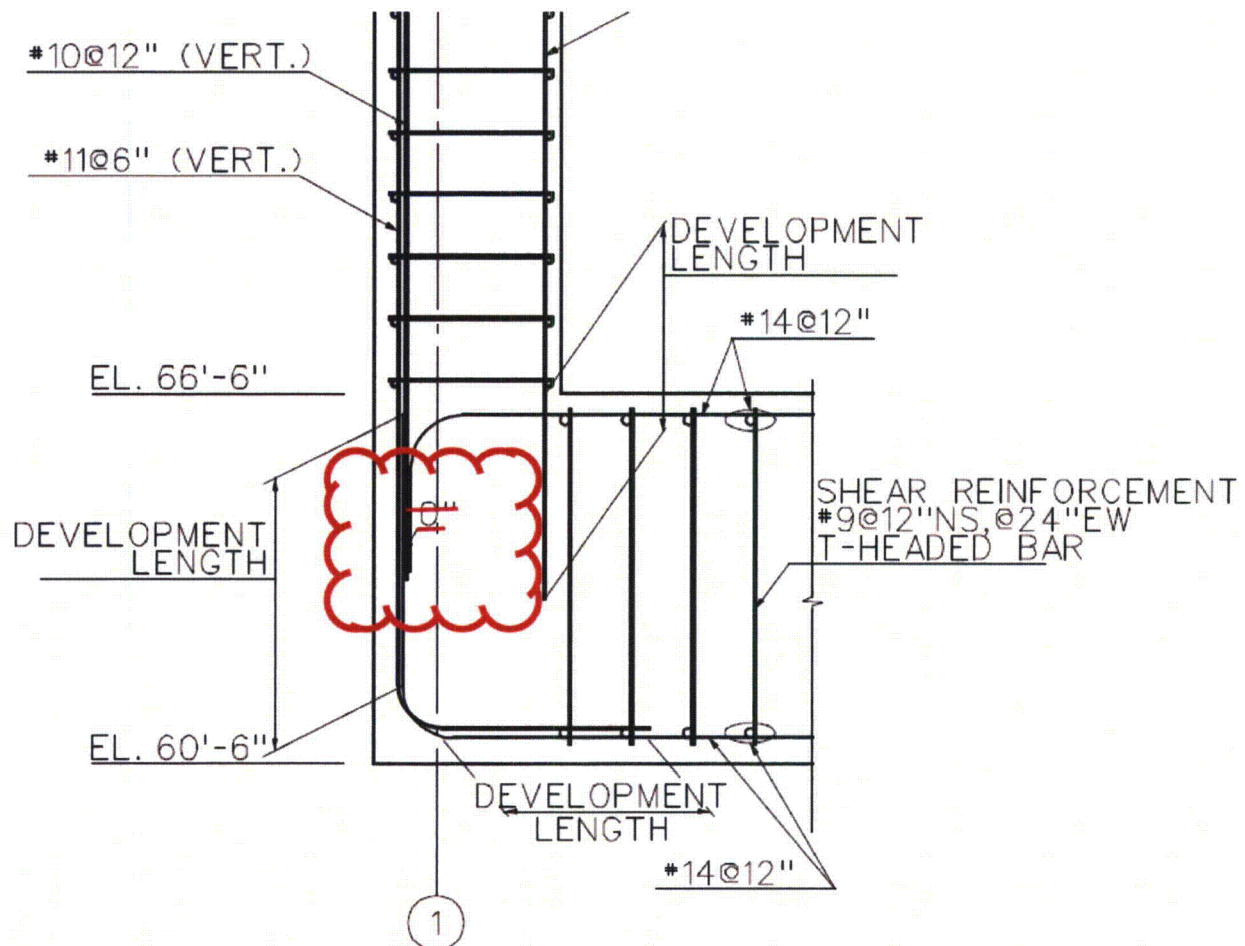
This enclosure includes this cover page and 2 pages showing proposed licensing basis document change.

UFSAR Subsection 3.8.4.6.1.1 (Partial)

*[The compressive strength of concrete used in the seismic Category I structures and containment internal structures is $f_c' = 4000$ psi except as noted in the following. For the nuclear island basemat (the nominal 6 ft. thick foundation described in Subsection 3.8.5.1) the compressive strength of concrete is $f_c' = 5000$ psi. For the SC composite portion of the shield building structure including the connection region below the SC/RC interface and the shield building roof, the compressive strength of concrete is $f_c' = 6000$ psi.]** The test age of concrete containing pozzolan is up to 56 days. The test age of concrete without pozzolan is up to 28 days. Concrete is mixed, batched, and placed according to Reference 6, Reference 7, and ACI-349.

UFSAR Figure 3H.5-3 (Partial)

In the Lower-Section detail of Figure 3H.5-3 that represents the basemat below the exterior wall, the 0" dimension is removed.



LOWER-SECTION