



June 14, 2016

Docket No.: 52-025

ND-16-0858  
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):  
Structural Design of Auxiliary Building Floors (PAR-16-009)

Ladies and Gentlemen:

The U.S. Nuclear Regulatory Commission (NRC) issued the Vogtle Electric Generating Plant (VEGP) Unit 3 and Unit 4 combined licenses (COLs) (License Nos. NPF-91 and NPF-92, respectively) to Southern Nuclear Operating Company (SNC) on February 10, 2012.

By letter dated June 14, 2016, SNC submitted a request for a license amendment (LAR-16-009, SNC correspondence ND-16-0816) to amend the VEGP Units 3 and 4 Updated Final Safety Analysis Report (UFSAR) to revise details related to the structural design of auxiliary building floors.

As discussed during the May 26, 2016, pre-submittal public meeting, SNC is submitting this Preliminary Amendment Request (PAR), PAR-16-009, to minimize further construction delays for Unit 3 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 construction based on the proposed plant licensing basis changes identified in the LAR is requested on or before June 30, 2016. Construction of VEGP Unit 3 seismic Category I module CA20 containing floors subject to the changes proposed in LAR-16-009 is currently on hold and delayed determination regarding this PAR will result in continued delay in the construction completion of VEGP Unit 3 structures.

A description of the proposed change and the reason for the change are contained in the Enclosure to this letter. This PAR has been developed in accordance with guidance provided in the most recent revision to the Interim Staff Guidance on Changes during Construction Under 10 CFR Part 52, COL-ISG-25 [ML15058A377], and corresponds accurately and technically with the above-mentioned LAR-16-009. The technical scope of this PAR, however, is limited to portions of the LAR, i.e., Change Activities 1, 2, 5, and 6. Change Activities 3, 4, 7, 8, and 9 affect only the finned floors in the auxiliary building and there are no finned floors in CA20. Thus, this requested PAR is based on and consistent with the limited technical scope of the submitted LAR

that addresses other than the finned floors. Section 7 of the Enclosure further identifies and details the scope of the "no objection" sought in this PAR.

This letter does not contain any NRC commitments. Should you have any questions, please contact Mr. Jason Redd at (205) 992-6435.

Mr. Wesley A. Sparkman states that: he is the Regulatory Affairs Licensing Manager, Nuclear Development, of Southern Nuclear Operating Company; he 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



Wesley A. Sparkman



WAS/ERG/ljs

Sworn to and subscribed before me this 14<sup>th</sup> day of June 2016

Notary Public: Lisa Myrick Spears

My commission expires: June 18, 2019

Enclosure: Vogtle Electric Generating Plant (VEGP) Unit 3 – Preliminary Amendment  
Request Regarding Structural Design of Auxiliary Building Floors (PAR-16-009)

cc:

Southern Nuclear Operating Company / Georgia Power Company

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Document Services RTYPE: VND.LI.L00

File AR.01.02.06

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**Southern Nuclear Operating Company**

**ND-16-0858**

**Enclosure**

**Vogtle Electric Generating Plant (VEGP) Unit 3**

**Preliminary Amendment Request  
Regarding  
Structural Design of Auxiliary Building Floors  
(PAR-16-009)**

**(This Enclosure consists of 5 pages, including this cover page.)**

ND-16-0858

Enclosure

PAR-16-009: Structural Design of Auxiliary Building Floors

Pursuant to 10 CFR 52.98(c) and in accordance with 10 CFR 50.90, Southern Nuclear Operating Company (SNC) submitted 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 construction of VEGP Unit 3 seismic Category I module CA20 within the auxiliary building containing non-finned floors subject to the changes proposed in LAR-16-009. The subject floors in module CA20 are currently on hold and delayed determination regarding this PAR will result in continued delay in the construction completion of VEGP Unit 3 structures, as identified in the Preliminary Amendment Request (PAR) provided below to be provided by the date shown below.

PAR Request Number: <b>SNC PAR-16-009</b>	Station Name: <b>VEGP</b>	Unit Number(s): <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 4	PAR Request Date: <b>June 14, 2016</b>
<b>1. NRC PAR Notification Requested Date (see Block 7 for basis): June 30, 2016</b>			
<b>2. License Amendment Request References (as applicable):</b> <input checked="" type="checkbox"/> LAR submittal date and SNC Correspondence Number: June 14, 2016 / ND-16-0816 <input type="checkbox"/> Expected LAR submittal date: _____			
<b>3. Brief Description of Proposed Change:</b> <p>Changes are proposed (in the associated License Amendment Request (LAR)) to the Updated Final Safety Analysis Report (UFSAR) descriptions and figures to address changes in the structural design of floors, including finned floors, in the auxiliary building. However, the modifications affecting only the finned floors, or affecting only the critical section finned floors, are not included within the scope of the PAR.</p> <p>The UFSAR text, table, and figures that are proposed to be changed provide information for these floors and are identified as Tier 2* information or as changes in Tier 2 information that are related to involved Tier 2* information. Changes include proposed modifications specific to the critical section, as well as additional clarification to define how similar finned floors other than the critical section and similar concrete on steel plate floors without fins can be different in the design details. The ceilings of the main control room and the instrumentation and control rooms in the auxiliary building are designed as finned-floor modules. These floors of the auxiliary building are constructed with concrete placed on steel plates stiffened with fins welded to the underside of the plate. UFSAR Figure 3H.5-9, Sheet 1, showing the finned floor critical section, is changed to correct the representation of the openings through the floor and the number of supporting steel plates. The variations in the detail design, which include information such as size and spacing of reinforcement in the floors and the spans of the floors, are the result of variations in the geometry of the floors and variations in the loads for which the floors are designed. The floor designs with the design variations satisfy design code requirements in American Concrete Institute (ACI) 349 and American Institute of Steel Construction (AISC) N690. The variations in the structural design details have no impact on the thermal function of the fins.</p> <p>The design summary table (UFSAR Table 3H.5-13) for the finned floor is reformatted and revised to change the calculational results, provide additional information about the design and remove the maximum calculated shear stud spacing value from the table. Changes are proposed to UFSAR Figure 3H.5-9, Sheet 2, showing the connection of the finned floor to the supporting wall to change the representation of the reinforcement in the connection. These changes were identified as part of</p>			

design finalization and satisfy design code requirements. Notes are added to the figure to identify variances in the design.

The LAR activity also clarifies the floor to wall connection design for concrete on steel plate floors, including finned floors, in the auxiliary building as represented in UFSAR Figure 3H.5-9, Sheet 2. These clarifications provide additional details on the use of the code requirements for the connection design. This activity changes the description for the floors in the auxiliary building by specifying requirements for length of the connecting dowel and capacity of the shear studs. The connection length requirements use the ACI 349 requirements for splice length.

The finned floors above the instrumentation and control rooms also have a requirement for fire protection reinforcement. The description of the design of these finned floors in UFSAR Subsections 3.8.4.1.2 and 3H.5.4 is changed to include provisions for fire protection reinforcement.

In addition to these changes to the finned floor design, minor changes are proposed to the design of reinforced concrete floors, cast-in-place concrete on precast panels, as described in UFSAR Subsections 3.8.4.1.2 and 3H.5.4 and shown in UFSAR Figure 3H.5-8.

#### **4. Reason for License Amendment Request:**

The changes requested by the proposed LAR are primarily revisions to the auxiliary building finned floor (critical section) design but they also impact similar non-finned floors.

For example, UFSAR Figure 3H.5-9 shows a finned floor for the ceiling above the main control room and the connection of the floor with the wall on column line 11. The presence of the fins for conducting heat into the floor is the critical attribute and the floor reinforcement and connection design details may vary from that shown. Design finalization has resulted in proposed changes that include the size and number of steel plates supporting the floor, location and orientation of openings in the floor, and the details of the connection between the floor and wall. The floor slab shown in UFSAR Figure 3H.5-9 is a critical section figure that is representative of other sections that use fins to stiffen the floor. Design finalization of locations that use the finned floor design shows that the size and spacing of the reinforcement at other locations may vary from that shown in the figure. UFSAR text and the figure need to be changed to reflect the variation. The figure shows a floor to wall connection including reinforcement dowels connected to the wall and shear studs attached to the steel plate on the bottom of the floor. The figure shows the required length of the dowel for the critical section but the design criteria for the length is not discussed or identified. At locations other than the critical sections the length of the dowel extending into the concrete may vary.

Additional bottom layer reinforcing steel is required in the finned floors at the 117'-6" elevation to maintain the structural integrity of the fire barrier during a fire event due to potential deterioration of mechanical properties of exposed steel fin plates during the fire. This reinforcing steel is not used in the critical section and is not shown in the figure. This change is not pertinent to the PAR as it affects only the finned floors.

In some locations in the auxiliary building, concrete on steel plate construction without fins is used for floors. As with the finned floors, the steel plates have shear studs welded to the top surface of the plate extending into the concrete and the steel plate provides the bottom layer of reinforcement. The floor is connected to the wall with reinforcing bar dowels located below the elevation of the top of the shear studs. The dowels are connected to standard hooks or headed reinforcement in the walls.

The description of these concrete on steel plate floors is included in the last paragraph of UFSAR Subsection 3.8.4.4.1 and refers to the design methodology for finned floors as described in UFSAR

Subsection 3H.5.4. The description of the floors does not specify the design requirements for the connection of the floor to the wall. The connection design of dowels extending into a matrix of shear studs satisfies requirements for development length and splice length in ACI 349. The connection requirements use the ACI 349 requirements for length of the dowels.

Specifying the appropriate code provisions for development length and splice length that apply to the connection design will clarify the application of ACI 349 requirements. The description in UFSAR Subsection 3.8.4.4.1 also includes an inappropriate reference to control room ceiling and stiffeners.

UFSAR Table 3H.5-13 includes design information for the finned floor critical section that requires an update as a result of a review of the design and an updated evaluation based on small changes in seismic loads and in equipment design and location. The format of UFSAR Table 3H.5-13 and the information included in the table may be confusing for those not familiar with the design evaluations. This change is not pertinent to the PAR as it affects only the finned floors.

UFSAR Figure 3H.5-8 includes a view showing precast panels at Elevation 133'-11". The width of the panels shown is inconsistent with the building geometry in this location. The number and configuration of the stirrups connecting the precast panels to the cast in place concrete, as a result of design finalization, are different than that shown in UFSAR Figure 3H.5-8. The width of the panels is proposed to be revised at this location on this Tier 2\* figure. The number and configuration of the stirrups on the figure are proposed to be revised.

The applicability of the design changes for the finned floors of the auxiliary building floor-to-wall connections in other locations within the auxiliary building was only recently recognized. A discussion of the capability of the floors to resist bending loads as described in the above mentioned UFSAR Subsection 3.8.4.4.1 indicates that "[t]his methodology" (which is therein identified for both the non-finned floors and the finned floors) "is described for the control room ceiling in UFSAR Subsection 3H.5.4." As indicated, this impact to the CA20 (non-finned) floors was only recently recognized, leading to the need for this PAR.

**5. Is Exemption Request Required?**      Yes      No

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

**6. Identify Applicable Precedents:** No precedence identified.

**7. Impact of Change on Installation and Testing Schedules:**

SNC's requested date for approval of this license amendment as identified in the referenced LAR is October 17, 2016. This date is based upon the construction of the finned floors at design elevations of approximately 117'-6" and 135'-3". However, the impacted non-finned floors at a design elevation of approximately 82'-6" as part of CA20 are staged and ready to set, but are currently placed in a "construction hold" status. The impacted non-finned floors at a design elevation of approximately 92'-6" as part of CA20 are also staged but cannot be set until the floors at design elevation of approximately 82'-6" are complete. If necessary, a second "no objection" statement may be requested for these floors, but they are not included in this request.

As such, this PAR requests a "no objection" finding related to this license amendment request by the date identified in Block 1 above (or sooner if reasonably achievable) to allow for appropriate notifications and release of further CA20 activities currently under the "construction hold" status to allow construction to continue.

This "no objection" finding would be specifically applicable to the following Unit 3 floors at a design elevation of approximately 82'-6" - CA20\_34, CA20\_35, CA20\_36, and CA20\_37.



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Enclosure

PAR-16-009: Structural Design of Auxiliary Building Floors

Specifically, SNC requests a “no objection” finding to begin completion of these identified floor to wall connections at approximately 82'-6" in Unit 3 auxiliary building structural module CA20 (including the pouring of concrete) in accordance with the design changes proposed in the revised UFSAR description in LAR-16-009.

A “no objection” finding for the above activities would release the associated Unit 3 construction holds for these floors related to this construction activity.

8. **Impact of Change on ITAAC:** None

9. **Additional Information:** None