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Docket No.: 52-025
52-026

ND-18-1173
10 CFR 50.90

U.S. Nuclear Regulatory Commission
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**Southern Nuclear Operating Company
Vogtle Electric Generating Plant Units 3 and 4
Preliminary Amendment Request (PAR):
Passive Core Cooling System (PXS) Gutter Drain Line Vents (PAR-18-022)**

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.

SNC submitted a License Amendment Request (LAR)-18-022 on August 27, 2018, by SNC letter ND-18-1057 [ADAMS Accession Number ML18239A375]. The LAR proposed changes to the combined licenses (COLs), COL Appendix C (and to plant specific Tier 1 information) and associated Tier 2 information to add vent lines to the passive core cooling system (PXS) lines which drain the containment gutters to the in-containment refueling water storage tank (IRWST).

SNC has determined that Unit 3 construction activities would support installation of the vent lines in October 2018. Additionally, it is probable that Unit 4 construction activities will progress to allow for installing the vent lines prior to the requested approval date of the LAR. Therefore, SNC is submitting the attached PAR-18-022, to minimize construction delays for VEGP Units 3 and 4 during the NRC's evaluation of the related LAR. The determination of whether the NRC has any objection to SNC proceeding with installation of the subject Unit 3 and Unit 4 vent lines is requested on or before October 10, 2018. Delayed determination regarding this PAR could result in the delay of the completion of construction activities related to the PXS system capability to return from the containment gutters to the IRWST for VEGP Units 3 and 4.

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 [ADAMS Accession Number ML15058A377], and corresponds accurately and technically with the above-mentioned LAR-18-022. The technical scope of this

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 [ADAMS Accession Number ML15058A377], and corresponds accurately and technically with the above-mentioned LAR-18-022. The technical scope of this PAR is consistent with the subject LAR. Section 7 of the Enclosure further identifies and details the scope of the "no objection" finding sought in this PAR.

Upon receipt of a No Objection Letter for PAR-18-022, SNC plans to complete installation of the PXS gutter drain vent lines in their final locations pursuant to LAR 18-022.

This letter has been reviewed and confirmed to not contain security-related information.

Should you have any questions, please contact Ms. Amy Chamberlain at (205) 992-6361.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 5th day of September 2018.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "B. H. Whitley", is written over a horizontal line.

Brian H. Whitley
Director, Regulatory Affairs
Southern Nuclear Operating Company

Enclosure: Vogtle Electric Generating Plant (VEGP) Units 3 and 4 –Preliminary Amendment
Request: Passive Core Cooling System (PXS) Gutter Drain Line Vents (PAR-18-022)

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Southern Nuclear Operating Company

ND-18-1173

Enclosure

Vogtle Electric Generating Plant (VEGP) Units 3 and 4

Preliminary Amendment Request:

**Passive Core Cooling System (PXS) Gutter Drain Line Vents
(PAR-18-022)**

(This Enclosure consists of 4 pages, including this cover page.)

ND-18-1173

Enclosure

PAR-18-022: Passive Core Cooling System (PXS) Gutter Drain Line Vents

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.

Installation of the following VEGP Unit 3 and Unit 4 components are subject to the changes proposed in LAR-18-022:

- Six (6) gutter drain line vents with line numbers: "PXS-L183A, PXS-L183B, PXS-L184A, PXS-L184B, PXS-L185A, PXS-L185B."

Delayed determination regarding this Preliminary Amendment Request (PAR) could result in the delay of the completion of construction, testing and turnover of the PXS gutter drain lines that return condensate to the in-containment refueling water storage tank (IRWST) for VEGP Units 3 and 4. Accordingly, SNC requests the determination of whether the NRC has any objection to proceeding with installation of the subject VEGP Units 3 and 4 components identified above, subject to the changes proposed in LAR-18-022:

PAR Request Number: SNC PAR-18-022	Station Name: VEGP	Unit Number(s): <input checked="" type="checkbox"/> 3 <input checked="" type="checkbox"/> 4	PAR Request Date: September 5, 2018
1. NRC PAR Notification Requested Date (see Block 7 for basis): October 10, 2018			
2. License Amendment Request References (as applicable): <input checked="" type="checkbox"/> LAR submittal date and SNC Correspondence Number: LAR-18-022 dated August 27, 2018 / ND-18-1057) <input type="checkbox"/> Expected LAR submittal date: _____			
3. Brief Description of Proposed Change: <p>As described in UFSAR Section 6.3, the passive core cooling system provides emergency core cooling following postulated design basis events. In order to accomplish this primary function, the passive core cooling system is designed to perform the following functions: emergency core decay heat removal, reactor coolant system emergency makeup and boration, safety injection, and containment pH control. The system is designed to operate without the use of active equipment such as pumps and ac power sources. The passive core cooling system depends on reliable passive components and processes such as gravity injection and expansion of compressed gases.</p> <p>UFSAR Subsection 6.3.2.1.1 describes the process by which emergency core decay heat removal at high temperature and pressure conditions occurs. The passive residual heat removal heat exchanger (PRHR HX) is used to maintain an acceptable, stable reactor coolant system (RCS) condition. It transfers decay heat and sensible heat from the RCS to the IRWST, the containment atmosphere, the containment vessel, and finally to the ultimate heat sink – the atmosphere outside of containment. This does not occur until after the IRWST saturation is reached and steaming to containment initiates.</p> <p>Once steaming from the IRWST has initiated (due to the IRWST reaching its saturation temperature), containment pressure increases as steam is released. As containment temperature increases, condensation begins to form on the subcooled metal and concrete surfaces inside containment. Condensation on these surfaces transfers energy to the bulk metal and concrete until</p>			

they come to equilibrium with the containment atmosphere. Most of the condensate formed on the containment vessel wall is collected in a safety-related gutter arrangement. A gutter is located near the operating deck elevation, and a downspout piping system is connected at the polar crane girder and internal stiffener, to collect steam condensate inside the containment during PXS operation and return it to the IRWST. This arrangement allows the inventory that is steaming into the containment to be returned to the IRWST to provide continued core cooling.

The PXS is tested prior to operation to confirm that the operation of the system meets the design requirements. A gutter flow capacity test is performed to demonstrate proper return flow to the IRWST from the collection boxes. The gutter isolation valves are closed and flow is directed to the collection boxes at each end of the IRWST, then finally draining from the boxes into the IRWST. (The layout of the IRWST and drain piping from the collection boxes is shown in UFSAR Figure 6.3-1 Sheet 2.) The test demonstrates that sufficient condensate return flows make it to the IRWST.

The proposed changes would revise the COL and licensing basis documents to add vent lines to the piping between the passive core cooling system (PXS) collection boxes and in-containment refueling water storage tank (IRWST) to remove entrained air and improve the drain line flow rates. Updated Final Safety Analysis Report (UFSAR) Figure 6.3-1 Sheet 2 is modified to add the vents to the figure. The proposed change involves the plant-specific Tier 1 information and the corresponding COL Appendix C, Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) Information to revise Table 2.2.3-2 to add the vent lines to the listed IRWST gutter drain lines. No structure, system, or component (SSC) design function or analysis as described in the UFSAR is adversely affected.

These changes impact COL Appendix C (and associated plant-specific Tier 1) and various Updated Final Safety Analysis Report (UFSAR) Subsections, Tables and Figures.

Additional details are provided in the referenced LAR.

4. Reason for License Amendment Request:

During testing at another AP1000 site, the PXS downspout and gutter flow capacity test was performed. The condensate returned to the IRWST during the test met the minimum requirements as specified by the safety analysis. However, the test did not achieve the flow rates that were expected based on the design of the system. It was determined that there were increased head losses in the drain piping between the PXS collection boxes to the IRWST due to air in the gutter piping. In order to improve the flow rates, vents were added to the two redundant drain lines to allow air to escape. After the vents were added, the flow testing was re-performed and demonstrated marked improvement in flow to the IRWST. Therefore, it is proposed to add these vents to the Vogtle Units 3 and 4 design in order to improve the condensate return flow rate.

The original design, without the vents, was sufficient to meet the safety analysis requirements for condensate return. The proposed change to add vents does not change the safety analysis, or impact previous conclusions by the US NRC (as documented in the SER for LAR-16-026, Reference 1 of Enclosure 1 of the LAR) that the PXS design is safe and meets the regulatory requirements. The addition of the vents to the gutter piping adds additional margin to the condensate return analysis by improving demonstrated return flow rates while also preventing additional condensate losses. The PXS will continue to perform its functions as specified in UFSAR Section 6.3.

5. Is Exemption Request Required? ☒ Yes ☐ No**If Yes, Briefly Describe the Reason for the Exemption.**

An exemption is requested to depart from AP1000 generic Tier 1 material with regard to the design of the PXS gutter drain lines which return to the IRWST.

An exemption is requested because LAR-18-022 requests a departure from plant-specific DCD Tier 1 material with regards to the AP1000 the addition of six (6) gutter drain line vents per unit.

6. Identify Applicable Precedents: No precedent identified.

- **Impact of Change on Installation and Testing Schedules:**

SNC's current requested date for approval of this license amendment is February 24, 2019 (as indicated in ND-18-1057 [ML18239A375]). This date was based on anticipating the submittal and subsequent "no objection" finding for this PAR to support the setting of these gutter drain vent lines.

The "no objection" finding would be specifically applicable to VEGP Unit 3 and Unit 4:

- PXS gutter drain line vents with line numbers: "PXS-L183A, PXS-L183B, PXS-L184A, PXS-L184B, PXS-L185A, PXS-L185B."

Construction holds have been issued for these activities.

A "no objection" finding for the above activities would allow for these identified VEGP Unit 3 and Unit 4 construction activities to proceed.

7. Impact of Change on ITAAC:

The proposed changes in LAR 18-022 would add six PXS gutter drain line vents to improve the demonstrated return flow rates while also preventing additional condensate losses.:

Therefore, COL Appendix C Table 2.2.3-2 related to Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) No. 2.2.3.05.b is revised to add these vent lines.

8. Additional Information: None