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April 10, 2017
NND-17-0218
10 CFR 50.90

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

Virgil C. Summer Nuclear Station (VCSNS) Units 2 and 3
Combined License Nos. NPF-93 and NPF-94
Docket Nos. 52-027 & 52-028

Subject: Preliminary Amendment Request (PAR) 17-03: Hydrogen Venting from Passive Core Cooling System Compartments

Reference:
1. NND-17-0078, South Carolina Electric & Gas Company (SCE&G) LAR 17-03: VCSNS Units 2&3 Request for License Amendment and Exemption: Hydrogen Venting from Passive Core Cooling System (PXS) Compartments, dated February 15, 2017 [ML17046A660]
2. Letter dated March 8, 2017 from the NRC to SCE&G, Subject: Acceptance Review of South Carolina Electric & Gas Company's Request for License Amendment (LAR 17-03) and Exemption for the Virgil C. Summer Nuclear Station Units 2 and 3: Hydrogen Venting from Passive Core Cooling System (PXS) Compartments (CAC No. RG3042) [ML17055A439]

Pursuant to 10 CFR 52.98(c) and in accordance with 10 CFR 50.90, South Carolina Electric & Gas Company (SCE&G), acting on behalf of itself and South Carolina Public Service Authority (Santee Cooper), the licensees for Virgil C. Summer Nuclear Station (VCSNS) Units 2 and 3, submitted a request for license amendment to Combined License (COL) Numbers NPF-93 and NPF-94 for VCSNS Units 2 and 3, respectively. The requested amendment (LAR 17-03) was submitted (Reference 1) to revise the licensing basis information to reflect changes to the locations of the hydrogen venting primary openings in the passive core cooling system (PXS) valve/accumulator rooms inside containment. In Reference 2, the NRC notified SCE&G of the determination that there was sufficient information to accept LAR 17-03 for detailed technical review.

The requested amendment proposed to depart from approved AP1000 Design Control Document (DCD) Tier 2 information (text and tables) as incorporated into the Updated Final Safety Analysis Report (UFSAR) as plant-specific DCD information, and also proposed to depart from involved plant-specific Tier 1 information (and associated COL Appendix C information). Pursuant to the provisions of 10 CFR 52.63(b)(1), an exemption from elements of the design as certified in the 10 CFR Part 52, Appendix D,

design certification rule was also requested for the plant-specific DCD Tier 1 material departures.

SCE&G is submitting this Preliminary Amendment Request, PAR 17-03, to minimize further construction delays for Units 2 and 3 during the NRC's evaluation of the related license amendment request. The determination of whether the NRC has any objection to SCE&G proceeding with construction based on the proposed plant licensing basis changes identified in the LAR is requested on or before May 9, 2017. Delayed determination regarding this PAR could result in a delay in the construction of VCSNS Units 2 and 3 Containment Buildings.

A description of the proposed change and the reason for the change are contained in Enclosure 1 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 [ML15058A377], and corresponds accurately and technically with the above-mentioned LAR 17-03. Section 7 of Enclosure 1 identifies and details the scope of the "no objection" sought in this PAR.

This letter contains no regulatory commitments. This letter, including the enclosure, has been reviewed and confirmed to not contain security-related information.

Should you have any questions, please contact Mr. Nicholas R. Kellenberger by telephone at (803) 941-9834, or by email at nicholas.r.kellenberger@scana.com.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on this 10th day of April, 2017.

Sincerely,

April R. Rice
Manager, Nuclear Licensing
New Nuclear Deployment

ARR/gt

Enclosure 1: Virgil C. Summer Nuclear Station (VCSNS) Units 2 and 3: Preliminary Amendment Request Regarding Hydrogen Venting from Passive Core Cooling System Compartments (PAR 17-03)

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South Carolina Electric & Gas Company

Virgil C. Summer Nuclear Station Units 2 and 3

NND-17-0218

Enclosure 1

Preliminary Amendment Request
Regarding
Hydrogen Venting from Passive Core Cooling System Compartments

(PAR 17-03)

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

Pursuant to 10 CFR 52.98(c) and in accordance with 10 CFR 50.90, South Carolina Electric and Gas Company (SCE&G) requested an amendment to Combined License (COL) Numbers NPF-93 and NPF-94, for Virgil C. Summer Nuclear Station (VCSNS) Units 2 and 3, respectively.

The construction schedules for VCSNS Units 2 and 3 show placement and subsequent field assembly (including placement of concrete to complete the floor module (CA37) placement) of the seismic Category I containment internal floor for Room 11300 at an approximate design elevation of 107'-2" (which are subject to the changes proposed in LAR 17-03) prior to the requested approval date for the LAR. SCE&G is submitting this Preliminary Amendment Request (PAR), PAR 17-03, to minimize construction delays for VCSNS Units 2 and 3 during the NRC's evaluation of the related LAR. The determination of whether the NRC has any objection to SCE&G proceeding with construction based on the proposed plant licensing basis changes identified in the LAR is requested on or before May 9, 2017. Delayed determination regarding this PAR will result in a delay of the construction completion of VCSNS Units 2 and 3 structures.

PAR Number	**Station Name**	**Unit Number**	**PAR Date**
PAR 17-03	VCSNS	☒ 2 ☒ 3	April 10, 2017

1. NRC PAR Notification Requested Date (see Block 7 for basis) May 9, 2017

2. License Amendment Request References (as applicable)

☒ **LAR submittal date and letter number** February 15, 2017 / NND-17-0078

☐ **Expected LAR submittal date** _____

3. Brief Description of Proposed Change

The containment hydrogen control system (VLS) functions following a severe accident to promote hydrogen burning soon after the lower flammability limit is reached in the containment to prevent accidental hydrogen burn initiation at high hydrogen concentration levels. This function provides confidence that containment integrity can be maintained during hydrogen burns and that safety-related equipment can continue to operate during and after the burns.

Hydrogen may be vented from the passive core cooling system (PXS) valve/accumulator rooms (PXS-A and PXS-B compartments) inside containment (Rooms 11206 and 11207, respectively) to the Core Make-up Tank (CMT)-A and CMT-B compartment (Room 11300) through openings in the floor of Room 11300 where each CMT is located, to prevent accumulation of hydrogen in a dead-ended compartment during a beyond design basis accident.

COL Appendix C (and corresponding plant-specific Tier 1) Inspections, Tests, Analyses and Acceptance Criteria (ITAAC) 2.3.09.03.iii acceptance criteria and UFSAR subsection 6.2.4.5.1 describe the minimum distance between the primary openings and the containment shell. The acceptance criteria also define primary openings of these compartments as those that constitute 98% of the opening area. UFSAR Figure 1.2-7 shows the equipment access opening from Room 11206 to Room 11300, which is located along the refueling cavity wall.

UFSAR Figure 1.2-9 shows the locations of CMT-A and CMT-B. The CMT openings are located directly underneath each CMT. Because the equipment access opening and CMT-A opening account for at least 98% of the opening area, the other openings shown from Room 11206 to Room 11300 on UFSAR Figure 1.2-7 are bounded by these two openings.

For Room 11206, in the proposed reconfiguration, the equipment access opening and CMT-A opening constitute at least 98% of the vent paths within Room 11206 that vent to Room 11300.

PAR Number	Station Name	Unit Number	PAR Date
PAR 17-03	VCSNS	☒ 2 ☒ 3	April 10, 2017

Because the CMT-A opening is closer to the containment vessel than the 19 feet currently specified in the acceptance criteria, the actual distances (less 6 inches for construction tolerances) for each opening are proposed to be used instead of 19 feet. The equipment access opening is at least 24.3 feet away from the containment vessel and the CMT-A opening is at least 9.4 feet away from the containment vessel, instead of 19 feet as currently described. To be consistent with the use of actual distances for the openings, the acceptance criteria for the CMT-B opening from Room 11207 to Room 11300 is revised to use the actual distance (less 6 inches for construction tolerances) to the containment vessel, which is 24.6 feet instead of 19 feet.

The licensing basis documents are proposed to be revised to reflect the revised layout of the vent openings, the revised analysis results, and to add the containment vessel lower equipment hatch to the sustained hydrogen combustion survivability assessment.

The proposed revised hydrogen venting locations from the PXS compartments (Rooms 11206 and 11207) have been evaluated to confirm that a diffusion flame hydrogen burn at the venting locations does not challenge containment integrity. The methodology and the analyses for evaluating the diffusion flame hydrogen burn is described in the technical evaluation provided in LAR 17-03.

Additional details are provided in the referenced LAR.

4. Reason for License Amendment Request

The openings in Room 11206 are proposed to be reconfigured to allow for access to perform maintenance activities on the equipment in Room 11206. The revised layout led to the equipment access opening along the refueling cavity wall no longer constituting 98% of the primary openings from Room 11206 to 11300. Because of this, the opening around the CMT-A also needed to be considered a primary opening. Therefore, the description of the primary openings in the licensing basis documents, including ITAAC 2.3.09.03.iii acceptance criteria, for Room 11206 is proposed to be changed.

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

If Yes, Briefly Describe the Reason for the Exemption

An exemption is requested to depart from AP1000 plant-specific DCD Tier 1 material with regard to the venting of hydrogen from the Passive Core Cooling System (PXS) compartments into the Core Makeup Tank (CMT) rooms above.

An exemption is requested because LAR 17-03 requests a departure from plant-specific DCD Tier 1 information in Table 2.3.9-3, Inspections, Tests, Analyses and Acceptance Criteria (ITAAC). Specifically, a plant-specific departure would change the locations for the hydrogen venting primary openings in the passive core cooling system (PXS) valve/accumulator rooms inside containment, redefine the openings constituting 98% of the vent path area, and allow some of these openings to be closer than the currently identified 19 feet from the containment shell.

6. (Optional) Identify Applicable Precedents

Southern Nuclear Operating Company (SNC) originally submitted an identical request PAR-17-003 [ML17054D208] for Vogtle Units 3 and 4 on February 23, 2017. The NRC Staff reviewed the scope of PAR-17-003 and found that it was consistent with the changes from the current licensing basis as requested in SNC's LAR-17-003 [ML17053A425]. Therefore, the NRC had no objection to SNC proceeding with the construction of the proposed plant changes identified in Section 7 of

PAR Number	Station Name	Unit Number	PAR Date
PAR 17-03	VCSNS	☒ 2 ☒ 3	April 10, 2017

the Enclosure to PAR-17-003, pending the outcome of the NRC's detailed technical review of SNC's LAR-17-003. The Notice of No Objection was provided to SNC on March 15, 2017 [ML17072A397].

The scope of this request, detailed in Section 7 below, is identical in content to the scope of SNC's PAR-17-003.

7. (As needed) Impact of Change on Installation and Testing Schedules

SCE&G's requested date for approval of this license amendment is February 9, 2018. This date is based upon the scheduled ITAAC closure. However, the impacted containment internal floor modules (CA37) are currently forecast for placement and subsequent field assembly beginning on May 16, 2017 (Unit 2) and September 22, 2017 (Unit 3). Additionally, concrete pours to an approximate design elevation of 107'-2" that complete the module placement are currently forecast for July 1, 2017 (Unit 2) and February 2018 (Unit 3).

A delayed determination regarding this PAR will result in delay in the construction completion of VCSNS Units 2 and 3 structures.

As such, this PAR requests a "no objection" finding related to this LAR by the date identified in Block 1 above (or sooner if reasonably achievable) to allow for appropriate notifications and release of further containment internal construction activities dependent on placing these modules and making the appropriate connections to allow construction to continue.

This "no objection" finding would be specifically applicable to setting and field assembly construction activities for the VCSNS Units 2 and 3 containment internal floor modules for Room 11300 at a design elevation of approximately 107'-2" and include subsequent concrete pours to a design elevation of approximately 107'-2" to complete the module placements.

8. Impact of Change on ITAAC

The plant-specific Tier 1 ITAAC 2.3.09.03.iii acceptance criteria define the primary openings of these compartments and describe the minimum distance between the primary openings and the containment shell. The defined primary openings are reconfigured and the minimum distances are proposed to be revised.

9. **Additional Information**

None

10. Preparer Name (Print)	11. Preparer Signature	12. Date
Greg Travers	Gregory Travers	4/10/2017
13. Reviewer Name (Print)	**14. Reviewer Signature**	**15. Date**
Nick Kellenberger	N R Kellenberger	4/10/2017
16. Approver Name (Print)	**17. Approver Signature**	**18. Date**
April Rice	[illegible]	4/10/2017