



Ronald A. Jones
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January 24, 2013
NND-13-0051
10 CFR 50.90

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

Virgil C. Summer Nuclear Station (VCSNS) Unit 2
Combined License No. NPF-93
Docket No. 52-027

Subject: PAR 13-01 Preliminary Amendment Request: Basemat Shear
Reinforcement Design Spacing Requirements

Reference: VCSNS License Amendment Request (LAR) 13-01 dated January 15,
2013 (ADAMS Accession Number ML13017A082)

In accordance with the provisions of VCSNS Unit 2 Combined License (COL) number NPF-93, condition 2.D.(1), Changes During Construction, South Carolina Electric & Gas Company (SCE&G) hereby requests a no objections determination per the preliminary amendment request (PAR) process. PAR 13-01, contained in Enclosure 1 to this letter, references SCE&G correspondence letter number NND-13-0021, dated January 15, 2013, in which SCE&G requested an amendment (LAR 13-01) to the COLs for VCSNS Units 2 and 3 to revise the structural criteria details for shear reinforcement bar spacing within the nuclear island basemat concrete. The NRC Staff has evaluated the license amendment documentation supporting LAR 13-01 and has determined that there is sufficient information to accept LAR 13-01 for review (ADAMS Accession Number ML13016A389).

Construction activities for VCSNS Unit 2 associated with the nuclear island basemat structure affected by the proposed license amendment are currently suspended pending required licensing action. SCE&G requests a no objections determination to PAR 13-01 to allow construction activities to proceed in accordance with the current integrated schedule for Unit 2. In order to avoid unnecessary construction delays 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 according to the proposed licensing basis modification identified in the subject PAR/LAR is requested to

DO83
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NND-13-0051
January 24, 2013
2 of 3

be provided by January 30, 2013. 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.

The requested revisions are necessary to support changes identified during a review of the design details related to installation of shear reinforcement bar in the nuclear island basemat. A description, a reason for the change, and associated regulatory evaluations 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 (ML111530026), and corresponds accurately and technically with the above-mentioned LAR 13-01. The technical scope of PAR 13-01 is consistent with the technical scope of the LAR 13-01. Section 1.1 of Enclosure 1 to PAR 13-01 discusses the scope of the "no objection" sought in both PAR 13-01: Basemat Shear Reinforcement Design Spacing Requirements and PAR 13-02: Basemat Shear Reinforcement Design Details (PAR 13-02 submitted in SCE&G correspondence letter NND-13-0038, dated January 22, 2013).

This letter contains no regulatory commitments.

Should you have any questions, please contact Alfred M. Paglia by telephone at (803) 941-9876, or by email at apaglia@scana.com.

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

Executed on this 24th day of January, 2013.

Sincerely,



Ronald A. Jones
Vice President
New Nuclear Operations

DK/RAJ/dk

Enclosure 1: V.C. Summer Nuclear Station Unit 2 – Preliminary Amendment Request
Regarding Basemat Shear Reinforcement Design Spacing Requirements

NND-13-0051
January 24, 2013
3 of 3

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NND-13-0051

Enclosure 1

Virgil C. Summer Nuclear Station (VCSNS) Unit 2

Preliminary Amendment Request

Regarding

Basemat Shear Reinforcement Design Spacing Requirements

(PAR 13-01)

NND-13-0051

Enclosure 1

Preliminary Amendment Request (PAR 13-01): Basemat Shear Reinforcement Design Spacing Requirements

Pursuant to 10 CFR 50.90, South Carolina Electric & Gas (SCE&G) has proposed a License Amendment Request (LAR 13-01) to change the Virgil C. Summer Nuclear Station (VCSNS), Units 2 and 3 licensing basis documents associated with Combined License Numbers NPF-93 and NPF-94, respectively. Accordingly, SCE&G requests the determination of whether the NRC has an objection to proceeding with the installation of the plant structures as identified in the Preliminary Amendment Request (PAR 13-01) provided below which is consistent with LAR 13-01.

PAR Request Number: PAR 13-01	Station Name: VCSNS	Unit Number(s): <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 3	PAR Request Date: January 24, 2013
1. NRC PAR Notification Requested Date (see Block 9 for basis): January 30, 2013			
2. License Amendment Request References (as applicable): <input checked="" type="checkbox"/> LAR submittal date and SCE&G Correspondence No.: Jan. 15, 2013, NND-13-0021 <input type="checkbox"/> Expected LAR submittal date:			
3. Brief Description of Proposed Change: The proposed changes clarify the requirements for shear reinforcement spacing in the nuclear island basemat by modifying the provisions for maximum spacing of the shear reinforcement in the basemat below the auxiliary building. The changes requested to be considered by this PAR are consistent with the changes detailed in the associated LAR 13-01.			
4. Reason for License Amendment Request: Subsection 3.8.5.5, Structural Criteria, of the UFSAR currently includes supplemental provisions for basemat shear reinforcement that refer to provisions in ACI 349 Subsection 11.8.3 for continuous deep flexural members. The UFSAR commits to these provisions without exception or qualifications. These referenced provisions from ACI 349 Subsection 11.8.3 include a maximum spacing requirement on the shear reinforcement. However the maximum spacing provision in ACI 349 Subsection 11.8.3 is not applicable to the AP1000 basemat design and is different than the design as depicted in UFSAR Figures 3H.5-3 and 3.8.5-3 (Sheet 7 of 7) which provide the maximum design spacing for shear reinforcement in the basemat. The proposed change resolves the inconsistency in the current licensing basis documents. The proposed change is to revise the third paragraph in the UFSAR Subsection 3.8.5.5 to remove the direct reference to ACI 349 Subsection 11.8.3 and replace it with supplemental provisions based on criteria from ACI 349-01. The provisions for the spacing of the shear reinforcement are modified to be consistent with the basemat design included in the UFSAR figures. The proposed UFSAR text is very similar to the text that was included in the AP600 DCD specifically to address shear reinforcement provisions in the nuclear island basemat. The text being modified and added is designated as Tier 2* information. UFSAR Tier 2 Figure 3.8.5-3 (Sheet 7 of 7) and Tier 2* Figure 3H.5-3 which			

show the basemat shear reinforcement design with a 24-inch spacing are not changed.

The application of these requirements was first discussed and implemented during the AP600 Design Certification review. These additional requirements on the basemat were included to address NRC concerns related to the quantity of shear reinforcement in the basemat. The requirement for the additional shear reinforcement was to address potential variations in soil stiffness under the nuclear island basemat, the consideration of continuous rather than simple span beam sections, and the ratio of span-to-depth of the nuclear island basemat. A method for increasing the AP600 shear reinforcement in the basemat was to include additional shear reinforcement based on provisions in ACI 318-95 for continuous deep flexural members with a few modifications. At that time during the review of the AP600, ACI 349 did not include such provisions for continuous deep flexural members. These provisions, with the modifications, were identified in the AP600 Final Safety Evaluation Report (NUREG-1512) as sufficient to satisfy the NRC concerns for additional shear reinforcement.

When the AP1000 DCD was created, the supplemental provisions for shear reinforcement were maintained in the design as shown in UFSAR Figures 3H.5-3 and 3.8.5-3 (Sheet 7 of 7). The purpose for maintaining these supplemental provisions within the design was to provide additional shear reinforcement within the design of the AP1000 basemat consistent with the earlier design. A conflict in the design requirements within the DCD was introduced when the wording for the specific supplemental provisions was removed from the text and replaced with a statement referencing Subsection 11.8.3 of ACI 349-01, which had slightly different requirements than the supplemental provisions contained in the design.

5. Is Exemption Request Required? Yes No

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

6. Identify Applicable Precedents: No precedents identified.

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

The proposed amendment would depart from plant-specific Design Control Document (DCD) Tier 2* material incorporated into the Updated Final Safety Analysis Report (UFSAR), to clarify the requirements for shear reinforcement spacing in the nuclear island basemat. The proposed change would modify provisions for shear reinforcement spacing in the nuclear island basemat.

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 or rock. The basemat transfers the load of nuclear island structures to the supporting soil or rock and transmits

seismic motions from the supporting soil or rock to the nuclear island.

The clarification of the requirements for shear reinforcement spacing in the AP1000 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. The clarification of the requirements for shear reinforcement spacing in the AP1000 basemat does not impact the support, design, or operation of mechanical and fluid systems. There is no change to plant systems or the response of systems to postulated accident conditions. There is no change to the predicted radioactive releases due to normal operation or postulated accident conditions. 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 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 to clarify the requirements for shear reinforcement spacing in the nuclear island basemat. The clarification of the requirements for shear reinforcement spacing in the nuclear island basemat does not change the design of the basemat or nuclear island structures. The clarification of the requirements for shear reinforcement spacing in the nuclear island basemat does not change the design function, support, design, or operation of mechanical and fluid systems. The clarification of the requirements for shear reinforcement spacing in the nuclear island basemat 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

No safety analysis or design basis acceptance limit/criterion is challenged or exceeded by the proposed changes, thus, no margin of safety is reduced. Therefore, the proposed amendment does 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]:

The proposed amendment would depart from plant-specific Design Control Document (DCD) Tier 2* material incorporated into the Updated Final Safety Analysis Report (UFSAR) to clarify the requirements for shear reinforcement spacing in the nuclear island basemat. The proposed change would modify the provisions for maximum spacing of the shear reinforcement in the nuclear island basemat.

This review has determined that the proposed change would require an amendment from the COL; 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 Section 4.3, Significant Hazards Consideration, of the license amendment request (LAR-13-01), 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 proposed change to the design spacing for the basemat shear reinforcement does not change the types of materials used in the basemat or the construction methods. The proposed change is unrelated to any aspect of plant construction or operation that would introduce any change 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, the proposed changes do not affect or 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.

The proposed change affects only the nuclear island basemat and would have no effect on any aspect of plant design or operation that would affect individual or cumulative occupational radiation exposure during plant operation. Plant radiation zones are not affected, nor are there any changes to the controls required under

10 CFR Part 20 that preclude a significant increase in occupational radiation exposure. Therefore, the proposed amendment does not involve a significant increase in individual or cumulative occupational radiation exposure.

Based on the above review of the proposed amendment, it has been determined that anticipated construction and operational affects of the proposed amendment does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluents that may be released offsite, or (iii) a significant increase in the individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), an environmental impact statement or environmental assessment of the proposed amendment is not required.

9. Impact of Change on Installation and Testing Schedules:

The shear reinforcement bar installation is underway in accordance with UFSAR figures 3H.5-3 and 3.8.5-3 (Sheet 7 of 7) as discussed in LAR 13-01. This PAR provides for consistency within the licensing basis and facilitates implementation of the basemat shear reinforcement design spacing requirements applied during construction activities associated with the nuclear island basemat structure.

No testing is impacted by the change to the headed shear reinforcement bar design details.

10. Impact of Change on ITAAC:

The change is specific to Tier 2* information in the UFSAR (as incorporated from the DCD) and does not impact the ITAAC related to the Nuclear Island (NI) structure basemat.

11. Additional Information: The scope of the "no objection" sought by this PAR is to engage in installation, testing, and quality control activities associated with the nuclear island basemat structure that are covered by the proposed change discussed above. SCE&G will not pour First Nuclear Concrete until it receives the license amendments requested in LAR 13-01 and 13-02. Additionally, this same scope also applies to SCE&G PAR 13-02: Basemat Shear Reinforcement Design Details (SCE&G correspondence NND-13-0038, dated January 22, 2013).