



September 24, 2012  
NND-12-0458  
10 CFR 50.55a

ATTN: Document Control Desk  
U.S. Nuclear Regulatory Commission  
Document Control Desk  
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: Alternative Request  
Reactor Vessel Flow Skirt ASME Code Jurisdictional Boundary

Pursuant to 10 CFR 50.55a(a)(3)(ii), South Carolina Electric & Gas Company (SCE&G) hereby requests NRC authorization to use an alternative to the requirements of the 1998 Edition, 2000 Addenda of ASME B&PV Code (the Code), Section III, Subparagraph NB-1132.2(d) with regard to the jurisdictional boundary of the reactor vessel flow skirt (RVFS) weld. Compliance with all the requirements of the Code would pose a hardship without a compensating increase in the level of quality and safety. The request for an alternative is applicable for construction, pre-service inspection, and all operating in-service inspection intervals.

The alternative sought by this 10 CFR 50.55a request is one of timing and administration. SCE&G requests that the jurisdictional boundary for the welds be changed so that the welds can be made after the N-Stamp is applied. This will allow the welds be made at the VCSNS site instead of at the fabricator's shop in Korea. All RVFS welding activities on the VCSNS site will be done to the same requirements as if the welding were done in the RV fabricator's shop. Therefore, the quality and safety of the welds will remain the same.

The details of this 10 CFR 50.55a request are contained in the following Enclosure to this letter. Approval is requested by November 30, 2012, to support completion of the VCSNS Unit 2 reactor vessel at the fabricator's shop.

Precedent for this request has been established by an application submitted by Southern Nuclear Operating Company (SNC) and subsequently approved by the NRC (SNC request - letter ND-12-1388 dated June 29, 2012; NRC approval letter - NRC ADAMS Accession Number ML12216A349). This application by SCE&G is considered to be technically equivalent to the SNC request.

This letter contains two regulatory commitments as described at the conclusion of the Enclosure. Any other statements are provided for informational purposes and are not considered to be regulatory commitments.

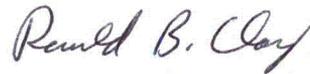
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Should you have any questions, please contact Mr. Alfred M. Paglia by telephone at (803) 941-9876, or by email at [apaglia@scana.com](mailto:apaglia@scana.com).

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

Executed on this 24<sup>th</sup> day of September 2012.

Sincerely,



Ronald B. Clary  
Vice President  
New Nuclear Deployment

BB/RBC/bb

Enclosure

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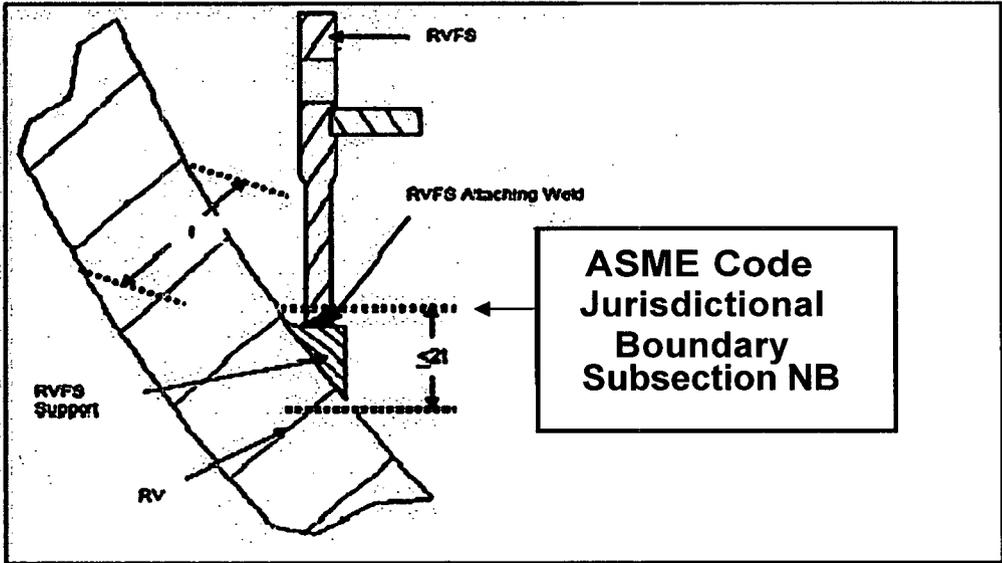
Enclosure to Letter NND-12-0458

Virgil C. Summer Nuclear Station Units 2 and 3

Alternative in Accordance with 10 CFR 50.55a(a)(3)(ii)

Regarding

Reactor Vessel Flow Skirt ASME Jurisdictional Boundary

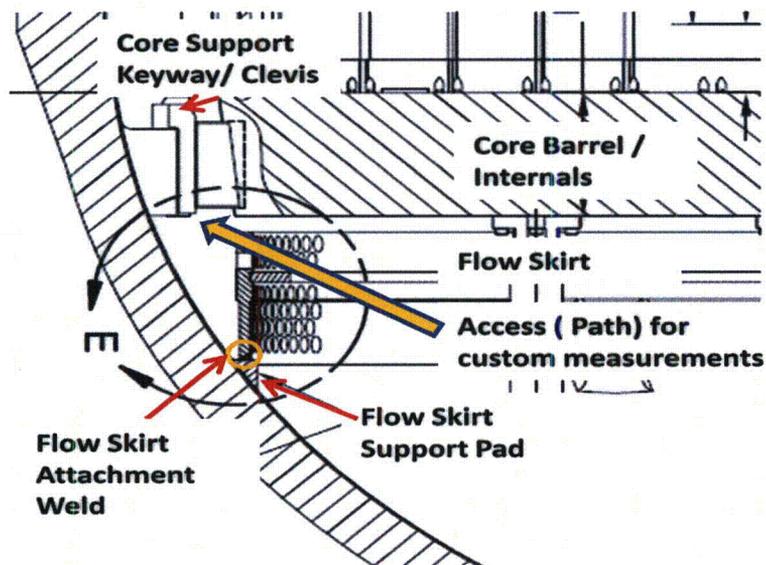
<p><b>Plant Site-Unit:</b></p>	<p>Virgil C. Summer Nuclear Station (VCSNS) Units 2 and 3</p>
<p><b>Interval Dates:</b></p>	<p>Applies to construction, pre-service inspection (PSI), and all operating In-service inspection (ISI) intervals</p>
<p><b>Requested Date for Approval:</b></p>	<p>Authorization is requested by November 30, 2012, to support completion of the VCSNS Unit 2 Reactor Vessel N-stamping.</p>
<p><b>ASME Code Components Affected:</b></p>	<p>Reactor Vessel (RV). As indicated in VCSNS Updated Final Safety Analysis Report (UFSAR) Table 3.2-3, the RV principal construction code is ASME B&amp;PV Code, Section III as a Safety Class A component.</p> <p>The Flow Skirt principal construction code is "per manufacturer's standards" as Safety Class D.</p>
<p><b>Applicable Code Edition and Addenda:</b></p>	<p>As indicated in UFSAR Section 5.2, the baseline used for the evaluations done to support the safety analysis report and the Design Certification is ASME Section III 1998 Edition, 2000 Addenda.</p>
<p><b>Applicable Code Requirements:</b></p>	<p>The flow skirt design specification identifies the Reactor Vessel Flow Skirt (RVFS) attachment weld as <u>within</u> the jurisdictional boundary of the RV as shown in Figure 1.</p> <p><i>"Per the 1998 Edition with the 2000 Addenda of ASME B&amp;PV Code, Section III, Article NB-1132.2 (d), the jurisdictional boundary between the RV and the RVFS is the first attachment weld, specifically the RVFS to RVFS support..."</i></p>  <p style="text-align: center;"><b>Figure 1</b></p> <p>Note that even though the RVFS is not classified as a core support structure, the requirements of Article NG-3000 were conservatively chosen for the design of the RVFS.</p>

**Reason for Request:**

Historically, in prior PWRs, the RVFS attachment welds have been made in the field rather than at the fabricator's shop. Further, the UFSAR states that the RVFS attachment welds be made in the field.

Under the 1998 Edition, 2000 Addenda of ASME B&PV Code, the RVFS attachment weld is within the jurisdictional boundary of the RV, requiring the RVFS to be welded to the RV at the RV fabricator's shop in order to permit ASME Code certification (N-stamping) of the RV prior to shipping the RV to the site.

The need for a customized fit-up of the reactor vessel internals (RVI) in the field as part of field assembly prevents the flow skirt attachment weld from being completed at the RV fabricator's shop. On-site installation of the RVI necessitates custom fitting and machining of the clevis inserts for proper interface between the core support clevis and radial support keyways. The position of an installed RVFS would prohibit effective measurement and final machining of the core support clevis and clevis inserts. (See Figure 2 for details).



**Figure 2**

As shown in Figure 2, there is no clear line of sight between the inner diameter of the RVFS and the RV core support keyways and clevises. Furthermore, the distance between the top of the RVFS and the bottom of the RV internals lower core support plate is no more than two inches and therefore does not provide sufficient access to the core support keyways and clevises.

Although highly undesirable, it is possible to ship the RVI assembly to the RV fabricator's shop for customization and fit up. However, there is a technical risk that field assembly activities, such as Reactor Coolant System (RCS) loop pipe welding and RV setting and installation, could nullify any customization and fit-up exercises performed at the RV fabricator's shop by causing changes in the alignment between the RVI core barrel and the RV.

Completing RVFS attachment welding at the RV fabricator's shop introduces unnecessary risk and hardship without any increase in the level of quality and safety, since the same Code requirements will be applied in the field as in the RV fabricator's shop.

**Proposed Alternative:** It is proposed that the RVFS attachment weld be excluded from the RV jurisdictional boundary. The attachment weld will be performed in the field in accordance with ASME Code requirements and will be identified in a Code N-5 data report. Figure 3 below illustrates the current jurisdictional boundary versus the proposed jurisdictional boundary.

### Jurisdictional Boundaries

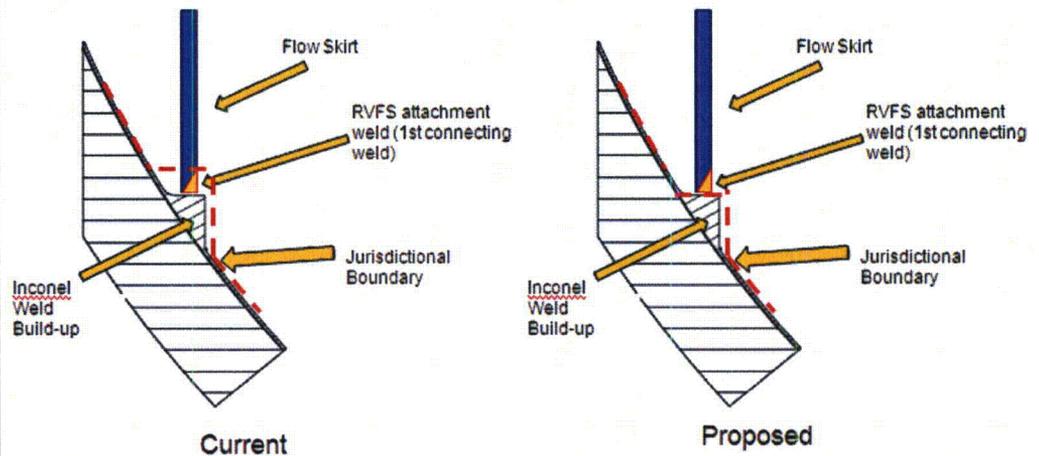


Figure 3

**Basis for Use:** The attachment welds will be performed in the field in accordance with ASME Code requirements and be identical to that which would be performed in the RV fabricator's shop. The attachment welds shall be identified in a Code N-5 data report.

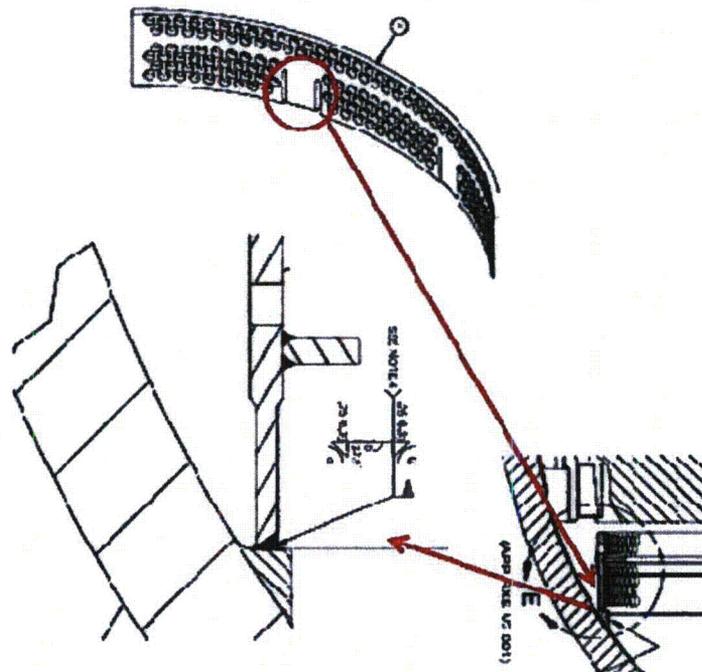
The requirements for the fabrication, inspection, and acceptance criteria of the attachment welds will be contained in a controlled document such as a field installation manual.

Materials of construction are:

- RVFS support pads- ERNiCrFe-7 (UNS N06052) or ERNiCrFe-7A (UNS N06054) weld build up
- RVFS attachment weld- ERNiCrFe-7 (UNS N06052) or ERNiCrFe-7A (UNS N06054) filler metal
- RVFS – SB-168 (UNS N06690)

The RVFS attachment welds do not require Post Weld Heat Treatment (PWHT) per NB-4622.7(a).

The weld configuration given in Figure 4 shows that a full penetration weld is completed between the RVFS and eight RVFS support pads included on the bottom head dome of the RV. This full penetration weld is performed from the inner diameter of the RVFS.



**Figure 4**

The requirements to execute welding necessary to install the RVFS in the field are:

1. Installation welding completed by NA Certificate holder in accordance with ASME Section III paragraph NB-4430;
2. Nondestructive Examination (NDE) completed in accordance with ASME Section III paragraph NB-5262;

	<p>3. NDE acceptance criteria in accordance with ASME Section III paragraph NB-5350;</p> <p>4. Quality records data package will be identified in an N-5 Code data report;</p> <p>5. Activities monitored by 3rd party inspector; and</p> <p>6. Requirements for Pre-service Inspection (PSI) and In-service Inspection (ISI) are not changed and will be in accordance with ASME Section XI IWB-2200 and IWB-2500, respectively.</p> <p>This request does not impact any plant-specific DCD Tier 1 information nor any ITAAC. This request seeks authorization to exclude the RVFS attachment welds from the RV jurisdictional boundary.</p> <p>The welds would be completed in the field to the same standards as they would if performed in the RV fabricator's shop. The attachment welds in the field would be made in accordance with ASME Code requirements for a weld governed by Subsection NB. This will assure the same level of quality and safety as if the welds were within the RV ASME Code jurisdictional boundary.</p> <p>Because there is a hardship, and this proposal is equal in both quality and safety, authorization is requested to exclude the RVFS attachment weld from the RV jurisdictional boundary in accordance with 10 CFR 50.55a(a)(3)(ii).</p>
<b>Duration of Proposed Alternative:</b>	Life of the facility
<b>Precedents:</b>	The technical information contained in this request is the same as that submitted by Southern Nuclear Operating Company by letter ND-12-1388 dated June 29, 2012. That request was approved by the NRC (see NRC ADAMS Accession Number ML12216A349).
<b>References:</b>	<p>1. VCSNS Units 2 and 3 UFSAR, Subsection 5.3.2.2</p> <p>2. ASME BP&amp;V Code Section III and Section XI 1998 Edition, Addenda 2000</p>
<b>Status:</b>	Awaiting NRC authorization

**Regulatory Commitments:**

1. The VCSNS Unit 2 Reactor Vessel Flow Skirt Attachment Weld quality records data package will be identified in an N-5 Code data report. Due Date: After the VCSNS Unit 2 Reactor Vessel Flow Skirt Attachment Welds are completed.
2. The VCSNS Unit 3 Reactor Vessel Flow Skirt Attachment Weld quality records data package will be identified in an N-5 Code data report. Due Date: After the VCSNS Unit 3 Reactor Vessel Flow Skirt Attachment Welds are completed.