Vogtle PEmails

From: Hoellman, Jordan
Sent: Tuesday, May 31, 2016 3:50 PM
To: Vogtle PEmails
Subject: SNC draft Request for Alternative PSI Requirements for SG-RCP Casing Welds - 6/9/16 Public Meeting
Attachments: 2016-06-09 SNC Request for Alternative PSI for SG-RCP Casing Welds.pdf

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Subject: SNC draft Request for Alternative PSI Requirements for SG-RCP Casing Welds - 6/9/16 Public Meeting
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From: Hoellman, Jordan

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SOUTHERN NUCLEAR
A SOUTHERN COMPANY

Docket Nos.: 52-025
52-026

ND-16-0687
10 CFR 50.55a

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Southern Nuclear Operating Company
Vogtle Electric Generating Plant Units 3 and 4
Request for Alternative:
Preservice Inspection Requirements for Steam Generator Nozzle to Reactor Coolant Pump Casing Welds (VEGP 3&4-PSI-ALT-05)

Ladies and Gentlemen:

Pursuant to 10 CFR 50.55a(z)(1), Southern Nuclear Operating Company hereby requests NRC authorization to use an alternative to the requirements of Section XI, IWB-2500, of the ASME Boiler and Pressure Vessel (B&PV) Code, 2007 Edition through 2008 Addenda (code of record) for Vogtle Electric Generating Plant (VEGP) Units 3 and 4. The proposed request for alternative is applicable to preservice inspection of the steam generator nozzle to reactor coolant pump casing butt weld. This butt weld is an ASME Code Class 1 weld and is not addressed in the ASME code of record for VEGP Units 3 and 4. This request proposes the use of the 2013 Edition of the ASME B&PV Code, Section XI for the inspection requirements of this weld, as amended by the six NRC conditions provided in Federal Register, Volume 81, No. 41, March 2, 2016, Proposed Rules, which conditionally accepts ASME Code Case N-799. This code case was the precedent to the examination requirements now included in the 2013 Edition of ASME B&PV Code, Section XI for this weld.

The details of the 10 CFR 50.55a(z)(1) request are contained in the enclosure to this letter. Approval is requested by October 14, 2016, to support preservice inspections currently scheduled for December, 2016.

This letter contains no regulatory commitments. Should you have any questions, please contact Mr. Corey Thomas at (205) 992-5221.

Mr. Brian H. Whitley states that: he is the Regulatory Affairs Director 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

Brian H. Whitley

BHW/BCT/ljs

Sworn to and subscribed before me this _____ day of _____, 2016

Notary Public: _____

My commission expires: _____

Enclosure: Vogtle Electric Generating Plant (VEGP) Units 3 and 4 – Proposed Alternative VEGP 3&4-PSI-ALT-05 in Accordance with 10 CFR 50.55a(z)(1) Regarding Preservice Inspection Requirements for Steam Generator Nozzle to Reactor Coolant Pump Casing Welds

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Southern Nuclear Operating Company

ND-16-0687

Enclosure

Vogtle Electric Generating Plant (VEGP) Units 3 and 4

Proposed Alternative VEGP 3&4-PSI-ALT-05 in Accordance with 10 CFR 50.55a(z)(1) Regarding Preservice Inspection Requirements for Steam Generator Nozzle to Reactor Coolant Pump Casing Welds

(Enclosure consists of 8 pages, including this cover page.)

Plant Site-Unit:	Vogtle Electric Generating Plant (VEGP) – Units 3 and 4
Interval-Interval Dates:	Applies to Preservice Inspection (PSI)
Requested Date for Approval:	Approval is requested by October 14, 2016 to support the performance of the VEGP Unit 3 Section XI PSI of the steam generator cold leg nozzle to reactor coolant pump casing welds.
ASME Code Components Affected:	The **AP1000®** design is unique in that the reactor coolant pump inlet nozzle is welded directly to the steam generator cold leg outlet nozzle (two per steam generator). The dissimilar metal circumferential butt weld joining the low alloy steel with austenitic stainless steel cladding steam generator nozzle to the cast austenitic stainless steel reactor coolant pump casing is classified as an ASME Section XI Class 1 weld (see Figure 1). The AP1000 design has two steam generators and four reactor coolant pumps in both VEGP Unit 3 and Unit 4.
Applicable Code Edition and Addenda:	ASME B&PV Code, Section XI, 2007 Edition through the 2008 Addenda (code of record)
Applicable Code Requirements:	The ASME code of record for VEGP Units 3 and 4 does not address this dissimilar Category B-F weld. ASME has approved Code Case N-799 and an ASME Code action to incorporate the steam generator nozzle to reactor coolant pump casing butt weld into later editions of ASME Section XI which are not yet approved by the NRC. The code change is included in the 2013 edition of ASME Section XI, Table IWB-2500-1, Category B-F, Item Number B5.71.
Reason for Request:	The 2007 Edition of ASME Section XI through the 2008 Addenda does not describe requirements for the examination of these welds. If approved, this alternative will be used to satisfy the preservice inspection requirements for the steam generator nozzle to reactor coolant pump casing welds.

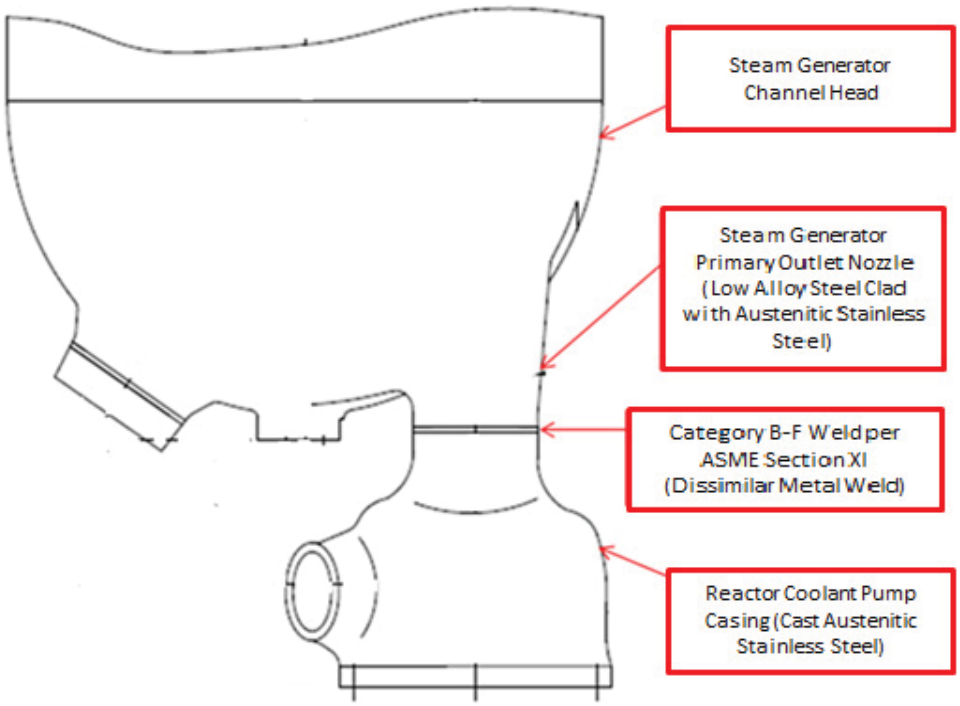
Proposed Alternative and Basis for Use:	SNC proposes to use the 2013 Edition of ASME Section XI for the inspection requirements of these welds as amended by the six NRC conditions specified in Federal Register Volume 81, No. 41, March 2, 2016, Proposed Rules, to conditionally accept ASME Code Case N-799. Table IWB-2500-1 of the 2013 Edition list these welds as ASME Category B-F, Item Number B5.71 with a description of Nominal Pipe Size 4-inch or Larger Nozzle-to-Component Butt Welds. Figure IWB-2500-8(c) from the 2013 Edition best depicts this configuration. In alignment with ASME Section XI, 2013 Edition, SNC proposes to perform a surface examination on the outer diameter (OD) surface and perform an encoded volumetric examination from the inner diameter (ID) surface using the ultrasonic test method. The ultrasonic test techniques will be qualified in accordance with the Performance Demonstration Initiative (PDI) Program which satisfies the requirements of ASME Section XI, Appendix VIII, Supplement 10, including Code Case N-695 and 10 CFR 50.55a. In addition to the ASME Section XI examinations, SNC proposes to perform eddy current test techniques from the ID surface. Although not an ASME mandatory examination, the eddy current technique utilized on the ID surface will be qualified in accordance with ASME Section V, Article 14 (2007 Edition through the 2008 Addenda). The ultrasonic test and eddy current techniques are the same as those applied to Reactor Pressure Vessel (RPV) nozzle to safe end dissimilar metal welds from the ID surface by WesDyne, the inspection vendor, except for the addition of larger and deeper focused ultrasonic test transducers. These added transducers allow for through-wall coverage through the full thickness of the weld in the event flaw indications are detected within the inner 1/3 of the thickness of the weld and adjacent base material or the defined examination volume. The AP1000 steam generator nozzle to pump casing dissimilar metal butt weld is thicker than the RPV nozzle to safe end dissimilar metal welds found in other pressurized water reactors. To extend the PDI qualification to this greater thickness and to account for the specific weld configuration, an AP1000 steam generator to pump casing weld specimen was designed and fabricated by the Electric Power Research Institute (EPRI) in accordance with the EPRI/PDI Program. This specimen serves as a blind test specimen necessary to qualify the ultrasonic test procedure and the ultrasonic test personnel. The ultrasonic test procedure and personnel qualifications are conducted by PDI under the PDI ASME Section XI, Appendix VIII program. The eddy current techniques are qualified internally by the inspection vendor

Proposed Alternative and Basis for Use (Continued):	in accordance with ASME Section V, Article 14, intermediate rigor, using test data obtained from an additional AP1000 steam generator to pump casing butt weld specimen, containing ID surface breaking planar flaws. The proposed preservice inspections are also complimented by ASME B&PV Code Section III radiography examinations required during component fabrication. In addition to the use of the 2013 Edition of ASME Section XI for inspection of these welds, SNC proposes to partially adopt the six proposed conditions currently outlined in the referenced Federal Register. The six proposed conditions and SNC application of these conditions are listed below: Condition 1: This proposed condition would require that the scanning surfaces have a gap less than 0.032-inch beneath the ultrasonic testing probe. SNC Application of Condition 1: SNC will meet Condition 1. The design organization's fabrication specification requires a flatness of 0.031-inch per 1 inch or better over the entire required scan length. Condition 2: This proposed condition is that the examination requirements of Section XI, Mandatory Appendix I, paragraph I–3200(c) must be applied. SNC Application of Condition 2: SNC will meet Condition 2. Inspections of these welds will be performed in two axial and two circumferential directions in accordance with Mandatory Appendix I, paragraph I-3200(c). The ultrasonic test procedure that is applied is qualified for detection and length-sizing of ID-connected flaws in dissimilar metal (DM) welds in accordance with Section XI, Appendix VIII, Supplement 10 (as administered by EPRI/PDI) assuming double sided access although the procedure is not qualified for examinations from the cast austenitic stainless steel (CASS) reactor coolant pump casing. The ultrasonic test procedure has been demonstrated on ID-connected flaws when scanning from the CASS material in accordance with ASME Section V, Article 14 under the cognizance of EPRI/PDI. Ultrasonic test personnel are qualified in the same manner as the procedure. An eddy current technique is also applied for surface examination. This eddy current technique is applied axially and circumferentially across the surface extent of the examination volume. The eddy current procedure and personnel have demonstrated detection and length-sizing in accordance with ASME Section V, Article 14 by the inspection vendor. This technique meets the requirements of Mandatory Appendix I, paragraph I-3200(c). Condition 3: This proposed condition is that the examination of the dissimilar

Proposed Alternative and Basis for Use (Continued):	metal welds between reactor vessel nozzles and components, and between steam generator nozzles and pumps must be full volume. SNC Application of Condition 3: SNC proposes to take a partial exception to Condition 3 and perform a volumetric examination of the required inspection volume, not the entire weld volume. The ultrasonic and eddy current inspection techniques are performed from the component ID surface. This approach minimizes the impact of sound beam re-direction and scattering. The capability of detecting and length sizing of ID-initiated flaws in the weld and in the CASS material was demonstrated on a representative blind test specimen. Therefore, full volume of the inner third of the weld, as required by the 2013 Edition of ASME Section XI, will be achieved. For clarification, SNC's proposed volumetric coverage is depicted in IWB-2500-8(c) and applied to the VEGP steam generator nozzle to reactor coolant pump casing butt welds in Figure 2. Condition 4: This proposed condition is that ultrasonic depth and sizing qualifications for CASS components must use the ASME Code requirements in Section XI, Appendix VIII, Supplement 10. Supplement 10 contains qualification requirements for dissimilar metal welds. SNC Application of Condition 4: SNC will meet Condition 4. SNC will utilize a Section XI, Appendix VIII, Supplement 10 qualified procedure (detection and length sizing) for the steam generator nozzle to reactor coolant pump casing butt weld including the scans over the CASS material. Depth sizing limitations are addressed in SNC application of condition 6. Condition 5: This proposed condition will require the examination's acceptability to be based on an ultrasonic examination of the qualified volume and a flaw evaluation of the largest hypothetical crack that could exist in the volume not qualified for ultrasonic examination. SNC Application of Condition 5: SNC proposes to take an exception to Condition 5. This condition is not applicable to the examination that will be performed. The examination procedure to be utilized has been qualified on the mock-up representative of the thickness of the steam generator outlet nozzle to reactor coolant pump casing weld. As such, detection and length sizing qualification was extended to the full thickness. Because the examinations are performed from the ID surface, the examination volume is not limited. It is important to note, the examination volume is the inner 1/3 of the thickness of the weld and includes the weld and 0.25" of adjacent base metal on both sides of the weld and buttering which are composed on alloy 690 weld metals. Examination of the outer 2/3 is not required unless performing depth sizing of a flaw indication. Condition 6: This proposed condition is that cracks that are detected but

	cannot be depth-sized with performance-based procedures, equipment, and personnel qualifications consistent with Section XI, Appendix VIII, shall be repaired or removed. SNC Application of Condition 6: SNC will meet Condition 6. Based on the information above, SNC concludes that the proposed examinations will provide an acceptable level of quality and safety.
Duration of Proposed Alternative:	The duration of the proposed alternative is the Section XI preservice inspections for both VEGP Unit 3 and VEGP Unit 4.
References:	1. Section XI ASME Code Case N-799 2. ASME B&PV Code, Section XI, 2007 Edition through the 2008 Addenda 3. ASME B&PV Code, Section XI, 2013 Edition 4. Federal Register Vol. 81, No. 41 dated March 2, 2016 5. Vogtle Units 3 and 4, Updated Final Safety Analysis Report (UFSAR), Subsection 5.1.3.3
Status:	Awaiting NRC authorization.

Figure 1



RCP CASING ATTACHMENT

Figure 2