



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

August 12, 2015

Mr. Thomas D. Gatlin  
Vice President, Nuclear Operations  
South Carolina Electric & Gas Company  
Virgil C. Summer Nuclear Station  
Post Office Box 88, Mail Code 800  
Jenkinsville, SC 29065

SUBJECT: VIRGIL C. SUMMER NUCLEAR STATION, UNIT 1 – ALTERNATIVE REQUEST  
REGARDING SNUBBERS (TAC NO. MF5775)

Dear Mr. Gatlin:

By letter dated February 19, 2015, as supplemented on June 4, 2015, the South Carolina Electric & Gas Company (SCE&G, the licensee) submitted an alternative request for Virgil C. Summer, Unit 1. The licensee proposes to perform the visual examination of snubbers (pin-to-pin) and associated attachment hardware (pin-to-pipe and pin-to-structure, excluding integral attachments) per the Snubber Program in lieu of the requirements specified in IWF-2500 of American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME B&PV Code), Section XI, in the 2007 edition through the 2008.

The application was submitted pursuant to Section 50.55a(z)(1) of Title 10 of the *Code of Federal Regulations* (10 CFR), which requires the applicant to demonstrate that the proposed alternative would provide an acceptable level of quality and safety.

The NRC staff has reviewed the subject request and concludes, as set forth in the enclosed safety evaluation, that SCE&G has adequately addressed all of the regulatory requirements set forth in 50.55a(z)(1), and therefore authorizes the proposed alternative.

T. Gatlin

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If you have any questions, please contact the Project Manager, Shawn Williams, at 301-415-1009 or via e-mail at [Shawn.Williams@nrc.gov](mailto:Shawn.Williams@nrc.gov).

Sincerely,



Robert J. Pascarelli, Chief  
Plant Licensing Branch II-1  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket No. 50-395

Enclosure: Safety Evaluation

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UNITED STATES  
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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

FOURTH TEN-YEAR INSERVICE INSPECTION PROGRAM INTERVAL

SOUTH CAROLINA ELECTRIC & GAS COMPANY

SOUTH CAROLINA PUBLIC SERVICE AUTHORITY

VIRGIL C. SUMMER NUCLEAR STATION, UNIT 1

DOCKET NO. 50-395

**1.0 INTRODUCTION**

By letter dated February 19, 2015 (Agencywide Documents and Access Management System (ADAMS) Accession No. ML15055A588), South Carolina Electric & Gas Company (SCE&G, the licensee) submitted Relief Request RR-4-08 for the fourth ten-year inservice inspection (ISI) program for the Virgil C. Summer Nuclear Station (VCSNS), Unit 1. In response to a request for additional information (RAI), the licensee submitted a revised Relief Request RR-4-08 and RAI responses on June 4, 2015 (ADAMS Accession No. ML15159A178). The licensee requested to perform the visual examination of snubbers (pin-to-pin) and associated attachment hardware (pin-to-pipe and pin-to-structure, excluding integral attachments) per the Snubber Program in lieu of the requirements specified in IWF-2500 of American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME B&PV Code), Section XI, in the 2007 edition through the 2008. The VCSNS, Unit 1, snubber program for the fourth 10-year interval is based on ASME OM Code 2004 Edition with 2005 and 2006 addenda. The fourth ten-year ISI interval began on January 1, 2014, and scheduled to end on December 31, 2023.

Specifically, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) 50.55a(z)(1), the licensee requested to use the proposed alternative on the basis that the alternative provides an acceptable level of quality and safety.

**2.0 REGULATORY EVALUATION**

10 CFR 50.55a(g)(4) requires that: Throughout the service life of a boiling or pressurized water-cooled nuclear power facility, components (including supports) which are classified as ASME Code Class 1, Class 2, and Class 3 must meet the requirements, except design and access provisions and preservice examination requirements, set forth in Section XI of editions and addenda of the ASME B&PV Code (or ASME OM [Operation and Maintenance] Code for snubber examination and testing) that become effective subsequent to editions specified in

Enclosure

paragraphs (g)(2) and (g)(3) of this section and that are incorporated by reference in paragraph (b) of this section [10 CFR 50.55a], to the extent practical within the limitations of design, geometry and materials of construction of the components.

10 CFR 50.55a(g)(4)(ii) requires that: Inservice examination of components and system pressure tests conducted during successive 120-month inspection intervals must comply with the requirements of the latest edition and addenda of the Code incorporated by reference in paragraph (b) of this section [10 CFR 50.55a] 12 months before the start of the 120-month inspection interval (or the optional ASME Code cases listed in NRC Regulatory Guide 1.147, Revision 17, when using Section XI; or Regulatory Guide 1.192, Revision 1 when using the OM Code, that are incorporated by reference in paragraph (b) of this section), subject to the conditions listed in paragraph (b) of this section.

Pursuant to 10 CFR 50.55a(z) alternatives to requirements may be authorized by the NRC if the licensee demonstrates that: (1) the proposed alternatives provide an acceptable level of quality and safety, or (2) compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

Based on the above, and subject to the following technical evaluation, the NRC staff finds that regulatory authority exists for the licensee to request and the Commission to authorize the alternative requested by the licensee.

### **3.0 TECHNICAL EVALUATION**

#### **3.1 Relief Request RR-4-08**

##### **The ASME Code Affected Components and Requirements**

The affected components are ASME Code Class 1, 2, and 3 snubbers attachment hardware (pin-to-pipe and pin-to-structure), excluding integral attachments.

The applicable ASME Section XI edition and addenda for the VCSNS, Unit 1, fourth 10-year ISI program is the 2007 Edition through the 2008 Addenda. The VCSNS, Unit 1, snubber program for fourth 10-year interval is based on ASME OM Code 2004 Edition with 2005 and 2006 addenda.

ASME Section XI, IWF-2500 specifies the examination requirements for supports and associated attachment hardware. Table IWF-2500-1, Examination Category F-A requires that visual VT-3 examination be performed on Class 1, 2, and 3 piping and component supports. ASME Section XI, IWF-1220 states that the examination and testing of snubbers are governed by ASME OM Code. Also when using ASME Section XI, 2007 Edition through 2008 addenda, 10 CFR 50.55a(b)(3)(v)(B) allows the use ASME OM Code, Subsection ISTD for inservice examination and testing of snubbers.

The interface boundaries for the examination of snubber and snubber attachment hardware are further addressed in IWF-1300(h), which states, "The examination boundary of the support containing snubber shall not include the connection to the snubber assembly (pins)." These boundaries are shown graphically in Figure IWF-1300-1(f).

### Licensee's Reason for Request

VCSNS, Unit 1, is required to perform VT-3 visual examinations on Class 1, 2 and 3 supports, including attachment hardware, per ASME Section XI. VCSNS, Unit 1, is also required to perform visual examinations and testing on snubber assemblies in accordance with ASME OM Code, Subsection ISTD. When incorporating the criteria of Subsection ISTD into the Snubber Program, SCE&G included the visual examination of the snubber assembly (pin-to-pin). VCSNS, Unit 1, will update Surveillance Test Procedure STP-803.002, *Mechanical Snubber Visual Examination*, to include the visual examination of snubber attachment hardware (pin-to-pipe and pin-to-structure, excluding integral attachments). With the proposed procedure update, the visual examination criteria of the Snubber Program will meet the requirements established by ASME Section XI. Having two nearly identical sets of requirements for the visual examination of snubber attachment hardware would require the performance of redundant examinations and cause unnecessary confusion in the sample selection, data collection and documentation of these examinations. All snubbers at VCSNS, Unit 1, are mechanical snubbers.

### Licensee's Proposed Alternative and Basis for Use

SCE&G proposes to perform the visual examination of snubbers and associated attachment hardware (pin-to-pipe and pin-to-structure, excluding integral attachments) per the Snubber Program documented in Surveillance Test Procedure STP-803.002, which will provide the requirements necessary to implement and administer a comprehensive snubber surveillance, testing, maintenance, and service life monitoring. STP-803.002 is written to meet ASME OM Code Subsection ISTA, "General Requirements," and Subsection ISTD, "Preservice and Inservice Examination and Testing of Dynamic Restraints (Snubbers) in Light-Water Reactor Nuclear Power Plants."

The examination of integral attachments will be in accordance with ASME Section XI, Table IWB-2500-1 (Examination Category B-K), Table IWC-2500-1 (Examination Category C-C) and Table IWD-2500-1 (Examination Category DA).

The examination and testing requirements for snubbers are documented in VCSNS STP-803.002. This procedure requires an examination frequency that establishes a high level of confidence in the acceptability of the plant's snubbers. This procedure requires the visual examination of snubber attachments, support attachments and attachments to the supporting foundation, including nuts, bolts, studs, welds, pins spacers and embedments. The visual examination criteria established in Procedure STP-803.002 meets the examination criteria specified in ASME Section XI, IWF-3410. Performing both the ASME Section XI and Snubber Program examinations would be redundant and would not improve the level of quality and safety in the plant. However, it would increase the occupational radiation exposure and cause the unnecessary repetition of activities.

The examinations on integral attachments that are associated with snubber attachment hardware are not included in the scope of this request for relief. The examination of these items will continue in accordance with ASME Section XI.

By letter dated June 4, 2015, the licensee submitted revised Relief Request RR-4-08 and its responses to the NRC staff's RAIs. In its response, the licensee clarified that the ASME OM Code 2004 Edition with 2005 and 2006 Addenda will be used from snubber (pin-to-pin) inclusively and ASME Section XI 2007 Edition with 2008 Addenda will be used from pin-to-structure and pin-to-piping (associated attachment hardware).

### 3.2 NRC Staff Evaluation

The VCSNS, Unit 1, snubber program for fourth 10-year interval is based on ASME OM Code 2004 Edition with 2005 and 2006 addenda, whereas the visual inspection of attachments for snubber attachment hardware (pin-to-pipe and pin-to structure, excluding integral attachments), is based on ASME Section XI 2007 Edition with 2008 Addenda.

The 2007 Edition through the 2008 Addenda of ASME Section XI contains Figure IWF-1300-1(f), which depicts the examination boundaries for snubber (as shown in Figure 1 below).

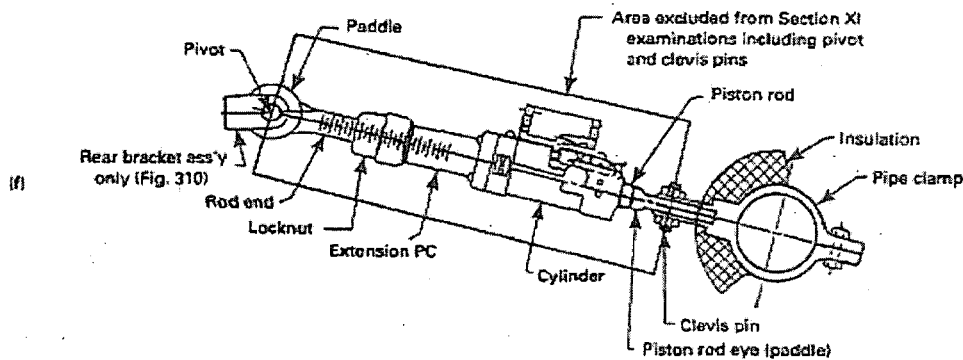


Figure 1

The component supports include (1) snubbers; and (2) their attachment hardware (pin-to-pipe and pin-to-structure). The examination and inspection of the snubbers (pin-to-pin) are to be performed per Subsections ISTA and ISTD of the ASME OM Code. Whereas, supports attachments hardware pin-to-pipe and pin-to-structure are to be performed as specified in paragraphs IWF-1220 and IWF-2000 of the ASME Section XI. The licensee states that having two similar sets of requirements for the visual examination and inspection for the same component supports: one for snubbers and another for their attachments and hardware, would require the performance of redundant examinations and cause unnecessary confusion in sample selection, data collection and documentation of these examinations.

The licensee states that in order to eliminate the duplication of effort of tracking two different examination boundaries for one component, the licensee proposes to perform the visual examination of snubbers and associated attachment hardware (pin-to-pipe and pin-to-structure,

excluding integral attachments) per the Snubber Program in lieu of the requirements specified in IWF-2500 of ASME B&PV Code, Section XI.

NRC staff reviewed the information provided in the February 19, 2015, submittal and the June 4, 2015, response to RAls, and found the proposed examination boundaries of snubber and attachment hardware (pin-to-pipe and pin-to-structure, excluding integral attachments) per the Snubber Program are acceptable based on the following:

- (1) The ASME Section XI, 2007 Edition including the 2008 Addenda, Figure IWF-1300-1(f) specify boundaries between snubber (pin-to-pin) and its attachments. Based on Figure IWF-1300-1(f), the snubber (pin-to-pin) inservice examination and testing requirements are provided in the ASME OM Code, whereas snubber' attachments inservice examination requirements are provided in the ASME Section XI. The Relief Request No. RR-4-08 proposes to perform the visual examination of snubbers and associated attachment hardware (pin-to-pipe and pin-to-structure, excluding integral attachments) along with snubber (pin-to-pin) visual examination in the Snubber Program.
- (2) Incorporating both examination boundaries (snubbers and their attachments) into one program provides a better understanding of the condition of the snubber and its associated attachments, without sacrificing quality and safety.
- (3) IWA-2213 requires the use of VT-3 for visual examination of snubbers' associated attachment hardware (pin-to-pipe and pin-to-structure, excluding integral attachments), whereas ISTA-1500 requires the use of the owner's specified method for visual examination of snubbers. The licensee states that VCSNS, Unit 1, will be using VT-3 qualified personnel to examine both snubbers and associated attachments. Performing both visual examinations of a snubber and its attachments under proposed boundaries in the snubber program using VT-3 qualified personnel to perform examinations provides an understanding of the snubber and its attachments sufficient to demonstrate an acceptable level of quality and safety.
- (4) Visual examination of the snubber and associated attachments will be performed at the same time to reduce the inspection time and radiation dose.
- (5) SCE&G will update VCSNS, Unit 1, Surveillance Test Procedure STP-803.002, Mechanical Snubber Visual Examination, to include the visual examination of snubber attachment hardware (pin-to-pipe and pin-to-structure, excluding integral attachments). Licensee procedures will be enhanced to include the current practice of using VT-3 certified examiners.
- (6) The licensee states that while performing visual examination of snubbers and its attachments, any findings related to snubber (pin-to-pin) will be evaluated in accordance with ASME OM Code requirements and will not be subject to ASME Section XI, Article IWF requirements for evaluation and expansion. Whereas, any findings identified from pin-to-structure and pin-to-piping system will be evaluated in accordance with Article IWF of ASME Section XI and corrective measures taken (including scope expansion if applicable) during the same refueling outage.

- (7) The licensee states that if Code Case OMN-13 is implemented for snubbers to extend the visual examination interval to the 10-year maximum allowable, the complete supports assemblies would be examined every 10 years. Therefore, a larger population of visual examination is performed for snubbers' associated attachments hardware than required by ASME Section XI, Table IWF-2500-1.

Based on the above, the NRC staff finds that the licensee proposed alternative of snubber boundaries for visual examination, which includes snubbers and their attachments, provides an acceptable level of quality and safety.

#### **4.0 CONCLUSION**

As set forth above, the NRC staff determines that Relief Request RR-4-08 as documented in the licensee's letter dated February 2015, and supplement dated June 4, 2015, provides an acceptable level of quality and safety. Accordingly, the NRC staff concludes that the licensee has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(z)(1). Therefore, the NRC staff authorizes the use of Relief Request RR-4-08 at the VCSNS, Unit 1, for the remainder of the fourth 10-year ISI and snubber program interval which is scheduled to end on December 31, 2023.

All other requirements of 10 CFR 50.55a and ASME Code, Section XI, for which relief was not specifically requested and approved, remain applicable, including third-party review by the Authorized Nuclear Inservice Inspector.

Principle Contributor: Bedi Gurjendra, NRR



T. Gatlin

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If you have any questions, please contact the Project Manager, Shawn Williams, at 301-415-1009 or via e-mail at [Shawn.Williams@nrc.gov](mailto:Shawn.Williams@nrc.gov).

Sincerely,

/RA/

Robert J. Pascarelli, Chief  
Plant Licensing Branch II-1  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket No. 50-395

Enclosure: Safety Evaluation

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