

July 28, 2003

Mr. Roy A. Anderson
President & Chief Nuclear Officer
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Post Office Box 236
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SUBJECT: SALEM NUCLEAR GENERATING STATION, UNIT NO. 1 - RELIEF FROM
ASME CODE REQUIREMENTS RELATED TO THE SALEM INSERVICE
INSPECTION PROGRAM, RELIEF REQUEST S1-RR-F01, (TAC NO. MB6098)

Dear Mr. Anderson:

By letter dated July 8, 2002, as supplemented on July 10, 2003, PSEG Nuclear, LLC (PSEG) submitted a request for relief (Relief Request S1-RR-F01) from the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (the Code), Section XI, requirements for the testing of dynamic restraints (snubbers) at the Salem Nuclear Generating Station (Salem), Unit No. 1. In the July 8, 2002, letter, PSEG requested the continued use of Technical Specification 3/4.7.9, "Snubbers," and associated bases, in lieu of ASME Code requirements outlined in Article IWF-5000. Relief was requested for the third 10-year Inservice Inspection (ISI) interval for Salem, Unit No. 1.

The U.S. Nuclear Regulatory Commission (NRC) staff has completed its review of the subject relief request. As documented in the enclosed Safety Evaluation, the staff concludes that the proposed alternative will provide an acceptable level of quality and safety. Therefore, pursuant to Title 10 of the *Code of Federal Regulations*, Section 50.55a(a)(3)(i), the NRC staff authorizes the proposed alternative for the third 10-year ISI interval for Salem, Unit No. 1.

Sincerely,

/RA/

James W. Clifford, Chief, Section 2
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-272

Enclosure: Safety Evaluation

cc w/encl: See next page

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO THE TESTING OF DYNAMIC PIPE RESTRAINTS (SNUBBERS)

IN ACCORDANCE WITH RELIEF REQUEST S1-RR-F01

PSEG NUCLEAR, LLC

SALEM NUCLEAR GENERATING STATION, UNIT NO. 1

DOCKET NO. 50-272

1.0 INTRODUCTION

By letter dated July 8, 2002, as supplemented on July 10, 2003, PSEG Nuclear, LLC (PSEG) submitted a request for relief from the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (the Code), Section XI, requirements for the testing of dynamic restraints (snubbers) at the Salem Nuclear Generating Station (Salem), Unit No. 1. In the July 8, 2002, letter, PSEG requested the continued use of Technical Specification (TS) Section 3/4.7.9, "Snubbers," and its associated bases, in lieu of ASME Code requirements outlined in Article IWF-5000. The July 10, 2003, letter provided additional information associated with personnel qualifications for snubber testing.

Relief was requested for the third 10-year Inservice Inspection (ISI) interval for Salem, Unit No. 1.

2.0 REGULATORY EVALUATION

The ISI of the ASME Code Class 1, 2, and 3 components is to be performed in accordance with Section XI of the ASME Code and applicable edition and addenda as required by Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.55a(g), except where specific written relief has been granted by the U.S. Nuclear Regulatory Commission (NRC or Commission) pursuant to 10 CFR 50.55a(g)(6)(i). Pursuant to 10 CFR 50.55a(a)(3), alternatives to the requirements of paragraph (g) may be used, when authorized by the NRC, Director of the Office of Nuclear Reactor Regulation, if the licensee demonstrates that: (i) the proposed alternatives would provide an acceptable level of quality and safety, or (ii) compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

Pursuant to 10 CFR 50.55a(g)(4), ASME Code Class 1, 2, and 3 components (including supports) shall meet the requirements, except the design and access provisions and the pre-service examination requirements, set forth in the ASME Code, Section XI, "Rules for Inservice Inspection (ISI) of Nuclear Power Plant Components," to the extent practical within the limitations of design, geometry, and materials of construction of the components. The

Enclosure

regulations require that the ISI of components and system pressure tests conducted during the first 10-year interval and subsequent intervals comply with the requirements in the latest edition and addenda of Section XI of the ASME Code incorporated by reference in 10 CFR 50.55a(b), 12 months prior to the start of the 120-month interval, subject to the limitations and modifications listed therein. The components (including supports) may meet the requirements set forth in subsequent editions and addenda of the ASME Code incorporated by reference in 10 CFR 50.55a(b), subject to the limitations and modifications listed therein, and subject to the Commission's approval.

3.0 LICENSEE'S RELIEF REQUEST (As stated)

Component Description

ASME Section XI Class 1, 2, and 3 component supports snubbers

Code Requirement

Paragraphs IWF-5200(a) and IWF-5300(a) require Preservice and Inservice examinations to be performed in accordance with ASME/ANSI OM, Part 4, using the VT-3 visual examination method described in IWA-2213. Additionally, Paragraphs IWF-5200(b) and IWF-5300(b) require Preservice and Inservice tests to be performed in accordance with ASME/ANSI OM, Part 4.

The regulation in 10 CFR 50.55a(b)(3)(v) permits the use of Subsection ISTD, titled 'Inservice Testing of Dynamic Restraints (Snubbers) in Light-water Reactor Power Plants', ASME OM Code, 1995 Edition up to and including the 1996 Addenda, in lieu of the requirements for snubbers in Section XI, IWF-5200(a) and (b) and IWF-5300(a) and (b), by making appropriate changes to their technical specifications or licensee controlled documents. Preservice and Inservice examinations shall be performed using the VT-3 visual examination method described in IWA-2213.

Basis for Relief

Pursuant to 10 CFR 50.55a(a)(3)(i), relief is requested on the basis that the proposed alternative provides an acceptable level of quality and safety.

PSEG Nuclear LLC requests the continued use of Plant Systems Technical Specification No. 3/4.7.9, Snubbers, and associated bases; as found within the Salem Nuclear Generating Station, Unit 1 Technical Specifications, Appendix 'A' to License No. DPR-70, Amendment No. 243, dated May 25, 2001.

The Salem Nuclear Generating Station, Unit 1 Technical Specifications contain specifically developed and approved visual examination and functional testing requirements.

Performance of examinations and testing to the requirements of the Technical Specification meet the intent of the Code requirements. However, use of the Technical Specification differs in the areas of examination scheduling, re-examinations and functional testing requirements. Visual examination and

testing to the more stringent requirements of the Technical Specification will continue to result in an increase in the overall level of Plant quality and safety. These mechanical and hydraulic snubbers were constructed and installed in accordance with the requirements of the Salem UFSAR. Documentation of fabrication and installation examinations is stored at the plant site. Subsequent to the plant going into operation, these snubbers have been and continue to be visually inspected and functionally tested in accordance with Plant Technical Specifications.

Additionally, relief has been previously granted to perform the examination and testing in accordance with the plant Technical specifications (Ref. NRC SER/TAC 66932), therefore there is reasonable assurance of continued structural integrity, and an acceptable level of quality and safety will be maintained during the Third Inspection Interval.

Alternate Requirements

PSEG Nuclear LLC proposes to continue implementation of the visual examinations and functional testing on Code Class 1, 2 and 3 (and other) snubbers in compliance with the Salem Nuclear Generating Station, Unit 1 Technical Specification 3/4.7.9 and its associated bases.

Applicability

This Relief Request is applicable to the following:

Salem, Unit 1 - Third Ten-Year Inservice Inspection

4.0 TECHNICAL EVALUATION

Paragraph (b)(3)(v) of 10 CFR 50.55a states that licensees may use Subsection ISTD, "Inservice Testing of Dynamic Restraints (Snubbers) in Light-Water Reactor Power Plants," of the ASME OM Code, 1995 Edition through the latest edition and addenda incorporated by reference in paragraph (b)(3) of 10 CFR 50.55a, in place of the requirements for snubbers in Section XI, IWF-5200(a) and (b) and IWF-5300(a) and (b), by making appropriate changes to their TSs or licensee-controlled documents. Therefore, in reviewing Relief Request S1-RR-F01, the NRC staff compared certain requirements of the ASME OM Code, Subsection ISTD, to TS Surveillance Requirement (SR) 4.7.9, including: (1) snubber sample size, (2) examination requirements, (3) failure evaluation, (4) additional sampling, (5) corrective actions, (6) subsequent examination intervals, and (7) personnel qualifications. A summary of the comparison of the Salem, Unit No. 1, TS SRs and ASME Code (Section XI and OM Code, Subsection ISTD) requirements is provided in the following table:

Criteria	ASME Code Section XI and/or OM Code (Subsection ISTD) Requirements	Salem, Unit Nos. 1 and 2, TS 3/4.7.9 Requirements
Snubber sample size	ISTD 7.6.1 states that each defined test plan group shall use either a 10% sampling plan; or a "37 testing sample plan" during each refueling outage.	At least once per 18 months during shutdown, a representative sample of 10% of the total of each type of snubber in use shall be functionally tested either in place or in a bench test.
Examination requirements	ISTD 6.1 states that snubber visual examinations shall identify physical damage, leakage, corrosion, or degradation. Also, ISTD 7.1 and 7.2 state that operational readiness tests shall verify activation, release rate, and breakaway force or drag force shall be verified by either an in-place or bench test. IWA-2213 also provides requirements for VT-3 examinations of snubbers.	TS 4.7.9.b requires that visual inspections shall verify that there are: (1) no visible indications of damage or impaired operability; (2) attachments to supporting structure secure; and (3) where possible, freedom of movement is checked to ensure the snubber is not frozen up. TSs 4.7.9.c, 4.7.9.d, 4.7.9.e requires in-place or bench tests to verify activation, snubber bleed or release rate, and maximum drag force for mechanical snubbers.
Failure evaluation	Snubbers not meeting test requirements shall be evaluated to determine the root cause for the failure in accordance with ISTD 7.7.	TS 4.7.9.c states that if a snubber does not meet functional testing acceptance criteria in TS 4.7.9.d and 4.7.9.e, the cause will be evaluated. If the failure is caused by the manufacturer or design deficiency, all snubbers of the same design, subject to the same defect, shall be functionally tested.
Additional sampling	Additional snubbers are to be tested based on the number of failures in accordance with ISTD 7.10.	TS 4.7.9.c requires an additional 10% of the type of snubber that failed functional testing be tested.
Corrective actions	ISTD 7.8 states that unacceptable snubbers shall be adjusted, repaired, modified, or replaced.	TS LCO 3/4.7.9 requires that inoperable snubbers would be adjusted, repaired, modified, or replaced before operability can be restored.

Criteria	ASME Code Section XI and/or OM Code (Subsection ISTD) Requirements	Salem, Unit Nos. 1 and 2, TS 3/4.7.9 Requirements
Subsequent examination intervals	ISTD 6.5.2 provides guidance for examination intervals. Intervals are to be based on Table ISTD 6.5.2-1.	TS Table 4.7-3 provides a snubber visual inspection interval based on the number of unacceptable snubbers discovered. Requirements similar to Table ISTD 6.5.2-1.
Personnel qualifications	IWA-2310 states that nondestructive examination (NDE) personnel shall be qualified in accordance with ANSI/ASNT CP-189. IWA-2317 provides alternative qualifications for VT-3 examination personnel	PSEG letter dated July 10, 2003, states that its qualification and certification program for NDE personnel satisfies the requirements of ASNT CP-189 (1991 edition) and supplemental requirements of IWA-2300.

4.1 Snubber Sample Size

Salem TS SR 4.7.9 requires that a representative sample of 10% of the total of each type of snubber in use shall be functionally tested, either in place or in a bench test, at least once per 18 months, during shutdown. These tests are normally performed during refueling outages. The ASME OM Code requires either a 10% testing sampling plan or a “37 testing sample plan.” The Salem TS sample size would, therefore, be comparable to the 10% sample testing requirements of the ASME OM Code. As a result, the number of snubbers tested during the 18-month period is essentially equivalent to the ASME OM Code requirements.

4.2 Examination Requirements

TS 4.7.9.b requires that visual inspections shall verify that: (1) there are no visible indications of damage or impaired operability; (2) attachments to the supporting structure secure; and (3) where possible, freedom of movement is checked to ensure the snubber is not frozen up. TSs 4.7.9.c, 4.7.9.d, and 4.7.9.e require in-place or bench tests to verify activation, snubber bleed or release rate, and maximum drag force for mechanical snubbers. These requirements are similar to snubber visual examination requirements of ASME OM Code Subsections ISTD 6.1, ISTD 7.1, and ISTD 7.2. Additionally, in PSEG’s letter dated July 10, 2003, the licensee states that its VT-3 type visual examinations include verification of: clearances, settings, and physical displacement; loose or missing parts; debris; corrosion; wear; erosion; and loss of integrity at bolted or welded connections. The licensee’s snubber examinations provided in its TSs are similar to the VT-3 examination requirements of ASME Code, IWA-2213.

4.3 Failure evaluation

The ASME OM Code requires that a root cause evaluation be performed. The root cause evaluation shall review information related to other unacceptable snubbers and determine whether other snubbers of similar design would require further examination. Salem TS 4.7.9.c

states that if a snubber does not meet functional testing acceptance criteria in TS 4.7.9.d and 4.7.9.e the cause will be evaluated. If the failure is caused by the manufacturer or design deficiency, all snubbers of the same design, subject to the same defect, shall be functionally tested. Therefore, the NRC staff considers Salem's TS requirements to be equivalent to the ASME OM Code requirements.

4.4 Additional Sampling

ASME OM Code, Subsection ISTD 7.9.2 states that the additional sample size must be at least one-half the size of the initial sample size of the "defined test plan group" of snubbers. That is, for a 10% sample program, an additional 5% of the same type of snubber in the overall population would need to be tested. If additional snubbers are required to be tested due to the failure of a snubber to meet acceptance criteria, the Salem TSs require that an additional 10% of the type of snubber that had failed be tested. Therefore, the NRC staff finds the additional sampling to be acceptable

4.5 Corrective Actions

ASME OM Code, Subsection ISTD 7.8 states that unacceptable snubbers shall be adjusted, repaired, modified, or replaced. Salem TS LCO 3/4.7.9 would require that inoperable snubbers be similarly adjusted, repaired, modified, or replaced prior to restoring system operability. Consequently, the corrective actions associated with the discovery of unacceptable snubbers at Salem are acceptable.

4.6 Subsequent Examination Intervals

ASME OM Code, Subsection ISTD 6.5.2 provides guidance for examination intervals. This subsection states that intervals are to be based on Table ISTD 6.5.2-1. TS Table 4.7-3 provides a snubber visual inspection interval based on the number of unacceptable snubbers discovered. The requirements of TS Table 4.7-2 are equivalent to ASME OM Code, Table ISTD 6.5.2-1. Therefore, the NRC staff finds this acceptable.

4.7 Personnel Qualifications

In its letter dated July 10, 2003, PSEG stated that NDE personnel assigned to conduct snubber visual examinations are, as a minimum, certified Level I, VT 1-3 in accordance with the licensee's qualification and certification program for NDE personnel. PSEG further stated its NDE qualification and certification program satisfies the requirements of: (1) American Society for Nondestructive Testing (ASNT) Recommended Practice No. SNT-TC-1A (1980, 1984, and 1992 Edition), "Personnel Qualification and Certification in Nondestructive Testing;" (2) ASNT CP-189 -1991, "ASNT Standard for Qualification and Certification of Nondestructive Testing Personnel;" and (3) supplemental requirements of the ASME Code, Section XI (1995 Edition, 1996 Addenda), Subsection IWA-2300. The qualification and certification program for personnel conducting snubber examinations at Salem are equivalent to the minimum ASME Code qualification requirements for VT-3 NDE personnel. Therefore, the NRC staff finds the licensee's qualification program acceptable.

5.0 CONCLUSION

Salem TSs define examination requirements, initial sample size, failure evaluation, additional sampling, corrective actions, subsequent examination intervals, and personnel qualifications that are similar to those provided by the ASME Code (Section XI and OM Code, Section ISTD). Therefore, because the limiting conditions for operation and SRs defined in Salem TS 3/4.7.9 provide essentially equivalent visual and functional testing of snubbers when compared to ASME Code requirements, the NRC staff finds the alternative program, as provided in the Salem, Unit No. 1, TSs, to be acceptable. Therefore, based on its review, the NRC staff finds that the proposed alternative described in PSEG's letter dated July 8, 2002, as supplemented on July 10, 2003, provides an acceptable level of quality and safety. Therefore, use of Salem Unit No. 1, TS 3/4.7.9 for the testing of dynamic restraints (snubbers) in lieu of ASME Code requirements is authorized pursuant to 10 CFR 50.55a(a)(3)(i) for the third 10-year ISI interval at Salem, Unit No. 1.

Principal Contributor: R. Fretz

Date: July 28, 2003