

March 26, 2002

Mr. Gregg R. Overbeck  
Senior Vice President, Nuclear  
Arizona Public Service Company  
P. O. Box 52034  
Phoenix, AZ 85072-2034

SUBJECT: PALO VERDE NUCLEAR GENERATING STATION, UNITS 1, 2, AND 3 -  
REQUEST FOR RELIEF NUMBER 5 RELATED TO SNUBBER TESTING  
(TAC NOS. MB3763, MB3764, AND MB3765)

Dear Mr. Overbeck:

By letter dated December 27, 2001, you requested the use of an alternative to the inservice inspection requirements for examination and testing of snubbers in Article IWF-5000 of Section XI of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (i.e., the ASME Code) on preservice, inservice, and repair or replacement activities. In submitting Relief Request No. 5, you requested approval to use the proposed alternative of a single program and standard for snubber examination and testing activities at Palo Verde Nuclear Generating Station, Units 1, 2, and 3. The examination and testing program is defined in the Palo Verde Technical Requirements Manual entitled TSR 3.7.101.1.

As discussed in the enclosed Safety Evaluation, the NRC staff has completed its review of the relief request, and has determined that the proposed alternative will provide an acceptable level of quality and safety. Therefore, Relief Request No. 5 is authorized pursuant to 10 CFR 50.55a(a)(3)(i) for the remainder of the second 10-year inservice inspection interval for each unit.

Sincerely,

*/RA/*

Stephen Dembek, Chief, Section 2  
Project Directorate IV  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

Docket Nos.: STN 50-528, STN 50-529,  
and STN 50-530

Enclosures: Safety Evaluation

cc w/encls: See next page

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Palo Verde Generating Station, Units 1, 2, and 3

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO RELIEF REQUEST NUMBER 5 ON THE EXAMINATION

AND TESTING OF SNUBBERS

ARIZONA PUBLIC SERVICE COMPANY, ET AL.

PALO VERDE NUCLEAR GENERATING STATION, UNITS 1, 2, AND 3

DOCKET NOS. STN 50-528, STN 50-529, AND STN 50-530

1.0 INTRODUCTION

By letter dated December 27, 2001, the Arizona Public Service Company (the licensee) submitted a request for relief for the second 10-year inservice inspection interval of 10 CFR 50.55a(g) for Palo Verde Nuclear Generating Station (PVNGS), Units 1, 2, and 3. In Relief Request No. 5, the licensee requested approval to use an alternative to the inservice inspection requirements for examination and testing of snubbers in Article IWF-5000 of Section XI of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (i.e., the ASME Code) on preservice, inservice, and repair or replacement activities. The licensee requested approval to use the proposed alternative of a single program and standard for snubber examination and testing activities. The examination and testing program is defined in the PVNGS Technical Requirements Manual (TRM) TSR 3.7.101.1, "Augmented Inservice Inspection Program." This relief request would apply for the remainder of the second 10-year inservice inspection interval for each unit.

The current snubber requirements in TSR 3.7.101.1 had been promulgated and approved by the NRC as part of the Technical Specifications for the units. The existing snubber inspection and testing requirements of TSR 3.7.101.1 were relocated from the Technical Specifications to the TRM as part of Amendment No. 117, dated May 20, 1998. The TRM is a licensee-controlled document referenced in Section 13.7 of the Updated Final Safety Analysis Report (UFSAR) with changes in the TRM controlled in accordance with the provisions of 10 CFR 50.59. The NRC approved a similar relief request for snubbers for PVNGS's first 10-year inspection interval, in a letter dated October 21, 1987.

2.0 BACKGROUND

Inservice inspection of the ASME Code Class 1, 2, and 3 components is to be performed in accordance with Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," of the ASME Code and applicable addenda as required by 10 CFR 50.55a(g), except where specific written relief has been granted by the Commission pursuant to 10 CFR 50.55a(g)(6)(i). Paragraph 50.55a(a)(3) of 10 CFR Part 50 states in part that alternatives to the requirements of paragraph (g) may be used, when authorized by the Nuclear Regulatory Commission (NRC), 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 preservice examination requirements, set forth in the ASME Code, Section XI to the extent practical within the limitations of design, geometry, and materials of construction of the components. The regulations require that inservice examination 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.

Pursuant to 10 CFR 50.55a(g)(5), if the licensee determines that conformance with an examination requirement of Section XI of the ASME Code is not practical for its facility, information will be submitted to the Commission in support of that determination and a request must be made for relief from the ASME Code requirement. After evaluation of the determination, pursuant to 10 CFR 50.55a(g)(6)(i), the Commission may grant relief and/or may impose alternative requirements that are determined to be authorized by law, will not endanger life, property, or the common defense and security, and are otherwise in the public interest, giving due consideration to the burden upon the licensee that could result if the requirements were imposed.

The applicable edition of Section XI of the ASME Code for the PVNGS Units 1, 2, and 3 second ten-year ISI interval is the 1992 Edition, 1992 Addenda.

### 3.0 EVALUATION OF RELIEF REQUESTS

#### 3.1 Request for Relief No. 5, Inservice Inspection Requirements for Snubbers

<u>ASME Code Class:</u>	1, 2, and 3
<u>ASME Code Reference:</u>	Section XI, 1992 Edition, 1992 Addenda, ASME/ANSI OM Part 4 Edition and OMa-1988 Addenda to OM-1987 Edition
<u>Examination Category:</u>	Not Applicable
<u>Item Numbers:</u>	Not Applicable
<u>Components:</u>	All safety related hydraulic and mechanical snubbers
<u>Inservice Inspection Interval:</u>	Second 10-year interval
<u>PVNGS Units</u>	All

#### 3.2 Applicable Code Requirement from Which Relief Is Requested:

ASME Code, Section XI, IWF-5000, "Inservice Inspection Requirements for Snubbers," states that preservice examinations and tests of snubbers (IWF-5200), inservice examinations and tests of snubbers (IWF-5300), and examination and test of snubber repairs and replacements (IWF-5400) shall be performed using VT-3 visually examination methods in accordance with ASME/ANSI OM Part 4.

ASME/ANSI OM Part 4, Section 2.3, "Inservice Examination," requires an 18-month frequency and categorizing failures into failure mode groups.

ASME/ANSI OM Part 4, Section 3.2, "Inservice Operability Testing," requires categorizing failures into failure mode groups.

ASME Section XI, IWA-2110 requires Authorized Nuclear Inservice Inspector (ANII) involvement for snubber examination and testing.

ASME Section XI, IWA-6200 requires the Inservice Inspection Summary Report for snubbers be prepared and filed with the regulatory authority.

### 3.3 Licensee's Proposed Alternative

Pursuant to 10 CFR 50.55a(a)(3)(i), the licensee is requesting relief from the requirements of ASME Code, 1992 edition, Section XI, Article IWF-5000 with regard to visual examination and functional testing of Code Class 1, 2, and 3 snubbers for preservice, inservice, and repair and replacement activities. The relief request pertains to the second 10-year interval of the inservice inspection program for PVNGS, Units 1, 2, and 3.

The licensee proposed to use the examination and testing program defined in TSR 3.7.101.1 for the examination and testing of snubbers for preservice, inservice, and repair and replacement. Data on the snubber examination and testing would be maintained in accordance with (1) Section 17.2.6, "Control of Documents and Records," of the UFSAR for PVNGS, Units 1, 2, and 3, and (2) TSR 3.7.101.1. A copy of TSR 3.7.101.1 was submitted with the licensee's application of December 27, 2001.

### 3.4 Licensee's Justification for Granting Relief

The licensee stated in its application that the examination and testing of the snubbers in accordance with both ASME Code Section XI and TSR 3.7.101.1 results in a duplication of effort using different standards, which results in unnecessary radiological exposure and additional cost without a compensating increase in the level of quality and safety. ASME/ANSI OM Part 4 imposes overlapping requirements which do not enhance the quality of safety of the snubber examination and testing program. The licensee concluded that the snubber program in TSR 3.7.101.1 provides a level of quality and safety equal to or greater than that provided by OMa-1988 Part 4 and uses NRC guidance not incorporated into the OM Code referenced by the 1992 Edition, 1992 Addenda of ASME Code Section XI.

The licensee provided what it stated were the items that outlined the essential difference between the two programs. These items are the following:

- Scope of Snubbers: ASME Code IWF-1230 allows exempting, from the examination requirements of IWF-5000, those snubbers that are connected to components exempted under IWB-1220, IWC-1220, IWD-1220, and IWE-1220. The scope of snubbers examined and tested in accordance with TSR 3.7.101.1 would be a numerically greater population of snubbers than what ASME Code Section XI would require.

The licensee further stated that the snubbers examined and tested in accordance with TSR 3.7.101.1 are not limited by the size or other applicable ASME Code exemptions. All hydraulic and mechanical snubbers are required to be operable with the exception of those snubbers installed on nonsafety-related systems, and then only if their failure, or the failure of the system they are on, would have no adverse effect on any safety-related system.

- VT-3 Examinations: IWF-5000 requires the use of the VT-3 visual examination method described in IWA-2213 for examining snubbers, which requires personnel performing such visual examinations to be certified for VT-3 examinations in accordance with ANSI/ASNT CP-189, "Standard for Qualification and Certification of Nondestructive Testing Personnel." This would be an additional certification as compared to the qualification required to perform the TSR-required visual examinations.

The licensee further stated that personnel performing the TSR-required visual examinations are qualified in accordance with ANSI/ANS 3.1-1978, "Selection and Training of Nuclear Power Plant Personnel." While the TSR 3.7.101.1 program does not require VT-3 certification, the methods to perform the TSR-required visual examination are consistent with IWA-2213. In addition to visual tests associated with respirator face mask fit tests, personnel performing TSR visual examinations are also required to have annual eye examinations that ensure visual acuity requirements consistent with ASME Code IWA-2321 Visual Tests. The licensee concluded with the statement that PVNGS personnel are trained and certified to visual acceptance criteria that is consistent with the VT-3 examinations, and this provides an acceptable level of quality and safety.

- Examination Intervals: OM Part 4, Paragraph 2.3.2.2 provides a schedule for visual examinations that is more restrictive than the schedule in TSR 3.7.101.1.

The licensee explained that the alternate schedule in the TSR program was prepared in accordance with NRC Generic Letter 90-09, "Alternative Requirements for Snubber Visual Inspection Intervals and Corrective Actions," and reduces occupational exposure and the expenditure of unnecessary resources associated with the overly restrictive examination schedule of OM Part 4, Paragraph 2.3.2.2. The licensee concluded that following the schedule required by OM Part 4, Paragraph 2.3.2.2 effectively cancels the benefits of the generic letter.

- Failure Mode Groups: OM Part 4, Paragraphs 2.3.4.3 and 3.2.4.2 require that unacceptable snubbers be categorized into the following failure mode groups: (a) design/manufacture, (b) application induced, (c) maintenance/installation, (d) isolated, and (e) unexplained. The TSR program does not require this type of classification.

The licensee explained that the TSR program requires that the cause for failure be clearly established and corrected for that failed snubber and those that may be susceptible. While failure mode groups are not specified in the TSR program, any unacceptable snubbers that would be categorized as common cause would be classified as such and evaluated, and snubbers susceptible to the same failure would be examined and/or tested as required. The licensee concluded that the differences

between TSR 3.7.101.1 and ASME Code programs creates confusion when applying corrective actions and examination schedules for failed snubbers, and, therefore, is impractical.

- ANII Involvement: IWA-2110 requires ANII involvement for snubber examination and testing, and IWA-4160 requires the services of an authorized inspection agency during the repair and replacement process. The TSR program does not require the use of an ANII for examination and test requirements of preservice or inservice snubbers.

The licensee explained that a snubber program manager provides oversight of the TSR snubber program for both visual examination and functional testing, which includes both review and evaluation of visual examination and functional testing data, to ensure TSR requirements are met. The involvement of ANII will be maintained in other inservice repair and replacement activities, as required by (1) IWA-2110(g) and (h), and (2) the ASME Code Section XI repair and replacement program for PVNGS, Units 1, 2, and 3. The licensee concluded that the snubber program manager provides an acceptable level of quality and safety with the involvement of an ANII in these activities.

- Documentation: Subarticle IWA-6230 and OM Part 4, Sections 2.4 and 3.3 provide requirements for a summary report of examinations, tests, repair, and replacements of snubbers, among other items. Under the TSR program, there would be no summary report.

The licensee explained that visual examination in accordance with TSR 3.7.101.1 program is required for reinstallation of a replacement snubber, and functional testing is required for replaced or rebuilt snubbers. The procedures that implement the TSR program have to be written and approved in accordance with the PVNGS Quality Assurance (QA) Program, and include data sheets for capturing snubber reinstallation and replacement component information, documenting the visual examination and functional test data and results, as well as documenting nonconforming results and evaluation of those results. The completed data sheets are QA records, and are controlled and maintained in accordance with the QA records program, and are available onsite for inspection.

In summarizing its justification that supports its request for relief, the licensee stated that TSR 3.7.101.1 in the TRM contains the current requirements on the examination and testing of snubbers that were relocated from the PVNGS Technical Specifications in License Amendment No. 117, dated May 20, 1998, and, because the TRM is in UFSAR Section 13.7 by reference, changes to the TSR 3.7.101.1 program are controlled by 10 CFR 50.59. The licensee concluded that the TRM program for examination and testing of snubbers will provide an acceptable level of quality and safety, and that relief should be granted from ASME Code, 1992 Edition, Section XI, Article IWF-5000 with regard to visual examination and functional testing of ASME Code Class 1, 2, and 3 snubbers for preservice, inservice, and repair and replacement activities.

### 3.5 Staff Evaluation

The licensee stated in its letter of December 27, 2001, that, in lieu of using Article IWF-5000 of ASME Code, Section XI, the ongoing visual examination and functional testing of all PVNGS



ASME Code Class 1, 2, and 3 snubbers will be performed in accordance with TSR 3.7.101.1. The licensee requested relief from the requirements of ASME Code, 1992 Edition, 1992 Addenda, Section XI, Article IWF-5000, with regard to visual examination and functional testing of Code Class 1, 2, and 3 snubbers for preservice, inservice, and repair/replacement activities. This relief request pertains to the second 10-year interval ISI Program for PVNGS, Units 1, 2, and 3.

The licensee stated that examination and testing of the snubbers in accordance with both ASME Code, Section XI, and TSR 3.7.101.1 would result in a duplication of effort utilizing different standards. This would result in unnecessary radiological exposure and additional cost without a compensating increase in the level of quality and safety. The areas inclusive of the pins back to the building structure and to the component/piping being supported will remain in the ASME Code, Section XI, examination, repair and replacement boundary.

The licensee stated that OM Code Part 4 provides a schedule for visual examinations that is more restrictive than TSR 3.7.101.1. The TSR program was established in accordance with Generic Letter (GL) 90-09, "Alternative Requirements for Snubber Visual Inspection Intervals and Corrective Actions," dated December 11, 1990, which has been approved for snubber visual examinations by the NRC. The Generic Letter provides alternative guidance to snubber inspection schedules, which alleviates the expenditure of unnecessary resource and minimizes radiological exposure associated with the overly restrictive examination schedule. The NRC staff concludes that TSR 3.7.101.1 provides adequate requirements for visual examination of all safety-related snubbers, and is acceptable.

Article IWF-5000 requires use of the VT-3 visual examination method described in IWA-2213 for examining snubbers. IWA-2310 requires personnel performing snubber visual examinations to be VT-3 certified in accordance with ANSI/ASNT CP-189, "Standard for Qualification and Certification of Nondestructive Testing Personnel." The licensee stated that personnel performing the TSR required visual examinations are qualified in accordance with ANSI/ANS 3.1-1978, "Selection and Training of Nuclear Power Plant Personnel," which is consistent with the VT-3 examination required by IWA-2213. In addition to visual tests associated with respirator face mask fit tests, personnel performing TSR visual inspections are also required to have annual eye examinations that ensure visual acuity requirements, consistent with the requirement of IWA-2321 for vision tests. The NRC staff concludes that the training and qualification of PVNGS personnel to perform visual examinations are consistent with the VT-3 examination requirements, and are acceptable.

The licensee stated that OM Part 4 requires that snubbers found unacceptable by visual examination and functional testing be categorized into specific failure mode groups (FMGs), such as design/manufacture, maintenance/repair/installation, application induced, isolated, etc. TSR 3.7.101.1 does not require the break out of such FMGs. Instead, it requires that the cause for failures be clearly established and remedied for that failed snubber and those that may be generically susceptible. The licensee stated that while FMGs are not specified in the TSR, any failure that would be categorized as common cause would be classified as such and evaluated. Snubbers susceptible to the same failure mechanism would be examined and/or tested as required. This is acceptable to the NRC staff. The licensee further stated that differences in requirements between the OM Code and the TSR would create confusion when the respective corrective actions and examination schedules are both applied for failed snubbers. Therefore, examining and testing snubbers only in accordance with TSR 3.7.101.1 would help eliminate

any misinterpretation or confusion in administering overlapping requirements for snubbers. The NRC staff concludes that the requirements in TSR 3.7.101.1 provide an acceptable level of quality and safety equal to or greater than those provided by the OM Code, and is, therefore, acceptable.

The licensee stated that IWA-2110 requires Authorized Nuclear Inservice Inspector (ANII) involvement for snubber examination and testing. In addition, IWA-4160 requires the services of an authorized inspection agency during the repair and replacement process. The snubber program in TSR 3.7.101.1 does not require the use of an ANII for examination and functional testing of inservice or preservice snubbers. Instead, a snubber manager (Snubber Engineer) would provide oversight of the snubber program implementation for both visual examination and functional testing. This oversight includes both review and evaluation of visual examination and functional testing data to ensure that the requirements are met. Based on the above discussion, the NRC staff concludes that the performance of the snubber manager would ensure an acceptable level of quality and safety without ANII involvement in the above mentioned snubber activities.

The licensee stated that IWA-6230 and OM Code Part 4 provide requirements for a summary report of examination, tests, repair, and replacements of snubbers. Under the alternate requirements for snubbers, however, the procedures that implement TSR 3.7.101.1 are written and approved in accordance with the PVNGS Quality Assurance (QA) Program. They include data sheets for capturing snubber reinstallation/replacement component information, documenting the visual examination and functional test data and results, as well as documenting nonconforming results and evaluation of those results. Since the completed data sheets are QA records and are controlled and maintained in accordance with the QA records program, this is acceptable to the NRC staff.

Based on the above, the NRC staff concludes that PVNGS snubber visual examinations and functional testing when conducted in accordance with TSR 3.7.101.1 would meet the intent of the ASME Code, Section XI, requirements and provides reasonable assurance of snubber operability and component integrity.

#### 4.0 CONCLUSION

Based on the information provided as part of the licensee's relief request, the NRC staff concludes that the licensee has presented an adequate justification for relief from the requirements of ASME Code, 1992 Edition, 1992 Addenda, Section XI, Article IWF-5000 (which references the first Addenda to OM-1987, Part 4), with regard to visual examination and functional testing of Palo Verde Code Class 1, 2, and 3 snubbers for preservice, inservice, and repair/replacement activities. Pursuant to the provisions of 10 CFR 50.55a(a)(3)(i), the NRC staff authorizes the proposed alternative use of TSR 3.7.101.1 for the examination and testing of snubbers for preservice, inservice, and repair/replacement activities. This is based on a finding that the proposed alternative provides an acceptable level of quality and safety, and that it ensures snubber operational readiness and component integrity.

Principal Contributor: Arnold Lee

Date: March 26, 2002