

March 27, 2000

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 -
EVALUATION OF ALTERNATIVES TO ASME SECTION XI CONTAINMENT
INSERVICE INSPECTION REQUIREMENTS (TAC NOS. MA7799, MA7800,
MA7801)

Dear Mr. Overbeck:

The staff has reviewed and evaluated the information provided by Arizona Public Service Company (APS) by letter dated December 22, 1999, in support of alternatives to some of the containment inservice inspection requirements contained in American Society of Mechanical Engineers (ASME) Section XI. Based on the information provided in this letter, the staff concludes that, for Relief Requests EE-1, 4, 5, 6, and 7, APS proposed alternatives will provide an acceptable level of quality and safety. Therefore, the proposed alternatives are authorized pursuant to 10 CFR 50.55a(a)(3)(i). For Relief Requests EE-2 and -3, the staff concludes that compliance with the code requirements would result in hardship without a compensating increase in the level of quality and safety, and that APS' proposed alternatives will provide reasonable assurance of containment pressure integrity. Therefore, the proposed alternatives are authorized pursuant to 10 CFR 50.55a(a)(3)(ii). The enclosed safety evaluation provides the bases for these conclusions.

Sincerely,

/RA/

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

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

Enclosure: Safety Evaluation

cc w/encl: 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

CONTAINMENT INSERVICE INSPECTION RELIEF REQUESTS

ARIZONA PUBLIC SERVICE COMPANY

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 22, 1999, the Arizona Public Service Company (the licensee) submitted alternatives to some of the containment inservice inspection (ISI) requirements contained in American Society of Mechanical Engineers Boiler and Pressure Vessel (ASME Code) Section XI for the Palo Verde Nuclear Generating Station, Units 1, 2, and 3.

ISI of Class CC (concrete containments), and Class MC (metallic containments) shall be performed in accordance with Section XI 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 NRC, if (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.

In *Federal Register* Notice No.154, Volume 61, dated August 8, 1996, the NRC amended 10 CFR 50.55a to incorporate by reference the 1992 edition with 1992 addenda of Subsections IWE and IWL of Section XI of the ASME Code. Subsections IWE and IWL provide the requirements for ISI of Class CC and Class MC containments. The effective date for the amended regulation was September 9, 1996, and requires licensees to incorporate the new requirements into their ISI plans and to complete the first containment inspection by September 9, 2001.

The licensee is requesting relief from seven of the ISI requirements contained in the 1992 edition with 1992 addenda of Subsections IWE and IWL of Section XI of the ASME Code. The specifics of the proposed relief requests, and the staff's evaluation of each relief request, are contained in the next section.

2.0 EVALUATION

2.1 Relief Request No. RR-E1

Torque/Tension Testing of Bolted Connections

Code Class	MC (IWE)
Code Reference	ASME Section XI, 1992 Edition, 1992 Addenda IWE-2500, Table IWE-2500-1
Examination Category	E-G
Item Numbers	E 8.20
Component Description	Bolted Connections
Palo Verde Units	1, 2, 3

Requirement:

IWE-2500, Table IWE-2500-1 requires bolt torque-tension tests to be performed on 100 percent of the bolts when the connection has not been disassembled and reassembled during the interval.

2.1.1 Licensee's stated proposed alternative:

The following examinations and tests required by Subsection IWE ensure the structural integrity and leak-tightness of Class MC pressure retaining bolting. Therefore no additional alternative examinations are proposed:

- 1) Exposed surface of bolted connections shall be visually examined in accordance with the requirements of Table IWE-2500-1, Examination Category E-G, Pressure Retaining Bolting, Item E8.10;
- 2) Bolted connections shall meet the pressure test requirements of Table IWE-2500-1, Examination Category E-P, All Pressure Retaining Components, Item E9.40; and
- 3) A general visual examination of the entire containment once each inspection period shall be conducted in accordance with 10CFR50.55a(b)(2)(ix)(E).

2.1.2 Licensee' stated basis for alternative:

10CFR50.55a was amended in the Federal Register (61FR41303) to require the use of the 1992 Edition, 1992 Addenda of Section XI when performing containment examinations. Bolt torque or tension testing is required on bolted connections that have not been disassembled and reassembled during the inspection interval.

Determination of the torque or tension value would require that the bolting be untorqued and then re-torqued or re-tensioned. The performance of the

10CFR50, Appendix J, Type B test itself proves that the bolt torque or tension remains adequate to provide a leak rate that is within acceptable limits. The torque or tension value of bolting only becomes an issue if the leak rate is excessive. Once a bolt is torqued or tensioned, it is not subject to dynamic loading that could cause it to experience significant change.

An in-situ test of an undisturbed connection would not be meaningful. Paint or corrosion on the bolted connection would result in a higher indicated torque and would not be representative of the pre-load on the connection.

Verification of torque or tension values on bolted joints that are proven adequate through Appendix J testing and visual inspection is satisfactory to demonstrate that design function is met. Torque or tension testing is not required on any other ASME Section, Class, 1, 2, or 3 bolted connections or their supports as part of the inservice inspection program.

The requirement for torque testing of containment bolting does not appear in the 1998 Edition of Section XI, Subsection IWE.

2.1.3 Staff Evaluation

The code requires that pressure-retaining bolting that has not been disassembled and reassembled during the inspection interval be torque or tension tested. This examination is used to aid in the determination that a leak-tight seal exists and that the structural integrity of the subject bolted connections is maintained. The licensee proposed to use the existing 10 CFR Part 50, Appendix J, Type B test as an alternative to the code requirement to verify the integrity of penetrations with bolted connections.

The Appendix J, Type B, test provides an adequate method to ensure the leak tightness of the pressure retaining bolting. Therefore, the licensee's proposed alternative is authorized pursuant to 10 CFR 50.55a(a)(3)(i) on the basis that it provides an adequate level of quality and safety.

2.2 Relief Request No. RR-E2

Successive Examination of Containment Repairs

Code Class	MC (IWE)
Code Reference	ASME Section XI, 1992 Edition, 1992 Addenda, IWE-2420(b), IWE-2420(c)
Examination Category	N/A
Item Numbers	N/A
Component Description	Metal (Class MC) Portions of the Containment Building, Containment Liner, Penetrations, Hatches, and Attachments
Palo Verde Units	1, 2, 3

Requirement:

ASME Section XI, 1992 Edition, 1992 Addenda, IWE-2420 (b) states that when component examination results require evaluation of flaws, areas of degradation, or repairs in accordance with IWE-3000, and the component is found to be acceptable for continued service, the areas containing such flaws, degradation, or repairs shall be reexamined during the next inspection period listed in the schedule of the inspection program of IWE-2411 or IWE-2412, in accordance with Table IWE-2500-1, Examination Category E-C (Augmented Examination).

IWE-2420(c) requires that this reexamination continue for at least three consecutive inspection periods.

2.2.1 Licensee's stated proposed alternative:

Relief is sought only from the requirement to reexamine areas that have been repaired. As an alternative PVNGS [Palo Verde] will perform the repair of degraded areas in accordance with an approved Repair/Replacement Program. For degraded areas that are accepted by engineering evaluation, the applicable successive inspection requirements specified in paragraph IWE-2420 will be met.

2.2.2 Licensee's stated basis for alternative:

Pursuant to 10CFR50.55a(a)(3)(ii), relief is requested from the Code requirements stated above on the basis that compliance with this requirement would result in hardship or unusual difficulty without a compensating increase in the level of quality or safety.

The purpose of a repair is to restore the component to an acceptable condition for continued service in accordance with the acceptance standards of IWE-3000. IWA-4150 requires the Owner to conduct an evaluation of the suitability of the repair including consideration of the cause of failure. This requirement for successive examination presupposes that the repair was not suitable. If the repair has restored the component to an acceptable condition, successive examinations are not warranted. If the repair was not suitable, then the repair does not meet Code requirements and the component is not acceptable for continued service. Neither IWB-2420(b), IWC-2420(b), nor IWD-2420(b) require a repair to be subject to successive examination requirements for ASME Class 1, 2, or 3 components respectively. The successive examination of repairs in accordance with IWE-2420(b) constitutes a burden without a compensating increase in quality or safety.

In SECY 96-080, ["Issuance of Final Amendment to 10 CFR 50.55a To Incorporate by Reference ASME BPV Code, Section XI, Division 1, Subsection IWE and Subsection IWL"] response to Comment 3.3 regarding IWE-2420, the NRC stated, "The purpose of IWE-2420(b) is to manage components found to be acceptable for continued service (meaning no repair or replacement at this time) as an Examination Category E-C [Containment Surfaces Requiring Augmented

Examination] component... If the component had been repaired or replaced, then the more frequent examination would not be needed."

The requirement for re-examination of repairs was removed from IWE-2420(b) and (c) in the 1995 Edition, 1995 Addenda to ASME Section XI.

2.2.3 Staff Evaluation

When repairs are complete, IWA-4150 requires licensees to evaluate the suitability of the repair. When a repair is required because an item fails, the evaluation will consider the cause of failure to ensure that the repair is suitable. Considering that the failure mechanism is identified and corrected as required and that the repair receives pre-service examinations, as required, the proposed alternative to perform inspections and evaluations following repairs will provide reasonable assurance of structural integrity. Performance of successive examinations presents a hardship on the licensee, due to increased radiation exposure to the personnel conducting the additional examinations, without a compensating increase in quality or safety. Therefore, the licensee's proposed alternative is authorized pursuant to 10 CFR 50.55a(a)(3)(ii) on the basis that compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety. The proposed testing provides reasonable assurance of containment leak tight integrity.

The staff notes that IWB-2420(b), IWC-2420(b), and IWD-2420(b) do not require the successive inspection of repairs for Code Class 1, 2, and 3 components as is required in IWE-2420(b) for Class MC components.

2.3 Relief Request No. RR-E3

Seals and Gaskets

Code Class	MC (IWE)
Code Reference	ASME Section XI, 1992 Edition, 1992 Addenda, IWE-2500, Table IWE-2500-1
Examination Category	E-D, Seals, Gaskets, and Moisture Barriers
Item Numbers	E5.10, Seals and E5.20, Gaskets
Component Description	Seals and Gaskets in the Containment Pressure Boundary
Palo Verde Units	1, 2, 3

Requirement:

ASME Section XI, 1992 Edition, 1992 Addenda, IWE-2500 and Table IWE-2500-1 require seals and gaskets on airlocks, hatches, and other devices that are required to assure containment leak-tight integrity to be visually examined (VT-3) once each interval to assure containment leak-tight integrity.

2.3.1 Licensee's stated proposed alternative:

As an alternative, the leak-tightness of seals and gaskets will be verified using 10CFR50, Appendix J, Type B testing. No additional alternatives to the visual examination, VT-3, of the seals and gasket will be performed.

2.3.2 Licensee's stated basis for alternative:

In accordance with 10CFR50.55a(a)(3)(ii), relief is requested from the Code requirements on the basis that compliance with this requirement would result in hardship or unusual difficulty without a compensating increase in the level of quality or safety.

Seals and gaskets receive a 10CFR50, Appendix J, Type B test. As noted in 10CFR50, Appendix J, the purpose is to measure leakage of containment or penetrations whose design incorporates resilient seals, gaskets, sealant compounds, and electrical penetrations fitted with flexible metal seal assemblies. Physical examination of the seals and gaskets requires disassembling joints, that are proven adequate through Appendix J testing.

For electrical penetrations, disassembly would involve a pre-maintenance Appendix J test, de-termination of cables at electrical penetrations if enough cable slack is not available, disassembly of the joint, removal and examination of the seals and gaskets, reassembly of the joint, re-termination of the cables if necessary, post maintenance testing of the cables, and a post maintenance Appendix J test of the penetration.

For containment hatches, blind flanges, and equipment hatches, the work required would be similar except for the de-termination, re-termination, and testing of cables.

For those penetrations that are routinely disassembled, such as equipment and personnel hatches, a Type B test is required upon reassembly and prior to start-up. Since the Type B test will assure the leak-tight integrity of the connection, the performance of a visual examination would not increase the level of quality or safety.

Seals and gaskets are not included in the definition of the containment pressure-retaining boundary under current Code rules (NE-2110(b)). When the airlocks and hatches containing these materials are tested in accordance with 10CFR50, Appendix J, degradation of the seat or gasket material is revealed by an increase in the leakage rate. In this case, corrective measures would be applied and the component retested. Furthermore, seals and gaskets are specifically excluded from Code rules for Repair and Replacement in IWA-4111(b)(5) (1992 Edition, 1992 Addenda, and 1998 Edition).

The 1995 Edition, 1996 Addenda of Section XI recognizes that disassembly of joints to perform these examinations is not warranted. Note I in Table IWE-2500-1, Examination Category E-D has been modified to state that sealed or gasketed connections need not be disassembled solely for performance of examinations. However, without disassembly, most of the surface of the seals and gaskets would be inaccessible. The requirement to examine seals and gaskets does not appear in the 1998 Edition of ASME Section XI.

2.3.3 Staff Evaluation

The licensee proposes to use the existing 10 CFR Part 50, Appendix J, Type B testing as a verification of seal and gasket integrity, rather than disassembling the subject components for the sole purpose of examination.

Performing the VT-3 examinations on the subject gaskets and seals would require disassembly and reassembly of the mechanical connection for those penetrations that are not routinely disassembled during a refueling outage. The ASME Main Committee and the Board of Nuclear Codes and Standards have also determined that a VT-3 examination of the seals and gaskets is no longer warranted. Both organizations have approved a revision to Subsection IWE to delete the requirement for performing a VT-3 examination of the seals and gaskets. This revision to Subsection IWE was published in the 1998 Edition of the ASME Code, Section XI. Requiring the licensee to disassemble components for the sole purpose of inspecting seals and gaskets would place a significant hardship on the licensee without a compensating increase in quality and safety.

The licensee will verify the leak-tight integrity of seals and gaskets, utilized on penetrations, that are required to assure containment leak-tight integrity, in accordance with the applicable requirements of 10 CFR Part 50, Appendix J. The proposed testing provides reasonable assurance of containment leak-tight integrity. Therefore, the proposed alternative is authorized pursuant to 10 CFR 50.55a(a)(3)(ii) on the basis that compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

2.4 Relief Request No. RR-E4

Performance of VT-3 Other Than at End-of-Interval

Code Class	MC (IWE)
Code Reference	ASME Section XI, 1992 Edition, 1992 Addenda Table IWE-2500-1
Examination Category	E-A
Item Numbers	E 1.12
Component Description	Metal Surfaces of the Containment Building
Palo Verde Units	1, 2, 3

Requirement:

ASME Boiler and Pressure Vessel Code, Section XI, 1992 Edition, 1992 Addenda, Table IWE-2500-1 requires that a VT-3 visual examination be performed on 100 percent of the accessible containment surface at the end of the inspection interval.

2.4.1 Licensee's stated proposed alternative:

The VT-3 examination will be performed on accessible surfaces of the containment structure in accordance with Code Case N-601. This Code Case allows the visual examinations to be performed at any time during the interval provided that the requirements for successive inspections stated in IWE-2420 are met.

2.4.2 Licensee's stated basis for alternative:

Pursuant to 10CFR50.55a(a)(3)(i), relief is requested from the Code requirements stated above on the basis that the proposed alternative would provide an acceptable level of quality and safety.

Code Case N-601, "Extent and Frequency of VT-3 Visual Examination for Inservice Inspection of Metal Containments" provides an alternative to the Code requirement to perform 100% of the VT-3 examinations on Item E 1.12 at the end of the interval. It recognizes that it is more important to perform visual examinations on the accessible surfaces of the containment structure during the course of the interval rather than at the end. In this way, the integrity of the containment can be better monitored between the 10CFR50, Appendix J testing and the visual examinations required by Table IWE-2500-1. The successive inspection requirements of IWE-2420 will be maintained.

The proposed alternative examination scheduling is in accordance with Code Case N-601 that has been approved and published by ASME.

The requirements of Code Case N-601 have been incorporated into the 1998 Edition of ASME Section XI, Table IWE-2500-1.

2.4.3 Staff Evaluation

The ASME Code, Table IWE-2500-1, Category E-A, Items E1.12 and E1.20, requires all of the VT-3 visual examinations be performed at the end of the inspection interval.

Performing visual examinations during the course of the inspection interval, as recommended in Code Case N-601, provides a more practical method of performing the inspections than performing all the visual examinations at the end of the interval. In doing this, the integrity of the containment and vent system can be monitored more effectively between the 10 CFR Part 50, Appendix J testing and the visual examination required by Table IWE-2500-1. On this basis, the NRC staff finds that the proposed alternative to use Code Case N-601 provides an adequate

method to perform visual examinations of the containment surface area and vent systems. Therefore, the licensee's proposed alternative is authorized pursuant to 10 CFR 50.55a(a)(3)(i) on the basis that it provides an acceptable level of quality and safety.

2.5 Relief Request No. RR-E5

UT Thickness Measurement of Augmented Exam Areas

Code Class	MC (IWE)
Code Reference	ASME Section XI, 1992 Edition, 1992 Addenda, IWE-2500(c)(3) and IWE-2500(c)(4).
Examination Category	E-C, Containment Surfaces Requiring Augmented Examination
Item Numbers	E4.12
Component Description	Containment Building
Palo Verde Units	1, 2, 3

Requirement:

ASME Section XI, 1992 Edition, 1992 Addenda, Subsection IWE-2500(c)(3) requires that 1-foot-square grids be used when ultrasonic thickness measurements are performed on surfaces requiring augmented examination. IWE-2500(c)(4) requires that the minimum wall thickness within each grid be determined.

2.5.1 Licensee's stated proposed alternative:

The alternative requirements approved by ASME in Code Case N-605 and in the 1998 Edition of ASME Section XI, Subsection IWE will be used when performing UT thickness examinations on areas requiring augmented examination.

2.5.2 Licensee's stated basis for alternative:

Pursuant to 10CFR50.55a(a)(3)(i), relief is requested from the Code requirements stated above on the basis that the proposed alternative would provide an acceptable level of quality and safety.

IWE-2500 (c)(3) and (4) in the 1992 Edition, 1992 Addenda of Section XI require that for surfaces requiring augmented ultrasonic thickness measurement, the surface to be examined is to be marked off into a one-foot square grid and that the minimum thickness in each grid square be marked, recorded, and periodically re-measured. It may be that the area being re-measured is not the area most susceptible to accelerated degradation.

Code Case N-605 and the 1998 Edition of Section XI, Subsection IWE provide an alternative to the one-foot square grid required by IWE-2500(c)(3) in the 1992 Edition with 1992 Addenda of Section XI. The Code Case and 1998 Edition call for setting up a grid system of between 2 and 12 inches and taking measurements at the intersections. The grid size is to be determined by the

Owner. At least 100 intersections must be measured if the augmented examination area is equal to or less than 100 square feet unless the required grid spacing is less than 2 inches. For augmented examination areas greater than 100 square feet, the Code Case and 1998 Edition of Subsection IWE detail a statistical sampling plan for determining the number of intersections to be measured.

If the measurement at an intersection is found to be reduced by more than 10% of the nominal plate thickness, the location of the minimum wall thickness shall be determined and located in each adjoining grid, as required by IWE-2500(c)(4) in the 1992 Edition, 1992 Addenda.

This is similar to the requirements of IWE-2500(c)(4) in the 1992 Edition with 1992 Addenda of Section XI except that under the Code Case and the 1998 Edition, the focus is on areas that exhibit degradation, rather than repeatedly reexamining areas that have not exhibited degradation.

The proposed alternative examination is in accordance with Code Case N-605 that has been approved and published by ASME.

The requirements of Code Case N-605 have been incorporated into the 1998 Edition of ASME Section XI as IWE-2500(b)(3) and (4).

2.5.3 Staff Evaluation

ASME Section XI, 1992 Edition, 1992 Addenda, IWE-2500(c)(3) requires that 1-foot-square grids be used when ultrasonic thickness measurements are performed. The licensee's proposed alternative method is in accordance with Code Case N-605 which is incorporated into the 1998 Edition of ASME Section XI. The alternative is an improvement over the original requirement because the alternative provides more flexibility that results in better detection of the plate thickness degradation. Since the alternative method is an improvement over the code-required method, the licensee's proposed alternative is authorized pursuant to 10 CFR 50.55a(a)(3)(i) on the basis that it provides an acceptable level of quality and safety.

2.6 Relief Request No. RR-E6

Preservice Examination of Reapplied Coatings

Code Class	MC (IWE)
Code Reference	ASME Section XI, 1992 Edition, 1992 Addenda IWE-2200(g)
Examination Category	N/A
Item Numbers	N/A
Component Description	Containment Building
Palo Verde Units	1, 2, 3

Requirement:

ASME Section XI, 1992 Edition, 1992 Addenda, IWE-2200(g) requires that when paint or coatings are reapplied, the condition of the new paint or coating shall be documented in the pre-service examination records.

2.6.1 Licensee's stated proposed alternative:

The paint or coatings in the containment will be examined in accordance with established controls per the PVNGS coatings program. If degradation of the coating is identified, additional measures will be applied to determine if the containment pressure boundary is affected.

2.6.2 Licensee's stated basis for alternative:

Paint and coatings are not part of the containment pressure boundary under current Code rules. Because they are not associated with the pressure retaining function of the component, neither paint nor coatings contribute to the structural integrity or leak tightness of the containment (Ref. ASME Section III, NE-2110(b), 1998). Furthermore, the paint and coatings on the containment pressure boundary were not subject to Code rules when they were originally applied and are not subject to ASME XI rules for repair or replacement in accordance with IWA-4111(b)(5). The adequacy of applied coatings is verified through the PVNGS coatings program. Recording the condition of reapplied coatings in the preservice record does not contribute to the containment structural integrity. Should deterioration of the coating in the reapplied area occur, the area would require additional evaluation regardless of the preservice record.

Recording the condition of new paint or coating in the preservice records does not increase the level of quality and safety of the containment.

SECY 96-080, response to Comment 3.2 about IWE-2200(g) states, "In the NRC's opinion, this does not mean that a visual examination must be performed with every application of paint or coating. A visual examination of the topcoat to determine the soundness and the condition of the topcoat should be sufficient." This is currently accomplished through the PVNGS coatings program.

The requirement to perform a preservice examination when paint or coatings are reapplied was removed from the Code in the 1997 Addenda to ASME Section XI.

2.6.3 Staff Evaluation

In the basis for the relief request, the licensee states that it has established the appropriate controls for the coating applications associated with the interior and exterior surfaces of the primary containment structure. These controls are contained in a plant procedure that covers (1) materials to be used, (2) application methods, (3) inspection, (4) personnel qualification, (5) repair, and (6) documentation. The plant procedure is written to comply with the applicable

requirements of Regulatory Guide 1.54, "Quality Assurance Requirements for Protective Coatings Applied to Water-Cooled Nuclear Power Plants," ANSI N5.12, "Protective Coatings (Paints) for the Nuclear Industry," ANSI N101.2, "Protective Coatings (Paints) for Light Water Nuclear Reactor Containment Facilities," and ANSI N101.4, "Quality Assurance for Protective Coatings Applied to Nuclear Facilities." The licensee's Protective Coatings Program provides a conservative approach to the inspection and documentation of new coatings and as such, the staff concludes that the proposed alternative provides an acceptable level of quality and safety. Therefore, the licensee's proposed alternative is authorized pursuant to 10 CFR 50.55a(a)(3)(i).

2.7 Relief Request No. RR-E7

VT Prior to Removal of Coatings

Code Class	MC (IWE)
Code Reference	ASME Section XI, 1992 Edition, 1992 Addenda IWE-2200(b)
Examination Category	N/A
Item Numbers	N/A
Component Description	Containment Building
Palo Verde Units	1, 2, 3

Requirement:

ASME Section XI, 1992 Edition, 1992 Addenda, IWE-2500(b) requires that when paint or coatings are to be removed, the paint or coatings shall be visually examined in accordance with Table IWE-2500-1 prior to removal.

2.7.1 Licensee's stated proposed alternative:

The condition of the containment vessel base material will be verified prior to the application of new paint or coating as required by the PVNGS coating program. If degradation is identified, additional measures will be applied to determine if the containment pressure boundary is affected. Repairs to the primary containment boundary, if required, will be conducted in accordance with ASME Section XI Code rules.

2.7.2 Licensee's stated basis for alternative:

Pursuant to 10CFR50.55a(a)(3)(i), relief is requested from the Code requirements stated above on the basis that the proposed alternative would provide an acceptable level of quality and safety.

Paint and coatings are not part of the containment pressure boundary under current Code rules as they are not associated with the pressure retaining function of the component (ASME Section III, Paragraph NE-2110(b), 1998). The interiors of containments are painted to prevent rusting and to facilitate decontamination. Neither paint nor coatings contribute to the structural integrity or leak tightness of the containment.

Furthermore, the paint and coating on the containment pressure boundary were not subject to ASME Code rules when they were originally applied and are not subject to ASME Section XI rules for repair or replacement in accordance with IWA-4111(b)(5).

The 1998 Edition of ASME Section XI does not contain this requirement to inspect coatings prior to their removal.

2.7.3 Staff Evaluation

The purpose of performing the visual examination per IWE-2500(b) is to identify any evidence of base metal degradation prior to removal of the coating or paint. As an alternative to the requirements of IWE-2500(b), the licensee has proposed to inspect the coatings, including paints, using its protective coating program. The licensee informed the staff that the protective coating program at Palo Verde has been written to comply with the applicable requirements of Regulatory Guide 1.54 and ANSI codes such as ANSI N101.4. Section 6 of ANSI N101.4 requires stringent inspection of the entire completed coating work by qualified coating inspection personnel, as well as quality assurance documentation. The Palo Verde Updated Final Safety Analysis Report further discusses compliance of the coating program with Regulatory Guide 1.54. The licensee states that degradation of the base metal would be identified at this time and that corrective actions would be initiated prior to the re-application of the coating or paint. Based upon the licensee's verification of sound base metal prior to application of new coatings, the staff considers the proposed alternative, as stated by the licensee, adequate for protecting the containment surfaces. Therefore, the licensee's proposed alternative is authorized pursuant to 10 CFR 50.55a(a)(3)(i) on the basis that it provides an acceptable level of quality and safety.

3.0 CONCLUSION

Based on the information provided in the relief requests, the staff concludes that, for Relief Requests RR-E1, -E4, -E5, -E6 and -E7, the licensee's proposed alternatives will provide an acceptable level of quality and safety. Therefore, the proposed alternatives are authorized pursuant to 10 CFR 50.55a(a)(3)(i). For Relief Requests RR-E2 and -E3, the staff concludes that compliance with the code requirements would result in hardship without a compensating increase in the level of quality and safety, and that the licensee's proposed alternatives will provide reasonable assurance of containment pressure integrity. Therefore, the proposed alternatives are authorized pursuant to 10 CFR 50.55a(a)(3)(ii).

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