



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO CONTAINMENT INSERVICE INSPECTION PROGRAM

IES UTILITIES, INC.

DUANE ARNOLD ENERGY CENTER

DOCKET NO. 50-331

1.0 INTRODUCTION

In the *Federal Register* dated August 8, 1996, the Commission amended Section 50.55a of Title 10 of the *Code of Federal Regulations* (10 CFR 50.55a) to incorporate by reference Section XI of the American Society of Mechanical Engineers (ASME) *Boiler and Pressure Vessel Code* (the Code), 1992 Edition through 1992 Addenda of Subsections IWE and IWL. Subsection IWE provides the requirements for inservice inspection (ISI) of Class MC (metallic containment components) and the metallic liner of Class CC (concrete containment components). Subsection IWL provides the requirements for ISI of Class CC components.

The regulations require that ISI of certain Code Class MC and CC components be performed in accordance with Section XI of the ASME Code and applicable addenda, except where alternatives have been authorized or relief has been requested by the licensee and granted by the Commission pursuant to paragraphs (a)(3)(i), (a)(3)(ii), or (g)(6)(i) of 10 CFR 50.55a. In proposing alternatives or requesting relief, the licensee must demonstrate that (1) the proposed alternatives provide an acceptable level of quality and safety; (2) compliance would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety; or (3) conformance is impractical for its facility.

By letter dated April 2, 1999, IES Utilities, Inc. (the licensee) proposed alternatives to the requirements of IWE for Duane Arnold Energy Center. The NRC staff's findings with respect to authorizing the alternatives or denying the proposed relief requests are given below.

2.0 RELIEF REQUESTS

2.1 Relief Request Number MC-R002

The licensee requests relief from the requirements of IWE-2500, Table IWE-2500-1, Category E-D, Item Numbers E5.10 and E5.20. The Code requires seals and gaskets to be visually examined once each interval. The licensee proposes to assure their leak-tight integrity by the performance of Appendix J testing.

2.1.1 Licensee's Basis for Requesting Relief

The licensee states:

10 CFR 50.55a was amended in the Federal Register (61FR41303) to require the use of the 1992 Edition, 1992 Addenda, of Section XI when performing

containment examinations. The penetrations discussed below contain seals and gaskets.

Electrical Penetrations

Electrical penetrations use a header plate attached to a containment penetration nozzle flange with redundant O-rings between the header plate and flange face. Modules through which electrical conductors pass are installed in the header plate. One type, manufactured by Amphenol uses seals and gaskets to assure leak tight integrity. A second type, manufactured by Conax uses a set of compression fittings. Replacement modules for the Amphenol penetrations use a combination of O-rings and compression fittings. Each penetration is pressurized with dry nitrogen to maintain and monitor integrity and to prevent the intrusion of moisture into the penetration. These seals and gaskets cannot be inspected without disassembly of the penetration to gain access to the seals and gaskets.

Containment Personnel, Equipment, and Emergency Escape Hatches

The Personnel, Equipment, and Emergency Escape Hatches utilize an inner and outer door with gasket surfaces to ensure a leak tight integrity. These hatches also contain other gaskets and seals such as the handwheel shaft seals, electrical penetrations, blank flanges, and equalizing pressure connections which require disassembly to gain access to the gaskets and seals.

Seals and gaskets receive a 10 CFR 50 Appendix J test. As noted in 10 CFR 50 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. Although not required by the Code, practical examination considerations of seals and gaskets require the joints, which are proven adequate through Appendix J testing, to be disassembled. For electrical penetrations, this would involve a pre-maintenance Appendix J test, determination 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 cable, and a post maintenance Appendix J test of the penetration. The work required for the containment hatches would be similar except for the determination, re-termination, and testing of cables. This imposes the risk that equipment could be damaged. The 1992 Edition, 1993 Addenda, of Section XI, IWE-2500-1, Category E-D (note 1) states that sealed or gasket connections need not be disassembled solely for performance of examinations. Category E-D was modified in the 1995 Edition of Section XI to state that sealed or gasket 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.

For those penetrations that are routinely disassembled, the gaskets are considered safety-related, and inspected during receiving inspection looking for cuts or tears and maintenance personnel perform a final examination prior to

installation. In addition, a Type B test is required upon final assembly and prior to start-up. Since the Type B test will assure the leak tight integrity of primary containment, the performance of the visual examination would not increase the level of safety or quality.

Seals and gaskets are not part of the containment pressure boundary under current Code rules (NE-1220(b)). When airlocks and hatches containing these materials are tested in accordance with 10 CFR 50, Appendix J, degradation of the seal or gasket material would be revealed by an increase in the leakage rate. Corrective measures would be applied and the component retested. Repair or replacement of seals and gaskets is not subject to Code (1992 Edition, 1992 Addenda) rules in accordance with Paragraph IWA-4111(b)(5) of ASME Section XI.

The visual examination of seals and gaskets in accordance with IWE-2500, Table IWE-2500-1 is a burden without any compensating increase in the level of safety or quality. Specific relief is requested in accordance with 10 CFR 50.55a(a)(3)(i) on the basis that the proposed alternative would provide an acceptable level of quality and safety. Testing the seals and gaskets in accordance with 10CFR50, Appendix J will provide assurance of the leak-tight integrity of the seals and gaskets.

The requirement to examine seals and gaskets has been removed in the 1997 Addenda of ASME Section XI. These addenda have been approved by the ASME Main Committee and were published in the 1998 Edition.

2.1.2 Alternative Examination

The licensee proposes (as stated):

The leak-tightness of seals and gaskets will be tested in accordance with 10 CFR 50, Appendix J. No additional alternatives to the visual examination, VT-3, of the seals and gaskets will be performed.

2.1.3 Evaluation

The components for which relief is requested are the seals and gaskets of Class MC pressure retaining components. The Code, IWE-2500, Table IWE-2500-1, Examination Category E-D, Item Numbers E5.10 and E5.20, requires seals and gaskets on airlocks, hatches, and other devices to be visually examined (VT-3) once each inspection interval to assure containment leak-tight integrity. Instead of performing a visual examination as required by the Code, the licensee proposes to confirm leak tightness by testing in accordance with 10 CFR Part 50, Appendix J.

Performance of VT-3 examinations on seals and gaskets requires that the components be disassembled. This includes determining cables at electrical penetrations, disassembling the joint, removing and examining the gaskets and seals, reassembling the joint, reterminating the cables, performing a post-maintenance test of the cables, and performing a post-maintenance Appendix J test. The 1993 Addenda to ASME Code, Section XI recognize that disassembly of joints for the sole purpose of performing a visual examination is unwarranted and because of this, Examination Category E-D was modified to remove this requirement.

Disassembling components for the sole purpose of inspecting seals and gaskets places an undue hardship on the licensee and does not offer a compensating increase in the level of quality and safety. Reasonable assurance of the functionality and integrity of the containment penetration seals and gaskets will be provided by the licensee's alternative to perform testing in accordance with 10 CFR Part 50, Appendix J.

2.1.4 Conclusion

The proposed alternative to the requirements of IWE-2500, Table IWE-2500-1, Examination Category E-D, Item Numbers E5.10 and E5.20 is authorized pursuant to 10 CFR 50.55a(a)(3)(ii) for the first 10-year interval of the Containment Inspection Program. Compliance with the specified requirements of this section would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

2.2 Relief Request Number MC-R003

The licensee requests relief from the requirements of IWE-2500, Table IWE-2500-1, Category E-G, Item E8.20 for all Class MC pressure retaining bolts. The Code requires a bolt torque or tension test for bolted connections that have not been disassembled and reassembled during the inspection interval. The licensee proposes to use the 10 CFR Part 50, Appendix J, Type B test as an alternative to the Code requirement.

2.2.1 Licensee's Basis for Requesting Relief

The licensee states:

10CFR50.55a was amended in the Federal Register (61FR41303) to require the use of the 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.

Each penetration receives a 10CFR 50, Appendix J Type B test in accordance with the testing frequencies specified in Appendix J. As noted in 10CFR 50 Appendix J, the purpose of Type B tests is to measure leakage of containment penetrations whose design incorporates resilient seals, gaskets, sealant compounds, and electrical penetrations fitted with flexible metal seal assemblies. The performance of the 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. Appendix J testing and visual inspection is adequate to demonstrate that design function is met. Torque or tension testing is not required on any other ASME Section XI, Class 1, 2, or 3 bolted connections or their supports as part of the inservice inspection program.

The requirements to perform bolt torque or tension tests have been removed in the 1997 Addenda of ASME Section XI. [These] addenda [have] been approved by the Main Committee and [were] issued in the 1998 Edition.

Relief is requested in accordance with 10CFR50.55a(a)(3)(ii). Compliance with the specified requirements of this section would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

2.2.2 Alternative Examination

The licensee proposes (as stated):

The following examinations and tests required by Subsection IWE ensure the structural integrity and the leak-tightness of Class MC pressure retaining bolting, and, therefore, no additional alternative examinations are proposed. The following examination will be conducted however:

- (1) Exposed surfaces of bolted connections shall be visually examined in accordance with requirements of Table IWE-2500-1, Examination Category E-G, Pressure Retaining Bolting, Item No. E8.10, and
- (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)(x)(E).

2.2.3 Evaluation

The Code, IWE-2500, Table IWE-2500-1, Category E-G, Item E8.20, 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 bolted connection is maintained. The licensee proposes to use the 10 CFR Part 50, Appendix J, Type B test as an alternative to the Code requirement.

In the 1997 Addenda of ASME Section XI, the requirement to perform bolt torque or tension test has been removed. The licensee's proposed alternative to use Appendix J, Type B testing to verify the containment pressure seal, together with visual examinations to verify penetration integrity, will provide reasonable assurance of containment pressure integrity.

2.2.4 Conclusion

The licensee's proposed alternative to the requirements of IWE-2500, Table IWE-2500-1, Category E-G, Item E8.20 is authorized pursuant to 10 CFR 50.55a(a)(3)(i) for the first 10-year interval of the Containment Inspection Program. This alternative examination provides an acceptable level of quality and safety.

2.3 Relief Request Number MC-R004

The Code, IWE-2200(g), requires that when paint or coatings are reapplied, the condition of the new paint or coating shall be documented in the preservice examination records. Relief is requested from the requirement to perform a preservice inspection of new paint or coatings.

2.3.1 Licensee's Basis for Requesting Relief

The licensee states:

Paint and coatings are not part of the containment pressure boundary under current Code rules (Paragraph NE-2110 (b) of ASME Section III). Neither paint nor coatings contribute to the structural integrity or leak tightness of the containment. 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 DAEC's [Duane Arnold Energy Center's] design controls [footnote deleted]. Recording the condition of reapplied coating in the preservice record does not substantiate the containment structural integrity. Should deterioration of the coating in the reapplied area occur, the area will 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 DAEC's design controls.

Relief is requested in accordance with 10CFR50.55a(a)(3)(i). The DAEC's design controls currently provide an adequate level of quality and safety.

The requirement to perform a preservice examination when paint or coatings are reapplied has been removed in the 1997 Addenda of ASME Section XI. [These] addenda [have] been approved by the ASME Main Committee and [were] issued in the 1998 Edition.

2.3.2 Alternative Examination

The licensee proposes (as stated):

The paint and coatings in the containment will be examined in accordance with the DAEC's design controls. Although repairs to paint or coatings are not subject to the repair/replacement rules of ASME XI (Inquiry 97-22), repairs to the primary containment boundary, if required, would be conducted in accordance with ASME Section XI Code rules.

2.3.3 Evaluation

The NRC staff does not fully agree with the licensee's belief that the quality and integrity of the paint applied to containment surfaces are not relevant to the containment's functional integrity. In Table 3 of the Final Rule (SECY 96-080), there are numerous examples where the containment integrity was found questionable because of the degradation of the applied paint and coating, and corrosion of the metal.

The licensee states that the adequacy of applied coatings is verified through DAEC's design controls. These controls are described in its November 11, 1998, response to Generic Letter 98-04 and also in Updated Final Safety Analysis Report (UFSAR) Section 17.2.9.5. These controls include:

- Coatings used for new applications or repair/replacement activities are procured from a vendor with a quality assurance program meeting the applicable requirements of 10 CFR Part 50, Appendix B. Receipt, inspection, and source surveillance activities are conducted in accordance with procedures, which are consistent with ANSI Standard N45.2 requirements.
- The qualification testing and evaluation of the coatings used for new applications or repair/replacement activities inside containment are performed in accordance with the ANSI Standard N101.2.
- Coating condition assessments are performed to visually inspect the accessible portions of interior and exterior surfaces for evidence of deterioration. These inspections are performed and documented by Quality Control personnel and ANSI Standard N45.2.6 Certified Level II inspectors.

The licensee's alternative program for the application of paint or coating, its inspection, and its quality assurance provisions provide an adequate method for protecting the inside surfaces of the containment.

2.3.4 Conclusion

The licensee's proposed alternative to the requirements of IWE-2200(g) is authorized pursuant to 10 CFR 50.55a(a)(3)(i) for the first 10-year interval of the Containment Inspection Program. This alternative examination provides an acceptable level of quality and safety.

2.4 Relief Request Number MC-R005

The licensee requests relief from IWE-2500(b), which requires that paint or coatings be visually examined in accordance with Table IWE-2500-1 prior to removal. The licensee proposes to perform an alternative examination in accordance with DAEC's design controls and the requirements of Examination Category E-A.

2.4.1 Licensee's Basis for Requesting Relief

The licensee states:

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. Paint and coatings are not part of the containment pressure boundary under current Code rules (Paragraph NE-2110 (b) of ASME Section III). The interiors of containments are painted to prevent rusting. Neither paint nor coatings contribute to the structural integrity or leak tightness of the containment. 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). Degradation or discoloration of the paint or coating materials on containment would be an indicator of potential degradation of the containment pressure boundary. Additional measures would have to be employed to determine the nature and extend of any degradation, if present. The application of ASME XI rules for removal of paint or coatings when unrelated to a Section XI repair or replacement activity is a burden without a compensating increase in quality or safety.

Relief is requested in accordance with 10CFR50.55a(a)(3)(i). DAEC's design controls [footnote deleted] currently provide an adequate level of quality and safety.

2.4.2 Alternative Examination

The licensee proposes (as stated):

The paint and coatings in the containment will be examined in accordance with the DAEC's design controls and the requirements of Examination Category E-A. If degradation of the coating is identified, additional measures will be applied to determine if the containment pressure boundary is affected. Although repairs to paint or coatings are not subject to the repair/replacement rules of ASME XI (Inquiry 97-22), repairs to the primary containment boundary, if required, would be conducted in accordance with ASME Section XI Code rules.

2.4.3 Evaluation

The licensee requests relief from IWE-2500(b), which requires that paint or coatings be visually examined in accordance with Table IWE-2500-1 prior to removal. The licensee proposes to perform an alternative examination in accordance with DAEC's design controls and the requirements of Examination Category E-A.

As indicated in the Section 2.3.3, the NRC staff finds that the DAEC's coating program is adequate to monitor the proper removal of the old paint and application of the new coatings. Performing an additional examination prior to removal of the old paint and documenting its condition (in addition to the licensee's program, which is subject to the quality assurance requirements of 10 CFR Part 50, Appendix B) would not provide additional assurance of the containment structural integrity.

2.4.4 Conclusion

The licensee's proposed alternative to the requirements of IWE-2500(b) is authorized pursuant to 10 CFR 50.55a(a)(3)(i) for the first 10-year interval of the Containment Inspection Program. The alternative examination provides an acceptable level of quality and safety.

2.5 Relief Request Number MC-R006

The licensee requests relief from IWE-2420(b) and IWE-2420(c), which requires the licensee to perform successive examination of flaws, areas of degradation, and repairs. Relief from the Code is requested only for the successive examination of repairs.

2.5.1 Licensee's Basis for Requesting Relief

The licensee states:

10 CFR 50.55a was amended in the Federal Register (61FR41303) to require the use of the 1992 Edition, 1992 Addenda, of Section XI when performing containment examinations. 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. Paragraph IWA-4150 requires the owner to conduct an evaluation of the suitability of the repair including consideration of the cause of the failure.

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 Paragraph IWB-2420(b), Paragraph IWC-2420(b), nor Paragraph IWD-2420(b) requires a repair to be subject to successive examination requirements. Furthermore, if the repair area is subject to accelerated degradation it would still require augmented examination in accordance with Table IWE-2500-1, Examination Category E-C. The successive examination of repairs in accordance with Paragraphs IWE-2420(b) and IWE-2420(c) constitutes a burden without a compensating increase in quality or safety.

SECY 96-080, in resolution to Comment 3.3, states, "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 component... If the component had been repaired or replaced, then the more frequent examination would not be needed."

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

The requirement to perform successive examination of following repairs has been removed in the 1997 Addenda of ASME Section XI. [These] addenda [have] been approved by the ASME Main Committee and [were] issued in the 1998 Edition.

2.5.2 Alternative Examination

The licensee proposes to not perform successive examination of repairs.

2.5.3 Evaluation

The licensee requests relief from IWE-2420(b) and IWE-2420(c), which requires the licensee to perform successive examination of flaws, areas of degradation, and repairs. Relief from the Code is requested only for the successive examination of repairs.

Subsections IWB-2420(b), IWC-2420(b), and IWD-2420(b) of Section XI do not require successive inspection of repairs for ASME Code Class 1, 2, and 3 components as required by IWE-2420(b) for ASME Code Class MC components. Considering that the failure mechanism, that necessitated the repair is identified and corrected in accordance with the Code, and the repair receives preservice examinations, performance of successive examinations is a hardship on the licensee without a compensating increase in safety.

2.5.4 Conclusion

The licensee's proposed alternative to the requirements of IWE-2420(b) and IWE-2420(c) for repaired components is authorized pursuant to 10 CFR 50.55a(a)(3)(ii) for the first 10-year interval of the Containment Inspection Program. Compliance with the Code requirements would result in a hardship without a compensating increase in the level of quality and safety.

2.6 Relief Request Number MC-R007

The licensee requests relief from the requirements of Table IWE-2500-1, Examination Category E-A, Items E1.12 and E1.20. Instead of performing visual examinations of the accessible surface areas of the containment and vent system at the end of the interval, the licensee proposes to perform the examinations in accordance with Code Case N-601.

2.6.1 Licensee's Basis for Requesting Relief

The licensee states:

Code Case N-601 "Extent and Frequency of VT-3 Visual Examination for Inservice Inspection of Metal Containments, Section XI, Division 1" provides an alternative to the Code Requirements of performing 100% of Items E1.12 and E1.20 at the end of the interval. The Duane Arnold Energy center (DAEC) feels it is more important to perform visual examinations of the Accessible Surface Areas of the Containment and Vent System during the interval rather than at the end of the interval. This way the integrity of the Containment and Vent System at the DAEC can be better monitored between the Integrated Leak Rate Tests (Appendix J) and the Visual Examination VT-3 required by IWE-2500-1. The successive inspection requirements of IWE-2420 will be maintained.

Pursuant to 10CFR50.55a(a)(3)(i), relief is requested on the basis that the alternative examination would result in an acceptable level of quality and safety.

2.6.2 Alternative Examination

The licensee proposes (as stated):

The DAEC will perform the VT-3 visual examinations of the Accessible Surface Areas of the containment structure and Vent Systems in accordance with Code

Case N-601. This code case provides an alternative to perform the visual examinations at any time during the interval, provided the requirements for successive inspections in IWE-2420 are met.

2.6.3 Evaluation

The 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. The licensee proposes to perform VT-3 visual examinations of the accessible surface areas of the containment structure and vent systems in accordance with Code Case N-601.

Performing visual examinations on the accessible surfaces of the containment structure and vent system during the course of the inspection interval, as recommended in Code Case N-601, is more technically sound 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 better monitored between the 10 CFR Part 50, Appendix J testing, and the visual examinations required by Table IWE-2500-1. On this basis, the NRC staff determines that the proposed alternative to use Code Case N-601 provides an adequate method to perform visual examinations of the containment structure and vent systems.

2.6.4 Conclusion

The proposed alternative to the requirements of Table IWE-2500-1, Category E-A, Items E1.12 and E1.20 is authorized pursuant to 10 CFR 50.55a(a)(3)(i) for the first 10-year interval of the Containment Inspection Program. The alternative examination provides an acceptable level of quality and safety.

2.7 Relief Request Number MC-P001

The licensee requests relief from the IWE-5240 requirement to perform VT-2 examinations following minor repairs. It is proposed that testing be conducted in accordance with 10 CFR Part 50, Appendix J.

2.7.1 Licensee's Basis for Requesting Relief

The licensee states:

Pursuant to 10CFR50.55a(a)(3)(ii), relief is requested on performing VT-2 examinations for minor repairs 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.

10 CFR 50.55a was amended in the Federal Register (61FR41303) to require the use of the 1992 Edition, 1992 Addenda, of Section XI when performing containment examinations. Paragraph IWE-5210 states that except as noted within Paragraph IWE-5240, the requirements of Article IWA-5000 are not applicable to Class MC components. Paragraph IWE-5240 states that the requirements (corrected from IWA-5246 to IWA-5240 in the 1993 Addenda) for visual examination are applicable. Paragraph IWA-5240 identified a "VT-2" Visual Examination. VT-2 examinations are conducted to detect evidence of leakage from pressure retaining components, with or without leakage collection

systems, as required during the conduct of a system pressure test. In addition, personnel performing VT-2 examinations are required to be qualified in accordance with Subarticle IWA-2300 of ASME Section XI.

Table IWE-2500-1, Examination Category E-P, identifies the examination method of 10CFR50, Appendix J and does not specifically identify a VT-2 Visual Examination. 10CFR50, Appendix J provides requirements for testing as well as acceptable leakage criteria. These tests are performed by Appendix J "test" personnel and utilize calibrated equipment to determine acceptability. Additionally, 10CFR50.55a(b)(2)(x)(E) requires a general visual examination of the containment each period that would identify any structural degradation that may contribute to leakage.

A "VT-2" Visual Examination for minor repairs will not provide additional assurance of safety beyond that of current Appendix J practices. The presence of a VT-2 examiner in addition to Appendix J test personnel for minor repairs could result in unnecessary exposure duplication and violation of "ALARA" good practice without any substantial increase in safety. It is important to note that all minor repairs will be examined (surface and visual) per the applicable construction code requirements.

2.7.2 Alternative Examination

The licensee proposes (as stated):

The requirements of IWE-5240 shall be performed on major repairs on the containment pressure boundary. However for minor repairs, testing shall be conducted in accordance with 10CFR50, Appendix J, in lieu of IWE-5240.

2.7.3 Evaluation

The Code, IWE-5240, requires a VT-2 visual examination be performed in conjunction with the pressure testing following all repairs, replacements, or modifications. Minor repairs can be deferred until the next scheduled leakage test provided that nondestructive examination is performed in accordance with the approved repair program. Minor repairs are defined in IWE-5222 and consist of the following:

- (1) Welds of attachments to the surface of the pressure retaining boundary,
- (2) Repair cavities, the depth of which does not penetrate the required design wall more than 10 percent, and
- (3) Welds attaching penetrations that are NPS 1 or smaller.

The licensee requests relief from the IWE-5240 requirement to perform VT-2 examinations following minor repairs. It is proposed that testing be conducted in accordance with 10 CFR Part 50, Appendix J. For major repairs on the containment pressure boundary, the requirements of IWE-5240 shall still apply.

Appendix J of 10 CFR Part 50 provides the requirements for leak rate testing as well as acceptable leakage criteria. Performing a VT-2 examination following minor repairs does not

provide additional assurance of safety beyond that of the current Appendix J practices. Therefore, the licensee's proposed alternative examination provides an acceptable level of quality and safety.

2.7.4 Conclusion

The proposed alternative to the requirements of IWE-5240 following minor repairs is authorized pursuant to 10 CFR 50.55a(a)(3)(i) for the first 10-year interval of the Containment Inspection Program. The alternative examination provides an acceptable level of quality and safety.

2.8 Relief Request Number NDE-R015, Revision 1

Rather than using the 1989 Edition, as amended by the 1989 Addenda, of ASME Section XI, the licensee proposes to use the 1992 Edition, as amended by the 1992 Addenda, to govern Repair Procedures (IWX-4000) and Replacement (IWX-7000) for Class 1, 2, 3 and MC pressure retaining components and their supports. This relief request pertains to the third 10-year interval of the Inservice Inspection Program.

2.8.1 Licensee's Basis for Requesting Relief

The licensee states:

The 1992 Addenda to Section XI made several changes to Articles IWX-4000 and IWX-7000. Very few of these changes were technical in nature. Instead, the changes restructured some of the requirements, (ie. combined IWX-4000 and IWX-7000 into one section) clarified others that were difficult to interpret, and eliminated redundant requirements. Of the actual technical changes made, these changes either add enhancements to the program or add requirements not applicable to DAEC.

Meeting both the 1989 with the 1989 Addenda and the 1992 with the 1992 Addenda of ASME Section XI requires the maintenance of two separate repair and replacement programs (one for the IWB, IWC, and IWD components per the 1989 Addenda of the ASME Section XI and one for the 1992 Addenda for the containment vessel). Duplicate records to demonstrate compliance with the 1989 Addenda and the 1992 Addenda will also be required. This duplication of programs and records increases the man-hours necessary to maintain the DAEC Repair/Replacement Program without providing any increase in quality or safety.

Attached to the licensee's letter of April 2, 1999, is a description of the changes made to its "Repair, Replacement and Modification Administration Document" in order to meet the requirements of the 1992 Edition of Subsection IWE. The licensee also provided a comparison of the 1992 Addenda to the 1989 Addenda of Section XI.

2.8.2 Alternative Examination

The licensee proposes:

This alternative is requested in accordance with 10 CFR 50.55a(a)(3)(ii). DAEC will use the 1992 Edition of ASME Section XI, as amended by the 1992 Addenda, to govern Repair Procedures (IWX-4000) and Replacements (IWX-7000) for Class 1, 2, 3, and MC pressure retaining components and their supports.

2.8.3 Evaluation

Section XI, IWX-4000 provides the rules and requirements for repair of pressure-retaining Class 1, 2, and 3 components and their supports, and for the attachment of replacements to the system by welding or brazing. Section XI, IWX-7000 provides the rules and requirements for procurement and construction of items to be used for replacement. The licensee proposes to implement these requirements as they are stated in the 1992 Edition, as amended by the 1992 Addenda.

10 CFR 50.55a dated September 6, 1996, requires the implementation of Subsections IWE and IWL of the 1992 Edition with the 1992 Addenda. The code of record governing repair and replacement procedures for Subsections IWB, IWC, and IWD is the 1989 Edition and Addenda. Meeting both the 1989 and 1992 Edition and Addenda of Section XI requires that the licensee maintain two separate repair and replacement programs. The duplication of programs and records is a hardship and does not provide an increase in either safety or quality.

The licensee submitted a reconciliation which delineates the changes that will be necessary in order to make the repair and replacement administration document conform to the requirements of the 1992 Edition and Addenda. The licensee provided additional clarification in a letter dated October 8, 1999, that, in addition to reconciling the sections on repair/replacement from the two respective Code editions, also indicated that all related requirements for repair/replacement have been addressed. The NRC staff has reviewed the changes and determined that they are acceptable.

2.8.4 Conclusion

The licensee's proposal to use the 1992 Edition with the 1992 Addenda to govern Repair Procedures, IWX-4000, and Replacement (IWX-7000) for Class 1, 2, 3, and MC pressure retaining components and their supports, is authorized pursuant to 10 CFR 50.55a(a)(3)(i) for the remainder of the third 10-year interval of the Inservice Inspection Program. This alternative provides an acceptable level of quality and safety.

3.0 CONCLUSION

The alternatives to the Code requirements as proposed in MC-R003, MC-R004, MC-R005, MC-R007, and MC-P001 will provide an acceptable level of quality and safety and are authorized pursuant to 10 CFR 50.55a(a)(3)(i) for the first 10-year interval of the Containment Inspection Program.

For relief requests MC-R002 and MC-R006, compliance with the Code would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety. For this reason, the proposed alternatives are authorized pursuant to 10 CFR 50.55a(a)(3)(ii) for the first 10-year interval of the Containment Inspection Program.

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