

May 1, 2002

Mr. Michael Kansler  
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SUBJECT: JAMES A. FITZPATRICK NUCLEAR POWER PLANT - ALTERNATIVE TO THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS BOILER AND PRESSURE VESSEL CODE (ASME CODE) TO USE THE 1998 EDITION OF SUBSECTIONS IWE OF THE ASME CODE, SECTION XI FOR CONTAINMENT INSPECTIONS (TAC NO. MB2946)

Dear Mr. Kansler:

By letter dated September 7, 2001, as supplemented on December 3, 2001, you proposed an alternative to the 1992 Edition and Addenda of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code), Section XI, Subsection IWE. As an alternative, you proposed to use the provisions of Subsection IWE of the 1998 Edition of the ASME Code, which has not yet been incorporated by reference into 10 CFR 50.55a.

Pursuant to 10 CFR 50.55a, the Nuclear Regulatory Commission (NRC) staff reviewed your alternative against the requirements of the 1992 Edition and Addenda of the ASME Code. The results of the review are provided in the enclosed safety evaluation (SE). An analysis of the changes in requirements between the 1992 Edition and Addenda and the 1998 Edition of Subsection IWE are contained in Appendix A of the SE.

The NRC staff determined that the proposed alternative to use the 1998 Edition of Subsection IWE will provide an acceptable level of quality and safety for ensuring the integrity of the pressure boundary of the James A. Fitzpatrick Nuclear Power Plant (JAFNPP) containment. Therefore, the proposed alternative is authorized pursuant to 10 CFR 50.55a(a)(3)(i). The alternative is authorized for the remainder of the first 10-year containment inservice inspection interval for JAFNPP.

If you have any questions, please contact the Project Manager, Guy Vissing at (301) 415-1441.

Sincerely,

*/RA/*

Richard J. Laufer, Chief, Section 1  
Project Directorate I  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

Docket No. 50-333

Enclosure: Safety Evaluation

cc w/encl: See next page

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ACCESSION NO.: ML020500402 \* Safety Evaluation provided. No major changes were made.

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO RELIEF REQUEST FROM THE REQUIREMENTS OF 10 CFR 50.55a  
FOR CONTAINMENT INSERVICE INSPECTION  
ENTERGY NUCLEAR OPERATIONS, INC.  
JAMES A. FITZPATRICK NUCLEAR POWER PLANT  
DOCKET NUMBER 50-333

1.0 EVALUATION

Section 50.55a(g)(6)(ii)(B) of Title 10 of the *Code of Federal Regulations* (10 CFR) requires licensees of nuclear power plants to perform expedited examinations of their primary containment structures in accordance with the requirements of Subsection IWE and IWL of the 1992 Edition up to and including the 1992 Addenda or the 1995 Edition with the 1996 Addenda of Section XI of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code), as modified by the requirements of 10 CFR 50.55a(b)(2)(viii) and 10 CFR 50.55a(b)(2)(ix). Licensees of all operating nuclear power plants were required to complete their first period examinations by September 9, 2001.

By letter dated September 7, 2001 (Ref. 1), Entergy Nuclear Operations, Inc., the licensee for the James A. FitzPatrick Nuclear Power Plant (JAFNPP), submitted a request seeking relief from the requirements of the 1992 Edition up to and including the 1992 Addenda of the ASME Code, Section XI, Subsection IWE. As an alternative, the licensee proposed using the provisions of Subsection IWE of the 1998 Edition of the Code, which has not yet been incorporated by reference into 10 CFR 50.55a. In its letter, the licensee provided a comparison of the requirements in the 1998 Edition with those in the 1992 Edition/1992 Addenda. This evaluation addresses the acceptability of the licensee's proposed alternative. In response to the Nuclear Regulatory Commission (NRC) staff's request for additional information (RAI) as discussed in a telephone conference on October 18, 2001, the licensee submitted additional information in its letter dated December 3, 2001 (Ref. 2).

The relief is requested for the second and third periods of the first 10-year containment inspection interval, from March 2001 to September 2006, of the containment inservice inspection (ISI) program at JAFNPP.

Enclosure

## 2.0 EVALUATION OF RELIEF REQUEST NO. RR-27

In Relief Request No. 27, the licensee proposed using the 1998 Edition of the ASME Code, Section XI, Subsection IWE as an alternative to the requirements of the 1992 Edition up to and including the 1992 Addenda for inspection of Class MC pressure retaining components and integral attachments. An analysis of the changes in requirements between the 1992 Edition/1992 Addenda and the 1998 Edition of Subsection IWE was performed. Appendix A contains a comparison of these requirements in a table. The four columns of the table provide the following information:

- Column 1 The paragraph (sometimes includes articles and subarticles) corresponding to the 1992 Edition/1992 Addenda of Subsection IWE.
- Column 2 Changes between the 1992 Edition/1992 Addenda and the 1998 Edition.
- Column 3 Licensee's statement of significance and/or basis for use as an alternative inspection.
- Column 4 Acceptability of the requirements of the 1998 Edition of the Code in terms of quality and safety.

The licensee will perform ISI of Class MC pressure-retaining components and their integral attachments in accordance with Subsection IWE of the 1998 Edition (no Addenda) of ASME Code, Section XI as supplemented with the applicable requirements of 10 CFR 50.55a(b)(2)(ix) and commitments as specified in the following Sections 2.1 through 2.4. In its review of the comparative requirements, the NRC staff identified several significant issues that are evaluated below.

### 2.1 Visual Examination Methods and Personnel Qualification, IWE-2300

The 1992 Edition/1992 Addenda requires the use of IWA-2200 for visual, surface, and volumetric examination methods, and IWA-2300 for qualification of personnel. For qualification of personnel, the 1992 Addenda of IWA-2300 requires personnel to be qualified and certified using a written practice prepared in accordance with American National Standards Institute/American Society for Nondestructive Testing (ANSI/ASNT) CP-189. The 1998 Edition of IWE-2300 requires the owner (i.e., licensee) to define requirements for visual examination of containment surfaces, and for qualifying the personnel performing visual examinations. In general, the use of consensus standards for performing containment examinations is preferable to owner-defined requirements. Without consistent guidance, deferring these responsibilities to individual owners creates a potential for inconsistencies from plant to plant. In its September 7, 2001, submittal, the licensee committed to supplement the requirements of the 1998 Edition of IWE-2300 with the following provisions, as part of the JAFNPP Containment ISI Program:

- a. General visual examinations will be performed by Engineering personnel knowledgeable in the requirements for design, inservice inspection, and/or testing of Class MC components. These personnel will be required to attend a Section XI Containment Inspection training class and pass an eye vision test examination as determined by the Responsible Engineer (RE).

- b. Since July 1, 2001, the qualification program for personnel performing the detailed visual examinations meets the applicable requirements of IWA-2300 of the 1992 Addenda, in accordance with CP-189, 1991 Edition.
- c. Applicable JAF Containment Inspection program documents and/or procedures will be developed to include the aforementioned qualification requirements.
- d. Performance requirements for general and detailed visual examinations will be included in the applicable examination documents and procedures. The following methodology will be used for the demonstration:
  - i. The demonstration will include artificial and natural lighting. The general and detailed visual examination parameters will be verified (using a commercial light meter) as meeting the illumination requirements of Section XI, 1992 Addenda, Table IWA-2210-1 for VT-3 (general visual) and VT-1 (detailed visual) respectively. Both industrial halogen flashlights and halogen spotlights will be used.
  - ii. For direct general visual examination, the demonstration will determine the distance that could resolve the character height requirement of Section XI, 1992 Addenda, Table IWA-2210-1 for VT-3.
  - iii. Direct detailed visual examination will be demonstrated to meet the character height and distance requirements of Section XI, 1992 Addenda, Table IWA-2210-1 for VT-1.
  - iv. Remote visual examination will be demonstrated using commercial binoculars, spotting scope, and power zoom camera systems. The remote visual demonstration will be conducted both in artificial and natural lighting.
  - v. Remote general visual will demonstrate the ability to resolve the character height for the VT-3 line of Table IWA-2210-1, at distances typical of the actual maximum remote examinations to be performed at the plant.
  - vi. Remote detailed visual will demonstrate to resolve the character height for the VT-1 line of Table IWA-2210-1.
  - vii. Demonstrations will be performed by qualified personnel and demonstrated to the Authorized Nuclear Inservice Inspector.
- e. An alternate method may be used in future demonstrations that will prescribe the use of a "general visual reference standard," such as using the 18% neutral gray card in lieu of the character height standard. The alternate method, if used, will be demonstrated to meet the resolution requirement sufficient to detect defects or deterioration that may be identified during a

general visual examination. The use of the reference standard complies with the provisions included in 10 CFR 50.55a(b)(2)(ix)(B). This “general visual reference standard” may also be used in future containment examination as applicable.

- f. Personnel performing augmented ultrasonic thickness examinations will be qualified in accordance with the requirements of IWA-2000 in the 1992 Addenda.

The NRC staff concludes that the incorporation of these provisions into the licensee's containment inservice inspection procedures provides reasonable assurance that the licensee's defined visual examination methods and personnel qualification procedures will provide an acceptable level of quality and safety.

## 2.2 Examination of Paint and Coatings, IWE-2500(b)

The requirement to examine paint or coating prior to removal was deleted in the 1998 Edition of the Code. The NRC staff has no objection to this deletion. However, in the absence of any examination for detecting flaws or degradation in the containment base metal, the recoating may be applied to a degraded containment surface.

The licensee states that “any work performed on the JAF Containment boundary, including coated or painted surfaces is controlled under the work control process. If a containment pressure boundary surface coating is degraded, as a good practice, it is evaluated and disposed by an engineer under the direction of the Responsible Containment Engineer. Any base metal conditions that could challenge the structural integrity of the containment would be identified and resolved prior to coating removal and re-application.”

The NRC staff finds that implementation of the licensee's proposed process will ensure that base metal degradation will be identified, and appropriate action taken, prior to recoating the containment liner. The proposed process will, therefore, provide an acceptable level of quality and safety.

## 2.3 Visual Examination Acceptance Standards for Categories E-A and E-C

Subparagraphs IWE-3510.1 and IWE-3511.1 of the 1998 Edition of the ASME Code state that the owner is required to define the acceptance criteria for visual examination of containment surfaces when performing Category E-A and Category E-C examinations. The 1992 Edition requires that visual examination to be performed under the direction of, a Registered Professional Engineer, or other individual, knowledgeable in requirements of design and IST of class MC and metallic liners of Class CC components. The licensee has augmented these requirements with commitments contained in its September 7 and December 3, 2001, letters ( Refs. 1, 2). The licensee states:

The general visual examination acceptance criteria will be included in the applicable JAF Containment examination program documents or procedures. The general visual examination of containment surfaces examines for indications of degradation that may affect the containment structural integrity or leak tightness. Containment welds and dissimilar metal welds are examined as part of the containment surfaces.

Excessive indications of flaking, blistering or peeling coating, corrosion, general deformation, bulges, surface irregularities, or other signs of distress, which do not meet the acceptance criteria as determined by the Responsible Engineer will be recorded and evaluated for further disposition. General visual examination of pressure retaining bolted connections will be performed for missing or loose bolting materials, corrosion, bolting deformation, or other indications that may affect the integrity of the bolted connection. General visual examination of moisture barriers will be performed for signs of wear, damage, erosion, tears, surface cracks or other defects that would permit intrusion of moisture into inaccessible areas. Excessive indications will be recorded and evaluated by the Responsible Engineer or designee.

The detailed visual (VT-1) examinations will also be included in the applicable JAF Section XI visual examination documents/procedures. The detailed visual examination assesses the initial condition of surfaces requiring augmented examinations, in accordance with IWE-1241, and determines the magnitude and extent of indications of degradation and distress of these containment surfaces. The detailed visual examination also determines the magnitude and extent of indications of degradation and distress of suspect containment surfaces initially detected by the general visual examination. The detailed visual examination criteria of IWE-2310(e) of the 1998 Edition are used, supplemented by additional criteria for bolted connections and moisture barriers, as defined in the general visual examination criteria above. The results of the examination will be recorded for evaluation by the Responsible Individual for acceptance by engineering evaluation or correction by repair/replacement activity.

The NRC staff finds that complying with the 1998 Edition of the ASME Code, Section XI requirements, as augmented by the specific requirements in the licensee's containment inspection program, will provide reasonable assurance that significant flaws and degradation of the containment are adequately identified during Category E-A and Category E-C examinations. The alternative proposed by the licensee, therefore, provides an acceptable level of quality and safety.

#### 2.4 Examination Pressure Retaining Bolting, Table IWE-2500-1

Examination Category E-G, Pressure Retaining Bolting, has been removed from Table IWE-2500-1 in the 1998 Edition. In the 1998 Edition of IWE, the requirements for bolted connections have been moved to Examination Category E-A, Item E1.10, "Containment Vessel Pressure Retaining Boundary" and Item E1.11, "Accessible Surface Areas." The 1992 Edition requires a visual examination (VT-1) of bolting when a connection is disassembled. The 1998 Edition requires a general visual, performed in place, with no requirement for visual examination when the joint is disassembled. If a bolted connection within the IWE boundary is disassembled, a detailed visual examination will be performed once per inspection interval, consistent with the requirements of the 1992 Addenda of the ASME Code, Section XI. The detailed visual (VT-1) examination will be performed on all accessible surface areas of the bolts, studs, nuts, bushings, washers, threads in base material, and flange ligaments between the fastener holes.

The licensee stated in its December 3, 2001, letter (Ref. 2) that the following guidelines will be incorporated into the applicable JAFNPP procedures:

- i. A detailed visual examination (VT-1) will be performed for areas where flaws or degradations which exceed ASME Section XI Code requirements, are indicated.
- ii. Pressure retaining bolting indications will be evaluated by the responsible engineer for continuous services. If disassembly is required for further evaluation, then a detailed visual examination (VT-1) shall be performed.
- iii. A detailed visual examination (VT-1) will be performed if a bolted connection is disassembled at the time of a scheduled general visual examination. All accessible surface areas of the connection (bushings, threads, ligaments in the base material of flanges) will be included in the examination.
- iv. A detailed visual examination (VT-1) will be performed when a bolt connection is disassembled at times other than a scheduled visual examination. Procedures will be used to ensure that the integrity of the reassembled bolted connection is maintained.

The licensee's description of examination of containment pressure boundary bolted connections in its letters of September 7 and December 3, 2001 (Refs. 1 and 2) are consistent with the NRC staff's guidelines and provides a reasonable and practical approach to ensure that degraded and damaged bolting is adequately identified. Therefore, the NRC staff finds that the licensee's proposed alternative provides an acceptable level of quality and safety.

### 3.0 CONCLUSION

The licensee's proposed alternative to use the requirements of the 1998 Edition of the ASME Code, Section XI, Subsection IWE, as supplemented by commitments in the licensee's letters of September 7 and December 3, 2001 (Refs. 1 and 2), provides an acceptable level of quality and safety for ensuring the integrity of the pressure boundary of the JAFNPP containment. On this basis, the proposed alternative is authorized pursuant to 10 CFR 50.55a(a)(3)(i). The alternative is authorized for the remainder of the first 10-year containment ISI interval for JAFNPP.

### 4.0 REFERENCES

1. Letter from Michael Kansler, Entergy Nuclear Operation, Inc. to Nuclear Regulatory Commission, "James A. FitzPatrick Nuclear Power Plant, License No. DPR-59 (Docket No. 50-333), Relief Request RR-27 for Third 10-year Inservice Inspection Interval Program Plan," dated September 7, 2001.
2. Letter from Michael Kansler, Entergy Nuclear Operation, Inc. to Nuclear Regulatory Commission (NRC), "James A. FitzPatrick Nuclear Power Plant, License No. DPR-59 (Docket No. 50-333), Supplemental Information Regarding Relief Request RR-27 for Third 10-year Inservice Inspection Interval Program Plan," dated December 3, 2001.

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Date: May 1, 2002

Appendix A: JAFNPP Subsection IWE Comparison Table



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