

April 8, 2005

Mr. Karl W. Singer
Chief Nuclear Officer and
Executive Vice President
Tennessee Valley Authority
6A Lookout Place
1101 Market Street
Chattanooga, TN 37402-2801

SUBJECT: BROWNS FERRY UNITS 1, 2, AND 3 - SAFETY EVALUATION CONCERNING
THE USE SUBSEQUENT EDITION AND ADDENDA OF ASME CODE,
SECTION XI FOR CORRECTIVE ACTION REQUIREMENTS FOR LEAKAGE
AT BOLTED CONNECTIONS (TAC NOS. MC5408, MC5409, AND MC5410)

Dear Mr. Singer:

By a letter dated December 7, 2004 the Tennessee Valley Authority (TVA, the licensee) submitted a request to use the corrective action requirements for leakage at bolted connections specified in the 1998 Edition through the 1999 Addenda of the American Society of Mechanical Engineers, Section XI Code, Subarticle IWA-5250(a)(2), for Browns Ferry Nuclear Plant (BFN) Units 1, 2, and 3.

Based on our review of your submittals, we have concluded that pursuant to Title 10, *Code of Federal Regulations*, Section 50.55(g)(4)(iv), the proposed alternative provides an acceptable level of quality and safety. This relief is authorized for the first 10-year inservice inspection (ISI) interval for BFN Unit 1, which ends 1 year following restart of the unit; for the remainder of the third 10-year ISI interval for BFN Unit 2, which concludes on May 24, 2011; and for the remainder of the second 10-year ISI interval for BFN Unit 3, which ends November 18, 2005.

Sincerely,

/RA/

Michael L. Marshall, Jr., Chief, Section 2
Project Directorate II
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-259, 50-260 and 50-296

Enclosure: Safety Evaluation

cc w/encl: See next page

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

INSERVICE INSPECTION PROGRAM

TENNESSEE VALLEY AUTHORITY

BROWNS FERRY NUCLEAR PLANT, UNITS 1, 2, AND 3

DOCKET NOS. 50-259, 50-260, AND 50-296

1.0 INTRODUCTION

By a letter dated December 7, 2004, the Tennessee Valley Authority (TVA, the licensee) submitted a request to use the corrective action requirements for leakage at bolted connections specified in the 1998 Edition through the 1999 Addenda of the American Society of Mechanical Engineers (ASME), Section XI Code, Subarticle IWA-5250(a)(2), for Browns Ferry Nuclear Plant (BFN) Units 1, 2, and 3.

2.0 REGULATORY REQUIREMENTS

Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.55, requires that ISI of American Society of Mechanical Engineers (ASME) Code Class 1, 2, and 3 components be performed in accordance with Section XI of the ASME Boiler and Pressure Vessel Code (ASME Code) and applicable Edition and Addenda, except where specific relief has been granted by the U.S. Nuclear Regulatory Commission (NRC) pursuant to 10 CFR 50.55a(g)(6)(i). Section 50.55a(g)(4)(iv) of 10 CFR allows the use of portions of subsequent editions and addenda of ASME Section XI Code, which have been incorporated by reference in paragraph 10 CFR 50.55a(b)(2) of that section, for inservice examination of components and system pressure tests and is subject to the approval by the NRC.

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, "Rules for Inservice Inspection of Nuclear Power Plant Components," 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. The applicable ASME Code of record for the BFN System Pressure Test Programs for BFN, Units 1 and 2 is the 1995 Edition, 1996 Addenda and for BFN, Unit 3, the 1989 Edition, no Addenda. BFN Unit 1 is in the first 10-year ISI interval, which ends 1 year following restart of the unit. BFN Unit 2 is in the third 10-year ISI

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interval, which concludes on May 24, 2011. BFN Unit 3 is in the second 10-year ISI interval, which ends November 18, 2005.

3.0 TECHNICAL EVALUATION

The licensee requested to use the corrective action requirement for leakage at bolted connections specified in the 1998 Edition, 1999 Addenda of the ASME Code, Section XI, Subarticle IWA-5250(a)(2) for BFN Units 1, 2, and 3. The Code of Record for the BFN System Pressure Test Programs for BFN Units 1 and 2 is the 1995 Edition, 1996 Addenda; and for BFN, Unit 3, the 1989 Edition, no Addenda.

The 1999 Addenda of the ASME Code, Section XI, Subarticle IWA-5250(a)(2), Corrective Action, now specifies limits of applicability for this paragraph. The required actions of this paragraph are limited to bolted connections in systems borted for the purpose of controlling reactivity, and states that only one bolt shall be removed, VT-3 examined, and evaluated in accordance with IWA-3100. If the removed bolt has evidence of degradation, all remaining bolting shall be removed, VT-3 examined, and evaluated in accordance with IWA-3100. The earlier editions and addenda of the ASME Code, Section XI, require that all bolts in the connection are to be removed, VT-3 visually examined for corrosion, and evaluated with IWA-3100. The revision to paragraph IWA-5250(a)(2) provides clarification with respect to the application and limitations of the requirements. Implementation of this new paragraph will eliminate the unnecessary removal from service and opening of plant systems and will reduce personnel radiation exposure.

The licensee stated that the evaluation requirements of IWA-3100 (and, as referenced in IWA-3100, all of Subarticle IWA-3000) are included as part of Subarticle IWA-5250 and, therefore, will be considered as related requirements. There were no technical changes made to the IWA-3000 section between 1989 Edition and the 1999 Addenda. Therefore, the licensee's proposed alternative to use the corrective action requirements for leakage at bolted connections specified in the 1998 Edition, 1999 Addenda of the ASME Section XI Code, Subarticle IWA-5250(a)(2), for BFN Units 1, 2, and 3 is acceptable, as it provides an acceptable level of quality and safety.

4.0 CONCLUSION

The use of the 1999 Addenda ASME Code requirements, as described in the licensee's submittal, has been incorporated by reference into 10 CFR 50.55a(b)(2). Therefore, the NRC staff finds the licensee's request to implement the corrective action requirements for leakage at bolted connections specified in the 1998 Edition, 1999 Addenda of the ASME Code, Section XI, Subarticle IWA-5250(a)(2) and related requirements is authorized pursuant to 10 CFR 50.55a(g)(4)(iv) for the BFN Unit 1 first 10-year ISI interval, the BFN Unit 2 third 10-year ISI interval, and the BFN Unit 3 second 10-year ISI interval. All other requirements of the ASME Code, Section XI for which relief has not been specifically requested remain applicable, including third party review by the Authorized Nuclear Inservice Inspector.

Principal Contributors: Tom McLellan, NRR

Date: April 8, 2005