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SUBJECT: Requests relief from requirements of ASME Boiler & Pressure Vessel Code, Section XI, Subsection IWE, 1992 Edition W/1992 Addenda for Oconee Units 1, 2 & 3 & McGuire Unit 1 & 2 & Catawba Units 1 & 2 re Duke Energy Corp Serial 98-GO-002.

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April 6, 1998

U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555-0001

ATTENTION: Document Control Desk

SUBJECT: Duke Energy Corporation

Oconee Nuclear Station - Units 1, 2, & 3  
Docket Nos. 50-269, 50-270, and 50-287

McGuire Nuclear Station - Units 1 & 2  
Docket Nos. 50-369 and 50-370

Catawba Nuclear Station - Units 1 & 2  
Docket Nos. 50-413 and 50-414

Request for Relief from Requirements of the ASME  
Boiler and Pressure Vessel Code, Section XI in  
Accordance With 10 CFR 50.55a(a)(3)(ii)  
Duke Energy Corporation Serial Number 98-GO-002

Pursuant to 10 CFR 50.55a(a)(3)(ii), Duke Energy Corporation requests relief from the requirements of the ASME Boiler and Pressure Vessel Code, Section XI, Subsection IWE, 1992 Edition with the 1992 Addenda for Oconee Units 1, 2 and 3, McGuire Units 1 and 2, and Catawba Units 1 and 2.

Specifically, this request is for relief from the bolt torque or tension test requirements for pressure retaining bolting of Class MC pressure retaining components and metallic liners of Class CC components, as specified in the ASME Boiler and Pressure Vessel Code, Section XI, 1992 Edition with the 1992 Addenda, IWE-2500, Table IWE-2500-1, for Examination Category E-G, Item Number E8.20.

A detailed relief request, including a background discussion and justification is included as an enclosure to this letter. Duke requests timely NRC review and approval of this relief request so that Containment Inservice Inspection Plans, which

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are under development, can be completed to support the implementation of Containment Inservice Inspections during plant refueling outages starting in September, 1998. A NRC response is requested by July 1, 1998 in order to allow sufficient time to amend the Duke plans that will implement this request. Questions regarding this request should be directed to J. S. Warren at (704) 382-4986.

Very truly yours,



M. S. Tuckman

MST/JSW

Attachment:  
Duke Energy Corporation  
Request for Relief  
Serial Number 98-GO-002, Pages 1 through 4.

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Attachment

DUKE ENERGY CORPORATION

Oconee Nuclear Station Units 1, 2 and 3  
McGuire Nuclear Station Units 1 and 2  
Catawba Nuclear Station Units 1 and 2

Request for Relief from the Requirements of the ASME Boiler and Pressure Vessel Code, Section XI

**Background:**

Pursuant to 10 CFR 50.55a (a) (3) (ii), Duke Energy Corporation requests relief from the requirements of the ASME Boiler and Pressure Vessel Code, Section XI, Subsection IWE, 1992 Edition with the 1992 Addenda for Oconee Units 1, 2 and 3, McGuire Units 1 and 2, and Catawba Units 1 and 2.

Subsection IWE, IWE-2500, Table IWE-2500-1, Examination Category E-G requires that bolt torque or tension tests be performed on 100% of pressure retaining bolted connections that have not been disassembled and reassembled during each inspection interval.

10 CFR 50, Appendix J requires that local leak rate tests (Type B tests) be performed on all containment pressure retaining connections to verify their leak tight integrity. Type B tests verify that local leakage is within allowable limits, but these tests also demonstrate that the existing preload in the connection bolting is acceptable. If the bolting preload were less than required to maintain the leak-tight integrity of the connection, the Type B test would not pass. Visual examination of these containment parts in accordance with IWE-2500 is adequate to detect any degradation caused by environmental conditions that could affect the leak-tight integrity of the joint. Experience has shown that penetrations, including personnel air locks and equipment hatches have not exhibited excessive leakage due to inadequate bolt torque or tension. Bolt 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.

Duke Energy Corporation believes that compliance with these requirements of Subsection IWE would result in a hardship and unusual difficulty without a compensating increase in the level of quality and safety.

**I. Systems/Components for Which Relief is Requested:**

Pressure retaining bolting of Class MC pressure retaining components and metallic shell and penetration liners of Class CC components. The function of this bolting is to maintain containment leak-tight integrity.

**II. Code Requirement(s):**

The ASME Boiler and Pressure Vessel Code, Section XI, Division 1, 1992 Edition with the 1992 Addenda, Subparagraph IWE-2500(a) requires that bolt torque or tension tests be performed on pressure retaining bolted connections as specified in Table IWE-2500-1, Examination Category E-G, Pressure Retaining Bolting, Item No. E8.20. The specific requirement is to perform a bolt torque or tension test on 100% of containment pressure retaining bolted connections that have not been disassembled and reassembled during an inspection interval. This requirement is specified in footnote (5) of this Table.

**III. Requirement from Which Relief is Requested:**

Relief is requested from the requirement to perform bolt torque or tension tests on containment pressure retaining bolted connections that have not been disassembled and reassembled during an inspection interval.

**IV. Basis for Relief:**

If bolt tension tests are to be performed, the bolting must be detensioned and then retensioned to determine acceptability. This activity could potentially affect the leak-tightness of the joint. Bolt torque tests performed on bolting under tension could also affect the leak-tightness of the joint. To ensure the bolted joint remains leak tight, a 10 CFR 50, Appendix J, Type B test would be required following these maintenance activities. The performance of the Type B test itself provides assurance that the bolt torque or tension is adequate to prevent a leak rate that exceeds allowable limits. Torque or tension tests do not provide this assurance. Once a bolt is properly torqued or tensioned, it is not subject to dynamic loading that could cause it to experience significant change. Also, relaxation of bolting occurs after initial

installation, and accurate estimates of the expected preload loss are not always reliable, making it difficult to establish an acceptance range for torque testing. Verification of torque or tension values on bolted joints is proven through Appendix J testing, and visual examination of bolting in accordance with IWE-2500 is sufficient to detect potential degradation that may cause the bolted connection to violate the leak-tight integrity of the containment. Experience has shown that containment bolted connections have not exhibited excessive leakage due to inadequate bolt torque or tension.

**V. Alternative Examination(s):**

The adequacy of containment pressure retaining bolted connections shall be verified by the following:

- (1) Bolted connections shall receive a visual, VT-1 examination in accordance with requirements of Table IWE-2500-1, Examination Category E-G, Pressure Retaining Bolting, Item No. E8.10, and
- (2) A local leak rate test shall be performed on all containment penetrations, airlocks, and other pressure retaining bolted connections in accordance with 10 CFR 50, Appendix J. Current Technical Specifications utilize Option A of 10 CFR 50, Appendix J for Type B tests.

Please note that visual, VT-1 examinations at Oconee, McGuire, and Catawba Nuclear Stations include requirements to inspect for evidence of loose bolting.

**VI. Justification for Granting Relief**

Torque or tension testing is not required by ASME Section XI for any Class 1, 2, or 3 bolted connections or their supports.

Existing pressure test requirements imposed by Technical Specifications, in addition to visual examination requirements specified by Subsection IWE are sufficient to ensure the acceptability of pressure retaining bolting and the leak-tight integrity of containment pressure retaining bolted connections.

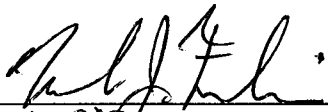
Duke Energy Corporation believes that compliance with Subsection IWE bolt torque or tension tests for pressure retaining bolted connections would result in

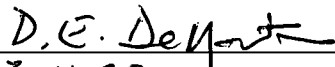


hardship or unusual difficulty without a compensating increase in the level of quality and safety. The alternatives proposed provide an equivalent level of quality and safety and can effectively demonstrate the acceptability of bolt tension and leak tightness of the connection.

**VII. Implementation Schedule**

First inspection interval for IWE.

Evaluated By:   
Date: 3-10-98

Reviewed By:   
Date: 3-11-98