

June 17, 2003

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

SUBJECT: Duke Energy Corporation

Catawba Nuclear Station, Units 1 and 2
Docket Numbers 50-413 and 50-414

McGuire Nuclear Station, Units 1 and 2
Docket Numbers 50-369 and 50-370

Oconee Nuclear Station, Units 1, 2, and 3
Docket Numbers 50-269, 50-270, and 50-287

Request to use an Alternative to the ASME Boiler and
Pressure Vessel Code, Section XI and 10CFR50.55a(g)(4)
in accordance with 10CFR50.55a(a)(3)(i).
Duke Energy Corporation Serial Number 03-GO-010

Pursuant to 10CFR50.55a(a)(3)(i), Duke Energy Corporation requests the use of an alternative to the requirements of the ASME Boiler and Pressure Vessel Code, Section XI, Subsections IWE and IWL, 1992 Edition with the 1992 Addenda; ASME Boiler and Pressure Vessel Code, Section XI, Subsections IWE and IWL, 1998 Edition with the 1999 Addenda and 2000 Addenda; and 10CFR50.55a(g)(4) for Catawba Nuclear Station, Units 1 and 2, McGuire Nuclear Station, Units 1 and 2, and Oconee Nuclear Station, Units 1, 2, and 3.

This request would allow the use of alternatives that will more closely align the intervals for inservice inspection of metal and concrete containments (Class MC and Class CC components) Subsection IWE and IWL with inspection intervals for ASME Class 1, 2, and 3 components. In addition, this request would allow continued use of selected alternatives (approved by the NRC for use during the first IWE and IWL inspection interval as cited in the enclosure) during the next IWE and IWL inspection interval.

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Nuclear Regulatory Commission
June 17, 2003
Page 2

The proposed alternative and justification are included in an enclosure to this letter. In order to enable time needed to prepare IWE and IWL inservice inspection plans for the second inservice inspection interval prior to July 15, 2004, Duke Energy Corporation requests NRC approval of this request by December 15, 2003.

Questions regarding this request may be directed to M. J. Ferlisi at (704) 382-3923.

Very truly yours,

A handwritten signature in cursive script, appearing to read "M. S. Tuckman".

M. S. Tuckman

Attachment:
Duke Energy Corporation
Request for Alternative, Serial Number 03-GO-010,
Pages 1 through 12.

Nuclear Regulatory Commission
June 17, 2003
Page 3

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NRIA File/ELL (EC050)
ONS Master File ON03DM
MNS Master File MG01DM
CNS Master File CN04DM

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 Alternative to the Requirements of the ASME Boiler
and Pressure Vessel Code, Section XI
Serial Number 03-GO-010
Page 1 of 12

1. System/Component(s) for Which Relief is Requested

- 1.1 Metal containment pressure retaining components and their integral attachments.
- 1.2 Metallic shell and penetration liners which are pressure retaining components and their integral attachments in concrete containments.
- 1.3 Concrete containment pressure retaining components and their integral attachments, and the post-tensioning systems of concrete containments.

2. Description of Code Requirement(s) for Which an Alternative is Requested

- 2.1 An alternative is requested for the following requirements of the ASME Boiler and Pressure Vessel Code, Section XI, 1992 Edition with the 1992 Addenda, applicable to the first containment inservice inspection interval:
 - 2.1.1 IWA-2430(a)

IWA-2430(a) requires that IWE inservice examinations be performed in accordance with Inspection Program A of IWA-2431 or Inspection Program B of IWA-2432.
 - 2.1.2 IWA-2430(b)

IWA-2430(b) requires that the Inspection Interval be determined by calendar years following placement of the plant into commercial service.
 - 2.1.3 IWA-2430(d)

IWA-2430(d) requires that for components inspected under Program B, the inspection intervals may be extended or decreased by as much as 1 year, provided successive intervals are not altered by more than 1 year from the original pattern of intervals.
 - 2.1.4 IWA-2432

IWA-2432 requires that the first inspection interval consist of ten years following start of plant commercial service and that subsequent

inspection intervals consist of ten years following previous inspection intervals, except as modified by IWA-2430(d).

2.1.5 IWE-2410

IWE-2410 requires that the requirements of either Inspection Program A or B shall be met.

2.1.6 IWE-2412

IWE-2412 requires that inservice examinations comply with the requirements of Table IWE-2412-1, and that the inspection periods may be decreased or extended by as much as 1 year to enable an inspection to coincide with a plant outage, within the limitations of IWA-2430(d).

- 2.2 An alternative is requested for the following requirements of the ASME Boiler and Pressure Vessel Code, Section XI, 1998 Edition with the 1999 Addenda and the 2000 Addenda, which is proposed for the second containment inservice inspection interval:

2.2.1 IWE-2420(a)

IWE-2420(a) requires that the sequence of component examinations established during the first inspection interval shall be repeated during each successive inspection interval, to the extent practical.

2.2.2 IWE-2500(b) and Table IWE-2500-1, Examination Category E-C

IWE-2500(b) and Table IWE-2500-1, Examination Category E-C specify requirements for examination of containment surfaces subject to augmented examination.

2.2.3 IWE-5240

IWE-5240 requires that, during the pressure test required by IWE-5220, a detailed visual examination be performed on areas affected by repair/replacement activities.

2.2.4 IWL-2421

IWL-2421 provides alternative examination requirements for sites with multiple plants that meet the conditions identified in IWL-2421(a).

- 2.3 An alternative is requested for the following requirement of 10CFR50.55a(g)(4) for the second containment inservice inspection interval:

10CFR50.55a(g)(4) requires, in part, that the modifications listed in paragraph (b)(2)(ix) apply to components classified as Class MC and metallic shell and penetration liners of Class CC components.

10CFR50.55a(b)(2)(ix)(H) requires, in part, that containment bolted connections that are disassembled during the scheduled performance of the examinations in Item E1.11 of Table IWE-2500-1 must be examined using the VT-3 examination method.

An alternative is requested to the above requirement to perform a VT-3 examination of containment bolted connections that are disassembled during the scheduled performance of Item E1.11 examinations.

3. Basis for Relief

The alternatives in this request are proposed for the following reasons:

- 3.1 To allow adjustment of the inservice inspection intervals for metal and concrete containments so that the intervals may be more closely aligned with inservice inspection intervals for ASME Class 1, 2, and 3 components at Oconee, McGuire, and Catawba Nuclear Stations.
- 3.2 To allow use of alternatives to IWE-2500(b) and Table IWE-2500-1, Examination Category E-C, IWE-5240, and IWL-2421 (approved by the NRC for use during the first containment inservice inspection interval) during the second containment inservice inspection interval.
- 3.3 To allow use of an acceptable alternative to selected requirements of 10CFR50.55a(b)(2)(ix)(H) during the second containment inservice inspection interval.

4. Description of Proposed Alternative(s)

- 4.1 In lieu of the ASME Boiler and Pressure Vessel Code, Section XI, 1992 Edition with the 1992 Addenda requirements listed in 2.1, the following alternatives are proposed for the first containment inservice inspection interval:

- 4.1.1 The first inservice inspection interval for IWL shall end on July 15, 2004.
- 4.1.2 The first inservice inspection interval for IWE shall end on July 15, 2004 and shall comply with requirements of Inspection Program B, except as follows:
 - 4.1.2.1 The 120 month schedule for successive intervals shall not be altered by more than 1 year from the 120 month pattern of intervals established on July 15, 2004.
 - 4.1.2.2 The first inspection interval shall consist of inspection periods 1 and 2 only. Period 1 may be decreased by as much as 1 year, and period 2 may be decreased or extended such that it ends no earlier than July 15, 2004 and no later than September 9, 2006. Examinations performed between July 15, 2004 and September 9, 2006 that are to be credited towards satisfying the examination requirements of period 2 of inspection interval 1 shall not be credited towards satisfying the examination requirements of period 1 of inspection interval 2.
 - 4.1.2.3 Examinations currently scheduled for Period 3 of the first inspection interval for IWE are not required to be performed.
 - 4.1.2.4 Examinations permitted to be deferred until the end of the first inspection interval in accordance with Table IWE-2500-1 shall not be deferred, and examinations shall be performed in accordance with the percentages listed in Table IWE-2412-1, Inspection Program B for periods 1 and 2.
- 4.2 In lieu of the ASME Boiler and Pressure Vessel Code, Section XI, 1998 Edition with the 1999 Addenda and the 2000 Addenda requirements listed in 2.2, the following alternatives are proposed for the second containment inservice inspection interval:

- 4.2.1 Those bolted connections required to be examined during period 3 of the first inspection interval in accordance with Table IWE-2500-1, Category E-G, Item E8.10, shall be examined using a VT-1 visual examination method during period 1 of the second inspection interval.
- 4.2.2 Metal containment supports (Personnel Airlock Barrel Supports) at Catawba and McGuire Nuclear Stations that are currently scheduled to be examined during period 3 of the first inspection interval shall be examined in accordance with IWF-2500, Table IWF-2500-1, Category F-A, Item F1.40 during period 1 of the second inspection interval.
- 4.2.3 The sequence of examinations established during periods 1 and 2 of the first inspection interval shall be repeated during periods 2 and 3 of the second inspection interval, to the extent practical.
- 4.2.4 In lieu of the requirements of IWE-2500(b) and Table IWE-2500-1, Examination Category E-C, the following alternatives are proposed for the second inspection interval:
 - 4.2.4.1 The alternative documented in Duke Energy Corporation Request for Relief Serial No. 98-GO-003, approved by the NRC for use during the first inspection interval, as documented in letter dated October 1, 1998 to Mr. M. S. Tuckman, Executive Vice President, Nuclear Generation, Duke Energy Corporation, as amended below.
 - 4.2.4.2 The alternative documented in Duke Energy Corporation Request for Relief Serial No. 98-GO-007, approved by the NRC for use during the first inspection interval, as documented in letter dated March 4, 1999 to Mr. M. S. Tuckman, Executive Vice President, Nuclear Generation, Duke Energy Corporation, as amended below.

Alternative to IWE-2500(b):

In lieu of the requirements of IWE-2500(b), the following alternative is proposed:

(1) Surface areas accessible for visual examination shall be visually examined using a VT-1 visual examination method.

(2) Surface areas accessible only from the opposite side shall be examined for wall thinning using an ultrasonic thickness measurement method in accordance with Section V, T-544.

(3) When ultrasonic thickness measurements are performed, grids not exceeding one foot square shall be used. The size and location of examination areas shall be determined by the Owner.

(4) Ultrasonic thickness measurements shall be used to determine the minimum wall thickness within each grid. The location of the minimum wall thickness shall be recorded or marked so that periodic reexamination of that location can be performed in accordance with Table 1, Examination Category E-C.

Alternative to Table IWE-2500-1, Examination Category E-C:

In lieu of the requirements of Table IWE-2500-1, Examination Category E-C, Containment Surfaces Requiring Augmented Examination, the following table (Table 1) is proposed.

TABLE 1

EXAMINATION CATEGORY E-C, CONTAINMENT SURFACES REQUIRING AUGMENTED EXAMINATION

Item No.	Parts Examined	Examination Requirements/ Fig. No.	Examination Method	Acceptance Standard	Extent and Frequency of Examination ²		Deferral of Inspection to End of Interval
					1st Inspection Interval	Successive Inspection Intervals	
E4.10	Containment Surface Areas ¹						
E4.11	Visible Surface	IWE-2500(b)	Visual, VT-1	IWE-3511.2	100% of Surface Areas Identified by IWE-1242	100% of Surface Areas Identified by IWE-1242	Not Permissible
E4.12	Surface Area Grid, Minimum Wall Thickness Locations	IWE-2500(b)	Ultrasonic Thickness Measurement	IWE-3511.3	100% of Minimum Wall Thickness Locations during each Inspection Period ^{3,4,5}	100% of Minimum Wall Thickness Locations during each Inspection Period ^{3,4,5}	Not Permissible

NOTES:

- (1) Containment surface areas requiring augmented examination are those identified in IWE-1240.
- (2) Except as permitted in Note 4, the extent of examination shall be 100% for each inspection period until the areas remain essentially unchanged for two consecutive inspection periods. Such areas no longer require augmented examination in accordance with IWE-2420(c).
- (3) Examinations need not be performed on portions of grids obstructed by structures, components, or permanent plant equipment. If more than 75% of any selected grid is obstructed, an alternate grid shall be selected at random for examination.
- (4) The following sampling plan may be used for surface areas requiring ultrasonic thickness measurement:
 - (a) Surface areas shall be divided into lots. Each lot shall consist of areas subject to similar service conditions which have caused, or could cause, accelerated degradation and aging. Grids of uniform size not exceeding one foot square shall be selected at random from within each lot. The lot size shall be equal to the total number of grids within 100% of the lot area.
 - (b) The sample size shall be defined as the number of grids within each lot to be selected for examination. The sample size shall comply with Table 1 of U. S. NRC Draft Regulatory Guide DG-1070 (September 1997) using a maximum number of defectives in sample equal to zero.
 - (c) If the minimum wall thickness within each selected grid remains essentially unchanged for two consecutive inspection periods, the lot from which the sample was drawn no longer requires augmented examination in accordance with IWE-2420(c).
- (5) If an ultrasonic thickness measurement of a selected grid within a lot reveals wall thickness loss exceeding the acceptance standard of IWE-3511.3, the entire lot shall be unacceptable, unless the remaining grids within the lot are examined and the entire lot accepted in accordance with IWE-3120.

- 4.2.5 In lieu of the requirements of IWE-5240, the alternative documented in Duke Energy Corporation Request for Relief Serial No. 00-GO-001, approved by the NRC for use during the first inspection interval (as documented in letter dated May 17, 2001 to Mr. M. S. Tuckman, Executive Vice President, Nuclear Generation, Duke Energy Corporation) is proposed for the second inspection interval.
- 4.2.6 In lieu of the requirements of IWL-2421, the alternative documented in Duke Energy Corporation Request for Relief Serial No. 98-0002 approved by the NRC for use during the first inspection interval (as documented in letter dated February 16, 1999 to Mr. W. R. McCollum, Vice President, Oconee Site, Duke Energy Corporation) is proposed for the second inspection interval at Oconee Nuclear Station, Units 1, 2, and 3.
- 4.3 In lieu of the requirement to perform a VT-3 examination of containment bolted connections that are disassembled during the scheduled performance of Item E1.11 examinations, as listed in 2.3, the following alternative is proposed for the second containment inservice inspection interval:
- The pressure retaining bolted connection visual examinations required by 10CFR50.55a(b)(2)(G) may be performed with the connection assembled and bolting in place under tension, provided the connection is not disassembled during the interval. If the bolted connection is disassembled for any reason during the interval, the examination shall be performed with the connection disassembled.

5. Justification for the Granting use of Proposed Alternative

- 5.1 The first IWE and IWL inservice inspection intervals for metal and concrete containments began on September 9, 1998 and are currently scheduled to end on September 9, 2008. These inspection intervals were established in order to implement the Expedited Examination requirements for metal and concrete containments imposed by 10CFR50.55a following September 9, 1996. Duke chose to establish new inspection intervals for IWE and IWL so that the end of the first period of the first inspection interval coincided with the end of the

Expedited Examination Period on September 9, 2001. As a result, these inspection intervals do not coincide with inspection intervals for ASME Class 1, 2, and 3 components. Because of this, different editions and addenda of Section XI are required for inservice inspection and repair/replacement activities at each site for Class 1, 2, and 3 components, and for Class MC and CC components. The proposed alternatives herein will allow closer alignment of the IWE and IWL inspection intervals to most of the inspection intervals for Class 1, 2, and 3 components at Oconee, McGuire, and Catawba Nuclear Stations. The proposed inspection interval dates for IWE and IWL will allow the use of a common edition and addenda of ASME Section XI for inservice inspection and repair/replacement activities at most units. This has distinct advantages in that there will be fewer procedures to maintain, and procedures will be meeting the requirements of one edition/addenda of the Code, instead of multiple editions/addenda. This also reduces the chance of applying incorrect ISI requirements for specific component examinations. Common procedures and documents can be used that will reduce the administrative burden of complying with ISI requirements without a reduction in the quality of the ISI Program.

Please note that IWA-2430 does not address requirements for establishing inservice inspection intervals for Subsection IWL examinations. However, Duke Energy Corporation intends to establish a 120 month inspection interval for IWL for purposes of complying with the 120 month interval update requirements of 10CFR50.55a(b)(2)(vi) and 10CFR50.55a(g)(4)(ii).

Therefore, the alternatives proposed in 4.1 and 4.2.1 through 4.2.3 will provide an equivalent level of quality and safety.

- 5.2 The justification for alternatives proposed in 4.2.4, 4.2.5, and 4.2.6 is essentially identical to that documented in the Safety Evaluation Reports attached to the letters referenced in 4.2.4, 4.2.5, and 4.2.6. The following minor changes to the previously approved alternatives have been made and should be noted:

- 5.2.1 The alternative proposed in 4.2.4 has been revised to reflect changes to applicable paragraph numbers in Subsection IWE that have changed between the 1992 Edition with the

1992 Addenda and the 1998 Edition with the 1999 Addenda and the 2000 Addenda. In addition, the extent and frequency of examinations detailed in TABLE 1 have been changed to be consistent with that provided in Subsection IWE in the 1998 Edition with the 1999 Addenda and the 2000 Addenda.

- 5.2.2 The alternative proposed in 4.2.5 is to be used in lieu of the detailed visual examination required by IWE-5240 of the ASME Boiler and Pressure Vessel Code, Section XI, 1998 Edition with the 1999 Addenda and the 2000 Addenda. During the first containment inspection interval, this alternative was approved for use in lieu of the VT-2 visual examination required by IWE-5240 of the ASME Boiler and Pressure Vessel Code, Section XI, 1992 Edition with the 1992 Addenda.

Because the alternatives referenced above are essentially identical to those previously approved by the NRC for use during the first inspection interval, these alternatives are considered acceptable for use during the second inspection interval and provide an equivalent level of quality and safety.

- 5.3 The justification for the alternative proposed in 4.3 is as follows:

The modification specified in 10CFR50.55a(b)(2)(ix)(H) to require a VT-3 visual examination of a containment bolted connection when it is disassembled during the performance of Item E1.11 examinations is to ensure that the bolted connection is given a thorough visual examination when it is disassembled. Bolted connections that are not disassembled during the inspection interval need not be disassembled solely to perform this VT-3 visual examination. However, it is not clear that 10CFR50.55a(b)(2)(ix)(H) requires the VT-3 visual examination be performed on the disassembled bolted connection if it is disassembled at times other than during the performance of Item E1.11 examinations.

The proposed alternative is acceptable because it will require that 100% of containment bolted connections receive a VT-3 visual examination each inspection interval. In addition, if any bolted connection is disassembled during the inspection interval, the VT-3 visual examination required by 10CFR50.55a(b)(2)(ix)(G)

shall be performed with the connection disassembled. Please note that Duke's maintenance procedures also contain visual examination requirements that must be met when a connection is disassembled and reassembled. In addition to the VT-3 visual examination imposed by 10CFR50.55a(b)(2)(ix)(G), bolted connections are subject to general visual examination in accordance with Table IWE-2500-1, Item E1.11 once each period, and these examinations would be performed with the bolted connection disassembled if the connection is disassembled during the scheduled Item E1.11 examinations. Therefore, the proposed alternative will result in an equivalent level of quality and safety.

6. Implementation Schedule

The proposed alternative is requested by December 15, 2003 so that IWE and IWL inservice inspection plans for the second inspection interval may be prepared prior to July 15, 2004.

Originated By: _____

Date: _____

[Handwritten Signature]
6/05/03

Approved By: _____

Date: _____

[Handwritten Signature]
6/5/03