

December 13, 2001

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SUBJECT: OCONEE NUCLEAR STATION, UNITS 1, 2 AND 3; MCGUIRE NUCLEAR STATION, UNITS 1 AND 2; AND CATAWBA NUCLEAR STATION, UNITS 1 AND 2, RE: SAFETY EVALUATION OF RELIEF REQUEST NO. 01-GO-003: IMPLEMENTATION OF SUBSECTION IWE OF ASME SECTION XI FOR CONTAINMENT INSPECTION (TAC NOS. MB3121/3122/3123, MB3174/3176 AND MB3171/3172)

Dear Mr. Tuckman:

By letter dated September 25, 2001, you submitted Relief Request 01-GO-003 which proposed alternatives to certain requirements of the American Society of Mechanical Engineers Code, Section XI, for the Oconee Nuclear Station, Units 1, 2, and 3, McGuire Nuclear Station, Units 1 and 2, and Catawba Nuclear Station, Units 1 and 2. Specifically, you proposed alternatives to the visual examination requirements for containment coatings.

The NRC staff has reviewed Relief Request Serial No. 01-GO-003 as documented in the enclosed Safety Evaluation. Based on our review, the staff concludes that your proposed alternatives will provide an acceptable level of quality and safety. Therefore, the proposed alternatives are authorized pursuant to Title 10 of the *Code of Federal Regulations*, Section 50.55.a(a)(3)(i), for use during the first 120-month containment inservice inspection interval.

Sincerely,

**/RA/**

Richard Laufer, Acting Chief, Section 1  
Project Directorate II  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

Docket Nos. 50-269, 50-270, and 50-287; 50-369 and 50-370; 50-413 and 50-414

Enclosure: As stated

cc w/encl: See next page

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ADAMS ACCESSION NUMBER: ML013470487

\*No major changes to SE.

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
OF RELIEF REQUESTS FROM ASME SECTION XI REQUIREMENTS  
FOR CONTAINMENT INSPECTION  
DUKE ENERGY CORPORATION 'S  
OCONEE NUCLEAR STATION UNITS 1, 2 AND 3  
MCGUIRE NUCLEAR STATION UNITS 1 AND 2  
CATAWBA NUCLEAR STATION UNITS 1 AND 2  
DOCKET NOS. 50-269, 50-270, & 50-287, 50-369 & 50-370, AND 50-413 & 50-414

## 1.0 INTRODUCTION

In the *Federal Register* dated August 8, 1996 (61 FR 41303), the Nuclear Regulatory Commission (NRC) amended its regulations to incorporate by reference the 1992 edition with 1992 addenda of Subsections IWE and IWL of Section XI of the ASME Boiler and Pressure Vessel Code (Code). Subsections IWE and IWL provide the requirements for inservice inspection (ISI) of Class CC (concrete containment), and Class MC (metallic containment) of light-water cooled power plants. The effective date for the amended rule was September 9, 1996, and it requires the licensees to incorporate the new requirements into their ISI plans and to complete the first containment inspection by September 9, 2001. However, a licensee may propose alternatives to or submit a request for relief from the requirements of the regulation pursuant to 10 CFR 50.55a(a)(3) and (g)(5).

By letter dated September 25, 2001 (Reference 1), Duke Energy Corporation (DEC), the licensee, proposed alternatives under the provisions of Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.55a(a)(3)(i) to the requirements of Subsection IWE of Section XI of the ASME Code (DEC Relief Request Serial No. 01-GO-003) for its Oconee Nuclear Station, Units 1, 2, and 3; McGuire Nuclear Station, Units 1 and 2; and Catawba Nuclear Station, Units 1 and 2. The proposed alternatives are requested for use during the first 120-month containment inservice inspection interval. The licensee states that this inspection interval will end September 9, 2008. The NRC's findings with respect to authorizing the alternative or denying the proposed request are discussed in this evaluation.

## 2.0 EVALUATION

### 2.1 Relief Request Serial No. 01-GO-003:

#### 2.1.1 Code Requirements:

ASME Section XI, 1992 Edition, 1992 Addenda, Subsection 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.

ASME Section XI, 1992 Edition, 1992 Addenda, Subsection IWE-2500(b) requires that when paint or coatings are to be removed, the paint or coatings shall be visually examined in accordance with Table IWE-2500-1 prior to removal.

#### 2.1.2 Requirements from Which Relief is Requested:

Relief is requested from the ASME Code, Section XI requirements in subparagraphs IWE-2200(g) and IWE-2500(b).

#### 2.1.3 Basis for Relief:

DEC interprets IWE-2200(g) to require that a preservice visual examination be performed following reapplication of paint or coating on containment metallic surfaces. The licensee states that DEC current procedure requires a VT-3 visual examination in accordance with Table IWE-2500-1, Category E-A to satisfy the Code requirement when coatings are reapplied to base metal surfaces. The licensee further states that the purpose of this examination is to document that the condition of the re-coated surface meets the acceptance standards of IWE-3500.

DEC procedures currently require a VT-3 visual examination in accordance with Table IWE-2500-1, Category E-A to satisfy the requirements of IWE-2500(b) when paint or coatings removal will result in the exposure of base metal. The purpose of this examination is to document the condition of the coated surface prior to removing coating to perform maintenance or repair/replacement activities, and to ensure that the condition of the base metal is acceptable.

DEC states that the visual examinations are performed by certified examiners, and all visual examinations are documented and maintained as QA Records as required by IWA-6210(b). DEC states that the proposed alternatives to IWE-2200(g) and IWE-2500(b) will satisfy the purposes stated above for the Code visual examination.

In addition, the proposed alternatives will have the following benefit. For Service Level II containment coating, the proposed alternative will require inspections to be performed during appropriate points in the coatings application process which will provide reasonable assurance of the quality of the coating system. These inspections are not currently required.

#### 2.1.4 Alternative Examination:

In lieu of the requirements of IWE-2200(g) and IWE-2500(b), the following alternatives are proposed by the licensee:

1. For Service Level I Coatings on the Interior Surfaces of the Metal Containments and Metallic Shell and Penetration Liners of the Concrete Containments:
  - 1.a Prior to performing coatings maintenance, the coated surface shall be evaluated if conditions exist that could indicate potential damage to, or unacceptable degradation of, the base metal.
  - 1.b Inspection of surface preparation and coatings application shall be performed in accordance with the requirements of DEC Service Level I Coating Program.
2. For Service Level II Coatings on the Exterior Surfaces of the Metal Containments and Metallic Shell and Penetration Liners of the Concrete Containments:
  - 2.a Prior to performing coatings maintenance, the coated surface shall be evaluated if conditions exist that could indicate potential damage to, or unacceptable degradation of, the base metal.
  - 2.b Inspection of surface preparation and coatings applicable shall be performed in accordance with the requirements of DEC Nuclear Coating Program, which shall be revised as necessary to incorporate requirements for these inspections commensurate with those specified for Service Level I.

#### 2.1.5 Justification for Granting Relief:

The licensee states:

U.S. Nuclear Regulatory Commission Regulatory Guide 1.54, Revision 1, Regulatory Position C.2 defines Service Level I and II protective coatings as follows:

Service Level I coating are used in areas inside the reactor containment where the coating failure could adversely affect the operation of post-accident fluid systems and thereby impair safe shutdown.

Service Level II coatings are used in areas where coatings failure could impair, but not prevent, normal operating performance. The functions of the Service Level 2 coatings are to provide corrosion protection and decontaminability in those areas outside the reactor containment that are subject to radiation exposure and radionuclide contamination. Service Level II coatings are not safety-related.

The definitions of Service Level I and II coatings described above apply to coatings used on interior surfaces (Level I) and exterior surfaces (Level II) of metal containments at McGuire and Catawba Nuclear Stations, and to metallic shell and penetration liners of concrete containments at Oconee Nuclear Station.

Requirements for surface preparation, application, and inspection of Service Level I coating at Oconee, McGuire, and Catawba Nuclear Stations are controlled by Duke Energy Corporation Nuclear Coating Program. A description of this program is documented in Duke Power's letter dated November 11, 1998, "Response to Generic Letter 98-04: Potential for Degradation of Emergency Core Cooling System and Containment Spray System After a Loss-of-Coolant Accident Because of Construction and Protective Coating Deficiencies and Foreign Material in Containment" [Reference 2].

Service Level I coatings are considered nuclear safety-related and require inspection during procurement, receipt, surface preparation, and coating application. These inspections performed by qualified and certified personnel, help to ensure that Service Level I coatings are applied in a manner that will ensure their successful performance."

Service Level II coatings are not safety-related and do not currently require inspections similar to those for Service Level I. However, the alternative addressed in Section 2.2 above will require that inspections identical to those for surface preparation and coating application for Service Level I be implemented for all Service Level II coatings applied to metal containments and metallic shell and penetration liners of concrete containments. These inspections shall be performed by personnel that are qualified and certified to the same standards as those required for Service Level I coatings.

The proposed alternative contains additional requirements to ensure that the condition of suspect areas is addressed prior to removal of coatings for maintenance or repair/replacement activities. DEC's Nuclear Coating Program shall be revised as necessary to incorporate these requirements. Evaluation of these suspect areas shall be performed by quality assurance personnel or Engineering.

Visual, VT-3 examinations performed in accordance with IWE-2200(g) after reapplication of paint or coatings can verify only that final condition of the reapplied coatings is acceptable. These examinations cannot determine whether surface preparation and application of prime and/or intermediate coatings was performed satisfactorily. These examinations alone cannot provide assurance that reapplied coatings will perform acceptably over time, nor can they determine the acceptability of the condition of the base metal beneath the reapplied coatings. An inspection performed by a qualified coatings inspector in accordance with a documented, effective inspection program can provide this assurance and provide an improved level of quality and safety of the coated containment surfaces. Our [DEC's] Nuclear Coating Program which provides this assurance for Service Level I coatings will, if modified, provide a similar level of assurance for Service Level II coatings on containment exterior surface.

#### **2.1.6 Staff Evaluation of Relief Request Serial No. 01-GO-003:**

In lieu of meeting the requirements in ASME Section XI, 1992 Edition, 1992 Addenda, subparagraph IWE-2200(g) to perform a preservice inspection of new paint or coatings, the

licensee proposes to examine the reapplied paint and coatings on the containment vessel in accordance with the DEC's Nuclear Coating Program. The licensee states that DEC's current procedure requires a VT-3 visual examination in accordance with Table IWE-2500-1, Category E-A to satisfy the Code requirement when coatings are reapplied to base metal surfaces. The licensee further states that the purpose of this examination is to document that the condition of the re-coated surface meets the acceptance standards of IWE-3500.

In addition, in lieu of meeting the requirements in ASME Section XI, 1992 Edition, 1992 Addenda, subparagraph IWE-2500(b) to perform visual examination of paint or coatings in accordance with Table IWE-2500-1 prior to removal, the licensee proposes to inspect the condition of the containment base material prior to application of new paint or coatings in accordance with the DEC's Nuclear Coating Program. The licensee states that DEC's procedure currently requires a VT-3 visual examination in accordance with Table IWE-2500-1, Category E-A to satisfy the requirements of IWE-2500(b) when paint or coatings removal will result in the exposure of base metal. The purpose of this examination is to document the condition of the coated surface prior to removing coating to perform maintenance or repair/replacement activities, and to ensure that the condition of the base metal is acceptable.

The Service Level I and II coatings as described in Regulatory Guide 1.54, Revision 1, Regulatory Position C.2 and above in Sections 2.1.4 and 2.1.5 apply to coatings used on interior surfaces (Level I) and exterior surfaces (Level II) of metal containments at McGuire and Catawba Nuclear Stations, and to metallic shell and penetration liners of concrete containments at Oconee Nuclear Station.

Service Level I coatings are considered nuclear safety-related and require inspection during procurement, receipt, surface preparation, and coating application. These inspections, performed by qualified and certified personnel, provide reasonable assurance that Service Level I coatings are applied in a manner that will ensure their successful performance.

Service Level II coatings are not safety-related and do not currently require inspections similar to those for Service Level I. However, the alternative addressed in Section 2.1.4 above will require that inspections identical to those for surface preparation and coating application for Service Level I be implemented for all Service Level II coatings applied to metal containments and metallic shell and penetration liners of concrete containments. These inspections shall be performed by personnel that are qualified and certified to the same standards as those required for Service Level I coatings.

Requirements for surface preparation, application, and inspection of Service Level I coating at Oconee, McGuire, and Catawba Nuclear Stations are controlled by DEC's Nuclear Coating Program. A description of this program is documented in Duke Power's letter dated November 11, 1998 (Reference 2).

The proposed alternative contains additional requirements to ensure that the condition of suspect areas is addressed prior to removal of coatings for maintenance or repair/replacement activities. DEC's Nuclear Coating Program which provides this assurance for Service Level I coatings will, if modified, provide a similar level of assurance for Service Level II coatings on containment exterior surface. DEC's Nuclear Coating Program shall be revised as necessary

to incorporate these requirements. Evaluation of these suspect areas shall be performed by quality assurance personnel or Engineering.

The staff finds that in SECY 96-080, the response to Comment 3.2 regarding IWE-2200(g) states, "In the NRC's opinion, this does not mean that 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."

On the basis discussed above, the staff finds that DEC's Nuclear Coating Program is adequate for the examinations of the safety-related protective coating work and will provide an acceptable level of quality and safety for protecting containment components. On this basis, the staff concludes that the alternatives proposed by the licensee to the requirements of IWE-2200(g) and IWE-2500(b) are authorized pursuant to 10 CFR 50.55a(a)(3)(i).

SUMMARY OF RELIEF REQUESTS  
OCONEE NUCLEAR STATION- UNITS 1, 2, AND 3  
MCGUIRE NUCLEAR STATION - UNITS 1 AND 2  
CATAWBA NUCLEAR STATION - UNITS 1 AND 2  
(Duke Serial No. 01-GO-003)

Relief Request No.	10CFR 50.55a - ASME Code IWE Section	Issue Identification	Recommended NRC Action	Remarks
01-GO-003	IWE-2200(g)	Preservice Examination of New Coatings	(a)(3)(i)	authorized
01-GO-003	IWE-2500(b)	Visual Examination of Paint or Coating Prior to Removal	(a)(3)(i)	authorized

### 3.0 CONCLUSION:

Based on our review of the information provided in the Relief Request Serial No. 01-GO-003, the staff concludes that the licensee's proposed alternatives will provide an acceptable level of quality and safety. Pursuant to 10 CFR 50.55.a(a)(3)(i), the staff authorizes the use of the proposed alternatives for the Oconee Nuclear Station, Units 1, 2, and 3; McGuire Nuclear Station, Units 1 and 2; and Catawba Nuclear Station, Units 1 and 2. As requested by the licensee, the proposed alternatives are authorized for use during first 120-month containment inservice inspection interval.

### 4.0 REFERENCES:

1. Letter from M. S. Tuckman of Duke Energy Corporation to NRC, "Request to use an alternative to the ASME Boiler and Pressure Vessel Code, Section XI in accordance with 10 CFR 50.55a(a)(3)(i) for Oconee Nuclear Station, Units 1, 2, and 3; McGuire Nuclear Station, Units 1 and 2; Catawba Nuclear Station, Units 1 and 2," dated September 25, 2001.

2. Duke Power's letter to NRC, "Response to NRC Generic Letter 98-04: Potential for Degradation of the Emergency Core Cooling System and the Containment Spray System After a Loss-of-Coolant-Accident Because of Construction and Protective Coating Deficiencies and Foreign Material in Containment," dated November 11, 1998.

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Date: December 13, 2001

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