August 23, 2001

Mr. H. B. Barron
Vice President, McGuire Site
Duke Energy Corporation
12700 Hagers Ferry Road
Huntersville, NC 28078-8985

SUBJECT: MCGUIRE NUCLEAR STATION, UNITS 1 AND 2, RE: RELIEF REQUEST NO. 00-001 (TAC NOS. MB2325 AND MB2326)

Dear Mr. Barron:

By letter dated April 5, 2000, as supplemented on August 8, 2001, Duke Energy Corporation (the licensee), requested that the U.S. Nuclear Regulatory Commission staff grant relief from certain requirements of the American Society of Mechanical Engineers, Boiler and Pressure Vessel Code, Section XI, for the examination of pressurizer skirt welds at McGuire Nuclear Station, Units 1 and 2.

The staff has reviewed the information provided for this relief request. The staff's evaluation and conclusion are provided in the Enclosure. Based on the information provided in the relief request, the staff concludes that your proposed alternative will provide an acceptable level of quality and safety. Therefore, the proposed alternative is authorized pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.55a(a)(3)(i) for the second inspection interval for inservice inspection at McGuire Nuclear Station, Units 1 and 2.

Sincerely,

/RA by Richard P. Correia for/

Richard L. Emch, Jr., Chief, Section 1
Project Directorate II
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-369 and 50-370

Enclosure: As stated

cc w/encl: See next page

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DATE	8/23/01	8/23/01	8/14/01	8/20/01	8/23/01

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

REQUEST FOR RELIEF 00-001 FROM ASME SECTION XI REQUIREMENTS

DUKE ENERGY CORPORATION

MCGUIRE NUCLEAR STATION, UNITS 1 AND 2

DOCKET NOS. 50-369, 50-370

1.0 INTRODUCTION

Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.55a, requires that inservice inspection (ISI) of certain 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) applicable Edition and Addenda, except where specific written relief has been granted by the U. S. Nuclear Regulatory Commission (NRC) pursuant to 10 CFR 50.55a(g)(6)(i). In 10 CFR 50.55a(a)(3), it states that alternatives to the requirements of paragraph (g) may be used, when authorized by the NRC, if (i) the proposed alternatives would provide an acceptable level of quality and safety, or (ii) compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

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. For McGuire Units 1 and 2, the applicable edition of Section XI of the ASME Code for the second ten-year ISI interval is the 1989 Edition with no addenda.

The NRC staff’s findings with respect to Duke Energy Corporation’s (DEC’s or licensee’s) proposed alternative submitted on April 5, 2000, as supplemented on August 8, 2001, is contained in this safety evaluation.

2.0 EVALUATION

2.1 LICENSEE'S EVALUATION

The Components for Which Relief is Requested:

Safety-related ASME Section XI Code Class 1 pressurizer integrally welded attachments (pressurizer support skirt to lower head, Item B08.020.001 for McGuire 1 and Item B08.020.001 for McGuire 2)

Requirement From Which Relief is Requested:

The ASME Code, Section XI, 1989 Edition, Table IWB-2500-1 Examination Category B-H, Item No. B8-20, Figure No. IWB-2500-13, requires a surface examination to the inside and outside areas of the skirt-to-pressurizer weld. The inside and outside areas of the weld are denoted as areas C-D and A-B, respectively, in DEC's request. Note 2 states "The extent of the examination includes essentially 100% of the length of the attachment weld at each attachment subject to examination."

By letter dated August 8, 2001, DEC provided clarification that the Code required surface examination of the outside (area A-B) surface of the weld will continue to be performed and that no relief is being requested from examination of the outside weld surface area.

Licensee's Basis for Requesting Relief and Justification for Granting Relief:

The licensee requests relief from the surface examination required on the inside surface area of the support skirt-to-pressurizer weld (area C-D). Surface area C-D is inaccessible for examination for the following reasons:

1. The pressurizer heater cables must be disconnected for access which, in the past, has caused a number of the termination joints and ceramic insulators to fail.

2 The maximum clearance between the inside surface of the support skirt and the outside row of the pressurizer heaters is 14 inches. This is insufficient clearance for performing the required surface examination.

3 The inside diameter of the pressurizer support skirt is a high radiation area. Personnel performing the required examination would receive a significant dose. The general area dose rate is 400 mr/hr and the contact dose rates range from 1000 to 3000 mr/hr.

Alternative Examination:

The licensee proposed, as an alternative to the surface examination required by Table IWB-2500-1 Examination Category B-H, Item No. B8-20, Figure No. IWB-2500-13, to conduct ultrasonic examination of the inner examination surface (surface area C-D) from the skirt's exterior surface. The support skirt weld surface will be scanned with two angle beams in two opposing axial directions and two opposing circumferential directions. These angle beam scans will cover the inner weld and base metal surfaces from points "C" to "D". A straight beam scan will also be performed from point "C" toward the vessel shell to the maximum extent practical.

2.2 STAFF EVALUATION

The Request for Relief No.00-001 pertains to Table IWB-2500-1 Examination Category B-H, Item No. B8-20, that requires a 100% volumetric or surface examination, for integrally welded attachments to the pressurizer as defined by Figure No. IWB-2500-13. The licensee requested relief from the Code-required surface examination for Weld 1PZR-SKIRT for Unit 1 and Weld 2PZR-SKIRT for Unit 2.

The licensee has proposed an alternative to the surface examinations required by Figure IWA-2500-13 for the support skirt-to-pressurizer circumferential welds. Instead of performing the surface examinations on both inside and outside surfaces of the weld, the licensee will perform a surface examination on the outside (accessible) surface and UT examinations of the volume adjacent to the inside surface. The alternative is necessitated by the narrow access through the skirt openings and the obstructions in the confined area inside the skirt under the bottom head. The working area inside the skirt limits maneuverability and exposes examiners to high radiation doses.

The proposed alternative is the same as the Code requirement for the attachment weld depicted in Figure IWA-2500-14. Figure IWA-2500-14 has an ideal weld profile for UT examinations. The difference between Figures IWA-2500-14 and IWA-2500-13 is the weld profile. Figure IWA-2500-13 has a non-ideal weld profile for UT examinations performed from the outside surface in search for flaws on the inside surface. The inside weld surface farthest from the outside surface cannot be directly examined with UT. However, if a flaw existed, it would have depth. The depth would be detected with a UT examination of the volume performed from the outside surface. The proposed UT examination on the volume near the inside surface of the support skirt weld provides reasonable assurance of its structural integrity. Therefore, the staff has determined that the surface examination on the outside surface and a UT examination of the volume adjacent to the inside surface will provide an acceptable level of quality and safety.

3.0 CONCLUSION

Based on the NRC staff's review of the information provided in the request for relief (Relief Request 00-001), the staff concludes that the combination of the Code-required surface examination of the outside weld surface area and the alternate ultrasonic examination of the weld from the outside surface area of the pressurizer-to-skirt weld at McGuire Units 1 and 2 will provide an acceptable level of quality and safety. Therefore, the proposed alternative is authorized for the second inservice inspection interval pursuant to 10 CFR 50.55a(a)(3)(i).

Principal Contributor: D. Naujock
R. E. Martin

Date: August 23, 2001

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