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SUBJECT: Requests relief from requirements of ASME Boiler & Pressure Vessel Code Section XI.

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**DUKE POWER**

August 4, 1995

U. S. Nuclear Regulatory Commission  
ATTENTION: Document Control Desk  
Washington, DC 20555

SUBJECT: Duke Power Company  
Request for Relief from ASME Section XI Requirements  
Duke Power Request for Relief 95-GO-003

Catawba Nuclear Station  
Docket Nos. 50-413, 414

McGuire Nuclear Station  
Docket Nos. 50-369, 370

Oconee Nuclear Station  
Docket Nos. 50-269, 270, 287

Pursuant to 10 CFR 50.55a(a)(3), Duke Power is hereby requesting relief from requirements of ASME Boiler and Pressure Vessel Code Section XI for Catawba, McGuire, and Oconee Nuclear Stations. The requested relief would allow Duke Power to use ASME Section XI, 1992 Edition with 1993 Addenda, Appendix VIII, as a basis for procedure and personnel qualification when performing ultrasonic examination of Examination Categories B-J, C-F-1, and C-F-2.

A separate request for relief addressing this matter was submitted for Oconee Unit 3 (Oconee Request for Relief No. 95-02) and approved by the NRC in a letter dated July 6, 1995.

A detailed relief request, including a background discussion, is contained in the attachment to this letter. Questions on this request may be directed to J. S. Warren at (704) 382-4986.

Very truly yours,

M. S. Tuckman

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U. S. Nuclear Regulatory Commission  
August 4, 1995  
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MST/JSW

Attachment: Duke Power Request for Relief No. 95-GO-003,  
Pages 1 through 4

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**Duke Power Company**  
**Station: Duke Power Units CNS 1&2, MNS 1&2, ONS 1&2**  
**10-YEAR INTERVAL REQUEST FOR RELIEF NO. 95-GO-003**

**Background:**

By letter dated December 15, 1994, Duke Power Company informed the NRC staff that Duke Procedure NDE-600, Revision 4, "Ultrasonic Examination of Similar Metal Welds in Wrought Ferritic and Austenitic Piping," was qualified using test specimens fabricated in accordance with ASME Section XI, 1992 Edition with 1993 Addenda, Appendix VIII, Supplements 2 and 3. Duke took exception to the requirements of ASME Section XI, 1989 Edition, Appendix III through utilization of Paragraph IWA-2240 regarding the use of alternate examination techniques. Essential variables used in the qualification were incorporated into Procedure NDE-600, Revision 5. Procedure NDE-600, Revision 5, was used during the McGuire Unit 1 and Unit 2 outages in 1994.

The NRC response to the December 15, 1994 Duke letter, dated January 27, 1995, indicated disagreement with the Duke position on use of alternative examination techniques and suggested that relief be sought in accordance with the requirements of 10 CFR 50.55a(3). Duke has since stopped using Procedure NDE-600, Revision 5, which adopted the alternative examination. Relief is requested to permit use of Procedure NDE-600, Revision 5 or later for McGuire Units 1 and 2, Catawba Units 1 and 2, and Oconee Units 1 and 2.

A separate request was submitted for Oconee Unit 3 in order that disposition be received prior to the outage which began June 8, 1995.

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

All Examination Category B-J similar metal piping welds that require volumetric examination.

All Examination Category C-F-1 and C-F-2 similar metal piping welds that require volumetric examination.

**Code Requirement from which Relief is Requested:**

ASME Section XI, 1989 Edition, Appendix III, Supplement 4 - "Austenitic and Dissimilar Metal Welds," does not specify the method or acceptance criteria to be used for a procedure qualification.

Paragraph (a). "The following welds and cast materials, because of their inherent coarse grained structure, may be subject to marked variations in attenuation, velocity, reflection and refraction at grain boundaries:

- (1) high alloy steels;
- (2) high nickel alloys;
- (3) cast pipe and fittings;
- (4) dissimilar metal welds between combinations of (1), (2), or (3) above and wrought carbon or low alloy steels."

Paragraph (c). "Qualification - In recognition of the difficulty in ultrasonic examination of the welds and materials in (a) above, it is recommended that examiners and procedures be qualified using welded samples, and simulated or actual flaws, or both, located in positions where geometry may make them more difficult to detect (e.g., the break in counterbore or adjacent to the weld root). The purpose of the examination procedure qualification is to determine that the proposed examination technique is capable of detecting the specified flaws of interest and that its capabilities and limitations will be identified."

**Basis for Relief:**

ASME Section XI, 1989 Edition, Appendix III, Supplement 4 does not specify the method or acceptance criteria to be used for a procedure qualification. ASME Section XI, 1992 Edition with 1993 Addenda, Appendix VIII, does specify the method and acceptance criteria to qualify an ultrasonic procedure. Use of Appendix VIII fulfills the recommendation of Appendix III, Supplement 4 (c) in that it requires welded samples, and actual flaws located in positions where geometry may make them more difficult to detect (e.g., the break in counterbore or adjacent to the weld root).

The Appendix VIII qualification, as administered by the Electric Power Research Institute NDE Center (EPRI) in cooperation with the Performance Demonstration Initiative (PDI), satisfies the purpose of the examination procedure qualification.

Duke Power Company Procedure NDE-600, Revision 4, "Ultrasonic Examination of Similar Metal Welds in Wrought Ferritic and Austenitic Piping" was qualified by performance demonstration at the EPRI NDE Center. Test specimens used in the qualification were ferritic and austenitic pipe welds fabricated in accordance with ASME Section XI, 1992 Edition with 1993 Addenda, Appendix VIII, Supplements 2 and 3. Duke Power Company requests relief in order to use ASME Section XI, 1992 Edition with 1993 Addenda, Appendix VIII, as a basis for procedure and personnel qualification when performing ultrasonic examination of Examination Categories B-J, C-F-1 and C-F-2.

#### **Alternate Examinations:**

Duke Power Company proposes to utilize ASME Section XI, 1992 Edition with 1993 Addenda, Appendix VIII, for alternative examination methods.

ASME Section XI, 1989 Edition, Appendix III, Supplement 4, Paragraph (c), states, in part, that "... it is recommended that examiners and procedures be qualified using welded samples...". Procedure NDE-600, Revision 4, adopted ASME Section XI, 1992 Edition with 1993 Addenda, Appendix VIII, which allows procedure and examiner qualification to be conducted using welded samples. Although not yet endorsed by the NRC, the qualification method and acceptance criteria for ultrasonic examinations contained in the 1992 Edition is generally recognized as being better than any other method currently available in the industry.

#### **Justification for Granting Relief:**

The utilization of Duke Power Company Procedure NDE-600, Revision 5 or later, "Ultrasonic Examination of Similar Metal Welds in Wrought Ferritic and Austenitic Piping" as an alternate examination will satisfy the inspection requirements of ASME,

XI, 1989 Edition. Use of Appendix VIII fulfills the recommendation of Appendix III, Supplement 4 (c), of the 1989 Code Edition of Section XI, in that it requires welded samples, and actual flaws located in positions where geometry may make them more difficult to detect (e.g., the break in counterbore or adjacent to the weld root).

The Appendix VIII qualification, as administered by EPRI in cooperation with the PDI, satisfies the purpose of the examination procedure qualification. It is equivalent to previous inspection techniques and provides for enhancement opportunities. For example, in order to qualify a procedure to examine austenitic pipe welds where access is limited to one side of the weld, the procedure must be capable of detecting flaws on the inaccessible side of the weld.

Use of Appendix VIII assures inspection results that meet or exceed Section XI Code Requirements. The proposed alternative volumetric examination will provide reasonable assurance that unallowable inservice flaws have not developed in the subject welds or that they will be detected and repaired prior to return of the reactor vessel to service. Thus, an acceptable level of quality and safety will have been achieved and public health and safety will not be endangered by allowing the proposed alternative examination.

**Implementation Schedule:**

Duke expects to implement the alternative examination for the units listed in this Request for Relief beginning October 6, 1995, with the next Catawba outage.

Evaluated By: Joe C. Shopshire Date 6/12/95

Reviewed By: Jo Barber Date 6/13/95