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PY-CEI/NRR-2534L

United States Nuclear Regulatory Commission  
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Perry Nuclear Power Plant  
Docket No. 50-440  
Revision of In-Service Examination Program Relief Request IR-046

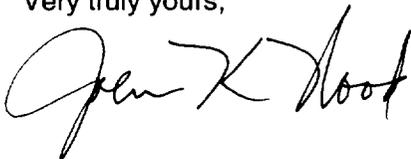
Ladies and Gentlemen:

By letter dated October 5, 2000 (PY-CEI/NRR-2518L), in accordance with 10 CFR 50.55a(a)(3)(i), several relief requests were submitted for the Perry Nuclear Power Plant In-Service Examination Program. One of those Relief Requests, IR-046, addresses requirements for flaw lengths estimated by ultrasonics. Subsequent to submitting this request, as a result of a detailed review by Electric Power Research Institute and Nuclear Regulatory Commission personnel, a discrepancy was discovered in the Final Rule that affects implementation of American Society of Mechanical Engineers Section XI, Appendix VIII, Supplement 4 requirements. This discrepancy requires revision to Relief Request IR-046.

Attachment 1 contains the revision to Relief Request IR-046. The applicable changes to IR-046 are made evident by lining through the text being deleted and bolding the text being added.

There are no regulatory commitments contained in this letter or its attachments. If you have questions or require additional information, please contact Mr. Gregory A. Dunn, Manager - Regulatory Affairs, at (440) 280-5305.

Very truly yours,



Attachment

cc: NRC Project Manager  
NRC Resident Inspector  
NRC Region III

A047

RELIEF REQUEST No. IR-046

I. Identification of Components

All ASME Section XI, Class 1, Examination Category B-A, Item no. B1.10, Shell Welds, and B1.20, Head Welds, at the Perry Nuclear Power Plant (PNPP) that are subject to Appendix VIII, Supplement 4, examination.

II. ASME B&PV Section XI Requirements

10 CFR 50.55a(g)(6)(ii)(C) was amended to require expedited implementation of Appendix VIII of Section XI, Division 1, 1995 Edition with the 1996 Addenda (Federal Register, 64 FR 51370). Appendix VIII, Supplement 4, Subparagraph 3.2(b), requires that flaw lengths estimated by ultrasonics be the true length  $-1/4$  inch,  $+1$  inch for a length sizing qualification. 10 CFR 50.55a(b)(2)(xv)(C)(1) requires a depth sizing acceptance criteria of 0.15 inch Root Mean Square (RMS) be used in lieu of the requirements of Subparagraph 3.2(b) to Supplement 4 to Appendix VIII of Section XI of the 1996 Addenda of the Code. **Subparagraph 3.2(c) contains additional requirements for statistical parameters.**

III. Relief Request

Pursuant to 10 CFR 50.55a(a)(3)(i), relief is requested to use a length sizing qualification tolerance of 0.75 inch RMS: **in lieu of subparagraph 3.2(b), and to use the RMSE calculations of 3.2(a) and 3.2(b) in lieu of the statistical parameters of 3.2(c).**

IV. Basis for Relief

On January 12, 2000, NRC staff, representatives from the Electric Power Research Institute (EPRI) Nondestructive Examination Center, and representatives from the Performance Demonstration Initiative (PDI) participated in a conference call. The discussion during the conference call included the differences between Supplement 4, "Qualification Requirements for the Clad/Basemetal Interface of Reactor Vessel," of Appendix VIII, "Performance Demonstration for Ultrasonic Examination Systems;" Paragraph 10 CFR 50.55a(b)(2)(xv)(C)(1) in the rule (Federal Register, 64 FR 51370); and the implementation of Supplement 4 by the PDI Program. Supplement 4, Subparagraph 3.2(b) imposed a flaw sizing tolerance of  $-1/4$  inch,  $+1.0$  inch of the true length to the performance demonstration qualification criteria. Paragraph 10 CFR 50.55a(b)(2)(xv)(C)(1) requires a depth sizing acceptance criteria of 0.15 inch Root Mean Square (RMS) in lieu of the requirements of Supplement 4, Subparagraph 3.2(b). The PDI program uses a length sizing tolerance of 0.75 in RMS for Supplement 4, Subparagraph 3.2(b). The NRC staff acknowledged that Paragraph 10 CFR 50.55a(b)(2)(xv)(C)(1) in the rule was an error and should actually be a length sizing tolerance of 0.75 inch RMS, the same tolerance that was being implemented by the PDI program.

United States nuclear utilities created the PDI to implement demonstration requirements contained in Appendix VIII. PDI developed a performance demonstration program for qualifying ultrasonic testing techniques.

In 1995, the NRC staff performed an assessment of the PDI program and reported that PDI was using a length sizing tolerance of 0.75 inch RMS for reactor pressure vessel performance demonstrations. This criterion was introduced to reduce testmanship (passing the test based on manipulation of results rather than skill):

**In a public meeting on October 11, 2000 at NRC offices in White Flint, MD, the PDI identified the discrepancy between the Subparagraph 3.2(c) and the PDI program. The NRC agrees that Paragraph 10 CFR 50.55a(b)(2)(xv)(C)(1) should have excluded Subparagraph 3.2(c) as a requirement.**

The NRC staff noted in their assessment report, dated March 6, 1996, that the length sizing tolerance was not according to Appendix VIII, but the report did not take exception to PDI's implementation of the 0.75 inch RMS length sizing tolerance. The NRC staff requested that the length sizing difference between PDI and the Code be resolved.

Resolution of the differences between the PDI program and the Code was provided through PDI's participation in development of a Code case that reflected PDI's program. The Code case was presented to ASME for discussion and consensus building. NRC representatives participated in this process. ASME approved the Code case and published it as Code Case N-622, "Ultrasonic Examination of RPV and Piping, Bolts and Studs, Section XI, Division 1."

Operating in parallel with the actions of PDI, the NRC staff incorporated most of Code Case N-622 criteria in the rule published in the Federal Register, 64 FR 51370. **Appendix IV to Code Case N-622 contains the proposed alternative sizing criteria, which has been authorized by the staff. The staff agrees that the omission of the length sizing tolerance of 0.75 inch RMS in the rule and the inclusion of the statistical parameters of Paragraph 3.2(c) of Supplement 4 to Appendix VIII was an oversight.** ~~In a conference call on January 12, 2000, PDI identified the omission of the length sizing tolerance in Paragraph 10 CFR 50.55a(b)(2)(xv)(C)(1) of the rule. The staff agreed that the omission of the length sizing tolerance 0.75 inch RMS in the rule was an oversight, and the inclusion of depth sizing tolerance to Paragraph 3.2(b) of Supplement 4 to Appendix VIII was an error. The NRC staff will correct the error in an upcoming rule.~~

V. Alternative Examination(s)

In lieu of the length sizing requirements of ASME Section XI, 1995 Edition, 1996 Addenda, Appendix VIII, Supplement 4, Subparagraph 3.2(b), a length sizing qualification tolerance of 0.75 inch RMS will be used. **The RMSE calculation will be used in lieu of Subparagraph 3.2(c).**

VI. Implementation Schedule

This relief request is intended to be utilized in PNPP's next refueling outage (Refuel Outage 8) through the remainder of PNPP's second 10-Year inspection interval (November 18, 1998 – November 17, 2008).

References:

1. NRC Assessment of the PDI Program, Jack R. Strosnider, Chief Materials and Chemical Engineering Branch, to Bruce J. Sheffel, Chairman, PDI, March 6, 1996, Table 2, Item 94-005, p34.
2. Meeting Summary, Teleconference between NRC and representatives from PDI, D. G. Naujock, Metallurgist, NDE & Metallurgy Section, to Edmund J. Sullivan, Chief NDE & Metallurgy Section, Chemical Engineering Branch, Division of Engineering, U.S. NRC, March 6, 2000.
3. **NRC staff's letter to Mr. T. F. Plunkett, Florida Power and Light Company, dated September 23, 1999.**