October 17, 2001

Mr. J. A. Stall
Senior Vice President, Nuclear and
Chief Nuclear Officer
Florida Power and Light Company
P.O. Box 14000
Juno Beach, Florida 33408-0420

SUBJECT: REQUEST FOR RELIEF NO. 24 FOR THE THIRD 10-YEAR INTERVAL OF THE INSERVICE INSPECTION PROGRAM - TURKEY POINT PLANT, UNITS 3 AND 4 (TAC NOS. MB2182 AND MB2183)

Dear Mr. Stall:

By letter dated June 11, 2001, Florida Power and Light Company submitted a Request for Relief No. 24 (RR-24) to use an alternative flaw length sizing qualification criterion. The alternative criterion is 0.75 inch root mean square (RMS) error in lieu of the length sizing requirements of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code, Section XI, 1995 Edition with the1996 Addenda. The Code requires the use of the RMS error calculations of 3.2(a) and 3.2(b), in lieu of the statistical parameters of 3.2(c), Appendix VIII, Supplement 4, Subparagraph 3.2(b). Based on the enclosed safety evaluation, the U.S. Nuclear Regulatory Commission staff finds that RR No-24 is acceptable because the proposed alternative provides an acceptable level of quality and safety. Therefore, pursuant to Title 10, *Code of Federal Regulations*, Section 50.55a(a)(3)(i), the requested relief is authorized for the third inservice inspection interval for Turkey Point Units 3 and 4.

This completes the staff's actions regarding TAC Nos. MB2182 and MB2183. If you have any comments on this matter, please contact the Turkey Point Project Manager, Kahtan Jabbour, at 301-415-1496.

Sincerely,

/RA/
Richard P. Correia, Chief, Section 2
Project Directorate II
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-250 and 50-251

Enclosure: Safety Evaluation

cc w/encl: See next page

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DATE	10/17/2001	10/17/2001	10/17/2001	10/03/2001

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

THIRD 10-YEAR INSERVICE INSPECTION INTERVAL

REQUEST FOR RELIEF NO. 24

FLORIDA POWER AND LIGHT COMPANY

TURKEY POINT, UNITS 3 AND 4

DOCKET NOS. 50-250 AND 50-251

1.0 INTRODUCTION

The inservice inspection (ISI) of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (Code) Class 1, Class 2, and Class 3 components is to be performed in accordance with Section XI of the ASME Code and applicable edition and addenda as required by Title 10, *Code of Federal Regulations* (10 CFR), Section 50.55a(g), except where specific written relief has been granted by the Commission pursuant to 10 CFR 50.55a(g)(6)(i). It is stated in 10 CFR 50.55a(a)(3) in part that alternatives to the requirements of paragraph (g) may be used, when authorized by the U.S. Nuclear Regulatory Commission (NRC), if the licensee demonstrates that: (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) will 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. The inservice inspection Code of record for Turkey Point Units 3 and 4 for the third 10-year ISI interval is the 1995 Edition with the 1996 Addenda of Section XI of the ASME Boiler and Pressure Vessel Code.

By letter dated June 11, 2001, Florida Power and Light Company (FPL, the licensee) requested relief to use an alternative flaw length sizing qualification criterion of 0.75 inch root mean square (RMS) error, in lieu of the length sizing requirements of the ASME Section XI, 1995 Edition with the1996 Addenda, Appendix VIII, Supplement 4, Subparagraph 3.2(b) and to use the RMS error calculations of 3.2(a) and 3.2(b), in lieu of the statistical parameters of 3.2(c).

2.0 ISI-14, APPENDIX VIII, SUPPLEMENT 4, DEPTH SIZING QUALIFICATION TOLERANCE

2.1 Code Requirements for Which Relief is Requested

The licensee is requesting relief from the 1995 Edition with 1996 Addenda, Appendix VIII to Section XI of the ASME Code, Supplement 4, Subparagraphs 3.2(b) and 3.2(c).

2.2 Licensee's Proposed Alternative to Code

Pursuant to 10 CFR 50.55a(a)(3)(i), the licensee proposed using a length sizing qualification criterion of 0.75 inch RMS error in lieu of Appendix VIII, Supplement 4, Subparagraph 3.2(b), and to use the RMS values of 10 CFR 50.55a(b)(2)(xv)(C)(1) which modifies the depth sizing criterion of Appendix VIII, Supplement 4, Subparagraphs 3.2(a) and 3.2(b), in lieu of Subparagraph 3.2(c). The request is for the third 10-year ISI interval for Turkey Point Units 3 and 4.

2.3 Evaluation

Section 50.55a(g)(6)(ii)(C) of 10 CFR imposes implementation of Appendix VIII to the 1995 Edition with 1996 Addenda of Section XI of the Code. The imposed implementation schedule for Supplement 4 to Appendix VIII was November 22, 2000. Supplement 4, Subparagraph 3.2(a) states that no flaw is undersized for depth by more than 0.2 inches, while Subparagraph 3.2(b) states that length sizing qualification criterion requires that flaw lengths estimated by ultrasonic testing (UT) be the true length - 1/4 inch +1 inch. However, 10 CFR 50.55a(b)(2)(xv)(C)(1) modifies the length sizing qualification criterion to a depth sizing acceptance criterion of 0.15 inch RMS and specifies that this be used in lieu of the requirements of Subparagraph 3.2(b).

Supplement 4, Subparagraph 3.2(c), requires that the UT performance demonstration results be plotted on a two-dimensional plot with the measured depth plotted along the ordinate axis and the true depth plotted along the abscissa axis. For qualification, the plot must satisfy the following statistical parameters: (1) slope of the linear regression line is not less than 0.7; (2) the mean deviation of flaw depth is less than 0.25 inches; and (3) correlation coefficient is not less than 0.70.

The U.S. nuclear utilities created the Performance Demonstration Initiative (PDI) to implement performance demonstration requirements contained in Appendix VIII of Section XI of the Code. To this end, PDI has developed a performance demonstration program for qualifying UT equipment, procedures, and personnel. During the development of the performance demonstration for Supplement 4, PDI determined that the Code criteria for flaw sizing was unworkable. The length sizing tolerance of -¼ inch +1.0 inch in Supplement 4, Subparagraph 3.2(b) encouraged examiners to bias their results on the plus side. To discourage testmanship (passing the test based on manipulation of results rather than skill), PDI adopted a length sizing tolerance of 0.75 inch RMS which has been in use since 1994. As early as 1995, the staff has recognized and accepted PDI's use of 0.75 inch RMS for length sizing. PDI formalized their use of 0.75 inch RMS as the criterion for Supplement 4, Subparagraph 3.2(b) in Code Case N-622, "Ultrasonic Examination of RPV and Piping and Bolts and Studs, Section XI, Division 1." The NRC representatives to ASME Code meetings participated in the process leading up to the publishing of Code Case N-622.

The NRC staff intended to formalize the acceptability of the 0.75 inch RMS length sizing criterion in 10 CFR 50.55a(b)(2)(xv)(C)(1), but mistakenly published the value of 0.15 inch RMS for depth sizing tolerance in place of the existing length sizing tolerance. The omission of the length sizing tolerance of 0.75 inch RMS in the rule was an oversight, and the inclusion of the depth sizing tolerance in Subparagraph 3.2(b) was an error. On March 26, 2001, the NRC published in the *Federal Register* (66 FR 16390) a rule change to 10 CFR 50.55a(b)(2)(xv)(C)(1), which corrected this administrative error with the length sizing criterion. Therefore, the relief sought with respect to Supplement 4, Subparagraph 3.2(b) is no longer required.

In the second part of the alternative, the licensee proposed eliminating the use of Supplement 4, Subparagraph 3.2(c) which imposes three statistical parameters for depth sizing. The first parameter, 3.2(c)(1), pertains to the slope of a linear regression line. The linear regression line is the difference between actual versus true value plotted along a through-wall thickness. For Supplement 4, performance demonstrations, a linear regression line of the data is not applicable because the performance demonstrations are performed on test specimens with flaws located in the inner 15% through-wall. The differences between actual versus true value produce a tight grouping of results which resemble a shotgun pattern. The slope of a regression line from such data is extremely sensitive to small variations, thus making the parameter of Subparagraph 3.2(c)(1) a poor and inappropriate, acceptance criterion. The second parameter, 3.2(c)(2), pertains to the mean deviation of flaw depth. The value used in the code is too lax with respect to evaluating flaw depths within the inner 15% of wall thickness. Therefore, the licensee proposed to use the more appropriate criterion of 0.15 inch RMS of 10 CFR 50.55a(b)(2)(xv)(C)(1), which modifies Subparagraph 3.2(a), as the acceptance criterion. The third parameter, 3.2(c)(3), pertains to a correlation coefficient. The value of the correlation coefficient in Subparagraph 3.2(c)(3) is inappropriate for this application since it is based on the linear regression from Subparagraph 3.2(c)(1).

PDI was aware of the inappropriateness of Subparagraph 3.2(c) early in the development of their program. They brought the issue before the appropriate ASME committee which formalized eliminating the use of Supplement 4, Subparagraph 3.2(c) in Code Case N-622. The NRC staff representatives participated in the discussions and consensus process of the code case. Based on the above, the NRC staff has determined that the use of Subparagraph 3.2(c) requirements, in this context, is inappropriate and that the proposed alternative to use the RMS value of 10 CFR 50.55a(b)(2)(xv)(C)(1), specifically 0.15 inch RMS, which modifies the criterion of Appendix VIII, Supplement 4, Subparagraph 3.2(a), in lieu of Subparagraph 3.2(c), will provide an acceptable level of quality and safety.

3.0 CONCLUSION

Based on the discussion above, the staff concludes that the proposed alternative to use the RMS value of 10 CFR 50.55a(b)(2)(xv)(C)(1), which modifies the depth sizing criterion of Appendix VIII, Supplement 4, Subparagraph 3.2(a), in lieu of Subparagraph 3.2(c) provides an acceptable level of quality and safety. Therefore, pursuant to 10 CFR 50.55a(a)(3)(i), relief request No. 24 is authorized for the third ISI interval for Turkey Point Units 3 and 4.

Principal Contributor: Meena K. Khanna

Date: October 17, 2001

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Florida Power and Light Company

TURKEY POINT PLANT

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