

April 11, 2000

Mr. T. F. Plunkett
President - Nuclear Division
Florida Power and Light Company
P.O. Box 14000
Juno Beach, Florida 33408-0420

SUBJECT: ST. LUCIE PLANT, UNIT 2 - RELIEF FROM ASME CODE REQUIREMENTS
RELATED TO THE INSERVICE INSPECTION PROGRAM SECOND 10-YEAR
INTERVAL (TAC NO. MA8375)

Dear Mr. Plunkett:

By letter dated March 6, 2000, the Florida Power and Light Company (FPL) submitted Request for Relief No. 27 from the testing and examination requirements of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (the Code), Section XI for the St. Lucie Plant, Unit 2. FPL proposed an alternative to the Code-required surface examination of the reactor pressure vessel (RPV) closure head nuts as specified in Table IWB-2500-1 of the 1989 edition of ASME Section XI. As an alternative, FPL proposed to perform a visual VT-1 examination of the RPV nuts.

The U.S. Nuclear Regulatory Commission staff has reviewed the FPL relief request and the proposed alternative visual examination of the RPV closure nuts. Our evaluation is enclosed. We find that the proposed alternative examination provides an acceptable level of quality and safety in lieu of the required ASME Section XI surface examination. Therefore, pursuant to Title 10, *Code of Federal Regulations*, Section 50.55a(a)(3)(i), FPL's proposed alternative examination is authorized.

Sincerely,

/RA/

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

Docket No. 50-389

Enclosure: Safety Evaluation

cc w/enclosure: See next page.

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
OF THE SECOND TEN-YEAR INTERVAL INSERVICE INSPECTION
REQUEST FOR RELIEF NO. 27
FOR
FLORIDA POWER AND LIGHT COMPANY
ST. LUCIE PLANT, UNIT 2
DOCKET NO. 50-389

1.0 INTRODUCTION

Inservice inspection (ISI) of the American Society of Mechanical Engineers (ASME) Code Class 1, 2, and 3 components is performed in accordance with Section XI of the ASME Boiler and Pressure Vessel (B&PV) Code and applicable 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) that alternatives to the requirements of paragraph (g) may be used, when authorized by the U.S. Nuclear Regulatory Commission, 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 pre-service 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 Code of record for the St. Lucie Plant, Unit 2, second 10-year ISI interval is the 1989 Edition of Section XI of the ASME B&PV Code.

Enclosure

2.0 EVALUATION

By letter dated March 6, 2000, Florida Power and Light (the licensee) submitted Second 10-Year Interval ISI Inspection Program Plan Request for Relief No. 27 for the St. Lucie, Plant Unit 2.

The information provided by the licensee in support of its alternative to the Code requirements has been evaluated and the basis for disposition is documented below.

ISI Relief Request No. 27

ASME Code, Section XI, Table IWB-2500-1, Examination Category B-G-1, Item B6.10, requires 100% surface examination of all RPV closure head nuts. Pursuant to 10 CFR 50.55a(a)(3)(i), the licensee proposed an alternative to the requirements of the Code for the reactor pressure vessel (RPV) closure head nuts. The licensee stated:

FPL will perform a visual VT-1 on the RPV Closure Head Nuts. The IWB-3517 acceptance criteria of the 1989 Edition of Section XI will be used for evaluation of indications.

The Code requires surface examination of the RPV closure head nuts. As an alternative to the Code requirements, the licensee proposed to perform a VT-1 visual examination of the RPV closure head nuts. Review of the examination requirements for Examination Category B-G-1, indicates that with the exception of the RPV closure head nuts and the closure studs (when removed), all other items in this Examination Category require VT-1 visual examinations or volumetric examinations (as applicable). Typical relevant conditions that would require corrective action prior to putting closure head nuts back into service would include corrosion, deformed or sheared threads, deformation, and degradation mechanisms (i.e., boric acid attack). Surface examination procedures are typically qualified for the detection of linear type flaws (cracks) with corresponding acceptance criteria for rejectable linear flaw lengths only. When performing surface examinations in accordance with the 1989 Edition of the Code, Item B6.10, the surface examination acceptance criteria is not provided, as it was in the course of preparation. Without clearly defined acceptance criteria, relevant conditions that require corrective measures may not be adequately addressed.

The 1989 Edition of Section XI, Article IWB-3000, Acceptance Standards, IWB-3517.1, Visual Examination, VT-1, describes relevant conditions that require corrective action prior to continued service of bolting and associated nuts. Included for corrective action in IWB-3517.1 is the requirement to compare crack-like flaws to the flaw standards of IWB-3515 for acceptance. Surface examination acceptance criteria are typically limited to linear type flaws (i.e. cracking, aligned pitting and corrosion). Because the VT-1 visual examination acceptance criteria include the requirement for evaluation of crack-like indications and other relevant conditions requiring corrective action such as deformed or sheared threads, localized corrosion, deformation of part, and other degradation mechanisms, it is concluded that the VT-1 visual examination provides a more comprehensive assessment of the condition of the closure head nut. The staff determined that a VT-1 visual examination provides an acceptable level of quality and safety. In addition, the 1989 Addenda of Section XI changes the requirement for the subject reactor pressure vessel closure head nuts from surface examination to VT-1 visual examination and provides appropriate acceptance criteria.

Therefore, the licensee's proposed alternative to perform VT-1 visual examinations provides an acceptable level of quality and safety, and is authorized pursuant to 10 CFR 50.55a(a)(3)(i).

3.0 CONCLUSION

The staff has reviewed and evaluated the licensee's submittal, and has concluded that the alternative examination provides an acceptable level of quality and safety. Therefore, pursuant to 10 CFR 50.55a(a)(3)(i), the licensee's proposed alternative examination contained in Request for Relief No. 27 is authorized.

Principal Contributor: Leonard A. Wiens

Date: April 11, 2000

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ST. LUCIE PLANT

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