April 21, 2003

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: SAINT LUCIE NUCLEAR PLANT, UNIT 2 - RELIEF REQUEST NO. 35 REGARDING EARLY USE OF ASME CODE CASE N-533-1 FOR SECOND 10-YEAR INSERVICE INSPECTION INTERVAL (TAC NO. MB7315)

Dear Mr. Stall:

By letter dated January 23, 2003, Florida Power and Light Company (the licensee) submitted Relief Request (RR) 35 for Saint Lucie Unit 2 (STL2), requesting relief from the visual test requirements for insulated pressure-retaining bolted connections set forth in the American Society of Mechanical Engineers (ASME) Code, Section XI, Article IWA-5242(a). In accordance with Title 10 of the *Code Federal Regulation* (10 CFR) Section 50.55a (Footnote 6) and 10 CFR 50.55a(a)(3)(i), the request proposed to implement ASME Code Case N-533-1, "Alternative Requirements for VT-2 Visual Examination of Class 1, 2, and 3 Insulated Pressure Retaining Bolted Connections," as an alternative to the ASME Code, Section XI, Article IWA-5242(a). In addition to the code case requirements, the licensee proposed using a 4-hour hold time prior to inspection of insulated piping.

The U.S. Nuclear Regulatory Commission (NRC) staff has reviewed the licensee's proposed alternative and has concluded that the use of Code Case N-533-1, including the use of a 4-hour hold time, provides an acceptable level of quality and safety for examination of the bolted connections of Class 1, 2, and 3 systems borated for controlling reactivity during pressure tests as prescribed by Section XI, Article IWA-5242(a). Therefore, pursuant to 10 CFR 50.55a(a)(3)(i), use of the code case is authorized until such time as Code Case N-533-1 is published in a future revision of Regulatory Guide 1.147, "Inservice Inspection Code Case Acceptability, ASME Section XI, Division 1." At that time, if the licensee intends to continue implementing this code case, it must follow all provisions of Code Case N-533-1 with limitations or conditions specified in RG 1.147, if any. This authorization is for the remainder of the second 10-year inservice inspection interval at STL2, which began August 8, 1993, and ends August 7, 2003.

Further details on the bases for the NRC staff's conclusions are contained in the enclosed safety evaluation. If you have any questions regarding this issue, please contact Eva Brown at (301) 415-2315 or Brendan Moroney at (301) 415-3974.

Sincerely,

/RA by M.Marshall Acting for/

Allen G. Howe, Chief, Section 2
Project Directorate II
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-389

Enclosure: Safety Evaluation

cc: See next page

Further details on the bases for the NRC staff's conclusions are contained in the enclosed safety evaluation. If you have any questions regarding this issue, please contact Eva Brown at (301) 415-2315 or Brendan Moroney at (301) 415-3974.

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

INSERVICE INSPECTION PROGRAM

RELIEF REQUEST NO. 35

FLORIDA POWER AND LIGHT

SAINT LUCIE NUCLEAR PLANT, UNIT 2

DOCKET NO. 50-389

1.0 INTRODUCTION

By a letter dated January 23, 2003, Florida Power and Light Company (FPL, the licensee) submitted Relief Request (RR) 35 for Saint Lucie Unit 2 (STL2). The licensee requested relief from the visual test requirements (i.e., VT-2 visual examination) of pressure-retaining bolted connections set forth in American Society of Mechanical Engineers (ASME) Code (Code), Section XI, Article IWA-5242(a), pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.55a(a)(3)(i) and proposed alternative VT-2 visual examination requirements which have not been authorized by the U.S. Nuclear Regulatory Commission (NRC) staff. FPL proposed to use Code Case N-533-1 dated February 26, 1999, entitled "Alternative Requirements for VT-2 Visual Examination of Class 1, 2, and 3 Insulated Pressure Retaining Bolted Connections" as an alternative to the IWA-5242(a) requirements. Code Case N-533-1 provides alternative criteria for the inspection of ASME Class 1, 2, and 3 systems borated for the purpose of controlling reactivity. The subject RR is for the remainder of the second 10-year inservice inspection (ISI) interval at STL2, which began August 8, 1993, and ends August 7, 2003.

2.0 REGULATORY EVALUATION

As stated in 10 CFR 50.55a(a)(3), alternatives to the requirements of paragraph (g) of this section 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 of this section 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 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 Code, Section XI, "Rules for ISI 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 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 applicable Code of record for the second 10-year ISI interval for STL2 is the 1989 Edition of the Code, Section XI, no addenda.

3.0 TECHNICAL EVALUATION

By a letter dated January 23, 2003, the licensee requested approval to use an alternative VT-2 examination method as prescribed within the guidelines of the ASME Code Case N-533-1, "Alternative Requirements for VT-2 Visual Examination of Class 1, 2, and 3 Insulated Pressure Retaining Bolted Connections."

3.1 RELIEF REQUEST NO. 35, USE OF ASME CODE CASE N-533-1

3.1.1 Component Identification

STL2, Insulated Pressure Retaining Bolted Connections of Class 1, 2, and 3 Systems

3.1.2 Code Requirements for which Relief is Requested

ASME Code Section XI, 1989 Edition with no addenda, Article IWA-5242(a), requires that for systems borated for controlling reactivity, insulation shall be removed from pressure retaining bolted connections during system pressure tests.

3.1.3 Licensee's Proposed Alternative to Code

Pursuant to 10 CFR 50.55a(a)(3)(i), FPL requested an alternative to the Code required VT-2 visual examination requirements for bolted connections set forth in IWA-5242(a). FPL indicated their intent to utilize the alternative requirements of ASME Code Case N-533-1, "Alternative Requirements for VT-2 Visual Examination of Class 1, 2, and 3 Insulated Pressure-Retaining Bolted Connections, Section XI, Division 1."

Since system pressure tests are typically conducted at elevated temperatures and pressures, performance of the examinations in accordance with IWA-5242(a) involves physical challenges and concerns for personnel safety. Code Case N-533-1 provides the following alternatives to the IWA-5242(a) requirement for removing insulation from Class 1, 2 and 3 pressure-retaining bolted connections to perform a VT-2 visual examination:

(a) A system pressure test and VT-2 visual examination shall be performed each refueling outage for Class 1 connections and each period for Class 2 and 3 connections without removal of insulation.

(b) The insulation shall be removed from the bolted connection, each refueling outage for Class 1 connections and each period for Classes 2 and 3 connections, and a VT-2 visual examination shall be performed. The connection is not required to be pressurized. Any evidence of leakage shall be evaluated in accordance with IWA-5250.

FPL has proposed to perform VT-2 visual examinations in accordance with Code Case N-533-1. Also, in addition to the requirements of paragraph (a) of Code Case N-533-1, FPL stated that the system pressure test and VT-2 visual examination with the insulation installed on bolted joints at normal operating pressure and temperature would include a 4-hour hold time, as required.

3.1.4 Licensee's Basis for Relief

The licensee stated that the proposed alternative provides and acceptable level of quality and safety, and permits the Section XI examinations to be performed while components are at safe operating pressures and temperatures.

The licensee stated that ambient conditions during the installation of insulation after VT-2 visual examinations at normal operating pressure and normal operating temperature (NOP/NOT) require heat stress work restrictions. Containment entries at NOP/NOT are physically demanding on personnel due to the adverse heat environment. Stay times for personnel in many areas are less than 1 hour and would require multiple containment entries to complete the examination activities. Ambient temperatures range from 95 to 120 degrees Fahrenheit (°F).

Reinstalling contaminated insulating material under adverse conditions (i.e., to piping that is at 2250 pounds per square inch gauge and greater than 500°F) would negatively impact total personnel contamination and expose personnel to unnecessary safety risk. Additionally, increased dose would be accumulated due to reduced examination efficiency as a result of the necessity to wear special protective equipment (e.g., ice vests).

The licensee also indicated that added physical and heat stress limitations would be placed on personnel when the plant is in Mode 3, with the equipment hatch secured. In Mode 3, the removal of scaffolding from containment would be through the reactor containment building personnel hatch instead of the equipment hatch, causing additional difficulty.

Further, the licensee stated, in accordance with Code Case N-533-1, that examinations for evidence of bolt degradation and leakage will be performed by having examiners look for boric acid residue, which accumulates around leakage sites. These examinations will be performed while components are at safe operating pressures and temperatures providing the required acceptable level of quality and safety and will, therefore, meet the intent of Section XI, IWA-5240.

The submittal indicates that should Code Case N-533-1 be referenced in a future revision of Regulatory Guide (RG) 1.147, FPL would implement any limitations stated in the RG.

3.1.5 Evaluation

Code Case N-533-1 was approved for use by ASME on February 26, 1999, as an alternative to the Code requirements of IWA-5242(a). The Code Case determined that evaluations and repairs could be performed without the need to bring the plant to a cold shutdown condition since the VT-2 visual examinations are normally performed at normal operating pressure and temperature during startup. The approach includes a system pressure test and a VT-2 visual examination, which will be performed during each outage for Class 1 systems and during each

period for Class 2 and 3 systems. The licensee has indicated that, in addition to the code case provisions, it will utilize a 4-hour hold time for the system pressure test, and that the 4-hour hold time should allow any leakage to penetrate the insulation and provide a means of detecting any significant leakage with the insulation in place.

The NRC staff reviewed Code Case N-533-1 to determine whether the alternative proposed to ensure the leak-tight integrity of systems borated for the purpose of controlling reactivity was acceptable. The approach would include a system pressure test and a VT-2 visual examination, which would be performed each period for Class 2 and 3 systems and each refueling outage for Class 1 systems. By removing the insulation each refueling outage for Class 1 systems and each inspection period for Class 2 and 3 systems, the licensee should be able to detect minor leakage indicated by the presence of boric acid crystals or residue. The NRC staff finds the utilization of a minimum 4-hour hold time for the system pressure test should provide an adequate means of detecting any significant leakage with the insulation in place. Additionally, this two-step approach should provide reasonable assurance of integrity for the pressure-retaining bolted connections in Class 1, 2 and 3 systems.

Based on the above discussion, the NRC staff has determined that the alternative proposed in Code Case N-533-1, plus the licensee's proposed use of a 4-hour hold time, provides an acceptable level of quality and safety for examination of the bolted connections on systems borated for controlling reactivity during system pressure tests, as prescribed by Section XI, Article IWA 5242(a), and satisfies the criteria of 10 CFR 50.55a(a)(3)(i).

4.0 CONCLUSION

Based on the above, the licensee's proposed alternative is authorized pursuant to 10 CFR 50.55a(a)(3)(i) until such time as Code Case N-533-1 is referenced in a future revision of RG 1.147, "Inservice Inspection Code Case Acceptability, ASME Section XI, Division 1." At that time, if the licensee wishes to continue implementing the code case, it must follow all provisions of Code Case N-533-1 with limitations and conditions specified in the RG, if any. This authorization is for the remainder of the second 10-year ISI interval at STL2, which began August 8, 1993, and ends August 7, 2003. All other ASME Code, Section XI requirements for which relief was not specifically requested and approved in this relief request remain applicable, including third-party review by the Authorized Nuclear Inservice Inspector.

Principal Contributor: Eric G. Reichelt, NRR

Date: April 21, 2003