May 29, 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 - SAFETY EVALUATION FOR RELIEF REQUEST NO. 37 REGARDING RADIOGRAPHIC INSPECTION OF INTAKE COOLING WATER SYSTEM PIPING (TAC NO. MB8732)

Dear Mr. Stall:

By a letter dated May 1, 2003, as supplemented in a letter dated May 4, 2003, Florida Power and Light Company, et al. (the licensee) submitted Relief Request 37 for Saint Lucie Unit 2, requesting relief from the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (Code), 1989 Edition, Section XI, Article IWD-4000, Paragraph IWD-4100, which would require radiographic examination of sections of the Intake Cooling Water System piping following weld repair. Pursuant to Title 10 of the *Code Federal Regulation* (10 CFR) Section 50.55a(a)(3)(i), the licensee proposed an alternative inspection in accordance with the Code, Section XI, 2001 Edition, paragraph IWA-4520(a)(1).

The U.S. Nuclear Regulatory Commission (NRC) staff has reviewed the licensee's proposed alternative and has concluded that it provides an acceptable level of quality and safety. Therefore, pursuant to 10 CFR 50.55a(a)(3)(i), the proposed alternative is authorized for the remainder of the second 10-year Inservice Inspection interval at Saint Lucie Unit 2, which ends on 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 feel free to contact Brendan Moroney at (301) 415-3974.

Sincerely,

/RA/

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

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

INSERVICE INSPECTION PROGRAM

RELIEF REQUEST NO. 37

FLORIDA POWER AND LIGHT COMPANY, ET AL.

SAINT LUCIE NUCLEAR PLANT, UNIT 2

DOCKET NO. 50-389

1.0 INTRODUCTION

By a letter dated May 1, 2003, as supplemented in a letter dated May 4, 2003, Florida Power and Light Company, et al. (FPL, the licensee) submitted Relief Request (RR) 37 for Saint Lucie (St. Lucie) Unit 2, requesting relief from the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel (B&PV) Code (Code), 1989 Edition, Section XI, Article IWD-4000, Paragraph IWD-4100. The ASME Code requires radiographic examination of sections of the Intake Cooling Water (ICW) System piping following weld repair.

Pursuant to Title 10 of the *Code Federal Regulation* (10 CFR) Section 50.55a(a)(3)(i), the licensee has proposed an alternative inspection in accordance with the Code, Section XI, 2001 Edition, paragraph IWA-4520(a)(1). Specifically, the proposed alternative will allow the licensee to perform a final surface examination in lieu of a radiographic examination, regardless of the surface area of the weld repair, for Class 3 lined steel piping in the ICW System. When the repair does not penetrate through the piping, the repair excavation area will receive a surface examination prior to welding. Where the repair penetrates through the piping, the root pass of the repair weld will receive a surface examination consistent with the guidance contained in Regulatory Guide 1.147 and ASME Code Case N-416-1.

2.0 REGULATORY EVALUATION

In accordance with 10 CFR Section 50.55a(a)(3), alternatives to the requirements of 10 CFR 50.55a(g) may be used, when authorized by the NRC, if (i) the proposed alternatives would provide an acceptable level of quality and safety, and (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.

In accordance with 10 CFR 50.55a(g), inservice inspection of nuclear power plant components shall be performed in accordance with the requirements of ASME Code, Section XI, except where specific written relief has been granted by the U.S. Nuclear Regulatory Commission (NRC) pursuant to 10 CFR 50.55a(g)(6)(i).

The Code of record for the second interval for Saint Lucie Unit 2 is the ASME Code, Section XI, 1989 Edition, no addenda.

Enclosure

3.0 TECHNICAL EVALUATION

In the submittal, as supplemented, the licensee requests relief from the requirements of ASME Code, Section III, paragraph ND-4130 to perform radiography on Class 3 piping base metal repairs when the repair area exceeds 10 square inches (in^2) of area. FPL requested authorization of this relief to support placing ICW piping in service in order to allow for the refueling outage electrical train swap. The relief was required because repairs were attempted on the ICW piping to repair two previously identified temporary non-code repairs. However, FPL identified an increase in the scope of repair after evaluating field data. FPL completed the final repair area excavations and due to the proximity of some of the additional repairs, the repair preparation and excavation activities resulted in some repair areas exceeding 10 in^2. After discussions with ASME Code experts, FPL concluded that radiography would be required on any identified repair areas that exceeded 10 in^2 unless relief from the ASME Code requirements was obtained.

3.1 RELIEF REQUEST NO. 37

3.1.1 Component Identification (as stated)

> All St. Lucie 2 Intake Cooling Water (ICW) ASME Class 3 piping and components: such as shown on FPL Drawing 2998-G-082 Sheet 2, Revision 48, "Flow Diagram Circulating & Intake Cooling Water System

3.1.2 Code Requirements for which Relief is Requested

ASME B&PV Code, 1989 edition, Section XI, Article IWD-4000, "Repair Procedures," Paragraph IWD-4100, "Scope," states: The rules of IWA-4000 apply.

> Article IWA-4000, "Repair Procedures," Paragraph, IWA-4120, "Rules and Requirements" states:
>
> (a) Repairs shall be performed in accordance with the Owner's Design Specification and the original Construction Code of the component or system. Later Editions and Addenda of the Construction Code or of Section III, either in their entirety or portions thereof, and Code Cases may be used...

ASME B&PV Code, 1980 edition, Section III, Subsection ND, Paragraph ND-4130 "Repair of Material" states:

> Material originally accepted on delivery in which defects exceeding the limits of ND-2500 are known or discovered during the process of fabrication or installation is unacceptable. The material may be used provided the condition is corrected in accordance with the requirements of ND-2500 for the applicable product form, except: (1) the limitation on the depth of the weld repair does not apply; and (2) the time of examination of the weld repairs to weld edge preparation shall be in

> accordance with ND-5120. However, radiography is not required for welded repairs in material used in components provided that the welded joints in these materials are not required to be radiographed, the extent of the welded repair does not exceed 10 sq in. (6540 mm2) of the surface area, and the magnetic particle or liquid penetrant examination of the repair is made as required by ND 2539.4.

3.1.3 Licensee's Proposed Alternative to Code and Basis for Relief (as stated)

The proposed alternative is to inspect weld repairs to base metal in Class 3 piping systems in accordance with ASME B&PV Code, Section XI, 2001 edition, paragraph IWA-4520(a)(1) which states:

> Welding or brazing areas and welded joints made for installation of items shall be examined in accordance with the Construction Code identified in the Repair/Replacement Plan with the following exceptions:
>
> Base metal repairs on Class 3 items are not required to be volumetrically examined when the Construction Code does not require that full penetration butt welds in the same location be volumetrically examined.

In accordance with the proposed alternative, repair welds in Class 3 piping will receive a final surface examination but not radiographic examination, regardless of the surface area of the weld repair. Additionally, when the repair does not penetrate through the piping, the repair excavation area will receive a surface examination prior to welding. Also, where the repair penetrates through the piping, the root pass of the repair weld will receive a surface examination when required to comply with the conditions of Regulatory Guide 1.147 and Code Case N-416-1 (Reference 1). All of the class 3 piping welds at the St. Lucie Unit 2 plant received a final surface examination during construction; the welds were not radiographed. The final surface examination was in accordance with the governing Construction Code requirements. The proposed alternative results in repair welds receiving a degree of examination equivalent to that imposed on pipe welds during the construction period.

The requirement for imposing radiography on weld repairs with surface area greater than 10 in^2 is a common requirement from base material specifications. The requirement is to insure that the final product meets uniform expected properties. The material manufacturer works to a set of specific requirements, not knowing the exact use of the product, fabricating material for stock and subsequent delivery to end users. The requirement for radiography on weld repairs with surface area greater than 10 in^2 is appropriate for a material manufacturer. Once an item is installed, it exists in a specific environment and the universal nature of stock products is inappropriate. Accordingly, the controls to insure uniformity are no longer appropriate or meaningful after installation.

The proposed alternative will be employed starting with the current St. Lucie Unit 2 outage.

In conclusion, the proposal to examine piping base metal weld repairs in a manner equivalent to examination of circumferential butt welds in the piping is an alternative to the requirement to radiograph base metal repairs that have a surface area greater than 10 in^2 in piping that is not subject to radiographic examination. The alternate provides a degree of quality and safety equivalent to the Construction Code requirements, and has been approved by the ASME Code.

3.1.4 Duration of Proposed Alternative (as stated)

The proposed alternative will be applicable to any base metal repairs in St. Lucie, Unit 2 ICW Class 3 lined carbon steel piping for the remainder of the second interval for Unit 2.

3.1.5 Evaluation

The licensee proposed an alternate examination that results in repair welds receiving a degree of examination equivalent to that imposed on pipe welds during the construction period. Specifically, the repair welds in Class 3 piping will receive a final surface examination but not radiographic examination, regardless of the surface area of the weld repair. Additionally, when the repair does not penetrate through the piping, the repair excavation area will receive a surface examination prior to welding. Also, where the repair penetrates through the piping, the root pass of the repair weld will receive a surface examination. All of the Class 3 piping welds at the St. Lucie Unit 2 plant had received a final surface examination during construction and were not radiographed. Therefore, the final surface examination was in accordance with the governing Construction Code requirements. The proposed alternative results in repair welds receiving a degree of examination equivalent to that imposed on pipe welds during the construction period.

Under the proposed alternative the ICW repair welds would receive an examination equivalent to that imposed on pipe welds during the construction phase of the plant. Therefore, the proposed alternative examination would detect unacceptable weld defects prior to placing the ICW piping in service and, thus, ensure the structural integrity of the ICW piping. The staff has determined that the proposed alternative examination for the subject ICW piping system provides an acceptable alternative to the requirements of ASME Code Section III, paragraph ND-4130. Requiring examinations in excess of those required to be performed on the welds made during the construction phase would provide little value towards ensuring the structural integrity of the ICW piping because the proposed alternative examinations would detect unacceptable defects in the repair welds prior to placing the piping in service. Based upon review of the information provided by the licensee, the staff finds the proposed examinations of the components in the St. Lucie Unit 2 ICW system to be acceptable.

4.0 CONCLUSION

Based on the information provided in the licensee's submittals, the NRC staff has determined that the proposed alternative in RR 37, as described above, provides an acceptable level of quality and safety and, therefore, they are authorized pursuant to 10 CFR 50.55a(a)(3)(i) at St. Lucie 2 for the duration of the second 10-year inspection interval which ends August 7, 2003. This authorization is limited to those components described in Section 3.1.1

above. All other ASME Code, Section XI requirements for which relief was not specifically requested and approved in this safety evaluation remain applicable, including third party review by the Authorized Nuclear Inservice Inspector.

5.0 REFERENCES

1) ASME Boiler and Pressure Vessel Code, Code Case N-416-1, "Alternative Pressure Test Requirements for Welded Repairs or Installation of Replacement Items by Welding, Class 1, 2, and 3, Section XI, Div. 1" as accepted by Regulatory Guide 1.147.

2) ASME Boiler and Pressure Vessel Code, Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," 2001 Edition.

3) ASME B&PV Code, Section III, Subsection ND, "Nuclear Plant -Components - Class 3 Components," 1980 Edition (in accordance with the provisions of the Repair/Replacement Program).

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Date: May 29, 2003

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