



May 4, 2003

L-2003-118
10 CFR 50.4
10 CFR 50.55a

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

Re: St. Lucie Unit 2
Docket No. 50-389
Inservice Inspection Plan
Second Ten-Year Interval
Relief Request 37 - Supplement 1

By letter L-2003-116 dated May 1, 2003, Florida Power and Light Company (FPL) requested, pursuant to 10 CFR 50.55a(a)(3)(i), approval of Relief Request 37, *Alternative Examination Of Class 3 Piping Base Metal Weld Repairs*. The request is to eliminate the requirement for radiography of Class 3 lined carbon steel piping base metal repair welds when repair welds are greater than 10 in² in area. The subject piping is on the intake cooling water (ICW) system. Based on a conference call between the NRC and FPL on May 2, 2003, the attached revised relief request provides the clarifications requested by the NRC reviewer.

The revised relief request proposes an alternate that results in repair welds receiving a degree of examination equivalent to that imposed on pipe welds during the construction period. Therefore, this alternate provides an acceptable level of quality and safety.

Please contact George Madden at 772-467-7155 if there are any questions about this submittal.

Very truly yours,

William Jefferson Jr.
Vice President
St. Lucie Plant

Attachment

A047

**10 CFR 50.55a ST. LUCIE UNIT 2
SECOND INSPECTION INTERVAL
RELIEF REQUEST NUMBER 37, Revision 1**

**Proposed Alternative
In Accordance with 10 CFR 50.55a(a)(3)(i)
Alternative Provides Acceptable Level of Quality and Safety**

**"EXAMINATION OF ST. LUCIE UNIT 2, INTAKE COOLING WATER
CLASS 3 LINED CARBON STEEL PIPING BASE METAL WELD REPAIRS"**

1. ASME Code Component(s) Affected

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

2. Applicable Code Edition and Addenda

ASME B&PV Code, Section XI, 1989 Edition (Applicable Inservice Inspection Requirements)

3. Applicable Code Requirement

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

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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."

4. Reason for Request

Repairs are to be made to ICW lined carbon steel pipe that has suffered damage during service. Damage can be internal or external, localized or widespread. Such repairs are made in accordance with the requirements of ND-4130.

An example would be the repair of external corrosion on a 30-inch diameter pipe. The surface area of a full penetration circumferential butt weld in a 30-inch diameter pipe could be 95 in² and the weld would not require radiography. Should external corrosion occur on this pipe, a repair weld would be a partial thickness weld and if the corroded area was greater than 10 in², radiography would be required. The 95 in² of full penetration weld is considered acceptable for use without radiography while an adjacent weld of approximately half the thickness and one tenth of the area is not considered suitable unless the more stringent examination method is used. The requirement for radiography when the repair is more than 10 in² area is more stringent than the original construction requirements. The additional radiography is an involved process that is in excess of the original design and construction requirements and does not necessarily provide greater assurances of quality and safety.

This request is to eliminate the requirement for radiography of lined carbon steel ICW piping base metal repair welds when repair welds are greater than 10 in² in area and circumferential butt welds in the piping were not examined by radiography.

5. Proposed Alternative and Basis for Use

The proposed alternative is to inspect weld repairs to base metal in St. Lucie Unit 2 ICW Class 3 lined carbon steel 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:

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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 St. Lucie Unit 2 ICW Class 3 lined carbon steel 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 in² 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 in² 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 universality 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 St. Lucie Unit 2 ICW Class 3 lined carbon steel 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 in² 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.

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6. Duration of Proposed Alternative

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.

7. Additional Design Information

The following provides additional design information for the St. Lucie Unit 2 ICW System lined carbon steel components, as requested by the NRC for evaluation of the proposed relief.

Material Specifications:

- Piping:** Welded plate pipe per ASTM A-155 Grade KC-65, Class 1, Firebox Quality
Seamless Carbon Steel pipe per ASTM A106 Grade B
ASTM A-672 Grade C65 Class 22 or 42
- Fittings:** ASTM A-234, Grade WPB or WPBW
ASTM A-216 Grade WPC
ASTM A-216 Grade WCB
ASTM A-352 Grade LCB
ASTM A-350 Grade LF2
ASTM A-105 Grade II
- Flanges:** ASTM A-105 Grade II
ASTM A-216 Grade WCB
ASTM A-350 Grade LF1
ASTM A-352 Grade LCB
ASTM A-181 Grade II
ASTM A-181 Class 70
ASTM A-105

For St. Lucie Unit 2, materials were specified to the corresponding ASME SA material where required by Section III of the ASME B&PV Code.

Design Pressure/Design Temperature:

90 psig/125°F upstream of the component cooling water heat exchanger
90 psig/150°F downstream of the component cooling water heat exchanger

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Pipe Schedule/Thickness:

3/8 inch wall for piping 14 inches and larger
2 ½ -12 inches - Schedule 40

Pipe Lining: Cement lining, or approved alternate coating

8. 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).