



Florida Power & Light Company, 6501 S. Ocean Drive, Jensen Beach, FL 34957

March 22, 2004

L-2004-062  
10 CFR 50.4  
10 CFR 50.55a

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

Re: St. Lucie Units 1 and 2  
Docket Nos. 50-335 and 50-389  
Inservice Inspection Plans  
Relief Request 25 and Unit 2 Relief Request 4 – Supplement 2

By letter L-2003-264 dated October 15, 2003, as supplemented by letter L-2004-032 on January 30, 2004, Florida Power and Light Company (FPL) requested approval of Unit 1 Relief Request (R/R) 25 and Unit 2 Relief Request 4, Alternative Visual Examination of Inaccessible Insulated Components During System Pressure Tests and pursuant to 10 CFR 50.55a (a)(3)(ii). Unit 1 R/R 25 and Unit 2 R/R 4 propose alternatives to direct visual examination of the reactor vessel bottom area and some segments of Class 1 and Class 2 reactor coolant system (RCS) support piping. The affected RCS support piping passes through trenches that are covered and secured during normal operation and during ASME Section XI system leak tests performed each refueling outage at normal system operating pressure and temperature (NOP/NOT). The reactor vessel bottom is not readily accessible during the RCS NOP/NOT system leak test. FPL has revised the R/Rs to perform the visual examinations at alternative plant conditions at the Code frequency. The St. Lucie reactor vessels do not have any bottom mounted instrumentation (BMI).

FPL submitted supplement 1 of the R/Rs as a result of a January 8, 2004 conference call between FPL and the NRC staff to discuss the conditions and scope of the relief requests. During the call, FPL committed to supplement the relief requests to provide additional detail on the scope of the relief requests.

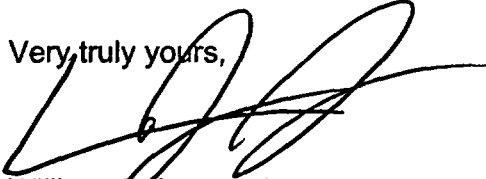
As a result of a NRC and FPL conference call on February 17, 2004, NRC issued a request for additional information on March 1, 2004. Attachment 1 provides a response to the NRC RAI and Attachments 2 and 3 provide copies of the revised relief requests.

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Approval of Unit 1 Relief Request 25 remains requested by March 29, 2004, to support its use during the upcoming Unit 1 refueling outage scheduled for the spring of 2004. The NRC notified the plant of potential need for these relief requests in July 2003. Please contact George Madden at 772-467-7155 if there are any questions about this submittal.

Very truly yours,

A handwritten signature in black ink, appearing to read 'W. Jefferson, Jr.', written over a horizontal line.

William Jefferson, Jr.  
Vice President  
St. Lucie Plant

WJ/GRM

**St. Lucie Units 1 and 2 Response to  
NRC Request for Additional Information Relief Requests 25 and 4**

**NRC Request 1:**

Per the American Society of Mechanical Engineers (ASME) Code, the Class 1 items for which relief is requested are required to be examined during each refueling outage at full pressure and temperature. The licensee proposes to extend the time between inspections for these specific items.

How does extending the time between inspections for these components provide a level of quality and safety comparable to the current ASME Code requirements?

**FPL Response 1:**

The FPL submittal has been revised to perform the proposed alternative examination each refueling outage. FPL will evaluate the conditions encountered during the alternative examination to verify that the increase in the level and quality of safety is commensurate with the risk and hazard to the inspection personnel.

**NRC Request 2:**

In your submittal, you referenced a Safety Evaluation dated September 12, 2003, for Fort Calhoun as a precedent.

*Provide a discussion of the differences and similarities between the alternatives and any bottom head reactor vessel physical arrangement or design differences between the Saint Lucie units and the Fort Calhoun Station.*

**FPL Response 2:**

1. As stated, Fort Calhoun proposes to conduct a VT-2 visual examination during each refueling outage. This inspection would be conducted while the vessel is not pressurized and nuclear fuel is off-loaded.

The FPL examination will be conducted each refueling outage while the vessel is depressurized, the same as Fort Calhoun. FPL does not normally perform a full core offload each refueling, using instead a planned in-core fuel shuffle to accomplish the refueling. As a result, there may be fuel in the core at the time of the exam resulting in a potentially higher radiation dose for the inspection.

2. At Fort Calhoun, the inspection will check insulation surfaces for signs of leakage or residue. If signs of leakage or residue are found, additional inspection will be conducted to determine the source. Additional inspection may include removal of insulation to gain access to the vessel lower head.

The actual examination to be conducted by FPL will be the same as the Ft. Calhoun alternative. As stated in the FPL submittal, the inspection will check insulation surfaces and joints for signs of leakage or residue. Any evidence of leakage will be evaluated in accordance with IWA-5250, which may include additional inspections and insulation removal as deemed necessary.

3. As stated, at Fort Calhoun leakage or water on the floor area is not indication of vessel leakage. This area is designed and used as a sump or liquid collection area and water may be expected on the floor of the area.

The area beneath the St. Lucie reactor vessel is not designed and utilized as a sump or liquid collection area. While leakage or water on the floor may not be an absolute indication of vessel leakage, any such evidence would be further investigated to positively identify the source.

4. The Fort Calhoun submittal requested relief pursuant to 10 CFR 50.55a(a)(3)(ii), stating that the area beneath the reactor vessel was inaccessible due to radiological conditions and contamination levels. Access to the bottom of the Fort Calhoun reactor vessel is through a locked hatch, down a ladder and through a tunnel to the vessel. This pathway is intended for human passage on a regular basis. The area is posted as a restricted high radiation area and a surface contamination area. Access is prohibited when fuel is in the core. Maintenance and other inspection activities in the vicinity are routinely conducted during periods when the fuel is off-loaded.

The St. Lucie submittal requested relief pursuant to 10 CFR 50.55a(a)(3)(ii), stating that the area beneath the reactor vessel was inaccessible due to physical plant configuration. Access to the bottom of the St. Lucie reactors is through a tunnel that is blocked by a set of relief dampers, with louvers only 11 inches wide. The dampers are welded in place and are spring loaded to shut. Human passage is possible, albeit difficult, requiring the inspector to crawl on through the limited space afforded by blocking open one of the louvers. The area is not intended for normal or routine human access, and there are no routine maintenance activities conducted in the vicinity during normal refueling outages.

The St. Lucie submittal did not request relief due to radiological conditions.

5. The Fort Calhoun submittal also requested relief from Code requirements to examine piping in covered trenches, and proposed an examination frequency of 10 years. Trench covers are large concrete plugs that are difficult to handle, and that create a walkway hazard in the auxiliary building when removed. Fort Calhoun requests the entrenched piping be treated as buried piping.

The St. Lucie submittal requests relief to perform the alternative visual examination of insulated piping contained in covered trenches inside the containment building only. Trench covers are required to be in place for containment sump integrity during the time when the system is at Code required examination conditions.

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Depressurized examination of the covered piping segments will be conducted at a frequency required by IWB-5000 and IWC-5000. Normal system pressure testing and VT-2 examination of accessible piping and components including floor and surrounding areas and areas to which leakage may be channeled will be conducted as required by the Code.

**St. Lucie Unit 1  
THIRD INSPECTION INTERVAL  
RELIEF REQUEST NUMBER 25**

**Alternative Visual Examination of Inaccessible  
Insulated Components during System Pressure Tests.**

**1. ASME Code Component(s) Affected**

St. Lucie Unit 1 reactor vessel and associated Class 1 and Class 2 piping in covered trenches rendered inaccessible due to containment building configuration.

Exam Cat.	Item No.	Examination Description
B-P	B15.10	Reactor Vessel - Pressure Retaining Boundary Bottom Head Area
	B15.50	Piping - Pressure Retaining Boundary (covered trench portions only) SI Headers 12-SI-148, 149, 150, 151 Charging 2-CH-147 Letdown 2-RC-142
C-H	C7.30	Piping - Pressure Retaining Components (covered trench portions only) SDC Suction 10-SI-420, 422

**2. Applicable Code Edition and Addenda**

Rules for Inservice Inspection of Nuclear Power Plant Components, Section XI, 1989 Edition, No Addenda

**3. Applicable Code Requirement**

Article IWA-5000, System Pressure Tests, Paragraph IWA-5242, Insulated Components, describes the requirements for conducting the visual examination VT-2 of insulated components.

**4. Reason for Request**

Pursuant to the provisions of 10 CFR 50.55a(a)(3)(ii), FPL requests approval to perform the examination of the reactor vessel bottom head area and piping in covered trenches at different plant conditions than those required by the ASME Code. IWA-5242(a) states, in part, that visual examination VT-2 may be conducted

without the removal of insulation by examining "the accessible and exposed surfaces and joints of the insulation." IWA-5242(b) provides further instruction, "When examining insulated components, the examination of surrounding area (including floor areas or equipment surfaces located underneath the components) for evidence of leakage, or other areas to which leakage may be channeled, shall be required."

St. Lucie Plant does not have access for a direct visual examination of the reactor vessel bottom area during the ASME Section XI System Leakage Test visual examination VT-2 walkdown. There are three possible pathways that lead to the area. Two are in the electrical tunnel at the bottom of the containment "keyway" and are blocked by the reactor cavity relief dampers (blast dampers). These dampers consist of horizontal louvers approximately 11 inches wide, and normally remain in the closed position. They are not intended for human passage. The third pathway is through the reactor cavity sump, a small tunnel from the cavity to the weir pit. A cooling duct runs through this tunnel limiting the height to a crawl space approximately a foot high and six to eight feet long. Ambient conditions during VT-2 examinations at normal operating conditions create an extreme heat stress environment and, combined with a nearly impossible exit pathway, make examination of this area an excessively hazardous work situation. For these reasons, St. Lucie VT-2 inspectors have considered the reactor bottom area to be not accessible for examination. The increase in the level of quality and safety gained by performing a visual inspection at normal operating conditions does not compensate for the safety hazard the inspector would be subjected to.

Some segments of Class 1 and Class 2 reactor support piping pass through trenches that are covered and secured during normal operation. These trenches are required to be covered and secured prior to entering Mode 4 following a shutdown to ensure containment sump recirculation flowpaths are maintained. This is outlined in the St. Lucie response to NRC Bulletin 2003-01 (FPL letter L-2003-201). The trench covers prohibit direct examination of horizontal insulation joints and low points as directed by IWA-5242(a). However, due to gaps and handholes in the trench covers and the use of grating in some locations, surrounding areas can be observed for evidence of leakage. Areas to which leakage may be channeled are also open in many locations throughout the containment for observation during the System Leakage Test. This is in compliance with the requirements of IWA-5242(b).

## **5. Proposed Alternative and Basis for Use**

### **Proposed Alternative**

FPL will continue to perform the required system pressure tests as prescribed by IWB-5000 each refueling outage and IWC-5000 each period, and will examine all accessible components in accordance with IWA-5242.

For those portions of components rendered inaccessible by containment building configuration, as an alternative to the requirements of IWA-5242, FPL will open the inaccessible areas each refueling outage and perform a VT-2 examination of the reactor vessel bottom and other associated piping following plant cooldown and depressurization. This inspection will check insulation surfaces and joints for signs of leakage or residue. Any evidence of leakage will be evaluated in accordance with IWA-5250, which may include additional inspections and insulation removal as deemed necessary.

#### Basis for Use

The objective of the required visual examination at normal operating conditions is to detect evidence of leakage and thereby verify the integrity of the RCS pressure boundary. FPL believes the same evidence of leakage can be identified by visual examination following cooldown for refueling. The St. Lucie reactors have no bottom head penetrations, and have been volumetrically examined in accordance with the rules of Section XI with no relevant indications identified. There is no expectation of leakage due to the solid configuration of the bottom. The reactor cavity is monitored for leakage continuously during operation, and inventory balance is performed daily throughout operating cycle. Therefore, FPL concludes that the proposed alternative provides reasonable assurance of system integrity and an acceptable level of quality and safety comparable to an exam performed at normal operating conditions.

#### **6. Duration of Proposed Alternative**

The proposed alternative will be implemented for the remainder of the Third Inspection Interval.

#### **7. Precedents**

Fort Calhoun Station Request for Relief RR-8 (TAC NO. MB8717), SER dated September 12, 2003.



**St. Lucie Unit 2  
THIRD INSPECTION INTERVAL  
RELIEF REQUEST NUMBER 4**

**Alternative Visual Examination of Inaccessible  
Insulated Components during System Pressure Tests.**

**1. ASME Code Component(s) Affected**

St. Lucie Unit 2 reactor vessel and associated Class 1 and Class 2 piping in covered trenches rendered inaccessible due to containment building configuration.

Exam Cat.	Item No.	Examination Description
B-P	B15.10	Reactor Vessel - Pressure Retaining Boundary Bottom Head Area
	B15.50	Piping - Pressure Retaining Boundary (covered portions only) SI Headers 12-SI-148, 149, 150, 151 Charging 2-CH-147 Letdown 2-RC-142
C-H	C7.10	Piping - Pressure Retaining Components (covered trench portions only) SDC Suction 10-SI-362, 363 Hot Leg Injection 3-SI-179, 181

**2. Applicable Code Edition and Addenda**

Rules for Inservice Inspection of Nuclear Power Plant Components, Section XI, 1998 Edition through 2000 Addenda

**3. Applicable Code Requirement**

Article IWA-5000, System Pressure Tests, Paragraph IWA-5242, Insulated Components, describes the requirements for conducting the visual examination VT-2 of insulated components.

**4. Reason for Request**

Pursuant to the provisions of 10 CFR 50.55a(a)(3)(ii), FPL requests approval to perform the examination of the reactor vessel bottom head area and piping in covered trenches at different plant conditions than those required by the ASME Code. IWA-5242(a) states, in part, that visual examination VT-2 may be conducted

without the removal of insulation by examining "the accessible and exposed surfaces and joints of the insulation." IWA-5242(b) provides further instruction, "When examining insulated components, the examination of surrounding area (including floor areas or equipment surfaces located underneath the components) for evidence of leakage, or other areas to which leakage may be channeled, shall be required."

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