



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

March 25, 2004

L-2004-066  
10 CFR 50.46

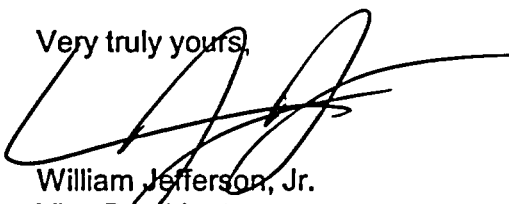
U. S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, DC 20555

Re: St. Lucie Units 1 and 2  
Docket Nos. 50-335 and 50-389  
Acceptance Criteria for Emergency Core Cooling  
Systems for Light Water Nuclear Power Reactors  
10 CFR 50.46 Annual Report

Pursuant to 10 CFR 50.46(a)(3)(ii), the nature of any change to or error discovered in the evaluation models for emergency core cooling systems (ECCS), or in the application of such models, that affect the fuel cladding temperature calculations for St. Lucie Units 1 and 2 is reported in the attachment to this letter. The estimated effect from any such change or error on the limiting ECCS analysis for each unit is also addressed. The data interval for the report is from January 1, 2003 through December 31, 2003.

Please contact us should you have any questions regarding this submittal.

Very truly yours,



William Jefferson, Jr.  
Vice President  
St. Lucie Plant

WJ/spt

Attachment

A001

St. Lucie Units 1 and 2  
10 CFR 50.46 Annual Report

Emergency core cooling system (ECCS) analyses for St. Lucie Unit 1 and St. Lucie Unit 2 are performed by Framatome ANP, Inc. (FRA-ANP) and Westinghouse Electric Company (W), respectively. The following information pertaining to the evaluation models for small break loss of coolant accidents (SBLOCA) and large break loss of coolant accidents (LBLOCA), and the application of such models to each St. Lucie unit, is provided pursuant to 10 CFR 50.46(a)(3)(ii). A summary of calculated peak cladding temperature (PCT) changes is provided in Table 1. The data interval for this report is from January 1, 2003 through December 31, 2003.

**1.0 ST. LUCIE UNIT 1**

- 1.1 No errors were found in the SBLOCA ECCS performance analysis since the previous report of Reference 3.1. The limiting SBLOCA PCT remains at 1766<sup>0</sup>F.
- 1.2 Two errors/issues were identified impacting the LBLOCA PCT. These errors, not previously reported in Reference 3.1, are described below. Table 1 summarizes the estimated impact of these errors/issues on the St. Lucie Unit 1 LBLOCA PCT. The limiting LBLOCA PCT with the estimated effect of the changes is 2041<sup>0</sup>F.

**Error in Main Feedwater and Steam Isolation Times**

The analysis of record incorrectly used delay times of 0.05 and 1.45 seconds, and ramp rates corresponding to 2.0 and 0.3 seconds ramp for main feedwater and steam isolation, respectively. The delay times and flow ramps were changed to 0.05 and 0.1 seconds, respectively, in compliance with the analysis guidelines. The PCT impact of this error correction on the St. Lucie Unit 1 LBLOCA analysis is estimated to be +8<sup>0</sup>F.

**Error in Bubble Rise Model for Safety Injection Tanks**

The analysis of record used values of 1.0 and 20.0 for the bubble gradient (ALPH) and velocity (VBUB), respectively, in the bubble rise model for the safety injection tanks. The values were corrected to 0.8 and 3.0 for ALPH and VBUB, respectively, consistent with the analysis guidelines. The PCT impact of correcting these errors on the St. Lucie Unit 1 LBLOCA analysis is estimated to be 0<sup>0</sup>F.

**2.0 ST. LUCIE UNIT 2**

- 2.1 No errors were found in the SBLOCA analysis impacting the PCTs previously reported in References 3.1 and 3.2. The limiting PCT for SBLOCA is 2132.6<sup>0</sup>F.

- 2.2 No errors were found in the LBLOCA analysis since those reported in Reference 3.3. Two PCT estimates reported in Reference 3.3 were revised in the final verification process: i) estimate for the model change is revised from  $-140^{\circ}\text{F}$  to  $-149^{\circ}\text{F}$  (correction of  $-9^{\circ}\text{F}$ ) and ii) estimate for the k-factor error is revised from  $+110^{\circ}\text{F}$  to  $+109^{\circ}\text{F}$  (correction of  $-1^{\circ}\text{F}$ ). The limiting PCT for LBLOCA is  $2126^{\circ}\text{F}$ .

### 3.0 REFERENCES

- 3.1 FPL Letter L-2003-078, D. E. Jernigan to USNRC Document Control Desk, "St. Lucie Units 1 and 2, Docket Nos. 50-335 and 50-389, Acceptance Criteria for Emergency Core Cooling Systems for Light Water Nuclear Power Reactors: 10 CFR 50.46 Annual Report," March 26, 2003
- 3.2 FPL Letter L-2002-196, D. E. Jernigan to USNRC Document Control Desk, "St. Lucie Unit 2, Docket No. 50-389, Proposed License Amendment: Reduce the Minimum Reactor Coolant System Flow," October 15, 2002
- 3.3 FPL Letter L-2003-227, W. Jefferson, Jr. to USNRC Document Control Desk, "St. Lucie Unit 2, Docket No. 50-389, LBLOCA Evaluation Model: 30-Day 10 CFR 50.46 Report," September 10, 2003

**Table 1: 2003 St. Lucie Units 1 and 2 SBLOCA and LBLOCA PCT Summary**

Unit 1 SBLOCA Summary	PCT
Year 2002 10 CFR 50.46 Annual Report (L-2003-078)	1766 <sup>0</sup> F
Change during Year 2003	0 <sup>0</sup> F
Year 2003 10 CFR 50.46 Annual Report	1766 <sup>0</sup> F

Unit 1 LBLOCA Summary	PCT
Year 2002 10 CFR 50.46 Annual Report (L-2003-078)	2033 <sup>0</sup> F
Change due to error in main feedwater and steam isolation times	8 <sup>0</sup> F
Change due to error in bubble rise model for safety injection tanks	0 <sup>0</sup> F
Year 2003 10 CFR 50.46 Annual Report	2041 <sup>0</sup> F

Unit 2 SBLOCA Summary	PCT
Year 2002 10 CFR 50.46 Annual Report (L-2003-078)	2125 <sup>0</sup> F
Change due to RCS flow reduction from 363,000 gpm to 355,000 gpm, previously reported in L-2002-196	7.6 <sup>0</sup> F
Year 2003 10 CFR 50.46 Annual Report	2132.6 <sup>0</sup> F

Unit 2 LBLOCA Summary	PCT
Year 2002 10 CFR 50.46 Annual Report (L-2003-078)	2151 <sup>0</sup> F
30-Day 10 CFR 50.46 Report (L-2003-227)	2136 <sup>0</sup> F
Correction to the PCT estimate, previously reported in L-2003-227, for 1985 EM to 1999 EM model change	-9 <sup>0</sup> F
Correction to the PCT estimate, previously reported in L-2003-227, for locked-rotor k-factor error	-1 <sup>0</sup> F
Year 2003 10 CFR 50.46 Annual Report	2126 <sup>0</sup> F