Florida Power & Light Company, 6351 S. Ocean Drive, Jensen Beach, FL 34957

October 29, 1999

L-99-236
10 CFR 50.46

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

Re: St. Lucie Unit 1
Docket 50-335
LBLOCA Evaluation Model
30-Day 10 CFR 50.46 Report

The attached report is submitted pursuant to 10 CFR 50.46(a)(3)(ii) to provide notification of a significant change to the calculated peak cladding temperature for the limiting loss of coolant accident evaluated for St. Lucie Unit 1.

Please contact us if you have any questions about this matter.

Very truly yours,

J. A. Stall
Vice President
St. Lucie Plant

JAS/RLD

Attachment

cc:
Regional Administrator, Region II, USNRC
Senior Resident Inspector, USNRC, St. Lucie Plant

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Siemens Power Corporation (SPC) is the current fuel vendor for St. Lucie Unit 1, and performs the calculations to demonstrate that the Unit 1 emergency core cooling system (ECCS) performance conforms to 10 CFR 50.46. SPC employs an acceptable evaluation model consistent with 10 CFR 50, Appendix K. Re-analysis of the large break loss of coolant accident (LBLOCA) has resulted in a significant reduction in the calculated peak cladding temperature (PCT), and is hereby reported pursuant to 10 CFR 50.46(a)(3)(ii).

Nature of the Model Change and Corrective Action

Certain non-physical behavior associated with reflood heat transfer coefficients used in SPC's LBLOCA evaluation model was identified by the NRC staff and is discussed in Reference 1. Compensatory measures taken by FPL at that time included an analysis of the LBLOCA by SPC using a modified 1986 methodology described in Reference 2. Based on that analysis, the calculated PCT for the limiting ECCS analysis of record was 2027°F (DECLG with 0.8 discharge coefficient). Pending further evaluation and long-term correction of LBLOCA model deficiencies, Reference 3 concluded that the modified 1986 model was acceptable for determining that St. Lucie Unit 1 meets the acceptance criteria of 10 CFR 50.46. Additional PCT adjustments based on the estimated impact from other model anomalies discovered since the last acceptable model are documented in References 4, 5, and 6.

The St. Lucie Unit 1 ECCS cooling performance has been analyzed for operating cycle-16 using the LBLOCA evaluation model identified in SPC Report EMF-2087(P)(A). This revised model resolves the identified deficiencies and incorporates other improvements, and is approved by the NRC staff as an acceptable ECCS evaluation model (Reference 7).

Impact of the Model Change

Reanalysis with the revised LBLOCA model results in a PCT –98°F from the value of 2027°F calculated previously with the modified 1986 model. The new LBLOCA PCT is **1929°F (DECLG with 1.0 discharge coefficient)**, and is the limiting PCT of record for St. Lucie Unit 1.

References

1. NRC Letter, Brian E. Sheron (NRC) to T.F. Plunkett (FPL), 10 CFR 50.46 LARGE BREAK LOSS-OF-COOLANT ACCIDENT EVALUATION MODEL FOR ST. LUCIE PLANT, UNIT 1 (TAC NO. M96335); October 11, 1996.

2. FPL Letter L-96-295, J.A. Stall (FPL) to NRC (DCD), Docket 50-335, LBLOCA/ECCS Revised Analysis, 30 Day 10 CFR 50.46 Report; November 7, 1996.

3. NRC Letter, Leonard A. Wiens (NRC) to Thomas F. Plunkett (FPL), 10 CFR 50.46 LARGE BREAK LOSS OF COOLANT ACCIDENT EVALUATION MODEL FOR ST. LUCIE PLANT UNIT 1 (TAC M96355); December 6, 1996.

4. FPL Letter, L-97-034, J.A. Stall (FPL) to NRC (DCD), Docket Nos. 50-335 and 50-389, Acceptance Criteria for Emergency Core Cooling Systems for Light Water Reactors: 10 CFR 50.46 Annual Report; March 6, 1997.

5. FPL Letter, L-98-057, J.A. Stall (FPL) to NRC (DCD), Docket Nos. 50-335 and 50-389, Acceptance Criteria for Emergency Core Cooling Systems for Light Water Reactors: 10 CFR 50.46 Annual Report; March 4, 1998.

6. FPL Letter, L-99-049, J.A. Stall (FPL) to NRC (DCD), Docket Nos. 50-335 and 50-389, Acceptance Criteria for Emergency Core Cooling Systems for Light Water Reactors: 10 CFR 50.46 Annual Report; March 1, 1999.

7. NRC Letter, Cynthia A. Carpenter (NRC) to J.F. Mallay (SPC), ACCEPTANCE FOR REFERENCING OF THE TOPICAL REPORT EMF-2087(P), "SEM/PWR-98: ECCS EVALUATION MODEL FOR PWR LBLOCA APPLICATIONS" (TAC NO. MA3457); June 15, 1999.