



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 58

TO FACILITY OPERATING LICENSE NO. NPF-16

FLORIDA POWER & LIGHT COMPANY, ET AL.

ST. LUCIE PLANT, UNIT NO. 2

DOCKET NO. 50-389

1.0 INTRODUCTION

In a submittal dated April 21, 1992, the Florida Power and Light Company (the licensee) proposed a change to the Technical Specifications (TS) for its St. Lucie Unit 2 plant, which would lower the minimum required safety injection tank (SIT) pressure from 570 pounds per square inch-gauge (psig) to 500 psig. In the submittal, the licensee provided a technical report which addresses the impact of this change on licensing basis events.

2.0 EVALUATION

Technical justification for the proposed TS change is contained in technical report OPS-92-0385, which was included in the licensee's submittal. OPS-92-0385 addresses the impact of the proposed TS change on St. Lucie licensing basis events, including Standard Review Plan (SRP) Chapter 15 events. These are discussed in the following sections.

2.1 Small Break LOCA Analyses

To address the impact of the SIT pressure change on the small break loss of coolant accident (LOCA) events, the licensee provided analyses for a spectrum of postulated small break LOCAs ranging in size from 0.0375 square foot, the previously identified worst small break size, to 0.0500 square foot. The new limiting small break size was identified as a 0.045 square foot pump discharge break. The calculated peak cladding temperature for the 0.045 square foot break is 1905 degrees F. This calculated peak cladding temperature (PCT) and the local and core-wide oxidation results calculated for small break LOCAs continue to be bounded by large break LOCA results and are acceptable.

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2.2 Large Break LOCA Analyses

The licensee referenced the current large break LOCA analysis of record as being bounding for the proposed reactor configuration with 500 psig SIT pressures. The current analysis of record, performed in 1987 to justify plant operation with 570 psig SIT pressures, assumes the SITs are pressurized to 200 psig. The staff's Safety Evaluation (SE) of November 12, 1987 found this large break LOCA analysis with the 200 psig SIT assumption acceptable for operation with 570 psig SITs. The calculated PCT is 2106 degrees F, the maximum calculated local cladding oxidation is 7.62 percent, and the calculated total core-wide cladding oxidation is less than 0.7 percent. These values, which bound those for the small break LOCA analyses, are within the limits specified in 10 CFR 50.46(b).

Since the present proposal is bounded by the finding made in the 1987 staff SE the staff finds this analysis acceptable. Additionally, the proposed SIT pressure (500 psig) is closer to the analyzed SIT pressure (200 psig) than the existing SIT pressure (570 psig).

2.3 Non-LOCA Design Basis Events

The licensee considered the impact of the lower SIT pressure on non-LOCA design basis event analyses. In its submittal, the licensee reports that its review of St. Lucie Unit 2 non-LOCA design basis event analyses indicates that no credit for SIT injection into the reactor coolant system (RCS) is taken in the analyses and, therefore, the reduction of the SIT minimum pressure setpoint does not impact the non-LOCA safety analyses.

2.4 Station Blackout

The licensee also provided an assessment of the impact of the lower SIT pressure on station blackout events. This assessment amends the current station blackout event analysis which assumes a 570 psig SIT pressure. The current analysis is documented in the St. Lucie 2 Final Safety Analysis Report (FSAR) Section 15.10 (FSAR Amendment 1, April 1986). The objective of the analysis is to assure that natural circulation can be maintained for a 4-hour period following a loss of all alternating current (AC) power (station blackout) at St. Lucie 2, until AC power could be restored to the plant. The current analysis calculated that reactor coolant system (RCS) pressure would reduce to the SIT pressure (570 psig) and the injection rate would exceed the RCS leak rate at about 3.5 hours, and by 3.9 hours the total integrated injection would exceed the total integrated leakage for the event. The analysis concluded that natural circulation would be maintained for the 4-hour period. In a SE dated September 12, 1991 the staff found the 1986 analysis acceptable to address Station Blackout Rule (10 CFR 50.63) requirements.

The new assessment changes the assumed SIT pressure for this event to 500 psig, but changes no other analysis assumptions. At the lower SIT pressure the licensee's analysis indicates that SIT injection would occur at about 3.9 hours, a delay of about 24.3 minutes. In its assessment the licensee adjusted

the RCS inventory from the approved analysis to account for the delay in SIT injection and additional steam mass accumulation during the delay period. The licensee concluded that at least 3373.5 pounds-mass of (liquid) water would remain in the upper head and pressurizer regions at the time of SIT (500 psig) injection, with no voiding introduced into the RCS loops. The licensee concluded that natural circulation continues to be assured on the same basis as for the previous analysis.

In summary, the licensee's assessment concludes that the lowering of SIT pressures to 500 psig does not substantially impact station blackout events. The staff finds this assessment acceptable.

3.0 TECHNICAL FINDINGS

As discussed in Section 2.0, the staff finds the proposed change to the St. Lucie Unit 2 Technical Specifications lowering the SIT minimum pressure setpoint acceptable, based on the justification provided in the licensee's submittal of April 21, 1992.

4.0 STATE CONSULTATION

Based upon the written notice of the proposed amendment, the Florida State official had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

This amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that this amendment involves no significant hazards consideration and there has been no public comment on such finding (57 FR 19317). Accordingly, this amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of this amendment.

6.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such

activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

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Date: July 30, 1992