

CATEGORY 1

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SUBJECT: Forwards rept per 10CFR50.46(a)(3)(ii), which provides notification of error discovered in ICECON computer code which is part of large break LOCA evaluation model for St Lucie, Unit 1.

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June 15, 1998

L-98-158
10 CFR 50.46

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D. C. 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 an error discovered in the ICECON computer code which is part of the large break loss of coolant accident (LBLOCA) evaluation model for St. Lucie Unit 1, and concurrently provide the status of the LBLOCA evaluation model relative to the previously reported excessive variability in the RELAP4 computer code. The estimated impact on calculated peak cladding temperature (PCT) from each anomaly is not significant; however, cumulative (absolute) PCT changes are estimated to exceed 50°F and meet the criteria for reporting within 30 days. A summary of the cumulative changes to the limiting calculated PCT is provided.

Should there be any questions, please contact us.

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) performs the emergency core cooling system (ECCS) analyses for St. Lucie Unit 1. The estimated impact on the limiting peak cladding temperature (PCT) from each anomaly discussed below is not significant; however, cumulative (absolute) PCT changes are estimated to exceed 50°F and therefore meet the 30 day reporting criteria. The current St. Lucie Unit 1 large break loss of coolant accident (LBLOCA) analysis PCT is 2040°F as reported in the 10 CFR 50.46 annual report for the year 1997 (Reference 1). A summary of cumulative changes to PCT is provided in Section III of this report.

I. RELAP4 Excessive Variability Issue

SPC previously identified a deviation in its EXEM/PWR LBLOCA evaluation model which was reported to the NRC by SPC in January 1998, and again by Florida Power and Light Company (FPL) and SPC in March 1998 (References 1, 2). The deviation occurs as a result of excessive variability experienced by the RELAP4 computer code. Subsequent to these notifications, SPC completed a 10 CFR Part 21 evaluation of this issue which was reported to the NRC by SPC on May 1, 1998 (Reference 3).

The impact on the St. Lucie Unit 1 LBLOCA PCT has been calculated to be a reduction in PCT of 28°F. This impact is based on a developmental version of the code which has corrections to reduce the RELAP4 variability. FPL will continue to follow the SPC LBLOCA evaluation model corrective action plan as described to the NRC in Reference 2. Based on this action plan, the St. Lucie Unit 1 analysis of record PCT remains unchanged at its current value of 2040°F.

II. ICECON Code Error

On May 21, 1998, FPL received notification from SPC that an error had been discovered involving the units of time used within the ICECON computer code. ICECON calculates the energy removed by containment fan coolers and is part of the evaluation model used to assess ECCS performance during a LBLOCA. The error results in an unreasonably small value of energy removal by the cooling fans during the analyzed event. SPC's generic estimate of the impact of the error on calculated PCT is less than 20°F. Sufficient margin exists in the analysis of record PCT (2040°F) for St. Lucie Unit 1 to accommodate this error and provide assurance that 10 CFR 50.46 acceptance criteria for ECCS performance continue to be met. Plant-specific confirmatory results after correction of the code error are expected to be available later in 1998.

III. Summary of Cumulative Changes in PCT

St. Lucie Unit 1 LBLOCA Summary	PCT (°F)
*Change following correction of z-equivalent error	-1
*Change due to revised containment spray and fan cooler minimum delay time	+14
Change due to corrected RELAP4 excessive variability	-28
Estimated impact from ICECON error	<20

* Changes annotated with an asterisk are included in the limiting PCT value of 2040°F reported in Reference 1.

IV. References

1. Florida Power and Light Company letter L-98-057, J. A. Stall to NRC (DCD): Acceptance Criteria for Emergency Core Cooling Systems for Light Water Nuclear Power Reactors, 10 CFR 50.46 Annual Report; March 4, 1998.
2. Siemens Power Corporation letter NRC:98:016, James F. Mallay to NRC (DCD), ATTN: Chief, Planning, Program and Management Support Branch: RELAP4 Excessive Variability; March 17, 1998.
3. Siemens Power Corporation letter NRC:98:026, James F. Mallay to NRC (DCD), ATTN: Chief, Planning, Program and Management Support Branch: 10 CFR Part 21 Evaluation and Notification for RELAP4 Excessive Variability; May 1, 1998.

10/20/50