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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

REGARDING LARGE BREAK LOCA ECCS ANALYSIS

LOUISANA POWER AND LIGHT COMPANY

WATERFORD STEAM ELECTRIC STATION, UNIT 3

DOCKET NO. 50-382

1.0 INTRODUCTION

In a meeting held on July 10, 1985 with Combustion Engineering (CE) and the CE Owners Group (CEOG), the CE large-break LOCA evaluation model axial power distribution and peaking factor sensitivity was discussed. It was indicated that a different axial power distribution than what was used in the approved evaluation model would increase the peak cladding temperature by more than 20°F. By letters dated July 11, 1985 and July 19, 1985, the licensee described a new calculation in which a possible worst-case axial shape was used, along with some compensating model changes.

2.0 EVALUATION

Based on the information presented in the July 10, 1985 meeting by CE and the licensee, the staff determined that the original ECCS analysis for Waterford 3 did not comply with paragraph I.A. of Appendix K to 10 CFR 50 which requires that:

> "A range of power distribution shapes and peaking factors representing power distribution that may occur over the core lifetime shall be studied and the one selected should be that which results in the most severe calculated consequences, for the spectrum of postulated breaks and single failures analyzed."

The new analysis described in the letters of July 11, 1985 and July 19, 1985 utilized a possible shape and peaking factor not previously considered which led to worse consequences (a peak cladding temperature [PCT] increase of 34°F). Since the original analysis resulted in a PCT of 2188°F, the additional 34°F would put the results over the 2200°F limit required by 10 CFR 50.46. In order to compensate for this, the licensee proposed other modifications to the calculational input. The original analysis assumed that the containment purge was operating at the time the LOCA event was initiated. Based on their current technical specification which limits containment purging to 90 hours per year, this assumption is no longer necessary. Moreover, they stated that the Safety Injection Tank (SIT) injection line resistance used in the original analysis was more conservative than the actual measured values. The new analysis uses the measured SIT line resistance, does not assume containment purge, accounts for the new axial shape and peaking factor, and results in a peak cladding temperature of 2170°F.

3.0 CONCLUSION

The staff finds the new analysis with a peak cladding temperature of 2170° F to be acceptable and in compliance with 10 CFR 50.46 and Appendix K to 10 CFR 50. Therefore, this issue is now considered to be closed.