



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 57 TO LICENSE NO. DPR-20

CONSUMERS POWER COMPANY

PALISADES PLANT

DOCKET NO. 50-255

1.0 INTRODUCTION AND DISCUSSION

By letter dated February 26, 1980, (Reference 1), Consumer's Power Company (CPCo) (the licensee) requested an amendment to Appendix A of Provisional Operating License No. DPR-20 for the Palisades Plant. A continuing investigation of the water hole peaking issue presented in NRC letter dated July 11, 1979 (Reference 2) resulted in the need to add an additional radial peaking factor into the Palisades Plant Technical Specifications.

A problem was identified by CPCo in their Technical Specifications "Basis" Section with regard to peaking factors and their treatment. The current Technical Specifications state that the limitations on Fr^A (assembly radial peaking factor) and Fr^T (total radial peaking factor) ensure that the assumptions used in the DNB analysis remain valid. According to the licensee, it has been determined through an inspection of a quarter core, pin by pin power distribution calculation and comparison against assumptions in the DNB analysis that an additional peaking factor limit is needed.

2.0 EVALUATION

Analysis of the Palisades Plant lattice indicated that an interior fuel pin is most limiting with respect to DNB even though it may not be the peak power pin. Inherent in the derivation of limits based on the DNB analysis was the assumption that, for assemblies approaching thermal limits, the ratio of the limiting DNB pin power to the peak pin power would not exceed that used in the analysis.

The licensee has stated that an inspection of Cycle 4 physics calculations has shown this assumption to be invalid. Although, according to CPCo, no interior fuel pin is expected to exceed the pin power (radial x local) assumed for the Cycle 4 DNB analysis, it is possible to have relatively high power assemblies that also have high interior peaking factors. Based on the above, the licensee considers it appropriate to impose a limit on the product of radial peaking factor times interior pin local peaking factor to assure that the assumptions in the DNB analysis remain valid in all cases.

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According to the licensee, an extensive analysis of Cycle 4 assembly power distribution has shown that DNB margins are adequately maintained if the highest interior rod radial peaking factor is limited to that assumed in the original DNB analysis of G reload fuel. This value is the local peaking factor for the MDNBR pin from Figure 6.2 of Reference 3 times that maximum assembly radial peaking factor ($1.145 \times 1.45 = 1.66$). The licensee asserts that since the limit on peak LHGR provides protection against DNB, a limit on the interior fuel rod LHGR is proposed. This limit maintains the axial peaking restrictions derived in previous analysis and is computed by multiplying the overall limit on LHGR by the ratio of the interior rod radial peaking factor limit over the total radial peaking factor limit (Fr^H/Fr^T).

Based on the considerations discussed above, we have concluded that the results of the analysis are acceptable and the addition of the interior fuel rod peaking factor limit will maintain the safety margin which forms the basis for the Technical Specifications. We, therefore, find the proposed changes acceptable.

3.C ENVIRONMENTAL CONSIDERATION

We have determined that the amendment does not authorize a change in effluent types or total amounts nor an increase in power level and will not result in any significant environmental impact. Having made this determination, we have further concluded that the amendment involves an action which is insignificant from the standpoint of environmental impact and pursuant to 10 CFR 51.5(d)(4), that an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with the issuance of this amendment.

4.0 CONCLUSION

We have concluded, based on the consideration discussed above, that: (1) because the amendment does not involve a significant increase in the probability or consequences of accidents previously considered and does not involve a significant decrease in a safety margin, the amendment does not involve a significant hazards consideration, (2) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (3) such activities will be conducted in compliance with the Commission's regulations and the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

Date: June 6, 1980

References

1. Letter, David P. Hoffman (CPCo) to Director, NRC (Attn: D. L. Ziemann), Dated February 26, 1980.
2. Letter, D. L. Ziemann (NRC) to D. A. Bixel (CPCo), dated July 11, 1979.
3. Palisades Plant, Cycle 3 Reload Analysis, XN-NF-77-59, Exxon Nuclear Company, Inc., Richland, Washington, dated December, 1977.