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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 79 TO FACILITY OPERATING LICENSE NO. DPR-3

YANKEE ATOMIC ELECTRIC COMPANY

YANKEE NUCLEAR POWER STATION

DOCKET NO. 50-29

1.0 Introduction

The performance analysis of core Reload 16 for the Yankee-Rowe plant is described in the report YAEC-1325, September 1982 entitled, "Yankee Nuclear Power Station, Core 16 Performance Analysis" (Ref. 1) and its revision (Ref. 2). Our evaluation of this submittal and its revision was issued on December 3, 1982 (Ref. 3).

The licensee, Yankee Atomic Electric Company (YAEC), submitted a second revision to the reload analysis entitled, "Core 16 Revised LOCA Limits" on November 26, 1982 (Ref. 4). Our evaluation of the second submittal was issued on December 15, 1982 (Ref. 5).

The licensee has now submitted a third revision to the reload analysis also entitled, "Core 16 Revised LOCA Limits," and dated January 7, 1983 (Ref. 6). This revision is the subject of the following evaluation.

2.0 Evaluation

A maximum allowable peak rod linear heat generation rate curve in the plant Technical Specifications was previously re-analyzed using a revised moderator density reactivity coefficient. The technical justification for this change was found acceptable in our review of Supplement 2 of the Cycle 16 safety analysis report.

The impact of this change was to provide a larger moderator density reactivity feedback in the plant safety analysis. Thus, a more rapid shutdown of core power due to delayed fissioning is provided in those events where a significant reduction in moderator density is expected (e.g., the loss-of-coolant accident or LOCA).

The licensee did not re-analyze all portions of the Cycle 16 reload submittal which would be impacted by the change in moderator density coefficient. Rather, it was shown that (1) a completely revised reload analysis would continue to show that Yankee Rowe is LOCA-limited in Cycle 16 and (2) a completely revised LOCA analysis would continue to show that a previously-selected set of LOCA parameters (e.g., break size, discharge coefficient, burnup) remains limiting with new moderator density coefficent.

The burnup sensitivity was performed only for the 1000 MWd/MtU fresh fuel case. Although this burnup was not limiting in the sense of peak linear heat generation rate (the lowest value of PLHGR occurs at beginning of life), the value did provide a reference point from which the allowable peak rod LHGR limits could be determined. While analysis of peak rod LHGRs at other burnups was possible, it was not required to determine the revised Technical Specification limits and not submitted at that time.

Supplement 3 to the Cycle 16 reload safety analysis has presented additional results of the burnup sensitivity study for the beginning of cycle, exposed fuel case. These results provide an additional reference point from which the peak rod LHGRs for the exposed fuel can be determined. All other conditions of the supplemental analysis, including break size, discharge and moderator density coefficients, remain unchanged. We therefore find the supplemental analysis acceptable.

In addition, we have confirmed that the revised LOCA limits described in Supplement 3 to the reload safety analysis do not adversely impact other, previously submitted portions of the analysis.

3.0 Summary

We have reviewed the YAEC's submittal (Ref. 6) on revised LOCA limits for Core 16 and find it acceptable.

4.0 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.

5.0 Conclusion

We have concluded, based on the considerations discussed above, that: (1) because the amendment does not involve a significant increase in the probability or consequences of an accident previously evaluated, does not create the possibility of an accident of a type different from any evaluated previously, and does not involve a significant reduction in a margin of safety, 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.

6.0 Acknowledgements

This evaluation has been prepared by J. Voglewede.

Date: January 12, 1983

REFERENCES

1. J. A. Handschuh, et al, "Yankee Nuclear Power Station Core 16 Performnnce Analysis" YAEC-1325, dated September 1982.

2. J. G. Robinson, et al, "Revision to Cycle 16 Core Performance Analysis" YAEC-1325, dated November 10, 1982.

3. D. M. Crutchfield, NRC, to J. A. Kay, YAEC, "Yankee Cycle 16" dated December 3, 1982.

4. L. H. Heider, YAEC, to NRR, "Core 16 Revised LOCA Limits - Proposed Change #178 - Supplement #2", dated November 26, 1982.

5. D. M. Crutchfield, NRC, to J. A. Kay, YAEC, "Yankee Cycle XVI Revised LOCA Limits", dated December 17, 1982.

6. L. H. Heider, YAEC, to NRR, "Core 16 Revised LOCA Limits - Proposed Change #178 - Supplement #3", dated January 7, 1983.