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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 85 TO FACILITY OPERATING LICENSE NO. DPR-3

YANKEE ATOMIC ELECTRIC COMPANY

YANKEE NUCLEAR POWER STATION

DOCKET NO. 50-29

1.0 INTRODUCTION

By letter dated March 18, 1985, as supplemented May 9 and May 30, 1985, the Yankee Atomic Electric Company (YAEC) submitted a request for changes to the Yankee Nuclear Power Station technical specifications.

The amendment would modify the pressurizer safety valve setpoint tolerance to conform to section VIII of the ASME Boiler and Pressure Vessel Code.

A Notice of Consideration of Issuance of Amendment to License and Proposed No Significant Hazards Consideration Determination and Opportunity for Hearing related to the requested action was published in the Federal Register on July 31, 1985 (50 FR 31078). No comments or requests for hearing were received.

2.0 EVALUATION

The licensee requested that the technical specifications for pressurizer safety valves be modified to increase the setting tolerance from +0%, -3% to +3%, -3%. The licensee justified the change by performing a new analysis of the bounding overpressure transient which is a complete loss of load from full power.

The Yankee Nuclear Power Station has two safety valves on the pressurizer. They have staggered lift settings of 2485 psig and 2560 psig. Following a loss of load transient the turbine stop valves would close causing heatup of the secondary system and a reduction of heat flow from the reactor system. The continued power production by the core and the reduction in heat removal would cause the reactor system pressure and temperature to increase. The reactor system pressure boundary is protected from overpressure by the action of the reactor protection system to trip the reactor and by the opening of the pressurizer safety valves.

Following a loss of load the reactor protection system would receive signals to trip the reactor in the following order.

1. Direct reactor trip on turbine trip
2. Reduction in steam generator level
3. High reactor system pressure
4. High pressurizer level

In the analysis the licensee assumed that the third incoming trip signal (high pressure) was effective. Other conservative assumptions were that the pressurizer relief valve and spray as well as the steam dump to the condenser failed to function. The pressurizer safety valves were assumed to open at 3% above their normal lift settings.

The staff previously approved an overpressure analysis for the Yankee Station tolerance of 0%. This analysis also utilized the GEMINI II code. Since that time overpressure protection has been improved by the addition of the high pressure reactor trip and by the addition of higher capacity pressurizer safety valves which allow for approximately 40% greater steam flow.

Staff review of the GEMINI II code was completed in 1977 (Ref. 2). The code was approved for analysis of overpressure transients including loss of load. The staff approval was based on the ability of the code to correlate operating plant transient data as well as a staff audit. The code contains a non-equilibrium pressurizer model which predicts more conservative results (higher pressures) than the plant data. The analyses predicted that the highest peak reactor system pressure would be 2650 psig which is less than 110% of the design pressure of 2500 psig. This result is acceptable under the staff's standard review plan as meeting the overpressure protection requirement of General Design Criterion 15 of the Commission's Regulations.

The staff concludes that the reanalysis of reactor system overpressure by the licensee is acceptable and the technical specifications for safety valve lift setting tolerance may be changed as the licensee requested.

3.0 ENVIRONMENTAL CONSIDERATION

This amendment involves a change to a requirement with respect to the installation or use of facility components located within the restricted area as defined in 10 CFR Part 20. The 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. 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.

4.0 CONCLUSION

The staff 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, and (2) 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.

5.0 ACKNOWLEDGEMENT

Principal Contributors: W. Jensen and J. Clifford

6.0 REFERENCES

1. K. Goller, NRC, letter to G. Andognini, YAEC, July 30, 1974.
2. R. Reid, NRC, letter to R. Groce, YAEC, May 27, 1977.

Dated: October 31, 1985.