



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
SUPPORTING AMENDMENT NO. 127 TO FACILITY OPERATING LICENSE NO. DPR-3  
YANKEE ATOMIC ELECTRIC COMPANY  
YANKEE NUCLEAR POWER STATION  
DOCKET NO. 50-029

INTRODUCTION

By letter dated July 24, 1989, the Yankee Atomic Electric Company (YAEC or the licensee) requested an amendment to Facility Operating License No. DPR-3 for the Yankee Nuclear Power Station (YNPS or the plant). The proposed amendment consists of two proposed changes: (1) The proposed amendment modifies Table 3.2-1 of Technical Specification 3.2.4 to substitute a limit on the operating loop average temperature for the current limit on cold leg temperature. The proposed average temperature limit will allow greater operational flexibility during part-load operation and will maintain Departure from Nucleate Boiling (DNB) margins to be bounded by full power conditions. (2) The proposed amendment removes the word "Exxon" from the last paragraph of Technical Specification Bases 3/4.2.4.

EVALUATION

The current limit on cold leg temperature is provided to assure steady state operating conditions consistent with the assumptions of the analysis of approach to DNB limits during transients. The analyses are typically based on full power operation and the limit is applied to the operating power range. With the proposed change, the design full power operating conditions will remain bounding.

A DNB evaluation has demonstrated that with the revised limit, DNB margins during part-load operation will continue to be bounded by full power conditions. For the current cold leg temperature limit, the limiting Departure from Nucleate Boiling (DNB) occurs at full power operating conditions. DNB performance improves with decreasing power level. The proposed average temperature limit has been derived to maintain DNBR margins equal to or greater than the limiting full power condition. For the most limiting design conditions, which incorporate the power distribution limits of Technical Specifications 3.2.2 and 3.2.3, the full power DNBR remains limiting. Thus, under the proposed average temperature limit DNB performance during part-load operation is bounded by the limiting full power condition.

The table below summarizes the results of the DNB evaluation using the revised average temperature limit. The values given include the effect of control rod insertion to the Power Dependent Insertion Limit (PDIL) as well as the increased cold leg temperature at the reduced power levels. The design Maximum Departure from Nucleate Boiling (MDNBR) incorporates the power distribution limits of Technical Specifications 3.2.2 and 3.2.3 in addition to the increased cold leg temperature.

<u>Power</u>	<u>Nominal MDNBR</u>	<u>Design MDNBR</u>
100	4.16	2.93
90	4.62	2.99
80	4.95	3.06
70	5.20	3.10

Transients initiated from the proposed part-load operating conditions have been evaluated. The main steam line break transient is the only licensing analysis affected by the proposed change. Zero and 50% power cases have been reanalyzed for this event, assuming initial main coolant system temperatures are consistent with the proposed change. For both the zero and 50% power cases the available shutdown margin is adequate to preclude inadvertent criticality. Thus, the results of the main steam line break event remain acceptable.

The table below summarized the results of the Main Steam Line Break reanalysis using the revised temperature limit. The reanalysis was based on Core 20 reactivity data and flux peaking factors consistent with the Core 20 reload analysis.

MSLB Analysis Using Revised Limit

<u>Analysis Case</u>	<u>Initial T-Cold°F</u>	<u>Minimum Subcriticality (% Reactivity)</u>
Full Power	520	0.84
50% Power	531	0.59
Zero Power	536	0.22

In addition to the average temperature limit change, the licensee proposed to modify the last paragraph of Technical Specification Base 3/4.2.4 to remove the word "Exxon".

Since the Exxon fuel is not used in Yankee's core, the word "Exxon" is not needed. That change is editorial in nature.

ENVIRONMENTAL CONSIDERATION

This amendment involves a change in a requirement with respect to installation or use of a facility component 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 published a proposed finding that the 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.

#### CONCLUSION

The Commission made a proposed determination that the amendment involves no significant hazards consideration which was published in the Federal Register (54 FR 35113) on August 23, 1989 and consulted with the State of Massachusetts. No public comments were received and the State of Massachusetts did not have any comments.

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 (3) the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

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Dated: October 27, 1989