



SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 69 TO FACILITY OPERATING LICENSE NPF-35
AND AMENDMENT NO. 63 TO FACILITY OPERATING LICENSE NPF-52

DUKE POWER COMPANY, ET AL.

CATAWBA NUCLEAR STATION, UNITS 1 AND 2

DOCKETS NOS. 50-413 AND 50-414

1.0 INTRODUCTION

By letter dated April 6, 1989, as supplemented September 6, 1989, Duke Power Company, et al. (the licensee), proposed amendments to the operating licenses for Catawba Nuclear Station, Units 1 and 2. The amendments would revise Technical Specifications (TSs) 3/4.9.8.1 and 3/4.9.8.2, and their associated Bases to: (1) reduce the required Residual Heat Removal (RHR) system flow rate during Mode 6 (refueling) operation, when the Reactor Coolant System (RCS) is partially drained, from greater than or equal to 3000 gpm to greater than or equal to 1000 gpm, (2) add a Surveillance Requirement to ensure that the RCS temperature is maintained at or below 140°F, and (3) provide the technical justification for the revision in TS Bases 3/4.9.8.

2.0 EVALUATION

At the currently required flow rate of 3000 gpm, the RHR system could be susceptible to vortexing at the RHR pump suction when the RCS is partially drained. Vortexing can lead to RHR system air entrainment and pump cavitation and subsequent loss of RHR system flow.

Operation with the RCS partially drained in Mode 6 is necessary for required inspection and maintenance of RCS components such as reactor coolant pumps and steam generators. As indicated in NUREG-1269, "Loss of Residual Heat Removal at Diablo Canyon Unit 2," reduced RHR flow rate, when the RCS is partially drained, would provide a greater margin against vortexing and preclude an inadvertent loss of decay heat removal capability due to air entrainment and cavitation of the RHR pumps. As the time after plant shutdown increases, decay heat removal requirements from the RHR flow are reduced since decay heat decreases as a function of time after initial reactor shutdown. The change proposed by the licensee will provide sufficient flow rate to maintain RCS temperature at less than or equal to 140°F. In addition, a minimum RHR flow rate is required to prevent boron stratification and minimize the potential for localized variation in boron concentration in the RCS. For Catawba, the licensee stated that a flow rate of 1000 gpm would maintain RCS temperature below 140°F, minimize the effect of a boron dilution incident, and would prevent boron stratification.

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The licensee also reviewed the proposed TS amendments with regard to the concerns raised by NRC Bulletin 88-04, "Potential Safety-Related Pump Loss." Specifically, operating the RHR pumps at flow rates less than 3000 gpm will increase the stress on the pump lower bearings. The licensee will monitor the bearings' wear and will replace the bearings if inspection reveals significant degradation.

The proposed amendments are consistent with Generic Letter (GL) 88-17, "Loss of Decay Heat Removal," dated October 17, 1988, which recommended that licensees identify and submit appropriate changes to TSs that restrict or limit the safety benefit of actions identified in GL 88-17.

The NRC staff has reviewed the licensee's submittals and finds that the proposed changes would reduce the potential for damage and loss of an RHR pump during mid-loop or similar operations and at the same time would mitigate the consequences of a boron dilution incident and prevent boron concentration. The changes have no adverse impact on safety and would not pose an undue risk to public health and safety. Therefore, they are acceptable.

3.0 ENVIRONMENTAL CONSIDERATION

These amendments involve changes in requirements with respect to the installation or use of facility components located within the restricted area as defined in 10 CFR Part 20 and changes in surveillance requirements. The staff has determined that the amendments involve 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 exposure. The NRC staff has previously issued a proposed finding that the amendments involve no significant hazards consideration, and there has been no public comment on such finding. Accordingly, the amendments meet 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 these amendments.

4.0 CONCLUSION

The Commission made a proposed determination that the amendments involve no significant hazards consideration which was published in the Federal Register (54 FR 46145) on November 1, 1989. The Commission consulted with the State of South Carolina. No public comments were received, and the State of South Carolina did not have any comments.

We have 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 these amendments will not be inimical to the common defense and security or to the health and safety of the public.

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Dated: January 23, 1990