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RECIP.NAME RECIPIENT AFFILIATION
MURLEY,T.E. Document Control Branch (Document Control Desk)

SUBJECT: Application for amend to License DPR-74,changing Tech Specs to revise boric acid storage tank vol requirements for Modes 1 through 4 to 5,650 gallons to reflect boron concentration requirements specific to Cycle 8.

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Donald C. Cook Nuclear Plant Unit 2
Docket No. 50-316
License No. DPR-74
TECHNICAL SPECIFICATION CHANGE REQUEST
BAST VOLUME REDUCTION

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D. C. 20555

Attn: T. E. Murley

February 15, 1991

Dear Mr. Murley:

This letter and its attachments constitute an application for a change to the Technical Specifications (T/Ss) for Donald C. Cook Nuclear Plant Unit 2. Specifically, we request that the boric acid storage tank (BAST) volume requirement for Modes 1 through 4 be changed to 5650 gallons to reflect the boron concentration requirements specific to Cycle 8 with additional conservatisms to cover future cycles. The reduction in the required BAST volume will enhance the ability of the plant to maintain the required boric acid concentration in the high pressure safety injection flow path. It will concurrently reduce the potential for boric acid blockages associated with the boric acid evaporator. This revision will also make the Unit 2 requirement identical to the Unit 1 requirement. We desire to implement these changes prior to the start of our next refueling outage, which is scheduled for early 1992.

During the Unit 2 Cycle 8 reload safety evaluation process, Westinghouse performed calculations to determine the BAST minimum boration volume requirements for Modes 1 through 4. Those calculations were bounding and resulted in an increase in the required minimum BAST borated water volume from 5650 to 7715 gallons (T/S 3.1.2.8). The additional volume has increased the potential for maintenance problems within this system. Further review of the assumptions used in the above calculation indicated that some conservatisms could be eliminated. We therefore contracted Westinghouse to calculate a more accurate minimum boration volume requirement. The results of this calculation justified a minimum boration volume of 4905 gallons. These results are contained in Attachment 1 to this letter. To achieve consistency between the

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Unit 1 and Unit 2 technical specifications, and to be conservative, we are requesting that the minimum boration volume required by T/S 3.1.2.8 equal 5650 gallons. In addition, several changes to T/S page B 3/4 1-3 are being made to reflect the results of the enclosed Westinghouse analysis. Specifically, the maximum expected boration capability usable volume requirement from the refueling water storage tank (RWST) has been reduced from "160,122 gallons" to "69,215 gallons."

Our evaluation concerning significant hazards considerations is provided in Attachment 2. The proposed revised T/Ss pages are included in Attachment 3. A copy of the existing T/Ss pages marked-up to reflect the changes proposed in this submittal are included in Attachment 4. The technical specifications that we are proposing to revise in this submittal are not impacted by any other requests that are pending NRC review and approval.

We believe that the proposed change will not result in (1) a significant change in the types of effluents or a significant increase in the amounts of any effluent that may be released offsite, or (2) a significant increase in individual or cumulative occupational radiation exposure.

The proposed changes have been reviewed by the Plant Nuclear Safety Review Committee and by the Nuclear Safety and Design Review Committee.

In compliance with the requirements of 10 CFR 50.91(b)(1), copies of this letter and its attachments have been transmitted to Mr. J. R. Padgett of the Michigan Public Service Commission and to the Michigan Department of Public Health.

This document has been prepared following Corporate procedures that incorporate a reasonable set of controls to ensure its accuracy and completeness prior to signature of the undersigned.

Sincerely,

M. P. Alexich
Vice President

MPA/eh

Attachments

cc: D. H. Williams, Jr.
A. A. Blind - Bridgman
J. R. Padgett
G. Charnoff
NFEM Section Chief
A. B. Davis - Region III
NRC Resident Inspector - Bridgman

ATTACHMENT 1 TO AEP:NRC:1139

WESTINGHOUSE ENGINEERING CALCULATION SUMMARY

DONALD C. COOK NUCLEAR PLANT UNIT 2

ENGINEERING CALCULATION SUMMARY OF THE MINIMUM BORIC ACID TANK VOLUME REQUIREMENT FOR CYCLE 8 OPERATION

BACKGROUND

As part of the effort to support Cycle 8 operation of the Donald C. Cook Unit 2 Nuclear Plant with Westinghouse VANTAGE 5 Fuel, Westinghouse performed calculations to determine the Boric Acid Storage Tank (BAST) minimum boration volume requirements as delineated in Technical Specifications 3.1.2.7 and 3.1.2.8. The results of these calculations indicated that the minimum boric acid tank volume required to reach Mode 4 from Mode 1 exceeded the then current Technical Specification limit (T.S. 3.1.2.8). The minimum boration volume required to reach Mode 6 from Mode 5 was well within the Technical Specification limit (T.S. 3.1.2.7).

Further review of the assumptions employed in the calculation of the minimum boration volume required to reach Mode 4 revealed that conservatisms could be eliminated from the projected Mode 1 and Mode 4 final boron concentration assumptions which would provide some relief in the original calculation of the minimum Boric Acid Storage Tank volume requirement.

INTRODUCTION

At the request of American Electric Power Service Corporation (AEPSC), Westinghouse has recalculated the minimum boration volume required to cooldown from Mode 1 to Mode 4 with revised final boron concentration assumptions. For consistency, the conservatisms in the previous Mode 5 and 6 final boron concentrations were also eliminated and the minimum BAST volume required in Modes 5 and 6 has been recalculated. The calculations have been performed using boron concentration data which is more accurate than employed in the original calculation of the Boric Acid Storage Tank minimum volume requirement for Unit 2 Cycle 8 operation. The method employed in the calculation of the BAST minimum volume requirements is briefly described below.

EVALUATION

Evaluation Methods

The BORDER computer code was used to perform the calculation. The BORDER code, developed by the Westinghouse Commercial Nuclear Fuels Division, performs calculations which determine if boron requirements dictated by fuel reload design are within existing limits specified in the Technical Specifications and the FSAR.

Results

The minimum boration volume calculated to be required in the Boric Acid Storage Tank to cooldown from Mode 1 to Mode 4 was 4905 gallons, which is less than the minimum volume of 7715 gallons specified in Technical Specification 3.1.2.8. The equivalent contained boration volume in the Refueling Water Storage Tank (RWST) for cooldown from Mode 1 to Mode 4 was calculated to be 69,215 gallons (Technical Specification 3.1.2.8 requires a minimum volume of 350,000 gallons based on Emergency Core Cooling System requirements).

For cooldown from Mode 5 to Mode 6, Technical Specification 3.1.2.7 requires a minimum usable borated water volume of 4300 gallons in the BAST and 90,000 gallons in the RWST. The minimum boration volume calculated to be required in the BAST to cooldown from Mode 5 to Mode 6 was 298 gallons. The equivalent contained boration volume in the RWST for cooldown from Mode 5 to Mode 6 was 2408 gallons.

CONCLUSIONS

The results of the calculation indicate that the relaxation of the minimum boration volume requirement specified in Technical Specification 3.1.2.8 for Donald C. Cook Nuclear Plant Unit 2 can be accommodated. Markups of the Unit 2 Technical Specifications indicating the relaxed requirement have been provided for AEPSC's use in the submittal of a change to the Technical Specifications.

As stated previously, additional conservatism was included in the Mode 4/5/6 boron concentrations to accommodate variations in future cycles provided current fuel management techniques and fuel product designs are maintained. Therefore, it is expected that the boron concentration ranges assumed for the determination of the minimum boration volume requirements for Modes 1 through 6 can bound future cycles of operation of the Donald C. Cook Nuclear Plant Unit 2.