HAZARDS ANALYSIS BY THE RESEARCH AND POWER REACTOR SAFETY BRANCH

DIVISION OF LICENSING AND REGULATION

IN THE MATTER OF

YANKEE ATOMIC ELECTRIC COMPANY

DOCKET NO. 50-29

PROPOSED CHANGE NO. 14

Introduction

Pursuant to the provisions of paragraph 3.A. of License No. DPR-3, as amended, Yankee Atomic Electric Company in Proposed Change No. 14 dated January 10, 1962 requested authorization to replace the original control rod coupling and drive shaft assemblies with similar devices of a new design. This new design is similar to the original except for slight modifications to the control rod drive shaft coupling fingers and an engaging-disengaging mechanism designed to provide a positive, zero clearance joint. If authorized, installation of the control rod drive shaft couplings of the new design would be accomplished at the first refueling or at some subsequent time when the presently installed control rod coupling and drive shaft assemblies are determined to be in need of replacement.

Discussion

The original design of the control rod drive shaft coupling mechanism allowed small axial backlash clearance between the coupling mechanism fingers and the control rod adapter surfaces when in the engaged position. Yankee is concerned that wear or corrosion may be taking place as a result of this aspect of the design. Accordingly, authorization was requested to replace these coupling mechanisms with a new type which will eliminate backlash and tend to minimize the possibility of fretting corrosion and wear between mating surfaces. Provided that the reliability of the new couplings can be established, such a change would contribute to the safety of operation.

Based on our review of the design details of the proposed modifications, we have concluded that they should function as intended and improve the serviceability of the control drive mechanisms. In order to establish the reliability of these modifications prior to reactor service, we believe that control rod drop tests should be performed after these modifications are completed. Accordingly, we believe that each control rod assembly incorporating the new coupling design should be drop tested a sufficient number of times to demonstrate its ability to function as designed prior to service use.

Conclusion

In view of the above, we believe that two rod assemblies containing couplings of the new design should be drop tested in the reactor a sufficient number of times, in no case less than five times each, prior to service use, to demonstrate consistency of the test data and the reliability of the coupling mechanisms. To further demonstrate the reliability of the coupling mechanisms, we believe that all other such rod assemblies which are installed should be drop tested at least twice each prior to service use.

Subject to this condition, it is our opinion that the Proposed Change would not present significant hazards considerations not described or implicit in the license application as amended. We have further concluded that there is reasonable assurance that the health and safety of the public would not be endangered by operation of the facility as proposed.

Original signed
by Robert H. Bryan

Robert H. Bryan, Chief
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Date: APR 9 1962