

SAFETY EVALUATION BY THE RESEARCH AND POWER REACTOR SAFETY BRANCH

DIVISION OF REACTOR LICENSING

IN THE MATTER OF

YANKEE ATOMIC ELECTRIC COMPANY

PROPOSED CHANGE NO. 70

DOCKET NO. 50-29

Introduction

Pursuant to the provisions of Section 50.59 of the Commission's regulations, Yankee Atomic Electric Company in Proposed Change No. 70, dated October 15, 1965, requested authorization of a change to the Technical Specifications attached as Appendix A to License No. DPR-3. This proposed change would authorize the installation of four Joint Clamp Assemblies to reinforce the bolted joints of the reactor vessel thermal shield.

Discussion

The thermal shield for the Yankee reactor consists of a hollow cylinder that is 3 inches thick and of larger diameter than the upper neck of the pressure vessel. The thermal shield was installed in four sections that are fastened together at four half-lap joints by thirteen bolts. The structure is located in the primary coolant flow annulus between the core barrel and the vessel wall, and is supported by eight support lugs. Recent inspection of the thermal shield has revealed that some of the bolts have failed, and that two joints had separated radially at the upper end and three at the lower end. The maximum measured separation was 3/8 inch. Based on inspection of some of the failed bolts, it is believed that the bolts failed as a result of shear forces.

Yankee has proposed to reinforce the bolted joints by the installation of four Joint Clamp Assemblies. Each assembly consists of two vertical clamps that grasp the upper and lower edges of adjacent thermal shield sections. The two sections of each clamp are joined at the top and bottom by bars which span the half-lap joints. The clamp assemblies have been designed to preclude vibration, and to withstand any anticipated static or dynamic stresses.

Since the thermal shield is located in the primary coolant flow annulus, failure of this structure could cause a potential flow reduction. However, even if one or more joints should become completely separated, there is insufficient clearance between the support lugs and the core support barrel to permit any significant displacement. The maximum possible motion for a thermal shield section would be for it to tilt either against the core barrel or the vessel wall, and would present

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a flow restriction in only one-quarter of the available flow annulus. This condition would be detected by existing flow and temperature instrumentation, and would not result in any reactor damage. Therefore, we believe that installation of the Joint Clamp Assemblies will improve the integrity of the thermal shield joints and that the safety of reactor operations will not be adversely affected.

Conclusion

We have concluded that the Proposed Change does not present significant hazards considerations not described or implicit in the hazards summary report, and that there is reasonable assurance that the health and safety of the public will not be endangered.

Original signed by:
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