UNITED STATES ATOMIC ENERGY COMMISSION

HAZARDS ANALYSIS BY THE RESEARCH AND POWER REACTOR SAFETY BRANCH

DIVISION OF LICENSING AND REGULATION

IN THE MATTER OF

YANKEE ATOMIC ELECTRIC COMPANY

PROPOSED CHANGE NO. 32

DOCKET NO. 50-29

Introduction

Pursuant to the provisions of Section 50.59 of the Commission's regulations, Yankee Atomic Electric Company, by Proposed Change No. 32 dated March 19, 1963, and supplement thereto dated August 23, 1963, requested authorization to install a vent line which will provide a means of establishing a continuous, controlled flow from the vapor phase portion of the reactor pressurizer to the low pressure surge tank. The installation and use of such a line would permit the removal of non-condensible gases which could accumulate in the pressurizer and interfere with the proper operation of the pressurizer.

Discussion

Recent operation of the Yankee reactor in conjunction with boric acid tests revealed the presence of oxygen in the main coolant system during pressurizer level changes. This indicated that oxygen had been accumulating in the pressurizer during these tests. In order to remove such non-condensible gases which may accumulate in the pressurizer during future operations, Yankee has proposed that a vent line be installed which would discharge up to approximately 40 lbs. of gas per hour from the pressurizer. This line would include a filter, a pressure reducing orifice and a manually operated needle valve. Along with the Proposed Change, Yankee submitted a drawing which shows the arrangement of the components of this vent line.

The vent line would discharge to the low pressure surge tank through the same piping as the pressurizer relief valves. We do not believe that use of the vent line during normal operation represents a significant change in safety. The one item which we do believe involves a safety question is the proposal that remotely actuated valves not be provided in the vent line. Resolution of this question involves a consideration of the consequences of continued flow through the vent line during credible accident situations.

If the primary system became highly contaminated with radioactive fission products, personnel might not be able to close a manually operated vent line valve due to conditions of high radiation levels or a steam atmosphere in the containment. To prevent such a situation from occurring, Yankee plans to install a radiation monitor which will provide the reactor operator with a continuous indication of the activity level in the primary coolant system. If high levels of radioactivity should be experienced, the operator could depressurize the primary system to limit the discharge of radioactive materials through the pressure vent line. Representatives of Yankee have stated that such depressurization could be performed within 20 hours, and before more than a fraction of a per cent of the radioactive isotopes present in the primary system could leak to the low pressure surge tank. In view of the fact that the low pressure surge tank is in a shielded compartment and is protected from runturing due to overpressure by a rupture disc discharging back into the containment building, we do not believe that the temporarily uncontrolled leakage of small amounts of fission product activity to the low pressure surge tank would represent a significant hazard.

Conclusion

Based on our review, 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 Robert H. Bryan

Robert H. Bryan, Chief
Research & Power Reactor Safety Branch
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Date: SEP 9 1959