

DOCKET NO. 50-29

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. 3

Pursuant to the provisions of paragraph 3A of License No. DPR-3, as amended, Yankee Atomic Electric Company has requested authorization of proposed Change No. 3, dated February 21, 1961. This change would permit the installation of a vent system from the distillate accumulator tank in the radioactive waste disposal system. Installation of such a system was found to be advisable during initial performance checks of the waste disposal evaporator when it was discovered that a certain amount of dissociation of the water being evaporated was taking place.

Yankee has proposed that the distillate accumulator tank be vented through a vent condenser and a vent scrubber to the inlet side of the purge and ventilation fans which discharge to the primary vent stack. The drain from the vent condenser would pass through a steam lift trap and then return to the waste disposal evaporator. In addition, Yankee has requested permission to install a connecting line from the gas stripper vent line to the proposed vent line from the distillate accumulator tank.

Upon review of the information submitted in regard to the proposed change, we were concerned over the possibility of an explosive recombination of the hydrogen and oxygen in the vent system. Accordingly, Yankee was requested to furnish additional data relative to this problem; these data were subsequently submitted in a letter to the Commission dated May 22, 1961. In this letter, Yankee presented information demonstrating that hydrogen and oxygen in the presence of water vapor are not flammable unless the total volume per cent of the hydrogen plus oxygen is considerably in excess of 23 per cent of the mixture. The temperature of the outlet from the vent condenser will, therefore, be controlled so as to maintain a mixture of 23 volume per cent or less of hydrogen and oxygen combined with at least 77 volume per cent of water vapor. The temperature of the gaseous mixture in the system will be kept between 200°F and 220°F through use of electrical trace heating and thermal insulation in order to prevent removal of water vapor from the mixture through condensation.

Based on our review of the information submitted by Yankee in regard to this proposed change, we have concluded that the modifications proposed will contribute to safer operation of the facility, and that these changes do not present significant hazards considerations not described or implicit in the license application. We have further concluded that there is reasonable assurance that the health and safety of the public will not be endangered by operation of the facility as proposed.

Edson G. Case, Chief
Research and Power Reactor Safety Branch
Division of Licensing and Regulation

Date: JUN 6 1961

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