

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

SUPPLEMENT TO CHANGE NO. 29

DOCKET NO. 50-29

Introduction

On September 11, 1962, Yankee Atomic Electric Company submitted a request for a temporary authorization to recommence reactor operation with only eleven of the twenty-two installed in-core flux wires in an operable condition. This request was authorized by the Director of the Division of Licensing and Regulation pursuant to the provisions of paragraph 50.59 (e)(2) of 10 CFR 50. The authorization was designated Change No. 29 and provided that the temporary authorization would be effective for a period of one month. On September 14, 1962, Yankee submitted further information relating to the in-core flux wires which has been considered as a Supplement to Change No. 29. This Supplement contains information regarding the modifications which had been made to the flux wire thimbles and a discussion of the effects on safety resulting from the loss of use of one-half of the installed flux wire thimbles. In its September 14 submittal, Yankee also requested authorization to operate their reactor with only one-half of the flux wire thimbles in an operable condition throughout the life of Core II.

Discussion

The twenty-two flux wire thimbles which are provided in the Yankee reactor for measurement of the flux distribution in the core during reactor operation, penetrate the reactor pressure vessel head through plug adapters in two groups of eleven each. Two of the flux wire thimbles in one group were damaged during replacement of the pressure vessel head subsequent to the refueling operation which has recently been in progress. A visual examination of the thimbles revealed deterioration of the metal on the inner surface of these two thimbles as well as similar deterioration on other thimbles.

Consideration was given to sealing the two thimbles damaged during reactor reassembly, but this was found to be impracticable since the thimbles were damaged in an area too near the plug adapter for an effective weld to be made. However, Yankee was able to plug and seal weld the other nine flux wire thimbles in the group. Following the sealing operation, all eleven of the group were covered with a cap which was welded to the existing seal cap to prevent the leakage of primary system coolant through any of

the thimbles in the group to the atmosphere. The remaining eleven thimbles were cut off above the plug adapter to remove defective material. They were then fitted with a connector tube sheet. This arrangement permits use of the eleven remaining thimbles, but a leak in one of these would allow coolant to escape to the atmosphere and would probably require the reactor to be shut down in order to perform necessary repairs.

The loss of the use of one-half of the twenty-two flux wire thimbles originally present in the Yankee reactor will decrease the ability to measure the flux distribution during reactor operation. We believe, however, that the remaining thimbles will allow measurement of the flux distribution with sufficient accuracy to permit confirmation of calculated hot channel factors during Core II life. Operation of two of the three installed charging pumps can supply sufficient water to the primary system to make up the loss of coolant which might occur should one of the uncapped flux wire thimbles rupture. If more than one of the uncapped thimbles should fail, the high pressure safety injection pump could supply an adequate quantity of water to the primary system after its pressure had decreased to 770 psig, and no damage to the core would result from such an occurrence.

#### Conclusion

Based on the foregoing, we have concluded that the Supplement to Change No. 29 does not present significant hazards considerations not described or implicit in the hazards summary report. We have further concluded that there is reasonable assurance that the health and safety of the public will not be endangered.

Original signed  
by Robert H. Lyons

Robert H. Lyons, Chief  
Research & Power Reactor Safety Branch  
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Date:

OCT 9 1962