

UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
SUPPORTING AMENDMENT NO. 20 TO FACILITY OPERATING LICENSE DPR-3  
(CHANGE NO. 125 TO THE TECHNICAL SPECIFICATIONS)

YANKEE ATOMIC ELECTRIC COMPANY

YANKEE NUCLEAR POWER STATION (YANKEE-ROWE)

DOCKET NO. 50-29

Introduction

By application dated October 28, 1975, Yankee Atomic Electric Company (the licensee) proposed changes that involve the replacement of descriptive page 213:9 in Section 213 "Reactor Control System" of the Final Hazards Summary Report which is incorporated in the Technical Specifications appended to License No. DPR-3 for the Yankee-Rowe reactor. One change would allow the replacement of the tungsten filament incandescent bulbs used for primary control rod position indication with light emitting diodes (LEDs). The other change would correct the description of the secondary rod position indicating scheme to reflect the previously approved controls of Yankee-Rowe with four instead of six rod groups.

Evaluation

The primary rod position indicating system at Yankee-Rowe provides column-type light indication of the position of each of the 24 control rods. Presently, this system includes tungsten filament incandescent bulbs mounted in vertical columns (30 bulbs for each control rod) on the control board. As a control rod is withdrawn from or inserted into the core the indicating bulbs associated with this control rod are caused to light up, giving position indication within an accuracy of  $\pm 3$  inches. The licensee has reported in their October 28, 1975 submittal that the sockets for the incandescent bulbs have deteriorated such that they no longer allow reliable operation of the bulbs. Further, the increase of the failure rate requires replacement of bulbs at frequent intervals. For these reasons, the licensee proposes to replace all tungsten filament incandescent bulbs with light emitting diodes (LEDs). The licensee informed us that the light indication of the LEDs will provide more uniform brightness than that obtained from the incandescent bulbs. We find that use of the LEDs for rod position indication does not involve

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changes to the existing rod position indicating scheme, that the rod position indication with the LEDs will be at least as reliable as presently obtained from the incandescent bulbs. We therefore conclude that the proposed replacement of the tungsten filament incandescent bulbs with LEDs is acceptable.

The proposed replacement of page 213:9 of Section 213 would also revise the description of the secondary rod position indicating system. This system gives an indication of each rod group position. Our previous Change No. 57 (issued July 30, 1964) approved operation of Yankee-Rowe with Core IV and all succeeding cores with the 24 control rods controlled in four rod groups, instead of six rod groups. This also resulted in the acceptable change of the secondary rod position indicating system involving the use of one self-synchronous transmitter, one self-synchronous receiver and one digital readout indicator for each of the four rod groups instead for six rod groups. The proposed replacement of page 213:9 corrects the description of the secondary rod position indication to reflect the use of this system for the previously approved four rod group control. This change does not involve an unreviewed safety question and is acceptable.

#### Conclusion

We have concluded, based on the considerations discussed above, that: (1) because the change does not involve a significant increase in the probability or consequences of accidents previously considered and does not involve a significant decrease in a safety margin, the change does not involve a significant hazards consideration, (2) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (3) such activities will be conducted in compliance with the Commission's regulations and the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

Date: NOV 19 1975