

SAFETY EVALUATION BY THE DIVISION OF REACTOR LICENSINGIN THE MATTER OFNORTHERN STATES POWER COMPANYPATHFINDER ATOMIC POWER PLANTDOCKET NO. 50-130PROPOSED CHANGE NO. 15INTRODUCTION

On July 28, 1967, Northern States Power Company requested authorization to revise the Technical Specifications of Provisional Operating License No. DPR-11 pursuant to the provisions of Section 50.59 of the Commission's regulations. This change would permit the storage of new Core II boiler and superheater fuel elements.

The licensee requests authorization for the following changes in Appendix A, Technical Specifications to DPR-11:

In Section 4.9.10:

- (1) It is requested that the first sentence of this section:

"The fuel handled or stored as described in this section shall be limited to the fuel as described in these specifications."

be replaced with the following:

"The fuel handled or stored as described in this section shall be limited to fuel as described in these specifications or as described in ACNP 67525."

- (2) It is requested that the third paragraph of subsection (b):

"The maximum calculated flooded  $K_{eff}$  for the superheater storage shall be less than 0.70."

be replaced with the following:

"The maximum calculated flooded  $K_{eff}$  for the superheater storage shall be less than 0.80."

(3) It is requested that the fifth paragraph of subsection (b):

"The new fuel storage vault shall contain a maximum of 156 boiler elements and 550 superheater elements. There shall be approximately 173 lbs. of  $UO_2$  in each boiler element and approximately 0.33 lbs. of  $UO_2$  in each superheater element."

be replaced with the following:

"The new fuel storage vault shall contain a maximum of 156 boiler elements and 550 superheater elements. There shall be approximately 173 lbs. of  $UO_2$  in each Core I boiler element and approximately 0.33 lbs. of  $UO_2$  in each Core I superheater element. There shall be approximately 169 lbs. of  $UO_2$  in each Core II boiler element and approximately 5.50 lbs. of  $UO_2$  in each Core II superheater element."

The changes considered here are necessary to permit the licensee to store new Core II boiler and superheater fuel elements for the Pathfinder reactor in the existing fuel storage vault. Additional changes will be required to permit refueling the reactor with Core II fuel and will be requested at a later date.

#### DISCUSSION

The principal safety consideration for the new fuel storage is maintaining secure, orderly storage, in an array which will ensure that  $K_{eff}$ , should the fuel storage vault inadvertently become flooded, will leave a conservative margin to criticality. We believe that the  $K_{eff}$  less than 0.80 proposed by the applicant provides a sufficient and conservative margin to criticality.

Secure, orderly fuel storage is maintained by permitting storage of no more fuel elements than the storage racks are designed to accommodate.

The licensee has calculated  $K_{eff}$  for the fuel storage vault by considering both the boiler element array in the flooded vault and the superheater element array in the flooded vault. In both cases the calculated  $K_{eff}$  is less than 0.80. The storage racks in the Pathfinder fuel storage vault are constructed so that approximately 8 inches are maintained between adjacent tiers of superheater elements, 23 inches are maintained between adjacent double rows of boiler elements, and more than 24 inches are maintained between superheater fuel elements and the nearest boiler fuel elements. We have examined the situation where both arrays are present in the flooded vault and have concluded that, since the boiler and superheater elements are separated by more than two feet, coupling is precluded; therefore, the limiting  $K_{eff}$  is the higher of the two arrays.

CONCLUSION

We have concluded that the Proposed Change No. 15, as set forth in this evaluation does not present significant hazards considerations not described or implicit in the Final Safety Analysis Report, and that there is reasonable assurance that the health and safety of the public will not be endangered.

*Robert J. Schmel, for*

Donald J. Skovholt  
Assistant Director for Reactor Operations  
Division of Reactor Licensing

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