



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 73 TO FACILITY OPERATING LICENSE NO. DPR-40

OMAHA PUBLIC POWER DISTRICT

FORT CALHOUN STATION, UNIT NO. 1

DOCKET NO. 50-285

Introduction

Omaha Public Power District (OPPD) encountered a problem of failures of incore detectors in the Fort Calhoun reactor during Cycle 6 operation. An interim Technical Specification (TS) modification was proposed (Ref. 1) and approved by the staff (Ref. 2) which allowed operation with less than 75% of the incore detector strings operable for the remainder of Cycle 6. A detector string is defined as failed if two out of four detectors in the axial string have failed signals. OPPD has submitted a request (Ref. 3) for a TS modification which would allow operation with less than 75% but more than 20% of the incore detector strings operable for all of the forthcoming Cycle 8 operation and future cycles. We have reviewed this request as well as the additional information submitted at our request (Refs. 4&5) and provide the following evaluation.

Evaluation

Inspection and analysis of Cycle 6 and Cycle 7 detector failures indicate that the accumulated failures would probably not reach the minimum operability condition of 75% until mid-cycle or later, if at all. A mid-cycle or later implementation of this alternate operating mode (20% to 75% of the strings operable) corresponds to a burnup when the radial peaking factors have decreased to low enough values so that the application of additional uncertainties still provides sufficient margin to TS limits. However our main concerns are that the failure of over 25% of the incore detectors will not only decrease the quality of the overall power distribution information but also hinder the ability to accurately determine possible reactivity anomalies. An example is the burnable poison rod leaching problem that occurred in St. Lucie 1 where the incore instrumentation was essential in identifying and understanding the event.

In the event that the operability requirement of availability of 75% of the incore detectors cannot be met during a cycle, the staff will consider interim TS to allow monitoring of linear heat rate and power density with less than 75% of the incore detector strings operable for the remainder of the cycle. Consideration will be given to lower peaking factors with cycle burnup, application of additional uncertainties, and more frequent evaluation of these uncertainties.

Therefore, we find that the proposed TS change to allow operation with less than 75% operational incore detectors is not acceptable.

OPPD also requested that interim special TS number 6.4 entitled "Operation with Less Than 75% of Incore Detector Strings Operable" be deleted, for it is applicable only for Cycle 6 operations. Since Cycle 6 operations have been concluded, there is no need to keep the interim TS in the license. Thus we agree it should be deleted.

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Environmental Consideration

We have determined that the amendment does not authorize a change in effluent types or total amounts nor an increase in power level and will not result in any significant environmental impact. Having made this determination, we have further concluded that the amendment involves an action which is insignificant from the standpoint of environmental impact and, pursuant to 10 CFR §51.5(d)(4), that an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with the issuance of this amendment.

Conclusion

We have concluded, based on the considerations discussed above, that: (1) because the amendment does not involve a significant increase in the probability or consequences of an accident previously evaluated, does not create the possibility of an accident of a type different from any evaluated previously, and does not involve a significant reduction in a margin of safety, the amendment 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: April 12, 1983

Principal Contributors:

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References:

1. Letter from Omaha Public Power District to H. Denton, to allow monitoring of the linear heat rate and power distribution with less than 75% of the incore detector strings operable for the remainder of Cycle 6, dated January 14, 1981.
2. Memorandum from L. S. Rubenstein to T. Novak, Fort Calhoun Evaluation of Technical Specification Change Request, dated February 2, 1981.
3. Letter from Le Boeuf, Lamb, Lieby & MacRae to Harold R. Denton, transmitting "Application for Amendment of Operating License" and proposed Technical Specifications for Fort Calhoun Station Unit 1, dated November 18, 1982.
4. Letter from R. A. Clark to W. C. Jones, request for additional information relating to incore detector string operability dated February 2, 1983.
5. Letter from W. C. Jones to R. A. Clark, OOPD response to questions on Fort Calhoun incore detector string operability dated March 11, 1983.