

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
UNITED STATES ATOMIC ENERGY COMMISSION
WASHINGTON, D.C. 20545

August 14, 1973

Honorable Dixy Lee Ray
Chairman
U. S. Atomic Energy Commission
Washington, D. C. 20545

Subject: REPORT ON OCONEE NUCLEAR STATION UNITS 2 AND 3

Dear Dr. Ray:

During its 160th meeting, August 9-11, 1973, the Advisory Committee on Reactor Safeguards completed its review of the application of the Duke Power Company for a license to operate Units 2 and 3 of the Oconee Nuclear Station at power levels up to 2568 MW(t). This project was considered during a Subcommittee meeting near the site at Clemson, South Carolina, on July 23 and 24, 1973, subsequent to a tour of the plant. In the course of the review, the Committee had the benefit of discussions with representatives and consultants of the Duke Power Company, the Babcock and Wilcox Company, the Bechtel Corporation, and the AEC Regulatory Staff, and of the documents listed. The Committee last reported to the Commission on the construction of this plant in its letter of July 11, 1967, and on operation of Unit 1 of the Oconee Nuclear Station on September 23, 1970.

The Oconee Nuclear Station is located in Oconee County, South Carolina. The nearest population center is Anderson, 21 miles southeast with a population of about 28,000. The water supply for the plant is taken from Lake Keowee.

The application for a construction permit for Units 1, 2 and 3 proposed initial operation of each unit at power levels up to 2452 MW(t) although the safety studies had been made for a power level of 2568 MW(t). The application for an operating license included a request for the higher power and the Committee agreed to this value for Unit 1, but recommended that the Regulatory Staff review operation of Unit 1 prior to allowing the full requested power for this first of a type. The Committee believes that this review should be completed and satisfactory performance of Unit 1 demonstrated before Units 2 and 3 operate at full licensed power.

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The hot functional testing of Oconee Nuclear Station Unit 1 which was conducted in 1972 caused damage to some components, including reactor vessel internals. The design changes which were required for Unit 1 have been applied to Units 2 and 3. The Committee believes that these changes are acceptable and notes, in addition, that a loose parts monitoring system has been installed in each unit and that a vibration monitoring system is being tested in Unit 1.

The applicant stated that he will propose appropriate additional operating limitations if, at any time during operation, the moderator temperature coefficient of reactivity is positive. This matter should be resolved in a manner satisfactory to the Regulatory Staff.

The Regulatory Staff has been investigating on a generic basis the problems associated with a potential reactor coolant pump overspeed in the unlikely event of a particular type of rupture at certain locations in a main coolant pipe. Some additional protective measures may be warranted and this matter should be resolved to the satisfaction of the Regulatory Staff. The Committee wishes to be kept informed.

The Committee reiterates its previous comments on the need for further study of means for preventing common mode failures from negating reactor scram action, and of design features to make tolerable the consequences of failure to scram during anticipated transients. The Committee believes it desirable to expedite these studies and to implement in timely fashion such design modifications as are found to improve significantly the safety of the plant in this regard. The Committee wishes to be kept informed of the resolution of this matter.

The applicant has proposed measures, including alarms and administrative procedures, to prevent operating under conditions which might result in exceeding acceptable fuel limits established from accident studies and other considerations. The current review has been confined to the first fuel cycle and the analyses have been based on the as-built fuel. The ACRS recommends that the Regulatory Staff establish suitable criteria for these measures, and provide suitable bases for evaluating future loadings. The Committee wishes to be kept informed.

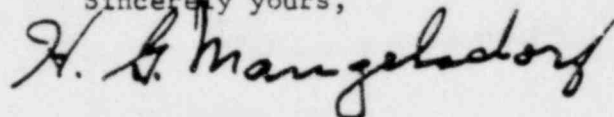
The Committee recognizes that re-evaluation of operating limits may be necessary as a result of possible changes in the acceptance criteria for emergency core cooling systems. The Committee wishes to be kept informed.

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Other problems relating to large water reactors which have been identified by the Regulatory Staff and the ACRS and cited in previous reports should be dealt with appropriately by the Regulatory Staff and the applicant as suitable approaches are developed.

The Advisory Committee on Reactor Safeguards believes that, if due regard is given to the items mentioned above, and subject to satisfactory completion of construction and preoperational testing, there is reasonable assurance that Units 2 and 3 of the Oconee Nuclear Station can be operated at power levels up to 2568 MW(t) without undue risk to the health and safety of the public.

Sincerely yours,

A handwritten signature in cursive script, reading "H. G. Mangelsdorf".

H. G. Mangelsdorf
Chairman

References Attached

References

1. Final Safety Analysis Report, Volumes I through IV
2. Amendments 22 through 42 to Application
3. DL Safety Evaluation for Oconee Nuclear Station, Unit 1, dated December 29, 1970, with Supplements 1, 2, and 3, dated March 24 and December 20, 1972, and July 10, 1973, respectively.
4. DL Safety Evaluation for Oconee Nuclear Station, Units 2 and 3, dated July 6, 1973, and Supplement 1, dated August 2, 1973
5. Duke Power Company letter dated July 27, 1972, transmitting a list of B&W Topical Reports
6. Duke Power Company letter dated November 20, 1972, furnishing information on auxiliary service water system for Oconee Units 2 & 3
7. Duke Power Company letter dated December 29, 1972 transmitting their analysis regarding the consequences of main steam and feedwater piping ruptures at the Oconee Station, Units 1, 2, and 3
8. Duke Power Company letter dated January 12, 1973, regarding the installation of flow restrictors in core flooding nozzles entering the reactor vessel at Oconee Units 1, 2, and 3
9. Duke Power Company letter dated March 2, 1973, concerning the analysis of reactor cavity and steam generator subcompartment pressure response
10. Duke Power Company letter dated April 4, 1973, furnishing comments of items under the heading "Units 1 & 2 and Units 1, 2, & 3 Operations"
11. Duke Power Company letter dated April 27, 1973 regarding quality assurance program for operation of Oconee Nuclear Station
12. B&W Interim Report on Fuel Densification for the Oconee 2 and 3 Reactors, May 1973
13. Duke Power Company Report No. OS-73.2, dated April 25, 1973, "Analysis of Effects Resulting from Postulated Piping Breaks Outside Containment for Oconee Units 1, 2, and 3"
14. Duke Power Company letter dated May 1, 1973, on Oconee Units 2 and 3 Active Valve Operability
15. Duke Power Company letter dated May 3, 1973, regarding control circuits and safety related equipment
16. Duke Power Company letter, dated May 4, 1973, transmitting three reports:

References Continued

- 1) Failure of the operating Mechanism to Fully Open the Core Flood Line Isolation Valve CF-1
 - 2) Failure of Reactor Building Spray Valves to Open During ES System Testing
 - 3) March 6, 1973, 1A1 Reactor Coolant Pump Oil Fire Incident Report
17. BAW-1395 (Proprietary) "Oconee 2 Fuel Densification Report"
18. DL Technical Report on Densification of B&W Reactor Fuel, July 6, 1973