

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

UNITED STATES ATOMIC ENERGY COMMISSION

WASHINGTON, D.C. 20545

April 18, 1973

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

Subject: REPORT ON COOPER NUCLEAR STATION

Dear Dr. Ray:

During its 156th meeting, April 12-14, 1973, the Advisory Committee on Reactor Safeguards completed its review of the application by the Nebraska Public Power District for authorization to operate the Cooper Nuclear Station at power levels up to 2381 MW(t). This project was considered during a Subcommittee meeting near the site at Auburn, Nebraska, on March 29, 1973, subsequent to a tour of the plant, and during a Subcommittee meeting in Washington, D. C. on April 4, 1973. During its review the Committee had the benefit of discussions with representatives and consultants of the Nebraska Public Power District (NPPD), the General Electric Company, Burns and Roe, Inc., and the AEC Regulatory Staff. The Committee also had the benefit of the documents listed below and of comments from members of the public. The Committee last reported to the Commission on the construction of this plant in its letter of March 12, 1968.

The Cooper Nuclear Station is located on the west bank of the Missouri River about sixty miles south of Omaha, Nebraska. The site consists of 1351 acres, 205 of which are in the State of Missouri on the east bank of the river.

The applicant is developing a stringent testing and inspection program for the main steam line isolation valves. Leakage tests will be performed prior to startup after each refueling outage and during unscheduled outages during the operating cycle. If results of these leak tests should be unsatisfactory, a valve sealing system will be installed. The Committee recommends that this matter be resolved in a manner satisfactory to the Regulatory Staff.

The applicant has developed plans for in-service inspection of accessible portions of the reactor coolant pressure boundary both inside and outside of containment. The Committee recommends that continued attention be given to means for assuring the integrity of those portions of the reactor pressure vessel that are currently inaccessible for inspection.

In the unlikely event that a break occurs in the recirculation pump discharge line, the pump impeller might act as a turbine, causing the pump and motor to overspeed and become potential sources of missiles. The applicant is reviewing means of dealing with this possibility. The Committee believes that this matter should be resolved in a manner satisfactory to the Regulatory Staff.

The applicant has examined the problems that might develop should a main steam line or feedwater line rupture outside of containment and has concluded that the plant could be shut down safely. The Regulatory Staff is reviewing the applicant's submittal. The Committee recommends that this matter be resolved in a manner satisfactory to the Regulatory Staff.

A postulated cask drop within the fuel pool is calculated to result in cracking of the pool bottom. To avoid such damage, the applicant has proposed to modify the Reactor Building overhead crane to provide appropriate redundancy in the hoisting system. The modifications will be made prior to the time of first refueling. This matter should be resolved in a manner satisfactory to the Regulatory Staff.

The applicant has considered barge traffic on the Missouri River adjacent to the plant and has determined that an accident involving hazardous cargo would not have a significant effect on the Cooper Station. He stated that he will be kept informed of any changes in the nature of such traffic or cargo and will re-evaluate the consequences of a possible accident as required.

Reviews are continuing of the problem of fuel densification and whether it might affect the efficacy of the Cooper Station emergency core cooling system. The Committee recommends that these studies be completed to the satisfaction of the Regulatory Staff prior to commercial power operation.

The applicant has provided protection against pipe whip in accordance with the criteria proposed by the Regulatory Staff in the Regulatory Guide, "Protection Against Pipe Whip Inside Containment," now under preparation. The Committee has emphasized the desirability of such protective measures in several letters. The Committee also recognizes that systems for restraining against pipe whip could generate undesirable stress concentrations unless properly designed and suitably installed. Therefore, particular emphasis should be devoted to the following: (1) a better understanding of transient response in piping than is usually required; (2) verification that the design computational techniques account for operational conditions and postulated transients; and (3) careful examination during preoperational testing and hot startup to validate that the installation meets the design criteria.

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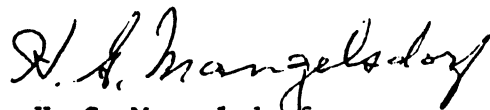
The applicant designed and constructed the Cooper plant to satisfy the requirements applicable in 1968 for the release of liquid and gaseous wastes. At the present time more stringent rules on new applications for construction permits in regard to allowable releases to the environment are being applied on a case-by-case basis to completed plants and plants under construction. The NPPD has agreed (a) to install equipment that will satisfy the rules in the proposed Appendix I of 10 CFR Part 50 no later than the time of the first refueling outage and (b) prior to installing this equipment, to operate the plant in a manner intended to keep off-gas releases to levels essentially equivalent to those in proposed Appendix I. The Committee agrees that these proposals are satisfactory and recommends that this equipment should be specified and installed, and technical specifications for reactor operation should be established to the satisfaction of the Regulatory Staff.

Particular attention should be given to assuring the availability of instrumentation of type and range adequate to assist in diagnosing the course of events inside and outside the containment for various postulated accidents.

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 the Cooper Nuclear Station can be operated at power levels up to 2381 MW(t) without undue risk to the health and safety of the public.

Sincerely yours,


H. G. Mangelsdorf
Chairman

References attached

References

- 1) Final Safety Analysis Report (FSAR), Volumes I-VII, Cooper Nuclear Station
- 2) Amendments 8 through 19 to the FSAR
- 3) Safety Evaluation Report by the Directorate of Licensing, USAEC, dated February 14, 1973
- 4) Letter, NPPD to Directorate of Licensing, USAEC, (submitting evaluation of the susceptibility of engineered safety systems to common mode failure as the result of flooding) dated September 8, 1972
- 5) Letter, Voss A. Moore, Assistant Director for BWR's, Directorate of Licensing, to Mr. Harold G. Mangelsdorf, Chairman, ACRS, dated April 13, 1973
- 6) Written statement and accompanying request to make an oral statement, by Les Williams, Corporate Counsel, Missouri Beef Packers, Inc., dated April 5, 1973
- 7) Written statement and accompanying request to make an oral statement, by Lawrence D. Stoner, received April 3, 1973
- 8) Written statement by Les Williams, Corporate Counsel, Missouri Beef Packers, Inc., received April 3, 1973
- 9) Letter, Glen E. Krueger, Nemaha County Hospital, to Mr. Larry Stoner, dated April 2, 1973
- 10) Letter, Harry Broermann to Advisory Committee on Reactor Safeguards, dated March 30, 1973
- 11) Written statement by Paul F. O'Konski, Attorney, St. Joseph, Missouri, with accompanying request for oral statements to be made by Mr. O'Konski, Mr. Lawrence D. Stoner and Representative Hardin C. Cox, 6th Congressional District of Missouri, received March 29, 1973
- 12) Written statement by Lawrence D. Stoner, received March 29, 1973
- 13) Written statement by Hardin C. Cox, received March 29, 1973
- 14) Letter, Mrs. Jeff Broady to R. F. Fraley, dated June 25, 1972

- 15) Letter, Mrs. Jeff Broady to Dr. Spencer H. Bush, dated March 3, 1972
- 16) Consumers Public Power District Summary Report on Programs Carried Out in Response to Recommendations by Fish & Wildlife Service, dated October 14, 1969
- 17) USAEC Division of Reactor Licensing Summary Statement dated April 29, 1968