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

July 21, 1972

Honorable James R. Schlesinger
Chairman
U. S. Atomic Energy Commission
Washington, D. C. 20545

Subject: REPORT ON OMAHA PUBLIC POWER DISTRICT - FORT CALHOUN STATION UNIT NO. 1

Dear Dr. Schlesinger:

During its 147th meeting, on July 13-15, 1972, the Advisory Committee on Reactor Safeguards completed its review of the application of the Omaha Public Power District for authorization to operate the Fort Calhoun Station Unit No. 1 at power levels up to 1420 MW(t). The project was considered previously by the Committee during its 143rd meeting, March 2-4, 1972, 146th meeting, June 8-10, 1972, and during Subcommittee meetings held on June 22, 1970, in Washington, D. C., on February 18, 1972, at the plant site, on May 31, 1972, in Denver, Colorado, on June 7, 1972, and on July 11, 1972, in Washington, D. C. During its review, the Committee had the benefit of discussions with representatives of the Omaha Public Power District, Combustion Engineering, Incorporated, Gibbs, Hill, Derham, and Richardson, the AEC Regulatory Staff, and their consultants. The Committee also studied the documents listed. The Committee previously discussed this project in a construction permit report dated February 16, 1968.

The Fort Calhoun station is located on the west bank of the Missouri River, in a rural area 19 miles north of Omaha, Nebraska (population about 347,000). The soils near the river and in the neighborhood of the plant consist of approximately 70 feet of silty sand with occasional inclusions of clay. Adequate support for the plant is ensured by the use of about 950, twenty-inch diameter pipe piles which have been driven to bedrock. The density of the sand between piles has been increased to a value sufficient to ensure against liquefaction. Corrosion protection for the piles is provided.

The applicant proposes to use a purging technique to control hydrogen accumulation in the containment which could occur in the unlikely event of a loss-of-coolant accident. The purge system will be installed and operable prior to routine power operation.

The applicant will conduct vibration tests during startup and will monitor for possible loose parts during operation of the reactor.

The emergency core cooling systems (ECCS) for the reactor have been evaluated using the Combustion Engineering model of the AEC "Interim Acceptance Criteria for Emergency Core Cooling Systems for Light-Water Power Reactors." The applicant has included in his ECCS performance calculations detailed evaluations and sensitivity studies of small breaks (less than 0.5 ft^2) and has modified the operating conditions of his safety injection tank system to reduce the clad temperatures calculated for such breaks. The Committee believes that the indicated performance is acceptable for the Fort Calhoun Reactor. However, the Committee recommends that as the results of additional research and analytical study become available they should be used by the applicant for evaluation and possible improvement of the systems. The Committee wishes to be kept informed.

Suitable surveillance of fuel behavior with burnup and other operating conditions should be maintained.

The Committee recommends that the Regulatory Staff satisfy itself with the adequacy of the applicant's analyses of the response of compartment walls within the containment to local and dynamic pressure loadings during postulated loss-of-coolant accidents.

The applicant has described specific changes he will make in the arrangement of the existing incoming transmission lines to comply with the AEC General Design Criterion 17. The Committee believes that these changes should be made prior to extended operation of the plant at appreciable power levels.

The Committee reiterates its previous comments on the need to study further means of preventing common mode failures from negating reactor scram action, and 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.

Other problems relating to large water reactors, which have been identified by the Regulatory Staff and the ACRS and cited in previous ACRS 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 pre-operational testing, there is reasonable assurance that the Fort Calhoun Station Unit No. 1 can be operated at power levels up to 1420 MW(t) without undue risk to the health and safety of the public.

Sincerely yours,

C. P. Siess

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Chairman

References

1. Amendment 17 (Vols. 1 through 5, Final Safety Analysis Report) to the Omaha Public Power District License Application for Fort Calhoun Station Unit No. 1

2. Amendments 18 through 36 to the License Application

3. Omaha Public Power District Draft Technical Specifications, May 9, 1972