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

October 14, 1971

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

Subject: REPORT ON JOSEPH M. FARLEY NUCLEAR PLANT, UNITS NO. 1 AND NO. 2

Dear Dr. Schlesinger:

At its 138th meeting, October 7-9, 1971, the Advisory Committee on Reactor Safeguards reviewed the application by Alabama Power Company for a permit to construct the two-unit Joseph M. Farley Nuclear Plant. The project was considered at Subcommittee meetings held at the site on August 18, 1971, and in Washington, D. C., on September 7, 1971. During its review, the Committee had the benefit of discussions with representatives and consultants of the applicant, Westinghouse Electric Corporation, Southern Services, Inc., Bechtel Corporation, and the AEC Regulatory Staff. The Committee also had the benefit of the documents listed.

The plant will be located in a sparsely populated region of Alabama on an 1850-acre site on the west bank of the Chattahoochee River, 16-1/2 miles east of Dothan, Alabama. The nearest community is Columbia, Alabama, 5 miles to the north, population 1300. The 1975 estimated population of Dothan is 38,000. The minimum distance to the site boundary is 4140 ft. (1262m) and the low population zone has been conservatively assumed to be 2 miles.

Each unit includes a three-loop Westinghouse pressurized water reactor, to be operated at 2652 MWt. The reactor system is similar to other high power density Westinghouse systems on which the Committee has reported recently. The containment structure will be of prestressed concrete.

The Chattahoochee River is controlled by a series of dams, forming a chain of lakes. The Chattahoochee River and the Flint River, at their confluence, form the Apalachicola River, which flows into the Gulf of Mexico. The plant will use cooling towers, and the temperature of the blowdown to the river will be limited. A storage pond, impounded by a seismic Class 1 earth dam, serves as the normal and emergency reservoir of cooling water; makeup to the pond is pumped from the river. The plant grade is 75 ft. above average river level; the Committee believes this provides adequate protection against flooding.

In order to satisfy the AEC "Interim Acceptance Criteria for Emergency Core Cooling Systems for Light-Water Power Reactors," the applicant finds it necessary to base his loss-of-coolant accident analysis for the cold-leg break on a maximum permissible linear power of 17.0 kw per foot at full power. It is believed, but remains to be confirmed by the applicant, that this restriction will be adequate for the full spectrum of postulated breaks. Subject to this confirmation, the Committee believes that the proposed restriction on the maximum permissible linear power will permit a satisfactory mode of operation. Although the applicant does not propose to install a fixed in-core flux monitoring system, he stated that it would be possible to install such a system; the Committee believes this capability should be retained. The Committee wishes to call attention to the importance of performing the necessary research and development studies to confirm the effectiveness of certain features of the emergency core cooling systems.

Further studies are in progress with regard to the effects of a failure to scram on anticipated transients and of design features which would make tolerable the results of such an event. These studies should be expedited and the matter resolved in a manner satisfactory to the Regulatory Staff and the ACRS during construction.

Other problems related to large water-cooled and moderated reactors have been identified by the Regulatory Staff and the ACRS and cited in previous ACRS reports. The Committee believes that resolution of these items should apply equally to the Joseph M. Farley Nuclear Plant.

The Committee believes that the items mentioned above can be resolved during construction and that, if due consideration is given to these items, the Joseph M. Farley Nuclear Plant, Units No. 1 and No. 2 can be constructed with reasonable assurance that they can be operated without undue risk to the health and safety of the public.

Sincerely,

/s/ Spencer H. Bush

Spencer H. Bush
Chairman

References

1. Alabama Power Company License Application and Preliminary Safety Analysis Report (Volumes I through V) for the Joseph M. Farley Nuclear Plant, Units No. 1 and No. 2

2. Amendments 1 through 23 to the License Application for he Joseph M. Farley Nuclear Plant, Units No. 1 and No. 2