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

December 17, 1971

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

Subject: REPORT ON SURRY POWER STATION UNITS 1 AND 2

Dear Dr. Schlesinger:

At its 140th meeting, December 9-11, 1971, the Advisory Committee on Reactor Safeguards completed its review of the application of Virginia Electric and Power Company for authorization to operate Surry Generating Units 1 and 2 at power levels up to 2441 MW(t). Unit 2 is expected to be ready for operation about six months after Unit 1. This project was considered at the 139th Committee meeting, November 11-13, 1971, and at Subcommittee meetings at the site July 1, 1971, and in Washington, D. C. on November 5, 1971. During its review, the Committee had the benefit of discussion with representatives of Virginia Electric and Power Company, Westinghouse Electric Corporation, Stone and Webster Engineering Corporation, the Regulatory Staff, and their consultants. The Committee also had the benefit of the documents listed. The Committee reported on the construction of these units in its letter of April 29, 1968.

Surry Units 1 and 2 are located in Surry County, Virginia on the Gravel Neck Peninsula which extends northwest from the south bank of the James River. The nearest boundary of Newport News, Virginia, population about 140,000, is approximately 4.7 miles southeast of the site. The high population density portion of Newport News is 17 miles from the plant. There is a large transient population in the area of the plant during summer months.

Each nuclear unit employs a pressurized water reactor in a three-loop nuclear steam supply system of essentially the same design as the H. B. Robinson Unit No. 2 and Turkey Point Units 3 and 4, previously reviewed.

The applicant states that he intends to operate Units 1 and 2 in such a manner as to assure that maximum fuel rod linear power density does not exceed 16.4 kw/ft at 102% of the rated power of 2441 MW(t). Performance of the emergency core cooling system (ECCS) during postulated loss-of-coolant accidents has been re-evaluated in the light of results from the Commission's FLECHT program, experiments and analyses by the applicant and his contractors, and information developed by the Regulatory Staff in recent studies of ECCS. The Committee believes that the applicant's proposed manner of operation is acceptable.

The applicant proposes to use a catalytic hydrogen recombiner to control the buildup of hydrogen in the containment that could follow in the unlikely event of a loss-of-coolant accident. The recombiner will be operable by the end of 1972. In the meantime, a backup purging system, to be operable before plant startup, will be relied upon for hydrogen concentration control. The Regulatory Staff should assure itself that the criteria for these systems are consistent with those for other engineered safety features.

The applicant has reported that the stress relieving of much of the cold bent type 316 stainless steel piping, some of which is utilized in the emergency core cooling system, resulted in its becoming sensitized to potential stress corrosion cracking under certain conditions. The applicant proposes that an augmented in-service inspection program, together with certain additional, special operating procedures, be implemented to aid in assuring maintenance of integrity of this piping throughout plant life. The details of these programs and procedures should be resolved in a manner satisfactory to the Regulatory Staff.

The applicant should assure himself that instrumentation for determining the course of postulated accidents is on hand at the station and that appropriate calibration methods and calculated bases for interpreting instrument responses are available.

The Committee reiterates its previous comments concerning 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 Surry Nuclear Generating Units 1 and 2 can be operated at power levels up to 2441 MW(t) without undue risk to the health and safety of the public.

Sincerely yours,

Spencer H. Bush
Chairman

References

1. Amendment No. 12, dated January 21, 1970: Final Safety Analysis Report, Surry Power Station Unit Nos. 1 and 2, Volumes 1 through 4 and Supplements Volumes 1 and 2

2. Amendment No. 13, dated February 9, 1970: Amended License Application for Surry Power Station Unit Nos. 1 and 2

3. Amendments Nos. 14 through 29, to License Application for Surry Power Station Unit Nos. 1 and 2

4. "Security Program, Surry Power Station," (Proprietary), dated October 22, 1971, Virginia Electric and Power Company