



UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, D. C. 20555

August 16, 1982

Honorable Nunzio J. Palladino
Chairman
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Dr. Palladino:

SUBJECT: ACRS REPORT ON WATTS BAR NUCLEAR PLANT, UNITS 1 AND 2

During its 268th meeting, August 12-14, 1982, the Advisory Committee on Reactor Safeguards reviewed the application of the Tennessee Valley Authority (TVA) for authorization to operate the Watts Bar Nuclear Plant, Units 1 and 2. The project was considered at ACRS Subcommittee meetings in Knoxville, Tennessee on April 30, 1982, and in Washington, D.C. on August 10, 1982. Members of the Subcommittee toured the facility on April 30, 1982. In its review, the Committee had the benefit of discussions with representatives of TVA, Westinghouse Electric Corporation, and the NRC Staff. The Committee also had the benefit of the documents listed. The Committee commented on the construction permit application for the Watts Bar Nuclear Plant in a report dated September 21, 1972.

The Watts Bar Nuclear Plant is located in Rhea County in southeastern Tennessee, about 45 miles north-northeast of Chattanooga, Tennessee. Each of the two identical units uses a Westinghouse nuclear steam supply system with a rated core power of 3411 MWt and has an ice-condenser containment with a design pressure of 15 psig. TVA estimates that Watts Bar Nuclear Plant, Units 1 and 2 will be ready for fuel loading by August 1983 and August 1984, respectively.

A number of items have been identified by the NRC Staff as Outstanding Issues, Confirmatory Issues, and License Conditions. These matters should be resolved in a manner satisfactory to the NRC Staff.

Late in the construction program a serious quality assurance breakdown was identified - principally in the construction area, but also in the design area. The effects of the breakdown persist, and corrective work on the plant will continue at least throughout 1982. TVA invoked major quality assurance programmatic changes, including plans to have an independent contractor review the design and construction of a typical "vertical section" of the plant, to confirm the adequacy and safety of the as-completed plant. This issue should be resolved in a manner satisfactory to the NRC Staff. We wish to be kept informed.

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Both Watts Bar Nuclear Plant units have Westinghouse Model D-3 steam generators. Steam generators of this design have experienced tube failures, apparently related to flow-induced vibrations in the preheater region. TVA has stated that this problem is being worked on by Westinghouse and that a resolution involving internal modifications is expected before the projected fuel load date for Unit 1. We wish to be kept informed.

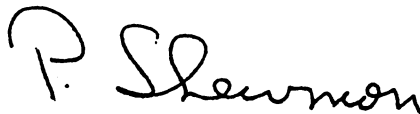
TVA is using a cement mortar lining in the essential raw cooling water system piping to reduce the pressure drop from corrosion-induced roughness. We believe that periodic inspections and tests of this lined piping should be carried out so that, if the bonding or quality of the coating should unduly deteriorate, the system will not be subject to sudden entrainment of debris.

TVA is developing a hydrogen ignition system using controlled distributed ignition sources. The system to be used at the Watts Bar Plant will be of the same design as the permanent system to be installed at the Sequoyah Nuclear Plant. We expect to review that system in the near future. We recommend that specific attention be given by the NRC Staff to assuring the reliability of the hydrogen monitors used in conjunction with this system. Acceptability of this system has been designated as a License Condition by the NRC Staff.

The ACRS believes that, if due regard is given to the items mentioned above, and subject to satisfactory completion of construction, staffing, and preoperational testing, there is reasonable assurance that the Watts Bar Nuclear Plant, Units 1 and 2 can be operated at core power levels up to 3411 MWt without undue risk to the health and safety of the public.

Additional comments by ACRS member D. Okrent are presented below.

Sincerely,



P. Shewmon
Chairman

Additional Comments by ACRS Member D. Okrent

With regard to the seismic design, I recommend that TVA and the NRC Staff conduct studies to evaluate the margins available to accomplish safe shut-down, including long-term heat removal, following an earthquake of somewhat greater severity and lower likelihood than the safe shutdown earthquake. I believe it is important that there be considerable assurance that the

combination of seismic design basis and margins in the seismic design is such that this accident source represents an acceptably low contribution to the overall risk from this plant.

References:

1. Tennessee Valley Authority, "Watts Bar Nuclear Plant Final Safety Analysis Report," with Amendments 1-46.
2. U. S. Nuclear Regulatory Commission, "Safety Evaluation Report Related to the Operation of Watts Bar Nuclear Plant, Units 1 and 2," NUREG-0847, dated June 1982.