

CERTIFIED

4/9/85

ACRS-2281
DATE ISSUED: 4/9/85 PDR 057385
LPDR

PROPOSED MINUTES FOR
THE ACRS SUBCOMMITTEE MEETING ON
WATTS BAR, UNITS 1 & 2
KNOXVILLE, TENN.
FEBRUARY 13, 1985

Purpose: The purpose of the meeting was to update the subcommittee on the status of open items, construction and QA deficiencies, the fire protection and equipment qualification programs, and other items related to the licensing of Watts Bar, Unit 1.

Attendees: ACRS

J. Ebersole, Chairman
C. Michelson, Member
D. Ward, Member

R. Patton, Consultant
E. Epler, Consultant
A. Cappucci, Staff

TVA

NRC

R. Cantrell
R. Pierce
R. Shell
D. Williams
R. Wimbrow
P. Nesbitt

E. Adensam
T. Kenyon
R. Ferguson
S. Weise
M. Shymlock

Meeting Highlights, Agreements and Requests:

1. The NRC staff reported that Watts Bar, Unit 1 is expected to load fuel by March 15, 1985. There are 10 open items and 7 confirmatory items. Major areas identified were equipment qualification and the main steamline break (MSLB) analysis. TVA is replacing large quantities of equipment (mostly instrumentation, solenoid valves, etc.) to meet the equipment qualification requirements. The MSLB Analysis, which is evaluating the effects of superheated steam

DESIGNATED ORIGINAL

50-390
50-391
8505230509 850409
PDR ACRS
2281 PDR

Certified By Byr

caused by convective heat transfer from uncovered SG tubes, is ongoing with the Catawba analysis. All of these items should be discussed in SER supplements 4 and 5 expected in early March 1985 and at the time of low power license, respectively.

2. With respect to the proposed reduction of Boron in the Boron Injection Tank (from 22,000 ppm to 0), Mr. Michelson questioned whether TVA took credit in their accident analysis for the BIT during steam generator tube rupture (SGTR) events (to compensate for Boron dilution caused by possible backflow of steam generator (SG) inventory into the RCS). TVA indicated that they only take credit for the BIT in the MSLB analysis.
3. Watts Bar, Unit 1 will be licensed with the Upper Head Injection System intact and operating. It will be removed on Unit 2.
4. The Subcommittee questioned whether there was a pre-fire plan for the Watts Bar control room. TVA indicated that there was an evacuation plan, but no control room specific pre-fire plan. Mr. Michelson asked if there was such a plan for Sequoyah. TVA indicated there was and at the request of Mr. Michelson agreed to send him a copy.
5. In their fire protection review TVA is evaluating all combustibles including intervening and transportable combustibles. They are not relying on spatial separation alone to maintain their shutdown capability but are installing 3 hour fire barriers at critical locations. In addition there are significant administrative controls in place to control transportable combustible materials. These include fire watches, training for all personnel, identification procedures for location and disposition of the above combustibles.
6. During discussions with the subcommittee TVA indicated that they treat Appendix A to SRP 9.5.1 (Branch Technical Position) as a requirement. In the evaluation of the fire protection program for Watts Bar TVA evaluated its program against the BTP and plans to treat any changes as requirement changes. The Staff stated that

that they will place a licensing condition on Watts Bar for fire protection which will reference the approved TVA documents.

7. TVA indicated that because of safe shutdown considerations and possible water damage to safety related equipment they installed a reactive fire suppression system. Water is supplied to the sprinkler heads by actuation of a control valve upstream of the heads. Actuation is provided by smoke ionization detectors using area based 2 detector logic(takes 2 signals to actuate). Mr. Patton questioned the reliability of this type of system. He indicated that if the valves which control the supply of water were delayed or failed to open, then more sprinkler heads would open due to heat flow. These heads could be in non-fire spaces putting more water into other spaces which could contain safety related equipment once the valves operate. In addition there would be a pressure drop causing less water to go where it is needed. TVA disagreed. they indicated that they had surveillance and administrative procedures in place which would prevent this type of scenario. In addition they cited the good operational experience DOE has had with these type of systems.
8. In response to questions by Mr. Ebersole, TVA indicated that there were problems with fire dampers such as binding, closing at times different from design times, and that they depended upon the shutdown of airflow to properly close dampers. TVA will perform visual inspections, but do not plan to operationally test. The Staff is considering adding testing of these dampers to the technical specifications. Mr. Ebersole suggested that this was a universal problem with most plants.
9. The subcommittee discussed inadvertent actuation of the CO2 system and closure of the fire dampers in the diesel generator rooms due to a seismic event and subsequent heatup of the diesel generators. TVA indicated that evaluations have shown that they have 30 to 60 minutes to open dampers and re-establish air flow/ventilation before severe heatup occurs.

- 10. TVA presented costs for meeting 10CFR50, Appendix R over and above what they consider economic protection. These costs are presented below.

Analysis.....3.5 Million
 Engineering.....2.3 Million
 Construction (Trades).....8.7 Million
 Materials.....1.3 Million
 Misc.....0.13 Million

Total.....16 Million (approximate)

- 11. TVA agreed to send the following information to the subcommittee through the ACRS staff:

- * Sequoyah Control Room Pre-Fire Plan
- * Temperature of Emergency Diesel Generators following CO2 dump.
- * Operability of safety related equipment in a CO2 atmosphere.
- * The closeness of the scram breaker actuating relays.
- * Evaluation of the Limitorque "drive gear problem" at Browns Ferry for Watts Bar.

- 12. The Subcommittee Chairman stated he would give a 15 minute report to the full Committee in March 1985.



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.

8207180072

YA01

August 16, 1982

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

August 16, 1982

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.