

TENNESSEE VALLEY AUTHORITY

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April 13, 1990

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Gentlemen:

In the Matter of the Application of)
Tennessee Valley Authority)

Docket Nos. 50-390

WATTS BAR NUCLEAR PLANT (WBN) - NRC REPORT NO. 50-390/89-200 - WATTS BAR
BROAD-BASED CONSTRUCTION ASSESSMENT

Enclosure 1 is TVA's response to NRC's report, "Watts Bar Broad-Based Construction Assessment Report No. 50-390/89-200," forwarded by NRC's letter of December 12, 1989. As requested in NRC's letter, TVA's response addresses each of the inspection team's four major concerns.

TVA appreciates the thorough examination performed by the inspection team. The inspection confirmed the adequacy of numerous corrective action program (CAP) and special program (SP) plans in many areas. TVA agrees with the team's general conclusion that the major areas of construction are adequate. TVA also recognizes that a great deal of work remains to correct previously and newly identified hardware deficiencies.

TVA has reviewed in detail each of the issues identified by NRC in this report. While TVA is concerned about NRC's characterization of certain problem areas, TVA understands the underlying issues upon which the report's conclusions were based. Since the NRC team's inspection, substantial progress has been made by TVA to address each of NRC's major concerns. Before and during the team inspection, TVA was engaged in extensive efforts to develop a schedule to complete WBN Unit 1. This development has been completed and TVA has now established September 30, 1991, as the Unit 1 fuel load date. As a part of the effort to meet scheduled milestones, TVA has concentrated on achieving a better interface among site programs and organizations. As a result of this and other efforts, substantial progress is being made in integrating and coordinating the appropriate site programs and related activities. TVA believes the implementation of these programs, increased management involvement, and other site activities will provide reasonable assurance that WBN Unit 1 will be completed in accordance with regulatory requirements.

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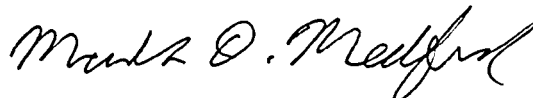
As requested in NRC's December 12, 1989 letter, TVA is documenting the actions being taken to resolve the open items identified in Table 1-1 of the report and will inform NRC when the actions are complete. The disposition of these and other specific items in the report will be available onsite for staff review.

The commitments identified in this response are listed in Enclosure 2.

Should you have any questions, do not hesitate to call R. J. Stevens at 615/365-8650.

Very truly yours,

TENNESSEE VALLEY AUTHORITY



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ENCLOSURE 1

WATTS BAR NUCLEAR PLANT RESPONSE TO CONSTRUCTION ASSESSMENT REPORT NO. 50-390/89-200

During the period from September 25 to October 6, and October 16 to 27, 1989, the Special Inspection Branch of NRC's Office of Nuclear Reactor Regulation conducted a broad-based construction assessment at the Watts Bar Nuclear Plant, Unit 1. This special inspection was performed to (1) determine the construction quality at the Watts Bar facility; (2) identify significant construction deficiencies, if they exist, that had not previously been identified; and (3) evaluate the plant's status in relation to projected schedules.

The team concluded that the major areas of construction are adequate; however, a great deal of work remains to correct previously and newly identified hardware deficiencies, and also that there was not a realistic basis for Watts Bar's then-existing fuel load date of December 1990.

The team's major concerns were characterized as (1) the poor general condition of plant equipment, (2) a number of problems not previously identified by TVA, (3) the site management's lack of understanding of the amount and scope of remaining work, and (4) the lack of control over interrelationships among site programs.

TVA agrees with the conclusion of the team regarding the adequacy of the major areas of construction. TVA recognized, then as now, that a great deal of work remains to correct previously and newly identified hardware deficiencies and that the previous fuel load date of December 1990 was unrealistic. While TVA is concerned about NRC's characterization of certain problem areas, TVA understands the underlying issues upon which the report's conclusions were based. Following is TVA's response to the four major concerns identified by the team.

CONCERN NO. 1: GENERAL CONDITION OF THE PLANT

The team identified many examples of satisfactory equipment condition and acknowledged the effectiveness of TVA's corrective action. In general, the team found that the inspected mechanical components and equipment were installed in conformance with applicable TVA design and installation requirements.

However, the team also identified a number of deficiencies reflecting the general condition of plant equipment. TVA will address each of these deficiencies. TVA is confident that implementation of the damaged, loose, or missing hardware (DMLH) program walkdowns performed as part of the implementation of various corrective action programs (CAPs), the walkdown of each system prior to initiation of prestart testing, and finally, the walkdown of each system for turnover of the system to the plant at the conclusion of prestart testing will adequately address this issue and effectively identify component deficiencies requiring corrective action. The DLMH walkdowns are scheduled to support system completion schedules and will follow the

construction activities where possible to minimize duplication of efforts and the possibility for subsequent damage.

The team identified the potential for further damage to equipment because of deficient control of ongoing work activities. TVA has revised the process for development of workplans and maintenance requests (MRs) to more clearly and completely control housekeeping and protection of adjacent plant equipment. Steps have also been taken to increase employee awareness of the need to protect plant equipment. Also, administrative controls in the plant operations area have been revised and additional controls are being developed to further enhance housekeeping and equipment protection.

TVA has budgeted and scheduled additional activities to improve the material condition of the plant. These activities include removal of PCBs from transformers, improvement in valve reliability through live load and enhanced valve packing, and refurbished and upgraded coatings in plant areas.

To further ensure that the plant is complete prior to fuel load, the plant manager will utilize a program to verify operability of specific plant systems. This process ensures that all open work items and outstanding programmatic items affecting systems operability or operational readiness of a system for fuel load/startup are complete or dispositioned before a system is returned to service for WBN Unit 1 startup.

Finally, the knowledge by plant and construction personnel that a realistic and workable plan has been established for plant completion and licensing, coupled with increased management attention to schedule and resource impacts, provides confidence that the additional controls associated with a near-term operating facility will minimize recurrence of this problem.

CONCERN NO. 2: PROBLEMS NOT PREVIOUSLY IDENTIFIED

At the time of the construction assessment, TVA was in the process of implementing CAP and special program (SP) plans intended to carry out extensive discovery efforts and subsequent actions to correct identified hardware and/or programmatic deficiencies. TVA agrees that the existing CAP descriptions are general in nature and did not address some of the specific items identified by the team.

TVA considers that the implementation of the CAPs and SPs, in combination with other site activities, will identify any remaining problems. Specifically, the Prestart Test Program will demonstrate that the applicable WBN plant equipment and personnel required for Unit 1 operation have operational capability, and that the plant is ready to commence fuel loading activities. This program will ensure that (1) the applicable plant equipment is capable of performing its intended function despite the delay between the completion of the applicable preoperational tests and actual plant operations, (2) the applicable plant equipment that has undergone modifications during this delay has been subjected to adequate postmodification testing, (3) the applicable plant equipment has suffered no degradation during this delay, and (4) the operating organizations are

knowledgeable about the plant and procedures and are prepared to operate the facility in a safe manner. The site system completion/turnover process has been implemented to provide assurance that items affecting system testing (under the Prestart Test Program) and subsequent operation have been addressed. Through the use of a master punchlist and conduct of multidiscipline walkdowns for each affected system, identified open work items affecting a system are completed or dispositioned before recommending a system be returned to service in support of WBN Unit 1 system alignment, prestart testing, and operations turnover. The Site Master Punchlist (SMPL) identifies the activities required for a system's return to service. SMPL is generated from data bases such as design changes, modifications, conditions adverse to quality (CAQs), maintenance work, temporary alterations, and incomplete instructions.

TVA is also currently reviewing documentation for welding-related work activities that were performed in accordance with American Society of Mechanical Engineers (ASME) Section XI after completion of the code data reports. These work activities are being evaluated to determine if they meet the ASME Section III requirements or if any exception will be needed. This review is scheduled for completion before the system completion date for each affected system.

Reviews and audits by the site Nuclear Quality Assurance (NQA) organization are being conducted at various stages of implementation through the Integrated Verification Program (IVP) for each CAP and SP. The Watts Bar Program Team (WBPT) is providing additional oversight of the implementation of the Watts Bar Nuclear Performance Plan (WBNPP), Volume 4.

Increased management involvement in the work process, communication of goals and expectations, and emphasis on quality performance are fostering an attitude of ownership and professionalism in the work force. Key managers are implementing walkthroughs in order to increase management visibility in the plant, to communicate management goals and expectations, and to identify unacceptable plant configuration or housekeeping. These walkthroughs will also increase the accessibility of upper management to plant and construction personnel regarding the condition of plant equipment. TVA expects these walkthroughs to validate information provided to management and, although difficult to quantify, to contribute to the development of an ownership of the plant systems by WBN personnel.

TVA considers that the implementation and completion of the above-mentioned efforts along with other WBN activities will provide reasonable assurance that WBN Unit 1 will be completed in accordance with regulatory requirements and TVA's commitments.

CONCERN NO. 3: LACK OF UNDERSTANDING BY SITE MANAGEMENT OF REMAINING WORK

Prior to the NRC inspection, as well as during the inspection, the overall WBN Unit 1 schedule was under critical review. The schedule had been established before implementation of the discovery process. TVA's expectation that the discovery process would take considerable time to complete and would identify

additional work scope drove, among other issues, the schedule reassessment at that time. Since the inspection, TVA has made significant improvement in the basis for determining the WBN Unit 1 completion schedule. As discovery proceeded, the evaluation of schedule and scope resulted in the issuance of a "120-day schedule" on November 27, 1989, for the initial groups of systems to be prepared for testing. The 120-day schedule established a common, near-term goal for site organizations and provided management expectations for completing work necessary to begin testing the first group of systems. The interface among site organizations improved as a result of this focused process.

The process of developing and the efforts to meet the 120-day schedule have yielded some significant changes. Based on an identification of required deliverables, a rollup of manhour requirements and staffing plans for engineering, construction, and quality assurance were developed and put in place to support those deliverables.

Forty-five days before scheduled turnover of a system, a punchlist is required to be issued and daily meetings are held to discuss progress. Additionally, periodic meetings are held and each milestone not met is discussed. Difficulties are escalated to higher levels of management and tracked to completion.

The overall performance in support of the 120-day schedule is improved. Just over 80% of the milestones were achieved. The schedule for the first system, control air, was met on April 3, 1990. The remaining two systems in the 120-day schedule, Essential Raw Cooling Water and Component Cooling, have been delayed primarily by electrical issues. The development of the punchlist for the first group of systems being prepared for testing provided a much better recognition of the scope of remaining work. TVA has found that by focusing the remaining work on system completion milestones rather than only on bulk construction milestones is a more effective method of controlling and accomplishing remaining work.

As TVA moves forward, a more systematic and integrated project management approach is being implemented for WBN. This process requires development and maintenance of project plans to provide schedules, deliverables, and scope definition and responsibilities for each major activity. Drafting of these project plans was largely completed in January and February 1990. Project plans identify specific deliverables for engineering, materials, construction, procedures, training, testing, independent verification, CAQ resolution, and licensing. This has considerably improved the detailed definition of remaining work scope and TVA's ability to realistically schedule the activities necessary to complete WBN Unit 1.

The WBN fuel load schedule (successor to the 120-day schedule) that has now been developed is supported by a more complete definition of scope, with reasonable allowance for uncertainties that may arise from remaining discovery activities. This scope also appropriately matches budget and schedule. The present schedule with its more complete basis shows fuel load in September 1991 and commercial operation in March 1992.

CONCERN NO. 4: LACK OF CONTROL OF INTERFACES BETWEEN ONSITE PROGRAMS

TVA considers that the integration and coordination of CAPs, SPs, and site completion activities have been significantly enhanced since the team inspection. As discussed above in Item 3, the development of the 120-day schedule provided a common goal on which site organizations can focus. The management team that has now been established onsite is making progress on achieving key goals. An example of this is the completion of the integrated activities in preparation for testing on the Control Air System. As part of this process, key site managers meet routinely to review progress and to jointly develop corrective actions, as appropriate, to meet the milestones on the schedule. This meeting is currently held on a weekly basis.

Another example of improved integration of site groups is the assignment of dedicated field support engineers from the design organization to support construction, operations, and maintenance activities. These engineers assist these organizations in resolving problems associated with implementing design documents.

A very recent example of improved coordination is the establishment of a daily integrated status meeting with key site departments, led by the startup organization. This meeting reviews the physical work planned for the day to ensure that all groups are coordinated on any specific activity. Supporting design and programmatic requirements that are needed to facilitate the activities are reviewed. Action items are assigned and tracked to maintain necessary progress.

In conclusion, TVA sees progress in teamwork and improving management control over site activities. The focus on management expectations, as set forth in the WBN fuel load schedule, is providing the control over interfaces between onsite programs that will be needed for successful completion and licensing of WBN Unit 1.

ENCLOSURE 2

LIST OF COMMITMENTS

1. TVA is documenting the actions being taken to resolve the open items identified in Table 1-1 of the report and will inform the NRC when the actions are complete.
2. The disposition of the Table 1-1 items and the other specific items in the report will be available onsite for staff review.