January 30, 1996

FOR: The Commissioners

FROM: James M. Taylor /s/
Executive Director for Operations

SUBJECT: WATTS BAR NUCLEAR PLANT, UNIT 1 - READINESS TO RECEIVE A FULL-POWER OPERATING LICENSE

PURPOSE:

To inform the Commission of the progress and status of activities at Watts Bar Nuclear Plant, Unit 1, since issuance of the low-power operating license (OL) on November 9, 1995, and to request Commission approval to issue a full-power operating license to the unit.

BACKGROUND:

On July 12, 1995, the staff briefed the Commission on the status of Watts Bar Unit 1. On September 11, 1995, representatives of the Tennessee Valley Authority (TVA) and the staff briefed the Commission on the readiness of Unit 1 to receive a low-power OL. On November 9, 1995, the Director, Nuclear Reactor Regulation (NRR) issued an OL authorizing the TVA to load fuel and operate the unit up to 5 percent of full power (3,411 megawatts thermal). TVA began to load fuel, and on November 13, 1995, had loaded all 191 fuel assemblies in the core. On November 17, 1995, the reactor vessel head was tensioned and the plant entered the cold shutdown mode (Mode 5).

In Mode 5, TVA conducted a variety of surveillance tests, including emergency response testing of the emergency diesel generators and testing of the control rods. TVA's performance during this period was acceptable. TVA management responded quickly to occurrences, such as hardware discrepancies and personnel errors, with both immediate and effective actions to determine the full extent of the condition and to prevent their recurrence.

On January 18, 1996, Watts Bar Unit 1 reached initial criticality, which was followed by physics testing. All tests were satisfactorily completed on January 22, 1996.

The staff held a public meeting with TVA on January 25, 1996, to discuss NRC and TVA's assessment of recent performance, licensing readiness, employee concerns, and current cases being handled by the TVA Inspector General. TVA concluded in that meeting that fuel loading and low-power testing have progressed with few problems. In addition, TVA concluded that plant systems have been tested; personnel, procedures, and processes have been proven; and TVA is ready for NRC to issue the full-power operating license for Watts Bar Unit 1.

DISCUSSION:

Emergency Preparedness

The low-power OL was issued on the basis that the Watts Bar Nuclear Plant Radiological Emergency Plan provides an adequate planning basis for an acceptable state of onsite emergency preparedness in accordance with applicable regulations and guidance. Such findings on onsite emergency preparedness were made and documented as acceptable in Supplement 13 of the Watts Bar Safety Evaluation Report (NUREG-0847, Supp. 13). Before issuance of the full-power OL, NRC needs Federal Emergency Management Agency (FEMA) findings and determinations as to whether offsite (State and local) emergency plans are adequate and whether there is reasonable assurance that they can be implemented.

On November 15, 1995, TVA conducted a successful full-participation exercise, which tested the Watts Bar (onsite) emergency plan and the State and local (offsite) emergency plans. FEMA has completed its evaluation and found offsite issues, such as State and local emergency plans, the prompt alert and notification system, and evacuation time estimates, acceptable. FEMA stated that "there is reasonable assurance that the State of Tennessee and local radiological emergency response plans site-specific to the Watts Bar Nuclear Plant can be implemented and are adequate to provide reasonable assurance that appropriate measures can be taken offsite to protect the health and safety of the public in the event of a radiological emergency at the Watts Bar Nuclear Plant" (letter, from K. C. Goss, FEMA, to D. Crutchfield, NRC, dated December 15, 1995). The staff will publish FEMA's findings in Supplement 20 of the Watts Bar Safety Evaluation Report, which is scheduled to be published concurrently with the full-power OL.

Thus, all onsite and offsite emergency preparation issues have been acceptably resolved.

Allegations

On allegations, the staff is following the procedure prescribed by Management Directive 8.8, "Management of Allegations". At the present time, there are no known allegations that have safety implications which affect the full-power

OL. There are 29 allegations open. All of the open allegations have been reviewed as "late filed" to determine whether or not they could, if substantiated, have any impact on the full power licensing decision. It was found that none of the open allegations would so affect the decision.

Radiation Monitoring System

During the construction completion and preoperational testing of Watts Bar, there were significant issues with the radiation monitoring system components, and the ability of the Watts Bar staff to operate the system. These problems resulted in the radiation monitoring system being the last of the major systems to be completed and turned over to the operating staff. At the staff's request (S. Ebneter letter of January 12, 1996), TVA submitted a letter on January 22, 1996, regarding the status of the system. TVA has continues to focus considerable attention on this system now that it

is operational. Although some startup problems have been identified, TVA has concluded that the system is performing with adequate reliability. In addition, TVA believes that as the current problems are identified and corrected, the reliability of the system will increase.

The staff has also expended considerable effort inspecting the design and operation of the radiation monitors, and discussed this issue with TVA during the January 25, 1996, meeting. The staff concludes that the monitors are installed, the TVA staff is trained, and procedures are in place. The system meets the regulatory requirements (i.e., 10 CFR 20.1302, and General Design Criteria 60, 63, and 64), and the reliability of the system is adequate to support issuance of a full-power license. TVA and the staff, separately, are prepared to discuss the performance of the radiation monitoring system during the Commission meeting on January 31, 1996.

The staff has received a letter from a member of the public dated January 25, 1996, which requests the Commission to conduct a full and impartial review of the entire Watts Bar Nuclear Plant licensing process and to revoke the low-power operating license, or that the letter be considered as a 10 CFR 2.206 petition. The concerns relate primarily to the radiation monitoring system. No issues were raised by this letter that the staff is not already addressing.

Issues Regarding Control Rods

During the January 25, 1996, meeting the staff discussed the rod control system performance with TVA. Since issuance of the low-power license, TVA has experienced five problems associated with rod control or rod position indication. TVA has evaluated the problems to determine if there is a common element that might be indicative of a more generic problem. TVA has concluded that the problems were isolated instances. The staff has independently reviewed the information and concluded that there is not a trend or pattern that is indicative of a more generic concern.

Employee Concerns and Investigations

In the closed portion of the January 25, 1996, meeting the staff met with the TVA Inspector General and the TVA Employee Concerns Program (ECP) manager. Since September 1995, approximately 1800 TVA employees and contractors have left the site due to the completion of construction. Each individual was interviewed by TVA's ECP program. According to TVA's data, 0.4% of the exiting employees identified concerns. TVA has evaluated these concerns and concluded that none are safety-significant, and none required hardware modifications. In addition, as a result of responses to a questionnaire provided during the exit interview, TVA has concluded that 96% of exiting employees feel free to express concerns with their supervisors. These findings are consistent with independent audits of the ECP program and interviews of TVA employees conducted by the NRC and constitute a significant improvement compared to past experience at Watts Bar.

NRC Coverage of Power Ascension

The NRC inspection program for this phase of plant startup is specified in NRC Inspection Procedure (IP) 2514. The staff is conducting inspections at Watts Bar that significantly exceed the minimum requirements of IP 2514. Before issuance of the low-power OL, the staff conducted an Operational Readiness Assessment Team (ORAT) inspection. The inspection results (Inspection Report 50-390/95-201) were generally favorable. The staff plans to perform a second ORAT team inspection during power ascension.

The staff has augmented the Watts Bar site staffing by the detail of two additional qualified operations resident inspectors. Thus the staffing is at the N+3 level. The staff has inspected TVA operational activities closely and has used regional inspectors and the former Construction Senior Resident Inspector as needed. Inspectors maintained around-the-clock coverage for selected tests and events (e.g., fuel load, initial criticality) and exceeded inspection program minimum requirements. There has been extensive NRC inspection presence onsite during important evolutions. The staff found TVA's performance to be careful, conservative, and cautious. The staff coverage will continue through power escalation until the plant reaches stable operation at 100% power.

LEGAL REVIEW:

This paper has been reviewed by the Office of the General Counsel and it has no legal objection to its contents.

REQUESTED COMMISSION ACTION:

At this time the staff recommends that the Commission authorize issuance of the full-power operating license to Watts Bar Unit 1. Conditions which could change this recommendation will be promptly reported to the Commission.

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