

Mr. Oliver D. Kingsley Jr.  
 President, TVA Nuclear and  
 Chief Nuclear Officer  
 Tennessee Valley Authority  
 6A Lookout Place  
 1101 Market Street  
 Chattanooga, Tennessee 37402-2801

February 28, 1996

SUBJECT: WATTS BAR UNIT 1 - ISSUANCE OF AMENDMENT UNDER AN EMERGENCY  
 SITUATION (TAC NO. M94815)

Dear Mr. Kingsley:

The Commission has issued the enclosed Amendment No. 1 to Facility Operating License No. NPF-90 for Watts Bar Nuclear Plant, Unit 1, under an emergency situation as defined in 10 CFR 50.91(a)(5). The amendment consists of changes to the Technical Specifications (TSs) in response to your application transmitted by letter dated February 26, 1996.

The proposed amendment allows implementation of a proposed plant modification to preclude inadvertent transfer of the turbine-driven auxiliary feedwater pump suction from the condensate storage tank to the emergency raw cooling water system.

A copy of the related safety evaluation, approving the Technical Specifications and Bases changes, is enclosed. The notice of issuance of amendment and final determination of no significant hazards consideration and opportunity for hearing will be included in the Commission's biweekly Federal Register Notice.

Sincerely,  
 Original signed by

Peter S. Tam, Senior Project Manager  
 Project Directorate II-3  
 Division of Reactor Projects - I/II  
 Office of Nuclear Reactor Regulation

Docket No. 50-390

Enclosure: 1. Amendment No. 1 to NPF-90  
 2. Safety Evaluation

cc w/enclosure: See next page

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DATE	02/28/96	02/28/96	02/28/96	02/28/96	02/28/96	2/28/96	

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UNITED STATES  
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

February 28, 1996

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Sincerely,

A handwritten signature in black ink that reads "Peter S. Tam".

Peter S. Tam, Senior Project Manager  
Project Directorate II-3  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

Docket No. 50-390

Enclosures: 1. Amendment No. 1 to NPF-90  
2. Safety Evaluation

cc w/enclosures: See next page



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

TENNESSEE VALLEY AUTHORITY  
DOCKET NO. 50-390  
WATTS BAR NUCLEAR PLANT, UNIT 1  
AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 1  
License No. NPF-90

1. The Nuclear Regulator Commission (the Commission) has found that:
  - A. The application for amendment by Tennessee Valley Authority (the licensee) dated February 26, 1996, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's rules and regulations set forth in 10 CFR Chapter I;
  - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
  - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
  - D. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. NPF-90 is hereby amended to read as follows:

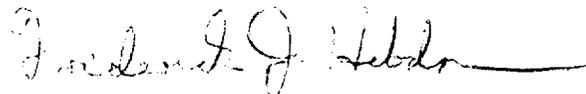
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(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 1, and the Environmental Protection Plan contained in Appendix B, both of which are attached hereto, are hereby incorporated into this license. TVA shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of the date of its issuance, to be implemented no later than 14 days of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Frederick J. Hebdon, Director  
Project Directorate II-3  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical Specifications

Date of Issuance: February 28, 1996

ATTACHMENT TO AMENDMENT NO. 1  
FACILITY OPERATING LICENSE NO. NPF-90  
DOCKET NO. 50-390

Revise the Appendix A Technical Specifications by removing the pages identified below and inserting the enclosed pages. The revised pages are identified by the captioned amendment number and contain marginal lines indicating the area of change.

Remove Pages

3.3-38  
B 3.3-93  
B 3.3-94

Insert Pages

3.3-38  
B 3.3-93  
B 3.3-94

Table 3.3.2-1 (page 5 of 7)  
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT
6. Auxiliary Feedwater (continued)						
c. Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements					
d. Loss of Offsite Power	1,2,3	4 per bus	F	Refer to Function 4 of Table 3.3.5-1 for SRs and Allowable Values		
e. Trip of all Main Feedwater Pumps	1,2	1 per pump	J	SR 3.3.2.8 SR 3.3.2.9 SR 3.3.2.10	≥ 48 psig	50 psig
f. Auxiliary Feedwater Pumps Train A and B Suction Transfer on Suction Pressure - Low	1,2,3	3	F	SR 3.3.2.6 SR 3.3.2.9 SR 3.3.2.10	A) ≥ 0.5 psig B) ≥ 1.33 psig	A) 1.2 psig B) 2.0 psig
7. Automatic Switchover to Containment Sump						
a. Automatic Actuation Logic and Actuation Relays	1,2,3,4	2 trains	C	SR 3.3.2.2 SR 3.3.2.3 SR 3.3.2.5	NA	NA

(continued)

BASES

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APPLICABLE  
SAFETY ANALYSES,  
LCO, and  
APPLICABILITY  
(continued)

e. Auxiliary Feedwater-Trip Of All Main Feedwater Pumps

A Trip of both turbine driven MFW pumps is an indication of a loss of MFW and the subsequent need for some method of decay heat and sensible heat removal to bring the reactor back to no load temperature and pressure. A turbine driven MFW pump is equipped with one pressure switch on the control oil line for the speed control system. A low pressure signal from this pressure switch indicates a trip of that pump. A trip of both turbine driven MFW pumps starts the motor driven and turbine driven AFW pumps to ensure that enough water is available to act as the heat sink for the reactor.

This Function must be OPERABLE in MODES 1 and 2. This ensures that at least one SG is provided with water to serve as the heat sink to remove reactor decay heat and sensible heat in the event of an accident. In MODES 3, 4, and 5, the RCPs and MFW pumps may be normally shut down, and thus neither pump trip is indicative of a condition requiring automatic AFW initiation.

f. Auxiliary Feedwater-Pump Suction Transfer on Suction Pressure-Low

A low pressure signal in the AFW pump suction line protects the AFW pumps against a loss of the normal supply of water for the pumps, the CST. Three pressure switches are located on each motor driven AFW pump suction line from the CST. A low pressure signal sensed by two switches of a set will cause the emergency supply of water for the respective pumps to be aligned. ERCW (safety

(continued)

BASES

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APPLICABLE  
SAFETY ANALYSES,  
LCO, and  
APPLICABILITY

f. Auxiliary Feedwater-Pump Suction Transfer on  
Suction Pressure-Low (continued)

grade) is then lined up to supply the AFW pumps to ensure an adequate supply of water for the AFW System to maintain at least one of the SGs as the heat sink for reactor decay heat and sensible heat removal.

Since the detectors are located in an area not affected by HELBs or high radiation, they will not experience any adverse environmental conditions and the Trip Setpoint reflects only steady state instrument uncertainties.

These Functions must be OPERABLE in MODES 1, 2, and 3 to ensure a safety grade supply of water for the AFW System to maintain the SGs as the heat sink for the reactor. These Functions do not have to be OPERABLE in MODES 5 and 6 because there is not enough heat being generated in the reactor to require the SGs as a heat sink. In MODE 4, AFW automatic suction transfer does not need to be OPERABLE because RHR will already be in operation, or sufficient time is available to place RHR in operation, to remove decay heat.

7. Automatic Switchover to Containment Sump

At the end of the injection phase of a LOCA, the RWST will be nearly empty. Continued cooling must be provided by the ECCS to remove decay heat. The source of water for the ECCS pumps is automatically switched to the containment recirculation sump. The low head residual heat removal (RHR) pumps draw the water from the containment recirculation sump, the RHR pumps pump the water through the RHR heat exchanger, inject the water back into the RCS, and supply the cooled water to the other ECCS pumps.

(continued)



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NO. 1 TO FACILITY OPERATING LICENSE NO. NPF-90

TENNESSEE VALLEY AUTHORITY

WATTS BAR NUCLEAR PLANT, UNIT 1

DOCKET NO. 50-390

1.0 INTRODUCTION

By letter dated February 26, 1996, the licensee requested that the Technical Specifications (Appendix A of Operating License NPF-90) and the associated Bases be revised. The proposed amendment allows implementation of a proposed plant modification to preclude inadvertent transfer of the turbine-driven auxiliary feedwater pump (TDAFWP) suction from the condensate storage tank (CST) to the emergency raw cooling water (ERCW) system.

2.0 EVALUATION

The auxiliary feedwater (AFW) system supplies feedwater to the steam generators in the event of a loss of main feedwater to remove reactor decay heat and avoid reactor coolant system overpressurization. The preferred water source for the AFW pumps is the CST, while the ERCW system is available as an alternate source. A separate ERCW header is provided for each of the two trains A and B motor-driven AFW pumps (MDAFWPs); the TDAFWP can receive water from either header. Two motor-operated valves (MOVs) are provided in each suction line from the ERCW header to the AFW pumps. Transfer from the CST (preferred source) to the ERCW is automatically initiated on low pressure in the AFW pump suction lines by closing and opening the valves in the respective suction lines. In the current design, the low-pressure signal is provided by three pressure switches located in each MDAFWP suction line from the CST and two sets of three pressure switches located in the TDAFW suction line.

On February 20, 1996, a turbine trip event at approximately 15-percent power occurred, resulting in the start of all AFW pumps. During recovery, with the MDAFWPs at low flow and the CST available, the TDAFWP supply was transferred to the ERCW train A. A spurious signal from the pressure switches in the TDAFWP suction line initiated this transfer. This spurious operation of the pressure switches was caused by pressure oscillations in the CST header resulting from low flow operation of the MDAFWPS. The MDAFWPs did not transfer suction to the ERCW.

To prevent recurrence, the licensee has proposed a modification to the facility that will bypass the TDAFWP pressure switches, and use the MDAFWP pressure switches to detect CST low pressure and initiate transfer of both MDAFWP and TDAFWP suction to the ERCW. Redundancy and electrical separation

is maintained to meet the single-failure criterion, such that the pressure switches associated with train A MDAFWP will operate train A MOVs, and pressure switches associated with train B MDAFWP will operate train B MOVs in the TDAFWP suction line from the ERCW headers. The setpoints of the MDAFWP pressure switches will remain unchanged; these setpoints are adequate to ensure that the TDAFWP minimum net positive suction head requirements are satisfied.

The licensee performed a failure modes and effects analysis for the proposed change, and no new failure modes were identified. The proposed modification does not introduce any new components or components of a different type which could create a different failure mode.

The requested changes revise Technical Specifications Page 3.3-38 (Page 5 of Table 3.3.2-1, "Engineered Safety Feature Actuation System Instrumentation") by deleting item 6.g, regarding the TDAFWP, and by deleting the words "motor-driven" from the function of item 6.f to state "Auxiliary Feedwater Pumps Train A and B Suction Transfer on Suction Pressure-Low". Thus, this item is now applicable to both the MDAFWPs and the TDAFWP. The proposed change is in accordance with the Westinghouse new improved Standard Technical Specifications (NUREG-1431).

The staff finds the design change described above consistent with licensing criteria and, therefore, acceptable. The staff also finds the associated change to the Technical Specifications acceptable.

The Bases of the Technical Specifications are revised to reflect the proposed change.

### 3.0 ASSESSMENT OF EMERGENCY SITUATION

In its February 26, 1996, application the licensee requested that this amendment be issued under an emergency situation. In accordance with 10 CFR 50.91(a)(5), the licensee provided the following information regarding why this emergency situation occurred and how it could not have been avoided.

During previous testing of the MDAFWPs and the TDAFWP in min-flow, pressure oscillations occurred, but the logic that opens the ERCW valves was not satisfied. On February 20, 1996, the TDAFWP was at full flow and the MDAFWPs were operating at 40 - 120 gpm. The suction pressure response was more pronounced at these conditions than during previous testing and operation, resulting in the spurious operation of the pressure switches and the alignment of the TDAFWP suction to the ERCW.

The staff concludes that an emergency condition exists in that failure to act in a timely way would prevent resumption of operation (i.e., entering Modes 1, 2 or 3). In addition, the staff has assessed the licensee's reasons for failing to file an application sufficiently in advance to preclude an emergency, and concludes that the licensee identified the operational problem, promptly notified the staff of the problem, and promptly proposed this amendment to remedy the situation. The staff concludes that the licensee has not abused the emergency provisions by failing to make timely application for

the amendment. Thus, conditions needed to satisfy 10 CFR 50.91(a)(5) exist, and the amendment is being processed on an emergency basis.

#### 4.0 FINAL NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION

The Commission's regulations in 10 CFR 50.92(c) state that the Commission may make a final determination that a license amendment involves no significant hazards consideration if operation of the facility in accordance with the amendment would not:

- (1) Involve a significant increase in the probability or consequences of an accident previously evaluated; or,
- (2) Create the possibility of a new or different kind of accident from any previously evaluated; or,
- (3) Involve a significant reduction in a margin of safety.

The proposed change will maintain the automatic transfer to the emergency water supply, ERCW, while avoiding spurious transfers when the preferred source of water, CST, is available. Redundancy and electrical separation will be maintained. The ability of the AFW system to perform its function during design basis events and anticipated operational transients is not affected. This change does not affect any engineered safety features actuation setpoints or accident mitigation capabilities. Therefore, the proposed change will not significantly increase the consequences of an accident or malfunction of equipment important to safety previously evaluated in the Final Safety Analysis Report (FSAR).

The proposed change will not affect the method of operation of the system. No new or different accident scenarios, transient precursors, failure mechanisms, or limiting single failures will be introduced as a result of this change. Therefore, the possibility of a new or different kind of accident other than those already evaluated will not be created by this change.

The proposed change will not affect the ability of the AFW system to provide required flows within the time limits assumed in the accident analysis for design basis events and anticipated operational transients, i.e., will not affect system performance or operation. Therefore, offsite and control room dose analyses are not affected by this change, and will remain within the regulatory limits. Thus, the proposed change will not result in a significant reduction in any margin of safety.

Since the three factors of 10 CFR 50.92(c) are satisfied, the staff determines that the proposed change does not involve a significant hazards consideration.

#### 5.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Tennessee State official (Debra Shults) was notified of the proposed issuance of the amendment. The State official had no comments.

## 6.0 ENVIRONMENTAL CONSIDERATIONS

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The staff has determined that the amendment involves no significant increase in the amounts, and no significant changes in the types, of any effluent that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). The staff has made a final no significant hazards finding with respect to this amendment. Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

## 7.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) the amendment does not significantly increase the probability or consequences of an accident previously evaluated, increase the possibility of a new or different kind of accident from any previously evaluated or, significantly reduce a margin of safety and, therefore, the amendment does not involve a significant hazards consideration; (2) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (3) such activities will be conducted in compliance with the Commission's regulations, and the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributors: Iqbal Ahmed and Peter S. Tam

Date: February 28, 1996

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Tennessee Valley Authority

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