

Mr. J. A. Scalice  
Chief Nuclear Officer and  
Executive Vice President  
Tennessee Valley Authority  
6A Lookout Place  
1101 Market Street  
Chattanooga, Tennessee 37402-2801

October 26, 1998

SUBJECT: ISSUANCE OF AMENDMENT - CLARIFICATION OF SURVEILLANCE TESTING  
REQUIREMENTS FOR THE TURBINE DRIVEN AUXILIARY FEEDWATER PUMP,  
WATTS BAR NUCLEAR PLANT, UNIT 1 (TAC NO. MA3358)

Dear Mr. Scalice:

The Commission has issued the enclosed Amendment No. 13 to Facility Operating License No. NPF-90 for Watts Bar Nuclear Plant, Unit 1 (WBN). This amendment is in response to your application dated August 6, 1998. The amendment changes the WBN Technical Specifications (TS) Surveillance and Bases Sections 3.3.2, "ESFAS Instrumentation," and 3.7.5, "AFW System" to clarify the intent of the surveillance testing requirements for the turbine driven auxiliary feedwater pump and make them consistent with the wording and intent of the Westinghouse Standard Technical Specifications (NUREG-1431, Revision 1). Accordingly, the bases are changed to clarify each of the above surveillance requirement changes.

A copy of the safety evaluation is also enclosed. Notice of issuance will be included in the Commission's biweekly Federal Register notice.

Sincerely,

Original signed by:

Robert E. Martin, 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.13 to NPF-90  
2. Safety Evaluation

cc w/encs: See next page

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**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**

WASHINGTON, D.C. 20555-0001

October 26, 1998

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Executive Vice President  
Tennessee Valley Authority  
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Sincerely,

A handwritten signature in cursive script that reads "Robert E. Martin".

Robert E. Martin, Senior Project Manager  
Project Directorate II-3  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

Docket No. 50-390

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2. Safety Evaluation

cc w/encls: See next page

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Tennessee Valley Authority

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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. 13  
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 August 6, 1998, 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:

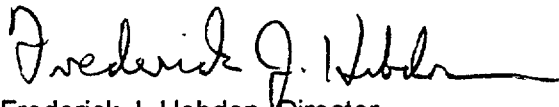
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(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 13 , 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 30 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: October 26, 1998

ATTACHMENT TO AMENDMENT NO. 13  
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

3.3-33  
3.7-13  
3.7-14  
B 3.3-119  
B 3.7-31  
B 3.7-32

Insert Pages

3.3-33  
3.7-13  
3.7-14  
B 3.3-119  
B 3.7-31  
B 3.7-32

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.3.2.10 -----NOTE-----            Not required to be performed for the turbine driven AFW pump until 24 hours after <math>\geq 1092</math> psig in the steam generator.            -----            Verify ESFAS RESPONSE TIMES are within limit.</p>	<p>18 months on a STAGGERED TEST BASIS</p>
<p>SR 3.3.2.11 -----NOTE-----            Verification of setpoint not required.            -----            Perform TADOT.</p>	<p>Once per reactor trip breaker cycle</p>

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.7.5.4 -----NOTES-----</p> <ol style="list-style-type: none"> <li>1. Not required to be performed for the turbine driven AFW pump until 24 hours after <math>\geq 1092</math> psig in steam generator.</li> <li>2. Not applicable in MODE 4 when steam generator is relied upon for heat removal.</li> </ol> <p>-----</p> <p>Verify each AFW pump starts automatically on an actual or simulated actuation signal.</p>	<p>18 months</p>
<p>SR 3.7.5.5      Verify proper alignment of the required AFW flow paths by verifying flow from the condensate storage tank to each steam generator.</p>	<p>Prior to entering MODE 2 after initial fuel loading and whenever unit has been in MODE 5 or 6 for &gt; 30 days</p>



SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.7.5.1    Verify each AFW manual, power operated, and automatic valve in each water flow path, and in both steam supply flow paths to the steam turbine driven pump, that is not locked, sealed, or otherwise secured in position, is in the correct position.</p>	<p>31 days</p>
<p>SR 3.7.5.2    -----NOTE----- Not required to be performed for the turbine driven AFW pump until 24 hours after <math>\geq 1092</math> psig in the steam generator. -----</p> <p>Verify the developed head of each AFW pump at the flow test point is greater than or equal to the required developed head.</p>	<p>31 days on a STAGGERED TEST BASIS</p>
<p>SR 3.7.5.3    -----NOTE----- Not applicable in MODE 4 when steam generator is relied upon for heat removal. -----</p> <p>Verify each AFW automatic valve that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.</p>	<p>18 months</p>

(continued)

BASES

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SURVEILLANCE  
REQUIREMENTS

SR 3.3.2.10 (continued)

Therefore, staggered testing results in response time verification of these devices every 18 months. The 18 month Frequency is consistent with the typical refueling cycle and is based on unit operating experience, which shows that random failures of instrumentation components causing serious response time degradation, but not channel failure, are infrequent occurrences.

This SR is modified by a Note indicating that the SR should be deferred until suitable test conditions are established. This deferral is required because there may be insufficient steam pressure to perform the test

SR 3.3.2.11

SR 3.3.2.11 is the performance of a TADOT as described in SR 3.3.2.8, except that it is performed for the P-4 Reactor Trip Interlock, and the Frequency is once per RTB cycle. This Frequency is based on operating experience demonstrating that undetected failure of the P-4 interlock sometimes occurs when the RTB is cycled.

The SR is modified by a Note that excludes verification of setpoints during the TADOT. The Function tested has no associated setpoint.

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REFERENCES

1. Watts Bar FSAR, Section 6.0, "Engineered Safety Features."
2. Watts Bar FSAR, Section 7.0, "Instrumentation and Controls."
3. Watts Bar FSAR, Section 15.0, "Accident Analyses."
4. Institute of Electrical and Electronic Engineers, IEEE-279-1971, "Criteria for Protection Systems for Nuclear Power Generating Stations," April 5, 1972.
5. Code of Federal Regulations, Title 10, Part 50.49, "Environmental Qualification of Electrical Equipment Important to Safety for Nuclear Power Plants."

(continued)

BASES

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SURVEILLANCE  
REQUIREMENTS  
(continued)

SR 3.7.5.2

Verifying that each AFW pump's developed head at the flow test point is greater than or equal to the required developed head ensures that AFW pump performance has not degraded during the cycle. Flow and differential head are normal tests of centrifugal pump performance required by Section XI of the ASME Code (Ref. 2). Because it is undesirable to introduce cold AFW into the steam generators while they are operating, this testing is performed on recirculation flow. This test confirms one point on the pump design curve and is indicative of overall performance. Such inservice tests confirm component OPERABILITY, trend performance, and detect incipient failures by indicating abnormal performance. Performance of inservice testing discussed in the ASME Code, Section XI (Ref. 2) (only required at 3 month intervals) satisfies this requirement. The 31 day Frequency on a STAGGERED TEST BASIS results in testing each pump once every 3 months, as required by Reference 2.

This SR is modified by a Note indicating that the SR should be deferred until suitable test conditions are established. This deferral is required because there may be insufficient steam pressure to perform the test.

SR 3.7.5.3

This SR verifies that AFW can be delivered to the appropriate steam generator in the event of any accident or transient that generates an ESFAS, by demonstrating that each automatic valve in the flow path actuates to its correct position on an actual or simulated actuation signal. This Surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative control. The 18 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a unit outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. The 18 month Frequency is acceptable based on operating experience and the design reliability of the equipment. This SR is modified by a Note that states that the SR is not required in MODE 4. MODE 4 does not require automatic activation of the AFW because there is a sufficient time frame for operator action. This is based on the fact that even at 0%

(continued)

BASES

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SURVEILLANCE  
REQUIREMENTS

SR 3.7.5.3 (continued)

power (MODE 3) there is approximately a 10 minute trip delay before actuation of the AFW system to allow for operator action. In MODE 4 the heat removal requirements would be less providing more time for operator action.

SR 3.7.5.4

This SR verifies that the AFW pumps will start in the event of any accident or transient that generates an ESFAS by demonstrating that each AFW pump starts automatically on an actual or simulated actuation signal.

The 18 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a unit outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power.

This SR is modified by two Notes. Note 1 indicates that the SR be deferred until suitable test conditions are established. This deferral is required because there may be insufficient steam pressure to perform the test. Note 2 states that the SR is not required in MODE 4. MODE 4 does not require automatic activation of the AFW because there is a sufficient time frame for operator action. This is based on the fact that even at 0% power (MODE 3) there is approximately a 10 minute trip delay before actuation of the AFW system to allow for operator action. In MODE 4 the heat removal requirements would be less providing more time for operator action.

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(continued)



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NO.13 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 August 6, 1998, the Tennessee Valley Authority (the licensee) submitted a request for changes to the Watts Bar Nuclear Plant, Unit 1 (WBN), Technical Specifications (TS) Surveillance and Basis Sections 3.3.2, "ESFAS Instrumentation," and 3.7.5, "AFW System." The revision would clarify the intent of the surveillance testing requirements for the turbine driven auxiliary feedwater pump (TDAFWP) and make them consistent with the wording and intent of the Westinghouse Standard MERITS [methodically engineered, restructured, and improved Technical Specifications] (NUREG-1431, Revision 1). Accordingly, the basis would be changed to clarify each of the above surveillance requirement changes. There will be no physical alterations to the plant configuration or changes in operating modes.

2.0 EVALUATION

The requirements for pump performance testing include capability to develop the required head (Surveillance Requirements (SR) 3.7.5.2), automatic start capability (SR 3.7.5.4), and response time testing (SR 3.3.2.10). These tests were intended to be performed no later than 24 hours after steam generator (SG) pressure is  $\geq 1092$  psig, to ensure sufficient steam pressure is available. However, a NOTE in each of the above SRs differs from the Westinghouse Standard MERITS Technical Specifications by inadvertently precluding testing until SG pressure achieves 1092 psig. Under certain plant conditions, sufficient steam pressure to adequately test the TDAFWP may exist below 1092 psig.

In July 1995, WBN personnel were concerned that the NOTE for these SRs, as written in the Westinghouse Standard TS, could be incorrectly interpreted to allow a 24-hour delay prior to beginning the test and submitted a modification to the final draft TS resulting in the current wording. In so doing, the WBN TS have been made more restrictive than NUREG-1431, Revision 1. The proposed changes would revise the NOTE for SRs 3.7.5.2, 3.7.5.4, and 3.3.2.10 from:

"Required to be performed for the turbine driven AFW pump within 24 hours after SG pressure is  $\geq 1092$  psig."

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ENCLOSURE

to:

"Not required to be performed for the turbine driven AFW pump until 24 hours after  $\geq 1092$  psig in the steam generator."

The TS BASES for SRs 3.7.5.2, 3.7.5.4, and 3.3.2.10 would be revised accordingly.

The proposed changes allow for additional flexibility in testing without a reduction in safety and make the WBN TSs consistent with Westinghouse Standard TS. The rewording of the NOTE to the SRs allows for adequate testing of the TDAFWP without the restriction of having to be at the normal operating pressure at no-load conditions. The staff finds these changes to be acceptable.

### 3.0 SUMMARY

The staff has reviewed the application and has found that the requested changes would allow for adequate testing of TDAFWP performance. The changes allow for added flexibility with no reduction in safety. Therefore, the staff has determined that the requested changes to the SRs are acceptable.

### 4.0 STATE CONSULTATION

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

### 5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes surveillance requirements. The U.S. Nuclear Regulatory Commission staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration, and there has been no public comment on such finding (63 FR 50941 dated September 23, 1998). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). 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.

### 6.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) 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 Contributor: Michelle Hart

Date: October 26, 1998