Tennessee Valley Authority, Post Office Box 2000, Spring City, Tennessee 37381-2000

February 24, 2000

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

Gentlemen:

In the Matter of) Docket No. 50-390
Tennessee Valley Authority)

WATTS BAR NUCLEAR PLANT (WBN) UNIT 1 - REQUEST FOR NOTICE OF ENFORCEMENT DISCRETION FOR TECHNICAL SPECIFICATION SURVEILLANCE REQUIREMENT 3.3.2.10

On February 23, 2000, at 1:00 p.m. WBN verbally requested NRC to issue a Notice of Enforcement Discretion to prevent having to enter the actions associated with entry into Limiting Condition for Operation (LCO) 3.0.3 concerning the missed time response surveillance for the replaced solenoid valve on the Train B Turbine Trip function. (reference LCO 3.3.2, Function 5.b and Surveillance Requirement (SR) 3.3.2.10). Entry into LCO 3.0.3 would be required following expiration of the 24 hour period allowed by SR 3.0.3.

At 2:00 p.m. February 23, 2000, Richard L. Emch, acting for the Director, Project Directorate 2, notified TVA that after NRR's

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consideration of WBN's verbal request for a NOED, and in consultation with Region II and the NRR technical staff, the NOED was approved. The approval was effective at 5:00 p.m. February 23, 2000 for 30 days. TVA was required to submit a written request for the NOED within 24 hours and an exigent Technical Specification change in 48 hours from that time.

Enclosed please find the information documenting TVA's earlier verbal request for the NOED. If you should have any additional questions, please contact me at(423) 365-1824.

Sincerely,

P. L. Pace
Manager, Site Licensing
and Industry Affairs

Subscribed and sworn to before me
on the 24 day of February, 2000

Judy C Lancaster
Notary Public

My Commission Expires 2-28-2001

Enclosure
cc (Enclosure):
NRC Resident Inspector
Watts Bar Nuclear Plant
1260 Nuclear Plant Road
Spring City, Tennessee 37381

Mr. Robert E. Martin, Senior Project Manager
U.S. Nuclear Regulatory Commission
One White Flint North
11555 Rockville Pike
Rockville, Maryland 20852

U.S. Nuclear Regulatory Commission
Region II
Atlanta Federal Center
61 Forsyth St., SW, Suite 23T85
Atlanta, Georgia 30303

ENCLOSURE

WATTS BAR NUCLEAR PLANT (WBN) UNIT 1
REQUEST FOR NOTICE OF ENFORCEMENT DISCRETION (NOED)
TECHNICAL SPECIFICATION (TS) SURVEILLANCE REQUIREMENT 3.3.2.10

1. **The TS or other license conditions that will be violated.**

On February 22, 2000, at 1700 hrs, with WBN Unit 1 at 100% reactor power, WBN entered TS Surveillance Requirement (SR) 3.0.3 due to a determination that response time testing (RTT) had not been performed for the Train B turbine trip solenoid valve (1-FSV-47-027-B) during WBN's Unit 1 Cycle 2 Refueling Outage in Spring 1999. This surveillance (SR 3.3.2.10) is required by TS Limiting Condition for Operation (LCO) 3.3.2 engineered safety features actuation system (ESFAS) Function 5(b), Steam Generator Water Level High-High, on a staggered test basis with a resulting frequency of 36 months for the Train B channel. As a result of this entry into SR 3.0.3, WBN was required to complete performance of the subject SR within 24 hours (e.g., February 23, 2000, at 1700 hrs) or declare the Steam Generator Water Level function inoperable and enter the appropriate TS Condition. Performance of SR 3.3.2.10 cannot be performed at full power since initiation of a turbine trip is required. As discussed below, shut down of the unit to perform the subject surveillance introduces an unnecessary plant transient which is not commensurate with the public health and safety for the given condition. Since the subject condition would render multiple channels of Steam Generator Water Level inoperable, the Condition (I) provided for Function 5(b) in TS Table 3.3.2-1 is not applicable, and no other Condition is available in the WBN TS for the subject condition. As a result, WBN would have been required to immediately enter LCO 3.0.3 at 1700 hours on February 23, 2000, and to have placed the unit in Mode 3 by 0000 hours on February 24, 2000, which again would have introduced an unnecessary forced shutdown with no corresponding benefit to public health and safety.

As discussed herein, TVA determined that the existing turbine trip capability is functional and would not adversely affect the accident analysis time response assumptions. Therefore, WBN is proposing an exigent technical specification change which would extend the surveillance performance requirement to be performed prior to turbine restart the next time the turbine is removed from service. Therefore, an additional 30 days as discussed in Item 7 below, was requested for revising the frequency specified for SR 3.3.2.10, Function 5(b) in the technical specification.

2. **The circumstances surrounding the situation, including root causes, the need for prompt action and identification of any relevant historical events.**

1-FSV-47-027-B is the solenoid valve that trips the main turbine from a Train B feedwater isolation signal from the Train B reactor protection system. During the last outage, Refueling Outage 2, this solenoid was replaced as part of a preventive maintenance (PM) activity. The post maintenance test (PMT) for this PM only specifies functional testing and does not specify a response time test. However, this solenoid valve is part of the response time test for the Train B Turbine Trip/Feedwater Isolation from High-High Steam Generator Level engineered safety feature (ESF) function. Because the solenoid valve was replaced, the applicable portion of the Train B response time test should have been performed. The response time tests are run on a train staggered basis. The Train B response time test was run during the previous outage, Refueling Outage 1, and the Train A response time test was run during the last outage, Refueling Outage 2. Since the response time of this component is not quantitatively known, the overall response time of the Train B Turbine Trip from High-High Steam Generator Level is also not quantitatively known. The apparent root cause of this event appears to be an inadequate PMT specified by the PM.

Prompt action was required to prevent an unnecessary shutdown as discussed in Item 1 above.

3. **The safety basis for the request, including an evaluation of the safety significance and potential consequences of the proposed course of action. This evaluation should include at least a qualitative risk assessment derived from the licensee's PRA.**

Technical Specification LCO 3.3.2 requires turbine trip and feedwater isolation for Steam Generator Water Level High-High, Safety Injection, and Valve Vault Room Level High. SR 3.3.2.10, Verify ESFAS Response Times, is applicable to Steam Generator Water Level High-High. Technical Requirements Manual (TRM) technical requirement (TR) 3.3.2 specifies that Steam Generator Water Level High-High trip the turbine in 2.5 seconds and perform feedwater isolation in 8 seconds. TR 3.3.2 for safety injection and valve vault

room level high does not specify a response time for turbine trip, only for feedwater isolation.

Based on discussions with WBN's Nuclear Steam Supply Systems (NSSS) vendor, Westinghouse, regarding their qualitative review of the WBN Feedwater Malfunction analysis, they model turbine trip and feedwater isolation off of the steam generator high-high water level setpoint, with a 2.5 second response time for turbine trip. The event is analyzed primarily to demonstrate that the Departure from Nucleate Boiling (DNB) design basis is satisfied. The minimum DNB Ratio (DNBR) in the current WBN analysis occurs prior to the time of turbine trip. In addition, the DNBR remains relatively constant up until the time of the turbine trip and is well above the safety analysis limit DNBR. Therefore, an increase in response time would not result in a more limiting condition for this analysis, but would only delay the time that the event is terminated. Even if the turbine trip does not occur, the feedwater isolation signal would cause the steam generator to drain down and the transient would simply behave as a loss-of-normal feedwater/inadvertent emergency core cooling system (ECCS) at power event. The resultant transient would be bounded by the existing Final Safety Analysis Report (FSAR) analyses.

For Steam Generator Water Level High-High, turbine trip is an equipment protection function, as described in the TS Bases. This function prevents possible damage to the turbine due to water in the steam lines.

The turbine trip function consists of two trip buses, Trains A and B. The Train A trip system consists of the solenoid-operated auto-stop oil dump valve actuated by the turbine trip slave relay solid state protection system (SSPS), the interface valve which operates on auto stop oil low pressure to dump electrohydraulic control (EHC) fluid from the throttle valves. The Train A overspeed protection controller (OPC) solenoid valve is actuated by the SSPS to dump EHC fluid from the governor and intercept valves. In addition the Train A trip bus is actuated by a relay in the Train B trip bus. The Train B trip system consists of the solenoid-operated emergency trip dump valve actuated by the SSPS to dump EHC fluid from the throttle valves. The Train B OPC solenoid valve is actuated by the SSPS to dump EHC fluid from the governor and intercept valves. In addition, the Train B trip bus is actuated by a relay in the Train A trip bus.

ENCLOSURE

WATTS BAR NUCLEAR PLANT (WBN) UNIT 1
REQUEST FOR NOTICE OF ENFORCEMENT DISCRETION (NOED)
TECHNICAL SPECIFICATION (TS) SURVEILLANCE REQUIREMENT 3.3.2.10

During WBN Unit 1 Refueling Outage 2 the Train B solenoid-operated emergency trip dump valve was replaced with a like for like replacement. This replacement valve was then functionally verified to trip the turbine. The response time for this function was not verified. Response time testing for other components in the Train B function is still in frequency. The Train B OPC trip was also functionally verified to trip the turbine. Response time testing of the Train A trip was performed satisfactorily. The Train A OPC trip was functionally verified to trip the turbine. OPC trips are not required to be response time tested.

In Summary:

- Turbine trips have been functionally verified in accordance with technical specifications and the turbine protection program.

- Train A response times have been verified per technical specifications.

- Other Train B turbine trip components remain within technical specification surveillance frequency for response time testing.

- Turbine trip response time is not a significant contributor in the accident analysis.

- Even if the turbine trip does not occur, the feedwater isolation signal would cause the steam generator to drain down and the transient would simply behave as a loss-of-normal feedwater/inadvertent ECCS at power event. The resultant transient would be bounded by the existing FSAR analyses.

Because of the above it is reasonable to assume that turbine trip will occur as assumed in the accident analysis. Failure to obtain response time data for the Train B solenoid does not pose an issue of safety significance.

4. The basis for the licensee's conclusion that the noncompliance will not be of potential detriment to the public health and safety and that no significant hazard consideration is involved.

As discussed above there is no safety significance associated with this NOED request. The three "no significant hazards" criteria are met as follows:

Involve a significant increase in the probability or consequences of an accident previously evaluated; or

The requested discretionary enforcement will not result in a significant increase in the consequences of an accident as the turbine trips have been functionally verified in accordance with the technical specifications and the turbine protection program and turbine trip response time is not a significant contributor to the accident analysis. Accordingly there would be no impact on projected offsite doses.

Create the possibility of a new or different kind of accident from any accident previously evaluated.

As discussed above, the safety function of the solenoid valve was confirmed during the post maintenance testing. Further, during the functional testing the control room operator observed normal operation of the trip function. Although the response time was not quantitatively determined for the end device, this deficiency cannot create a new or different accident from any previously evaluated.

Involve a significant reduction in a margin of safety.

Again as discussed above, the trip function was confirmed by post maintenance testing, and was not observed by the operator to have an abnormal delay in functioning. This clearly indicates there would be no significant reduction in a margin of safety associated with the lack of quantitative documentation of the response time for a portion of the Steam Generator Water Level High High turbine trip function.

5. **The basis for the licensee's conclusion that the noncompliance will not involve adverse consequences to the environment.**

This action does not involve an unreviewed environmental question because it does not increase any adverse environmental impacts, change effluents or power level, or result in unreviewed environmental matters.

6. **Any proposed compensatory measure(s).**

None. This particular solenoid valve is functionally verified during turbine startup activities as required by the system operating instruction (SOI), 1-SOI-47.02, for the turbine startup procedure. The last performance of this procedure on April 15, 1999 has been obtained and the steps testing this valve were verified as successfully performed by a licensed operator. The operators' log for the time that the turbine startup occurred was obtained and there are no entries regarding any abnormal behavior of this, or any other, turbine trip valve.

7. **The justification for the duration of the noncompliance.**

TVA has determined that approximately 30 days is an acceptable duration for the proposed NOED. Based on the functional testing of the solenoid circuit discussed above, the parts similarity to the previous surveillance performance for this train and the statements of the operator that conducted the post maintenance trip functional testing after solenoid replacement at the end of the Cycle 2 refueling outage, TVA is confident that the existing turbine trip capability is functional and that the lack of a quantifiable time response measurement does not adversely affect the applicable accident analyses. The 30 day duration is needed for TVA and the NRC staff to process an exigent technical specification change (see attached markup) to extend the surveillance performance requirement to be performed prior to turbine restart the next time the turbine is removed from service.

8. **A statement that the request has been approved by the facility organization that normally reviews safety issues (Plant Onsite Review Committee, or its equivalent).**

   This request was approved by the WBN Plant Operations Review Committee on February 23, 2000.

9. **The request must specifically address which of the NOED criteria for appropriate plant conditions specified in Section B is satisfied and how it is satisfied.**

   This request is made under the criteria in Section B, Paragraph 2.0, Item 1.a in Attachment 1 of Administrative Letter 95-05, Revision 2. This criteria is satisfied in that WBN Unit 1 is online at 100 percent power and the potential risk of undesirable transients as a result of forcing compliance with the technical specifications provides no safety consequences given the minimal increase in risk associated with the extension.

10. **If a follow-up license amendment is required, the NOED request must include marked-up TS pages showing the proposed TS changes. The actual license amendment request must follow within 48 hours.**

    See attached pages.

11. **For NOEDs involving severe weather or other natural events, the licensee's request must be sufficiently detailed for the staff to evaluate the likelihood that the event could affect the plant, the capability of the ultimate heat sink, on-site and off-site emergency preparedness status, access to and from the plant, acceptability of any increased radiological risk to the public and the overall public benefit. In addition to items 1-10 above as appropriate, the licensee must provide:**

    a. **The name, organization, and telephone number of the official declaring the emergency.**

    b. **Details of the basis and nature of the emergency; its potential consequences such as plant trip, controlled shutdown, delayed startup; the condition**

and operational status of the plant (equipment out of service or otherwise inoperable);

c. Status, and potential challenges to off-site and on-site power sources, and the impact of the emergency on plant safety.

d. Demonstrated actions taken to avert and/or alleviate the emergency situation, including steps taken to avoid being in the noncompliance, as well as efforts to minimize grid instabilities (e.g., coordinating with other utilities and the load dispatcher organization for buying additional power or for cycling load, shedding interruptible industrial or non-emergency loads).

Not applicable.

ATTACHMENT TO
ENCLOSURE

WATTS BAR NUCLEAR PLANT UNIT 1
REQUEST FOR DISCRETIONARY ENFORCEMENT FOR
TECHNICAL SPECIFICATION (TS) SURVEILLANCE REQUIREMENT 3.3.2.10

AFFECTED PAGES

Technical Specification

3.3-36

Technical Specification Bases

B 3.3-119
B 3.3-120

Table 3.3.2-1 (page 3 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
4.	Steam Line Isolation (continued)						
	c. Containment Pressure-High High	1,2(c),3(c)	4	E	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.9 SR 3.3.2.10	≤ 2.9 psig	2.8 psig
	d. Steam Line Pressure						
	(1) Low	1,2(c), 3(a)(c)	3 per steam line	D	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.9 SR 3.3.2.10	≥ 666.6(b) psig	675(b) psig
	(2) Negative Rate-High	3(d)(c)	3 per steam line	D	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.9 SR 3.3.2.10	≤ 108.5(e) psi	100(e)psi
5.	Turbine Trip and Feedwater Isolation						
	a. Automatic Actuation Logic and Actuation Relays	1,2(f), 3(f)	2 trains	H	SR 3.3.2.2 SR 3.3.2.3 SR 3.3.2.5	NA	NA
	b. SG Water Level – High High (P-14)	1,2(f), 3(f)	3 per SG	I	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.9 SR 3.3.2.10(h) ← Insert h	≤ 83.1%	82.4%
	c. Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.					
	d. North MSV Vault Room Water Level - High	1,2(f)(g)	3/vault room	0	SR 3.3.2.6 SR 3.3.2.9	≤ 5.31 inches	4 inches
	e. South MSV Vault Room Water Level - High	1,2(f)(g)	3/vault room	0	SR 3.3.2.6 SR 3.3.2.9	≤ 4.56 inches	4 inches

(continued)

(a) Above the P-11 (Pressurizer Pressure) interlock.
(b) Time constants used in the lead/lag controller are $t_1 \geq 50$ seconds and $t_2 \leq 5$ seconds.
(c) Except when all MSIVs are closed and de-activated.
(d) Function automatically blocked above P-11 (Pressurizer Interlock) setpoint and is enabled below P-11 when safety injection on Steam Line Pressure Low is manually blocked.
(e) Time constants utilized in the rate/lag controller are t_3 and $t_4 \geq 50$ seconds.
(f) Except when all MFIVs, MFRVs, and associated bypass valves are closed and de-activated or isolated by a closed manual valve.
(g) MODE 2 if Turbine Driven Main Feed Pumps are operating.
(h) For the time period between February 23, 2000 and prior to turbine restart (following the next time the turbine is removed from service), the response time test requirement of SR 3.3.2.10 is not applicable for 1-FSV-47-027.

Insert

BASES

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.

Insert

There is an additional note pertaining to this SR on Page 3 of Table 3.3.2-1 of the Technical Specification, which states the following (Ref. 14):

> Note h:
> For the time period between February 23, 2000 and prior to turbine restart (following the next time the turbine is removed from service), the response time test requirement of SR 3.3.2.10 is not applicable for 1-FSV-47-027.

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.

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."

(continued)

BASES

REFERENCES (continued)

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."

6. WCAP-12096, Rev. 7, "Westinghouse Setpoint Methodology for Protection System, Watts Bar 1 and 2," March 1997.

7. WCAP-10271-P-A, Supplement 1 and Supplement 2, Rev. 1, "Evaluation of Surveillance Frequencies and Out of Service Times for the Reactor Protection Instrumentation System," and "Evaluation of Surveillance Frequencies and Out of Service Times for the Engineered Safety Features Actuation System." May 1986 and June 1990.

8. Watts Bar Technical Requirements Manual, Section 3.3.2, "Engineered Safety Feature Response Times."

9. TVA Letter to NRC, November 9, 1984, "Request for Exemption of Quarterly Slave Relay Testing, (L44 841109 808)."

10. Evaluation of the applicability of WCAP-10271-P-A, Supplement 1, and Supplement 2, Revision 1, to Watts Bar.

11. Westinghouse letter to TVA (WAT-D-8347), September 25, 1990, "Charging/Letdown Isolation Transients" (T33 911231 810).

12. Design Change Notice W-38238 associated documentation.

13. WCAP-13877, Rev. 1, "Reliability Assessment of Westinghouse Type AR Relays Used As SSPS Slave Relays," August 1998.

Insert →

14. TVA's Letter to NRC dated February ??, 2000, "WBN Unit 1 - Request for TS Amendment for TS 3.3.2 - ESFAS Instrumentation"

(continued)