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

William J. Muesler
Site Vice President, Watts Bar Nuclear Plant

JUN 4 1993

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

Gentlemen:

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

WATTS BAR NUCLEAR PLANT (WBN) UNIT 1 - COMMENTS ON THE PROOF AND REVIEW TECHNICAL SPECIFICATIONS

By letter dated April 2, 1993, the staff requested comments on the Proof and Review Technical Specifications (TS) by April 30, 1993. TVA responded by letter dated April 30, 1993 and provided comments and associated justifications on each individual section of the Proof and Review TS with the exception of the Electrical Systems and Instrumentation sections. The enclosure to this letter provides the comments and associated justifications for the remaining Proof and Review TS.

If you have any questions, please telephone Tom Porter at (615) 365-3854.

Very truly yours,

W. J. Museler

William J. Museler

Enclosure
cc: See page 2

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1/1

JUN 4 1993

cc (Enclosure):
NRC Resident Inspector
Watts Bar Nuclear Plant
P.O. Box 700
Spring City, Tennessee 37381

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ENCLOSURE

COMMENTS AND JUSTIFICATIONS ON THE
PROOF AND REVIEW TECHNICAL SPECIFICATIONS

50-390 WATTS BAR 1 TVA

COMMENTS ON THE PROOF AND REVIEW TECH SPECS

REC'D W/LTR DTD 6/4/93...9306110275

JUSTIFICATION FOR CHANGES TO SECTION 3.3

GENERIC JUSTIFICATIONS

A. This change reflects a change to NUREG-1431 submitted to the NRC by the Industry Owners groups via the generic STS change process.

B. Removal of brackets and/or addition of plant specific parameter or information.

C. Correction of typographical error in the Proof and Review TS.

SPECIFIC JUSTIFICATIONS

1. This test is conducted on the same relay in the ESFAS LCO 3.3.2 for Auxiliary Feedwater loss of power start and allows a 92 day frequency. The Bases have already been changed to 92 days as discussed in the development meetings for the Proof and Review TS with the NRC.

2. A Note has been added to Condition B which allows one automatic actuation logic train to be placed in bypass for surveillance testing since this is the only way testing can be accomplished without causing the actuation. This Note is consistent with the Note in Condition Q of LCO 3.3.1 for the automatic actuation logic. However, since Required Action B.1 is immediate, the Note has been further modified to allow a delayed entry into the required actions for the 4 hour period. Otherwise, surveillance testing could not be conducted without closing isolation valves in accordance with LCO 3.6.3 or 3.9.4. This is considered an administrative burden with no real benefit. Since a complete train of ESFAS is already inoperable during the test, a requirement to verify that isolation valves are closed is of much less significance.

3. The manual actuation function has no setpoint, therefore, a note is needed in the SR which is consistent with similar applications in SR 3.3.2.6.

4. This function does not interact with the SSPS, rather it actuates the system directly through relay contacts.

5. The Frequency Bases is incorrect. Neither the WCAP nor the TRM address TADOT frequency for this function. The Bases have been revised consistent with similar applications in LCO 3.3.2.

6. This statement is repetitive from a previous paragraph.

7. This statement is not completely accurate for the Watts Bar design. The correct information has been included in Bases 3.6.3 and need not be repeated here in the discussion for purge valves.

8. This statement is misleading. The accident analyses for radiation release calculations assume a time after the DBA occurs which bounds the response time for the SSPS, initiation of the isolation signal, and subsequent valve closure. The LOCA occurs and is assumed detected immediately by the sensors, then transmitted to the SSPS (sensor delay) to generate the SI signal (SSPS delay), which in turn "initiates" the signal to close the valves (valve closure delay).

9. MODES 5 and 6 have been added back to this LCO, consistent with the NUREG, for a waste gas decay tank rupture.

10. A discussion of Allowable Value and Trip Setpoint has normally been included in all Bases discussions in the Instrumentation section of the TS, except for Containment Isolation and CREVS. A discussion appropriate to these LCOs has been added to the Bases for consistency.

11. The Frequency is based on NUREG-1366 as is already stated in a previous sentence.

12. This WCAP does not specifically justify this frequency. The frequency is acceptable based on operating experience.

13. A bases discussion for the frequency was added consistent with similar presentations. The bases discussion for this SR in the STS is incorrect. This WCAP does not specifically justify this frequency. The frequency is acceptable based on operating experience.

14. These fans have been disabled and are no longer planned to be used.

15. This section is presented different from nearly identical functions for Containment Isolation and CREVS. The LCO section has been revised to be consistent with those LCOs. A discussion of Trip Setpoints and Allowable values was also added to the discussion of the Fuel Pool Area Radiation Monitors similar to that added for CREVS and Containment Isolation.

16. The RTD cannot be calibrated without removal and placement in a water bath in the instrument shop. The functional verification of the RTD operation is considered sufficient.

17. A TADOT is a more appropriate test for valve position indicators rather than a channel calibration. A note was added to the channel calibration SR to exclude the affected functions, and a new SR for these functions was added.

18. Wide range RCS does not input into the Reactor Trip System (RTS).

19. Valve position indicators are not "channels" as defined in the FSAR.

20. Alternate means have not been developed and tested at this time, however, this does not preclude their development in the future. Therefore, the statement has been deleted.

21. The specific system requirements are not addressed in GDC 19, only the criteria for remote shutdown capability.

22. The information presented in this paragraph is for a Reviewer's Note and is not appropriate for a specific plant implementation Bases and should be deleted. The SER for Watts Bar approved the systems required for remote shutdown.

23. The incore detector measurements require the reactor be at equilibrium conditions, before data collection can begin, in order to obtain good data. Equilibrium can be assured within 72 hours following power escalation. Experience at Sequoyah has shown that data collection takes approximately 40 hours and that instrument mechanics require 8 hours/channel to input calibration data into the NIS. This gives a total of 144 hours or 6 days.

24. With the reactor trip breakers open, there is not a trip function to be performed, therefore, the trip setpoint or allowable value is not applicable.

25. These functions have no indication and cannot be channel checked. Additionally, these are software functions within the computer and have no delay or response time associated with them.

26. While this interlock is based on turbine impulse pressure, the Interlock does not have a pressure indication, rather interlocks normally have status lights. Channel checks are not performed on any interlock status light.

27. The detectors at Watts Bar are a combination source and intermediate range monitor and this statement is not true for this design.

28. Many of the test segments are sequential and do not overlap. This statement is technically incorrect for the testing methodology used at Watts Bar.

29. The NIS has no inputs to any ESFAS function.

30. Only an allowable value is specified consistent with this same relay in LCO 3.3.5.

31. Reactor trip handswitches actuate both breakers, not individual train associated breakers.

32. These additional slave relays should not be tested during at power considerations for the reasons provided in Westinghouse letter to TVA dated September 25, 1990 (attached). These relays actuate charging and letdown isolation valves and could cause a thermal transient as discussed in the Westinghouse letter. TVA does not consider online testing to be beneficial in consideration of the thermal stresses involved to the affected components.

33. With the implementation of the Eagle 21 process control system, the ESFAS system no longer uses bistables.

34. This statement is only true for the Reactor Trip System, not ESFAS.

35. This function is based on relay logic and does not utilize the SSPS and its associated master relay coils.

36. According to Westinghouse, this SR frequency is not justified in WCAP-10271. Appropriate justification has been added based on discussions with Westinghouse. Additionally, reference to the 4 hour testing allowance is already addressed in the individual actions which use the allowance. It is redundant to address this in the SR bases.

37. The Trip Time Delay and RWST Level Low coincident with Sump Level High Functions are not addressed in WCAP-10271 specifically, but can be justified based on the WCAP. This will be done in the plant specific WCAP implementation study for the Watts Bar Technical Specifications.

QA Record

B26 '90 1003 308

Westinghouse Electric Corporation Energy Systems

Box 355
Pittsburgh Pennsylvania 15230-0355

ACTION COPY

WAT-D-8347

September 25, 1990

T33 911231 810

Mr. W. L. Elliott
Manager of Engineering
Tennessee Valley Authority
Watts Bar Nuclear Power Plant
IOB-1A, P.O. Box 2000
Spring City, TN 37381

Ltr. Rec'd by: NRR

Dear Mr. Elliott:

Tennessee Valley Authority
Watts Bar Nuclear Plant Units 1 and 2
Charging/Letdown Isolation Transients

The purpose of this letter is to inform you that a potential issue has been identified regarding charging/letdown isolation transients. The issue involves the containment isolation test performed once per quarter during power operation, and which may isolate charging and letdown flows, resulting in thermal transients not accounted for in the design of these systems. Consideration of these transients may result in exceeding the fatigue usage factor design limits.

Westinghouse recommends revising the test such that the valve itself is not stroked (if required by current test procedures), review of past operation to determine what transients may have been experienced by the charging and letdown systems, and an evaluation of the structural analysis of these systems, particularly fatigue analysis.

If you should have any questions or require further information, please feel free to contact me.

Very truly yours,

J. W. Irons, Manager
TVA Watts Bar Project
Domestic Customer Projects

# CHARGING/LETDOWN ISOLATION TRANSIENTS

## SUMMARY

An issue has been identified on several plants regarding thermal transients on the charging and letdown lines. The issue involves the containment isolation test performed once per quarter, in accordance with the Technical Specifications. These isolations/reinitiations may result in a transient which is very similar to design letdown isolation transients which are described in current Westinghouse design transient documents. These transients are defined as coolant temperature drops at the charging nozzle, from 500°F down to 70°F in two to five minutes, with a constant velocity of five feet per second. These letdown isolation transients and the resulting increase in fatigue usage are not accounted for in the original design analysis of these systems.

## ISSUE DESCRIPTION

The Westinghouse "Engineered Safeguards Protection System Final Device or Actuator Testing" procedure specifies a "GO" test (i.e., the signal is tested by actuating the final device -- in this case, actually closing the isolation valves) for relays that isolate the charging and letdown lines. It is our belief that this procedure is being used by some utilities as part of their quarterly testing.

When this procedure is used, the charging and letdown lines can cool down to or near ambient temperature. The resulting return to flow condition can impose a significant thermal transient on the components in these lines. Assuming these lines are isolated for each containment isolation test, this thermal transient would be incurred 160 times over the (40) year life of the plant. Note that these test-induced transients are in addition to the design transients which were assumed for the charging and letdown lines.

The charging and alternate charging (if applicable) nozzles, along with other components in these lines, typically have fatigue usage factors which approach the ASME Code limit. The charging nozzles are generally the most limiting components.

## SAFETY SIGNIFICANCE

In consideration of this issue, continued plant operation is justified provided the number of letdown isolations experienced by either the charging or alternate charging nozzle is enveloped by the following, regardless of the initiating operation, whether it is the containment isolation test or another operation:

| Fluid Temperature Drop (°F) | Nozzle Material | Number of Transients |
|---|---|---|
| 430 | 304N SS | 118 |
| 430 | 316 SS | 121 |
| 430 | CF8A SS | 134 |

Further, a pressure boundary failure in a Class 2 portion of the chemical and volume control system would not result in an unanalyzed loss of coolant. If a failure occurred in the Class 1 piping, the result would be a small break LOCA, which is an accident analyzed in the FSAR.

## REPORTABILITY CONSIDERATIONS

Since Westinghouse does not have sufficient information to perform an evaluation of this issue, it is being communicated to each utility so that a regulatory evaluation can be performed.

Westinghouse is not aware of any reporting of this issue to the NRC.

## RECOMMENDED ACTIONS

Westinghouse suggests the following actions to address the potential fatigue usage concern:

- If current procedures specify that the valves must be stroked during the charging and letdown isolation test, the procedure should be modified such that the valves are not stroked. If this modification is made, the criteria in R.G. 1.22, "Periodic Testing of Protection System Actuation Functions", must be shown to be satisfied. Further, the technical specifications should be reviewed for potential impact; i.e., a requirement to stroke the valves.

  This procedure modification should be done on an interim basis until the following evaluation can be completed.

- Reconstruct the past operation and with this data evaluate the current status of the charging and letdown systems to determine if, indeed, the fatigue usage exceeds design. The following tasks should be included in this evaluation:

  - Determination of the design transients included in the charging and letdown systems design bases.

  - Determination of the plant's piping/structural code requirements and the existence of a fatigue analysis in the plant's design basis.