TENNESSEE VALLEY AUTHORITY
CHATTANOOGA, TENNESSEE 37401
400 Chestnut Street Tower II

February 19, 1985

Director of Nuclear Reactor Regulation
Attention: Ms. E. Adensam, Chief
Licensing Branch No. 4
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Ms. Adensam:

In the Matter of the Application of)
Tennessee Valley Authority

Docket Nos. 50-390
50-391

By letters dated July 27, 1983 and June 19, 1984, TVA provided comments/proposed modifications to the Watts Bar unit 1 draft Appendix A Technical Specifications. Included in these submittals was a request to revise the Reactor Trip System Instrumentation technical specifications in accordance with the recommendations of WCAP-10271 and the Technical Specification Optimization Program of the Westinghouse Owners Group (WOG).

The NRC Staff has notified TVA that the WOG proposed changes are under generic review and that as such, TVA's requested revisions cannot be approved until completion of that review.

During a February 6, 1985 meeting between TVA and NRC, held to discuss various Technical Specification issues, NRC representatives stated that a Safety Evaluation Report (SER) would be issued in the near future on the WOG recommended changes and that TVA would need to prepare a submittal requesting the approved changes and addressing any contingencies which may exist.

Enclosed is the required submittal as discussed above. Also, enclosed are corresponding revised technical specification pages.

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Director of Nuclear Reactor Regulation February 19, 1985

If you have any questions concerning this matter, please get in touch with D. B. Ellis at FTS 858-2681.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

R. H. Shell

R. H. Shell
Nuclear Engineer

Sworn to and subscribed before me
this 19th day of Feb. 1985.

Paulette N. White
Notary Public

My Commission Expires 8-24-88

Enclosures
cc: U.S. Nuclear Regulatory Commission (Enclosures)
Region II
Attn: Dr. J. Nelson Grace, Regional Administrator
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30323

TABLE 3.3-1 - REACTOR TRIP SYSTEM INSTRUMENTATION - (PAGES 3/4 3-6, 3/4 3-7, AND 3/4 3-8); TABLE 4.3-1 - REACTOR TRIP SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS - (PAGES 3/4 3-11, 3/4 3-12, 3/4 3-13 AND 3/4 3-14) AND INSTRUMENTATION - REACTOR TRIP SYSTEM AND ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION - BASES 3/4.3.1 AND 3/4.3.2 - (PAGE B 3/4 3-1)

These recommended changes to the Reactor Protection System instrumentation section are consistent with WCAP 10271 and the Technical Specification Optimization Program of the Westinghouse Owners Group.

The changes proposed to the Watts Bar technical specifications are based on those changes approved by the NRC.

Actions 2, 6, 7, and 9 have been revised to reflect an increase from 1 to 6 hours to place an inoperable channel in the tripped condition and an increase from 2 to 4 hours to perform a test on a channel when the inoperable channel is bypassed.

No other changes are proposed to the action statements because Watts Bar does not have the capability to bypass a channel in test. The changes not requested include the changes to actions 2, 6, and 7 as noted in WCAP 10271, Supplement 1, that address testing a channel in bypass. Action 7 was deleted in the WCAP because action 6 would apply to the affected channels. Again, action 7 still applies to Watts Bar.

The analog channel operational test frequency has been changed from monthly to quarterly and the test requirements prior to startup for the source range and intermediate range channels have been deleted as recommended in WCAP 10271, Supplement 1. The trip actuating device operational tests have been changed from monthly to quarterly for the reactor coolant pump undervoltage and under-frequency channels.

Table notes (1) and (9) have been revised to reflect the change in frequency to quarterly testing.

No changes to the reactor trip breakers and associated logic cabinets were approved at this time. Watts Bar is not proposing any changes.

TVA has evaluated instrument drift in preparing the technical specification change request to increase the analog channel test frequency from monthly to quarterly. Data for a 20 month period was reviewed for all analog channels at Sequoyah Nuclear Plant. One third of the functions required no calibration during that period. Only three instances were found where the setpoint had drifted beyond the allowable value. Three separate functions were affected. In the majority of the cases, a function had three or less recalibrations during this period. The drift was minor, never exceeding half of the allowable value. The direction of drift appeared to be random. Watts Bar has the same type of equipment as Sequoyah. TVA expects the performance to be the same.

The inherently stable performance of the bistables leads us to conclude that the present allowable values are acceptable. The typical drift that occurs in the channels is small and random in direction. For the most part, the channels operate with recalibration for many calendar quarters.

Watts Bar's Administrative Instruction AI-2.2 "Common Mode Failure" assigns responsibility at the plant to identify and prevent common mode failures. As part of this requirement, maintenance supervisors and superintendents are responsible for ensuring that equipment failures are reviewed to identify incipient common mode problems. The Plant Operations Review Committee also must consider common failures or potentials in their investigations. If common mode failure potentials are identified, plant management will decide on the appropriate response. Additional testing on repairs may be initiated as a result of their review. The exact response cannot be determined apriori because the common mode problems are not identified. In all cases, the plant response will be consistent with good engineering and management judgement.

ENCLOSURE

TABLE 3.3-1 (Continued)

TABLE NOTATIONS

*Only if the Reactor Trip System breakers happen to be closed and the Control Rod Drive System is capable of rod withdrawal.

#The provisions of Specification 3.0.4 are not applicable.

##Below the P-6 (Intermediate Range Neutron Flux Interlock) Setpoint.

###Below the P-10 (Low Setpoint Power Range Neutron Flux Interlock) Setpoint.

####Above the P-9 (Power Range Neutron Flux Interlock) Setpoint.

ACTION STATEMENTS

ACTION 1 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, restore the inoperable channel to OPERABLE status within 48 hours or be in HOT STANDBY within the next 6 hours.

ACTION 2 - With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided the following conditions are satisfied:

a. The inoperable channel is placed in the tripped condition within ~~1 hour;~~ 6hours;

b. The Minimum Channels OPERABLE requirement is met; however, the inoperable channel may be bypassed for up to ~~2~~ 48 hours for surveillance testing of other channels per Specification 4.3.1.1; and

c. Either, THERMAL POWER is restricted to less than or equal to 75% of RATED THERMAL POWER and the Power Range Neutron Flux Trip Setpoint is reduced to less than or equal to 85% of RATED THERMAL POWER within 4 hours; or, the QUADRANT POWER TILT RATIO is monitored at least once per 12 hours per Specification 4.2.4.2. This ACTION statement is not applicable if the QUADRANT POWER TILT RATIO is still monitored and alarmed by the excore detectors, i.e., the failure is in the rack cabinet for a trip channel and not in the excore detector itself.

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TABLE 3.3-1 (Continued)

ACTION STATEMENTS (Continued)

ACTION 3 - With the number of channels OPERABLE one less than the Minimum Channels OPERABLE requirement and with the THERMAL POWER level:

a. Below the P-6 (Intermediate Range Neutron Flux Interlock) Setpoint, restore the inoperable channel to OPERABLE status prior to increasing THERMAL POWER above the P-6 Setpoint; and

b. Above the P-6 (Intermediate Range Neutron Flux Interlock) Setpoint but below 10% of RATED THERMAL POWER, restore the inoperable channel to OPERABLE status prior to increasing THERMAL POWER above 10% of RATED THERMAL POWER.

ACTION 4 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement suspend all operations involving positive reactivity changes.

ACTION 5 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, restore the inoperable channel to OPERABLE status within 48 hours or open the Reactor trip breakers, suspend all operations involving positive reactivity changes and verify that one of the valve combinations given in Specification 4.9.1.3 are closed and secured in position within the next hour.

ACTION 6 - With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided the following conditions are satisfied:

a. The inoperable channel is placed in the tripped condition within ~~1 hour~~ 6 hours, and

b. The Minimum Channels OPERABLE requirement is met; however, the inoperable channel may be bypassed for up to ~~2~~ 4 hours for surveillance testing of other channels per Specification 4.3.1.1.

ACTION 7 - With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed until performance of the next required ANALOG CHANNEL OPERATIONAL TEST provided the inoperable channel is placed in the tripped condition within ~~1 hour~~ 6 hours.

ACTION 8 - With less than the Minimum Number of Channels OPERABLE, within 1 hour determine by observation of the associated permissive annunciator window(s) that the interlock is in its required state for the existing plant condition, or apply Specification 3.0.3.

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TABLE 3.3-1 (Continued)

ACTION STATEMENTS (Continued)

ACTION 9 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, be in at least HOT STANDBY within 6 hours; however, one channel may be bypassed for up to 4 ~~2~~ hours for surveillance testing per Specification 4.3.1.1, provided the other channel is OPERABLE.

ACTION 10 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, restore the inoperable channel to OPERABLE status within 48 hours or open the Reactor trip breakers within the next hour.

ACTION 11 - With the number of OPERABLE channels less than the Minimum Channels OPERABLE requirement, restore the inoperable channel to OPERABLE status within 48 hours or reduce power to below 50% RATED THERMAL POWER within the next 6 hours.

TABLE 4.3-1

REACTOR TRIP SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	ANALOG CHANNEL OPERATIONAL TEST	TRIP ACTUATING DEVICE OPERATIONAL TEST	ACTUATION LOGIC TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED
1. Manual Reactor Trip	N.A.	N.A.	N.A.	R	N.A.	1,2,3*,4*,5*
2. Power Range, Neutron Flux a. High Setpoint	S	D(2, 4), M(3, 4), Q(4, 6), R(4, 5)	~~#~~ Q	N.A.	N.A.	1, 2
b. Low Setpoint	S	R(4)	~~#~~ Q	N.A.	N.A.	1###, 2
3. Power Range, Neutron Flux, High Positive Rate	N.A.	R(4)	~~#~~ Q	N.A.	N.A.	1, 2
4. Power Range, Neutron Flux, High Negative Rate	N.A.	R(4)	~~#~~ Q	N.A.	N.A.	1, 2
5. Intermediate Range, Neutron Flux	S	R(4, 5)	~~S/U(1),#~~ Q	N.A.	N.A.	1###, 2
6. Source Range, Neutron Flux	S	R(4, 5)	~~S/U(1),H(9)~~ Q(9)	N.A.	N.A.	2##, 3, 4, 5
7. Overtemperature ΔT	S	R(12)	~~#~~ Q	N.A.	N.A.	1, 2
8. Overpower ΔT	S	R	~~#~~ Q	N.A.	N.A.	1, 2
9. Pressurizer Pressure-Low	S	R	~~#~~ Q	N.A.	N.A.	1
10. Pressurizer Pressure-High	S	R	~~#~~ Q	N.A.	N.A.	1, 2
11. Pressurizer Water Level-High	S	R	~~#~~ Q	N.A.	N.A.	1
12. Reactor Coolant Flow -Low-Single Loop	S	R	~~#~~ Q	N.A.	N.A.	1

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TABLE 4.3-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	ANALOG CHANNEL OPERATIONAL TEST	TRIP ACTUATING DEVICE OPERATIONAL TEST	ACTUATION LOGIC TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED
13. Reactor Coolant Flow - Low - Two Loops	S	R	~~M~~ Q	N.A.	N.A.	1
14. Steam Generator Water Level-Low-Low	S	R	~~M~~ Q	N.A.	N.A.	1, 2
15. Steam Generator Water Level - Low Coincident with Steam/Feedwater Flow Mismatch	S	R	~~M~~ Q	N.A.	N.A.	1, 2
16. Undervoltage - Reactor Coolant Pumps	N.A.	R	N.A.	~~M~~ Q	N.A.	1
17. Underfrequency - Reactor Coolant Pumps	N.A.	R	N.A.	~~M~~ Q	N.A.	1
18. Turbine Trip						
a. Low Fluid Oil Pressure	N.A.	R	N.A.	S/U(1, 10)	N.A.	1
b. Turbine Stop Valve Closure	N.A.	R	N.A.	S/U(1, 10)	N.A.	1
19. Safety Injection Input from ESF	N.A.	N.A.	N.A.	R	N.A.	1, 2
20. Reactor Trip System Interlocks						
a. Intermediate Range Neutron Flux, P-6	N.A.	R(4)	~~M~~ Q	N.A.	N.A.	2##
b. Low Power Reactor Trips Block, P-7	N.A.	R(4)	~~M (8)~~ Q(8)	N.A.	N.A.	1
c. Power Range Neutron Flux, P-8	N.A.	R(4)	~~M (8)~~ Q(8)	N.A.	N.A.	1

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TABLE 4.3-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	ANALOG CHANNEL OPERATIONAL TEST	TRIP ACTUATING DEVICE OPERATIONAL TEST	ACTUATION LOGIC TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED
20. Reactor Trip System Interlocks (Continued)						
d. Power Range Neutron Flux, P-9	N.A.	R (4)	Q(8) ~~M (8)~~	N.A.	N.A.	1
e. Power Range Neutron Flux, P-10	N.A.	R (4)	Q(8) ~~M (8)~~	N.A.	N.A.	1, 2
f. Turbine Impulse Chamber Pressure, P-13	N.A.	R	Q(8) ~~M (8)~~	N.A.	N.A.	1
21. Reactor Trip Breaker	N.A.	N.A.	N.A.	M (7,11)	N.A.	1,2,3*,4*,5*
22. Automatic Trip and Interlock Logic	N.A.	N.A.	N.A.	N.A.	M (7)	1,2,3*,4*,5*

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TABLE 4.3-1 (Continued)

TABLE NOTATIONS

*Only if the Reactor Trip System breakers happen to be closed and the Control Rod Drive System is capable of rod withdrawal.

##Below P-6 (Intermediate Range Neutron Flux Interlock) Setpoint.

###Below P-10 (Low Setpoint Power Range Neutron Flux Interlock) Setpoint.

(1) If not performed in previous 92 days.

(2) Comparison of calorimetric to excore power indication above 15% of RATED THERMAL POWER. Adjust excore channel gains consistent with calorimetric power if absolute difference is greater than 2%. The provisions of Specification 4.0.4 are not applicable to entry into MODE 2 or 1.

(3) Single point comparison of incore to excore axial flux difference above 15% of RATED THERMAL POWER. Recalibrate if the absolute difference is greater than or equal to 3%. The provisions of Specification 4.0.4 are not applicable for entry into MODE 2 or 1.

(4) Neutron detectors may be excluded from CHANNEL CALIBRATION.

(5) Detector plateau curves shall be obtained, evaluated and compared to manufacturer's data. For the Intermediate Range and Power Range Neutron Flux channels the provisions of Specification 4.0.4 are not applicable for entry into MODE 2 or 1.

(6) Incore - Excore Calibration, above 75% of RATED THERMAL POWER. The provisions of Specification 4.0.4 are not applicable for entry into MODE 2 or 1.

(7) Each train shall be tested at least every 62 days on a STAGGERED TEST BASIS.

(8) With power greater than or equal to the Interlock Setpoint the required ANALOG CHANNEL OPERATIONAL TEST shall consist of verifying that the interlock is in the required state by observing the permissive annunciator window.

(9) ~~Monthly~~ QUARTERLY surveillance in MODES 3*, 4* and 5* shall also include verification that permissives P-6 and P-10 are in their required state for existing plant conditions by observation of the permissive annunciator window. Monthly surveillance shall include verification of the Boron Dilution Alarm Setpoint of less than or equal to one-half decade above background.

(10) Setpoint verification is not required.

(11) At least once per 18 months and following maintenance or adjustment of the Reactor trip breakers, the TRIP ACTUATING DEVICE OPERATIONAL TEST shall include independent verification of the Undervoltage and Shunt trips.

(12) CHANNEL CALIBRATION shall include the RTD bypass loops flow rate.

consistent with maintaining an appropriate level of reliability of the Reactor Protection and Engineered Safety Features instrumentation, and (3)

3/4.3.1 and 3/4.3.2 REACTOR TRIP SYSTEM and ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

The OPERABILITY of the Reactor Trip System and Engineered Safety Features Actuation System instrumentation and interlocks ensures that: (1) the associated ACTION and/or Reactor trip will be initiated when the parameter monitored by each channel or combination thereof reaches its Setpoint, (2) the specified coincidence logic ~~is maintained, (3)~~ and sufficient redundancy is maintained to permit a channel to be out-of-service for testing or maintenance ~~and (4)~~ sufficient system functional capability is available from diverse parameters.

The OPERABILITY of these systems is required to provide the overall reliability, redundancy, and diversity assumed available in the facility design for the protection and mitigation of accident and transient conditions. The integrated operation of each of these systems is consistent with the assumptions used in the accident analyses. The Surveillance Requirements specified for these systems ensure that the overall system functional capability is maintained comparable to the original design standards. The periodic surveillance tests performed at the minimum frequencies are sufficient to demonstrate this capability.

The measurement of response time at the specified frequencies provides assurance that the Reactor trip and the Engineered Safety Features actuation associated with each channel is completed within the time limit assumed in the accident analyses. No credit was taken in the analyses for those channels with response times indicated as not applicable. Response time may be demonstrated by any series of sequential, overlapping or total channel test measurements provided that such tests demonstrate the total channel response time as defined. Sensor response time verification may be demonstrated by either: (1) in place, onsite, or offsite test measurements, or (2) utilizing replacement sensors with certified response times.

The Engineered Safety Features Actuation System senses selected plant parameters and determines whether or not predetermined limits are being exceeded. If they are, the signals are combined into logic matrices sensitive to combinations indicative of various accidents, events, and transients. Once the required logic combination is completed, the system sends actuation signals to those Engineered Safety Features components whose aggregate function best serves the requirements of the condition. As an example, the following actions may be initiated by the Engineered Safety Features Actuation System to mitigate the consequences of a steam line break or loss-of-coolant accident: (1) Safety Injection pumps start and automatic valves position, (2) Reactor trip, (3) feedwater isolation, (4) startup of the emergency diesel generators, (5) Phase A containment isolation, (6) Turbine trip, (7) auxiliary feedwater pumps start, (8) containment air return fans start, (9) essential raw cooling water pumps start and automatic valves position, (10) Control Room Isolation And Ventilation Systems start, and (11) component cooling water pumps start.

Surveillance intervals and out of service times were determined based on maintaining an appropriate level of reliability of the Reactor Protection system and Engineered Safety Features instrumentation.

Specified surveillance intervals and surveillance and maintenance outage times have been determined in accordance with WCAP 10271, "Evaluation of Surveillance Frequencies and Out of Service times for the Reactor Protection Instrumentation System," and supplements to that report.