



Tennessee Valley Authority, Post Office Box 2000, Soddy-Daisy, Tennessee 37384-2000

April 5, 2007

TVA-SQN-TS-07-03

10 CFR 50.90

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D. C. 20555-0001

Gentlemen:

In the Matter of) Docket Nos. 50-327
Tennessee Valley Authority) 50-328

SEQUOYAH NUCLEAR PLANT (SQN) - UNITS 1 AND 2 - TECHNICAL SPECIFICATIONS (TS) CHANGE 07-03 "REVISION OF CHANNEL FUNCTIONAL TEST SURVEILLANCE FREQUENCY FOR REACTOR TRIP SYSTEM (RTS) TURBINE TRIP"

Pursuant to 10 CFR 50.90, Tennessee Valley Authority (TVA) is submitting a request for a TS change (TS-07-03) to Licenses DPR-77 and DPR-79 for SQN Units 1 and 2. The proposed TS change will revise the surveillance frequency for the turbine trip functions of the reactor trip system instrumentation. The current frequency is prior to each reactor startup and the proposed change will revise this to be prior to exceeding the Permissive P-9 interlock whenever the unit has been in hot standby. The proposed change is consistent with NRC approved Technical Specification Task Force Traveler TSTF-311 as incorporated into the latest revision of Standard TSs (NUREG-1431, Revision 3).

TVA has determined that there are no significant hazards considerations associated with the proposed change and that the TS change qualifies for categorical exclusion from environmental review pursuant to the provisions of 10 CFR 51.22(c) (9).

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Additionally, in accordance with 10 CFR 50.91(b)(1), TVA is sending a copy of this letter and enclosures to the Tennessee State Department of Public Health.

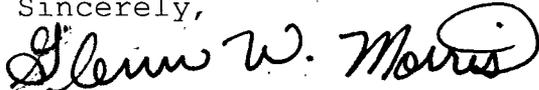
There is no specific need date for this proposed change. Therefore, TVA requests routine processing of this TS change and that the implementation of the revised TS be within 45 days of NRC approval.

There are no commitments contained in this submittal.

If you have any questions about this change, please contact me at 843-7170.

I declare under penalty of perjury that the foregoing is true and correct. Executed on this 5th day of April, 2007.

Sincerely,



Glenn W. Morris
Manager, Site Licensing and
Industry Affairs

Enclosures:

1. TVA Evaluation of the Proposed Changes
2. Proposed Technical Specifications Changes (mark-up)

cc (Enclosures):

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ENCLOSURE 1

TENNESSEE VALLEY AUTHORITY (TVA) SEQUOYAH NUCLEAR PLANT (SQN) UNITS 1 AND 2

TVA Evaluation of the Proposed Changes

1.0 DESCRIPTION

This letter is a request to amend Operating Licenses DPR-77 and DPR-79 for SQN Units 1 and 2. The proposed changes would revise Functional Units 18.A and 18.B of TS Table 4.3-1, "Reactor Trip System Instrumentation Surveillance Requirements." The Channel Functional Test (CFT) column of this table would be revised to delete the "S/U" frequency and replace this with a reference to Notation (12). This notation would require that the CFT be performed prior to exceeding the P-9 interlock whenever the unit has been in hot standby. The current "S/U" frequency requires the surveillance to be performed prior to reactor startup, which is well before the P-9 interlock is disabled.

The proposed revision will eliminate the gap between the required surveillance performance and the applicability for the function. Previous amendments to the SQN TSs revised the applicability from Mode 1 to operation above the P-9 interlock. These efforts did not identify the potential confusion between the surveillance frequency and the applicability. The proposed change will couple the surveillance frequency and applicability to provide more consistent requirements for this function. The proposed change is consistent with NRC approved Technical Specification Task Force Traveler TSTF-311 as incorporated into the latest revision of Standard TSs (NUREG-1431, Revision 3).

2.0 PROPOSED CHANGE

The proposed change will delete the CFT surveillance frequency of "S/U" from Functional Units 18.A and 18.B of TS Table 4.3-1. This requirement will be replaced with "(12)" indicating that table Notation (12) applies to these CFT requirements. Notation (12) will be added to Table 4.3-1 and will read, "Prior to exceeding the P-9 interlock whenever the unit has been in HOT STANDBY."

In summary, the surveillance frequency for the turbine trip functions of the reactor trip system instrumentation requirements will be revised to be consistent with the mode applicability for these functions.

3.0 BACKGROUND

The proposed change affects the reactor trip system instrumentation that is initiated by the turbine trip functions. The turbine trip reactor trip is actuated by two out of three logic from low autostop oil pressure signals or by all closed signals from the turbine steam stop valves. A turbine trip causes a direct reactor trip above the P-9 setpoint.

The reactor trip on turbine trip is an anticipatory trip input signal to the reactor protection system. This trip is anticipatory in that it is not assumed to occur in any of the Chapter 15 accident analysis. Condition II faults associated with turbine trips are discussed in Chapter 15.2.7 of the Updated Final Safety Analysis Report (UFSAR). This trip meets all of the requirements of IEEE 279-1971 including separation, redundancy, single failure, and testability. Seismic location, qualification, or mounting of the sensors is not practical because of their location in the nonseismic Turbine Building.

When the turbine is tripped, turbine auto stop oil pressure drops, and the pressure is sensed by three pressure sensors. A digital output is provided from each sensor when the oil pressure drops below a preset value. These three outputs are transmitted to two redundant two out of three logic matrixes, either of which trips the reactor if above the P-9 setpoint.

The auto stop oil pressure signal also dumps the autostop emergency trip fluid, closing all of the turbine steam stop valves. When all stop valves are closed, a reactor trip signal will be initiated if the reactor is above the P-9 setpoint. This trip signal is generated by redundant (two each) limit switches on the stop valves. Reactor trips initiated by a turbine trip event are discussed in Chapter 7.2.1.1.2 of the UFSAR.

Interlock P-9 blocks a reactor trip following a turbine trip below 50 percent power. The block action (absence of the P-9 interlock signal) occurs when three out of four neutron flux power range signals are below the setpoint. Thus, below the P-9 setpoint, the reactor will not be directly tripped by a turbine trip, but instead the reactor control system and the steam dump system will automatically control the reactor to zero power conditions. These interlock functions are described in Chapter 7.2.1.1.3 of the UFSAR.

When the SQN units were licensed for power operation, the surveillance frequency for the turbine trip functions was prior to reactor startup or S/U. This requirement was associated with a Mode 1 applicability for these functions. This crafting of the TSs left a small window of time during

typical startups between the point when the surveillance was required to be performed and when the functions had to be operable. This is not typical for most TS requirements and creates difficulty when trying to apply the general rules of the TSs found in TS Sections 3.0 and 4.0.

TVA requested and received approval from NRC to revise the turbine trip function applicability from Mode 1 to above the P-9 interlock in Amendments 304 and 294 for Units 1 and 2, respectively. The basis of this change is that the turbine trip instrumentation cannot perform any function until the P-9 interlock of 50 percent reactor power is exceeded and the trip function is enabled. Therefore, a function does not need to be operable until it can perform its intended function. This change actually amplified the concern described above by increasing the duration between the surveillance performance requirement and the applicability.

TVA is pursuing this TS change to eliminate this gap which creates confusion regarding the need to perform the surveillance before reactor startup even though the function is not required to be operable until 50 percent reactor power. Vogtle Nuclear Power Plant identified this disconnect during their conversion to the standard TSs. As a result of this discovery and NRC's approval of their conversion, TSTF-311 was proposed for NUREG-1431 and approved generically by NRC. Incorporation of TSTF-311, as contained in the proposed revision, into the SQN TSs will eliminate the potential misapplication of the surveillance requirements and the associated confusion. The proposed surveillance frequency does not alter the current provision that takes credit for a surveillance performance within the previous 31 days. In this case, the surveillance does not have to be performed prior to the P-9 interlock based on a recent performance of the surveillance.

4.0 TECHNICAL ANALYSIS

The proposed change to the surveillance frequency of the turbine trip functions for the reactor trip system instrumentation provides a more appropriate requirement. These trip functions are only enabled by design when the reactor power is above the P-9 interlock that is set at 50 percent thermal power. A requirement to verify that a function is operable through testing when the design keeps such a feature from performing the required action is not necessary. The proposed revision to change the turbine trip function surveillance frequency before the reactor is above the P-9 interlock achieves the appropriate requirement to have an operable trip function when the system is capable of initiating the required reactor trip signal. The turbine trips are not credited as the primary actuation of a reactor trip for any SQN postulated event. They are provided to

enhance the overall reliability of the reactor protection system. This proposed change is consistent with the latest version of the standard TSs (NUREG-1431, Revision 3) and the NRC approved TSTF-311. The incorporation of this revision into the SQN TSs will not adversely affect the ability of the reactor trip system to generate the required trip signal for turbine trip events.

5.0 REGULATORY SAFETY ANALYSIS

This letter is a request to amend Operating Licenses DPR-77 and DPR-79 for SQN Units 1 and 2. The proposed changes would revise Functional Units 18.A and 18.B of TS Table 4.3-1, "Reactor Trip System Instrumentation Surveillance Requirements." The Channel Functional Test (CFT) column of this table would be revised to delete the "S/U" frequency and replace this with a reference to Notation (12). This notation would require that the CFT be performed prior to exceeding the P-9 interlock whenever the unit has been in hot standby. The current "S/U" frequency requires the surveillance to be performed prior to reactor startup, which is well before the P-9 interlock is disabled.

The proposed revision will eliminate the gap between the required surveillance performance and the applicability for the function. Previous amendments to the SQN TSs revised the applicability from Mode 1 to operation above the P-9 interlock. These efforts did not identify the potential confusion between the surveillance frequency and the applicability. The proposed change will couple the surveillance frequency and applicability to provide more consistent requirements for this function. The proposed change is consistent with NRC approved Technical Specification Task Force Traveler TSTF-311 as incorporated into the latest revision of Standard TSs (NUREG-1431, Revision 3).

5.1 No Significant Hazards Consideration

TVA has evaluated whether or not a significant hazards consideration is involved with the proposed amendments by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of Amendment," as discussed below:

1. Does the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: No.

The proposed changes revise the surveillance frequency for reactor trip functions from a turbine trip event. These changes do not alter

these functions physically or how they are maintained. Delaying the performance of the surveillance up to the P-9 interlock will continue to ensure operability of the function before the plant is in a condition that would benefit from the associated actuation. The incorporation of a surveillance frequency that is consistent with the applicability for the function eliminates potential misapplication of the TS requirements. The frequency changes support turbine trip operability during plant startup and is consistent with their ability to perform the reactor trip functions.

Since these changes will not affect the ability of these trips to perform the initiation of reactor trips when appropriate, the offsite dose consequences for an accident will not be impacted. Equally, the potential to cause an accident is not affected because no plant system or component has been altered by the proposed changes. Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No.

The proposed changes only affect the surveillance frequency requirement for the turbine trip functions. This does not affect any physical features of the plant or the manner in which these functions are utilized. The proposed surveillance frequency will require the functions to be verified operable before the turbine trip functions are applicable and able to perform their trip functions. Delaying the performance of the surveillance up to the P-9 interlock will continue to ensure operability of the function before the plant is in a condition that would benefit from the associated actuation. Therefore, the proposed change does not create the possibility of a new or different kind of accident from any previously evaluated.

3. Does the proposed change involve a significant reduction in a margin of safety?

Response: No.

The proposed changes do not alter any plant setpoints or functions that are assumed to actuate in the event of postulated accidents. In fact, the proposed changes do not alter any plant feature and only alters the requirements for when the function must be verified to be operable through surveillance testing. The proposed changes ensure the functionality of the turbine trips when assumed in the analysis for accident mitigation. Therefore, the proposed change does not involve a significant reduction in a margin of safety.

Based on the above, TVA concludes that the proposed amendment(s) present no significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and accordingly, a finding of "no significant hazards consideration" is justified.

5.2 Applicable Regulatory Requirements/Criteria

Section 182a of the Atomic Energy Act requires applicants for nuclear power plant operating licenses to include TSs as part of the license. The Commission's regulatory requirements related to the content of the TS are contained in Title 10, Code of Federal Regulations (10 CFR), Section 50.36. The TS requirements in 10 CFR 50.36 include the following categories: (1) safety limits, limiting safety systems settings and control settings, (2) limiting conditions for operation (LCO), (3) surveillance requirements (SRs), (4) design features, and (5) administrative controls. The requirements for the initiation of a reactor trip resulting from a turbine trip are included in the TS in accordance with 10 CFR 50.36(c)(2), "Limiting Conditions for Operation."

As stated in 10 CFR 50.59(c)(1)(i), a licensee is required to submit a license amendment pursuant to 10 CFR 50.90 if a change to the TS is required. Furthermore, the requirements of 10 CFR 50.59 necessitate that the U.S. Nuclear Regulatory Commission (NRC) approve the TS changes before the changes are implemented. TVA's submittal meets the requirements of 10 CFR 50.59(c)(1)(i) and 10 CFR 50.90.

NUREG-1431, Revision 3, "Standard Technical Specifications Westinghouse Plants," provides generic recommendations for requirements associated with the operation of Westinghouse Electric Company designed nuclear power plants. NUREG-1431 contains specifications for the generation of reactor trips as a result of a trip of the turbine. The proposed changes

support these functions by implementing appropriate surveillance frequency requirements that are more consistent with the function applicability and the logic design of these trip functions. The proposed changes are consistent with NUREG-1431 recommendations to the degree that the SQN design is compatible with these requirements. The proposed change is consistent with and meets the intent of NUREG-1431.

General Design Criteria (GDC) 20 through 29, "Protection and Reactivity Control Systems," of Appendix A, "General Design Criteria," to 10 CFR Part 50, provides the expectations for protection systems associated with reactor operation. The proposed changes do not alter the ability for the reactor trip functions to actuate on a valid turbine trip signal. The proposed surveillance frequency is consistent with the function applicability requirements and the SQN design and analysis for the turbine trip safety function and ensures operability verifications before entering required plant conditions. Therefore, the recommendations of these GDCs continue to be met with the proposed changes.

There are several NRC Regulatory Guides associated with instrumentation and control systems for nuclear facilities. These guides deal primarily with the design, setpoint development, and testing of these systems. The proposed changes do not alter these types of features for the reactor trip functions that are generated by turbine trip signals. The physical characteristics of these functions are not altered by the proposed revision of the surveillance frequency requirements. Therefore, the recommendations of applicable regulatory guides continue to be met without change.

In conclusion, based on the considerations discussed above, (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.

6.0 ENVIRONMENTAL CONSIDERATION

A review has determined that the proposed amendment would change a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, or would change an inspection or SR.

However, the proposed amendment does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluent that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 50.22(b), no environmental impact statement or environmental assessment needs to be prepared in connection with the proposed amendment.

7.0 REFERENCES

1. Sequoyah Nuclear Plant, Final Safety Analysis Report (as updated) Revision 18, Sections 7.2.1.1.2, 7.2.1.1.3, and 15.2.7, dated May 28, 2004
2. NUREG-1431, Revision 3, "Standard Technical Specifications Westinghouse Plants," dated March 2004
3. Technical Specification Task Force Traveler TSTF-311, Revision 0, "Revision of Surveillance Frequency for TADOT on Turbine Trip Functional Unit," approved by NRC April 21, 1999

ENCLOSURE 2

**TENNESSEE VALLEY AUTHORITY
SEQUOYAH NUCLEAR PLANT (SQN)
UNITS 1 AND 2**

Proposed Technical Specification Changes (mark-up)

I. AFFECTED PAGE LIST

Unit 1

3/4 3-12

3/4 3-13

Unit 2

3/4 3-12

3/4 3-13

II. MARKED PAGES

See attached.

TABLE 4.3-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

<u>FUNCTIONAL UNIT</u>	<u>CHANNEL CHECK</u>	<u>CHANNEL CALIBRATION</u>	<u>CHANNEL FUNCTIONAL TEST</u>	<u>MODES IN WHICH SURVEILLANCE IS REQUIRED</u>
15. Deleted				
16. Undervoltage - Reactor Coolant Pumps	N.A.	R	Q	1
17. Underfrequency - Reactor Coolant Pumps	N.A.	R	Q	1
18. Turbine Trip				
A. Low Fluid Oil Pressure	N.A.	N.A.	S/U(1)(12)	1**
B. Turbine Stop Valve Closure	N.A.	N.A.	S/U(1)(12)	1**
19. Safety Injection Input from ESF	N.A.	N.A.	R	1, 2
20. Reactor Trip Breaker	N.A.	N.A.	M(5) and S/U(1)	1, 2, and *
21. Automatic Trip Logic	N.A.	N.A.	M(5)	1, 2, and *
22. Reactor Trip System Interlocks				
A. Intermediate Range Neutron Flux, P-6	N.A.	R	N.A.	2, and *
B. Power Range Neutron Flux, P-7	N.A.	N.A.	N.A.	1
C. Power Range Neutron Flux, P-8	N.A.	R	N.A.	1
D. Power Range Neutron Flux, P-10	N.A.	R	N.A.	1, 2
E. Turbine Impulse Chamber Pressure, P-13	N.A.	R	N.A.	1
F. Power Range Neutron Flux, P-9	N.A.	R	N.A.	1
G. Reactor Trip, P-4	N.A.	N.A.	R	1, 2, and *
23. Reactor Trip Bypass Breaker	N.A.	N.A.	M(10)R(11)	1, 2, and *

TABLE 4.3-1 (Continued)

NOTATION

- * - With the reactor trip system breakers closed and the control rod drive system capable of rod withdrawal.
- ** - Above the P-9 (Power Range Neutron Flux) interlock.
- (1) - If not performed in previous 31 days.
- (2) - Heat balance only, above 15% of RATED THERMAL POWER. Adjust channel if absolute difference greater than 2 percent.
- (3) - Compare incore to excore AXIAL FLUX DIFFERENCE above 15% of RATED THERMAL POWER. Recalibrate if the absolute difference greater than or equal to 3 percent. The frequency of this surveillance is every 31 EFPD. This surveillance is not required to be performed until 96 hours after thermal power is \geq 15% RTP.
- (4) - Deleted.
- (5) - Each train or logic channel shall be tested at least every 62 days on a STAGGERED TEST BASIS. The test shall independently verify the OPERABILITY of the undervoltage and automatic shunt trip circuits.
- (6) - Neutron detectors may be excluded from CHANNEL CALIBRATION.
- (7) - Below P-6 (Block of Source Range Reactor Trip) setpoint.
- (8) - Deleted.
- (9) - The CHANNEL FUNCTIONAL TEST shall independently verify the operability of the undervoltage and shunt trip circuits for the manual reactor trip function.
- (10) - Local manual shunt trip prior to placing breaker in service. Each train shall be tested at least every 62 days on a STAGGERED TEST BASIS.
- (11) - Automatic and manual undervoltage trip.

(12) *Prior to exceeding the P-9 interlock whenever the unit has been in HOT STANDBY.*

TABLE 4.3-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

<u>FUNCTIONAL UNIT</u>	<u>CHANNEL CHECK</u>	<u>CHANNEL CALIBRATION</u>	<u>CHANNEL FUNCTIONAL TEST</u>	<u>MODES FOR WHICH SURVEILLANCE IS REQUIRED</u>
15. Deleted				
16. Undervoltage - Reactor Coolant Pumps	N.A.	R	Q	1
17. Underfrequency - Reactor Coolant Pumps	N.A.	R	Q	1
18. Turbine Trip				
A. Low Fluid Oil Pressure	N.A.	N.A.	S/U(1)(12)	1**
B. Turbine Stop Valve Closure	N.A.	N.A.	S/U(1)(12)	1**
19. Safety Injection Input from ESF	N.A.	N.A.	R	1, 2
20. Reactor Trip Breaker	N.A.	N.A.	M(5) and S/U(1)	1, 2, and *
21. Automatic Trip Logic	N.A.	N.A.	M(5)	1, 2, and *
22. Reactor Trip System Interlocks				
A. Intermediate Range Neutron Flux, P-6	N.A.	R	N.A.	2, and *
B. Power Range Neutron Flux, P-7	N.A.	N.A.	N.A.	1
C. Power Range Neutron Flux, P-8	N.A.	R	N.A.	1
D. Power Range Neutron Flux, P-10	N.A.	R	N.A.	1, 2
E. Turbine Impulse Chamber Pressure, P-13	N.A.	R	N.A.	1
F. Power Range Neutron Flux, P-9	N.A.	R	N.A.	1
G. Reactor Trip, P-4	N.A.	N.A.	R	1, 2, and *
23. Reactor Trip Bypass Breaker	N.A.	N.A.	M(10)R(11)	1, 2, and *

Table 4.3-1 (Continued)

NOTATION

- * - With the reactor trip system breakers closed and the control rod drive system capable of rod withdrawal.
- ** - Above the P-9 (Power Range Neutron Flux) interlock. |
- (1) - If not performed in previous 31 days.
- (2) - Heat balance only, above 15% of RATED THERMAL POWER. Adjust channel if absolute difference greater than 2 percent.
- (3) - Compare incore to excore AXIAL FLUX DIFFERENCE above 15% of RATED THERMAL POWER. Recalibrate if the absolute difference greater than or equal to 3 percent. The frequency of this surveillance is every 31 EFPD. This surveillance is not required to be performed until 96 hours after thermal power is \geq 15% RTP.
- (4) - Deleted.
- (5) - Each train or logic channel shall be tested at least every 62 days on a STAGGERED TEST BASIS. The test shall independently verify the OPERABILITY of the undervoltage and automatic shunt trip circuits.
- (6) - Neutron detectors may be excluded from CHANNEL CALIBRATION.
- (7) - Below P-6 (Block of Source Range Reactor Trip) setpoint.
- (8) - Deleted.
- (9) - The CHANNEL FUNCTIONAL TEST shall independently verify the operability of the undervoltage and shunt trip circuits for the manual reactor trip function.
- (10) - Local manual shunt trip prior to placing breaker in service. Each train shall be tested at least every 62 days on a STAGGERED TEST BASIS.
- (11) - Automatic and manual undervoltage trip.
- (12) - ***Prior to exceeding the P-9 interlock whenever the unit has been in HOT STANDBY.***