

August 28, 2008

TVA-SQN-TS-08-05

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 (TVA)) 50-328

SEQUOYAH NUCLEAR PLANT (SQN) - UNITS 1 AND 2 - TECHNICAL SPECIFICATIONS (TS) CHANGE AND EMERGENCY TS CHANGE (TS-08-05) - "AUXILIARY FEEDWATER (AFW) START UPON TRIP OF MAIN FEEDWATER (MFW) PUMPS" - SUPPLEMENT (TAC NOS. UNIT 1 MD9525 and UNIT 2 MD9501)

Reference: TVA letter to NRC dated August 26, 2008, "Sequoyah Nuclear Plant (SQN) - Units 1 And 2 - Technical Specifications (TS) Change and Emergency TS Change (TS-08-05) - "Auxiliary Feedwater (AFW) Start Upon Trip of Main Feedwater Pumps"

Pursuant to 10 CFR 50.90, Tennessee Valley Authority (TVA) submitted the above referenced letter for a proposed license amendment to Licenses DPR-77 and DPR-79 for SQN Units 1 and 2. The proposed license amendment request (LAR) would revise the Functional Unit 6.f of Table 3.3-3, "Engineered Safety Feature Actuation System Instrumentation," modifying the mode of applicability. A footnote would indicate that the AFW auto-start function associated with the trip of MFW pumps in Mode 2 is only required when one or more MFW pumps are supplying feedwater to the steam generators (SGs). Functional Unit 6.f of TS Table 3.3-3 is an anticipatory trip function that provides early actuation of the AFW system.

During a teleconference with NRC on August 28, 2008, it was noted that entry into a limiting condition of operation (LCO) Action for placing the second main feedwater (MFW) pump in service or removing it from service would be inconsistent with TS application without additional notation. This submittal supplements the referenced LAR to address this issue.

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This supplement to the LAR will add a footnote to the Minimum Channels Operable column for Functional Unit 6.f of TS Table 3.3-3 to indicate one channel may be inoperable during Mode 1 for up to four hours when starting up or shutting down a MFW pump.

TVA has revised the no significant hazards considerations provided in the referenced letter and determined that there are no significant hazards considerations associated with this supplement to the LAR. It is also determined that the LAR, as supplemented, qualifies for categorical exclusion from environmental review pursuant to the provisions of 10 CFR 51.22(c)(9). 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.

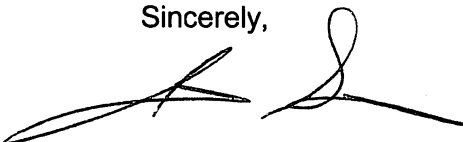
TVA's schedule request remains the same as provided by the referenced letter.

The SQN Plant Operations Review Committee and the Nuclear Safety Review Board have reviewed this proposed change and determined that operation of SQN Units 1 and 2 in accordance with the proposed change will not endanger the health and safety of the public.

There are no regulatory commitments associated with this license amendment request. If you have any questions about this change, please contact me at (423) 843-7170.

I declare under penalty of perjury that the foregoing is true and correct. Executed on this 28th day of August, 2008.

Sincerely,

A handwritten signature in black ink, appearing to read 'James D. Smith', with a long horizontal flourish extending to the left.

James D. Smith
Manager, Site Licensing and
Industry Affairs

Enclosure:
Evaluation of the Proposed Change

cc: See page 3

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Enclosure

cc (Enclosure):

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ENCLOSURE

EVALUATION OF THE PROPOSED CHANGE

Sequoyah Nuclear Plant (SQN) Unit 1 Technical Specification (TS) Limiting Condition for Operation (LCO) 3.3.2.1, "Engineered Safety Feature Actuation System (ESFAS) Instrumentation," Functional Unit 6.f and SQN Unit 2 TS LCO 3.3.2 Functional Unit 6.f

1.0 SUMMARY DESCRIPTION

This supplement will address the issue of entering an LCO Action during Mode 1 for Functional Unit 6.f of Table 3.3-3 when placing the second main feedwater (MFW) pump in service or removing one of the two MFW pumps from service. Also this information will clarify the normal start up process of the second MFW pump as described in the referenced license amendment request (LAR) (Reference 1).

In particular, this supplement to the referenced LAR adds a footnote to the Minimum Channels Operable column for Functional Unit 6.f of TS Table 3.3-3 to allow a period of time for a auxiliary feedwater (AFW) auto-start channel to be inoperable during Mode 1 when starting up the second MFW pump or shutting down one of the two MFW pumps.

As previously stated in the referenced LAR for SQN, to comply with the current TS applicability and enter into Mode 2, each MFW pump would need to be in a tripped condition. This configuration would result in an AFW start signal, starting the turbine-driven pump in addition to the motor-driven AFW pumps. The turbine-driven AFW level control valves are non-modulating (i.e., either open or closed) valves and closure of these valves to control steam generator (SG) level would impact operability of the pump and preclude Mode 2 entry. SQN's design does not provide any other method for complying with the current TS requirement.

2.0 DETAILED DESCRIPTION

The proposed change supplements the referenced LAR, to include, a footnote reference to the Minimum Channels Operable column for Functional Unit 6.f of TS Table 3.3-3 which states

- "(a) One channel may be inoperable during Mode 1 for up to 4 hours when placing the second main feedwater (MFW) pump in service or removing one of two MFW pumps from service."

The proposed footnote in the reference LAR is now designated as footnote "(b)".

This provision will allow placing the second MFW pump in service or removing one of the two MFW pumps from service during Mode 1 operations without the requirement to enter the LCO Action for an inoperable channel during this period of time. Entering into an LCO Action to place a system into service or remove a system from service is atypical without expressed allowance in the TSs (e.g., allowances associated with emergency core cooling system [ECCS] and low temperature overpressure protection [LTOP] system).

3.0 TECHNICAL EVALUATION

The condensate and feedwater system is designed to supply a sufficient quantity of feedwater to the SG secondary side inlet during normal operating conditions and to guarantee that feedwater will not be delivered to the SGs when feedwater isolation is required. The condensate and feedwater pumps take suction from the main condenser hotwells and deliver water to the SGs at elevated temperature and pressure. Additional information can be found in Updated Final Safety Analysis Report (UFSAR) Section 10.4.7, "Condensate Feedwater System."

The AFW system supplies, in the event of a loss of the MFW supply, sufficient feedwater to the SGs to remove primary system stored and residual core energy. The system is designed to start automatically in the event of a loss of offsite electrical power (LOOP), a safety injection (SI) signal, low-low SG water level, or a trip of one or both MFW pumps. Additional information can be found in UFSAR Section 10.4.7.2, "Auxiliary Feedwater System."

The design basis events, which impose AFW safety function requirements, are loss of normal feedwater, main feed line or main steam line break, LOOP, and small break loss of coolant accident. These design basis events assume auto-start of the AFW system on a blackout signal, low-low SG level, or a SI signal. These ESFAS signals are Class 1E which means all requirements for reliable power supplies, separation, redundancy, testability, and seismic and environmental qualifications as specified in 10 CFR 50.55a(h)(2), "Protection Systems" are met. The proposed referenced LAR and this supplement do not result in a change to this instrumentation or its function.

As stated in the referenced LAR, the ESFAS instrumentation used to satisfy Functional Unit 6.f of Table 3.3-3 provides an anticipatory trip to reduce the effect of a feedwater transient.

Normal Plant Startup - First MFW Pump

A normal plant start up uses the AFW system to supply feedwater to the SGs into Mode 2. When sufficient steam pressure is established, one MFW pump is reset and placed into service. The MFW pump is reset when electrical power is applied to the MFW pump trip circuit and the pressure switch located on the oil control system senses that the oil system is pressurized. A MFW pump is in service when the MFW pump's stop valves are open, the governor control valves are either in manual or automatic control, and feedwater is being supplied to the SGs.

At approximately two percent reactor thermal power (RTP) and before placing the first MFW pump into service, the other MFW pump (i.e., second MFW pump) is placed in a tripped condition. With one MFW pump in service and the other MFW pump in trip condition, the AFW system is secured. In this condition, half the AFW auto-start logic will exist. If the operating MFW pump was to trip, an AFW auto-start signal will cause all three AFW pumps to start.

Normal Plant Startup - Second MFW Pump

With one MFW pump in service and operating in Mode 1, the second MFW pump is placed into service when required for continued plant power ascension. To place the second MFW pump into service, the MFW pump must be reset. In reset condition, the

AFW auto-start channel is inoperable until the second MFW is supplying feedwater the steam generator. The MFW pump is then started and brought up to speed to supply feedwater to the SGs. This proposed revision to the Minimum Channels Operable column will allow a channel to be inoperable for a period of time less 10 percent of the allowed outage time and is consistent with the modifying Notes to LCOs associated ECCS and LTOP system of the NUREG-1431. The time to return to service of four hours is reasonable, based on operating experience that this activity can be accomplished in this time period, and the credited accident mitigation functions are still available.

Removing One of The Two MFW Pumps from Service

During a plant shutdown in Mode 1, one of the two MFW pumps is removed from service when no longer required to supply feedwater flow. During this process, the MFW pump is brought to near minimum speed then tripped. For a brief period of time when the pump is at reduced speed, the MFW pump would be in the reset condition and not supplying feedwater to the SGs.

In summary, the proposed change supplements the referenced LAR by adding a footnote to the Minimum Channels Operable column for Functional Unit 6.f of TS Table 3.3-3 to allow a period of time for an AFW auto-start channel to be inoperable during Mode 1 when starting up the second MFW pump or shutting down one of the two MFW pumps.

The requirement for auto-start of the AFW pumps to be only required when the MFW pumps are in service limits the potential for inadvertent AFW actuations during normal plant startups and shutdowns. This change also limits the potential for inadvertent AFW actuations during normal plant startup and shutdown that could lead to reactivity control issues due to over-cooling transients. Lastly, additional protection for loss of normal feedwater for all modes of operation is provided by the safety-related signals discussed in this section of this LAR.

4.0 REGULATORY EVALUATION

4.1 Applicable Regulatory Requirements/Criteria

Section 182a of the Atomic Energy Act requires applicants for nuclear power plant operating licenses to include technical specifications (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, "Technical Specifications," of 10 CFR Part 50 "Domestic Licensing of Production and Utilization Facilities." 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, (3) surveillance requirements (SRs), (4) design features, and (5) administrative controls. The requirements for the initiation of an auxiliary feedwater (AFW) start resulting from a main feedwater (MFW) pump 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 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.

General Design Criterion (GDC) 13 "Instrumentation and Control," of Appendix A "General Design Criteria for Nuclear Power Plants," to 10 CFR Part 50 requires, among other things, that instrumentation be provided to monitor variables and systems and that controls be provided to maintain these variables and systems within prescribed operating ranges. The proposed operational change continues to provide system monitoring and proper actuation to satisfy the anticipatory trip function. No changes are proposed to the safety-related instrumentation.

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 change does not alter the ability for the reactor trip functions to actuate. The proposed operational allowance is consistent with the SQN design and analysis and ensures proper actuation to satisfy the anticipatory trip function. Therefore, the recommendations of these GDCs continue to be met with the proposed change.

4.2 Precedent

Several operating facilities have been identified with similar operational TS allowances for Mode 2 as proposed within the referenced license amendment request. These facilities include Vogtle, Callaway, Indian Point 2, and Prairie Island. In particular, on November 19, 1993, Vogtle requested a license amendment change in a similar manner as proposed herein. NRC subsequently approved the request (Reference 2). During conversion to Improved Standard TS, Vogtle clarified the language. The Sequoyah Nuclear Plant (SQN) original proposed change is consistent with this language. No precedent was found for the modification to the minimum channels required column requested by this supplement. However, the proposed note is similar to those associated with emergency core cooling system and low temperature overpressure protection (LTOP) system interface.

4.3 Significant Hazards Consideration

The proposed TS change will modify SQN Units 1 and 2, Mode 1 and 2 applicability for Functional Unit 6.f of TS Table 3.3-3. Specifically, a footnote will be added to Mode 2 to clarify that the AFW auto-start function associated with "Trip of all Main Feedwater Pumps" is only required when one or more MFW pumps are supplying feedwater to the steam generators (SGs). A second footnote will be added to the Minimum Channels Operable column for this function, which allows one channel to be inoperable for up to four hours while in Mode 1 to allow for starting up of the second MFW pump or shutting down one of the two MFW pumps.

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 amendment involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: No.

The design basis events which impose AFW safety function requirements are loss of normal MFW, main feedline or main steam line break, loss of offsite power, and small break loss of coolant accident. These design basis event evaluations assume actuation of the AFW due to a blackout signal, low-low SG level, or a safety injection (SI) signal. The automatic start of the AFW pumps, because of a trip of both MFW pumps, is an anticipatory trip function. Requiring this function in Mode 2 only when one or more MFW pumps are running or the temporary placement of one channel in an inoperable condition to start or shutdown a MFW pump while in Mode 1 will not impact any previously evaluated design basis events. Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

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

Response: No.

The proposed change allows for an operational allowance during Modes 1 and 2 for placing MFW pumps in service or securing MFW pumps. This change involves a function that is anticipatory for loss of normal heat sink and is not credited in the accident analysis. This change does not affect the function that actuates AFW due to a blackout signal, low-low SG level, or a SI signal, and therefore will not be an initiator of a new or different kind of accident from any accident previously evaluated.

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 amendment involve a significant reduction in a margin of safety?

Response: No.

This TS change involves the automatic start of the AFW pumps when both MFW pumps trip, which is not an assumed start signal for design basis events. This change does not change any values or limits involved in a safety-related function or accident analysis. Therefore, the proposed change does not involve a significant reduction in a margin of safety.

Based on the above, TVA concludes that the proposed amendments do not involve a 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.

4.4 Conclusions

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.

5.0 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 surveillance requirement. 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 effluents 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 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

6.0 REFERENCES

1. TVA letter to NRC dated August 26, 2008, "Sequoyah Nuclear Plant (SQN) - Units 1 And 2 - Technical Specifications (TS) Change and Emergency TS Change (TS-08-05) - "Auxiliary Feedwater (AFW) Start Upon Trip of Main Feedwater Pumps"
2. NRC letter to Mr. C. K. McCoy dated June 1, 1994, "Issuance of Amendments - Vogtle Nuclear Generating Plant, Units 1 and 2 (TAC Nos. M88268 and M88269) "

ATTACHMENTS

1. Technical Specifications Page Markups

ATTACHMENT 1

**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 3-20

Unit 2

3/4 3-20

II. MARKED PAGES

See attached.

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

	<u>FUNCTIONAL UNIT</u>	<u>TOTAL NO. OF CHANNELS</u>	<u>CHANNELS TO TRIP</u>	<u>MINIMUM CHANNELS OPERABLE</u>	<u>APPLICABLE MODES</u>	<u>ACTION</u>
e.	Loss of Power Start					
	1. Voltage Sensors	3/shutdown board**	2/shutdown board**	3/shutdown board**	1, 2, 3	35
	2. Load Shed Timer	2/shutdown board**	1/shutdown board**	1/shutdown board**	1, 2, 3	35
f.	Trip of Main Feedwater Pumps Start Motor-Driven Pumps and Turbine Driven Pump	1/pump	1/pump	1/pump ^(a)	1, 2 ^(b)	20
g.	Auxiliary Feedwater Suction Pressure- Low	3/pump	2/pump	3/pump	1, 2, 3	21
h.	Auxiliary Feedwater Suction Transfer Time Delays					
	1. Motor-Driven Pump	1/pump	1/pump	1/pump	1, 2, 3	21
	2. Turbine-Driven Pump	2/pump	1/pump	2/pump	1, 2, 3	21

**Unit 1 shutdown boards only

- (a) One channel may be inoperable during Mode 1 for up to 4 hours when placing the second main feedwater (MFW) pump in service or removing one of two MFW pumps from service.
- (b) When one or more Main Feedwater Pump(s) are supplying feedwater to steam generators.

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

<u>FUNCTIONAL UNIT</u>	<u>TOTAL NO. OF CHANNELS</u>	<u>CHANNELS TO TRIP</u>	<u>MINIMUM CHANNELS OPERABLE</u>	<u>APPLICABLE MODES</u>	<u>ACTION</u>
e. Loss of Power Start					
1. Voltage Sensors	3/shutdown board**	2/shutdown board**	3/shutdown board**	1, 2, 3	35
2. Load Shed Timer	2/shutdown board**	1/shutdown board**	1/shutdown board**	1, 2, 3	35
f. Trip of Main Feedwater Pumps Start Motor-Driven Pumps and Turbine Driven Pump	1/pump	1/pump	1/pump ^(a)	1, 2 ^(b)	20
g. Auxiliary Feedwater Suction Pressure-Low	3/pump	2/pump	3/pump	1, 2, 3	21
h. Auxiliary Feedwater Suction Transfer Time Delays					
1. Motor-Driven Pump	1/pump	1/pump	1/pump	1, 2, 3	21
2. Turbine-Driven Pump	2/pump	1/pump	2/pump	1, 2, 3	21

** Unit 2 Shutdown Boards Only

- (a) **One channel may be inoperable during Mode 1 for up to 4 hours when placing the second main feedwater (MFW) pump in service or removing one of two MFW pumps from service.**

(b) **When one or more Main Feedwater Pump(s) are supplying feedwater to steam generators.**