ENCLOSURE 2

PROPOSED TECHNICAL SPECIFICATION (TS) CHANGE

SEQUOYAH NUCLEAR PLANT UNITS 1 AND 2

DOCKET NOS. 50-327 AND 50-328

(TVA-SQN-TS-92-13)

LIST OF AFFECTED PAGES

Unit 1

3/4 3-33

Unit 2

3/4 3-33

9211160468 921109
PDR ADOCK 05000327
P PDR

TABLE 3.3-5 (Continued)

TABLE NOTATION

(1) Diesel generator starting and sequence loading delays included. Response time limit includes opening of valves to establish SI path and attainment of discharge pressure for centrifugal charging pumps, SI and RHR pumps.

(2) Using air operated valve. (ADD INSERT A)

(3) The following valves are exceptions to the response times shown in the table and will have the values listed in seconds for the initiating signals and function indicated:

Valves: FCV-26-240, -243
Response times:
2.d. $21^{(8)}/31^{(9)}$
3.d. $22^{(8)}$
4.d. $21^{(8)}/31^{(9)}$
5.d. $24^{(8)}/34^{(9)}$
6.d. $21^{(8)}/31^{(9)}$

Valves: FCV-61-96, -97, -110, -122, -191, -192, -193, -194
Response times:
2.d. $31^{(8)}$
3.d. $32^{(8)}$
4.d. $31^{(8)}$
5.d. $34^{(8)}$
6.d. $31^{(8)}$

R21

Valve: FCV-70-143
Response times:
2.d. $61^{(8)}/71^{(9)}$
3.d. $62^{(8)}$
4.d. $61^{(8)}/71^{(9)}$
5.d. $64^{(8)}/74^{(9)}$
6.d. $61^{(8)}/71^{(9)}$

(4) On 2/3 any Steam Generator

(5) On 2/3 in 2/4 Steam Generator

(6) Radiation detectors for Containment Ventilation Isolation may be excluded from Response Time Testing.

(7) Diesel generator starting and sequence loading delays not included. Offsite power available. Response time limit includes opening and closing of valves to establish SI path and attainment of discharge pressure for centrifugal charging pumps. R59

(8) Diesel generator starting and sequence loading delays not included. Response time limit includes operating time of valves.

(9) Diesel Generator starting and sequence loading delays included. Response time limit includes operating time of valves.

TABLE 3.3-5 (Continued)

TABLE NOTATION

(1) Diesel generator starting and sequence loading delays included. Response time limit includes opening of valves to establish SI path and attainment of discharge pressure for centrifugal charging pumps, SI and RHR pumps.

(2) Using air operated valve. (ADD INSERT A)

(3) The following valves are exceptions to the response times shown in the table and will have the values listed in seconds for the initiating signals and function indicated:

Valves: FCV-26-240, -243
Response times:
2.d. 21(8)/31(9)
3.d. 22(8)
4.d. 21(8)/31(9)
5.d. 24(8)/34(9)
6.d. 21(8)/31(9)

Valves: FCV61-96, -97, -110, -122, -191, -192, -193, -194 R8
Response times

2.d. 31(8)
3.d. 32(8)
4.d. 31(8)
5.d. 34(8)
6.d. 31(8)

Valve: FCV-70-143
Response times:
2.d. 61(8)/71(9)
3.d. 62(8)
4.d. 61(8)/71(9)
5.d. 64(8)/74(9)
6.d. 61(8)/71(9)

(4) On 2/3 any Steam Generator

(5) On 2/3 in 2/4 Steam Generator

(6) Radiation detectors for Containment Ventilation Isolation may be excluded from Response Time Testing.

(7) Diesel generator starting and sequence loading delays not included. Offsite power available. Response time limit includes opening and closing of valves to establish SI path and attainment of discharge pressure for centrifugal charging pumps. R

(8) Diesel generator starting and sequence loading delays not included. Response time limit includes operating time of valves.

(9) Diesel generator starting and sequence loading delays included. Response time limit includes operating time of valves.

Insert A

The response time requirement for a specific feedwater air-operated valve can also be satisfied when the air-operated valve is either closed with air supply(s) isolated, isolated by a closed manual valve, or isolated by a closed feedwater isolation valve with power removed. When using one of these provisions for satisfying the air-operated valve response time, the closed or isolated condition described above will be verified at least once per 7 days.

ENCLOSURE 3

PROPOSED TECHNICAL SPECIFICATION (TS) CHANGE

SEQUOYAH NUCLEAR PLANT UNITS 1 AND 2

DOCKET NOS. 50-327 AND 50-328

(TVA-SQN-TS-92-15)

DESCRIPTION AND JUSTIFICATION FOR

AN ALTERNATE METHOD FOR SATISFYING THE

FEEDWATER ISOLATION RESPONSE TIME

Description of Change

TVA proposes to modify the Sequoyah Nuclear Plant (SQN) Units 1 and 2 technical specifications (TSs), TS Table 3.3-5, Table Notation 2, to provide an alternate method for satisfying the response time requirement for the engineered safety feature feedwater isolation (FWI). This addition to the notation is as follows:

> The response time requirement for a specific feedwater air-operated valve can also be satisfied when the air-operated valve is either closed with air supply(s) isolated, isolated by a closed manual valve, or isolated by a closed feedwater isolation valve with power removed. When using one of these provisions for satisfying the air-operated valve response time, the closed or isolated condition described above will be verified at least once per 7 days.

Reason for Change

The TSs for SQN require the response time for FWI to be maintained within the limits assumed in the accident analysis. Review of recent needed maintenance activities associated with the air-operated FWI valves in Modes 3 and above involved a conflict with literal TS compliance while performing these activities. NRC approved two waivers of compliance to allow the implementation of these maintenance activities based on alternate isolation capability. These waivers were required because the present TS wording does not provide alternate means for satisfying the FWI response time even when isolation of feedwater flow is provided in the affected flow path. The current TS is overly conservative; this was recognized as such and resolved through similar provisions in NUREG-1431. The proposed change will allow future maintenance of the air-operated FWI valves when adequate isolation of feedwater flow is provided. This will eliminate the need for future waivers from NRC associated with performing FWI valve maintenance or unit shutdown to perform the maintenance activity. Unit shutdown could present unnecessary challenges to safety systems when the maintenance can be performed at power without adverse impact to nuclear safety.

Justification for Change

The feedwater system is a TVA Class B safety system from the steam generators (S/Gs) (reference the Updated Final Safety Analysis Report [UFSAR] Figure 10.4.7-2) back through the motor-operated isolation valves (FCVs-3-33, -47, -87, and -100) including the check valves (3-508, -509, -510, and -511). This portion of the feedwater system is an integral part of the auxiliary feedwater system. Located upstream of the isolation valve and check valve are the feedwater regulating valves (FCVs-3-35, -48, -90, and -103) and the bypass regulating valves (FCVs-3-35A, -48A, -90A, and -103A). The regulating and bypass valves are located in that portion of the feedwater system that is TVA Class H and are provided with individual manual isolation valves immediately upstream.

The feedwater isolation signal is part of the engineered safety features actuation system and serves to limit the core energy release in the case of a steamline break, to limit the magnitude of the reactor coolant system cooldown, and to prevent or mitigate the effects of excessive cooldown. This isolation, accompanied by a reactor trip, is accomplished

by closure of redundant valves in the piping to each S/G. The feedwater regulating valves (FCVs-3-35, -48, -90, and -103) close in a nominal 6.5 seconds after receipt of a feedwater isolation signal. The feedwater isolation response time, which includes the closure time and all electronic delays of the feedwater regulating valves and bypass regulating valves (FCVs-3-35A, -48A, -90A, and -103A), is less than 8 seconds. The signal to initiate closure of these valves is available from both Train A and B power. The Class 2 motor-operated feedwater isolation valves are designed to close within 7.5 seconds from receipt of the isolation signal. The isolation valves for S/Gs 1 and 3 are powered from Train A and S/Gs 2 and 4 are powered from Train B. The feedwater bypass regulating valves associated with S/Gs 1 and 3 are powered from Train B, while those associated with S/Gs 2 and 4 are powered from Train A.

The feedwater isolation valves are 16-inch, TVA Class B, motor-operated gate valves. The feedwater regulating valves are 16-inch, air-to-open, spring-to-close, fail-closed control valves. The associated solenoid valves are connected to redundant trains of 1E power. The feedwater bypass regulating valves serve as an isolation valve when they are in service. These valves have the same design requirements as the regulating valves and are served by 1E power. The manual isolation valves associated with the feedwater regulating valves are 16-inch gate valves and are frequently used as a hold-order boundary for maintenance activities during refueling outages. Similarly, the manual isolation valves for the bypass feedwater regulating valves are 4-inch gate valves.

Complete isolation of main feedwater to all S/Gs occurs upon receipt of any of the following isolation signals from the reactor protection system:

a. High-high S/G level in any S/G

b. Safety injection signal

c. Reactor trip coincident with low reactor coolant T_{avg}

In addition, the valves will remain in the closed position if the reactor protection signals are reset; however, each valve can be opened or closed manually after the reactor protection system isolation signals are reset.

The assumptions utilized in the determination of the isolation time for accident analysis purposes are:

1. SQN is an ice condenser plant that by design reduces peak pressures in the containment, both in magnitude and duration.

2. The unisolatable volume of the feedwater system between the regulating valves and the S/Gs is no more than 104 cubic feet, which is less than the maximum volume of 150 cubic feet recommended by Westinghouse Electric Corporation.

3. The main feedwater pumps are tripped on a feedwater isolation signal.

The feedwater regulating valves are the primary mechanism for feedwater isolation assumed in the loss of coolant accident (LOCA) and non-LOCA analyses. Closure of the feedwater isolation valves is considered a backup mechanism for isolation in the analyses to the regulating valves, in conjunction with the tripping of the main feedwater pumps.

The proposed TS change will allow the isolation of the affected feedwater flow path to satisfy the response time requirement for FWI. With the flow path isolated, the safety function provided by the air-operated FWI valves is already achieved. The response time assumed in the accident analysis for FWI is met because under these conditions the response time is zero. The TSs require a response time of less than or equal to 8 seconds for FWI on containment pressure high, pressurizer pressure low, and steam line pressure low conditions, and less than or equal to 11 seconds for the S/G water level high-high condition.

For the alternative to close the air-operated valve and isolate the air supply(s), the safety function is already achieved to isolate feedwater flow. Isolation of the air supply(s) ensures the valve is deactivated to prevent inadvertent operation. These valves fail close with air pressure required to overcome the spring force holding the valve in the closed position. For the use of a closed manual isolation valve, the same isolation of feedwater flow is provided that is assumed by closure of the air-operated FWI valve with no time delay. For the closed motor-operated FWI valve with power removed method, once again feedwater flow is isolated from the main and bypass air-operated valves to the S/Gs. Both flow paths associated with the air-operated valves go through the motor-operated FWI valve. By removing power to the motor operator of this valve, inadvertent operation is prevented. The requirement to verify the provisions of each of these methods at least once every 7 days provides additional assurance that the safety function is adequately maintained. Therefore, these methods implement the FWI safety function of the air-operated valves with no time delay and meet all the assumptions utilized in the SQN accident analysis for FWI.

Environmental Impact Evaluation

The proposed change request does not involve an unreviewed environmental question because operation of SQN Units 1 and 2 in accordance with this change would not:

1. Result in a significant increase in any adverse environmental impact previously evaluated in the Final Environmental Statement (FES) as modified by the staff's testimony to the Atomic Safety and Licensing Board, supplements to the FES, environmental impact appraisals, or decisions of the Atomic Safety and Licensing Board.

2. Result in a significant change in effluents or power levels.

3. Result in matters not previously reviewed in the licensing basis for SQN that may have a significant environmental impact.

Enclosure 4

PROPOSED TECHNICAL SPECIFICATION (TS) CHANGE

SEQUOYAH NUCLEAR PLANT UNITS 1 AND 2

DOCKET NOS. 50-327 AND 50-328

(TVA-SQN-TS-92-15)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATION

Significant Hazards Evaluation

TVA has evaluated the proposed technical specification (TS) change and has determined that it does not represent a significant hazards consideration based on criteria established in 10 CFR 50.92(c). Operation of Sequoyah Nuclear Plant (SQN) in accordance with the proposed amendment will not:

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

   The proposed TS change fully maintains the feedwater isolation (FWI) functions assumed in the accident analysis. In addition, no component functions will be affected by utilizing the alternate methods to ensure completion of the FWI function for accident mitigation. Since maintaining the conditions to provide FWI is not postulated to create an accident, there is no increase in the probability of an accident. By maintaining isolation of the feedwater flow path when the response time for automatic actuation of the air-operated FWI valve is considered inoperable, all safety functions assumed in the accident analysis for FWI are met to mitigate accident conditions. Therefore, there is no increase in the consequences of an accident because the safety functions for accident mitigation are maintained by the alternate isolation methods that are more conservative than the normal time delayed valve actuation.

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

   The isolation of feedwater flow is not considered the source of an accident although inadvertent isolation may initiate automatic unit shutdown that is an analyzed event. This change will not alter any plant design or operating parameters such that conditions could be created that would create new accident potentials. The isolation methods are the same as or equivalent to the closing of the air-operated valves and will not create any additional safety concern or plant operating impact. Therefore, the use of these methods to maintain the FWI function will not create a new or different kind of accident.

3. Involve a significant reduction in a margin of safety.

   This change provides alternate FWI methods that are more conservative than the delayed isolation assumed in the accident analysis. By placing the flow path in an isolated condition, the safety function is already achieved without the need for the valve actuation and the associated response time. Therefore, the use of these alternate FWI methods to satisfy TS response time requirements will actually result in an increase in the margin of safety when compared with normal plant operation.