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

March 4, 2002

TVA-SQN-TS-00-04 10 CFR 50.90

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

Gentlemen:

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

SEQUOYAH NUCLEAR PLANT (SQN) - UNITS 1 AND 2 - TECHNICAL SPECIFICATION (TS) CHANGE NO. 00-04, "RELOCATION OF ICE CONDENSER ICE BED TEMPERATURE MONITORING AND INLET DOOR POSITION MONITORING SYSTEMS TO THE TECHNICAL REQUIREMENTS MANUAL (TRM) IN ACCORDANCE WITH 10 CFR 50.36"

In accordance with the provisions of 10 CFR 50.90, TVA is submitting a request for an amendment to SQN's Licenses DPR-77 and 79 to change the TSs for Units 1 and 2. The proposed change will relocate the current requirements for ice condenser ice bed temperature and inlet door position monitoring systems to the TRM. These relocated specifications are consistent with the functions that have been moved to 10 CFR 50.59 controlled documents in the latest version of the standard TSs (NUREG-1431). The affected functions have been evaluated in accordance with 10 CFR 50.36 for applicability to the criteria for requirements that must be retained in the TSs. In each case, the four criteria of 10 CFR 50.36 did not apply to these functions. This revision will provide better consistency between the SQN TSs and NUREG-1431.

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TVA has determined that there are no significant hazards considerations associated with the proposed change and that the change is exempt from environmental review pursuant to the provisions of 10 CFR 51.22(c)(9). The SQN Plant Operations Review Committee and the SQN 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. Additionally, in accordance with 10 CFR 50.91(b)(1), TVA is sending a copy of this letter to the Tennessee State Department of Public Health.

Enclosure 1 to this letter provides the description and evaluation of the proposed change. This includes TVA's determination that the proposed change does not involve a significant hazards consideration, and is exempt from environmental review. Enclosure 2 contains copies of the appropriate TS pages from Units 1 and 2 marked up to show the proposed change. Enclosure 3 forwards the revised TS pages for Units 1 and 2 which incorporate the proposed change.

This is not a risk informed TS change and no commitments are associated with the proposed request. TVA does not require special processing of the proposed TS change and no specific need date for approval has been identified. TVA requests that the revised TS be made effective within 45 days of NRC approval. This letter is being sent in accordance with NRC RIS 2001-05. If you have any questions about this change, please telephone me at (423) 843-7170 or J. D. Smith at (423) 843-6672.

Sincerely,

Pedro Salas
Licensing and Industry Affairs Manager

Subscribed and sworn to before me
on this 4th day of March

Peggy M. Billingsley
Notary Public

My Commission Expires October 9, 2002

Enclosures

ENCLOSURE 1

TENNESSEE VALLEY AUTHORITY
SEQUOYAH NUCLEAR PLANT (SQN)
UNITS 1 AND 2
DOCKET NOS. 327 AND 328

PROPOSED TECHNICAL SPECIFICATION (TS) CHANGE 00-04
DESCRIPTION AND EVALUATION OF THE PROPOSED CHANGE

I. DESCRIPTION OF THE PROPOSED CHANGE

The proposed revision to the SQN TSs for Units 1 and 2 will relocate specifications that are not required to be contained in the TSs in accordance with 10 CFR 50.36. These specifications include Specifications 3.6.5.2 for ice bed temperature monitoring system and 3.6.5.4 for inlet door position monitoring system. These specifications are relocated in their entirety to the Technical Requirements Manual (TRM) without change to the requirements currently contained within TSs. The Bases associated with these specifications will also be relocated to the TRM to support the proposed revision. Consistent with the relocation, Surveillance Requirements 4.6.5.1 and 4.6.5.3.1.a are modified to remove reference to the ice bed temperature monitoring system and the inlet door position monitoring system. Necessary changes to the index pages have been included to denote the deletion of these specifications from the TSs.

II. REASON FOR THE PROPOSED CHANGE

The proposed revision removes specifications that are not required to be contained in the TSs in accordance with the criteria in 10 CFR 50.36. The inclusion of these specifications in the TSs places an unnecessary potential burden on TVA and the NRC for processing licensing amendments. The relocation of these specifications will place them in the TRM, which is a 10 CFR 50.59 controlled document, that provides an appropriate level of review and approval for the revision of functions that are important to safety but do not satisfy the criterion found in 10 CFR 50.36 for TS requirements. The proposed revision will reduce TVA and NRC activities for functions that were not intended to be controlled as TS requirements while maintaining an appropriate level of requirement control and an improved level of consistency with NUREG-1431.

III. SAFETY ANALYSIS

The ice condenser is a passive device requiring only maintenance of the ice inventory in the ice bed. As such there are no actuation circuits or equipment which are required for the ice condenser to operate in the event of a loss of coolant accident (LOCA).

The ice bed monitoring system consists of resistance temperature detectors which are located in various parts of the ice condenser that serve only to monitor the ice bed temperature. Since the ice bed has a very large thermal capacity, postulated off-normal conditions can be successfully tolerated for an extended period of time. Therefore, the ice bed temperature monitoring system provides an early warning of any incipient ice condenser temperature anomalies. The ice bed monitoring system is not assumed to be "OPERABLE" to mitigate the consequences of a design basis accident (DBA) or transient.

The inlet door position monitoring system consists of door frame mounted limit switches that serve to only monitor door position. The inlet doors form the barrier to air flow through the inlet ports of the ice condenser for normal unit operation. Proper operation of the inlet doors is necessary to mitigate the consequences of a LOCA or a main steam line break inside containment. The inlet door position monitoring system, however, is not required for proper operation of the inlet doors, nor is it considered "OPERABLE" as an initial condition for a DBA.

Therefore, the proposed relocation of the ice bed temperature monitoring system and inlet door position monitoring system specifications only places the current requirements into an acceptable alternative document that maintains the same requirements. The primary difference is that the revision for these specifications are now controlled in accordance with 10 CFR 50.59, which is acceptable for functions that do not meet the criterion of 10 CFR 50.36. The 10 CFR 50.59 requirements ensure that changes to these provisions that are not consistent with the design basis of the plant are evaluated. If this cannot be assured, review and approval by NRC is required prior to implementation. Consistent with the relocation, Surveillance Requirements (SRs) 4.6.5.1 and 4.6.5.3.1.a are modified to remove reference to the ice bed temperature monitoring system and the inlet door position monitoring system.

The following evaluation addresses the 10 CFR 50.36 applicability for the ice bed temperature monitoring system and the inlet door position monitoring system:

1. **Installed instrumentation that is used to detect, and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary.**

   The ice bed temperature monitoring system monitors the temperature of the ice condenser ice bed. The inlet door position monitoring system monitors the position of the ice condenser ice bed inlet doors during normal operation. The doors are kept closed to limit the loading on the ice bed refrigeration system.

   The ice bed temperature monitoring system and the inlet door position monitoring system are not installed instrumentation that is used to detect, and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary; therefore, they do not satisfy Criterion 1.

2. **A process variable, design feature, or operating restriction that is an initial condition of a design basis accident or transient analysis that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.**

   The ice bed temperature monitoring system and the inlet door position monitoring system are not process variables that are initial conditions of a DBA or transient analysis that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. Therefore, the ice bed temperature monitoring system and the inlet door position monitoring system do not satisfy Criterion 2.

3. **A structure, system, or component that is part of the primary success path and which functions or actuates to mitigate a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission produce barrier.**

   The ice bed temperature monitoring system and the inlet door position monitoring system are not systems that are part of the primary success path and which function or actuate to mitigate a DBA or transient that either assumes the failure of or presents a challenge to the integrity of a fission product

barrier. Therefore, the ice bed temperature monitoring system and the inlet door position monitoring system do not satisfy Criterion 3.

4. A structure, system, or component which operating experience or probabilistic risk assessment has shown to be significant to public health and safety.

Review of the ice bed temperature monitoring system and the inlet door position monitoring system has determined that these systems are not significant contributors to the health and safety of the public. The ice bed temperature and inlet door positions are provided to allow monitoring of the status of the ice bed and the ice condenser cooling system during normal operation. The information provided is not used by operators during the design basis transients, or any severe accidents. Therefore, the ice bed temperature monitoring system and the inlet door position monitoring system are not risk significant and do not satisfy Criterion 4.

The proposed change to remove the ice bed temperature monitoring system from the Specification is consistent with NUREG-1431, Revision 2, "Standard Technical Specifications Westinghouse Plants." However, the explicit designation of Inlet Door Position Monitoring System is contained in SR 3.6.16.1 of NUREG-1431. The proposed change deletes this verbiage from the equivalent SR (4.6.5.3.1.a). It appears that during the development of NUREG-1431, this deletion was an oversight. The proposed change is consistent with NUREG-1431, SR 3.6.15.1 which does not contain verbiage regarding ice bed temperature monitoring system and other NUREG-1431 formats. The proposed change is administrative and does not affect nuclear safety.

IV. NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION

TVA has concluded that operation of Sequoyah Nuclear Plant (SQN) Units 1 and 2, in accordance with the proposed change to the technical specifications (TSs), does not involve a significant hazards consideration. TVA's conclusion is based on its evaluation, in accordance with 10 CFR 50.91(a)(1), of the three standards set forth in 10 CFR 50.92(c).

The proposed revision to the SQN TSs for Units 1 and 2 will relocate specifications that are not required to be contained in the TSs in accordance with 10 CFR 50.36. These specifications include Specifications 3.6.5.2 for the ice bed temperature monitoring system and 3.6.5.4 for inlet door position monitoring system. These

specifications are relocated in their entirety to the Technical Requirements Manual (TRM) without change to the requirements currently contained within TSs. The Bases associated with these specifications will also be relocated to the TRM to support the proposed revision. Consistent with the relocation, Surveillance Requirements 4.6.5.1 and 4.6.5.3.1.a are modified to remove reference to the ice bed temperature monitoring system and the inlet door position monitoring system. Necessary changes to the index pages have been included to denote the deletion of these specifications from the TSs.

A. The proposed amendment does not involve a significant increase in the probability or consequences of an accident previously evaluated.

The proposed revision relocates the ice bed temperature monitoring system and the inlet door position monitoring system. Relocation to the TRM continues to provide an acceptable level of applicability to plant operation and requires revisions to be processed in accordance with the provisions in 10 CFR 50.59. Evaluations of revisions in accordance with 10 CFR 50.59 will continue to ensure that these specifications adequately control the functions of ice bed temperature and inlet door positions to maintain safe operation of the plant. These systems are not postulated to be the initiator of a design basis accident. Since there are no changes to these functions and their operation will remain the same, the probability of an accident is not increased by relocating these requirements to the TRM. Additionally, the accident mitigation capability and offsite dose consequences associated with accidents will not change because these functions will not be altered by the proposed relocation. Therefore, the consequences of an accident are not increased by this relocation to the TRM and the control of revisions to these specifications in accordance with 10 CFR 50.59.

B. The proposed amendment does not create the possibility of a new or different kind of accident from any accident previously evaluated.

The proposed revision will not alter the functions for the ice bed temperature or inlet door positions such that accident potential would be changed. The location of these specifications in the TRM and the performance of revisions in accordance with 10 CFR 50.59 will continue to maintain acceptable operability requirements. Therefore, the possibility

of an accident of a new or different kind is not created by the proposed relocation and deletion.

C. The proposed amendment does not involve a significant reduction in a margin of safety.

The proposed specification relocation will not affect plant setpoints or functions that maintain the margin of safety. This is based on the relocation to the TRM. The TRM continues to maintain the same level of operability requirements and surveillance testing to adequately ensure functionality of the ice bed temperature monitoring system and the inlet door position monitoring system. The TRM is controlled in accordance with requirements of 10 CFR 50.59. Therefore, the proposed relocation and deletion is acceptable and will not reduce the margin of safety.

V. ENVIRONMENTAL IMPACT CONSIDERATION

The proposed change does not involve a significant hazards consideration, a significant change in the types of or significant increase in the amounts of any effluents that may be released offsite, or a significant increase in individual or cumulative occupational radiation exposure. Therefore, the proposed change meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), an environmental assessment of the proposed change is not required.

ENCLOSURE 2

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

PROPOSED TECHNICAL SPECIFICATION (TS) CHANGE 00-04
MARKED PAGES

I. AFFECTED PAGE LIST

Unit 1

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Unit 2

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II. MARKED PAGES

See attached.

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LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS

This page is affected by TS Change 01-04

CONTAINMENT SYSTEMS

3/4.6.5 ICE CONDENSER

ICE BED

LIMITING CONDITION FOR OPERATION

3.6.5.1. The ice bed shall be OPERABLE with:

a. The stored ice having a boron concentration of ≥ 1800 ppm and ≤ 2500 ppm boron as sodium tetraborate and a pH of 9.0 to 9.5,

b. Flow channels through the ice condenser,

c. A maximum ice bed temperature of less than or equal 27°F,

d. A total ice weight of at least 2,082,024 pounds at a 95% level of confidence, and

e. 1944 ice baskets.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

With the ice bed inoperable, restore the ice bed to OPERABLE status within 48 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.6.5.1 The ice condenser shall be determined OPERABLE:

a. At least once per 12 hours by ~~using the ice bed temperature monitoring system to~~ verify**[ing]** that the maximum ice bed temperature is less than or equal to 27°F.

b. At least once per 18 months by verifying, by visual inspection, accumulation of ice on structural members comprising flow channels through the ice bed is ≤ 15 percent blockage of the total flow area for each safety analysis section.

CONTAINMENT SYSTEMS

ICE BED TEMPERATURE MONITORING SYSTEM

LIMITING CONDITION FOR OPERATION

This Specification Deleted

~~3.6.5.2 The ice bed temperature monitoring system shall be OPERABLE with at least 2 OPERABLE RTD channels in the ice bed at each of 3 basic elevations (10'6", 30'9" and 55' above the floor of the ice condenser) for each one third of the ice condenser.~~

~~APPLICABILITY: MODES 1, 2, 3 and 4.~~

~~ACTION:~~

~~a. With the ice bed temperature indication not available in the main control room, determine the ice bed temperature at the local ice condenser temperature monitoring panel every 12 hours. The provisions of Specification 3.0.4 are not applicable.~~

~~b. With the ice bed temperature monitoring system inoperable and unable to determine the ice bed temperatures by alternate means, POWER OPERATION may continue for up to 6 days provided the ice compartment lower inlet doors, intermediate deck doors, and top deck doors are closed and the last recorded mean ice bed temperature was less than or equal to 15°F and steady; otherwise, be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.~~

~~SURVEILLANCE REQUIREMENTS~~

~~4.6.5.2 The ice bed temperature monitoring system shall be determined OPERABLE by performance of a CHANNEL CHECK at least once per 12 hours.~~

CONTAINMENT SYSTEMS

ICE CONDENSER DOORS

LIMITING CONDITION FOR OPERATION

3.6.5.3 The ice condenser inlet doors, intermediate deck doors, and top deck doors shall be closed and OPERABLE.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

a. With one or more ice condenser inlet doors inoperable due to being physically restrained from opening, restore all inlet doors to OPERABLE status within 1 hour or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

b. With one or more ice condenser doors open or otherwise inoperable for reasons other than action a., POWER OPERATION may continue for up to 14 days provided the ice bed temperature is monitored at least once per 4 hours and the maximum ice bed temperature is maintained less than or equal to 27°F; otherwise, restore the doors to their closed positions or OPERABLE status (as applicable) within 48 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.6.5.3.1 Inlet Doors - Ice condenser inlet doors shall be:

a. Continuously monitored and determined closed ~~by the inlet door position monitoring system~~, and

b. Demonstrated OPERABLE at least once per 18 months by:

1. Verifying that the torque required to initially open each door is less than or equal to 675 inch pounds.

2. Verifying that opening of each door is not impaired by ice, frost, debris, or obstruction.

3. Verifying that the torque required to open each door is less than 195 inch-pounds when the door is 40 degrees open. This torque is defined as the "door opening torque" and is equal to the nominal door torque plus a frictional torque component.

INLET DOOR POSITION MONITORING SYSTEM

LIMITING CONDITION FOR OPERATION

This Specification Deleted

~~3.6.5.4 The inlet door position monitoring system shall be OPERABLE.~~

~~APPLICABILITY: MODES 1, 2, 3 and 4.~~

~~ACTION:~~

~~With the inlet door position monitoring system inoperable, POWER OPERATION may continue for up to 14 days, provided the ice bed temperature monitoring system is OPERABLE and the maximum ice bed temperature is less than or equal to 27°F when monitored at least once per 4 hours; otherwise, restore the inlet door position monitoring system to OPERABLE status within 48 hours or be in at least HOT SHUTDOWN within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.~~

~~SURVEILLANCE REQUIREMENTS~~

~~4.6.5.4 The inlet door position monitoring system shall be determined OPERABLE by:~~

~~a. Performing a CHANNEL CHECK at least once per 12 hours,~~

~~b. Performing a CHANNEL FUNCTIONAL TEST at least once per 18 months, and~~

~~c. Verifying that the monitoring system correctly indicates the status of each inlet door as the door is opened and reclosed during its testing per Specification 4.6.5.3.1.~~

Frost buildup or loose ice is not to be considered as flow channel blockage, whereas attached ice is considered blockage of a flow channel. Frost is the solid form of water that is loosely adherent, and can be brushed off with the open hand.

The frequency of 18 months was based on ice storage tests and the allowance built into the required ice mass over and above the mass assumed in the safety analyses. Operating experience has verified that, with the 18-month interval, the weight requirements are maintained with no significant degradation between surveillances.

Verifying the chemical composition of the stored ice ensures that the ice and the resulting melted water will meet the requirement for borated water for accident analysis. This is accomplished by obtaining at least 24 ice samples. Each sample is taken approximately one foot from the top of the ice of each randomly selected ice basket in each ice condenser bay. The SR is modified by a NOTE that allows the boron concentration and pH value obtained from averaging the individual samples' analysis results to satisfy the requirements of the SR. If either the average boron concentration or the average pH value is outside their prescribed limit, then entry into the LCO ACTION is required. Sodium tetraborate has been proven effective in maintaining the boron content for long storage periods, and it also enhances the ability of the solution to remove and retain fission product iodine. The high pH is required to enhance the effectiveness of the ice and the melted ice in removing iodine from the containment atmosphere. This pH range also minimizes the occurrence of chloride and caustic stress corrosion on mechanical systems and components exposed to ECCS and Containment Spray System fluids in the recirculation mode of operation. The frequency of 54 months is intended to be consistent with the expected length of three fuel cycles, and was developed considering these facts:

a. Long-term ice storage tests have determined that the chemical composition of the stored ice is extremely stable;

b. There are no normal operating mechanisms that decrease the boron concentration of the stored ice, and pH remains within a 9.0-9.5 range when boron concentrations are above approximately 1200 ppm.

c. Operating experience has demonstrated that meeting the boron concentration and pH requirements has never been a problem; and

d. Someone would have to enter the containment to take the sample, and, if the unit is at power, that person would receive a radiation dose.

The SR is modified by a NOTE that allows the chemical analysis to be performed on either the liquid or resulting ice of each sodium tetraborate solution prepared. If ice is obtained from off site sources, then chemical analysis data must be obtained for the ice supplied.

3/4.6.5.2 ICE BED TEMPERATURE MONITORING SYSTEM

This Specification Deleted

~~The OPERABILITY of the ice bed temperature monitoring system ensures that the capability is available for monitoring the ice temperature. In the event the monitoring system is inoperable, the ACTION requirements provide assurance that the ice bed heat removal capacity will be retained within the specified time limits.~~

3/4.6.5.3 ICE CONDENSER DOORS

The OPERABILITY of the ice condenser doors ensures that these doors will open because of the differential pressure between upper and lower containment resulting from the blowdown of reactor coolant during a LOCA and that the blow-down will be diverted through the ice condenser bays for heat removal and thus containment pressure control. The requirement that the doors be maintained closed during normal operation ensures that excessive sublimation of the ice will not occur because of warm air intrusion from the lower containment.

If an ice condenser inlet door is physically restrained from opening, the system function is degraded, and immediate action must be taken to restore the opening capability of the inlet door. Being physically restrained from opening is defined as those conditions in which an inlet door is physically blocked from opening by installation of a blocking device or by an obstruction from temporary or permanently installed equipment or is otherwise inhibited from opening such as may result from ice, frost, debris, or increased inlet door opening torque beyond the valves specified in Surveillance Requirement 4.6.5.3.1.

Note: entry into Limiting Condition for Operation Action Statement 3.6.5.3.b is not required due to personnel standing on or opening an intermediate deck or upper deck door for short durations to perform required surveillances, minor maintenance such as ice removal, or routine tasks such as system walkdowns.

3/4.6.5.4 INLET DOOR POSITION MONITORING SYSTEM

This Specification Deleted

~~The OPERABILITY of the inlet door position monitoring system ensures that the capability is available for monitoring the individual inlet door position. In the event the monitoring system is inoperable, the ACTION requirements provide assurance that the ice bed heat removal capacity will be retained within the specified time limits.~~

3/4.6.5.5 DIVIDER BARRIER PERSONNEL ACCESS DOORS AND EQUIPMENT HATCHES

The requirements for the divider barrier personnel access doors and equipment hatches being closed and OPERABLE ensure that a minimum bypass steam flow will occur from the lower to the upper containment compartments during a LOCA. This condition ensures a diversion of the steam through the ice condenser bays that is consistent with the LOCA analyses.

INDEX

LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS

This page is affected by TS Changes 00-02 and 01-04

ICE BED

LIMITING CONDITION FOR OPERATION

3.6.5.1 The ice bed shall be OPERABLE with:

a. The stored ice having a boron concentration of at least 1800 ppm boron as sodium tetraborate and a pH of 9.0 to 9.5,

b. Flow channels through the ice condenser,

c. A maximum ice bed temperature of less than or equal to 27°F,

d. A total ice weight of at least 2,082,024 pounds at a 95% level of confidence, and

e. 1944 ice baskets.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

With the ice bed inoperable, restore the ice bed to OPERABLE status within 48 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.6.5.1 The ice condenser shall be determined OPERABLE:

a. At least once per 12 hours by ~~using the ice bed temperature monitoring system to~~ verify**[ing]** that the maximum ice bed temperature is less than or equal to 27°F.

b. At least once per 18 months by verifying, by visual inspection, accumulation of ice on structural members comprising flow channels through the ice bed is ≤ 15 percent blockage of the total flow area for each safety analysis section.

ICE BED TEMPERATURE MONITORING SYSTEM

This Specification Deleted

~~LIMITING CONDITION FOR OPERATION~~

~~3.6.5.2 The ice bed temperature monitoring system shall be OPERABLE with at least 2 OPERABLE RTD channels in the ice bed at each of 3 basic elevations (10'6", 30'9", and 55' above the floor of the ice condenser) for each one third of the ice condenser.~~

~~APPLICABILITY: MODES 1, 2, 3 and 4.~~

~~ACTION:~~

~~a. With the ice bed temperature indication not available in the main control room, determine the ice bed temperature at the local ice condenser temperature monitoring panel every 12 hours. The provisions of Specification 3.0.4 are not applicable.~~

~~b. With the ice bed temperature monitoring system inoperable and unable to determine the ice bed temperatures by alternate means, POWER OPERATION may continue for up to 6 days provided the ice compartment lower inlet doors, intermediate deck doors, and top deck doors are closed and the last recorded mean ice bed temperature was less than or equal to 15°F and steady; otherwise, be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.~~

~~SURVEILLANCE REQUIREMENTS~~

~~4.6.5.2 The ice bed temperature monitoring system shall be determined OPERABLE by performance of a CHANNEL CHECK at least once per 12 hours.~~

ICE CONDENSER DOORS

LIMITING CONDITION FOR OPERATION

3.6.5.3 The ice condenser inlet doors, intermediate deck doors, and top deck doors shall be closed and OPERABLE.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

a. With one or more ice condenser inlet doors inoperable due to being physically retrained from opening, restore all inlet doors to OPERABLE status within 1 hour or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

b. With one or more ice condenser doors open or otherwise inoperable for reasons other than action a., POWER OPERATION may continue for up to 14 days provided the ice bed temperature is monitored at least once per 4 hours and the maximum ice bed temperature is maintained less than or equal to 27°F; otherwise, restore the doors to their closed positions or OPERABLE status (as applicable) within 48 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.6.5.3.1 Inlet Doors - Ice condenser inlet doors shall be:

a. Continuously monitored and determined closed ~~by the inlet door position monitoring system~~, and

b. Demonstrated OPERABLE at least once per 18 months by:

1. Verifying that the torque required to initially open each door is less than or equal to 675 inch pounds.

2. Verifying that opening of each door is not impaired by ice, frost, debris, or obstruction.

3. Verifying that the torque required to open each door is less than 195 inch-pounds when the door is 40 degrees open. This torque is defined as the "door opening torque" and is equal to the nominal door torque plus a frictional torque component.

INLET DOOR POSITION MONITORING SYSTEM

This Specification Deleted

~~LIMITING CONDITION FOR OPERATION~~

~~3.6.5.4 The inlet door position monitoring system shall be OPERABLE.~~

~~APPLICABILITY: MODES 1, 2, 3 and 4.~~

~~ACTION:~~

~~With the inlet door position monitoring system inoperable, POWER OPERATION may continue for up to 14 days, provided the ice bed temperature monitoring system is OPERABLE and the maximum ice bed temperature is less than or equal to 27°F when monitored at least once per 4 hours, otherwise, restore the inlet door position monitoring system to OPERABLE status within 48 hours or be in at least HOT SHUTDOWN within the next 6 hours and in COLD SHUTDOWN within the following 30 hours~~

~~SURVEILLANCE REQUIREMENTS~~

~~4.6.5.4 The inlet door position monitoring system shall be determined OPERABLE by:~~

~~a. Performing a CHANNEL CHECK at least once per 12 hours,~~

~~b Performing a CHANNEL FUNCTIONAL TEST at least once per 18 months, and~~

~~c. Verifying that the monitoring system correctly indicates the status of each inlet door as the door is opened and reclosed during its testing per Specification 4.6.5.3.1.~~

Frost buildup or loose ice is not to be considered as flow channel blockage, whereas attached ice is considered blockage of a flow channel. Frost is the solid form of water that is loosely adherent, and can be brushed off with the open hand.

The frequency of 18 months was based on ice storage tests and the allowance built into the required ice mass over and above the mass assumed in the safety analyses. Operating experience has verified that, with the 18-month interval, the weight requirements are maintained with no significant degradation between surveillances.

3/4.6.5.2 ICE BED TEMPERATURE MONITORING SYSTEM

This Specification Deleted

~~The OPERABILITY of the ice bed temperature monitoring system ensures that the capability is available for monitoring the ice temperature. In the event the monitoring system is inoperable, the ACTION requirements provide assurance that the ice bed heat removal capacity will be retained within the specified time limits.~~

3/4.6.5.3 ICE CONDENSER DOORS

The OPERABILITY of the ice condenser doors ensures that these doors will open because of the differential pressure between upper and lower containment resulting from the blowdown of reactor coolant during a LOCA and that the blow-down will be diverted through the ice condenser bays for heat removal and thus containment pressure control. The requirement that the doors be maintained closed during normal operation ensures that excessive sublimation of the ice will not occur because of warm air intrusion from the lower containment.

If an ice condenser inlet door is physically restrained from opening, the system function is degraded, and immediate action must be taken to restore the opening capability of the inlet door. Being physically restrained from opening is defined as those conditions in which an inlet door is physically blocked from opening by installation of a blocking device or by an obstruction from temporary or permanently installed equipment or is otherwise inhibited from opening such as may result from ice, frost, debris, or increased inlet door opening torque beyond the valves specified in Surveillance Requirement 4.6.5.3.1.

Note: entry into Limiting Condition for Operation Action Statement 3.6.5.3.b is not required due to personnel standing on or opening an intermediate deck or upper deck door for short durations to perform required surveillances, minor maintenance such as ice removal, or routine tasks such as system walkdowns.

3/4.6.5.4 INLET DOOR POSITION MONITORING SYSTEM

This Specification Deleted

~~The OPERABILITY of the inlet door position monitoring system ensures that the capability is available for monitoring the individual inlet door position. In the event the monitoring system is inoperable, the ACTION requirements provide assurance that the ice bed heat removal capacity will be retained within the specified time limits.~~

3/4.6.5.5 DIVIDER BARRIER PERSONNEL ACCESS DOORS AND EQUIPMENT HATCHES

The requirements for the divider barrier personnel access doors and equipment hatches being closed and OPERABLE ensure that a minimum bypass steam flow will occur from the lower to the upper containment compartments during a LOCA. This condition ensures a diversion of the steam through the ice condenser bays that is consistent with the LOCA analyses.

ENCLOSURE 3

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

PROPOSED TECHNICAL SPECIFICATION (TS) CHANGE 00-04
REVISED PAGES

I. AFFECTED PAGE LIST

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II. MARKED PAGES

See attached.

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LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS

CONTAINMENT SYSTEMS

3/4.6.5 ICE CONDENSER

ICE BED

LIMITING CONDITION FOR OPERATION

3.6.5.1. The ice bed shall be OPERABLE with:

a. The stored ice having a boron concentration of ≥ 1800 ppm and ≤ 2500 ppm boron as sodium tetraborate and a pH of 9.0 to 9.5,

b. Flow channels through the ice condenser,

c. A maximum ice bed temperature of less than or equal 27°F,

d. A total ice weight of at least 2,082,024 pounds at a 95% level of confidence, and

e. 1944 ice baskets.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

With the ice bed inoperable, restore the ice bed to OPERABLE status within 48 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.6.5.1 The ice condenser shall be determined OPERABLE:

a. At least once per 12 hours by verifying that the maximum ice bed temperature is less than or equal to 27°F.

b. At least once per 18 months by verifying, by visual inspection, accumulation of ice on structural members comprising flow channels through the ice bed is ≤ 15 percent blockage of the total flow area for each safety analysis section.

LIMITING CONDITION FOR OPERATION

3.6.5.2 This specification is deleted.

CONTAINMENT SYSTEMS

ICE CONDENSER DOORS

LIMITING CONDITION FOR OPERATION

3.6.5.3 The ice condenser inlet doors, intermediate deck doors, and top deck doors shall be closed and OPERABLE.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

a. With one or more ice condenser inlet doors inoperable due to being physically restrained from opening, restore all inlet doors to OPERABLE status within 1 hour or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

b. With one or more ice condenser doors open or otherwise inoperable for reasons other than action a., POWER OPERATION may continue for up to 14 days provided the ice bed temperature is monitored at least once per 4 hours and the maximum ice bed temperature is maintained less than or equal to 27°F; otherwise, restore the doors to their closed positions or OPERABLE status (as applicable) within 48 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.6.5.3.1 Inlet Doors - Ice condenser inlet doors shall be:

a. Continuously monitored and determined closed, and

b. Demonstrated OPERABLE at least once per 18 months by:

1. Verifying that the torque required to initially open each door is less than or equal to 675 inch pounds.

2. Verifying that opening of each door is not impaired by ice, frost, debris, or obstruction.

3. Verifying that the torque required to open each door is less than 195 inch-pounds when the door is 40 degrees open. This torque is defined as the "door opening torque" and is equal to the nominal door torque plus a frictional torque component.

INLET DOOR POSITION MONITORING SYSTEM

LIMITING CONDITION FOR OPERATION

3.6.5.4 This specification is deleted.

Frost buildup or loose ice is not to be considered as flow channel blockage, whereas attached ice is considered blockage of a flow channel. Frost is the solid form of water that is loosely adherent, and can be brushed off with the open hand.

The frequency of 18 months was based on ice storage tests and the allowance built into the required ice mass over and above the mass assumed in the safety analyses. Operating experience has verified that, with the 18-month interval, the weight requirements are maintained with no significant degradation between surveillances.

Verifying the chemical composition of the stored ice ensures that the ice and the resulting melted water will meet the requirement for borated water for accident analysis. This is accomplished by obtaining at least 24 ice samples. Each sample is taken approximately one foot from the top of the ice of each randomly selected ice basket in each ice condenser bay. The SR is modified by a NOTE that allows the boron concentration and pH value obtained from averaging the individual samples' analysis results to satisfy the requirements of the SR. If either the average boron concentration or the average pH value is outside their prescribed limit, then entry into the LCO ACTION is required. Sodium tetraborate has been proven effective in maintaining the boron content for long storage periods, and it also enhances the ability of the solution to remove and retain fission product iodine. The high pH is required to enhance the effectiveness of the ice and the melted ice in removing iodine from the containment atmosphere. This pH range also minimizes the occurrence of chloride and caustic stress corrosion on mechanical systems and components exposed to ECCS and Containment Spray System fluids in the recirculation mode of operation. The frequency of 54 months is intended to be consistent with the expected length of three fuel cycles, and was developed considering these facts:

a. Long-term ice storage tests have determined that the chemical composition of the stored ice is extremely stable;

b. There are no normal operating mechanisms that decrease the boron concentration of the stored ice, and pH remains within a 9.0-9.5 range when boron concentrations are above approximately 1200 ppm.

c. Operating experience has demonstrated that meeting the boron concentration and pH requirements has never been a problem; and

d. Someone would have to enter the containment to take the sample, and, if the unit is at power, that person would receive a radiation dose.

The SR is modified by a NOTE that allows the chemical analysis to be performed on either the liquid or resulting ice of each sodium tetraborate solution prepared. If ice is obtained from off site sources, then chemical analysis data must be obtained for the ice supplied.

3/4.6.5.2 ICE BED TEMPERATURE MONITORING SYSTEM

This specification is deleted.

3/4.6.5.3 ICE CONDENSER DOORS

The OPERABILITY of the ice condenser doors ensures that these doors will open because of the differential pressure between upper and lower containment resulting from the blowdown of reactor coolant during a LOCA and that the blow-down will be diverted through the ice condenser bays for heat removal and thus containment pressure control. The requirement that the doors be maintained closed during normal operation ensures that excessive sublimation of the ice will not occur because of warm air intrusion from the lower containment.

If an ice condenser inlet door is physically restrained from opening, the system function is degraded, and immediate action must be taken to restore the opening capability of the inlet door. Being physically restrained from opening is defined as those conditions in which an inlet door is physically blocked from opening by installation of a blocking device or by an obstruction from temporary or permanently installed equipment or is otherwise inhibited from opening such as may result from ice, frost, debris, or increased inlet door opening torque beyond the valves specified in Surveillance Requirement 4.6.5.3.1.

Note: entry into Limiting Condition for Operation Action Statement 3.6.5.3.b is not required due to personnel standing on or opening an intermediate deck or upper deck door for short durations to perform required surveillances, minor maintenance such as ice removal, or routine tasks such as system walkdowns.

3/4.6.5.4 INLET DOOR POSITION MONITORING SYSTEM

This specification is deleted.

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LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS

CONTAINMENT SYSTEMS

3/4.6.5 ICE CONDENSER

ICE BED

LIMITING CONDITION FOR OPERATION

3.6.5.1 The ice bed shall be OPERABLE with:

a. The stored ice having a boron concentration of at least 1800 ppm boron as sodium tetraborate and a pH of 9.0 to 9.5,

b. Flow channels through the ice condenser,

c. A maximum ice bed temperature of less than or equal to 27°F,

d. A total ice weight of at least 2,082,024 pounds at a 95% level of confidence, and

e. 1944 ice baskets.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

With the ice bed inoperable, restore the ice bed to OPERABLE status within 48 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.6.5.1 The ice condenser shall be determined OPERABLE:

a. At least once per 12 hours by verifying that the maximum ice bed temperature is less than or equal to 27°F.

b. At least once per 18 months by verifying, by visual inspection, accumulation of ice on structural members comprising flow channels through the ice bed is ≤ 15 percent blockage of the total flow area for each safety analysis section.

ICE BED TEMPERATURE MONITORING SYSTEM

LIMITING CONDITION FOR OPERATION

3.6.5.2 This specification is deleted.

CONTAINMENT SYSTEMS

ICE CONDENSER DOORS

LIMITING CONDITION FOR OPERATION

3.6.5.3 The ice condenser inlet doors, intermediate deck doors, and top deck doors shall be closed and OPERABLE.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

a. With one or more ice condenser inlet doors inoperable due to being physically retrained from opening, restore all inlet doors to OPERABLE status within 1 hour or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

b. With one or more ice condenser doors open or otherwise inoperable for reasons other than action a., POWER OPERATION may continue for up to 14 days provided the ice bed temperature is monitored at least once per 4 hours and the maximum ice bed temperature is maintained less than or equal to 27°F; otherwise, restore the doors to their closed positions or OPERABLE status (as applicable) within 48 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.6.5.3.1 Inlet Doors - Ice condenser inlet doors shall be:

a. Continuously monitored and determined closed, and

b. Demonstrated OPERABLE at least once per 18 months by:

1. Verifying that the torque required to initially open each door is less than or equal to 675 inch pounds.

2. Verifying that opening of each door is not impaired by ice, frost, debris, or obstruction.

3. Verifying that the torque required to open each door is less than 195 inch-pounds when the door is 40 degrees open. This torque is defined as the "door opening torque" and is equal to the nominal door torque plus a frictional torque component.

INLET DOOR POSITION MONITORING SYSTEM

LIMITING CONDITION FOR OPERATION

3.6.5.4 This specification is deleted.

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3/4.6.5.2 ICE BED TEMPERATURE MONITORING SYSTEM

This specification is deleted.

3/4.6.5.3 ICE CONDENSER DOORS

The OPERABILITY of the ice condenser doors ensures that these doors will open because of the differential pressure between upper and lower containment resulting from the blowdown of reactor coolant during a LOCA and that the blow-down will be diverted through the ice condenser bays for heat removal and thus containment pressure control. The requirement that the doors be maintained closed during normal operation ensures that excessive sublimation of the ice will not occur because of warm air intrusion from the lower containment.

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Note: entry into Limiting Condition for Operation Action Statement 3.6.5.3.b is not required due to personnel standing on or opening an intermediate deck or upper deck door for short durations to perform required surveillances, minor maintenance such as ice removal, or routine tasks such as system walkdowns.

3/4.6.5.4 INLET DOOR POSITION MONITORING SYSTEM

This specification is deleted.

3/4.6.5.5 DIVIDER BARRIER PERSONNEL ACCESS DOORS AND EQUIPMENT HATCHES

The requirements for the divider barrier personnel access doors and equipment hatches being closed and OPERABLE ensure that a minimum bypass steam flow will occur from the lower to the upper containment compartments during a LOCA. This condition ensures a diversion of the steam through the ice condenser bays that is consistent with the LOCA analyses.