ENCLOSURE 1

PROPOSED TECHNICAL SPECIFICATION (TS) CHANGE

SEQUOYAH NUCLEAR PLANT UNITS 1 AND 2

DOCKET NOS. 50-327 AND 50-328

(TVA-SQN-TS-92-04)

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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:

INSERT A

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: R135

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, ~~or~~ 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. R135 R135

event that observed sublimation rates are equal to or lower than design predictions after three years of operation, the minimum ice baskets weight may be adjusted downward. In addition, the number of ice baskets required to be weighed each 9 months may be reduced after 3 years of operation if such a reduction is supported by observed sublimation data.

3/4.6.5.2 ICE BED TEMPERATURE MONITORING SYSTEM

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 blowdown 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.

INSERT B

3/4.6.5.4 INLET DOOR POSITION MONITORING SYSTEM

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.

3/4.6.5.6 CONTAINMENT AIR RETURN FANS

The OPERABILITY of the containment air return fans ensures that following a LOCA 1) the containment atmosphere is circulated for cooling by the spray system and 2) the accumulation of hydrogen in localized portions of the containment structure is minimized.

## 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:
INSERT A

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: R118

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, ~~or~~ 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. R118 R118

event that observed sublimation rates are equal to or lower than design predictions after three years of operation, the minimum ice baskets weight may be adjusted downward. In addition, the number of ice baskets required to be weighed each 9 months may be reduced after 3 years of operation if such a reduction is supported by observed sublimation data.

3/4.6.5.2 ICE BED TEMPERATURE MONITORING SYSTEM

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 blowdown 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.

INSERT B

3/4.6.5.4 INLET DOOR POSITION MONITORING SYSTEM

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.

3/4.6.5.6 CONTAINMENT AIR RETURN FANS

The OPERABILITY of the containment air return fans ensures that following a LOCA 1) the containment atmosphere is circulated for cooling by the spray system and 2) the accumulation of hydrogen in localized portions of the containment structure is minimized.

INSERT A

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.

INSERT B

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 values specified in Surveillance Requirement 4.6.5.3.1.

ENCLOSURE 2

PROPOSED TECHNICAL SPECIFICATION (TS) CHANGE

SEQUOYAH NUCLEAR PLANT UNITS 1 AND 2

DOCKET NOS. 50-327 AND 50-328

(TVA-SQN-TS-92-04)

DESCRIPTION AND JUSTIFICATION FOR
REVISIONS OF ACTIONS FOR
ICE CONDENSER DOORS

Description of Change

TVA proposes to modify the Sequoyah Nuclear Plant (SQN) Units 1 and 2 technical specifications (TSs) to revise TS 3/4.6.5.3, "Ice Condenser Doors," and its associated bases. This change revises Limited Condition for Operation (LCO) 3.6.5.3 to label the existing action as "b" with the addition of an exclusion for conditions covered by Action "a" and adds an Action "a" that will read:

"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."

Surveillance Requirement 4.6.5.3.1.b.2 has been revised to require verification that the opening of each inlet door is not impaired by ice, frost, debris, or other obstruction.

Additionally, the associated TS Bases 3/4.6.5.3, is proposed to be changed to include a statement on the importance of the ice condenser inlet doors not being physically restrained from opening and provides a definition of the term "physically restrained from opening." The proposed wording of the bases change reads:

"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."

Reason for Change

The current action statement for TS 3.6.5.3, "Ice Condenser Doors," is nonconservative in that it does not provide an appropriate action that addresses the potential condition of the inlet doors being physically restrained from opening and, therefore, not capable of automatically opening, which is the primary safety-related function of the inlet doors. The existing surveillance verifies that the inlet doors are not impaired by ice, frost, or debris, but does not appropriately verify that the inlet doors are not impaired by an obstruction. While the existing action statement does address inoperable ice condenser doors, it inappropriately would allow continued power operation with one or more of the inlet doors (up to all of the doors) blocked closed for more than 14 days. The proposed changes to the action statements are based on Westinghouse Electric Corporation, Methodically Engineered Restructured and Improved Technical Specifications Program, Phase III (draft NUREG-1431) and Revision 4A of Standard Technical Specifications (draft NUREG-0452, dated August 14, 1987) as issued to Texas Utilities Electric Company for Comanche Peak Unit 1.

Justification for Change

The ice condenser is a passive device containing borated ice that is utilized in the event of a loss-of-coolant accident (LOCA) or high-energy-line break (HELB) to absorb thermal energy. This ensures that steam is condensed, and the pressure energy is reduced to ensure containment integrity in the early stages of an accident. The system works in conjunction with the containment spray system to ensure containment integrity. In addition, it is also used as an iodine removal system via the chemical and physical properties of the ice to reduce the fission product iodine concentration in the post-LOCA and/or HELB containment environment. The ice condenser is divided into 24 bays with each bay containing a pair of doors in the lower compartment that are normally closed but open on differential pressure to allow for initial steam flow into the condenser. The ice inventory is maintained in 1944 ice baskets that are 48 feet high. The total ice inventory is approximately 2.25 million pounds based on the end-of-cycle random weighing. The top deck, intermediate deck, containment shell, crane wall, and shield walls form the boundaries of the upper ice condenser plenum that allows for mass and energy transport to the upper compartment for further cooling by the containment spray system.

The ice condenser inlet doors form the barrier to air flow through the inlet ports of the ice condenser for normal plant operation. They also provide the continuation of thermal insulation around the lower section of the crane wall to minimize heat input that would promote sublimation and mass transfer of ice in the ice condenser compartment. In the event of a LOCA and/or HELB causing a pressure increase in the lower compartment, the doors open, venting air and steam in a relatively even manner into all sections of the ice condenser.

The door panels are provided with tension spring mechanisms that produce a small closing torque on the door panels as they open. The magnitude of the closing torque is equivalent to providing approximately one pound per square foot pressure drop through the inlet ports with the door open to a position equivalent to the full port flow area. The zero load position of the spring mechanisms is such that with zero differential pressure across the door panels, the gasket holds the door slightly open. This setting provides assurance that all doors will be opened slightly upon removal of cold air head, therefore eliminating significant inlet maldistribution for very small incidents. For larger incidents, the doors open fully, and flow distribution is controlled by the flow area and pressure drops of inlet ports. The doors are provided with shock absorber assemblies to dissipate the door kinetic energies generated during large break incidents.

The SQN Final Safety Analysis Report (FSAR) states that the force required to open the doors of the ice condenser shall be sufficiently low such that the energy from any leakage of steam through the divider barrier can be readily absorbed by the containment spray system without exceeding containment design pressure. The SQN FSAR further states that the basic performance requirement for the lower inlet doors for design basis accident conditions is to open rapidly and fully and to ensure proper venting of released energy into the ice condenser.

The existing 14-day action is based on long-term ice storage tests that indicate that if the temperature is maintained below 27 degrees Fahrenheit, there would not be a significant loss of ice from sublimation. This action is appropriate for the condition of one or more open doors. The condition of the inlet doors being blocked closed does not increase ice condenser temperature or increase sublimation, but rather may impact immediate ice condenser operability. With the inlet doors blocked closed and not capable of automatically opening, the ice condenser may not adequately perform the safety-related function of reducing the post-LOCA and/or HELB pressure inside containment. The 1-hour action is consistent with the action of LCO 3.6.1.1, "Containment Integrity."

In summary, while the current TS 3.6.5.3 does address inoperability of ice condenser doors, the provided action is considered inappropriately nonconservative for the situation of interest. As currently written, the action would allow power operation with a significant safety system partially or fully disabled for a period exceeding 14 days. The proposed changes more appropriately reflect the significance of the condition.

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 3

PROPOSED TECHNICAL SPECIFICATION (TS) CHANGE

SEQUOYAH NUCLEAR PLANT UNITS 1 AND 2

DOCKET NOS. 50-327 AND 50-328

(TVA-SQN-TS-92-04)

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 changes to the existing TS 3.6.5.3 provide requirements that impose more restrictive action to be taken in the event ice condenser inlet doors are physically restrained from opening. The proposed change does not involve or result in any alteration of plant configuration, equipment, or action that would affect accident mitigation. The ice condenser and the associated doors are utilized for accident mitigation and are not considered to be the source for any accident. While the actions to be taken for inoperable inlet doors have been changed, the functions of the ice condenser and the doors remain the same. Therefore, the probability or consequences of an accident previously evaluated has not been increased.

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

   The ice condenser and the associated doors are utilized for accident mitigation and are not considered to be the source for any accident. While the actions to be taken for inoperable inlet doors have been changed, the functions of the ice condenser and the doors remain the same. Therefore, no equipment postulated to create an accident is impacted, and the possibility of a new or different kind of accident is not increased.

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

   The proposed changes do not alter the functions of any safety-related equipment. All accident mitigation functions of the ice condenser will remain the same and the proposed change will ensure appropriate action is taken in the event an ice condenser inlet door is physically restrained from opening. Therefore, a reduction in a margin of safety is not involved as a result of the proposed change.