July 12, 2001

Mr. J. A. Scalice
Chief Nuclear Officer and
Executive Vice President
Tennessee Valley Authority
6A Lookout Place
1101 Market Street
Chattanooga, TN 37402-2801

SUBJECT: SEQUOYAH NUCLEAR PLANT, UNITS 1 AND 2 - ISSUANCE OF AMENDMENTS REGARDING ICE CONDENSER ICE SAMPLING AND ANALYSIS (TAC NOS. MB1733 AND MB1734) (TS 00-02)

Dear Mr. Scalice:

The Commission has issued the enclosed Amendment No. 269 to Facility Operating License No. DPR-77 and Amendment No. 259 to Facility Operating License No. DPR-79 for the Sequoyah Nuclear Plant, Units 1 and 2, respectively. These amendments are in response to your application dated April 12, 2001. The amendments revise the Technical Specifications (TS) and associated Bases to change the methodology and frequency for sampling the ice condenser ice bed (stored ice) and adds a new TS and associated bases to address sampling requirements for all ice additions to the ice bed.

A copy of the Safety Evaluation is also enclosed. Notice of Issuance will be included in the Commission's biweekly Federal Register notice.

Sincerely,

/RA/
Ronald W. Hernan, Senior Project Manager, Section 2
Project Directorate II
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-327 and 50-328

Enclosures:
1. Amendment No. 269 to License No. DPR-77
2. Amendment No. 259 to License No. DPR-79
3. Safety Evaluation

cc w/enclosures: See next page

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TENNESSEE VALLEY AUTHORITY

DOCKET NO. 50-327

SEQUOYAH NUCLEAR PLANT, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 269
License No. DPR-77

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Tennessee Valley Authority (the licensee) dated April 12, 2001, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and paragraph 2.C.(2) of Facility Operating License No. DPR-77 is hereby amended to read as follows:

   (2) Technical Specifications

   The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 269, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance, to be implemented no later than 45 days after issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA by R. Hernan for P. Madden/
Patrick M. Madden, Acting Chief, Section 2
Project Directorate II
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical Specifications

Date of Issuance: July 12, 2001

ATTACHMENT TO LICENSE AMENDMENT NO. 269

FACILITY OPERATING LICENSE NO. DPR-77

DOCKET NO. 50-327

Replace the following pages of the Appendix A Technical Specifications with the attached pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

REMOVE	INSERT
3/4 6-26	3/4 6-26
3/4 6-27	3/4 6-27
B3/4 6-5a	B3/4 6-5a
---	B3/4 6-5b

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 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.

SURVEILLANCE REQUIREMENTS (Continued)

c. At least once per 40 months by lifting and visually inspecting the accessible portions of at least two ice baskets from each 1/3 of the ice condenser and verifying that the ice baskets are free of detrimental structural wear, cracks, corrosion or other damage. The ice baskets shall be raised at least 10 feet for this inspection.

d. At least once per 18 months by:

1. Deleted.

2. Weighing a representative sample of at least 144 ice baskets and verifying that each basket contains at least 1071 pounds of ice. The representative sample shall include 6 baskets from each of the 24 ice condenser bays and shall be constituted of one basket each from Radial Rows 1, 2, 4, 6, 8 and 9 (or from the same row of an adjacent bay if a basket from a designated row cannot be obtained for weighing) within each bay. If any basket is found to contain less than 1071 pounds of ice, a representative sample of 20 additional baskets from the same bay shall be weighed. The minimum average weight of ice from the 20 additional baskets and the discrepant basket shall not be less than 1071 pounds/basket at a 95% level of confidence.

   The ice condenser shall also be subdivided into 3 groups of baskets, as follows: Group 1 - bays 1 through 8, Group 2 - bays 9 through 16, and Group 3 - bays 17 through 24. The minimum average ice weight of the sample baskets from Radial Rows 1, 2, 4, 6, 8 and 9 in each group shall not be less than 1071 pounds/basket at a 95% level of confidence.

   The minimum total ice condenser ice weight at a 95% level of confidence shall be calculated using all ice basket weights determined during this weighing program and shall not be less than 2,082,024 pounds.

e. At least once per 54 months by chemical analysis of the stored ice in at least one randomly selected ice basket from each ice condenser bay verify:

1. Ice bed boron concentration is $\geq$ 1800 ppm and $\leq$ 2500 ppm as sodium tetraborate and;

2. pH is $\geq$ 9.0 and $\leq$ 9.5

NOTE: The requirements of this SR are satisfied if the boron concentration and pH values obtained from averaging the individual sample results are within the limits specified above.

f. Each ice addition verify, by chemical analysis, that ice added to the ice condenser meets the boron concentration and pH requirements of SR 4.6.5.1.e.

NOTE: The chemical analysis may be performed on either the liquid solution or the resulting ice.

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:

(3) Long-term ice storage tests have determined that the chemical composition of the stored ice is extremely stable;

(4) 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;

(5) Operating experience has demonstrated that meeting the boron concentration and pH requirements has never been a problem; and

(6) 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

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

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.

TENNESSEE VALLEY AUTHORITY

DOCKET NO. 50-328

SEQUOYAH NUCLEAR PLANT, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 259
License No. DPR-79

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Tennessee Valley Authority (the licensee) dated April 12, 2001, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and paragraph 2.C.(2) of Facility Operating License No. DPR-79 is hereby amended to read as follows:

   (2) Technical Specifications

   The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 259, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance, to be implemented no later than 45 days after issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA by R. Hernan for P. Madden/
Patrick M. Madden, Acting Chief, Section 2
Project Directorate II
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical Specifications

Date of Issuance: July 12, 2001

ATTACHMENT TO LICENSE AMENDMENT NO. 259

FACILITY OPERATING LICENSE NO. DPR-79

DOCKET NO. 50-328

Replace the following pages of the Appendix A Technical Specifications with the attached pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

REMOVE	INSERT
3/4 6-27	3/4 6-27
3/4 6-28	3/4 6-28
B3/4 6-5a	B3/4 6-5a
---	B3/4 6-5b

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 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 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.

c. At least once per 40 months by lifting and visually inspecting the accessible portions of at least two ice baskets from each 1/3 of the ice condenser and verifying that the ice baskets are free of detrimental structural wear, cracks, corrosion or other damage. The ice baskets shall be raised at least 10 feet for this inspection.

d. At least once per 18 months by:

1. Deleted.

2. Weighing a representative sample of at least 144 ice baskets and verifying that each basket contains at least 1071 pounds of ice. The representative sample shall include 6 baskets from each of the 24 ice condenser bays and shall be constituted of one basket each from Radial Rows 1, 2, 4, 6, 8 and 9 (or from the same row of an adjacent bay if a basket from a designated row cannot be obtained for weighing) within each bay. If any basket is found to contain less than 1071 pounds of ice, a representative sample of 20 additional baskets from the same bay shall be weighed. The minimum average weight of ice from the 20 additional baskets and the discrepant basket shall not be less than 1071 pounds/basket at a 95% level of confidence.

   The ice condenser shall also be subdivided into 3 groups of baskets, as follows: Group 1 - bays 1 through 8, Group 2 - bays 9 through 16, and Group 3 - bays 17 through 24. The minimum average ice weight of the sample baskets from Radial Rows 1, 2, 4, 6, 8 and 9 in each group shall not be less than 1071 pounds/basket at a 95% level of confidence.

   The minimum total ice condenser ice weight at a 95% level of confidence shall be calculated using all ice basket weights determined during this weighing program and shall not be less than 2,082,024 pounds.

e. At least once per 54 months by chemical analysis of the stored ice in at least one randomly selected ice basket from each ice condenser bay verify:

1. Ice bed boron concentration is $\geq$ 1800 ppm and $\leq$ 2500 ppm as sodium tetraborate and;

2. pH is $\geq$ 9.0 and $\leq$ 9.5

NOTE: The requirements of this SR are satisfied if the boron concentration and pH values obtained from averaging the individual sample results are within the limits specified above.

f. Each ice addition verify, by chemical analysis, that ice added to the ice condenser meets the boron concentration and pH requirements of SR 4.6.5.1.e.

NOTE: The chemical analysis may be performed on either the liquid solution or the resulting ice

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

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

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.

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 269 TO FACILITY OPERATING LICENSE NO. DPR-77

AND AMENDMENT NO. 259 TO FACILITY OPERATING LICENSE NO. DPR-79

TENNESSEE VALLEY AUTHORITY

SEQUOYAH NUCLEAR PLANT, UNITS 1 AND 2

DOCKET NOS. 50-327 AND 50-328

1.0 INTRODUCTION

By application dated April 12, 2001, the Tennessee Valley Authority (TVA, the licensee) proposed an amendment to the Technical Specifications (TS) for Sequoyah Nuclear Plant (SQN) Units 1 and 2. The requested changes would revise TS and associated Bases for Surveillance Requirement (SR) 3.6.5.1 to: (1) change the method and frequency for sampling the ice condenser ice bed (stored ice), and (2) add a new SR 4.6.5.1.e (and associated bases) to address sampling requirements for all ice additions to the ice bed. SR 3.6.5.1 would also be changed to: (1) increase the sample population from 9 representative samples to 1 randomly selected sample per ice condenser bay for a total of 24 samples, (2) add a note to clarify that acceptable performance of the SR is met provided the average results of the individual samples are within the existing (unchanged) acceptance criteria for boron concentration and pH value, and (3) revise the performance interval from 18 months to 54 months. The new SR requires that all ice additions to the ice condenser be sampled to verify they meet the boron and pH requirements of SR 3.6.5.1. A clarifying note allows samples to be obtained from either the liquid solution or the resulting ice.

The proposed change will make the SQN ice condenser section of the TS consistent with the U.S. Nuclear Regulatory Commission (NRC) approved change that was submitted by Watts Bar Nuclear Plant (WBN). The WBN submittal was the ice condenser utility group lead plant for the ice condenser sampling and analysis TS change under WBN TS Change No. 99-06 and Standard TS (STS) Change No. TSTF [TS Task Force] 356. The NRC approved WBN TS Change No. 99-06 on March 21, 2000.

2.0 DISCUSSION

TVA proposes to modify the SQN TS by revising SR 4.6.5.1 to change the methodology and frequency for sampling the ice condenser ice bed (stored ice), and to add a new TS SR to address sampling requirements for each ice addition to the ice bed.

ENCLOSURE

Specifically, SR 4.6.5.1 currently requires that every 18 months ice in the ice bed be verified to have a boron concentration of at least 1800 parts per million (ppm) and a pH value of 9.0 to 9.5, as determined by chemical analysis of 9 representative ice samples. The proposed amendment would increase the number of samples from 9 to 24. The 24 samples would be obtained by randomly selecting one ice basket to be sampled from each of the 24 ice bays. The acceptance criteria for boron concentration would be changed to include an upper limit of 2500 ppm. A note would be added to clarify that the SRs are satisfied if the boron concentration and pH values obtained from averaging the individual sample results are within the limits specified. The performance interval for the SR would be increased from 18 months to 54 months.

A new SR would be added to require that ice additions (new ice) to the ice condenser be verified by chemical analysis to meet the boron concentration and pH requirements of SR 4.6.5.1. A note would be provided to clarify that this verification can be performed by chemical analysis of either the liquid solution or the resulting ice.

TVA's application is one of the products of an initiative between the NRC staff and the Ice Condenser Mini Group (ICMG). The ICMG also interfaces with the NRC staff, in a parallel manner, through the Nuclear Energy Institute's (NEI) program for addressing proposed changes to the STS. The need for consideration of changes to the TS for ice condenser containment plants, was addressed in the letter from William Beckner, NRC, to James Davis, NEI, dated October 2, 1998, as follows:

> Over the past several weeks, a number of issues have been raised relative to licensee compliance with the technical specifications (TS). These TS involve ice condenser plants with TS similar to the Westinghouse Improved Standard Technical Specifications (iSTS) 3.6.15 'Ice Bed.' These issues involved several different surveillances in this section and have highlighted problems literally complying with the TS, ambiguities in the requirements. . . .
>
> * * * * * * * * * *
>
> SR 3.6.15.5 is a similar surveillance requirement to check that the boron concentration in the ice and pH are adequate. Unlike SR 3.6.15.2, the requirement does not seem to necessarily imply that each basket must meet the appropriate limits, but then neither is there a requirement to calculate the total or average concentration. Licensees have focused on ensuring that the average of all samples meet the limits by melting and mixing samples in the past. More recently, individual samples have been analyzed separately and have resulted in some samples falling below the limit. It is not clear if an individual sample falling below the limit would result in failure of the surveillance or if the total or average values may be calculated in a manner used in the weight surveillance.

3.0 EVALUATION

The current SQN TS SR 4.6.5.1 requires that every 18 months, ice in the ice bed be verified to have a boron concentration of greater than or equal to 1800 ppm and a pH between 9.0 and 9.5 as determined by nine ice samples. TVA's application includes the following changes to TS 4.6.5.1 for sampling of ice residing in the ice bed:

- The number of samples is increased from 9 to 24 by requiring one sample from each of the 24 ice condenser bays.

- The interval for the surveillance is increased from once per 18 months to once per 54 months.

- A note is added to the effect that the results of the SR will be based on the average of the 24 individual samples.

- A boron concentration upper limit of 2500 ppm is added to reflect the value required for the post loss-of-coolant hot leg switchover timing calculation.

In addition a new TS 4.6.5.1.e is added with the following changes applicable to each addition of ice:

- For each ice addition, the ice must meet the boron concentration and pH requirements of SR 4.6.5.1.e, and

- The chemical analysis of the boron concentration and pH may be performed on either the liquid solution or the resulting ice.

The NRC staff notes that the product of the increased number of samples and the longer surveillance interval for sampling of ice in the ice bed results in approximately the same level of sampling as was previously the case over a 54-month interval. TVA has also stated, and has included in the Bases, that there are no normal operating mechanisms that decrease the boron concentration of the stored ice, and pH remains within a 9.0 to 9.5 range when boron concentrations are above approximately 1200 ppm. The Bases continue to retain the stipulation that if either the average boron concentration or average pH value is outside the prescribed limit, then entry into the Action Statement is required.

The addition of the Note in SR 4.6.5.1.e, indicating that the SR is satisfied based on the averages of the boron concentration and pH, provides clarification that, as TVA states, the sample results should be “consistent with the accident analysis assumption that the bulk containment sump pH and boron concentration will not be altered from their accident analysis assumed values following complete ice melt.” This clarifies the staff’s previously discussed concern regarding the use of average concentrations.

The provision of the additional SR 4.6.5.1.f provides further assurance that the boron concentration and pH of new ice that may be added to the ice bed as often as each refueling outage will be controlled within the limit values.

3.1 Evaluation Conclusion

The staff has found that the licensee's proposed changes, as discussed above, provide the needed clarifications addressed in William Beckner's letter of October 2, 1998, and are consistent with the amendment already issued for the WBN Operating License. These changes should ensure a clearer and more consistent interpretation and implementation of the TS related to boron concentration and pH. Therefore, the staff finds these changes to be acceptable.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Tennessee State official was notified of the proposed issuance of the amendment. The State official had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration, and there has been no public comment on such finding (66 FR 22033). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

6.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (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.

Principal Contributor: Ronald W. Hernan, NRR

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Mr. J. A. Scalice
Tennessee Valley Authority

SEQUOYAH NUCLEAR PLANT

cc:
Mr. Karl W. Singer, Senior Vice President
Nuclear Operations
Tennessee Valley Authority
6A Lookout Place
1101 Market Street
Chattanooga, TN 37402-2801

Mr. Jack A. Bailey
Vice President
Engineering & Technical Services
Tennessee Valley Authority
6A Lookout Place
1101 Market Street
Chattanooga, TN 37402-2801

Mr. Richard T. Purcell
Site Vice President
Sequoyah Nuclear Plant
Tennessee Valley Authority
P.O. Box 2000
Soddy Daisy, TN 37379

General Counsel
Tennessee Valley Authority
ET 11A
400 West Summit Hill Drive
Knoxville, TN 37902

Mr. Robert J. Adney, General Manager
Nuclear Assurance
Tennessee Valley Authority
6A Lookout Place
1101 Market Street
Chattanooga, TN 37402-2801

Mr. Mark J. Burzynski, Manager
Nuclear Licensing
Tennessee Valley Authority
4X Blue Ridge
1101 Market Street
Chattanooga, TN 37402-2801

Mr. Pedro Salas, Manager Licensing and
Industry Affairs
Sequoyah Nuclear Plant
Tennessee Valley Authority
P.O. Box 2000
Soddy Daisy, TN 37379

Mr. D. L. Koehl, Plant Manager
Sequoyah Nuclear Plant
Tennessee Valley Authority
P.O. Box 2000
Soddy Daisy, TN 37379

Mr. Russell A. Gibbs
Senior Resident Inspector
Sequoyah Nuclear Plant
U.S. Nuclear Regulatory Commission
2600 Igou Ferry Road
Soddy Daisy, TN 37379

Mr. Lawrence E. Nanney, Director
Division of Radiological Health
Dept. of Environment & Conservation
Third Floor, L and C Annex
401 Church Street
Nashville, TN 37243-1532

County Executive
Hamilton County Courthouse
Chattanooga, TN 37402-2801

Ms. Ann Harris
305 Pickel Road
Ten Mile, TN 37880