ENCLOSURE 1

PROPOSED TECHNICAL SPECIFICATION CHANGE
BROWNS FERRY NUCLEAR PLANT
UNITS 1, 2, AND 3

(TVA BFN TECHNICAL SPECIFICATION AMENDMENT 333)

TECHNICAL SPECIFICATION 333
Effective Page Listing

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ENCLOSURE 1

PROPOSED TECHNICAL SPECIFICATION CHANGE
BROWNS FERRY NUCLEAR PLANT
UNIT 1

(TVA BFN TECHNICAL SPECIFICATION AMENDMENT 333)

3.4/4.4 STANDBY LIQUID CONTROL SYSTEM

LIMITING CONDITIONS FOR OPERATION	SURVEILLANCE REQUIREMENTS
3.4.B. Operation with Inoperable Components 1. From and after the date that a redundant component is made or found to be inoperable, Specification 3.4.A.1 shall be considered fulfilled and continued operation permitted provided that the component is returned to an operable condition within seven days.	4.4.B. Surveillance with Inoperable Components 1. When a component is found to be inoperable, its redundant component shall be demonstrated to be operable immediately and daily thereafter until the inoperable component is repaired.
3.4.C Sodium Pentaborate Solution At all times when the Standby Liquid Control System is required to be OPERABLE, the following conditions shall be met: 1. At least 186 pounds Boron-10 must be stored in the Standby Liquid Control Solution Tank and be available for injection. 2. The sodium pentaborate solution concentration must be equal to or less than 9.2% by weight.	4.4.C Sodium Pentaborate Solution The following tests shall be performed to verify the availability of the Liquid Control Solution: 1. Volume: Check at least once per day. 2. Sodium Pentaborate Concentration check at least once per month. Also check concentration within 24 hours anytime water or boron is added to the solution. 3. Boron-10 Quantity: At least once per month, calculate and record the quantity of Boron-10 stored in the Standby Liquid Control Solution Tank. 4. Boron-10 Enrichment: At least once per 18 months and following each addition of boron to the Standby Liquid Control Solution Tank:

ENCLOSURE 1

PROPOSED TECHNICAL SPECIFICATION CHANGE
BROWNS FERRY NUCLEAR PLANT
UNIT 2

(TVA BFN TECHNICAL SPECIFICATION AMENDMENT 333)

3.4/4.4 STANDBY LIQUID CONTROL SYSTEM

LIMITING CONDITIONS FOR OPERATION	SURVEILLANCE REQUIREMENTS
3.4.B. Operation with Inoperable Components	4.4.B. Surveillance with Inoperable Components
1. From and after the date that a redundant component is made or found to be inoperable, Specification 3.4.A.1 shall be considered fulfilled and continued operation permitted provided that the component is returned to an operable condition within seven days.	1. When a component is found to be inoperable, its redundant component shall be demonstrated to be operable immediately and daily thereafter until the inoperable component is repaired.
3.4.C Sodium Pentaborate Solution	4.4.C Sodium Pentaborate Solution
At all times when the Standby Liquid Control System is required to be OPERABLE, the following conditions shall be met:	The following tests shall be performed to verify the availability of the Liquid Control Solution:
1. At least 186 pounds Boron-10 must be stored in the Standby Liquid Control Solution Tank and be available for injection.	1. Volume: Check at least once per day.
2. The sodium pentaborate solution concentration must be equal to or less than 9.2% by weight.	2. Sodium Pentaborate Concentration check at least once per month. Also check concentration within 24 hours anytime water or boron is added to the solution.
	3. Boron-10 Quantity: At least once per month, calculate and record the quantity of Boron-10 stored in the Standby Liquid Control Solution Tank.
	4. Boron-10 Enrichment: At least once per 18 months and following each addition of boron to the Standby Liquid Control Solution Tank:

ENCLOSURE 1

PROPOSED TECHNICAL SPECIFICATION CHANGE
BROWNS FERRY NUCLEAR PLANT
UNIT 3

(TVA BFN TECHNICAL SPECIFICATION AMENDMENT 333)

LIMITING CONDITIONS FOR OPERATION	SURVEILLANCE REQUIREMENTS
3.4.B. Operation with Inoperable Components 1. From and after the date that a redundant component is made or found to be inoperable, Specification 3.4.A.1 shall be considered fulfilled and continued operation permitted provided that the component is returned to an operable condition within seven days.	4.4.B. Surveillance with Inoperable Components 1. When a component is found to be inoperable, its redundant component shall be demonstrated to be operable immediately and daily thereafter until the inoperable component is repaired.
3.4.C Sodium Pentaborate Solution At all times when the Standby Liquid Control System is required to be OPERABLE, the following conditions shall be met: 1. At least 186 pounds Boron-10 must be stored in the Standby Liquid Control Solution Tank and be available for injection. 2. The sodium pentaborate solution concentration must be equal to or less than 9.2% by weight.	4.4.C Sodium Pentaborate Solution The following tests shall be performed to verify the availability of the Liquid Control Solution: 1. Volume: Check at least once per day. 2. Sodium Pentaborate Concentration check at least once per month. Also check concentration within 24 hours anytime water or boron is added to the solution. 3. Boron-10 Quantity: At least once per month, calculate and record the quantity of Boron-10 stored in the Standby Liquid Control Solution Tank. 4. Boron-10 Enrichment: At least once per 18 months and following each addition of boron to the Standby Liquid Control Solution Tank:

ENCLOSURE 2

BROWNS FERRY NUCLEAR PLANT (BFN) UNITS 1, 2, AND 3 (TVA BFN TECHNICAL SPECIFICATION AMENDMENT 333) REASON FOR THE CHANGE, DESCRIPTION AND JUSTIFICATION

REASON FOR THE CHANGE

The BFN Unit 2 Standby Liquid Control System (SLCS) was previously modified to utilize boric acid enriched with Boron-10. When the amount of sodium pentaborate required to support Unit 3 operation was recalculated, an omission in the previous calculation was identified. The volume of the Residual Heat Removal (RHR) stagnant water leg piping, connected during the shutdown cooling mode of RHR operation, was not included in the previous calculation. The inclusion of this piping in the calculation, and the associated additional volume of approximately 700 cubic feet of water, would require the amount of Boron-10 in the SLCS Solution Tank to be increased.

DESCRIPTION OF THE PROPOSED CHANGE

The current Limiting Condition for Operation (LCO) 3.4.C, Sodium Pentaborate Solution, for BFN Units 1, 2, and 3, will be revised from:

1. At least 180 pounds Boron-10 must be stored in the Standby Liquid Control Solution tank and be available for injection.

To read as follows:

1. At least 186 pounds Boron-10 must be stored in the Standby Liquid Control Solution Tank and be available for injection.

It should be noted that the word "tank" is being capitalized to correct a typographical error.

ENCLOSURE 2 (CONTINUED)
BROWNS FERRY NUCLEAR PLANT (BFN) UNITS 1, 2, AND 3
(TVA BFN TECHNICAL SPECIFICATION AMENDMENT 333)
REASON FOR THE CHANGE, DESCRIPTION AND JUSTIFICATION

JUSTIFICATION FOR THE PROPOSED CHANGE

SLCS Design Basis -

The requirement for total Boron content comes from the design basis of the SLCS. The SLCS is designed to make the reactor subcritical from rated power to a cold shutdown at any time in core life with the control rods remaining withdrawn in the rated power pattern. The minimum bounding concentration of natural Boron in the reactor vessel required to achieve cold shutdown for the currently anticipated future core configurations is 660 ppm. The 660 ppm concentration was recommended by General Electric in Service Information Letter (SIL) No. 325, June 1980. The concentration of Boron within the reactor is based upon the total quantity of coolant in the reactor vessel, recirculation loops, and the RHR System in the shutdown cooling mode at 70°F at the reactor normal water level.

The increase in the amount of Boron-10 required to be stored in the SLCS Solution Tank restores the ability of the SLCS to maintain the Boron concentration required to ensure cold shutdown for future anticipated core configurations. The current long term design basis of the SLCS system is to inject sufficient Boron to maintain a 660 ppm concentration in the vessel. Since increasing the minimum storage requirements of the SLCS solution tank restores the SLCS ability to maintain the 660 ppm concentration, the increased Boron-10 storage requirements does not represent a change to the designed Boron injection capability of the SLCS.

ENCLOSURE 2 (CONTINUED)
BROWNS FERRY NUCLEAR PLANT (BFN) UNITS 1, 2, AND 3
(TVA BFN TECHNICAL SPECIFICATION AMENDMENT 333)
REASON FOR THE CHANGE, DESCRIPTION AND JUSTIFICATION

Equivalency Requirements of 10 CFR 50.62 -

The increase in the amount of Boron-10 that is required to be stored in the SLCS Solution Tank does not degrade TVA's compliance with the equivalency requirement of 10 CFR 50.62. Paragraph (c)(4) of 10 CFR 50.62 states, in part:

> Each boiling water reactor must have a standby liquid control system (SLCS) with the capability of injection into the reactor pressure vessel a borated water solution at such a flow rate, level of Boron concentration and Boron-10 isotope enrichment, and accounting for reactor pressure vessel volume, that the resulting reactivity control is at least equivalent to that resulting from injection of 86 gallons per minute of 13 weight percent sodium pentaborate decahydrate solution at the natural Boron-10 isotope abundance into a 251-inch inside diameter reactor pressure vessel for a given core design.

The licensing basis established in 10 CFR 50.62 is a requirement for licensees to be able to inject sufficient Boron into the vessel volume as to bring the reactor into a hot shutdown condition; not to be able to bring the reactor to a cold shutdown condition while using the RHR system. Since the mass of water in the reactor vessel and recirculation system at hot rated conditions is not necessary for calculating equivalency with the rule; Boron concentration, enrichment, and flow rates, but not total Boron content, is necessary for compliance with 10 CFR 50.62.

The requirement for total Boron content comes from the original design of the SLCS. The system is designed to make the reactor subcritical from rated power to a cold shutdown at any time in core life. The minimum quantity of sodium pentaborate to be injected into the reactor is calculated based on the required 660 ppm average concentration in the reactor coolant, Boron-10 enrichment, the quantity of reactor coolant in the reactor vessel, recirculation loops, and the entire RHR system in the shutdown cooling mode, at 70°F and reactor normal water level.

ENCLOSURE 2 (CONTINUED)

BROWNS FERRY NUCLEAR PLANT (BFN) UNITS 1, 2, AND 3
(TVA BFN TECHNICAL SPECIFICATION AMENDMENT 333)
REASON FOR THE CHANGE, DESCRIPTION AND JUSTIFICATION

Requirements for Heat Tracing -

The SLCS currently uses a 9.2 weight percent sodium pentaborate solution. The saturation temperature of a 9.2 weight percent sodium pentaborate solution is 40°F. The minimum normal temperature for the SLCS Solution Tank area is 60°F and the minimum abnormal temperature is 50°F. Thus, a 10°F margin is maintained at all times. The increase in the amount of Boron-10 required to be stored in the SLCS Solution Tank will be accomplished by requiring an increase in the level of sodium pentaborate solution in the storage tank; not an increase in the weight percent of the sodium pentaborate solution. Therefore, there is no change in the requirements for heat tracing of the SLCS.

Conclusion -

The increase in the amount of Boron-10 required to be stored in the SLCS Solution Tank restores the ability of the SLCS to ensure cold shutdown for future anticipated core configurations. It is a change in the conservative direction that does not affect BFN's compliance with the equivalency requirements of 10 CFR 50.62 or the requirements for heat tracing of the SLCS.

ENCLOSURE 3

BROWNS FERRY NUCLEAR PLANT (BFN)
PROPOSED NO SIGNIFICANT HAZARDS CONSIDERATIONS DETERMINATION

DESCRIPTION OF THE PROPOSED TECHNICAL SPECIFICATION CHANGE

The current Limiting Condition for Operation (LCO) 3.4.C, Sodium Pentaborate Solution, for BFN Units 1, 2, and 3, will be revised from:

1. At least 180 pounds Boron-10 must be stored in the Standby Liquid Control Solution tank and be available for injection.

To read as follows:

1. At least 186 pounds Boron-10 must be stored in the Standby Liquid Control Solution Tank and be available for injection.

It should be noted that the word "tank" is being capitalized to correct a typographical error.

BASES FOR PROPOSED NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION

NRC has provided standards for determining whether a significant hazards consideration exists as stated in 10 CFR 50.92(c). A proposed amendment to an operating license involves no significant hazards considerations if operation of the facility in accordance with the proposed amendment would not (1) involve a significant increase in the probability or consequences of an accident previously evaluated, or (2) create the possibility of a new or different kind of accident from an accident previously evaluated, or (3) involve a significant reduction in a margin of safety. The proposed TS change is judged to involve no significant hazards considerations based on the following:

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

   The Standby Liquid Control System (SLCS) is designed to make the reactor subcritical from rated power to a cold shutdown at any time in core life with the control rods remaining withdrawn in the rated power pattern. The increase in the amount of Boron-10 that is required to be stored in the SLCS Solution Tank does not affect the precursors for any accident or transient analyzed in Chapter 14 of the BFN Final Safety Analysis Report (FSAR). Since there is no change to an accident precursor, there is no increase in the probability of any accident previously evaluated.

ENCLOSURE 3 (CONTINUED)
BROWNS FERRY NUCLEAR PLANT (BFN)
PROPOSED NO SIGNIFICANT HAZARDS CONSIDERATIONS DETERMINATION

The increase in the amount of Boron-10 required to be stored in the SLCS Solution Tank restores the ability of the SLCS to maintain the Boron concentration required to ensure cold shutdown for future anticipated core configurations. The minimum concentration of natural Boron in the reactor vessel required to achieve cold shutdown for the currently anticipated future core configurations is 660 ppm. The 660 ppm concentration was recommended by General Electric in Service Information Letter (SIL) No. 325, June 1980.

The increase in the amount of Boron-10 required to be stored in the SLCS Solution Tank restores the ability of the SLCS to maintain the Boron concentration required to ensure cold shutdown for future anticipated core configurations. The increased Boron-10 storage requirements does not represent a change to the designed Boron concentration capability of the SLCS. Since this change will ensure the ability of the SLCS to mitigate the consequences of an accident for future anticipated core designs, the change does not involve a significant increase in the consequences of any accident previously evaluated.

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

The increase in the amount of Boron-10 required to be stored in the SLCS Solution Tank does not affect the function or operation of any other system. The proposed change does not introduce any new modes of operation or modify existing equipment design. Therefore, the proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

ENCLOSURE 3 (CONTINUED)
BROWNS FERRY NUCLEAR PLANT (BFN)
PROPOSED NO SIGNIFICANT HAZARDS CONSIDERATIONS DETERMINATION

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

   The SLCS shutdown margin is determined for each core configuration by using the BWR simulator code to calculate the core multiplication for the cold, xenon-free, all-rods-out condition at the exposure point of maximum cold reactivity. The resulting k-effective is subtracted from the critical k-effective of 1.0 to obtain the SLCS shutdown margin. Increasing the amount of Boron-10 stored in the SLCS Solution Tank increases the SLCS shutdown margin. Therefore, the proposed amendment results in an increased margin of safety.

CONCLUSION

TVA has evaluated the proposed amendment described above against the criteria given in 10 CFR 50.92(c) in accordance with the requirements of 10 CFR 50.91(a)(1). This evaluation has determined that the proposed amendment will not (1) involve a significant increase in the probability or consequences of an accident previously evaluated, (2) create the possibility for a new or different kind of accident from any accident previously evaluated, or (3) involve a significant reduction in a margin of safety. Thus, TVA has concluded that the proposed amendment does not involve a significant hazards consideration.