February 28, 1995

Mr. Oliver D. Kingsley, Jr.
President, TVA Nuclear and
Chief Nuclear Officer
Tennessee Valley Authority
6A Lookout Place
1101 Market Street
Chattanooga, Tennessee 37402-2801

SUBJECT: ISSUANCE OF TECHNICAL SPECIFICATION AMENDMENTS FOR THE BROWNS FERRY NUCLEAR PLANT UNITS 1, 2, AND 3 (TAC NOS. M87891, M87892, AND M87893) (TS 333)

Dear Mr. Kingsley:

The Commission has issued the enclosed Amendment Nos. 217, 233, and 191 to Facility Operating Licenses Nos. DPR-33, DPR-52, and DPR-68 for the Browns Ferry Nuclear Plant (BFN), Units 1, 2, and 3, respectively. These amendments are in response to your application dated September 29, 1993, proposing revision of the amount of boron required to be stored in the Standby Liquid Control System Solution Tank.

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

Sincerely,

ORIGINAL SIGNED BY:

Joseph F. Williams, Project Manager
Project Directorate II-4
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Docket Nos. 50-259, 50-260 and 50-296

Enclosures:
1. Amendment No. 217 to License No. DPR-33
2. Amendment No. 233 to License No. DPR-52
3. Amendment No. 191 to License No. DPR-68
4. Safety Evaluation

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cc w/enclosures: See next page

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cc:
Mr. O. J. Zeringue, Sr. Vice President
Nuclear Operations
Tennessee Valley Authority
3B Lookout Place
1101 Market Street
Chattanooga, TN 37402-2801

Dr. Mark O. Medford, Vice President
Engineering & Technical Services
Tennessee Valley Authority
3B Lookout Place
1101 Market Street
Chattanooga, TN 37402-2801

Mr. D. E. Nunn, Vice President
New Plant Completion
Tennessee Valley Authority
3B Lookout Place
1101 Market Street
Chattanooga, TN 37402-2801

Mr. R. D. Machon, Site Vice President
Browns Ferry Nuclear Plant
Tennessee Valley Authority
P.O. Box 2000
Decatur, AL 35602

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

Mr. P. P. Carier, Manager
Corporate Licensing
Tennessee Valley Authority
4G Blue Ridge
1101 Market Street
Chattanooga, TN 37402-2801

Mr. T. D. Shriver
Nuclear Assurance and Licensing
Browns Ferry Nuclear Plant
Tennessee Valley Authority
P.O. Box 2000
Decatur, AL 35602

Mr. Pedro Salas
Site Licensing Manager
Browns Ferry Nuclear Plant
Tennessee Valley Authority
P.O. Box 2000
Decatur, AL 35602

TVA Representative
Tennessee Valley Authority
11921 Rockville Pike, Suite 402
Rockville, MD 20852

Regional Administrator
U.S. Nuclear Regulatory Commission
Region II
101 Marietta Street, NW., Suite 2900
Atlanta, GA 30323

Mr. Leonard D. Wert
Senior Resident Inspector
Browns Ferry Nuclear Plant
U.S. Nuclear Regulatory Commission
10833 Shaw Road
Athens, AL 35611

Chairman
Limestone County Commission
310 West Washington Street
Athens, AL 35611

State Health Officer
Alabama Department of Public Health
434 Monroe Street
Montgomery, AL 36130-1701

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

TENNESSEE VALLEY AUTHORITY

DOCKET NO. 50-259

BROWNS FERRY NUCLEAR PLANT, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 217
License No. DPR-33

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

   A. The application for amendment by Tennessee Valley Authority (the licensee) dated September 29, 1993, 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-33 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 217, 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 and shall be implemented within 30 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Frederick J. Hebdon

Frederick J. Hebdon, Director
Project Directorate II-4
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical Specifications

Date of Issuance: February 28, 1995

ATTACHMENT TO LICENSE AMENDMENT NO. 217

FACILITY OPERATING LICENSE NO. DPR-33

DOCKET NO. 50-259

Revise the Appendix A Technical Specifications by removing the pages identified below and inserting the enclosed pages. The revised pages are identified by the captioned amendment number and contain marginal lines indicating the area of change. Overleaf* page is provided to maintain document completeness.

REMOVE	INSERT
3.4/4.4-3	3.4/4.4-3
3.4/4.4-4	3.4/4.4-4*

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:

LIMITING CONDITIONS FOR OPERATION	SURVEILLANCE REQUIREMENTS
	a. Calculate the enrichment within 24 hours. b. Verify by analysis within 30 days.
3.4.D Standby Liquid Control System Requirements The Standby Liquid Control System conditions must satisfy the following equation. $\frac{(C)(Q)(E)}{(13\ wt.\%)(86\ gpm)(19.8\ atom\%)} \geq 1$ where, C = sodium pentaborate solution concentration (weight percent) Determined by the most recent performance of the surveillance instruction required by Specification 4.4.C.2. Q = pump flow rate (gpm) Determined by the most recent performance of the surveillance instruction required by Specification 4.4.A.2.b. E = Boron-10 enrichment (atom percent Boron-10) Determined by the most recent performance of the surveillance instruction required by Specification 4.4.C.4.	4.4.D Standby Liquid Control System Requirements Verify that the equation given in Specification 3.4.D is satisfied at least once per month and within 24 hours anytime water or boron is added to the solution.
1. If Specification 3.4.A through 3.4.D cannot be met, make at least one subsystem OPERABLE within 8 hours or the reactor shall be placed in a SHUTDOWN CONDITION with all operable control rods fully inserted within the following 12 hours.	1. No additional surveillance required.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

TENNESSEE VALLEY AUTHORITY

DOCKET NO. 50-260

BROWNS FERRY NUCLEAR PLANT, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 233
License No. DPR-52

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

   A. The application for amendment by Tennessee Valley Authority (the licensee) dated September 29, 1993, 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-52 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 233, 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 and shall be implemented within 30 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Frederick J. Hebdon

Frederick J. Hebdon, Director
Project Directorate II-4
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical Specifications

Date of Issuance: February 28, 1995

ATTACHMENT TO LICENSE AMENDMENT NO. 233

FACILITY OPERATING LICENSE NO. DPR-52

DOCKET NO. 50-260

Revise the Appendix A Technical Specifications by removing the pages identified below and inserting the enclosed pages. The revised pages are identified by the captioned amendment number and contain marginal lines indicating the area of change. Overleaf* page is provided to maintain document completeness.

REMOVE	INSERT
3.4/4.4-3	3.4/4.4-3
3.4/4.4-4	3.4/4.4-4*

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:

LIMITING CONDITIONS FOR OPERATION	SURVEILLANCE REQUIREMENTS
	a. Calculate the enrichment within 24 hours. b. Verify by analysis within 30 days.
3.4.D Standby Liquid Control System Requirements The Standby Liquid Control System conditions must satisfy the following equation. $\frac{(C)(Q)(E)}{(13\ wt.\%)(86\ gpm)(19.8\ atom\%)} \geq 1$ where, C = sodium pentaborate solution concentration (weight percent) Determined by the most recent performance of the surveillance instruction required by Specification 4.4.C.2. Q = pump flow rate (gpm) Determined by the most recent performance of the surveillance instruction required by Specification 4.4.A.2.b. E = Boron-10 enrichment (atom percent Boron-10) Determined by the most recent performance of the surveillance instruction required by Specification 4.4.C.4.	4.4.D Standby Liquid Control System Requirements Verify that the equation given in Specification 3.4.D is satisfied at least once per month and within 24 hours anytime water or boron is added to the solution.
1. If Specification 3.4.A through 3.4.D cannot be met, make at least one subsystem OPERABLE within 8 hours or the reactor shall be placed in a SHUTDOWN CONDITION with all OPERABLE control rods fully inserted within the following 12 hours.	1. No additional surveillance required.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

TENNESSEE VALLEY AUTHORITY

DOCKET NO. 50-296

BROWNS FERRY NUCLEAR PLANT, UNIT 3

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 191
License No. DPR-68

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

   A. The application for amendment by Tennessee Valley Authority (the licensee) dated September 29, 1993, 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-68 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 191, 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 and shall be implemented within 30 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Frederick J. Hebdon

Frederick J. Hebdon, Director
Project Directorate II-4
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical Specifications

Date of Issuance: February 28, 1995

ATTACHMENT TO LICENSE AMENDMENT NO. 191

FACILITY OPERATING LICENSE NO. DPR-68

DOCKET NO. 50-296

Revise the Appendix A Technical Specifications by removing the pages identified below and inserting the enclosed pages. The revised pages are identified by the captioned amendment number and contain marginal lines indicating the area of change. Overleaf* page is provided to maintain document completeness.

REMOVE	INSERT
3.4/4.4-3	3.4/4.4-3
3.4/4.4-4	3.4/4.4-4*

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:

LIMITING CONDITIONS FOR OPERATION	SURVEILLANCE REQUIREMENTS
	a. Calculate the enrichment within 24 hours. b. Verify by analysis within 30 days.
3.4.D Standby Liquid Control System Requirements The Standby Liquid Control System conditions must satisfy the following equation. $\frac{(C)(Q)(E)}{(13\ wt.\%)(86\ gpm)(19.8\ atom\%)} \geq 1$ where, C = sodium pentaborate solution concentration (weight percent) Determined by the most recent performance of the surveillance instruction required by Specification 4.4.C.2. Q = pump flow rate (gpm) Determined by the most recent performance of the surveillance instruction required by Specification 4.4.A.2.b. E = Boron-10 enrichment (atom percent Boron-10) Determined by the most recent performance of the surveillance instruction required by Specification 4.4.C.4.	4.4.D Standby Liquid Control System Requirements Verify that the equation given in Specification 3.4.D is satisfied at least once per month and within 24 hours anytime water or boron is added to the solution.
1. If Specification 3.4.A through 3.4.D cannot be met, make at least one subsystem OPERABLE within 8 hours or the reactor shall be placed in a SHUTDOWN CONDITION with all OPERABLE control rods fully inserted within the following 12 hours.	1. No additional surveillance required.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 217 TO FACILITY OPERATING LICENSE NO. DPR-33

AMENDMENT NO. 233 TO FACILITY OPERATING LICENSE NO. DPR-52

AMENDMENT NO. 191 TO FACILITY OPERATING LICENSE NO. DPR-68

TENNESSEE VALLEY AUTHORITY

BROWNS FERRY NUCLEAR PLANT, UNITS 1, 2, AND 3

DOCKET NOS. 50-259, 50-260, AND 50-296

1.0 INTRODUCTION

On September 29, 1993, the Tennessee Valley Authority (the licensee) requested amendments for the Technical Specifications (TS) for the Browns Ferry Nuclear Plant (BFN) Units 1, 2 and 3. These changes to Technical Specification 3.4.C will increase the amount of Boron-10 that must be stored in the Standby Liquid Control System (SLCS) Solution Tank. The change is required to ensure adequate safe shutdown margin for future fuel cycles.

2.0 EVALUATION

The current Limiting Condition for Operation 3.4.C, "Sodium Pentaborate Solution," will be revised to require at least 186 pounds Boron-10 instead of at least 180 pounds Boron-10. This change is necessary to ensure the ability of the SLCS to maintain the boron concentration required for cold shutdown for future anticipated core configurations. A previous calculation omitted the Residual Heat Removal (RHR) stagnant water leg piping which represents approximately 700 cubic feet of water volume. This additional volume of water requires the amount of Boron-10 stored to be increased by 6 pounds. The current tank concentration is adequate for the current fuel cycle.

The requirement for total Boron content comes from the design of the SLCS. The SLCS is designed to make the reactor subcritical from the rated power to a cold shutdown with the control rods remaining withdrawn at any time in core life. The minimum bounding concentration of boron to achieve cold shutdown for the anticipated future cycles is 660 ppm. Increasing the amount of Boron-10 stored in the SLCS Solution Tank will restore the ability of the SLCS to maintain the Boron concentration required to ensure cold shutdown for future anticipated core configurations.

The increase in the minimum storage requirement of the SLCS solution tank ensures the SLCS will be able to maintain adequate shutdown margin. Therefore, this change is acceptable.

ENCLOSURE 4

3.0 STATE CONSULTATION

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

4.0 ENVIRONMENTAL CONSIDERATION

The amendments change requirements 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 amendments involve 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 amendments involve no significant hazards consideration, and there has been no public comment on such finding (59 FR 29635). Accordingly, the amendments meet 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 amendments.

5.0 CONCLUSION

The Commission has concluded, based upon 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, and (2) such activities will be conducted in compliance with the Commission's regulations, and (3) issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: M. Chatterton

Dated: February 28, 1995