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Tennessee Valley Authority, Post Office Box 2000, Decatur, Alabama 35609-2000 June 28, 2004

TVA-BFN-TS-431

10 CFR 50.90

U.S. Nuclear Regulatory Commission ATTN: Document Control Desk Washington, DC 20555-0001

Gentlemen:

In the Matter of Tennessee Valley Authority Docket Nos. 50-259

BROWNS FERRY NUCLEAR PLANT (BFN) - UNIT 1- PROPOSED TECHNICAL SPECIFICATIONS (TS) CHANGE TS - 431 - REQUEST FOR LICENSE AMENDMENT - EXTENDED POWER UPRATE (EPU) OPERATION

Pursuant to 10 CFR 50.90, TVA requests an amendment to BFN Unit 1 Operating License DPR-33. The proposed license amendment increases the maximum power level authorized by Section 2.C.(1) of the license from 3293 megawatts thermal (MWt) to 3952 MWt, an approximate 20 percent increase in thermal power.

NRC approval of the requested increase in reactor thermal power level will allow TVA to implement operational changes to generate and supply a higher steam flow to the turbine generator. Higher steam flow is accomplished by increasing the reactor power along specified control rod and core flow lines and by increasing reactor operating pressure. This increase in steam flow will enable increasing the electrical output of the plant. U.S. Nuclear Regulatory Commission Page 2 June 28, 2004

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The technical bases for this request follows the guidelines contained in General Electric (GE) Licensing Topical Reports (LTR) NEDC-32424P-A, "Generic Guidelines for General Electric Boiling Water Reactor Extended Power Uprate," (ELTR-1), which the NRC has determined was an acceptable methodology for requesting extended power uprates, and NEDC-32523P-A, "Generic Evaluations of General Electric Boiling Water Reactor Extended Power Uprate," (ELTR-2), which the NRC has reviewed and approved. Several other BWRs have submitted similar requests, up to a 20 percent increase in thermal power using the ELTR process. The NRC has previously reviewed and approved extended power uprates at the Duane Arnold, Dresden, Quad Cities, Clinton, and Brunswick nuclear power plants.

This request contains descriptions and the results of evaluations performed to identify the effects of the requested power increase on the reactor, engineered safety features, power conversion, emergency power, support systems, environmental impact, design basis transients and accidents, and other evaluations performed to demonstrate safe operation at the requested power level. These are contained in the following enclosures:

- Enclosure 1 is a description and evaluation of the proposed changes to the operating licenses and the TSs. This includes TVA's determination that the proposed changes do not involve a significant hazards consideration.
- Enclosure 2 is the BFN Unit 1 Environmental Report supporting a conclusion of no significant impact.
- Enclosure 3 contains copies of the marked-up BFN Unit 1 TS.
- Enclosure 4 contains: 1) Assessment of General Electric Evaluations for Extended Power Uprate, 2) the Browns Ferry Units 1, 2, and 3 Comparison of ELTR Generic Evaluations to the PUSAR and, 3) NEDC-33101P, "Browns Ferry Unit 1 Safety Analysis Report for Extended Power Uprate," Revision 0 (hereafter referred to as the PUSAR). TVA's assessment of General Electric Evaluations for Extended Power Uprate provides a description of the reviews, audits, and independent verifications preformed by TVA to support the EPU Safety Assessment.

The Browns Ferry Unit 1, 2, and 3 Comparison of ELTR Generic Evaluations to the PUSAR is a cross-reference of key inputs and assumptions used in GE's bounding analysis with that used in the BFN Unit 1 specific analyses. This reference should aid the staff in concluding that the bounding analysis previously reviewed and approved are bounding for BFN Unit 1.

The PUSAR provides a summary of the results of the safety analyses performed for the BFN Unit 1 EPU. The PUSAR contains information that GE considers proprietary. GE requests that the proprietary information in this report be withheld U.S. Nuclear Regulatory Commission Page 3 June 28, 2004

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from public disclosure in accordance with 10 CFR 9.17(a)(4), 10 CFR 2.390(a)(4) and 10 CFR 2.390(b)(1). An affidavit supporting this request is included with Enclosure 4. A non-proprietary version is contained in Enclosure 14.

- Enclosure 5 contains a background, description, and justification of the requested change to the BFN Unit 1 licensing bases to include credit for Containment Overpressure for ensuring the adequacy of Emergency Core Cooling System (ECCS) pump net positive suction head (NPSH) following design basis accidents. BFN Unit 1 does not now include credit for containment overpressure. The need for containment overpressure credit is consistent with EPU applications previously submitted and approved by the NRC.
- Enclosure 6 provides a matrix identifying sections in the Updated Final Safety Analysis Report (UFSAR) that are under evaluation for EPU implementation.
- Enclosure 7 provides a listing of planned modifications for EPU implementation.
- Enclosure 8 provides the BFN Unit 1 EPU startup test program. This includes a
 justification for exception to large transient testing. This enclosure supplements
 PUSAR Section 10.4.
- Enclosure 9 contains the GE Engineering Report, "Browns Ferry Nuclear Plant Units 1, 2, and 3 Steam Dryer Analysis for Extended Power Uprate," Revision 0. The analysis contains information that GE considers proprietary. GE requests that the proprietary information in this report be withheld from public disclosure in accordance with 10 CFR 9.17(a)(4), 10 CFR 2.390(a)(4) and 10 CFR 2.390(b)(1). An affidavit supporting this request is included with Enclosure 9. A nonproprietary version is contained in Enclosure 15. Also included is a summary of BFN actions relative to GE SIL 644, Supplement 1.
- Enclosure 10 provides a summary of the BFN Flow Induced Vibration Extent of Condition (EOC) reviews. As discussed in this enclosure, TVA is actively engaged with, and continues to assess issues emerging from the BWR Owners' Group EOC Committee for applicability to BFN.
- Enclosure 11 provides a summary of the BFN Grid Adequacy and Stability Study. This study demonstrates that the requested BFN Unit 1 power uprate will not have a significant adverse effect on the reliability or operating characteristics of BFN or on the offsite electrical system. This enclosure supplements PUSAR Section 6.1.1.

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- Enclosure 12 provides a markup of the review matrices contained in the NRC's "Review Standard for Extended Power Uprates," (RS-001). The enclosed matrix cross-references the BFN Unit 1 PUSAR, applicable ELTR1 and ELTR2 sections, and the BFN UFSAR to the NRC Staff's "Areas of Review" identified therein.
- Enclosure 13 provides a markup of the Safety Evaluation template contained in RS-001.
- Enclosure 14 contains a non-proprietary version of NEDC-33101P, "Browns Ferry Unit 1 Safety Analysis Report for Extended Power Uprate," (PUSAR), Revision 0.
- Enclosure 15 contains a non-proprietary version of the GE Engineering Report, "Browns Ferry Nuclear Plant Units 1, 2, and 3 Steam Dryer Analysis for Extended Power Uprate."

As part of the TVA's BFN Unit 1 application, TVA is proposing a change to the licensing bases for containment overpressure and the upper bound peak cladding temperature. TVA is requesting a credit for overpressure of 3 psig for the duration of a design basis loss-of-coolant accident (LOCA). Enclosure 5 of this submittal, and PUSAR Section 4.2.5 provide the details for this request.

PUSAR Section 4.3 documents the applicability of GE Nuclear Energy Report NEDE-23785P-A, "GESTR-LOCA and SAFER Models For Evaluation of Loss-of-Coolant Accident, Additional Information For Upper Bound PCT Calculation," to Browns Ferry Unit 1. NEDE-23785P was accepted by NRC with its February 1, 2002, Safety Evaluation. As a result, the 1600 degree F, upper bound peak cladding temperature limit will no longer be applicable to BFN Unit 1.

PUSAR Section 3.3.1, "Reactor Vessel Fracture Toughness," states that the TS Pressure-Temperature (P-T) Curves will be revised prior to EPU implementation. The P-T curves for the reactor coolant system are being modified to accommodate EPU conditions and will be provided in a separate submittal.

By letter dated July 31, 2002, TVA requested a full scope application of an Alternative Source Term (AST) for BFN. Postulated accident radiological consequence analyses were revised assuming plant operation at EPU operating conditions. This change included a revision to the available volume of sodium pentaborate solution, which bounds the change in volume required for EPU operation. The results indicate offsite and control room doses are within the regulatory limits. TVA considered AST results during preparation of the BFN Unit 1 PUSAR. Approval of AST is required prior to EPU implementation.

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Three additional BFN Unit 1 amendment requests have been or will be submitted to the NRC, that following approval, would implement changes that are assumed in the BFN Unit 1 EPU analyses. These changes are consistent with those previously obtained for BFN Units 2 and 3, and would make the BFN Unit 1 TS consistent with the BFN Units 2 and 3 TS in these respective areas. Accordingly, these BFN Unit 1 TS changes should be issued prior to or concurrent with the BFN Unit 1 EPU amendment request. These include:

- BFN Unit 1 TS Change 430 Power Range Neutron Monitor Upgrade With Implementation of Average Power Range Monitor and Rod Block Monitor Technical Specification Improvements and Maximum Extended Load Line Limit Analyses, submitted to NRC by TVA letter dated November 10, 2003;
- BFN Unit 1 TS Change 434 Lowering the Allowable Value for Reactor Vessel Water Level – Low Level 3, submitted to NRC by TVA letter dated March 9, 2004; and
- BFN Unit 1 TS Change 24 Month Fuel Cycle, currently pending submission to the NRC.

TVA also plans to submit a request to implement the Maximum Extended Load Line Limit Plus (MELLLA+) reactor operating domain expansion. This request will be submitted separately.

TVA has determined that there are no significant hazards considerations associated with the proposed change. This change does not qualify for categorical exclusion from environmental review pursuant to the provisions of 10 CFR 51.22(c)(9). Accordingly, an Environmental Report is included in Enclosure 2. The Plant Operations Review Committee and Nuclear Safety Review Board have reviewed these proposed changes, and determined that operation of BFN Unit 1 in accordance with the proposed changes will not endanger the health and safety of the public. Additionally, in accordance with 10 CFR 50.91 (b) (1), TVA is sending a copy of this letter and enclosures to the Alabama State Department of Public Health.

This application provides all of the information to allow the staff to complete its review. TVA is providing a complete BFN Units 2 and 3 application under a separate TS change. We request NRC approval of this amendment request by June of 2005, to support integration of its implementation with other ongoing BFN Unit 1 restart activities. TVA intends to implement BFN Unit 1 EPU concurrent with restart of the unit from its current outage.

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There are no new regulatory commitments associated with this submittal. If you have any questions about this change, please telephone me at (256) 729-2636.

Pursuant to 28 U.S.G. § 1746 (1994), I declare under penalty of perjury that the foregoing is true and correct.

Executed on this 28th day of June, 2004.

Sincerely, T. E. Abney

Manager of Licensing and Industry Affairs

Enclosures

- 1. TVA Evaluation of the Proposed Change
- 2. BFN Unit 1 Extended Power Uprate Environmental Report
- 3. BFN Unit 1 TS Mark-ups
- 4. NEDC-33101P, "Browns Ferry Unit 1 Safety Analysis Report for Extended Power Uprate," (PUSAR), Revision 0
- 5. Justification for Credit of Containment Overpressure for ECCS NPSH
- 6. BFN Unit 1 Extended Power Uprate UFSAR Review Matrix
- 7. BFN Unit 1 Extended Power Uprate List of Planned Modifications
- 8. BFN Unit 1 Extended Power Uprate Startup Test Program
- 9. GE Engineering Report, "Browns Ferry Nuclear Plant Units 1, 2, and 3 Steam Dryer Analysis for Extended Power Uprate," Revision 0
- 10. BFN Extended Power Uprate Extent of Condition Review
- 11. Browns Ferry Extended Power Uprate Grid Stability Study
- 12. Browns Ferry Extended Power Uprate RS-001 Areas of Review Matrix
- 13. Browns Ferry Extended Power Uprate RS-001 Template Safety Evaluation
- 14. Non-proprietary version of NEDC-33101P, "Browns Ferry Unit 1 Safety Analysis Report for Extended Power Uprate," (PUSAR), Revision 0
- 15. Non-Proprietary Version of GE Engineering Report, "Browns Ferry Nuclear Plant Units 1, 2, and 3 Steam Dryer Analysis for Extended Power Uprate," Revision 0

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cc (Enclosures): State Health Officer Alabama Dept. of Public Health RSA Tower - Administration Suite 1552 P.O. Box 303017 Montgomery, AL 36130-3017

TENNESSEE VALLEY AUTHORITY BROWNS FERRY NUCLEAR PLANT (BFN) UNIT 1

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