August 26, 1998

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

SUBJECT: ENVIRONMENTAL ASSESSMENT REGARDING POWER UPRATE - BROWNS FERRY PLANT UNITS 2 AND 3 - (TAC NOS. M99711 AND M99712)

Dear Mr. Scalice:

Enclosed is a copy of the Environmental Assessment and Finding of No Significant Impact related to your application dated October 1, 1997, as supplemented October 14, 1997; and March 16 and 20, April 1 and 28, May 1, 20 and 22, June 12, 17 and 26, and July 17, 24, and 31, 1998. The proposed amendment allows operation at 3458 Megawatts thermal.

The assessment is being forwarded to the Office of the Federal Register for publication.

Sincerely,

/s/

L. Raghavan, Senior Project Manager
Project Directorate II-3
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Docket Nos. 50-260 and 50-296
Enclosure: Environmental Assessment

cc w/enclosure: See next page

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

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Mr. J. A. Scalice
Tennessee Valley Authority

BROWNS FERRY NUCLEAR PLANT

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UNITED STATES NUCLEAR REGULATORY COMMISSION

TENNESSEE VALLEY AUTHORITY

DOCKET NOS. 50-260 AND 50-296

BROWNS FERRY NUCLEAR PLANT, UNITS 2 AND 3

ENVIRONMENTAL ASSESSMENT AND FINDING OF NO SIGNIFICANT IMPACT

INTRODUCTION

The U.S. Nuclear Regulatory Commission (NRC, or the Commission) is considering issuance of an amendment to Facility Operating License Nos. DPR-52 and DPR-68 issued to the Tennessee Valley Authority (TVA or the licensee) for operation of the Browns Ferry Nuclear Plant (BFN) Units 2 and 3, located in Limestone County, Alabama.

ENVIRONMENTAL ASSESSMENT

Identification of the Proposed Action:

The proposed action would allow the licensee to increase allowed core power level by 5 percent, from 3293 megawatt thermal (MWt) to the uprated power level of 3458 MWt.

The proposed action is in accordance with the licensee's application for amendment dated October 1, 1997, as supplemented October 14, 1997; and March 16 and 20, April 1 and 28, May 1, 20 and 22, June 12, 17 and 26, and July 17, 24, and 31, 1998.

The Need for the Proposed Action:

The proposed action is needed to allow the licensee to increase the licensed core thermal power and the potential electrical output of each BFN Units 2 and 3 by approximately 55 MWt and thus, providing additional electric power to service TVA's grid. The proposed thermal power uprate project is in accordance with the generic boiling water reactor (BWR) power uprate program established by the General Electric Company and approved by the NRC

in a letter dated September 30, 1991. Power uprate has been widely recognized by the industry as a safe and cost-effective method to increase generating capacity. The proposed power uprate will provide the licensee with additional operational flexibility.

Environmental Impacts of the Proposed Action:

The Commission has completed its evaluation of the proposed action and concludes that no significant change in the environmental impact can be expected for the proposed increase in power. On September 1, 1972, TVA issued a Final Environmental Statement (FES) which is based on a total electrical generation name plate rating of 3456 MWt.

Nonradiological Effects

Under normal operation, BFN uses a once-through circulating water system to dissipate heat from the main turbine condensers. Water is drawn from the Tennessee River by the plant intake system and is discharged back to the river. In addition, BFN currently has four mechanical draft cooling towers which can be operated to assist in heat dissipation (helper mode) primarily during summer hot weather periods.

BFN has a National Pollutant Discharge Elimination System (NPDES) permit issued by the State of Alabama that contains specific requirements applicable to the nonradiological effluents released from BFN. The licensee has evaluated the impact of power uprate on NPDES limitations relating to effluent temperatures, cooling tower usages and effects on biological species. The licensee has evaluated and determined that post-accident effluent temperature from emergency equipment cooling water systems and normal operating condition effluent discharges from other plant systems such as yard drainage, station sumps, and sewage treatment will not change as a result of the power uprate. The licensee indicates that the proposed uprated power level may result in approximately a 1 percent temperature increase of the circulating water leaving the main condenser, a 5 percent increase in the heat rejection to the Tennessee River, and may require additional cooling tower usage during summer periods. The licensee states that as a result of power uprate, cooling tower use would increase

approximately 12 percent. However, the impacts of the increase would continue to be bounded by the FES. Based on its evaluation, the licensee has concluded that the changes in discharges to the river as a result of the power uprate will remain within the bounding conditions established in the NPDES permit and no changes to the permit requirements are needed as a result of the power uprate.

As part of its NPDES permit application in April 1994, the licensee documented its biological monitoring program and the effect of thermal discharge limitations on selected biological species. In that report, the licensee concluded that operation of BFN has not had a significant impact on the reproductive success of yellow perch and sauger, or the overall indigenous community in Wheeler Reservoir. This conclusion is not affected by the power uprate.

The proposed action would not change the method of generating electricity at BFN Units 2 and 3 nor the methods of handling influents from the environment or effluents to the environment. The licensee indicates that power uprate does not require any plant modifications. Therefore, no changes to land use or impacts to historical areas would result from lay down areas. Therefore, no new or different types of nonradiological environmental impacts are expected. The staff considers that continued compliance with applicable Federal, State, and Local agency requirements relating to environmental protection will preclude any significant increase in nonradiological impacts over those evaluated in the FES.

Radiological Effects

Gaseous and liquid effluents are produced during both normal operation and abnormal operational events. The licensee has evaluated the radiological effects of the proposed power uprate during both normal operation and postulated accident conditions for gaseous and liquid effluent releases.

The licensee evaluated the offsite radiation exposure to the maximally exposed individual member of the general public for the proposed uprate. Section 2.4, Table 2.4.3, of the FES dated September 1, 1972, projected doses due to radioactive materials released to the environment during routine operations of the BFN units. The estimated radiation exposure of the maximally exposed individual from radioactive material in both liquid and gaseous effluents was 2.2 mrem/year total. The estimated dose based on actual liquid and gaseous effluent releases for the period 1994-1996 was 0.054 mrem/year. Although a 5 percent increase in reactor power does not necessarily result in any increase in effluents, the licensee projected the total body dose would increase to 0.056 mrem/year. This projected dose is about 2 percent of the applicable NRC limits in 10 CFR Part 50, Appendix I. Therefore, the staff concludes that the actual releases at the BFN units will still remain within the FES estimates and are not significantly above current levels..

With respect to onsite radiation exposure, the licensee stated that in-plant radiation levels will generally increase by no more than the percentage increase in power level. The licensee stated that individual worker exposures will be maintained within the acceptable limits by the site as-low-as-reasonably-achievable program, by procedural controls that compensate for increased radiation levels. The 5-year (1991-1996) average collective dose at Browns Ferry was 202 person-rem per year per reactor and 0.5 person-rem per MWe-year. (See NUREG-0713 Volume 18, Occupational Radiation Exposure at Commercial Nuclear Power Reactors and Other Facilities, 1996). This compares favorably with the average collective dose for all BWRs of 306 person-rem per year per reactor and 0.5 person-rem per MWe-year. Considering a potential increase of 5 percent, onsite radiation exposure will not be significantly higher than the current operation and will remain within the acceptable limits of 10 CFR 20. Therefore, the staff concludes that operation at the uprated power level will not significantly impact occupational exposures.

Regarding radioactive waste production, the licensee stated that the total volume of processed waste is not expected to increase appreciably since the only significant increase in processed waste is due to the slightly more frequent backwashes of the condensate demineralizers. Based on this, the licensee concluded that the power uprate would not have an adverse effect on the processing of liquid radwaste. With regard to gaseous waste production, the licensee stated that gaseous effluent releases through building vents are not expected to increase significantly with power uprate, since the releases are maintained within administratively controlled values that are not a function of core power. The noncondensable radioactive gases exhausted from the main condenser and discharged via the off gas system are the major source of radioactive gases. The licensee stated that the operation of the off gas equipment will continue to be within the design parameters for the equipment. The staff concludes that operation at the uprated power will not significantly affect the licensee's ability to process radioactive wastes. Therefore, the staff concludes that operation at the uprated power level will not significantly increase the allowable occupational exposures.

Technical Specification (TS) 4.3 establishes spent fuel storage design features to ensure that the fuel array in fully loaded fuel racks remains subcritical and to prevent inadvertent draining of the spent fuel pool. No changes to TS 4.3 were necessary for the uprate condition. The design basis for the SFP system remains unchanged during power uprate conditions. Therefore, the proposed action will not significantly increase the probability or consequences of spent fuel storage criticality accidents.

As discussed above, the projected dose due to power uprate is about 2 percent of the applicable NRC limits in 10 CFR Part 50, Appendix I for offsite exposures, and will remain within the acceptable limits of 10 CFR 20 for occupational exposures. The actual releases at the BFN units will also remain within the FES estimates. Thus, the amendment does not significantly effect the amount or type of radiological plant effluents, and has no other environmental impact. Therefore, the staff concludes that continued compliance with applicable Federal, State, and

Local agency requirements relating to environmental protection will preclude any significant radiological environmental impacts associated with the proposed uprate. Accordingly, the Commission concludes that there are no significant radiological environmental impacts associated with the proposed action.

Alternatives to the Proposed Action:

Since the Commission has concluded there is no significant environmental impact associated with the proposed action, any alternatives with equal or greater environmental impact need not be evaluated. As an alternative to the proposed action, the NRC staff considered denial of the proposed action (no action alternative). Denial of the application would result in no change in current environmental impacts and would reduce operational flexibility.

Alternative Use of Resources:

This action does not involve the use of any resources not previously considered in the FES dated September 1, 1972 for BFN Units 2 and 3.

Agencies and Persons Consulted:

In accordance with its stated policy, on August 26, 1998, the NRC staff consulted with the Alabama State official, Mr. Kirk Whatley of the State Office of Radiation Control, regarding the environmental impact of the proposed action. The State official had no comments.

FINDING OF NO SIGNIFICANT IMPACT

Based upon the environmental assessment, the Commission concludes that the proposed action will not have a significant effect on the quality of the human environment. Accordingly, the Commission has determined not to prepare an environmental impact statement for the proposed action.

For further details with respect to this action, see the application for amendment dated October 1, 1997, as supplemented October 14, 1997; and March 16 and 20, April 1 and 28, May 1, 20 and 22, June 12, 17 and 26, and July 17, 24, and 31, 1998, which are available for public inspection at the Commission's Public Document Room, the Gelman Building, 2120 L

Street NW., Washington, DC and at the local public document room located at the Athens Public Library, 405 E. South Street, Athens, Alabama.

Dated at Rockville, Maryland, this 26th day of August 1998.

For the Nuclear Regulatory Commission

Frederick J. Hebdon
Director, Project Directorate II-3
Division of Reactor Projects--I/II
Office of Nuclear Reactor Regulation