August 3, 2004

10 CFR 54
10 CFR 51

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Mail Stop: OWFN P1-35
Washington, D.C. 20555-0001

Gentlemen:

In the Matter of	)	Docket Nos. 50-259
Tennessee Valley Authority	)	50-260
		50-296

BROWNS FERRY NUCLEAR PLANT (BFN) - UNITS 1, 2, AND 3 - LICENSE RENEWAL (LR) APPLICATION - DETAILED EXPLANATION OF HOW THE LR APPLICATION BOUNDS THE BFN EXTENDED POWER UPRATE (EPU) SUBMITTALS (TAC NOS. MC1768, MC 1769, AND MC1770)

To assist the Nuclear Regulatory Commission (NRC) staff in its review of the Tennessee Valley Authority (TVA) applications for LR and EPU of the BFN units, TVA is submitting the enclosed detailed explanation of how the LR application bounds the BFN EPU submittal. The enclosure is essentially a “road map” which documents the review of plant systems included in the scope of LR to identify design or operational changes created by EPU.

This letter contains no new regulatory commitments.

If you have any questions about this information, please contact Ken Brune, Manager, BFN License Renewal Project, at (423) 751-8421 or, e-mail address: kabrune@tva.gov.

I declare under penalty of perjury that the foregoing is true and correct. Executed on this third day of August 2004.

Sincerely,

Original signed by

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ENCLOSURE

TENNESSEE VALLEY AUTHORITY

BROWNS FERRY NUCLEAR PLANT (BFN)

UNITS 1, 2, AND 3

REVIEW OF THE BROWNS FERRY LICENSE RENEWAL APPLICATION (LRA) FOR EXTENDED POWER UPRATE (EPU) CONDITIONS

SUMMARY

The Browns Ferry License Renewal Application was developed in parallel with the EPU submittal. By our February 28, 2004 letter (Reference 1) additional information was provided discussing the effects of EPU on the LRA. This letter concluded that all evaluations in support of the LRA are valid at the uprated power level, except those associated with Section 4.3, Metal Fatigue. License Renewal Application Sections 4.2 and 4.3 were later updated by our letter of May 28, 2004 to reflect extended power uprate conditions (Reference 2).

The changing operational characteristics that potentially affect the identified aging mechanisms following extended power uprate are identified in Attachment 1. These operational characteristics were reviewed for the systems affected, as delineated in Attachment 2, to verify the license renewal application remains valid.

The Browns Ferry License Renewal Application is consistent with the final extended power uprate submittals (References 3 and 4).

REFERENCES

1. Letter from T. E. Abney (TVA) to U.S. Nuclear Regulatory Commission, “Browns Ferry Nuclear Plant (BFN) - Units 1, 2 and 3 - January 28, 2004 Meeting Follow-Up - Additional Information,” dated February 19, 2004.

2. Letter from T. E. Abney (TVA) to U.S. Nuclear Regulatory Commission, “Browns Ferry Nuclear Plant (BFN) - Units 1, 2 and 3 License Renewal Application – Update of Application Sections 4.2 and 4.3 to Reflect Extended Power Uprate Conditions,” dated May 28, 2004

3. Letter from T. E. Abney (TVA) to U.S. Nuclear Regulatory Commission, “Browns Ferry Nuclear Plant (BFN) - Unit 1- Proposed Technical Specifications (TS) Change TS - 431 - Request for License Amendment - Extended Power Uprate (EPU) Operation,” dated June 28, 2004.

4. Letter from T. E. Abney (TVA) to U.S. Nuclear Regulatory Commission, “Browns Ferry Nuclear Plant (BFN) – Units 2 and 3 - Proposed Technical Specifications (TS) Change TS - 418 - Request for License Amendment Extended Power Uprate (EPU) Operation,” dated June 25, 2004.

ATTACHMENT 1

OPERATIONAL CHARACTERISTICS POTENTIALLY AFFECTED BY EPU CONDITIONS

Operating Characteristic	Unit 1	Units 2 and 3
Power Level	3952 MWt	Same
Full Power Core Flow Range	101.5 to 107.6 Mlb/hr 99 to 105 % of rated flow	Same
Rated Core Flow	102.5 Mlb/hr	Same
Recirculation Flow	Increased < 3%	Same
Recirculation Temperature	Increased < 2°F	Same
Full Power Steam Flow	16.44 Mlb/hr	Same
Maximum Nominal Dome Temperature	551°F	Same
Maximum Nominal Dome Pressure	1050 psia	Same
Full Power Feedwater Flow	16.39 Mlb/hr	Same
Full Power Feedwater Temperature	394.5 °F	Same
HPCI Turbine/Pump Speed	4100 rpm	Same
HPCI Pump Discharge Head	2930 feet	Same
RCIC Turbine/Pump Speed	4600 rpm	Same
RCIC Pump Discharge Head	2930 feet	Same
Neutron Fluence	The neutron fluence values used for the license renewal evaluations are based on EPU conditions.	Same
Cumulative Fatigue Usage Factors	The cumulative fatigue usage factors values used for the license renewal evaluations are based on EPU conditions.	Same
Plant Area Temperatures	The increased heat loads during normal plant operation result in a maximum area temperature increase of < 3ºF	Same
Plant Area Radiation Levels	The increase in radiation levels does not affect radiation zoning or shielding in the various areas because it is offset by conservatism in the original design, source terms used and analytical techniques.	Same

ATTACHMENT 2

REVIEW FOR POTENTIAL IMPACT DUE TO EPU CONDITIONS

LRA Section	System/Structure /Component	Reference 3, Enclosure 4, PUSAR Section	Changes in Unit 1 System Operating Characteristics	Reference 4, Enclosure 4, PUSAR Section	Changes in Units 2 and 3 System Operating Characteristics
3.4.2.1.1	Main Steam System (001)	3.5, 3.11, and Table 1-2	Steam flow rate Steam temperature Steam pressure	3.5, 3.11, and Table 1-2	Steam flow rate
3.4.2.1.3	Feedwater System (003)	3.5, 3.11, and Table 1-2	Feedwater flow rate Feedwater temperature Feedwater pressure	3.5, 3.11, and Table 1-2	Feedwater flow rate Feedwater temperature
3.4.2.1.4	Heater Drains & Vents System (006)	3.11	Steam flow rate Steam temperature Steam pressure	3.11	Steam flow rate
3.4.2.1.5	Turbine Drains and Miscellaneous Piping (008)	3.11	Steam flow rate Steam temperature Steam pressure	3.11	Steam flow rate
3.1.2.1.4	Recirculation (068)	3.4, 3.5 and 10.4	Recirculation flow Recirculation temperature	3.4, 3.5 and 10.4	Recirculation flow Recirculation temperature
3.3.2.1.23	Reactor Core Isolation Cooling (071)	3.5, 3.8, and 3.11	Turbine/Pump Speed Pump Discharge Head	3.5, 3.8, and 3.11	
3.2.2.1.3	High Pressure Coolant Injection (073)	3.5, 3.11, and 4.2.1	Turbine/Pump Speed Pump Discharge Head	3.5, 3.11, and 4.2.1	
3.1.2.1.1 and 3.1.2.1.2	Reactor Vessel and Internals (RVI)	3.3	Reactor coolant temperature Reactor coolant flow rate	3.3	Reactor coolant temperature Reactor coolant flow rate

ATTACHMENT 2

REVIEW FOR POTENTIAL IMPACT DUE TO EPU CONDITIONS

LRA Section	System/Structure /Component	Reference 3, Enclosure 4, PUSAR Section	Changes in Unit 1 System Operating Characteristics	Reference 4, Enclosure 4, PUSAR Section	Changes in Units 2 and 3 System Operating Characteristics
4.2	Reactor Vessel and Internals (RVI)	3.3.1	Neutron fluence	3.3.1	Neutron fluence
4.3.1 and 4.3.2	Reactor Vessel and Internals (RVI)	3.3.2.2	Cumulative fatigue usage factors	3.3.2.2	Cumulative fatigue usage factors
3.6	Various Organic Polymers/ Temperature	6.6	Plant area temperatures	6.6	Plant area temperatures
4.4	Environmental Qualification	10.3.1	Plant area temperatures Plant area radiation levels	10.3.1	Plant area temperatures Plant area radiation levels
3.5.2.1.1	Primary Containment Structures	6.6	Plant area temperatures	6.6	Plant area temperatures
3.5.2.1.2	Reactor Buildings	6.6	Plant area temperatures	6.6	Plant area temperatures
3.5.2.1.20	Turbine Buildings	6.6	Plant area temperatures	6.6	Plant area temperatures
3.5.2.1.26	Structures and Component Supports Commodities	6.6	Plant area temperatures	6.6	Plant area temperatures