Tennessee Valley Authority, 1101 Market Street, Chattanooga, Tennessee 37402-2801

April 18, 2012

10 CFR 50.4
10 CFR 50.90

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

Browns Ferry Nuclear Plant Unit 1
Facility Operating License No. DPR-33
NRC Docket No. 50-259

Subject: **Supplement to License Amendment Request to Transition to AREVA Fuel**

References:
1. Letter from TVA to NRC, "Technical Specification Change TS-473, AREVA Fuel Transition," dated April 16, 2010
2. Letter from NRC to TVA, "Browns Ferry Nuclear Plant, Unit 1 - Request for Additional Information Regarding Technical Specification TS-473, AREVA Fuel Transition," dated August 23, 2011
3. Letter from TVA to NRC, "Response to NRC Request for Additional Information Regarding Amendment Request to Transition to AREVA Fuel," dated October 7, 2011

On April 16, 2010, the Tennessee Valley Authority (TVA) submitted Technical Specification (TS) change TS-473 to request the Nuclear Regulatory Commission's (NRC) approval of a license amendment request to add the AREVA NP analysis methodologies to the list of approved methods to be used in determining the core operating limits in the Core Operating Limits Report (COLR). Additional TS changes were also requested to reflect the AREVA NP specific methods for monitoring and enforcing of the thermal limits.

On August 23, 2011, TVA received a Request for Additional Information (RAI) letter from the NRC (Reference 2) containing seven questions related to TS Change TS-473. The NRC expressed concerns regarding the application of the AREVA methodology as it relates to the most limiting Loss of Coolant Accident (LOCA) Analysis. In order to

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resolve this concern, AREVA made changes to the EXEM BWR-2000 ECCS Evaluation Model. This change also required an update to the LOCA Break Spectrum Analysis provided in the Reference 1 submittal. This updated LOCA analysis report was provided in an RAI response dated October 7, 2011.

During a telephone call with the Browns Ferry Nuclear Plant (BFN) Project Manager on March 28, 2012, the NRC indicated that the technical review has concluded that the new analysis should be processed as a BFN Unit 1 Specific Methodology.

In order to incorporate the Unit 1 specific approval, item 16 of the TS 5.6.5, CORE OPERATING LIMITS REPORT (COLR), will be revised to reference the NRC Approved Safety Evaluation. Reference 11 of TS Bases 3.2.1, AVERAGE PLANAR LINEAR HEAT GENERATION RATE (APLHGR), will also be revised to incorporate the reference to the NRC Safety Evaluation described above. Additionally, based on feedback from the NRC technical reviewer, all of the methodology references in TS 5.6.5 are required to have a revision number and revision dates in the TS. This position was documented in a letter from the NRC to the TS Task Force, dated August 4, 2011. The enclosure to this letter provides the supplement in the form of revised proposed TS and TS Bases pages. Attachments 1 through 4 of this enclosure replace the respective pages from Attachments 1 through 4 of the enclosure to the Reference 1 letter.

TVA has determined that the supplemental information provided by this letter does not affect the evaluation of significant hazards considerations associated with the proposed TS changes provided in the Reference 1 letter. The proposed TS changes still qualify for a categorical exclusion from environmental review pursuant to the provisions of 10 CFR 51.22(c)(9). Additionally, in accordance with 10 CFR 50.91(b)(1), TVA is sending a copy of this letter and the enclosures to the Alabama Department of Public Health.

There are no new regulatory commitments in this submittal.

Please direct any questions concerning this matter to Tom Hess at (423) 751-3487.

I declare under penalty of perjury that the foregoing is true and correct.
Executed on the 18th day of April 2012

Respectfully,

J. W. Shea
Manager, Corporate Nuclear Licensing

Manager, Corporate Nuclear Licensing

Enclosure: Browns Ferry Nuclear Plant (BFN), Unit 1, Supplement to Technical Specifications (TS) Change 473

cc (Enclosure):

NRC Regional Administrator – Region II
NRC Senior Resident Inspector – Browns Ferry Nuclear Plant
State Health Officer, Alabama State Department of Public Health

ENCLOSURE

Browns Ferry Nuclear Plant Unit 1
Supplement to Technical Specifications Change 473

Attachment 1

Browns Ferry Nuclear Plant Unit 1

Supplement to Technical Specifications Change 473

Proposed Technical Specifications Page - Markups

5.6 Reporting Requirements (continued)

5.6.4 (Deleted).

5.6.5 CORE OPERATING LIMITS REPORT (COLR)

a. Core operating limits shall be established prior to each reload cycle, or prior to any remaining portion of a reload cycle, and shall be documented in the COLR for the following:

(1) The APLHGRs for Specification 3.2.1;

(2) The LHGR for Specification 3.2.3;

(3) The MCPR Operating Limits for Specification 3.2.2; ~~and~~

(4) ~~(4)~~ **The period based detection algorithm (PBDA) setpoint for Function 2.f, Oscillation Power Range Monitor (OPRM) Upscale, for Specification 3.3.1.1; and**

(5) The RBM setpoints and applicable reactor thermal power ranges for each of the setpoints for Specification 3.3.2.1, Table 3.3.2.1-1.

b. The analytical methods used to determine the core operating limits shall be those previously reviewed and approved by the NRC, specifically those described in **the following documents:** ~~NEDE-24011-P-A, "General Electric Standard Application for Reactor Fuel," (latest approved version for BFN).~~

1. **NEDE-24011-P-A, Revision 16, General Electric Standard Application for Reactor Fuel, October 2007.**

2. **XN-NF-81-58(P)(A) Revision 2 and Supplements 1 and 2, RODEX2 Fuel Rod Thermal-Mechanical Response Evaluation Model, Exxon Nuclear Company, March 1984.**

(continued)

5.6 Reporting Requirements (continued)

5.6.5 CORE OPERATING LIMITS REPORT (COLR) (continued)

3. **XN-NF-85-67(P)(A) Revision 1, Generic Mechanical Design for Exxon Nuclear Jet Pump BWR Reload Fuel, Exxon Nuclear Company, September 1986.**

4. **EMF-85-74(P) Revision 0 Supplement 1(P)(A) and Supplement 2(P)(A), RODEX2A (BWR) Fuel Rod Thermal-Mechanical Evaluation Model, Siemens Power Corporation, February 1998.**

5. **ANF-89-98(P)(A) Revision 1 and Supplement 1, Generic Mechanical Design Criteria for BWR Fuel Designs, Advanced Nuclear Fuels Corporation, May 1995.**

6. **XN-NF-80-19(P)(A) Volume 1 and Supplements 1 and 2, Exxon Nuclear Methodology for Boiling Water Reactors - Neutronic Methods for Design and Analysis, Exxon Nuclear Company, March 1983.**

7. **XN-NF-80-19(P)(A) Volume 4 Revision 1, Exxon Nuclear Methodology for Boiling Water Reactors: Application of the ENC Methodology to BWR Reloads, Exxon Nuclear Company, June 1986.**

8. **EMF-2158(P)(A) Revision 0, Siemens Power Corporation Methodology for Boiling Water Reactors: Evaluation and Validation of CASMO-4/MICROBURNB2, Siemens Power Corporation, October 1999.**

9. **XN-NF-80-19(P)(A) Volume 3 Revision 2, Exxon Nuclear Methodology for Boiling Water Reactors, THERMEX: Thermal Limits Methodology Summary Description, Exxon Nuclear Company, January 1987.**

(continued)

5.6 Reporting Requirements (continued)

5.6.5 CORE OPERATING LIMITS REPORT (COLR) (continued)

10. **XN-NF-84-105(P)(A) Volume 1 and Volume 1 Supplements 1 and 2, XCOBRA-T: A Computer Code for BWR Transient Thermal-Hydraulic Core Analysis, Exxon Nuclear Company, February 1987.**

11. **ANF-524(P)(A) Revision 2 and Supplements 1 and 2, ANF Critical Power Methodology for Boiling Water Reactors, Advanced Nuclear Fuels Corporation, November 1990.**

12. **ANF-913(P)(A) Volume 1 Revision 1 and Volume 1 Supplements 2, 3 and 4, COTRANSA2: A Computer Program for Boiling Water Reactor Transient Analyses, Advanced Nuclear Fuels Corporation, August 1990.**

13. **ANF-1358(P)(A) Revision 3, The Loss of Feedwater Heating Transient in Boiling Water Reactors, Framatome ANP, September 2005.**

14. **EMF-2209(P)(A) Revision 3, SPCB Critical Power Correlation, AREVA NP, September 2009.**

15. **EMF-2245(P)(A) Revision 0, Application of Siemens Power Corporation's Critical Power Correlations to Co-Resident Fuel, Siemens Power Corporation, August 2000.**

16. **EMF-2361(P)(A) Revision 0, EXEM BWR-2000 ECCS Evaluation Model, Framatome ANP Inc., May 2001 as supplemented by the site-specific approval in NRC safety evaluation dated [*insert SE approval date*], 2012**

17. **EMF-2292(P)(A) Revision 0, ATRIUM™-10: Appendix K Spray Heat Transfer Coefficients, Siemens Power Corporation, September 2000.**

(continued)

5.6 Reporting Requirements (continued)

5.6.5 CORE OPERATING LIMITS REPORT (COLR) (continued)

18. **EMF-CC-074(P)(A), Volume 4, Revision 0, BWR Stability Analysis: Assessment of STAIF with Input from MICROBURN-B2, Siemens Power Corporation, August 2000.**

19. **BAW-10255(P)(A), Revision 2, Cycle-Specific DIVOM Methodology Using the RAMONA5-FA Code, AREVA NP, May 2008.**

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Attachment 2

Browns Ferry Nuclear Plant Unit 1

Supplement to Technical Specifications Change 473

Proposed Technical Specifications Bases Pages - Markups

BASES

SURVEILLANCE REQUIREMENTS

SR 3.2.1.1 (continued)

operation. The 12 hour allowance after THERMAL POWER ≥ 25% RTP is achieved is acceptable given the large inherent margin to operating limits at low power levels.

REFERENCES

1. NEDE-24011-P-A-~~13~~, **Revision 16,** "General Electric Standard Application for Reactor Fuel," **October 2007**~~August 1996~~.
2. FSAR, Chapter 3.
3. FSAR, Chapter 14.
4. FSAR, Appendix N.
5. NEDC-32484P, "Browns Ferry Nuclear Plant Units 1, 2, and 3, SAFER/GESTR-LOCA Loss-of-Coolant Accident Analysis," Revision 2, December 1997.
6. NRC No. 93-102, "Final Policy Statement on Technical Specification Improvements," July 23, 1993.
7. NEDC-32433P, "Maximum Extended Load Line Limit and ARTS Improvement Program Analyses for Browns Ferry Nuclear Plant Units 1, 2, and 3," April 1995.
8. NEDO-30130-A, "Steady State Nuclear Methods," May 1985.
9. NEDO-24154, "Qualification of the One-Dimensional Core Transient Model for Boiling Water Reactors," October 1978.
10. NEDO-24236, "Browns Ferry Nuclear Plant Units 1, 2, and 3, Single-Loop Operation," May 1981.
11. **EMF-2361(P)(A) Revision 0, EXEM BWR-2000 ECCS Evaluation Model, Framatome ANP Inc., May 2001 as supplemented by the site-specific approval in NRC safety evaluation [*insert SE approval date*], 2012.**

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Attachment 3

Browns Ferry Nuclear Plant Unit 1

Supplement to Technical Specifications Change 473

Proposed Technical Specifications Pages - Retyped

5.6 Reporting Requirements (continued)

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