



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

March 27, 2009

TVA-BFN-TS-431

10 CFR 50.90

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

In the Matter of)
Tennessee Valley Authority)

Docket Nos. 50-259

BROWNS FERRY NUCLEAR PLANT (BFN) - UNIT 1 - TECHNICAL SPECIFICATIONS (TS) CHANGE TS-431 - EXTENDED POWER UPRATE (EPU) - RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION (RAI) - SRXB-78 (TAC NO. MD5262)

By letter dated June 28, 2004 (ADAMS Accession No. ML041840109) TVA submitted a license amendment application to the NRC for the EPU operation of BFN Unit 1. The proposed amendment would change the operating license to increase the maximum authorized core thermal power level by approximately 14 percent to 3952 megawatts.

This submittal is in response to a March 19, 2009, e-mail RAI from NRC requesting that TVA address limitations 12, 14, and 17 from NRC's final safety evaluation report (SER) on licensing topical report (LTR) NEDC-33173-P, "Applicability of GE Methods to Expanded Operating Domains," January 2008 (ML083010252). The RAI and subject limitations are repeated below for reference.

NRC RAI SRXB-78 (Unit 1)

Provide a discussion summarizing how Unit 1 will meet the specified conditions/limitations numbered 12, 14, and 17 in the NRC's safety evaluation report (SER) related to licensing topical report NEDC-33173P "Applicability of GE Methods to Expanded Operating Domains."

For limitation 14, specifically address the measures intended for Unit 1 in relation to Appendix F of the SER for NEDC-33173P to reduce the critical pressure by 350 psi in order to ensure that the no-clad-liftoff criterion of Standard Review Plan Section 4.2 is met.

DOBO
NRK

Response to RAI SRXB-78

SER Limitation 12

In MFN 06-481, GE committed to submit plenum fission gas and fuel exposure gamma scans as part of the revision to the T-M licensing process. The conclusions of the plenum fission gas and fuel exposure gamma scans of GE 10x10 fuel designs as operated will be submitted for NRC staff review and approval. This revision will be accomplished through Amendment to GESTAR II or in a T-M licensing LTR. PRIME (a newly developed T-M code) has been submitted to the NRC staff for review (Reference 58). Once the PRIME LTR and its application are approved, future license applications for EPU and MELLLA+ referencing LTR NEDC-33173P must utilize the PRIME T-M methods.

TVA response on SER Limitation 12

TVA will apply the PRIME methodology beginning with the next Global Nuclear Fuels (GNF) EPU reload that occurs after the PRIME SER is issued and referenced in "General Electric Standard Application for Reactor Fuel (GESTAR)." Once the change to GESTAR is made, subsequent GNF reloads will be licensed on the basis of the linear heat generation rate (LHGR) versus exposure curves derived using PRIME.

SER Limitation 14

From Appendix F of the LTR the NRC staff's conclusion was:

The NRC staff determined that until such time that GE benchmarks the GSTRM methodology, the $P_{critical}$ acceptance criteria will be reduced by 350 psi. This adjusted $P_{critical}$ must be used to verify that the LHGR limit for the current fuel designs remains applicable with burnup.

TVA response on SER Limitation 14

TVA has been in communication with GNF on this issue. GNF has evaluated the impact of a 350 pounds per square inch (psi) reduction in $P_{critical}$ on the GE14 thermal mechanical limit curves. GNF indicated that the evaluation used the same bounding LHGR power history as was used to derive the original GE14 thermal mechanical limits. The same analysis model, operating parameter perturbations, and uncertainties that were used to derive the original GE14 limit curves were also used with the exception of a few input parameters. The modified input parameters values were based on actual GE14 design data. The GNF evaluation resulted in revised LHGR versus exposure limit curves, which ensure that the rod pressure is maintained in conformance with the reduced $P_{critical}$ criteria.

Following completion of the analysis verification, GNF will incorporate the revised LHGR curves as well as the justification for the input parameter changes into the GE14 Amendment 22 compliance document. GNF indicates this will occur in April 2009. TVA will update the Unit 1 Core Operating Limits Report (COLR) with the revised LHGR limit curves related to the 350 psi

reduction in $P_{critical}$ acceptance criteria in Appendix F of NRC's SER for NEDC-33173-P. This is in accordance with BFN TS 5.6.5.a (2) and TS 5.6.5.b, which require that core operating limits analyses be in compliance with GESTAR. A regulatory commitment to incorporate the revised LHGR curves into the COLR is provided in the enclosure.

SER Limitation 17 - Steady-State 5 Percent Bypass Voiding

The instrumentation specification design bases limit the presence of bypass voiding to 5 percent (LRPM levels). Limiting the bypass voiding to less than 5 percent for long-term steady operation ensures that instrumentation is operated within the specification. For EPU and MELLLA+ operation, the bypass voiding will be evaluated on a cycle-specific basis to confirm that the void fraction remains below 5 percent at all LPRM levels when operating at steady-state conditions within the MELLLA+ upper boundary. The highest calculated bypass voiding at any LPRM level will be provided with the plant-specific SRLR.

TVA response on SER Limitation 17

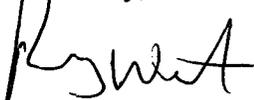
The cycle-specific bypass voiding has been calculated using the GNF standard reload process and is documented in Appendix I of the BFN Unit 1 Cycle 8 EPU Supplemental Reload Licensing Report. The calculated bypass void fraction remains below 5% as required. A regulatory commitment to maintain this limitation is provided in the enclosure.

TVA has determined that the additional information provided by this letter does not affect the no significant hazards considerations associated with the proposed TS change. The proposed TS change still qualifies for a categorical exclusion from environmental review pursuant to the provisions of 10 CFR 51.22(c)(9).

There are three new regulatory commitments are made in this submittal as listed in the enclosure. If you have any questions regarding this letter, please contact J. D. Wolcott at (256) 729-2495.

I declare under penalty of perjury that the foregoing is true and correct. Executed on this 27th day of March, 2009.

Sincerely,



R. G. West
Site Vice President

Enclosure
List of Regulatory Commitments

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Enclosure:

cc: (Enclosure):

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

Ms. Eva Brown, Project Manager
U.S. Nuclear Regulatory Commission
(MS 08G9)
One White Flint, North
11555 Rockville Pike
Rockville, Maryland 20852-2739

Ms. Heather J. Gepford, Acting Branch Chief
U.S. Nuclear Regulatory Commission
Region II
Sam Nunn Atlanta Federal Center
61 Forsyth Street, SW, Suite 23T85
Atlanta, Georgia 30303-8931

NRC Resident Inspector
Browns Ferry Nuclear Plant
10833 Shaw Road
Athens, Alabama 35611-6970

ENCLOSURE

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

TECHNICAL SPECIFICATIONS (TS) CHANGES TS-431

EXTENDED POWER UPRATE (EPU)

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION (RAI) - SRXB-78

LIST OF REGULATORY COMMITMENTS

1. TVA will apply the PRIME methodology beginning with the next Global Nuclear Fuels (GNF) EPU reload that occurs after the PRIME SER is issued and referenced in "General Electric Standard Application for Reactor Fuel (GESTAR)." Once the change to GESTAR is made, subsequent GNF reloads will be licensed on basis of the linear heat generation rate (LHGR) versus exposure curves derived using PRIME.
2. Prior to EPU operations, TVA will update the Unit 1 Core Operating Limits Report with the revised LHGR limit curves related to the 350 psi reduction in $P_{critical}$ acceptance criteria in Appendix F of NRC's safety evaluation report for NEDC-33173-P.
3. For General Electric based fuels methods applications for EPU, the bypass voiding will be evaluated on a cycle-specific basis to confirm that the void fraction remains below 5 percent at all Local Power Range Monitor (LPRM) levels when operating at steady-state conditions. The highest calculated bypass voiding at any LPRM level will be provided with the Supplemental Reload Licensing Report.