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

TVA-BFN-TS-425

10 CFR 50.90

September 5, 2003

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. 50-260
Tennessee Valley Authority	)	50-296

BROWNS FERRY NUCLEAR PLANT (BFN) - UNITS 2 AND 3 - TECHNICAL SPECIFICATIONS (TS) CHANGE 425 - FRAMATOME FUEL - CORE OPERATING LIMITS REPORT (COLR) REFERENCES - RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION (RAI) AND TS MARK-UP CORRECTION (TAC NOS. MB8433, MB8434)

This letter is in response to a June 20, 2003, teleconference with the NRC staff regarding proposed BFN TS change 425. The proposed amendment, which was submitted on April 14, 2003, revises two Limiting Conditions for Operation regarding core thermal limits adjustments for inoperable equipment and modifies TS 5.6.5, COLR, to add references to the Framatome Advanced Nuclear Power analytical methods that will be used to determine core operating limits.

NRC subsequently provided two RAI questions related to the proposed TS 5.6.5 changes regarding COLR references. The two RAI questions are repeated in Enclosure 1 along with TVA's response.

A correction to the TS mark-up pages provided in TVA's April 14, 2003, submittal has also been identified. The last word in the new LCO 3.3.4.1.c should be changed from "operable" to

D030
A001

"applicable" for consistency with the associated TS Condition. This is an administrative change and does not affect the purpose of the proposed TS. Replacement Unit 2 and 3 mark-up pages are provided in Enclosure 2.

TVA has determined this additional information response does not change the determination in the April 14, 2003, TS-425 submittal that there are no significant hazards considerations associated with the proposed change and that the TS change qualifies 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 Enclosure to the Alabama State Department of Public Health.

There are no regulatory commitments associated with this submittal. This letter is being sent in accordance with NRC Regulatory Issue Summary 2001-05, Guidance on Submitting Documents to the NRC by Electronic Information Exchange or on CD-ROM. If you have any questions about this submittal or TS-425, please contact me at (256) 729-2636.

I declare under penalty of perjury that the foregoing is true and correct. Executed on September 5, 2003.

Sincerely,

T. E. Abney
Manager of Licensing
and Industry Affairs

Enclosures:
1. Response to Request for Additional Information (RAI)
2. Corrected TS Pages (mark-up)

Enclosures
cc (Enclosures):
State Health Officer
Alabama State Department of Public Health
RSA Tower - Administration
Suite 1552
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Enclosure 1

Technical Specifications (TS) Change 425

Framatome Fuel - Core Operating Limits Report (COLR) References

Units 2 and 3

Response to Request for Additional Information

NRC Question 1

Since the licensee is planning a transition to Framatome ANP fuel while still keeping some of the previous fuel in the core, the licensee will retain the existing reference to the Global Nuclear Fuels topical. In the modified version of TS 5.6.5.b, after the reference to NEDE-24011-P-A, General Electric Standard Application for Reactor Fuel, the licensee requests the removal of the statement "latest approved version for BFN." Please provide justification for removing this statement from the reference document. What version of this document will be used for the upcoming fuel cycle, and is it the most recent?

TVA Response

As discussed in the April 14, 2003, TS-425 submittal, the proposed change to TS 5.6.5.b adopts the syntax of TS Task Force (TSTF) Traveler 363. TSTF-363 was approved by NRC on July 6, 2000, and provides that only the titles of the analytic methods be included in TS 5.6.5.b and that the complete identification (report number, title, revision, date, and any supplements) be maintained in the Core Operating Limits Report (COLR). Therefore, the removal of the existing phrase "latest approved version for BFN" after the reference to NEDE-24011-P-A, "General Electric Standard Application for Reactor Fuel", is being made to stay consistent with the TSTF. By adopting TSTF-363, BFN is updating this section of TS to the latest NRC-approved version of NUREG-1433 Revision 2, "Standard TS for BWR/4s."

The existing TS 5.6.5.b reference to the Global Nuclear Fuels (GNF) (formerly General Electric) topical report, NEDE-24011-P-A, will be retained pending the complete replacement of GNF fuel with Framatome Advance Nuclear Power (FANP) fuel, since some GNF-derived core limits will continue to be applicable for

co-resident GNF fuel. NEDE-24011-P-A-14 is the latest version approved for use by NRC for BFN.

NRC Question 2

In the TS section 5.6.5 Core Operating Limits Report part (a), four limits and setpoints are listed which the licensee calculates for each reload cycle. The licensee requests the addition of 16 approved methodologies in 5.6.5.b which will be used to calculate these limits. The licensee has not provided any indication of which individual methodologies it plans on using to calculate each limit. Please provide the staff with a table indicating which methodology will be used to calculate each limit for each fuel assembly type during the fuel transition.

TVA Response

A table is provided in Attachment A, which shows the 16 FANP references added to TS 5.6.5.b by TS-425 and the associated TS 5.6.5.a Limiting Conditions for Operation for the core limits or setpoints for which the methodology is used. Additionally, Attachment B shows the applicability of the retained reference, GNF topical report NEDE-24011-P-A, to the TS 5.6.5.a core limits. Details regarding GNF methods for calculating core limits are available in NEDE-24011-P-A-14, June 2000.

Attachment A

BWR Approved Framatome Advanced Nuclear Power (FANP) Topical Reports for TS-425 COLR References

Report	Applicable LCO / Assembly Types	Methodology / Justification
XN-NF-81-58(P)(A) and Supplements 1 and 2, Revision 2 *RODEX2 Fuel Rod Thermal-Mechanical Response Evaluation Model.*	3.2.1 / A10 3.2.2 / A10, GE13, GE14 3.2.3 / A10	Provides an analytical capability to predict BWR fuel thermal and mechanical conditions for normal core operation and to establish initial conditions for power ramping, non-LOCA, and LOCA analyses.
XN-NF-85-67(P)(A) Revision 1, *Generic Mechanical Design for Exxon Nuclear Jet Pump BWR Reload Fuel.*	3.2.3 / A10	Describes the process used to develop linear heat generation rates for fuel designs.
EMF-85-74(P) Revision 0 Supplement 1(P)(A) and Supplement 2(P)(A), *RODEX2A (BWR) Fuel Rod Thermal-Mechanical Evaluation Models.*	3.2.3 / A10	Extends the exposure limit of the RODEX2A code which is a version of RODEX2 that includes a fission gas release model specific to BWR fuel designs.
ANF-89-98(P)(A) Revision 1 and Supplement 1, *Generic Mechanical Design Criteria for BWR Fuel Designs.*	3.2.3 / A10	Establishes a set of design criteria which assures that BWR fuel will perform satisfactorily throughout its lifetime.
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.*	3.2.1 / A10 3.2.2 / A10, GE13, GE14 3.2.3 / A10 3.3.2.1, Table 3.3.2.1-1 / A10, GE13, GE14	Development of BWR core analysis methodology which comprises codes for fuel neutronic parameters and assembly burnup calculations, reactor core simulation diffusion theory calculations, core and channel hydrodynamic stability predictions, and producing input for nuclear plant transients. Subsequently approved codes or methodologies have superceded portions of this report. Applicable portions include CRDA, and methodology to determine neutronic reactivity parameters, void reactivity, Doppler reactivity, scram reactivity, delayed neutron fraction, and prompt neutron lifetime.
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.*	3.2.1 / A10 3.2.2 / A10, GE13, GE14 3.2.3 / A10	Summarizes the types of BWR licensing analyses performed, identifies the methodologies used.

Attachment A

BWR Approved Framatome Advanced Nuclear Power (FANP) Topical Reports for TS-425 COLR References

Report	Applicable LCO / Assembly Types	Methodology / Justification
EMF-2158(P)(A) Revision 0, *Siemens Power Corporation Methodology for Boiling Water Reactors: Evaluation and Validation of CASMO-4/MICROBURN-B2.*	3.2.2 / A10, GE13, GE14 3.2.3 / A10 3.3.2.1, Table 3.3.2.1-1 / A10, GE13, GE14	Describes the reactor core simulator code MICROBURN-B2 and the lattice physics code CASMO-4.
XN-NF-80-19(P)(A) Volume 3 Revision 2, *Exxon Nuclear Methodology for Boiling Water Reactors, THERMEX: Thermal Limits Methodology Summary Description.*	3.2.2 / A10, GE13, GE14	Provides overall methodology for determining a MCPR operating limit.
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.*	3.2.2 / A10, GE13, GE14	Provides a capability to perform analyses of transient heat transfer behavior in BWR assemblies.
ANF-524(P)(A) Revision 2 Supplements 1 and 2, *ANF Critical Power Methodology for Boiling Water Reactors.*	3.2.2 / A10, GE13, GE14	Provides a methodology for the determination of thermal margins, specifically the MCPR safety limit.
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.*	3.2.2 / A10, GE13, GE14	Provides a computer program for analyzing BWR system transients.
ANF-1358(P)(A) Revision 1, *The Loss of Feedwater Heating Transient in Boiling Water Reactors.*	3.2.2 / A10, GE13, GE14	Presents a generic methodology for evaluating the loss of feedwater heating event.

Attachment A

BWR Approved Framatome Advanced Nuclear Power (FANP) Topical Reports for TS-425 COLR References

Report	Applicable LCO / Assembly Types	Methodology / Justification
EMF-2209(P)(A) Revision 1, *SPCB Critical Power Correlation.*	3.2.2 / A10, GE13, GE14	Presents an improved critical power correlation for use with the ATRIUM-10 fuel designs.
EMF-2245(P)(A) Revision 0, *Application of Siemens Power Corporation's Critical Power Correlations to Co-Resident Fuel.*	3.2.2 / GE13, GE14	Provides direct and indirect approaches to develop parameters necessary to appropriately model co-resident fuel with an approved critical power correlation.
EMF-2361(P)(A) Revision 0, *EXEM BWR-2000 ECCS Evaluation Model.*	3.2.1 / A10	Describes an upgraded evaluation model methodology for licensing analyses of postulated LOCAs in jet pump BWRs. The methodology was developed to comply with 10 CFR 50.46 and Appendix K criteria to 10 CFR 50.
EMF-2292(P)(A) Revision 0, *ATRIUM™-10: Appendix K Spray Heat Transfer Coefficients.*	3.2.1 / A10	Provides measured cladding temperatures from spray heat transfer tests to justify the use of Appendix K coefficients for ATRIUM-10 fuel LOCA analyses.

Attachment B

GESTAR-II COLR Limits for General Electric Fuel
Applicable for a Transition Core with FANP Fuel

TS-425 COLR References

Applicable LCO / Assembly Types	COLR Specified Limit	GESTAR-II Applicability
3.2.1 / GE13, GE14	Average Planar Linear Heat Generation Rate (APLHGR)	GESTAR-II APLHGR limits documented in the BF3 Cycle 11 COLR remain applicable for GE13 and GE14 fuel in the Cycle 12 transition core with FANP fuel. The GESTAR-II APLHGR limits are applied to off-rated power and flow conditions using ARTS factors $MAPFAC_p$ and $MAPFAC_f$. The GESTAR-II APLHGR limits are applied to the following Equipment Out-of-Service (EOOS) conditions: • SLO (TS 3.4.1) • Turbine Bypass OOS (TS 3.7.5)
3.2.2 / Not Applicable	Minimum Critical Power Ratio (MCPR)	GESTAR-II will not be applied to establish MCPR operating limits. OLMCPR for rated and off-rated power and flow conditions and EOOS operation will be established for GE13 and GE14 fuel using FANP-approved methods identified in Attachment A.
3.2.3 / GE13, GE14	Linear Heat Generation Rate (LHGR)	GESTAR-II LHGR limits documented in the BF3 Cycle 11 COLR remain applicable for GE13 and GE14 fuel in the Cycle 12 transition core with FANP fuel. No off-rated power or flow-dependent or EOOS corrections are applied to the LHGR limits for GE fuel.
3.3.2.1 Table 3.3.2.1-1 / Not Applicable	Rod Block Monitor (RBM) setpoints and applicable reactor thermal power ranges	GESTAR-II will not be applied to establish RBM setpoints and applicable reactor thermal power ranges. The RBM setpoints and applicable thermal power ranges will be established using FANP approved methods identified in Attachment A.

Enclosure 2

Technical Specifications (TS) Change 425

Framatome Fuel - Core Operating Limits Report (COLR) References

Units 2 and 3

Corrected Pages (mark-up)

3.3 INSTRUMENTATION

3.3.4.1 End of Cycle Recirculation Pump Trip (EOC-RPT) Instrumentation

LCO 3.3.4.1

a. Two channels per trip system for each EOC-RPT instrumentation Function listed below shall be OPERABLE:

1. Turbine Stop Valve (TSV) - Closure; and

2. Turbine Control Valve (TCV) Fast Closure, Trip Oil Pressure - Low.

OR

b. LCO 3.2.2, "MINIMUM CRITICAL POWER RATIO (MCPR)," limits for inoperable EOC-RPT as specified in the COLR are made applicable; and

APPLICABILITY: THERMAL POWER ≥ 30% RTP.

c. LCO 3.2.3, "LINEAR HEAT GENERATION RATE (LHGR)," limits for inoperable EOC-RPT as specified in the COLR are made ~~operable~~.

Applicable

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APPLICABILITY: THERMAL POWER ≥ 30% RTP.

c. LCO 3.2.3, "LINEAR HEAT GENERATION RATE (LHGR)," limits for inoperable EOC-RPT as specified in the COLR are made operable.

applicable