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March 24, 2010

10 CFR 50.4

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

Browns Ferry Nuclear Plant, Unit 3
Facility Operating License No. DPR-68
NRC Docket No. 50-296

Subject: Browns Ferry Nuclear Plant, Unit 3 Core Operating Limits Report for Cycle 15 Operation

In accordance with the requirements of Technical Specification 5.6.5.d, the Tennessee Valley Authority is submitting the Browns Ferry Nuclear Plant, Unit 3 Cycle 15 (i.e., the upcoming cycle), Core Operating Limits Report (COLR), Revision 0. This Unit 3 COLR was issued as an interim measure to include Shutdown Margin criteria in support of fuel loading for Cycle 15 (Mode 5 operation). A revision to the COLR will be issued prior to Cycle 15 startup covering all licensed power levels of operation (Modes 1 through 5).

There are no new commitments contained in this letter. If you have any questions please contact Terry Cribbe at (423) 751-3850.

Respectfully,

R. M. Krich

Enclosure: Browns Ferry Nuclear Plant, Unit 3 Core Operating Limits Report, Revision 0, for Cycle 15 Operation

cc: See Page 2

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NRR

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Enclosure
cc: (w/Enclosure):

NRC Regional Administrator - Region II
NRC Senior Resident Inspector - Browns Ferry Nuclear Plant

**Enclosure
Tennessee Valley Authority
Browns Ferry Nuclear Plant
Unit 3**

Core Operating Limits Report, Revision 0

For Cycle 15 Operation

(See Attached)



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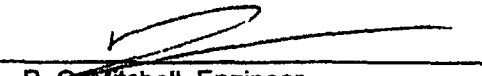
Browns Ferry Unit 3 Cycle 15

Core Operating Limits Report, (105% OLTP)

TVA-COLR-BF3C15 Revision 0 (Final)

February 2010

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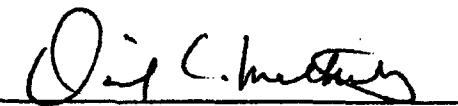
Approved:  Date: 2/24/10
Chairman, PORC

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Revision Log

Number	Page	Description
1-R0	All	New document, per NFTP-111, Section 3.3, Item Q.

Nomenclature

APLHGR	Average Planar LHGR
APRM	Average Power Range Monitor
AREVA NP	Vendor (Framatome, Siemens)
ARTS	APRM, Rod Block Monitor, and Technical Specification Improvement Program
BOC	Beginning of Cycle
BWR	Boiling Water Reactor
CAVEX	Core Average Exposure
CD	Coastdown
COLR	Core Operating Limits Report
CPR	Critical Power Ratio
CPRFAC	Multiplier to determine off-rated OLMCPR, relative to rated conditions
CRWE	Control Rod Withdrawal Error
DTSP	Dual TSP
EIS	Equipment-In-Service
EOC	End of Cycle
EOFP	End of Full Power (no ICF or FFWTR)
EOOS	Equipment OOS
EOR	End of Rated Conditions
FFWTR	Final Feedwater Temperature Reduction
FHOOS	Feedwater Heaters OOS
GWd	Giga Watt Day
HPSP	High PSP
HTSP	High TSP
ICF	Increased Core Flow (beyond rated)
IPSP	Intermediate PSP
ITSP	Intermediate TSP
K _p	Vendor Specific Nomenclature for CPRFAC
LHGR	Linear Heat Generation Rate
LHGRFAC	LHGR Multiplier (Power or Flow dependent)
LPRM	Low Power Range Monitor
LPSP	Low PSP
LRNB	Generator Load Reject, No Bypass
LTSP	Low TSP
MAPFAC	MAPLHGR multiplier (Power or Flow dependent)
MCPR	Minimum CPR
MOC	Middle of Cycle
MSIV	Main Steam Isolation Valve
MSIVOOS	MSIV OOS

MSR	Moisture Separator Reheater
MSROOS	MSR OOS
MTU	Metric Ton Uranium
MWd/MTU	Mega Watt Day per Metric Ton Uranium
NEOC	Near EOC
NFT	Nuclear Fuel Type
NRC	United States Nuclear Regulatory Commission
NSS	Nominal Scram Speed
NTSP	Nominal TSP
OLMCPR	MCPR Operating Limit
OOS	Out-Of-Service
OLTP	Original Licensed Thermal Power (100% OLTP, 3293 MW _t)
Pbypass	Power, below which TSV Position and TCV Fast Closure Scrams are bypassed
PLU	Power Load Unbalance
PLUOOS	PLU OOS
PSP	Power Setpoint
RBM	Rod Block Monitor
RPT	Recirculation Pump Trip
RPTOOS	RPT OOS
SDM	Shutdown Margin
SLMCPR	MCPR Safety Limit
SLO	Single Loop Operation
SRV	Safety Relief Valve
SRVOOS	SRV OOS
TAU	Vendor Specific Variable (τ) Representing Scram Timing.
TBV	Turbine Bypass Valve
TBVIS	Turbine Bypass Valves IS
TBVOOS	Turbine Bypass Valves OOS
TCV	Turbine Control Valve
TIP	Transverse In-Core Probe
TIPOOS	TIP OOS
TLO	Two Loop Operation
TSP	Trip Setpoint
TSSS	Technical Specification Scram Speed
TSV	Turbine Stop Valve
TVA	Tennessee Valley Authority

References

1. BFE-2904, Revision 1, "Browns Ferry Unit 3 Reload 14 In-Core Shuffle Verification," Calculation File, Tennessee Valley Authority, February 2010.

Methodology References

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.
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/MICROBURN-B2, 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.
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 1, **The Loss of Feedwater Heating Transient in Boiling Water Reactors**, Advanced Nuclear Fuels Corporation, September 1992.
14. EMF-2209(P)(A) Revision 3, **SPCB Critical Power Correlation**, Siemens Power Corporation, September 2009.
15. EMF-2361(P)(A) Revision 0, **EXEM BWR-2000 ECCS Evaluation Model**, Framatome ANP Inc., May 2001.
16. EMF-2292(P)(A) Revision 0, **ATRIUM™-10: Appendix K Spray Heat Transfer Coefficients**, Siemens Power Corporation, September 2000.

1 Introduction

In anticipation of cycle startup, it is necessary to describe the expected limits of operation.

1.1 Purpose

The primary purpose of this document is to satisfy requirements identified by unit technical specification section 5.6.5. This document may be provided, upon final approval, to the NRC.

1.2 Scope

This version of the COLR is specifically intended to support the refueling outage. Consequently, this document only covers MODE 5 operation of the unit. Operation outside MODE 5 will be addressed in a future COLR revision. This document will discuss the following area:

- Shutdown Margin (SDM) Limit
(Technical Specification 3.1.1)

1.3 Fuel Loading

The core will contain all AREVA NP, Inc., ATRIUM-10 fuel. Nuclear fuel types used in the core loading are shown in Table 1.1. The core shuffle and final loading were explicitly evaluated for BOC cold shutdown margin performance as documented in Reference 1.

1.4 Acceptability

Limits discussed in this document were generated based on NRC approved methodologies per References 2 through 16.

Table 1.1 Nuclear Fuel Types*

Fuel Description	Original Cycle	Number of Assemblies	Nuclear Fuel Type (NFT)	Fuel Names (Range)
ATRIUM-10 A10-4171B-14GV80-FCB	13	43	1	FCB001-FCB064
ATRIUM-10 A10-4163B-16GV80-FCB	13	68	2	FCB065-FCB232
ATRIUM-10 A10-4181B-13GV80-FCB	13	64	3	FCB233-FCB296
ATRIUM-10 A10-4218B-15GV80-FCC	14	215	4	FCC001-FCC216
ATRIUM-10 A10-4218B-13GV80-FCC	14	72	5	FCC219-FCC290
ATRIUM-10 A10-3831B-15GV80-FCD	15	200	6	FCD001-FCD200
ATRIUM-10 A10-3403B-9GV80-FCD	15	20	7	FCD257-FCB276
ATRIUM-10 A10-3392B-10GV80-FCD	15	36	8	FCD221-FCB256
ATRIUM-10 A10-4218B-15GV80-FCC	15	2	9	FCC217-FCC218
ATRIUM-10 A10-4218B-13GV80-FCC	15	4	10	FCC307-FCC310
ATRIUM-10 A10-3757B-10GV80-FCC	15	40	11	FCC335-FCC374

* The table identifies the expected fuel type breakdown in anticipation of final core loading. The final composition of the core depends upon uncertainties during the outage such as discovering a failed fuel bundle, or other bundle damage. Minor core loading changes, due to unforeseen events, will conform to the safety and monitoring requirements identified in this document.

2 Shutdown Margin Limit (Technical Specification 3.1.1)

Assuming the strongest OPERABLE control blade is fully withdrawn, and all other OPERABLE control blades are fully inserted, the core shall be sub-critical and meet the following minimum shutdown margin:

$$\text{SDM} > 0.38\% \text{ dk/k}$$