Duke Power Company

Oconee 2 Cycle 17

Core Operating Limits Report

QA Condition 1

FOR INFORMATION ONLY

REVIEWED AND APPROVED BY CFNM 3.13

Prepared By: Joy D. Hunter Date: 21 Jul 1999

Checked By: David W Hain Date: July 21, 1999

Approved By: R. R. St. Clair Date: 21 JUL 99

Oconee 2 Cycle 17

Core Operating Limits Report

Insertion Sheet for Revision 9A

This revision supercedes Revision 9 Dated 07/15/99 for Oconee 2 Cycle 17 operation.

Remove these revision 9 pages		Insert these revision 9A pages
1 - 4	Dated 07/15/99	1-4

Revision Log

Revision	Effective Date	Pages Revised	Pages Added	Pages Deleted	Total Effective Pages
Oconee 2 Cycle 17 revisions below					
9A	Jul-99	1-4	-	-	31
9	Jul-99	1 - 31	-	-	31
9	Mar-99	1 - 31	-	32 - 38	31
8	May-98	1-3, 5, 11, 32, 35		-	38
7	Mar-98	1 - 38	-	-	38
Oconee 2 Cycle 16 revisions below					
6	Oct-96	1-3, 18	-	-	38
5	Mar-96	1 - 34	35 - 38	-	38

Oconee 2 Cycle 17

1.0 Error Adjusted Core Operating Limits

The Core Operating Limits Report for O2C17 has been prepared in accordance with the requirements of ITS 5.6.5. The core operating limits within this report have been developed using NRC approved methodology identified in references 1, 2, 3, and 4. The RPS protective limits and maximum allowable setpoints are documented in references 6 and 7. These limits are validated for use in O2C17 by references 5 and 8. The O2C17 analyses assume a design flow of 107.5% of 88,000 gpm per RCS pump, radial local peaking ($F\Delta h$) of 1.714, and axial peaking factor (Fz) of 1.5.

The error adjusted core operating limits included in section 1 of the report incorporate all necessary uncertainties and margins required for operation of the O2C17 reload core.

1.1 References

1. Nuclear Design Methodology Using CASMO-3 / SIMULATE-3P, DPC-NE-1004A, November 1992.

2. Oconee Nuclear Station Reload Design Methodology II, DPC-NE-1002A, October 1985.

3. Oconee Nuclear Station Reload Design Methodology, NFS-1001A, April 1984.

4. ONS Core Thermal Hydraulic Methodology Using VIPRE-01, DPC-NE-2003A, July 1989.

5. O2C17 Maneuvering Analysis, OSC-7056, Revision 6, July 1999.

6. Variable Low Pressure Safety Limit, OSC-4048, Revision 3, July 1998.

7. Power Imbalance Safety Limits and Tech Spec Setpoints Using Error Adjusted Flux-Flow Ratio of 1.094, OSC-5604, Revision 1, January 1999.

8. O2C17 Specific DNB Analysis, OSC-7057, Revision 0, December 1997.

9. O2C17 Reload Safety Evaluation and 50.59, OSC-7045, Revision 2, May 1998.

10. 10CFR50.59 Safety Evaluation for Reducing the O2C17 COLR Flow Criteria, OSC-7464, Revision 0, July 1999.

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Miscellaneous Setpoints

BWST boron concentration shall be greater than 2220 ppm and less than 3000 ppm.
Referred to by ITS 3.5.4.

Spent fuel pool boron concentration shall be greater than 2220 ppm and less than 3000 ppm.
Referred to by ITS 3.7.12.

The equivalent of at least 1100 cubic feet of 11,000 ppm boron shall be maintained in the CBAST.
Referred to by ITS SLC 16.5.13.

CFT boron concentration shall be greater than 1835 ppm. The average boron concentration in the CFT's shall be less than 4000 ppm. Referred to by ITS 3.5.1.

RCS and Refueling canal boron concentration shall be greater than 2220 ppm.
Referred to by ITS 3.9.1.

Shutdown Margin (SDM) shall be greater than 1% $\Delta k/k$.
Referred to by ITS 3.1.1.

Moderator Temperature Coefficient (MTC) shall be less than $+0.9 \times 10^{-4}$ $\Delta k/k/°F$ at power levels less than 95% and less than or equal to 0.0 $\Delta k/k/°F$ at power levels greater than or equal to 95%.
Referred to by ITS 3.1.3.

Departure from Nucleate Boiling (DNB) parameter for RCS loop pressure shall be:
Referred to by ITS 3.4.1.

4 RCP: measured hot leg pressure $\geq$ 2070 psig
3 RCP: measured hot leg pressure $\geq$ 2100 psig

DNB parameter for RCS loop average temperature shall be: Loop Tavg $\leq$ 581.0 °F
Referred to by ITS 3.4.1.

Note 1: Non-zero ΔTc operation is not allowed unless the max loop Tavg remains below 581.0 °F.
Note 2: The measured value must be less than the temperature given above by an amount equal to the uncertainty corresponding to the instrument from which it is read.

DNB parameter for RCS loop total flow shall be:
Referred to by ITS 3.4.1.

4 RCP: measured $\geq$ 108.5 %df
3 RCP: measured $\geq$ 74.7 % of the 4 RCP minimum flows

Regulating rod groups shall be withdrawn in sequence starting with Group 5, then Group 6, and finally Group 7.
Referred to by ITS 3.2.1.

Regulating rod group overlap shall be 25% ± 5% between two sequential groups.
Referred to by ITS 3.2.1.