**DUKE POWER COMPANY**

**OCONEE 1 CYCLE 16**

**CORE OPERATING LIMITS REPORT**

**REVISION 1**

# QA CONDITION 1

REFERENCE OSC-5581

Prepared by: _____ Date: 17 May 94

Checked by: _____ Date: May 17, 1994

Approved by: J. Ed Burchfield Date: 5/17/94

Oconee Nuclear Station

Unit 1 Cycle 16

Core Operating Limits Report

Insertion Sheet for Revision 1

| **Remove these Revision 0 pages** | **Insert these Revision 1 pages** |
|---|---|
| 1 - 4, and 15 | 1 - 4a, and 15 |

Oconee Nuclear Station

Unit 1 Cycle 16

Core Operating Limits Report

Revision Log

| Revision | Effective Date | Pages Revised | Pages Added | Pages Deleted | Total Effective Pages |
|---|---|---|---|---|---|
| 0 | 18-Apr-94 | - | 1-33 | - | 33 |
| 1 | 17-May-94 | 1 - 4 , 15 | 4a | - | 34 |

## 1.0 CORE OPERATING LIMITS

This Core Operating Limits Report for O1C16 has been prepared in accordance with the requirements of Technical Specification 6.9. The core operating limits within this report have been developed using NRC-approved methodology (References 1, 2, 3, and 4). The RPS protective limits and maximum allowable setpoints are documented in References 6 and 7, and validated in References 5 and 8 for O1C16. The operational limits and requirements are documented in Reference 5. The reactor coolant system design flow used in References 5 and 8 for O1C16 is 107.5 % (of 88,000 gpm per pump). The core operating limits have been developed with a radial local peaking factor ($F^N_{\Delta H}$) of 1.714 and an axial peaking factor ($F^N_Z$) of 1.5.

The following cycle-specific core operating limits are included in this report (note that the approved SIMULATE and EPRI-NODE-P methodologies refer to those within Reference 1):

1) RPS protective limits (Figures 1.1 and 1.2), and RPS maximum allowable setpoints (Figures 1.3 and 1.4), which are based on the approved SIMULATE methodology.

2) Quadrant power tilt operational limits, which are based on the approved SIMULATE methodology.

3) Steady state operating band, which are based on the approved SIMULATE methodology.

4) Power-imbalance operational limits, which are based on the approved SIMULATE methodology.

5) Rod index operational limits, which are based on the approved SIMULATE methodology.

6) Shutdown margin-restricted limits, which are based on the approved EPRI-NODE-P methodology.

7) BWST, CBAST, CFT, and refueling canal boron requirements, which are based on the approved SIMULATE methodology.

## 1.1 REFERENCES

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

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

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

4) DPC-NE-2003A, Oconee Nuclear Station Core Thermal Hydraulic Methodology Using VIPRE-01, July 1989.

5) O1C16 Maneuvering Analysis, DPCo calculational file, OSC-5581, 1994.

6) Variable Low Pressure Safety Limit, DPCo calculational file, OSC-4048, Revision 0, July 1990.

7) Power-Imbalance Safety Limits and Tech. Spec. Setpoints Using Error-Adjusted Flux-Flow Ratio of 1.094, DPCo calculational file, OSC-5604, Revision 0, November 1993.

8) O1C16 Thermal-Hydraulic Evaluation, DPCo calculational file, OSC-5468, Revision 1, January 1994.

## Oconee 1 Cycle 16

## BWST, CBAST, CFT, and REFUELING CANAL BORON REQUIREMENTS

## 0 EFPD to EOC

1) The BWST boron concentration shall be greater than 2210 ppm and less than 3000 ppm (referred to by Tech Spec 3.3.4).

2) The equivalent of at least 1100 cubic feet of 11,000 ppm boron shall be maintained in the CBAST (referred to by Tech Spec 3.2.2).

3) The boron concentration in each CFT shall be greater than 1835 ppm (referred to by Tech Spec 3.3.3).

4) The refueling canal boron concentration shall be greater than 2210 ppm (referred to by the bases to Tech Spec 3.8). This concentration is large enough to maintain 1% $\Delta k/k$ shutdown margin with all control rods out of the core at temperatures down to 33 degF with no credit for xenon. There is no upper limit on the refueling canal boron concentration.