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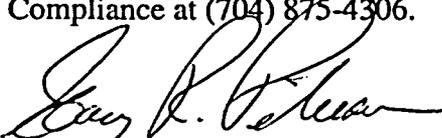
October 7, 2003

U. S. Nuclear Regulatory Commission  
Document Control Desk  
Washington, D.C. 20555

Subject: McGuire Nuclear Station,  
Docket No.50-369  
Unit 1, Cycle 16  
Core Operating Limits Report (COLR)

Pursuant to McGuire Technical Specification 5.6.5.d, please find enclosed Revision 25 to the McGuire Unit 1, Cycle 16 Core Operating Limits Report (COLR).

Questions regarding this submittal should be directed to Kay Crane, McGuire Regulatory Compliance at (704) 875-4306.



Gary R. Peterson

Attachment

ADD

U. S. Nuclear Regulatory Commission

October 7, 2003

Page 2

cc: Mr. R. E. Martin, Project Manager  
Office of Nuclear Reactor Regulation  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Mr. Luis Reyes, Regional Administrator  
U. S. Nuclear Regulatory Commission  
Region II  
Atlanta Federal Center  
61 Forsyth St., SW, Suite 23T85  
Atlanta, GA 30323

Mr. Joe Brady  
Senior Resident Inspector  
McGuire Nuclear Station

**McGuire Unit 1 Cycle 16**  
**Core Operating Limits Report**  
**Revision 25**

**September 2003**

Calculation Number: MCC-1553.05-00-0371, Rev. 1.

Duke Power Company

		Date
Prepared By:	<u>David F. Boyd</u>	<u>9/3/03</u>
Checked By:	<u>Scott A. ...</u>	<u>9/5/03</u>
Checked By:	<u>RJA1-elt</u>	<u>9/3/03</u>
Approved By:	<u>P.m. Abraham</u>	<u>9/4/03</u>

**QA Condition 1**

The information presented in this report has been prepared and issued in accordance with McGuire Technical Specification 5.6.5.

### INSPECTION OF ENGINEERING INSTRUCTIONS

Inspection Waived By: P. M. Abramo  
Date: 9/4/03  
(Sponsor)

<u>CATAWBA</u>		
	Inspection Waived	
MCE (Mechanical & Civil) :	<input type="checkbox"/>	Inspected By/Date: _____
RES (Electrical Only)	<input type="checkbox"/>	Inspected By/Date: _____
RES (Reactor)	<input type="checkbox"/>	Inspected By/Date: _____
MOD	<input type="checkbox"/>	Inspected By/Date: _____
Other ( _____ )	<input type="checkbox"/>	Inspected By/Date: _____

<u>OCONEE</u>		
	Inspection Waived	
MCE (Mechanical & Civil)	<input type="checkbox"/>	Inspected By/Date: _____
RES (Electrical Only)	<input type="checkbox"/>	Inspected By/Date: _____
RES (Reactor)	<input type="checkbox"/>	Inspected By/Date: _____
MOD	<input type="checkbox"/>	Inspected By/Date: _____
Other ( _____ )	<input type="checkbox"/>	Inspected By/Date: _____

<u>MCGUIRE</u>		
	Inspection Waived	
MCE (Mechanical & Civil)	<input checked="" type="checkbox"/>	Inspected By/Date: _____
RES (Electrical Only)	<input checked="" type="checkbox"/>	Inspected By/Date: _____
RES (Reactor)	<input checked="" type="checkbox"/>	Inspected By/Date: _____
MOD	<input checked="" type="checkbox"/>	Inspected By/Date: _____
Other ( _____ )	<input type="checkbox"/>	Inspected By/Date: _____

## **McGuire 1 Cycle 16 Core Operating Limits Report**

### **IMPLEMENTATION INSTRUCTIONS FOR REVISION 25**

Revision 25 to the McGuire Unit 1 COLR contains new end-of-cycle moderator temperature coefficient limits. These limits should be implemented within two weeks of issuance. This revision also updates the methodology reference list included in COLR Section 1.1 to reflect recent approvals to NRC approved methods.

McGuire 1 Cycle 16 Core Operating Limits Report

REVISION LOG

<u>Revision</u>	<u>Effective Date</u>	<u>Effective Pages</u>	<u>COLR</u>
Revisions 0-3	Superseded	N/A	M1C09
Revisions 4-8	Superseded	N/A	M1C10
Revisions 9-11	Superseded	N/A	M1C11
Revisions 12-15	Superseded	N/A	M1C12
Revisions 16-17	Superseded	N/A	M1C13
Revision 18-20	Superseded	N/A	M1C14
Revision 21-23	Superseded	N/A	M1C15
Revision 24	August 30, 2002	5, 6, 10-29	M1C16 (Original Issue)
Revision 25	September 3, 2003	1, 1a, 2-4, 7-9	M1C16 (Revision 1)

**McGuire 1 Cycle 16 Core Operating Limits Report**

**INSERTION SHEET FOR REVISION 25**

**Remove pages**

**Pages 1 – 4, 7, 8 and 9**

**Insert Rev. 25 pages**

**Pages 1, 1a – 4, 7, 8 and 9**

## McGuire 1 Cycle 16 Core Operating Limits Report

### 1.1 Analytical Methods (continued)

7. DPC-NE-3001PA, "Multidimensional Reactor Transients and Safety Analysis Physics Parameter Methodology," (DPC Proprietary).

Revision 0

Report Date: November 1991

8. DPC-NE-3002A, "FSAR Chapter 15 System Transient Analysis Methodology".

Revision 4

SER Date: April 6, 2001

9. DPC-NE-2004P-A, "Duke Power Company McGuire and Catawba Nuclear Stations Core Thermal-Hydraulic Methodology using VIPRE-01," (DPC Proprietary).

Revision 1

SER Date: February 20, 1997

10. DPC-NE-2005P-A, "Thermal Hydraulic Statistical Core Design Methodology," (DPC Proprietary).

Revision 1

SER Date: November 7, 1996

11. DPC-NE-2008P-A, "Fuel Mechanical Reload Analysis Methodology Using TACO3," (DPC Proprietary).

Revision 0

SER Date: April 3, 1995

12. DPC-NE-2009-P-A, "Westinghouse Fuel Transition Report," (DPC Proprietary).

Revision 2

SER Date: December 18, 2002

13. DPC-NE-1004A, "Nuclear Design Methodology Using CASMO-3/SIMULATE-3P."

Revision 1

SER Date: April 26, 1996

14. DPC-NF-2010A, "Duke Power Company McGuire Nuclear Station Catawba Nuclear Station Nuclear Physics Methodology for Reload Design."

Revision 2

SER Date: June 24, 2003

## McGuire 1 Cycle 16 Core Operating Limits Report

### 1.1 Analytical Methods (continued)

15. DPC-NE-2011PA, "Duke Power Company Nuclear Design Methodology for Core Operating Limits of Westinghouse Reactors," (DPC Proprietary).

Revision 1.

SER Date: October 1, 2002

### 2.0 Operating Limits

The cycle-specific parameter limits for the specifications listed in section 1.0 are presented in the following subsections. These limits have been developed using NRC approved methodologies specified in Section 1.1.

#### 2.1 Requirements for Operational Mode 6

The following condition is required for operational mode 6.

- 2.1.1 The Reactivity Condition requirement for operational mode 6 is that  $k_{eff}$  must be less than, or equal to 0.95.

#### 2.2 Shutdown Margin - SDM (TS 3.1.1, TS 3.1.4, TS 3.1.5, TS 3.1.6 and TS 3.1.8)

- 2.2.1 For TS 3.1.1, SDM shall be  $\geq 1.3\% \Delta K/K$  in mode 2 with  $k_{eff} < 1.0$  and in modes 3 and 4.
- 2.2.2 For TS 3.1.1, SDM shall be  $\geq 1.0\% \Delta K/K$  in mode 5.
- 2.2.3 For TS 3.1.4, SDM shall be  $\geq 1.3\% \Delta K/K$  in modes 1 and 2.
- 2.2.4 For TS 3.1.5, SDM shall be  $\geq 1.3\% \Delta K/K$  in mode 1 and mode 2 with any control bank not fully inserted.
- 2.2.5 For TS 3.1.6, SDM shall be  $\geq 1.3\% \Delta K/K$  in mode 1 and mode 2 with  $k_{eff} \geq 1.0$ .
- 2.2.6 For TS 3.1.8, SDM shall be  $\geq 1.3\% \Delta K/K$  in mode 2 during physics testing.

## McGuire 1 Cycle 16 Core Operating Limits Report

### 2.3 Moderator Temperature Coefficient - MTC (TS 3.1.3)

#### 2.3.1 The Moderator Temperature Coefficient (MTC) Limits are:

The MTC shall be less positive than the upper limits shown in Figure 1. The BOC, ARO, HZP MTC shall be less positive than  $0.7E-04 \Delta K/K/^{\circ}F$ .

The EOC, ARO, RTP MTC shall be less negative than the  $-4.3E-04 \Delta K/K/^{\circ}F$  lower MTC limit.

#### 2.3.2 The 300 PPM MTC Surveillance Limit is:

The measured 300 PPM ARO, equilibrium RTP MTC shall be less negative than or equal to  $-3.65E-04 \Delta K/K/^{\circ}F$ .

#### 2.3.3 The 60 PPM MTC Surveillance Limit is:

The 60 PPM ARO, equilibrium RTP MTC shall be less negative than or equal to  $-4.125E-04 \Delta K/K/^{\circ}F$ .

Where,

BOC = Beginning of Cycle (Burnup corresponding to the most positive MTC.)

EOC = End of Cycle

ARO = All Rods Out

HZP = Hot Zero Power

RTP = Rated Thermal Power

PPM = Parts per million (Boron)

### 2.4 Shutdown Bank Insertion Limit (TS 3.1.5)

2.4.1 Each shutdown bank shall be withdrawn to at least 226 steps. Shutdown banks are withdrawn in sequence and with no overlap.

### 2.5 Control Bank Insertion Limits (TS 3.1.6)

2.5.1 Control banks shall be within the insertion, sequence, and overlap limits shown in Figure 2. Specific control bank withdrawal and overlap limits as a function of the fully withdrawn position are shown in Table 1.