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November 12, 2003

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

Subject: Oconee Nuclear Site Docket No. 50-270/50-287
Core Operating Limits Report (COLR)

Gentlemen:

Attached, pursuant to Oconee Technical Specifications 5.6.5, is an information copy of a revision to the Core Operating Limits Report for Oconee Unit 2, Cycle 20, Rev. 19 and Unit 3, Cycle 21, Rev 18.

Very truly yours,

R. A. Jones Site, Vice President
Oconee Nuclear Site

Attachment

A001

xc w/att: Mr. L. A. Reyes, Regional Administrator
U. S. Nuclear Regulatory Commission, Region II

Mr. L. N. Olshan, Project Manager
Office of Nuclear Reactor Regulation

Mr. Mel Shannon
Senior Resident Inspector
Oconee Nuclear Site

PRIORITY SuperRush

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REFERENCE

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OCONEE NUCLEAR STATION
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Date: 11/10/03

Document Transmittal #: DUK033140020

QA CONDITION ■ Yes ☐ No

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ONEI-0400-051	1	019 11/10/03	NOMD-27	V1	X	V1	V1	V1											4
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K S CANADY
MANAGER
NUCLEAR ENGINEERING

BY:
J W SIMMONS JWS/AYB EC08H

Duke Power Company

Oconee 2 Cycle 20

Core Operating Limits Report

FOR INFORMATION ONLY

QA Condition 1

~~Not Reviewed or Approved by CFAM 3.13~~

REVIEWED AND APPROVED BY CFAM 3.13

Prepared By: J. D. Forster Joy D. Forster Date: 06 Nov 2003

Checked By: G. M. Presnell M. Presnell Date: 11-6-2003

CDR By: S. G. Siry Stephen G. Siry Date: 11/7/03

Approved By: R. R. St. Clair R. R. St. Clair Date: 11/7/2003

INSPECTION OF ENGINEERING INSTRUCTIONS

Inspection Waived By: R.R. St. Clair (Sponsor) Date: 11/7/2003

CATAWBA

	Inspection Waived	
MCE (Mechanical & Civil)	☐	Inspected By/Date:
RES (Electrical Only)	☐	Inspected By/Date:
RES (Reactor)	☐	Inspected By/Date:
MOD	☐	Inspected By/Date:
Other (_____)	☐	Inspected By/Date:

OCONEE

	Inspection Waived	
MCE (Mechanical & Civil)	☑	Inspected By/Date:
RES (Electrical Only)	☑	Inspected By/Date:
RES (Reactor)	☑	Inspected By/Date:
MOD	☑	Inspected By/Date:
Other (_____)	☐	Inspected By/Date:

MCGUIRE

	Inspection Waived	
MCE (Mechanical & Civil)	☐	Inspected By/Date:
RES (Electrical Only)	☐	Inspected By/Date:
RES (Reactor)	☐	Inspected By/Date:
MOD	☐	Inspected By/Date:
Other (_____)	☐	Inspected By/Date:

Oconee 2 Cycle 20

Core Operating Limits Report

Insertion Sheet for Revision 19

This revision is not valid until the end of operation for Oconee 2 Cycle 19.

Remove these revision 18 pages	Insert these revision 19 pages
1-4, 8-10, 12-13, 29	1-4, 8-10, 12-13, 29

Revision Log

Revision	Effective Date	Pages Revised	Pages Added	Pages Deleted	Total Effective Pages
Oconee 2 Cycle 20 revisions below					
19	Nov 2003	1-4,8-10,12-13,29	-	-	32
18	Oct 2002	1-3,14,16,24,30	-	-	32
17	Oct 2002	1 - 31	32	-	32
Oconee 2 Cycle 19 revisions below					
16	May 2001	1 - 31	-	-	31
Oconee 2 Cycle 18 revisions below					
15	Apr 2001	1-4	-	-	31
14	Feb 2000	1-4	-	-	31
13	Nov 1999	1-31	-	-	31
12	Sep 1999	1-31	-	-	31
11	Apr 1999	1-4, 6	-	-	31
10	Mar 1999	1-31	-	-	31

Oconee 2 Cycle 20

1.0 Error Adjusted Core Operating Limits

The Core Operating Limits Report for O2C20 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 through 10. The RPS protective limits and maximum allowable setpoints are documented in references 11 through 13. These limits are validated for use in O2C20 by references 14 through 16. The O2C20 analyses assume a design flow of 107.5% of 88,000 gpm per RCS pump, radial local peaking (FΔh) of 1.714, and axial peaking factor (Fz) of 1.5, and an EOC (< 100 ppmB) Tavg reduction of up to 10 ^{0}F provided 4 RCPs are in operation and Tavg does not decrease below 569 ^{0}F.

The error adjusted core operating limits included in section 1 of the report incorporate all necessary uncertainties and margins required for operation of the O2C20 reload core.

1.1 References

1. Nuclear Design Methodology Using CASMO-3 / SIMULATE-3P, DPC-NE-1004P-A, Revision 0, SER dated November 23, 1992.

2. Oconee Nuclear Station Reload Design Methodology II, DPC-NE-1002A, Revision 1, SER dated October 1, 1985.

3. Oconee Nuclear Station Reload Design Methodology, NFS-1001A, Revision 5, SER dated December 8, 2000.

4. ONS Core Thermal Hydraulic Methodology Using VIPRE-01, DPC-NE-2003P-A, Revision 1, SER dated June 23, 2000.

5. Thermal Hydraulic Statistical Core Design Methodology, DPC-NE-2005P-A, Revision 2, SER dated June 8, 1999.

6. Fuel Mechanical Reload Analysis Methodology Using TACO3, DPC-NE-2008P-A, SER dated April 3, 1995.

7. UFSAR Chapter 15 Transient Analysis Methodology, DPC-NE-3005-PA, Revision 1, SER dated May 25, 1999.

8. DPC-NE-3000P-A, Thermal Hydraulic Transient Analysis Methodology, Rev. 2, SER dated October 14, 1998.

9. BAW-10192-PA, BWNT LOCA - BWNT Loss of Coolant Accident Evaluation Model for Once-Through Steam Generator Plants, SER dated February 18, 1997.

10. BAW-10227-PA, Evaluation of Advanced Cladding and Structural Material (M5) in PWR Reactor Fuel, SER dated February 4, 2000.

11. Variable Low Pressure Safety Limit, OSC-4048, Revision 4, January 2001.

12. Power Imbalance Safety Limits and Tech Spec Setpoints Using Error Adjusted Flux-Flow Ratio of 1.094, OSC-5604, Revision 2, October 2001.

13. ΔTc and EOC Reduced Tavg Operation, OSC-7265, Rev. 1, Duke Power Co., June 2002.

14. O2C20 Maneuvering Analysis, OSC-8082, Revision 4, November 2003.

15. O2C20 Specific DNB Analysis, OSC-8103, Revision 0, June 2002.

16. O2C20 Reload Safety Evaluation, OSC-8182, Revision 1, November 2002.

Oconee 2 Cycle 20

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.
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% Δk/k.
Referred to by ITS 3.1.1.

Moderator Temperature Coefficient (MTC) shall be less than:
Linear interpolation is valid within the table provided.
Referred to by ITS 3.1.3.

MTC x 10-4 Δρ / °F	% FP
+0.70	0
+0.40	15
0.00	80
-0.125	100
-0.25	120

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 ≥ 2125 psig
3 RCP: measured hot leg pressure ≥ 2125 psig

DNB parameter for RCS loop average temperature shall be:
Referred to by ITS 3.4.1.

The measured Tavg must be less than COLR limits minus instrument uncertainty. ΔTc is the setpoint value selected by the operators. Values are expanded by linear interpolation on page 32 of this document **without** instrument uncertainty.

	Max Loop Tavg (Incl 2°F unc)	
ΔTc, °F	4 RCP Op	3 RCP Op
0	581.0	581.0 *
1	581.4	581.2
2	581.8	581.4
3	582.1	581.7
4	582.5	581.9
5	582.9	582.1

* This limit is applied to the loop with the lowest loop average temperature consistent with the NOTE in SR 3.4.1.2. All other temperature limits apply to the maximum loop Tavg.

DNB parameter for RCS loop total flow shall be:
Referred to by ITS 3.4.1.
4 RCP: Measured ≥ 107.5 %df
3 RCP: Measured ≥ 74.7 % of 4 RCP min flow

Regulating rod groups shall be withdrawn in sequence starting with group 5, 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.

Misaligned, dropped, or inoperable rods may be excluded from control rod group average calculations when determining if overlap requirements are met as these situations are explicitly addressed by TS 3.1.4 (Control Rod Group Alignment Limits), TS 3.1.5 (Safety Rod Position Limits), and TS 3.2.3 (Quadrant Power Tilt).

Oconee 2 Cycle 20

Operational Power Imbalance Setpoints

	%FP	Full Incore	Backup Incore	Out of Core
4 Pumps	0	-26.0	-25.5	-26.0
	80	-26.0	-25.5	-26.0
	90	-22.7	-22.3	-22.7
	100	-13.5	-13.1	-13.5
	102	-11.7	-11.3	-11.7
	102	17.0	17.0	17.0
	100	19.1	18.9	19.1
	90	24.6	24.3	24.6
	80	28.1	27.6	28.1
	0	28.1	27.6	28.1
3 Pumps	0.0	-26.0	-25.5	-26.0
	68.50	-26.0	-	-26.0
	68.97	-	-25.5	-
	77.0	-11.7	-11.3	-11.7
	77.0	17.0	17.0	17.0
	66.98	-	27.6	-
	66.51	28.1	-	28.1
	0.0	28.1	27.6	28.1

Oconee 2 Cycle 20

Operational Power Imbalance Setpoints

Operation with 4 RCS Pumps, BOC to EOC

% FP	RPS Trip		Full Incore Alarm		Out of Core Alarm	
107.9	-14.40	14.40				
107	-15.36	15.36				
106	-16.42	16.42				
105	-17.48	17.48				
104	-18.55	18.55				
103	-19.61	19.61				
102	-20.67	20.67	-11.70	17.00	-11.70	17.00
101	-21.73	21.73	-12.60	18.05	-12.60	18.05
100	-22.80	22.80	-13.50	19.10	-13.50	19.10
99	-23.86	23.86	-14.42	19.65	-14.42	19.65
98	-24.92	24.92	-15.34	20.20	-15.34	20.20
97	-25.99	25.99	-16.26	20.75	-16.26	20.75
96	-27.05	27.05	-17.18	21.30	-17.18	21.30
95	-28.11	28.11	-18.10	21.85	-18.10	21.85
94	-29.17	29.17	-19.02	22.40	-19.02	22.40
93	-30.24	30.24	-19.94	22.95	-19.94	22.95
92	-31.30	31.30	-20.86	23.50	-20.86	23.50
91	-32.36	32.36	-21.78	24.05	-21.78	24.05
90.4	-33.00	33.00	-22.33	24.38	-22.33	24.38
90	-33.00	33.00	-22.70	24.60	-22.70	24.60
89	-33.00	33.00	-23.03	24.95	-23.03	24.95
88	-33.00	33.00	-23.36	25.30	-23.36	25.30
87	-33.00	33.00	-23.69	25.65	-23.69	25.65
86	-33.00	33.00	-24.02	26.00	-24.02	26.00
85	-33.00	33.00	-24.35	26.35	-24.35	26.35
84	-33.00	33.00	-24.68	26.70	-24.68	26.70
83	-33.00	33.00	-25.01	27.05	-25.01	27.05
82	-33.00	33.00	-25.34	27.40	-25.34	27.40
81	-33.00	33.00	-25.67	27.75	-25.67	27.75
80	-33.00	33.00	-26.00	28.10	-26.00	28.10
0	-33.00	33.00	-26.00	28.10	-26.00	28.10
% FP	RPS Trip		Full Incore Alarm		Out of Core Alarm	

Oconee 2 Cycle 20

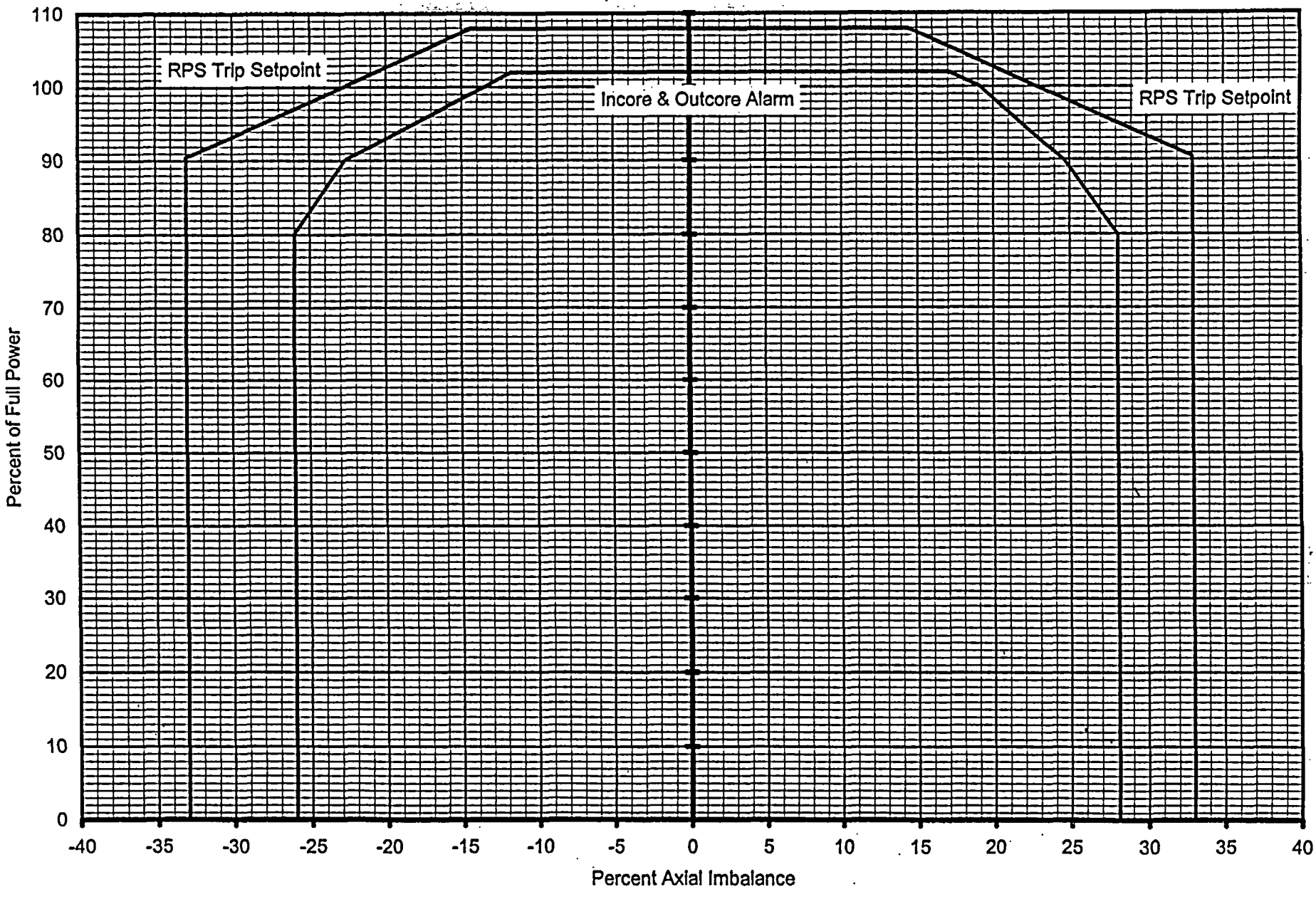
Operational Power Imbalance Setpoints

Operation with 3 RCS Pumps, BOC to EOC

% FP	RPS Trip		Full Incore Alarm		Out of Core Alarm	
80.6	-14.40	14.40				
80	-15.04	15.04				
79	-16.10	16.10				
78	-17.16	17.16				
77.0	-18.23	18.23	-11.70	17.00	-11.70	17.00
76	-19.29	19.29	-13.38	18.06	-13.38	18.06
75	-20.35	20.35	-15.06	19.12	-15.06	19.12
74	-21.41	21.41	-16.75	20.18	-16.75	20.18
73	-22.48	22.48	-18.43	21.23	-18.43	21.23
72	-23.54	23.54	-20.11	22.29	-20.11	22.29
71	-24.60	24.60	-21.79	23.35	-21.79	23.35
70	-25.67	25.67	-23.47	24.41	-23.47	24.41
69	-26.73	26.73	-25.15	25.47	-25.15	25.47
68.5	-27.26	27.26	-26.00	26.00	-26.00	26.00
68	-27.79	27.79	-26.00	26.53	-26.00	26.53
67	-28.85	28.85	-26.00	27.58	-26.00	27.58
66.5	-29.37	29.37	-26.00	28.10	-26.00	28.10
66	-29.92	29.92	-26.00	28.10	-26.00	28.10
65	-30.98	30.98	-26.00	28.10	-26.00	28.10
64	-32.04	32.04	-26.00	28.10	-26.00	28.10
63.1	-33.00	33.00	-26.00	28.10	-26.00	28.10
63	-33.00	33.00	-26.00	28.10	-26.00	28.10
62	-33.00	33.00	-26.00	28.10	-26.00	28.10
61	-33.00	33.00	-26.00	28.10	-26.00	28.10
60	-33.00	33.00	-26.00	28.10	-26.00	28.10
0	-33.00	33.00	-26.00	28.10	-26.00	28.10
% FP	RPS Trip		Full Incore Alarm		Out of Core Alarm	

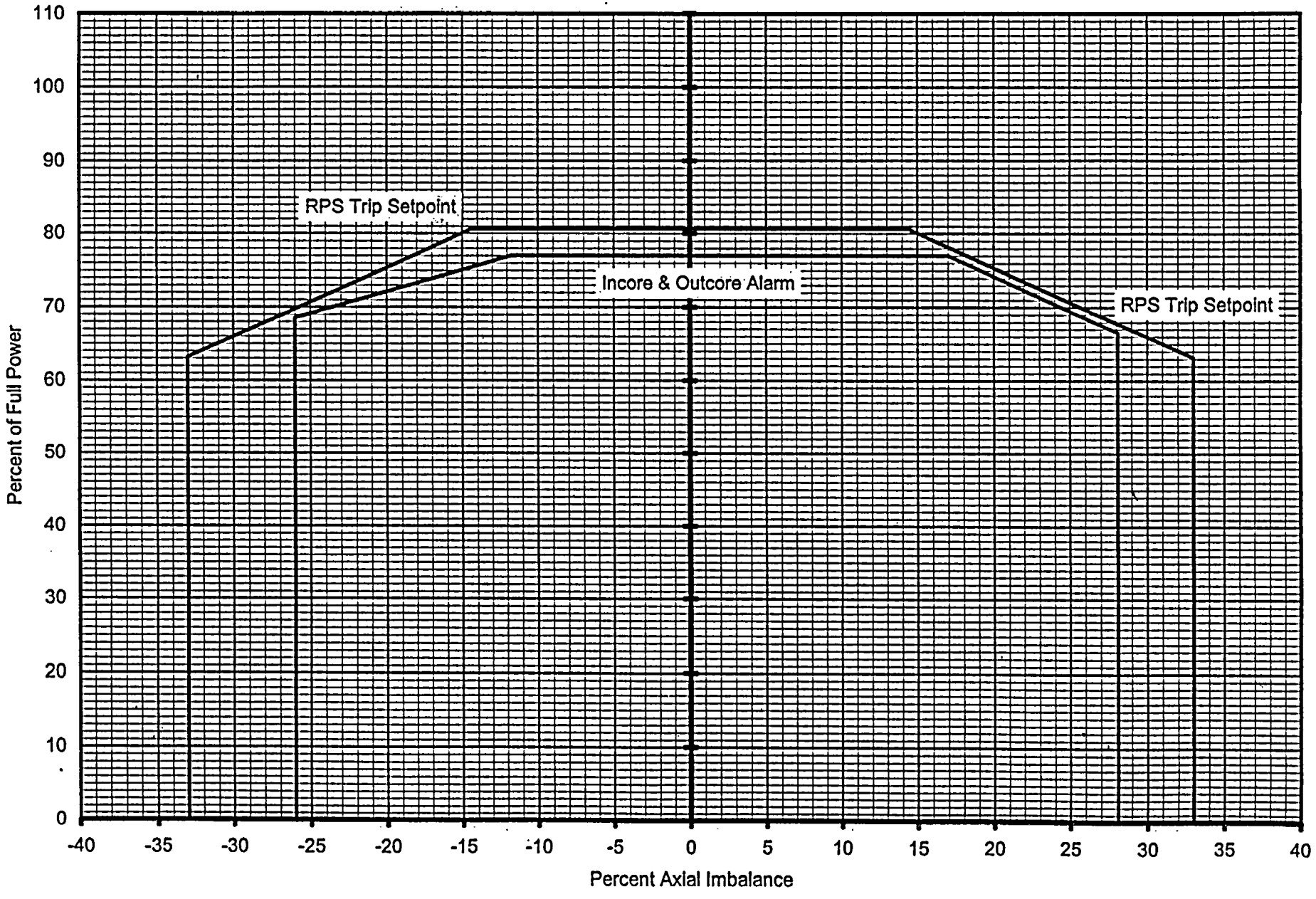
Oconee 2 Cycle 20

Imbalance Setpoints for 4 Pump Operation, BOC to EOC



Oconee 2 Cycle 20

Imbalance Setpoints for 3 Pump Operation, BOC to EOC



Oconee 2 Cycle 20

Axial Power Imbalance Protective Limits

Referred to by ITS 2.1.1

Not for Plant Use

	%FP	RPS	Operational
4 Pumps	0	-48.0	-37.0
	80	-	-37.0
	90	-	-33.7
	100	-48.0	-23.2
	112	-31.1	-
	112	31.1	-
	100	48.0	30.0
	90	-	36.0
	80	-	39.6
	0	48.0	39.6
3 Pumps	0	-48.0	-37.0
	74.6	-48.0	-
	77.0	-	-37.0
	86.6	-31.1	-
	86.6	31.1	-
	77.0	-	39.6
	74.6	48.0	-
	0	48.0	39.6

Duke Power Company

Oconee 3 Cycle 21

FOR INFORMATION ONLY

Core Operating Limits Report

QA Condition 1

~~Not Reviewed or Approved by CFAM 3.13~~ REVIEWED AND APPROVED BY CFAM 3.13

Prepared By: J. D. Forster Joy D. Forster Date: 06 Nov 2003

Checked By: G. M. Presnell M. Presnell Date: 11-6-2003

CDR By: S. G. Siry Stephen G. Siry Date: 11/7/03

Approved By: R. R. St. Clair R. R. St. Clair Date: 11/7/2003

INSPECTION OF ENGINEERING INSTRUCTIONS

Inspection Waived By: R.K. McClain (Sponsor) Date: 11/7/2003

CATAWBA

	Inspection Waived	
MCE (Mechanical & Civil)	☐	Inspected By/Date: _____
RES (Electrical Only)	☐	Inspected By/Date: _____
RES (Reactor)	☐	Inspected By/Date: _____
MOD	☐	Inspected By/Date: _____
Other (_____)	☐	Inspected By/Date: _____

OCONEE

	Inspection Waived	
MCE (Mechanical & Civil)	☑	Inspected By/Date: _____
RES (Electrical Only)	☑	Inspected By/Date: _____
RES (Reactor)	☑	Inspected By/Date: _____
MOD	☑	Inspected By/Date: _____
Other (_____)	☐	Inspected By/Date: _____

MCGUIRE

	Inspection Waived	
MCE (Mechanical & Civil)	☐	Inspected By/Date: _____
RES (Electrical Only)	☐	Inspected By/Date: _____
RES (Reactor)	☐	Inspected By/Date: _____
MOD	☐	Inspected By/Date: _____
Other (_____)	☐	Inspected By/Date: _____

Oconee 3 Cycle 21

Core Operating Limits Report

Insertion Sheet for Revision 18

This revision is not valid until the end of operation for Oconee 3 Cycle 20.

Remove these revision 17 pages	Insert these revision 18 pages
1-5, 9-11, 13-14, 30	1-5, 9-11, 13-14, 30

Revision Log

Revision	Effective Date	Pages Revised	Pages Added	Pages Deleted	Total Effective Pages
Oconee 3 Cycle 21 revisions below					
18	Nov. 2003	1-5,9-11,13-14,30	-	-	33
17	Apr. 2003	1 - 31	32 - 33	-	33
Oconee 3 Cycle 20 revisions below					
16	Oct. 2002	1 - 3, 5	-	-	31
15	Nov. 2001	1 - 3	-	-	31
14	Nov. 2001	1 - 31	-	-	31
Oconee 3 Cycle 19 revisions below					
13	Apr. 2000	1 - 31	-	-	31

Oconee 3 Cycle 21

1.0 Error Adjusted Core Operating Limits

The Core Operating Limits Report for O3C21 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 through 10. The RPS protective limits and maximum allowable setpoints are documented in references 11 through 13. These limits are validated for use in O3C21 by references 14 through 16. The O3C21 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, and an EOC ($\leq$ 100 ppmB) Tavg reduction of up to 10 ^{o}F provided 4 RCPs are in operation and Tavg does not decrease below 569 ^{o}F.

The error adjusted core operating limits included in section 1 of the report incorporate all necessary uncertainties and margins required for operation of the O3C21 reload core.

1.1 References

1. Nuclear Design Methodology Using CASMO-3 / SIMULATE-3P, DPC-NE-1004P-A, Revision 0, SER dated November 23, 1992.

2. Oconee Nuclear Station Reload Design Methodology II, DPC-NE-1002A, Revision 1, SER dated October 1, 1985.

3. Oconee Nuclear Station Reload Design Methodology, NFS-1001A, Revision 5, SER dated December 8, 2000.

4. ONS Core Thermal Hydraulic Methodology Using VIPRE-01, DPC-NE-2003P-A, Revision 1, SER dated June 23, 2000.

5. Thermal Hydraulic Statistical Core Design Methodology, DPC-NE-2005P-A, Revision 2, SER dated June 8, 1999.

6. Fuel Mechanical Reload Analysis Methodology Using TACO3, DPC-NE-2008P-A, SER dated April 3, 1995.

7. UFSAR Chapter 15 Transient Analysis Methodology, DPC-NE-3005-PA, Revision 1, SER dated May 25, 1999.

8. DPC-NE-3000P-A, Thermal Hydraulic Transient Analysis Methodology, Rev. 2, SER dated October 14, 1998.

9. BAW-10192-PA, BWNT LOCA - BWNT Loss of Coolant Accident Evaluation Model for Once-Through Steam Generator Plants, SER dated February 18, 1997.

10. BAW-10227-PA, Evaluation of Advanced Cladding and Structural Material (M5) in PWR Reactor Fuel, SER dated February 4, 2000.

11. Variable Low Pressure Safety Limit, OSC-4048, Revision 4, January 2001.

12. Power Imbalance Safety Limits and Tech Spec Setpoints Using Error Adjusted Flux-Flow Ratio of 1.094, OSC-5604, Revision 2, October 2001.

13. ΔTc and EOC Reduced Tavg Operation, OSC-7265, Rev. 1, Duke Power Co., June 2002.

14. O3C21 Maneuvering Analysis, OSC-8178, Revision 3, November 2003.

15. O3C21 Specific DNB Analysis, OSC-8220, Revision 0, October 2002.

16. O3C21 Reload Safety Evaluation, OSC-8400, Revision 1, November 2003.

Oconee 3 Cycle 21

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.
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% Δk/k.
Referred to by ITS 3.1.1.

Moderator Temperature Coefficient (MTC) shall be less than:
Linear interpolation is valid within the table provided.
Referred to by ITS 3.1.3.

MTC x 10-4 Δρ / °F	% FP
+0.70	0
+0.40	15
0.00	80
-0.125	100
-0.25	120

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 ≥ 2125 psig
3 RCP: measured hot leg pressure ≥ 2125 psig

DNB parameter for RCS loop average temperature shall be:
Referred to by ITS 3.4.1.

The measured Tavg must be less than COLR limits minus instrument uncertainty. ΔTc is the setpoint value selected by the operators. Values are expanded by linear interpolation on page 33 of this document without instrument uncertainty.

	Max Loop Tavg (Incl 2°F unc)	
ΔTc, °F	4 RCP Op	3 RCP Op
0	581.0	581.0 *
1	581.4	581.2
2	581.8	581.4
3	582.1	581.7
4	582.5	581.9
5	582.9	582.1

* This limit is applied to the loop with the lowest loop average temperature consistent with the NOTE in SR 3.4.1.2. All other temperature limits apply to the maximum loop Tavg.

DNB parameter for RCS loop total flow shall be:
Referred to by ITS 3.4.1.
4 RCP: Measured ≥ 107.5 %df
3 RCP: Measured ≥ 74.7 % of 4 RCP min flow

Regulating rod groups shall be withdrawn in sequence starting with group 5, 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.

Misaligned, dropped, or inoperable rods may be excluded from control rod group average calculations when determining if overlap requirements are met as these situations are explicitly addressed by TS 3.1.4 (Control Rod Group Alignment Limits), TS 3.1.5 (Safety Rod Position Limits), and TS 3.2.3 (Quadrant Power Tilt).

Oconee 3 Cycle 21

Operational Power Imbalance Setpoints

	%FP	Full Incore	Backup Incore	Out of Core
4 Pumps	0	-24.3	-23.8	-24.3
	80	-24.3	-23.8	-24.3
	90	-21.1	-20.7	-21.1
	100	-12.3	-11.9	-12.3
	102	-10.5	-10.1	-10.5
	102	17.0	17.0	17.0
	100	18.6	18.3	18.6
	90	23.7	23.4	23.7
	80	26.9	26.4	26.9
	0	26.9	26.4	26.9
3 Pumps	0.0	-24.3	-23.8	-24.3
	70.10	-24.3	-	-24.3
	70.58	-	-23.8	-
	77.0	-10.5	-10.1	-10.5
	77.0	17.0	17.0	17.0
	68.12	-	26.4	-
	67.65	26.9	-	26.9
	0.0	26.9	26.4	26.9

Oconee 3 Cycle 21

Operational Power Imbalance Setpoints

Operation with 4 RCS Pumps, BOC to EOC

% FP	RPS Trip		Full Incore Alarm		Out of Core Alarm	
107.9	-14.40	14.40				
107	-15.36	15.36				
106	-16.42	16.42				
105	-17.48	17.48				
104	-18.55	18.55				
103	-19.61	19.61				
102	-20.67	20.67	-10.50	17.00	-10.50	17.00
101	-21.73	21.73	-11.40	17.80	-11.40	17.80
100	-22.80	22.80	-12.30	18.60	-12.30	18.60
99	-23.86	23.86	-13.18	19.11	-13.18	19.11
98	-24.92	24.92	-14.06	19.62	-14.06	19.62
97	-25.99	25.99	-14.94	20.13	-14.94	20.13
96	-27.05	27.05	-15.82	20.64	-15.82	20.64
95	-28.11	28.11	-16.70	21.15	-16.70	21.15
94	-29.17	29.17	-17.58	21.66	-17.58	21.66
93	-30.24	30.24	-18.46	22.17	-18.46	22.17
92	-31.30	31.30	-19.34	22.68	-19.34	22.68
91	-32.36	32.36	-20.22	23.19	-20.22	23.19
90.4	-33.00	33.00	-20.75	23.50	-20.75	23.50
90	-33.00	33.00	-21.10	23.70	-21.10	23.70
89	-33.00	33.00	-21.42	24.02	-21.42	24.02
88	-33.00	33.00	-21.74	24.34	-21.74	24.34
87	-33.00	33.00	-22.06	24.66	-22.06	24.66
86	-33.00	33.00	-22.38	24.98	-22.38	24.98
85	-33.00	33.00	-22.70	25.30	-22.70	25.30
84	-33.00	33.00	-23.02	25.62	-23.02	25.62
83	-33.00	33.00	-23.34	25.94	-23.34	25.94
82	-33.00	33.00	-23.66	26.26	-23.66	26.26
81	-33.00	33.00	-23.98	26.58	-23.98	26.58
80	-33.00	33.00	-24.30	26.90	-24.30	26.90
0	-33.00	33.00	-24.30	26.90	-24.30	26.90
% FP	RPS Trip		Full Incore Alarm		Out of Core Alarm	

Oconee 3 Cycle 21

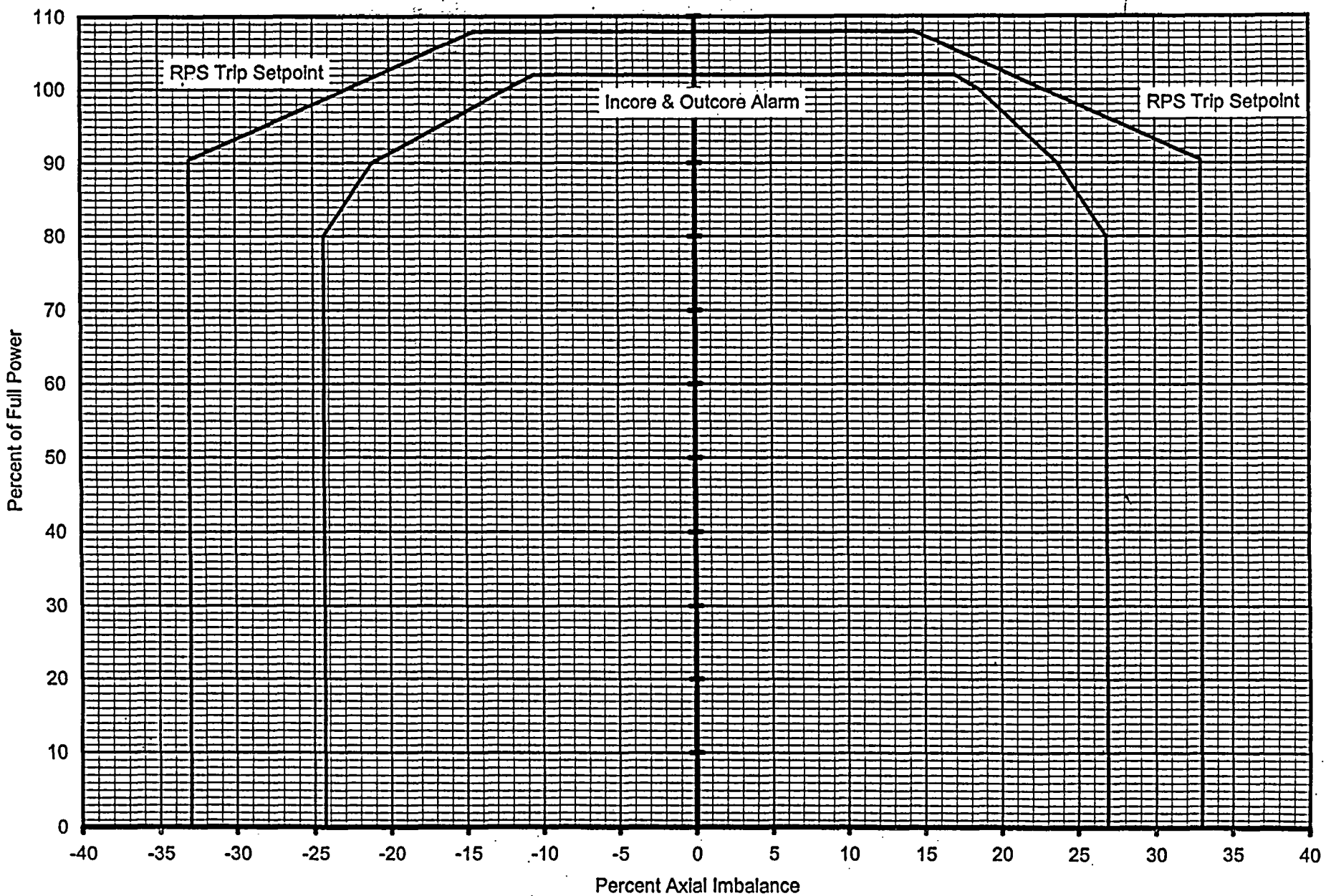
Operational Power Imbalance Setpoints

Operation with 3 RCS Pumps, BOC to EOC

% FP	RPS Trip		Full Incore Alarm		Out of Core Alarm	
80.6	-14.40	14.40				
80	-15.04	15.04				
79	-16.10	16.10				
78	-17.16	17.16				
77.0	-18.23	18.23	-10.50	17.00	-10.50	17.00
76	-19.29	19.29	-12.50	18.06	-12.50	18.06
75	-20.35	20.35	-14.50	19.12	-14.50	19.12
74	-21.41	21.41	-16.50	20.18	-16.50	20.18
73	-22.48	22.48	-18.50	21.23	-18.50	21.23
72	-23.54	23.54	-20.50	22.29	-20.50	22.29
71	-24.60	24.60	-22.50	23.35	-22.50	23.35
70.1	-25.56	25.56	-24.30	24.30	-24.30	24.30
70	-25.67	25.67	-24.30	24.41	-24.30	24.41
69	-26.73	26.73	-24.30	25.47	-24.30	25.47
68	-27.79	27.79	-24.30	26.53	-24.30	26.53
67.65	-28.17	28.17	-24.30	26.90	-24.30	26.90
67	-28.85	28.85	-24.30	26.90	-24.30	26.90
66	-29.92	29.92	-24.30	26.90	-24.30	26.90
65	-30.98	30.98	-24.30	26.90	-24.30	26.90
64	-32.04	32.04	-24.30	26.90	-24.30	26.90
63.1	-33.00	33.00	-24.30	26.90	-24.30	26.90
63	-33.00	33.00	-24.30	26.90	-24.30	26.90
62	-33.00	33.00	-24.30	26.90	-24.30	26.90
61	-33.00	33.00	-24.30	26.90	-24.30	26.90
60	-33.00	33.00	-24.30	26.90	-24.30	26.90
0	-33.00	33.00	-24.30	26.90	-24.30	26.90
% FP	RPS Trip		Full Incore Alarm		Out of Core Alarm	

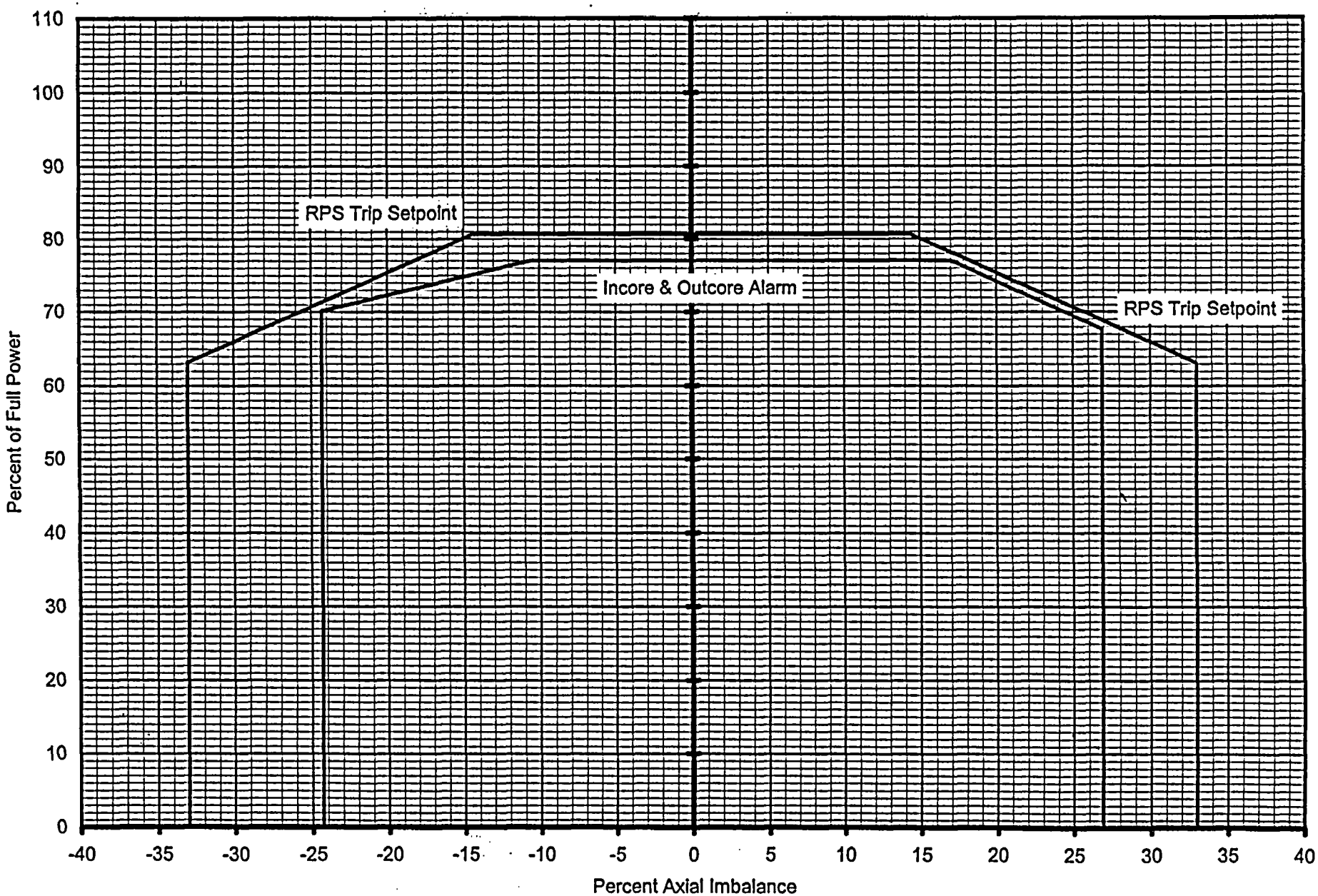
Oconee 3 Cycle 21

Imbalance Setpoints for 4 Pump Operation, BOC to EOC



Oconee 3 Cycle 21

Imbalance Setpoints for 3 Pump Operation, BOC to EOC



Oconee 3 Cycle 21

Axial Power Imbalance Protective Limits

Referred to by ITS 2.1.1

Not for Plant Use

	%FP	RPS	Operational
4 Pumps	0	-48.0	-35.0
	80	-	-35.0
	90	-	-31.8
	100	-48.0	-21.7
	112	-31.1	-
	112	31.1	-
	100	48.0	29.4
	90	-	34.9
	80	-	38.2
	0	48.0	38.2
3 Pumps	0	-48.0	-35.0
	74.6	-48.0	-
	77.0	-	-35.0
	86.6	-31.1	-
	86.6	31.1	-
	77.0	-	38.2
	74.6	48.0	-
	0	48.0	38.2