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October 5, 1989

U. S. Nuclear Regulatory Commission
Document Control Desk
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Subject: Oconee Nuclear Station
Docket No. 50-270
Unit 2 Cycle 11 Startup Testing Report

Gentlemen:

Pursuant to Oconee Nuclear Station Technical Specification 6.6.1.1 please find attached the Startup Test Report for Oconee Unit 2, Cycle 11. Part I of the report contains Zero Power Physics Test information. Part II contains Power Escalation Test results.

Very truly yours,

Hal B. Tucker

H. B. Tucker

PJN/51/td
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DUKE POWER COMPANY

OCONEE NUCLEAR STATION

OCONEE 2 CYCLE 11

STARTUP TESTING REPORT

Part I: Zero Power Physics Test

Part II: Power Escalation Test

Prepared by: Michael J. Hone

OCONEE 2 CYCLE 11
Startup Testing Report
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Enclosures

OCONEE 2 CYCLE 11
STARTUP TESTING REPORT

PART I

ZERO POWER PHYSICS TEST

1.0 Introduction and Summary

The Oconee 2 Cycle 11 Zero Power Physics Test (ZPPT) was conducted from 6/27/89 through 7/04/89 per Station Procedure TT/2/A/0711/11. The purpose of this testing was to verify the nuclear parameters upon which the Oconee 2 Cycle 11 safety analysis and Technical Specifications are based.

Zero Power Physics Testing measurements were made with reactor power controlled between 2.0 E(-10) amps and 7.0 E(-8) amps on the intermediate range instrumentation; reactivity insertions were maintained < 120 pcm. RCS pressure and temperature were maintained at approximately 2150 psig and 532°F, respectively.

The following nuclear parameters were measured:

(a) All-Rods-Out Boron Concentration (See Enclosure 1.0);

(b) Temperature and Moderator Coefficients of Reactivity (See Enclosure 2.0);

(c) Integral Rod Worth for Control Rod (CR) Groups 5, 6, and 7 (See Enclosure 2.0);

(d) Differential Boron Worth (See Enclosure 1.0).

The plant computer was used to record RC pressure, RC temperature, intermediate range power levels, and control rod positions. Reactivity was calculated by the plant computer and output to a chart recorder.

On 7/04/89 at 0315, ZPPT was declared complete. All acceptance criteria were met.

2.0 Approach to Criticality

The initial RCS heatup following the refueling outage began on 06/27/89. The heatup was suspended at approximately 0200 on 6-30-89 after a loud noise was heard on the B feedwater line channel of the Loose Parts Monitor. The initial evaluation of this noise indicated a loose part in the feedwater system. Therefore the decision was made to cool back down and retrieve the part. After further evaluation, Design Engineering concluded that the noise was due to boiling in the B feedwater header, and not due to a loose part. RCS heatup was again commenced on 7/01/89 at approximately 1100. During the heatup, the Loose Parts Monitor did not alarm when feedwater flow was introduced at lower RCS temperatures than before. This confirmed that the previous indication had not been caused by a loose part. Therefore, heatup continued until hot shutdown was reached on 7/02/89 at approximately 0900. Source range count rates were recorded and 1/M (inverse multiplication) vs RC temperature plots were generated throughout heatup.

Rod withdrawal for the Control Rod Drive Trip Time Test began at 0000 on 7/03/89. 1/M vs. withdrawn rod worth plots were maintained throughout. Criticality was achieved at 0140 on 7/03/89 with rod groups 1-6 at 100 %wd, group 7 at 79 %wd, group 8 at 37 %wd and RCS boron concentration at 1695 ppmB. Due to the critical position of group 7 at 79 %wd, it was necessary to add boron to the RCS before pulling group 7 for the CRD trip time test. Group 7 was pulled to 100 %wd (approximately 100 pcm insertion) and the CRD trip time test was performed per station procedure IP/0/A/301/3W at 0500 on 7/03/89. Due to problems with the plant computer reading the drop times of some of the rods, the CRD trip time test had to be performed seven additional times. After the second attempt, only one group 3 rod in core location G-7 had not read correctly. After the sixth attempt, a computer card was changed out, and the test was successfully completed on the eighth attempt at 0915 on 7/03/89. All acceptance criteria for this test were met.

3.0 Pre-Physics Measurements

After establishing steady conditions with the reactor critical, NI overlap was verified and recorded, and the point of adding sensible heat was determined. From the sensible heat determination, the upper testing limit on the intermediate range NIs (as indicated on the Control Room Chart) was established for ZPPT.

An on-line OAC reactimeter checkout* was then performed by making reactivity insertions of about ± 50 and ± 120 pcm, and measuring the associated doubling times. These doubling times were input to an off-line reactivity calculation and the results were then compared to the on-line reactivity values.

*NOTE: An off-line OAC reactimeter checkout was performed during RCS heatup. This checkout verified correct calculational and chart recorder response to three test cases in which simulated power ramps were input via floppy disks.

4.0 Physics Testing

A. All Rods Out Boron Concentration Measurement

The RCS equilibrium boron concentration was measured with Groups 1-6 at 100% wd, Group 7 at 89% wd, and CR Group 8 at 35% wd. The control rods were moved to their all-rods-out position (Groups 1-7 at 100% wd, Gp. 8 at 35% wd) and the associated reactivity change was converted to ppmB. The All Rods Out Boron concentration was then calculated and verified to be within 50 ppmB of its predicted value.

B. Reactivity Coefficient Measurements

The temperature coefficient measurement was made while maintaining equilibrium boron concentration in the RCS, with CR Group 7 withdrawn to 89% wd and with CR Group 8 at 35% wd. This measurement was made by varying RCS temperature by about 7°F and observing the associated reactivity change. The change in reactivity was divided by the change in RCS temperature to calculate the temperature coefficient. The measured temperature coefficient was corrected for the difference in RCS average test temperature and reference temperature (532°F). The moderator temperature coefficient was calculated by subtracting the predicted isothermal Doppler coefficient from the measured temperature coefficient.

C. Control Rod Integral Worths and Differential Boron Worth Measurement

The worths of Groups 5, 6, and 7 were measured by steadily deborating the RCS and compensating for the resulting positive reactivity ramp by inserting (in discrete steps of ~100 pcm) the control rods from 100% wd on Group 7 to 85% wd on Group 4 (with no rod overlap). The reactivity changes resulting from the discrete control rod insertions were summed for each group to obtain the group integral worth.

The differential boron worth was calculated by dividing the total rod worth inserted during the rod worth measurements by the corresponding change in RCS boron concentration. The initial value for the boron concentration was recorded at critical equilibrium conditions. The final values of boron concentration and reactivity were recorded as they approached steady-state at a rate of less than 8 pcm/minute.

PART II

POWER ESCALATION TEST

1.0 Introduction and Summary

The Oconee 2 Cycle 11 Power Escalation Test was performed between 7/04/89 and 7/21/89 per Station Procedure TT/2/A/0811/11. Testing was performed at 19% Full Power (FP), 68% FP, 72% FP, and 100% FP to verify nuclear parameters upon which the Oconee 2 Cycle 11 safety analysis and Technical Specifications are based. The following tests and verifications were performed:

(a) Initial Core Symmetry Check @ 19% FP;

(b) NSS Heat Balance @ 19% FP, 68% FP, and 100% FP (See Enclosure 3.0);

(c) Incore Detector Checkout @ 19% FP, 68% FP and 100% FP;

(d) Power Imbalance Detector Correlation Slope Measurement @ 72% FP;

(e) Core Power Distribution @ 72% FP and 100% FP (See Enclosures 4.0-4.3 and 5.0);

(f) All-Rods-Out Critical Boron Concentration @ 100% FP (See Enclosure 1.0).

The unit reached 19% FP at 0950 on 7/04/89. All low power testing was completed that day. The unit reached 68% FP at 0200 on 7/06/89. Testing at the intermediate power level was completed on 7/07/89. The unit reached 100% FP on 7/10/89 at about 0555. Testing at this power level was concluded on 7/12/89. Power Escalation Testing was declared complete on 7/21/89.

2.0 NSS Heat Balance/RC Flow Verification

Off-line secondary and primary heat balances were performed at 19% FP (primary only), 68% FP, and 100% FP. These tests verified the accuracy of CTPA, the on-line plant computer program which performs primary and secondary heat balances. The plant computer was used to average heat balance data (flows, temperatures, pressures, etc.) for 15 minutes. This data was input into the off-line heat balance program, the results were compared to CTPA averages for the same period, and agreement within 2% FP was verified.

RC flow was determined from plant computer indications at LPT. An off-line program was used to calculate RC flow based on a secondary heat balance and measured primary loop enthalpy changes for IMPT and FPT. These results demonstrated that the RC flow rate was above that assumed in the core design (108.5% design flow) and, for FPT, below that which could cause core lift at 400°F (114.5% design flow).

Normalization of the plant computer flow constants (used to calculate flow from the primary delta-P instrumentation) was not necessary since all on-line and off-line power calculations agreed well within 2% FP.

3.0 Core Power Distribution

Core Power Distribution tests were conducted at 72% FP and at 100% FP. These tests verified that reactor power imbalance, quadrant power tilt, minimum DNBR, maximum linear heat rate (LHR) and radial/ total power peaks did not exceed their respective specified limits. An initial Core Symmetry Check was performed at 19% FP. All acceptance criteria were met.

Specific checks were made as follows:

Incore imbalance was compared to the error adjusted imbalance LOCA limit curve and was verified to be within specified limits (based on Tech Spec 3.5.2.6).

The maximum positive quadrant power tilt was verified to be less than the error adjusted LOCA limit (based on Tech Spec 3.5.2.4).

The LHR was verified to be within the LOCA limit at each core level (per Reload Report DPC-RD-2013).

The worst case minimum DNBR and maximum LHR, when extrapolated to the overpower trip setpoint, were verified to be within the clad failure and fuel melt limits, respectively (per Technical Specification 2.1 and Reload Report).

Prior to performing the radial and total peaking factor comparisons, PT/0/B/0302/06 (Review and Control of Incore Neutron Detector Signals) was performed to identify erroneous SPND signals. This test was performed at 19% FP as part of Core Symmetry Verification, and at 68% FP and 100% FP as directed in the Incore Detector Checkout.

The radial and total peaking factors were measured and compared to the predicted values at 72% and 100% FP. The following acceptance criteria were applied:

(a) $$\% \text{ Deviation} = \frac{(\text{Predicted} - \text{Measured})}{\text{Measured}} \times 100$$

$$\leq \begin{cases} \pm 15\% \text{ for radial peaking factors} \\ \pm 20\% \text{ for total peaking factors (recommended maximum deviation - not an acceptance criterion)} \end{cases}$$

(b) Largest Peak % deviation = $\frac{LMP-LPP}{LMP} \times 100$

$$\leq \begin{cases} \text{+ 5.0\% for radial peaking factors} \\ \text{+ 7.5\% for total peaking factors} \end{cases}$$

Where: LMP is the largest measured peaking factor
LPP is the largest predicted peaking factor

(c) The full core root mean square radial peaking factor deviation (RMS) for all core locations with operable incore detector strings was limited as follows:

$$\text{\% RMS deviation} = \left[\sum_{i=1}^{n} \frac{(PP_i - MP_i)^2}{n-1} \right]^{\frac{1}{2}} \times 100 \quad \leq 7.5\%$$

Where: PP = Predicted radial peaking factor
MP = Measured radial peaking factor
n = Total number of operable incore detector strings

4.0 Power Imbalance Detector Correlation

The Power Imbalance Detector Correlation Test was performed at 72% FP. The purpose of this test was to measure the excore to full incore power imbalance correlation slopes for NI Channels 5, 6, 7, and 8; and to verify these slopes to be equal to or greater than 0.95.

The incore/excore imbalance correlation slope for each NI Channel (5-8) was determined by a least squares fit of excore to incore imbalance indications. A total of 11 incore imbalance points which ranged between -8.97% and +4.23% FP were used. All the slopes were verified to be greater than 0.95.

The correlation slopes for NI Channels 5, 6, and 8 were calculated to be 1.12; the slope for NI Channel 7 was calculated to be 1.11. The differential amp gain settings for NI Channels 5-8 were 4.19, 4.38, 4.12, and 4.06 respectively.

5.0 Reactivity Measurement at Power

Per the Oconee Generic Startup Physics Test Program (May 1986 reissue), testing for measurement of reactivity coefficients at power is no longer required. The All Rods Out Critical Boron at Power measurement was made at 100% FP, and the boron anomaly between measured and predicted concentration was verified to be less than 50 ppmB.

OCONEE 2 CYCLE 11

STARTUP REPORT

ENCLOSURE 1.0

ALL-RODS-OUT (ARO) BORON AND DIFFERENTIAL BORON WORTH RESULTS

	Zero Power ARO Critical Boron Concentration	At-Power ARO Critical Boron concentration	Differential Boron Worth
CONDITIONS	0 %FP, 0 EFPD Gp 7 @ 100% wd Gp 8 @ 35% wd (Initial critical equilibrium: Gp 7 @ 89% wd Gp 8 @ 35% wd 1704 ppmB)	100 %FP, 5.8 EFPD Gp 7 @ 100% wd Gp 8 @ 35% wd (Conditions at time of Measurement: Gp 7 @ 95% wd Gp 8 @ 35% wd 1171 ppmB)	Initial: Gp 7 @ 89% wd Gp 8 @ 35% wd 1703 ppmb Final: Gp 4 @ 85% wd Gp 5 @ 0% wd Gp 8 @ 35% wd 1335 ppmB
MEASURED VALUE	1711 ppmB	1172 ppmB	- 0.8837% δk/k per 100 ppmB
PREDICTED VALUE	1681 ppmB	1150 ppmB	- 0.8478% δk/k per 100 ppmB
DEVIATION	+ 30 ppmB	+ 22 ppmB	- 4.06% (% Dev = $\frac{\text{Pred - Meas}}{\text{Meas}}$ X 100)
ACCEPTANCE CRITERIA	Predicted ± 50 ppmB	Predicted ± 50 ppmB	Measured more positive than - 1.33% δk/k and ± 15% deviation from predicted

ENCLOSURE 2.0

INTEGRAL GROUP ROD WORTH MEASUREMENTS

PARAMETER	MEASURED VALUE (% δk/k)	PREDICTED VALUE (% δk/k)	DEVIATION* (%)	ACCEPTANCE CRITERIA
Gp 7 Integral Worth	- 0.763	- 0.746	- 2.2	± 15% Deviation
Gp 6 Integral Worth	- 1.1115	- 1.133	+ 1.9	± 15% Deviation
Gp 5 Integral Worth	- 1.3045	- 1.244	- 4.6	± 15% Deviation
Gp 5-7 Integral Worth	- 3.1790	- 3.1230	- 1.8	± 10% Deviation

* $\%\ \text{Deviation} = \frac{\text{predicted-measured}}{\text{measured}} \times 100$

REACTIVITY COEFFICIENTS

PARAMETER	CONDITIONS	MEASURED VALUE	PREDICTED VALUE	DEVIATION (Meas - Pred)	ACCEPTANCE CRITERIA
Hot Zero Power Temperature Coefficient (ARO)	T_{av} = 538°F Gp 7 @ 89% wd Gp 8 @ 35% wd 1704 ppmB	+ 7.23 x 10(-6) δk/k/°F	+ 1.69 x 10(-6) δk/k/°F	+ 5.54 x 10(-6) δk/k/°F	Deviation Less than ± 0.3 x 10(-4) δk/k/°F
Hot Zero Power Moderator Temperature Coefficient (ARO)		+ 2.35 x 10(-5) δk/k/°F	+ 1.80 x 10(-5) δk/k/°F	+ 5.52 x 10(-6) δk/k/°F	Deviation Less than ± 0.3 x 10(-4) δk/k/°F and Measured Value ≤ + 0.5 x 10(-4) δk/k/°F

OCONEE 2 CYCLE 11

STARTUP REPORT

ENCLOSURE 3.0

NSS HEAT BALANCE/RC FLOW VERIFICATION

Test Plateau	Plant Computer On-Line Primary Power Level (% FP)	Plant Computer On-Line Secondary Power Level	Plant Computer "Delta Temp" Power Level	Off-Line* Calculated Primary Power Level	Off Line* Calculated Secondary Power Level	RCS Flow (% Design Flow)
LPT	19.23	N/A	19.38	19.25	N/A	114.6
IMPT	67.82	67.62	67.95	67.89	67.73	114.0 *
FPT	100.35	99.96	100.21	100.41	100.04	112.9 *
FPT (adjusted constants)	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated by the off-line secondary heat balance program (POWER)

OCONEE 2 CYCLE 11

STARTUP REPORT

ENCLOSURE 4.0

RADIAL PEAKING FACTORS AT IMPT

	8	9	10	11	12	13	14	15
H	0.97 0.96 -1.0%	1.15 1.22 6.1%	1.27 1.29 1.6%	1.36 1.37 0.7%	1.03 1.06 2.9%	1.28 1.22 -4.7%	1.08 1.10 1.9%	0.53 0.54 1.9%
K		1.27 1.26 -0.8%	1.22 1.26 3.3%	1.03 1.04 1.3%	1.35 1.37 1.5%	1.30 1.29 -1.1%	1.26 1.26 -0.4%	0.46 0.45 -2.2%
L			1.24 1.30 4.8%	1.35 1.36 0.7%	1.07 1.04 -2.8%	1.29 1.31 1.8%	0.87 0.91 5.2%	0.27 0.27 0.0%
M				1.03 1.03 0.0%	1.27 1.26 -0.8%	1.07 1.08 0.9%	0.51 0.51 0.0%	
N					0.90 0.94 4.4%	**** 0.94 0.0%	0.31 0.29 -6.5%	
O						**** 0.40 0.0%		

Meas
Pred
% Dev

$$\% \text{ Dev.} = \frac{\text{Predicted - Measured}}{\text{Measured}} * 100$$

Core Conditions

	Predicted		Measured	
Power	75.0	%FP	72.0	%FP
Group 5	100	%wd	100	%wd
Group 6	100	%wd	100	%wd
Group 7	92	%wd	91	%wd
Group 8	35	%wd	34	%wd
Imbalance	- 0.61	%FP	- 1.50	%FP
Burnup	3	EFPD	1.43	EFPD
RCS Boron	1212	ppmB	1250	ppmB
Incore tilt				
			WX: -0.33	XY: -0.21
			YZ: 0.22	ZW: 0.33

The highest % Deviation is -6.5% at location N-14.
The highest measured radial peak is 1.36 at location H-11.
The largest peak % Deviation is -0.7%.
The full core RMS % Deviation is 2.93% with 49 operable detectors.

**** The Detector in this location is inoperable.

OCONEE 2 CYCLE 11

STARTUP REPORT

ENCLOSURE 4.1

TOTAL PEAKING FACTORS AT IMPT

	8	9	10	11	12	13	14	15
H	1.11 1.13 1.8%	1.37 1.45 5.8%	1.43 1.51 5.6%	1.54 1.58 2.6%	1.21 1.22 0.8%	1.48 1.42 -4.1%	1.25 1.30 4.0%	0.60 0.64 6.7%
K		1.45 1.49 2.8%	1.39 1.47 5.8%	1.15 1.19 3.6%	1.56 1.56 0.0%	1.50 1.49 -0.7%	1.50 1.49 -0.7%	0.53 0.53 0.0%
L			1.38 1.49 8.0%	1.53 1.53 -0.3%	1.22 1.20 -1.2%	1.49 1.51 1.3%	0.99 1.05 6.6%	0.30 0.31 3.3%
M				1.14 1.15 0.9%	1.49 1.45 -2.7%	1.24 1.24 0.4%	0.58 0.59 1.7%	
N					1.06 1.09 2.8%	**** 1.11 0.0%	0.37 0.34 -8.1%	
O						**** 0.47 0.0%		

Meas
Pred
% Dev

$$\% \text{ Dev.} = \frac{\text{Predicted - Measured}}{\text{Measured}} * 100$$

Core Conditions

	Predicted		Measured	
Power	75.0	%FP	72.0	%FP
Group 5	100	%wd	100	%wd
Group 6	100	%wd	100	%wd
Group 7	92	%wd	91	%wd
Group 8	35	%wd	34	%wd
Imbalance	- 0.61	%FP	- 1.50	%FP
Burnup	3	EFPD	1.43	EFPD
RCS Boron	1212	ppmB	1250	ppmB
Incore tilt				
			WX: -0.33	XY: -0.21
			YZ: +0.22	ZW: +0.33

The highest % Deviation is -8.1% at location N-14.
The highest measured total peak is 1.56 at location K-12
The largest peak % Deviation is -1.3%.
The full core RMS % Deviation is 4.56% with 49 operable detectors.

**** The Detector in this location is inoperable.

OCONEE 2 CYCLE 11

STARTUP REPORT

ENCLOSURE 4.2

RADIAL PEAKING FACTORS AT FPT

	8	9	10	11	12	13	14	15
H	1.00 0.96 -4.0%	1.17 1.22 4.3%	1.28 1.28 0.0%	1.35 1.36 0.7%	1.04 1.06 1.9%	1.27 1.22 -3.9%	1.08 1.10 1.9%	0.53 0.55 3.8%
K		1.31 1.26 -3.8%	1.23 1.26 2.4%	1.03 1.05 1.6%	1.35 1.36 1.1%	1.30 1.29 -1.1%	1.25 1.26 0.4%	0.46 0.45 -2.2%
L			1.24 1.29 4.0%	1.34 1.35 0.7%	1.07 1.04 -2.8%	1.27 1.31 2.8%	0.86 0.91 5.8%	0.27 0.28 3.7%
M				1.03 1.03 0.0%	1.26 1.26 -0.4%	1.07 1.08 1.4%	0.51 0.52 2.0%	
N					0.92 0.95 3.3%	**** 0.95 0.0%	0.30 0.30 0.0%	
O						**** 0.41 0.0%		

Meas
Pred
% Dev

$$\% \text{ Dev.} = \frac{\text{Predicted - Measured}}{\text{Measured}} * 100$$

Core Conditions

	Predicted		Measured	
Power	100.0	%FP	99.5	%FP
Group 5	100	%wd	100	%wd
Group 6	100	%wd	100	%wd
Group 7	92	%wd	94	%wd
Group 8	35	%wd	35	%wd
Imbalance	- 3.80	%FP	+ 0.39	%FP
Burnup	4	EFPD	4.95	EFP
RCS Boron	1148	ppmB	1171	ppm
Incore tilt				
			WX: -0.40	XY: +0.02
			YZ: +0.17	ZW: +0.21

The highest % Deviation is 5.8% at location L-14.
The highest measured radial peak is 1.35 at location H-11.
The largest peak % Deviation is -0.7%.
The full core RMS % Deviation is 3.04% with 49 operable detectors.

**** The Detector in this location is inoperable.

OCONEE 2 CYCLE 11

STARTUP REPORT

ENCLOSURE 4.3

TOTAL PEAKING FACTORS AT FPT

	8	9	10	11	12	13	14	15
H	1.17 1.11 -5.2%	1.40 1.41 0.9%	1.45 1.48 1.7%	1.53 1.55 1.5%	1.22 1.21 -0.8%	1.43 1.40 -1.9%	1.22 1.29 5.7%	0.60 0.64 6.7%
K		1.55 1.45 -6.2%	1.43 1.44 0.6%	1.17 1.17 -0.1%	1.53 1.57 2.7%	1.49 1.49 -0.3%	1.48 1.49 0.9%	0.52 0.53 1.3%
L			1.40 1.46 4.4%	1.50 1.55 3.3%	1.18 1.22 3.6%	1.46 1.53 5.3%	0.97 1.05 8.6%	0.30 0.31 5.0%
M				1.14 1.16 1.8%	1.44 1.48 2.5%	1.21 1.26 4.3%	0.57 0.59 3.7%	
N					1.04 1.10 6.2%	**** 1.13 0.0%	0.34 0.34 0.0%	
O						**** 0.47 0.0%		

Meas
Pred
% Dev

$$\% \text{ Dev.} = \frac{\text{Predicted - Measured}}{\text{Measured}} * 100$$

Core Conditions

	Predicted		Measured	
Power	100.0	%FP	99.5	%FP
Group 5	100	%wd	100	%wd
Group 6	100	%wd	100	%wd
Group 7	92	%wd	94	%wd
Group 8	35	%wd	35	%wd
Imbalance	- 3.80	%FP	+ 0.39	%FP
Burnup	4	EFPD	4.95	EFP
RCS Boron	1148	ppmB	1171	ppm
Incore tilt				
			WX: -0.40	XY: +0.02
			YZ: +0.17	ZW: +0.21

The highest % Deviation is 8.6% at location L-14.
The highest measured total peak is 1.55 at location K-09.
The largest peak % Deviation is -1.4%.
The full core RMS % Deviation is 5.05% with 49 operable detectors.

**** The Detector in this location is inoperable.

OCONEE 2 CYCLE 11

STARTUP REPORT

ENCLOSURE 5.0

CORE POWER DISTRIBUTION DATA SUMMARY AT

LPT, IMPT AND FPT PLATEAUS

	LPT	IMPT	FPT
Power Level (% FP)	19.4	72.2	99.6
Burnup (EFPD)	0.04	1.43	3.92
Group 6/7/8 Positions (% wd)	00 55/02/35	100/91/34	100/93/35
RCS Boron Concentration (ppmB)	1426	1250 ~~1344~~	1171 ~~1254~~
Incore Imbalance (% FP)	- 4.23	- 1.50	~~+2.00~~ ~~+1.00~~ OK
Incore Tilt WX/XY YZ/ZW	-0.55/-0.13 +0.30/+0.38	-0.33/-0.21 +0.22/+0.33	-0.37/-0.13 +0.21/+0.29
Minimum DNBR	17.48	5.30	3.40
Extrapolated* Worst Case Minimum DNBR	4.07	3.42	2.61
Maximum Linear Heat Rate (kW/ft)	2.74	7.92	10.84
Extrapolated* Worst Case Linear Heat Rate (kW/ft)	11.69	11.28	11.45

* Extrapolated to 85% FP for LPT, 104.75% FP for IMPT and FPT

OCONEE 2 CYCLE 11

STARTUP REPORT

ENCLOSURE 5.0

CORE POWER DISTRIBUTION DATA SUMMARY AT

LPT, IMPT AND FPT PLATEAUS

	LPT	IMPT	FPT
Power Level (% FP)	19.4	72.2	99.6
Burnup (EFPD)	0.04	1.43	3.92
Group 6/7/8 Positions (% wd)	55/00/35	100/91/34	100/93/35
RCS Boron Concentration (ppmB)	1426	1250	1171
Incore Imbalance (% FP)	- 4.23	- 1.50	+ 1.00
Incore Tilt WX/XY YZ/ZW	-0.55/-0.13 +0.30/+0.38	-0.33/-0.21 +0.22/+0.33	-0.37/-0.13 +0.21/+0.29
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* Extrapolated to 85% FP for LPT, 104.75% FP for IMPT and FPT