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DUKE POWER

January 16, 1991

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

Subject: Oconee Nuclear Station
Docket No. 50-270
Unit 2 Cycle 12 Startup Testing Report

Gentlemen:

Pursuant to Oconee Nuclear Station Technical Specification 6.6.1.1 attached is the Startup Test Report for Oconee Unit 2, Cycle 12. Part I of the report contains Zero Power Physics Test information. Part II contains Power Escalation Test results.

Very truly yours,

M. S. Tuckman

M. S. Tuckman

SGB1/td

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DUKE POWER COMPANY

OCONEE NUCLEAR STATION

OCONEE 2 CYCLE 12

STARTUP TESTING REPORT

Part I: Zero Power Physics Test

Part II: Power Escalation Test

Prepared by: J. L. Osborn

OCONEE 2 CYCLE 12
Startup Testing Report
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Enclosures

OCONEE 2 CYCLE 12
STARTUP TESTING REPORT

PART I

ZERO POWER PHYSICS TEST

1.0 Introduction and Summary

The Oconee 2 Cycle 12 Zero Power Physics Test (ZPPT) was conducted from 10/23/90 through 10/27/90 per Station Procedure PT/0/A/0711/01. The purpose of this testing was to verify the nuclear parameters upon which the Oconee 2 Cycle 12 Safety Analysis and Technical Specifications are based.

Zero Power Physics Testing measurements were made with reactor power controlled between 7.5×10^{-9} amps and 2.0×10^{-10} amps on the intermediate range instrumentation; reactivity insertions were maintained < 1300 μρ. RCS pressure and temperature were maintained at approximately 2155 psig and 532°F, respectively.

The following nuclear parameters were measured:

(a) All-Rods-Out Critical 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 10/27/90 at 0200, ZPPT was declared complete. All acceptance criteria was met.

2.0 Approach to Criticality

The initial RCS heatup following the refueling outage began on 10/24/90. Hot shutdown was reached on 10/25/90 at approximately 1800. Source range count rates were recorded and 1/M (inverse multiplication) vs clock time plots were generated during heatup from approximately 330°F to 420°F while deboration was in progress. No anomalies were noted.

Rod withdrawal for the Control Rod Drive Trip Time Test (CRDTTT) began at 1915 on 10/25/90. The CRDTTT was performed entirely at hot shutdown conditions (i.e., > 1% Δk/k shutdown) per station procedure IP/0/A/0330/3A. 1/M data was taken as Rod Groups 1, 2, 3 and 4 were withdrawn to their upper limits in order to ensure that criticality would not occur during this step. Rod Groups 5 through 7 were withdrawn individually. The CRDTTT was completed at 2350 on 10/25/90 with the acceptance criteria being satisfied.

1/M vs. withdrawn rod worth plots were maintained throughout the withdrawal of Rod Groups 1, 2 and 3 for the Trip Time Test, then again beginning with Group 3 during the subsequent approach to criticality. Criticality was achieved at 0455 on 10/26/90 with rod groups 1-6 at 100%

wd, group 7 at 96% wd, group 8 at 35% wd, 532.7°F RCS average temperature, and RCS boron concentration at 1673 ppmB.

3.0 Pre-Physics Measurements

After establishing stable conditions with the reactor critical, reactor power was slowly increased to verify and record NI overlap. The point of adding sensible heat was also 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 ± 500 and ± 1000 μρ, and measuring the associated doubling times. These doubling times were input to an off-line reactivity calculation and the results 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 93.1% wd, and APSR Group 8 at 35.0% 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 93.4% wd and with APSR Group 8 at 35.0% wd. This measurement was made by varying RCS temperature by approximately 6.5°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 CR Groups 5, 6, and 7 were measured by steadily deborating the RCS and compensating for the resulting positive reactivity addition by inserting (in discrete steps of ~1000 μρ) the control rods from 100% wd on Group 7 to 89% 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 rod worth.

The differential boron worth was calculated by dividing the total rod worth of groups 5, 6, and 7 inserted during the rod worth measurements (not including Group 4) by the corresponding change in RCS boron concentration. The initial value for the boron concentration was recorded at ARO critical equilibrium conditions. The final value of boron concentration was recorded as reactivity approached steady-state at a rate of change less than 80 μρ/minute.

PART II

POWER ESCALATION TEST

1.0 Introduction and Summary

The Oconee 2 Cycle 12 Power Escalation Test was performed between 10/27/90 and 11/7/90 per Station Procedure PT/0/A/0811/01. Testing was performed at 14% Full Power (FP), 20% FP, 72% FP, 92% FP and 100% FP to verify nuclear parameters upon which the Oconee 2 Cycle 12 safety analysis and Technical Specifications are based. The following tests and verifications were performed:

(a) Initial Core Symmetry Check @ 20% FP;

(b) NSS Heat Balance @ 20% FP, 72% FP, and 100% FP (See Enclosure 3.0);

(c) Incore Detector Checkout @ 14% FP, 71% FP and 92% FP;

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

(e) Core Power Distribution @ 20% FP, 72% FP, 92%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 14% FP at 0415 on 10/27/90. Low power testing (LPT) was completed at 1200 that same day. The unit reached 72% FP at 1257 on 10/28/90. Testing at this intermediate plateau was completed at 1700 on 10/29/90. The unit reached the Full Power Testing plateau on 10/30/90 at 0030. Full Power Testing (FPT), consisting of Incore Detector Checkout, Core Power Distribution, NSS Heat Balance and All-Rods-Out Critical Boron, was performed at this plateau. FPT was concluded at 1730 on 10/31/90. Power Escalation Testing was declared complete on 11/7/90 at 1200.

2.0 NSS Heat Balance/RC Flow Verification

Off-line secondary and primary heat balances were performed at 20% FP (primary only), 72% FP, and 100% FP. These tests verified the accuracy of the Core Thermal Power Applications (CTPA), the on-line plant computer program which performs primary and secondary-side heat balances. OAC computer points (temperatures, pressures, flow-rates etc.) are trended via the Emergency Data Transmittal PC. Using this data, the Reactor Group PWRCALC PC program calculates RCS % design flow, verifies Primary/Secondary Power from the Primary/Secondary heat balance, and compares RPS flow values. The results were compared to CTPA averages for the same period, and agreement within 2% FP was verified.

The PWRCALC program results demonstrated that the RC flow rate was above that assumed in the core design (110.5% design flow).

Normalization of the plant computer RCS flow constants (used to calculate flow from the primary delta-P instrumentation) was performed at FPT and the on-line power calculations were then verified to agree within 2% FP.

3.0 Core Power Distribution

Core Power Distribution tests were conducted at 72% FP, 92% 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 20% 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-2016).

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 Tech Spec 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 Instrumentation Signals) was performed to identify erroneous SPND signals. This test was performed at 14% FP as part of Core Symmetry Verification, and at 72% FP and 92% FP as directed in the Incore Detector Checkout Enclosure.

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

$\leq$ { ± 15% for radial peaking factors; ± 20% for total peaking factors (recommended maximum deviation - not an acceptance criterion) }

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

$\leq$ { + 5.0% for radial peaking factors; + 7.5% for total peaking factors }

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

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

$$\% \text{ RMS deviation} = \left[\sum_{i=1}^{3} \frac{(PP_i - MP_i)^2}{n - 1} \right]^{1/2} \times 100 \quad \leq 7.5\%$$

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

Note: OAC computer substitutions for core locations with inoperable detectors was allowed during FPT.

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 13 incore imbalance points which ranged between -9.54% and +3.56% FP were used. All the slopes were verified to be greater than 0.95.

The correlation slopes for NI Channels 5, 6, 7, and 8 were calculated to be 1.120, 1.131, 1.139, and 1.166, 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 12

STARTUP REPORT

ENCLOSURE 1.0

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

	Zero Power ARO Critical Boron Concentration	At-Power ARO Critical Boron Concentration	Differential Boron Worth
CONDITIONS	Gp 7 @ 100% wd Gp 8 @ 35% wd (Initial critical equilibrium: Gp 7 @ 96% wd Gp 8 @ 35% wd 1673 ppmB)	100% FP 3.0 EFPD Gp 7 @ 95% wd Gp 8 @ 35% wd	Initial: Gp 7 @ 93% wd Gp 8 @ 35% wd 1669 ppmB Final: Gp 4 @ 89% wd Gp 5 @ 0% wd Gp 8 @ 35% wd
MEASURED VALUE	1678 ppmB	1130 ppmB	-0.00845 dk/k / ppmB
PREDICTED VALUE	1674 ppmB	1118 ppmB	-0.00822 dk/k / ppmB
DEVIATION	+ 4 ppmB	+ 12 ppmB	-2.7% (% Dev.=((Pred.-Meas.)/Meas.)X100%)
ACCEPTANCE CRITERIA	Predicted ± 50 ppmB	Predicted ± 50 ppmB	Measured more positive than -.0133%dk/k/ppmB <u>and</u> ±15% dev. from pred.

OCONEE 2 CYCLE 12

STARTUP REPORT

ENCLOSURE 2.0

INTEGRAL GROUP ROD WORTH MEASUREMENTS

PARAMETER	MEASURED VALUE (% dk/k)	PREDICTED VALUE (%dk/k)	DEVIATION* (%)	ACCEPTANCE CRITERION
Gp 7 Integral Worth	-0.814	-0.806	-1.0	± 15% Deviation
Gp 6 Integral Worth	-0.897	-0.912	+1.7	± 15% Deviation
Gp 5 Integral Worth	-1.378	-1.257	-8.8	± 15% Deviation
Gp 5-7 Integral Worth	-3.089	-2.975	-3.7	± 10% Deviation

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

REACTIVITY COEFFICIENTS

PARAMETER	CONDITIONS	MEASURED VALUE	PREDICTED VALUE	ACCEPTANCE CRITERIA
Hot Zero Power Temperature Coefficient (ARO)	T_{ave}=535 F Gp 7 @ 93.4% wd Gp 8 @ 35% wd 1668 ppmB	-0.07116E-4 dk/k/F	-0.1788E-4 dk/k/F	Predicted ±0.3E-4 dk/k/F
Hot Zero Power Moderator Temperature Coefficient (ARO)	T_{ave}=535 F Gp 7 @ 93.4% wd Gp 8 @ 35% wd 1668 ppmB	+0.0915E-4 dk/k/F	-0.0161E-4 dk/k/F	Predicted ±0.3E-4 dk/k/F and Measured ≤+0.5E-4 dk/k/F

OCONEE 2 CYCLE 12

STARTUP REPORT

ENCLOSURE 3.0

NSS HEAT BALANCE/RC FLOW VERIFICATION

Test Plateau	Plant Computer Online Primary Power Level (%FP)	Plant Computer Online Sec. Power Level (%FP)	Offline* Calculated Primary Power Level	Offline* Calculated Secondary Power Level	RCS* Flow (%DF)
LPT	20.31	21.22	20.36	21.28	113.7
IMPT	71.89	71.50	71.95	71.49	113.0
FPT	101.31	100.17	101.51	100.29	112.5
FPT (adjusted constants)	99.90	99.97	99.97	99.95	112.4

* Calculated by the offline secondary heat balance program (PWRCALC).

OCONEE 2 CYCLE 12
STARTUP REPORT

ENCLOSURE 4.0
RADIAL PEAKING FACTORS AT IMPT

	8	9	10	11	12	13	14	15
H	1.00 1.06 6.0%	1.10 1.19 8.2%	0.90 0.96 6.7%	1.41 1.40 -0.7%	1.02 1.05 2.9%	1.26 1.20 -4.8%	1.14 1.12 -1.8%	0.46 0.47 2.2%
K		1.13 1.19 5.3%	1.03 1.11 7.8%	1.08 1.12 3.3%	1.43 1.39 -3.1%	1.13 1.11 -1.8%	1.37 1.33 -2.9%	0.56 0.55 -1.8%
L			0.92 0.98 6.5%	1.37 1.36 -1.1%	1.01 1.00 -1.0%	1.38 1.37 -0.7%	0.97 0.99 2.1%	0.30 0.30 0.0%
M				1.04 1.05 1.0%	1.35 1.33 -1.5%	1.09 1.09 0.0%	0.48 0.49 2.1%	
N					0.93 0.93 0.0%	1.24 1.13 -8.9%	0.28 0.30 7.1%	
O						0.53 0.54 1.9%		

Meas
Pred
% Dev

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

Core Conditions

Predicted

Power	75.0	%FP
Group 5	100	%wd
Group 6	100	%wd
Group 7	92	%wd
Group 8	35	%wd
Imbalance	- 0.83	%FP
Burnup	3	EFPD
RCS Boron	1181	ppmB

Measured

Power	71.0	%FP
Group 5	100	%wd
Group 6	100	%wd
Group 7	92	%wd
Group 8	35	%wd
Imbalance	- 0.36	%FP
Burnup	1.3	EFPD
RCS Boron	1222	ppmB
Incore tilt		
WX: -1.04	XY: -0.72	
YZ: -0.54	ZW: +2.30	

The highest % Deviation is -8.9% at location N-13.
The highest measured radial peak is 1.43 at location K-12.
The largest peak % Deviation is +2.4%.
The full core RMS % Deviation is 4.30% with 52 operable detectors.

OCONEE 2 CYCLE 12
STARTUP REPORT

ENCLOSURE 4.1
TOTAL PEAKING FACTORS AT IMPT

	8	9	10	11	12	13	14	15
H	1.15 1.22 6.1%	1.21 1.36 12.4%	1.00 1.09 9.0%	1.61 1.59 -1.2%	1.19 1.19 0.0%	1.46 1.36 -6.8%	1.32 1.30 -1.5%	0.51 0.55 7.8%
K		1.31 1.37 4.6%	1.16 1.27 9.0%	1.22 1.26 3.4%	1.63 1.57 -3.7%	1.28 1.26 -1.9%	1.62 1.56 -3.7%	0.66 0.64 -3.0%
L			1.03 1.10 6.8%	1.56 1.52 -2.3%	1.12 1.14 1.3%	1.59 1.57 -1.3%	1.12 1.14 2.2%	0.33 0.34 3.0%
M				1.13 1.18 4.4%	1.55 1.52 -2.3%	1.24 1.26 2.0%	0.54 0.56 3.7%	
N					1.10 1.07 -2.7%	1.48 1.33 -10.1%	0.33 0.35 6.1%	
O						0.61 0.64 4.9%		

Meas Pred % Dev

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

Core Conditions

Predicted

Power	75.0	%FP
Group 5	100	%wd
Group 6	100	%wd
Group 7	92	%wd
Group 8	35	%wd
Imbalance	- 0.83	%FP
Burnup	3	EFPD
RCS Boron	1181	ppmB

Measured

Power	71.0	%FP
Group 5	100	%wd
Group 6	100	%wd
Group 7	92	%wd
Group 8	35	%wd
Imbalance	- 0.36	%FP
Burnup	1.3	EFPD
RCS Boron	1222	ppmB
Incore tilt		
WX: -1.04	XY: -0.72	
YZ: -0.54	ZW: +2.30	

The highest % Deviation is +12.4% at location H-9.
The highest measured total peak is 1.63 at location K-12.
The largest peak % Deviation is +2.5%.
The full core RMS % Deviation is 5.72% with 52 operable detectors.

OCONEE 2 CYCLE 12
STARTUP REPORT

ENCLOSURE 4.2
RADIAL PEAKING FACTORS AT FPT

	8	9	10	11	12	13	14	15
H	1.03 1.07 3.9%	1.14 1.19 4.4%	0.92 0.96 4.3%	1.41 1.39 -1.4%	1.03 1.05 1.9%	1.26 1.19 -5.6%	1.12 1.12 0.0%	0.46 0.48 4.3%
K		1.16 1.19 2.6%	1.05 1.12 7.2%	1.09 1.12 2.6%	1.42 1.38 -2.8%	1.13 1.11 -1.8%	1.36 1.32 -2.6%	0.56 0.56 0.0%
L			0.93 0.98 5.4%	1.37 1.35 -1.5%	1.00 1.00 -0.5%	1.36 1.36 0.1%	0.97 0.99 2.1%	0.30 0.30 0.0%
M				1.04 1.05 1.0%	1.34 1.32 -1.1%	1.08 1.09 1.4%	0.48 0.49 2.1%	
N					0.95 0.94 -1.1%	1.23 1.13 -8.1%	0.29 0.31 6.9%	
O						0.53 0.55 3.8%		

Meas Pred % Dev

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

Core Conditions

Predicted

Power	100.0	%FP
Group 5	100	%wd
Group 6	100	%wd
Group 7	92	%wd
Group 8	35	%wd
Imbalance	- 4.42	%FP
Burnup	4	EFPD
RCS Boron	1114	ppmB

Measured

Power	100	%FP
Group 5	100	%wd
Group 6	100	%wd
Group 7	95	%wd
Group 8	35	%wd
Imbalance	-0.44	%FP
Burnup	3.0	EFPD
RCS Boron	1173	ppmB
Incore tilt		
WX: -1.06	XY: -0.54	
YZ: -0.51	ZW: +2.11	

The highest % Deviation is +8.1% at location N-13.
The highest measured radial peak is 1.42 at location K-12.
The largest peak % Deviation is +2.1%.
The full core RMS % Deviation is 3.77% with 52 operable detectors.

OCONEE 2 CYCLE 12
STARTUP REPORT

ENCLOSURE 4.3
TOTAL PEAKING FACTORS AT FPT

	8	9	10	11	12	13	14	15
H	1.19 1.21 1.7%	1.30 1.34 3.1%	0.90 1.08 5.9%	1.59 1.58 -0.6%	1.16 1.18 1.7%	1.45 1.36 -6.2%	1.30 1.31 0.8%	0.51 0.55 7.8%
K		1.35 1.34 -0.7%	1.18 1.25 5.9%	1.22 1.25 2.6%	1.60 1.60 0.3%	1.27 1.26 -1.2%	1.59 1.57 -1.3%	0.65 0.65 0.0%
L			1.03 1.09 5.8%	1.53 1.55 1.0%	1.09 1.16 6.4%	1.55 1.60 3.1%	1.10 1.15 5.0%	0.33 0.34 3.0%
M				1.12 1.19 6.3%	1.52 1.55 1.6%	1.21 1.26 4.6%	0.53 0.56 5.7%	
N					1.09 1.08 -0.9%	1.46 1.35 -7.5%	0.33 0.35 6.1%	
O						0.60 0.64 6.7%		

Meas Pred % Dev

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

Core Conditions

Predicted

Power	100.0	%FP
Group 5	100	%wd
Group 6	100	%wd
Group 7	92	%wd
Group 8	35	%wd
Imbalance	- 4.42	%FP
Burnup	4	EFPD
RCS Boron	1114	ppmB

Measured

Power	100	%FP
Group 5	100	%wd
Group 6	100	%wd
Group 7	95	%wd
Group 8	35	%wd
Imbalance	- 0.44	%FP
Burnup	3	EFPD
RCS Boron	1173	ppmB

Incore tilt
WX: -1.06 XY: -0.54
YZ: -0.51 ZW: +2.11

The highest % Deviation is +7.8% at location H-15.
The highest measured radial peak is 1.60 at location K-12.
The largest peak % Deviation is -0.3%.
The full core RMS % Deviation is 4.90% with 52 operable detectors.

OCONEE 2 CYCLE 12

STARTUP REPORT

ENCLOSURE 5.0

CORE POWER DISTRIBUTION DATA SUMMARY AT

LPT, IMPT AND FPT PLATEAUS

Power Level (% FP)	20	72	92
Burnup (EFPD)	.07	0.54	1.63
Group 6/7/8 Positions (% wd)	100/38/36	100/53/52	100/73/38
RCS Boron Concentration (ppmB)	1434	1265	1222
Incore Imabalance (% FP)	-1.98	-10.61	-9.25
Incore Tilt WX/XY YZ/ZW	-1.56/+0.62 -1.79/+2.72	-1.16/-0.86 -0.41/+2.43	-1.06/-0.54** -0.51/+2.11
Minimum DNBR	16.8	4.55	3.42
Extrapolated* Worst Case Minimum DNBR	3.71	2.80	2.65
Maximum Linear Heat Rate (kW/ft)	2.75	9.97	11.84
Extrapolated* Worst Case Linear Heat Rate (kW/ft)	11.47	14.24	13.28

* Extrapolated to 85% FP for LPT, 105.5% FP for IMPT and FPT

** Data taken at 100% FP