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AUTH. NAME: REPKO, R.T. AUTHOR AFFILIATION: Duke Power Co.
TUCKER, H.B. Duke Power Co.
RECIP. NAME: RECIPIENT AFFILIATION

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DUKE POWER COMPANY
OCONEE NUCLEAR STATION
OCONEE 1 CYCLE 12
STARTUP TESTING REPORT

Part I: Zero Power Physics Test

Part II: Power Escalation Test

Prepared by: Regis T. Repko

8905150259 890505
PDR ADOCK 05000269
P FDC

**OCONEE 1 CYCLE 12
Startup Testing Report
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OCONEE 1 CYCLE 12
STARTUP TESTING REPORT

PART I

ZERO POWER PHYSICS TEST

1.0 Introduction and Summary

The Oconee 1 Cycle 12 Zero Power Physics Test (ZPPT) was conducted from 2/09/89 through 2/14/89 per Station Procedure TT/1/A/0711/12. The purpose of this testing was to verify the nuclear parameters upon which the Oconee 1 Cycle 12 safety analysis and Technical Specifications are based.

Zero Power Physics Testing measurements were made with reactor power controlled between $2.0E(-10)$ amps and $1.0E(-7)$ amps on the intermediate range instrumentation; reactivity insertions were maintained < 150 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 2/14/89 at 1245, ZPPT was declared complete. All acceptance criteria were met.

2.0 Approach to Criticality

The initial RCS heatup following the refueling outage began on 02/08/89. Hot shutdown was reached on 2/13/89 at approximately 2311. 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Rod withdrawal for the Control Rod Drive Trip Time Test began at 0555 on 2/13/89. 1/M vs. withdrawn rod worth plots were maintained throughout. Criticality was achieved with rod groups 1-6 at 100 %wd, group 7 at 90 %wd, group 8 at 35 wd and RCS boron concentration at 1705 ppmB. Group 7 was pulled to 100 %wd (+68 pcm insertion) and the CRD trip time test was performed per station procedure IP/0/A/301/3W at 0902 on 2/13/89. 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 two additional times. The second time for groups 2 and 3 and the third time for group 2 only. The CRD trip time test was completed at 1037 on 2/13/89. 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 87% 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. All Rod 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 85% wd and with CR Group 8 at 35% wd. This measurement was made by varying RCS temperature by about 10°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 calculated 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 82% 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 1 Cycle 12 Power Escalation Test was performed between 2/14/89 and 2/21/89 per Station Procedure TT/1/A/0811/12. Testing was performed at 9% Full Power (FP), 14% FP, 73% FP, and 100% FP to verify nuclear parameters upon which the Oconee 1 Cycle 12 safety analysis and Technical Specifications are based. The following tests and verifications were performed:

- (a) Initial Core Symmetry Check @ 9% FP and 13% FP;
- (b) NSS Heat Balance @ 9% FP, 73% FP, and 100% FP (See Enclosure 3.0);
- (c) Incore Detector Checkout @ 9% FP, 71% FP and 97% FP;
- (d) Power Imbalance Detector Correlation Slope Measurement @ 73% FP;
- (e) Core Power Distribution @ 13% FP, 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 9% FP at 2100 on 2/14/89. The Initial Core Symmetry Check was repeated at 13% FP. All low power testing was completed on 2/14/89. The unit reached 72% FP at 0740 on 2/17/89. Testing at this power level was completed on 2/18/89. The unit reached 100% FP on 2/19/89 at about 0030. Power Escalation Testing was declared complete on 2/21/89.

2.0 NSS Heat Balance/RC Flow Verification

Off-line secondary and primary heat balances were performed at 9% FP (primary only), 73% 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 9% FP. The acceptance criterion for incore detector strings 31 and 36 failed at this power level. The signal data was evaluated and no unusual problems were found. The Core Symmetry Check was performed again at 13% FP. All acceptance criteria were met at this power level.

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-2012).

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/O/B/0302/06 (Review and Control of Incore Neutron Detector Signals) was performed to identify erroneous SPND signals. This test was performed at 9% FP as part of Core Symmetry Verification, and at 71% FP and 97% 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:

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

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

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

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

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:

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

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 16 incore imbalance points which ranged between -5.42% and +7.18% FP were used. All the slopes were verified to be greater than 0.95.

The correlation slopes for NI Channels 5 through 7 were calculated to be 1.22; the slope for NI Channel 8 was calculated to be 1.23. The differential amp gain settings for NI Channels 5-8 were 4.36, 4.38, 4.29, and 4.40 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.

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ENCLOSURE 1.0

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

	Zero Power ARO Critical Boron Concentration	At-Power ARO Critical Boron concentration	Differential Boron Worth
CONDITIONS	<p>Gp 7 @ 100% wd Gp 8 @ 35% wd</p> <p>(Initial critical equilibrium: Gp 7 @ 87% wd Gp 8 @ 35% wd 1705 ppmB)</p>	<p>100% FP 4.3 KFPD</p> <p>Gp 7 @ 95% wd Gp 8 @ 36% wd</p>	<p>Initial: Gp 7 @ 85% wd Gp 8 @ 35% wd 1703 ppmB</p> <p>Final: Gp 4 @ 82% wd Gp 5 @ 0% wd Gp 8 @ 35% wd 1373 ppmB</p>
MEASURED VALUE	1713 ppmB	1174 ppmB	- 0.9139% $\delta k/k$ per 100 ppmB
PREDICTED VALUE	1691 ppmB	1137 ppmB	- 0.8431% $\delta k/k$ per 100 ppmB
DEVIATION	+ 22 ppmB	+ 37 ppmB	- 7.75%
			(% Dev = $\frac{\text{Pred} - \text{Meas}}{\text{Meas}} \times 100$)
ACCEPTANCE CRITERIA	Predicted \pm 50 ppmB	Predicted \pm 50 ppmB	Measured more positive than - 1.33% $\delta k/k$ per 100 ppmB <u>and</u> \pm 15% deviation from predicted

STARTUP REPORT

ENCLOSURE 2.0

INTEGRAL GROUP ROD WORTH MEASUREMENTS

PARAMETER	MEASURED VALUE (% $\delta k/k$)	PREDICTED VALUE (% $\delta k/k$)	DEVIATION* (%)	ACCEPTANCE CRITERION
Gp 7 Integral Worth	- 0.750	- 0.728	- 2.9	\pm 15% Deviation
Gp 6 Integral Worth	- 1.139	- 1.105	- 2.9	\pm 15% Deviation
Gp 5 Integral Worth	- 1.071	- 1.086	+ 1.4	\pm 15% Deviation
Gp 5-7 Integral Worth	- 2.9595	- 2.9190	- 1.4	\pm 10% Deviation

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

REACTIVITY COEFFICIENTS

PARAMETER	CONDITIONS	MEASURED VALUE	PREDICTED VALUE	ACCEPTANCE CRITERIA
Hot Zero Power Temperature Coefficient (ARO)	$T_{av} = 536^{\circ}\text{F}$ Gp 7 @ 85% wd Gp 8 @ 35% wd 1702 ppmB	+ 8.18 x 10(-6) $\delta k/k/^{\circ}\text{F}$	- 5.50 x 10(-7) $\delta k/k/^{\circ}\text{F}$	Predicted \pm 0.3 x 10(-4) $\delta k/k/^{\circ}\text{F}$
Hot Zero Power Moderator Temperature Coefficient (ARO)		+ 2.81 x 10(-5) $\delta k/k/^{\circ}\text{F}$	+ 1.59 x 10(-5) $\delta k/k/^{\circ}\text{F}$	Predicted \pm 0.3 x 10(-4) $\delta k/k/^{\circ}\text{F}$ and Measured \leq + 0.5 x 10(-4) $\delta k/k/^{\circ}\text{F}$

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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	9.29	N/A	9.21	9.29	N/A	115.6
IMPT	73.60	72.74	73.18	73.60	72.74	112.9 *
FPT	101.65	100.03	100.95	101.67	100.06	112.2 *
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)

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ENCLOSURE 4.0

RADIAL PEAKING FACTORS AT 72% FP

	8	9	10	11	12	13	14	15
H	1.04 1.02 -2.1%	1.37 1.32 -3.7%	1.39 1.31 -5.8%	1.39 1.38 -0.5%	1.01 1.02 +0.7%	1.12 1.15 +2.9%	1.02 1.05 +3.0%	0.49 0.53 +8.4%
K		1.40 1.35 -3.6%	1.32 1.28 -3.0%	1.04 1.05 +0.8%	1.34 1.35 +1.1%	1.20 1.24 +3.5%	1.25 1.23 -1.7%	0.44 0.46 +4.3%
		L	1.34 1.31 -2.5%	1.39 1.37 -2.2%	1.00 1.00 -0.1%	1.27 1.30 +2.08%	0.82 0.85 +4.0%	0.29 0.30 +3.1%
			M	1.01 1.00 -0.9%	1.32 1.27 -3.4%	1.07 1.10 +3.0%	0.51 0.53 +4.1%	
				N	1.01 0.97 -4.4%	0.98 0.97 -0.6%	0.29 0.29 +1.7%	
					O	0.40 0.41 +2.8%		

Meas
Pred
Z Dev

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

Core Conditions

Predicted			Measured		
Power	75.0	ZFP	Power	72.0	ZFP
Group 5	100	Zwd	Group 5	99.1	Zwd
Group 6	100	Zwd	Group 6	99.3	Zwd
Group 7	92	Zwd	Group 7	89.2	Zwd
Group 8	35	Zwd	Group 8	39.9	Zwd
Imbalance	- 1.37	ZFP	Imbalance	- 0.50	ZFP
Burnup	3	EFPD	Burnup	1.46	EFPD
RCS Boron	1200	ppmB	RCS Boron	1258	ppmB
			Incore tilt		
			WX: +0.88	XY: +1.71	
			YZ: -0.72	ZW: -1.87	

The highest Z Deviation is 8.4% at location H-15.
 The highest measured radial peak is 1.40 at location K-9.
 The largest peak Z Deviation is 1.2%.
 The full core RMS Z Deviation is 3.47% with 52 operable detectors.

OCONEE 1 CYCLE 12

STARTUP REPORT

ENCLOSURE 4.1

TOTAL PEAKING FACTORS AT 72% FP

	8	9	10	11	12	13	14	15
H	1.21 1.17 -3.6%	1.62 1.51 -7.0%	1.66 1.49 -10.1%	1.63 1.57 -3.6%	1.19 1.15 -3.2%	1.27 1.32 +4.1%	1.18 1.23 +3.9%	0.56 0.62 +10.5%
	K	1.62 1.54 -5.0%	1.52 1.46 -4.6%	1.18 1.17 -0.8%	1.51 1.54 +1.7%	1.37 1.42 +4.2%	1.48 1.45 -1.8%	0.52 0.53 +2.7%
		L	1.54 1.47 -4.3%	1.61 1.54 -4.1%	1.14 1.16 +1.5%	1.46 1.51 +3.0%	0.94 0.99 +5.6%	0.32 0.34 +7.8%
			M	1.14 1.11 -2.5%	1.53 1.47 -3.8%	1.25 1.27 +2.1%	0.58 0.61 +4.8%	
				N	1.19 1.11 -6.7%	1.15 1.14 -0.5%	0.32 0.34 +6.3%	
					O	0.46 0.47 +3.3%		

Meas
Pred
Z Dev

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

Core Conditions

Predicted			Measured		
Power	75.0	ZFP	Power	72.0	ZFP
Group 5	100	Zwd	Group 5	99.1	Zwd
Group 6	100	Zwd	Group 6	99.3	Zwd
Group 7	92	Zwd	Group 7	89.2	Zwd
Group 8	35	Zwd	Group 8	39.9	Zwd
Imbalance	- 1.37	ZFP	Imbalance	- 0.50	ZFP
Burnup	3	KFPD	Burnup	1.46	EFPD
RCS Boron	1200	ppmB	RCS Boron	1258	ppmB
			Incore tilt		
			WX: +0.88	XY: +1.71	
			YZ: -0.72	ZW: -1.87	

The highest Z Deviation is 10.5% at location H-15.
 The highest measured total peak is 1.66 at location H-1.
 The largest peak Z Deviation is 5.3%.
 The full core RMS Z Deviation is 5.68% with 52 operable detectors.

OCONEE 1 CYCLE 12

STARTUP REPORT

ENCLOSURE 4.2

RADIAL PEAKING FACTORS AT 100% FP

	8	9	10	11	12	13	14	15
H	1.06 1.02 -4.1%	1.38 1.31 -5.1%	1.40 1.30 -7.0%	1.39 1.37 -1.1%	1.03 1.02 -1.0%	1.12 1.15 +2.9%	1.02 1.05 +3.2%	0.50 0.54 +7.7%
	K	1.41 1.34 -4.9%	1.33 1.27 -3.9%	1.04 1.05 +0.6%	1.34 1.34 +0.7%	1.19 1.23 +3.7%	1.25 1.23 -1.0%	0.45 0.47 +3.5%
	L		1.34 1.30 -3.0%	1.38 1.36 -1.6%	1.00 1.00 +0.7%	1.26 1.29 +2.6%	0.82 0.86 +4.6%	0.29 0.30 +5.0%
			M	1.01 1.00 -0.6%	1.31 1.27 -2.8%	1.07 1.10 +3.2%	0.51 0.54 +5.4%	
				N	1.02 0.97 -4.8%	0.98 0.98 -0.1%	0.29 0.30 +3.7%	
					O	0.40 0.42 +4.2%		

Meas
Pred
% Dev

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

Core Conditions

Predicted			Measured		
Power	100.0	ZFP	Power	99.9	ZFP
Group 5	100	Zwd	Group 5	99.1	Zwd
Group 6	100	Zwd	Group 6	99.3	Zwd
Group 7	92	Zwd	Group 7	94.8	Zwd
Group 8	35	Zwd	Group 8	35.5	Zwd
Imbalance	- 4.83	ZFP	Imbalance	- 0.49	ZFP
Burnup	4	KFPD	Burnup	4.31	EFPD
RCS Boron	1135	ppmB	RCS Boron	1174	ppmB
			Incore tilt		
			WX: +1.00	XY: +1.72	
			YZ: -0.88	ZW: -1.85	

The highest % Deviation is 7.7% at location H-15.

The highest measured total peak is 1.41 at location K-9.

The largest peak % Deviation is 2.5%.

The full core RMS % Deviation is 3.87% with 52 operable detectors.

OCONEE 1 CYCLE 12

STARTUP REPORT

ENCLOSURE 4.3

TOTAL PEAKING FACTORS AT 100% FP

	8	9	10	11	12	13	14	15
H	1.22	1.63	1.67	1.61	1.15	1.26	1.17	0.56
	1.14	1.47	1.47	1.56	1.15	1.33	1.23	0.63
	-6.3%	-9.6%	-12.1%	-2.9%	+0.4%	+5.4%	+5.5%	+11.7%
K	1.63	1.53	1.18	1.49	1.36	1.45	0.52	
	1.51	1.43	1.16	1.56	1.44	1.47	0.54	
	-7.5%	-6.7%	-1.3%	+4.9%	+6.2%	+1.4%	+3.8%	
L	1.53	1.57	1.12	1.44	0.93	0.32		
	1.46	1.56	1.19	1.53	1.00	0.35		
	-4.6%	-0.6%	+5.9%	+6.7%	+7.3%	+9.2%		
M	1.13	1.50	1.23	0.58				
	1.13	1.50	1.30	0.62				
	-0.3%	-0.4%	+5.4%	+6.5%				
N	1.13	1.13	0.32					
	1.13	1.17	0.35					
	+0.4%	+3.5%	+8.5%					
					0.45			
					0.49			
					+7.9%			

Meas
Pred
Z Dev

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

Core Conditions

Predicted			Measured		
Power	100.0	ZFP	Power	99.9	ZFP
Group 5	100	Zwd	Group 5	99.1	Zwd
Group 6	100	Zwd	Group 6	99.3	Zwd
Group 7	92	Zwd	Group 7	94.8	Zwd
Group 8	35	Zwd	Group 8	35.5	Zwd
Imbalance	- 4.83	ZFP	Imbalance	- 0.49	ZFP
Burnup	4	KFPD	Burnup	4.31	KFPD
RCS Boron	1135	ppmB	RCS Boron	1174	ppmB
			Incore tilt		
			WX: +1.00	XY: +1.72	
			YZ: -0.88	ZW: -1.85	

The highest Z Deviation is 12.1% at location H-10.
 The highest measured total peak is 1.67 at location H-10.
 The largest peak Z Deviation is +6.3%.
 The full core RMS Z Deviation is 7.59% with 52 operable detectors.

OCONEE 1 CYCLE 12

STARTUP REPORT

ENCLOSURE 5.0

CORE POWER DISTRIBUTION DATA SUMMARY AT

LPT, IMPT AND FPT PLATEAUS

	LPT	IMPT	FPT
Power Level (% FP)	12.9	73.2	99.9
Burnup (KFPD)	0.03	0.71	4.31
Group 6/7/8 Positions (% wd)	100/30/35	100/61/50	100/95/36
RCS Boron Concentration (ppmB)	1507	1438	1174
Incore Imbalance (% FP)	- 0.09	- 7.44	- 0.49
Incore Tilt WX/XY YZ/ZW	+0.60/+1.60 -0.40/-1.80	+0.79/+1.74 -0.63/-1.90	+1.00/+1.72 -0.88/-1.85
Minimum DNBR	28.81	4.84	3.35
Extrapolated* Worst Case Minimum DNBR	4.28	3.09	2.56
Maximum Linear Heat Rate (kW/ft)	1.85	9.44	11.35
Extrapolated* Worst Case Linear Heat Rate (kW/ft)	12.28	13.26	12.09

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

Duke Power Company
P.O. Box 33198
Charlotte, N.C. 28242

Hal B. Tucker
Vice President
Nuclear Production
(704)323-4531



DUKE POWER

May 5, 1989

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

Subject: Oconee Nuclear Station
Docket No. 50-269
Unit 1 Cycle 12 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 1, Cycle 12. Part I of the report contains Zero Power Physics Test information. Part II contains Power Escalation Test results.

Very truly yours,

Hal B. Tucker

PJN/946/td

Attachment

cc: S. B. Ebnetter
U. S. Nuclear Regulatory Commission
Region II
101 Marietta Street, NW, Suite 2900
Atlanta, GA 30323

D. B. Matthews
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, DC 20555

Mr. P. H. Skinner
NRC Resident Inspector
Oconee Nuclear Station

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