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U.S. Nuclear Regulatory Commission
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DOMINION NUCLEAR CONNECTICUT, INC.
MILLSTONE POWER STATION UNIT 3
STARTUP TEST REPORT FOR CYCLE 18

Pursuant to Millstone Power Station Unit 3 Technical Specification 6.9.1.1, Dominion Nuclear Connecticut, Inc. submits the enclosed Startup Test Report for Cycle 18.

If you have any questions or require additional information, please contact Mr. Thomas G. Cleary at (860) 444-4377.

Sincerely,

B. L. Stanley
Director, Nuclear Safety and Licensing – Millstone

Enclosure: (1)

Commitments made in this letter: None

IE26
NRR

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ENCLOSURE

STARTUP TEST REPORT FOR CYCLE 18

DOMINION NUCLEAR CONNECTICUT, INC.
MILLSTONE POWER STATION UNIT 3

1.0 SUMMARY

Pursuant to Millstone Power Station Unit 3 (MPS3) Technical Specification (TS) 6.9.1.1, a summary of the MPS3 Cycle 18 startup testing, performed following completion of the spring 2016 refueling outage, is provided.

2.0 INTRODUCTION

The MPS3 Cycle 18 fuel reload was completed on April 29, 2016. The attached core map (Figure 7.1) shows the final core configuration. Reference [6.3] documents that Cycle 18 uses a low leakage loading pattern (L3P) consisting of 85 new Region 20 fuel assemblies, 84 Region 19 once-burned fuel assemblies, and 24 Region 18 twice-burned fuel assemblies. All 193 fuel assemblies in the Cycle 18 core are the Westinghouse 17x17 robust fuel assembly (RFA-2) design.

The 85 new Region 20 fuel assemblies are comprised of 53 fuel assemblies enriched to 4.10 weight percent Uranium-235 (w/o U^{235}) and 32 fuel assemblies enriched to 4.95 w/o U^{235}. The top and bottom regions of all fuel assemblies in the Cycle 18 core are comprised of a 6-inch annular blanket region enriched to 2.6 w/o U^{235}. Placement of the new fuel assemblies in the designated fresh fuel assembly locations was made in a random fashion in order to prevent power tilts across the core due to systematic deviations in the fresh fuel composition.

The 108 re-inserted fuel assemblies were ultrasonically cleaned during the spring 2016 refueling outage. The purpose of the ultrasonic fuel cleaning was to remove adhered crud (primarily nickel and iron-based deposits) from the surface of fuel rods that have previous core exposure in order to reduce the probability of occurrence of crud-induced power shift (CIPS).

Every fuel assembly in Cycle 18 contains an insert. The inserts consist of 61 rod cluster control assemblies (RCCAs), 128 thimble plugs, and 4 secondary source assemblies.

Subsequent operational and testing milestones were completed as follows:

Initial Criticality	May 12, 2016
Low Power Physics Testing completed	May 13, 2016
Main Turbine Online	May 13, 2016
49% Power Testing completed	May 14, 2016
74% Power Testing completed	May 15, 2016
100% Power Testing completed	May 24, 2016

3.0 FUEL DESIGN

All of the 193 assemblies in the Cycle 18 core are of the RFA-2 design. This fuel design is the same as that used in Cycle 17.

4.0 LOW POWER PHYSICS TESTING

The low power physics testing program for Cycle 18 was completed using the procedure in Reference [6.1] which is based on the Westinghouse dynamic rod worth measurement (DRWM) technique described in Reference [6.4]. This program consisted of the following: control and shutdown bank worth measurements, critical boron endpoint measurements for all rods out (ARO), and ARO moderator/isothermal temperature coefficient measurements. Low power physics testing was performed at a power level below the point of nuclear heat to avoid nuclear heating reactivity feedback effects.

4.1 Critical Boron Concentration

The critical boron concentration was measured for the ARO configuration. The measured values include corrections to account for differences between the measured critical rod configuration and the ARO configuration. The review and acceptance criteria of ±500 and ±1000 percent milliRho (pcm), respectively, were met for the ARO configuration.

Summary of Boron Endpoint Results

	Measured (ppm)	Predicted (ppm)	M-P (ppm)	Acceptance Criteria (pcm)
All Rods Out (ARO)	2060	2058	+2 (-14.7 pcm)	± 1000

4.2 Moderator Temperature Coefficient

Isothermal temperature coefficient (ITC) data was measured with Control Bank D at 197 steps withdrawn. The review criteria of ±2 pcm/degrees Fahrenheit (°F) to the predictions were met.

The ARO moderator temperature coefficient (MTC) of +0.60 pcm/°F was calculated by subtracting the design Doppler temperature coefficient (-1.74 pcm/°F) from the measured ARO isothermal temperature coefficient of -1.70 pcm/°F, and adding the delta (Δ) ITC correction value of +0.56 pcm/°F (ΔITC corrects the MTC at the measurement conditions to the minimum temperature for criticality value of 551°F). The TS limit of MTC < +5.0 pcm/°F at ARO hot zero power (HZP) was met.

Isothermal/Moderator Temperature Coefficient Results

	Measured (pcm/°F)	Corrected Predicted (pcm/°F)	M-P (pcm/°F)	Acceptance Criteria (pcm/°F)
ARO ITC	-1.70	-2.52	0.82	NA
ARO MTC	0.60	NA	NA	MTC < +5.0

4.3 Control Rod Reactivity Worth Measurements

The integral reactivity worths of all RCCA control and shutdown banks were measured using the DRWM technique. The review criteria of the measured worth is ±15% or 100 pcm of the individual predicted worth, whichever is greater and the sum of the measured worths is ±8% of the predicted worths. The DRWM rod worth acceptance criteria is defined as: the sum of the measured worths (M) of all banks shall be greater than or equal to 90% of the sum of their predicted worths (P).

Control Bank Integral Worth Results

	Measured (pcm)	Predicted (pcm)	M-P (pcm)	% Difference (M-P) / P
Control Bank A	774.0	769.4	4.6	0.6
Control Bank B	597.7	606.1	-8.4	-1.4
Control Bank C	784.5	828.1	-43.6	-5.3
Control Bank D	606.7	566.2	40.5	7.2
Shutdown Bank A	387.8	399.9	-12.1	-3.0
Shutdown Bank B	911.3	976.4	-65.1	-6.7
Shutdown Bank C	406.0	381.5	24.5	6.4
Shutdown Bank D	404.8	384.6	20.2	5.3
Shutdown Bank E	82.2	82.2	0	0
Total	4955.0	4994.4	-39.4	-0.8

The measured results of the individual bank worths and the total control bank worth showed excellent agreement with the predicted values. All individual and total worth review criteria were met. The acceptance criteria for the sum of the measured rod worths (greater than or equal to 90% of the sum of the predicted worths), was met.

5.0 POWER ASCENSION TESTING

Testing was performed at specified power plateaus of approximately 49%, 74% and 100% Reactor Thermal Power (RTP). Power changes were governed by operating procedures and fuel preconditioning guidelines.

Thermal-hydraulic parameters, nuclear parameters, and related instrumentation were monitored throughout the power ascension. Data was compared to previous cycle power ascension data and engineering predictions, as required, at each test plateau to identify calibration or system problems. The major areas analyzed were:

- Core Performance Evaluation: Flux mapping was performed at approximately 49%, 74% and 100% RTP using the moveable incore detector system. The resultant peaking factors and power distribution were compared to TS limits to verify that the core was operating within its design limits. All analysis limits were met and the results are summarized in Section 5.1.

- Nuclear Instrumentation Indication: Overlap data was obtained between the intermediate and power range nuclear instrumentation channels. Secondary plant heat balance calculations were performed to verify the nuclear instrumentation indications.

- Incore/Excore Calibration: Scaling factors were calculated from flux map data using the single point calibration methodology. The nuclear instrumentation power range channels were re-scaled at approximately 49% and 100% RTP.

- Reactor Coolant System (RCS) Flow: The RCS flow rate was measured at approximately 94% RTP using a secondary calorimetric heat balance for each loop with the steam generators as the control volumes. The calculated RCS flow rate met the TS requirements and is reported in Section 5.3.

5.1 Power Distribution, Power Peaking and Tilt Measurements

The core power distribution was measured through the performance of a series of flux maps during the power ascension, as specified in Reference [6.2]. The results from the flux maps were used to verify compliance with the power distribution TSs.

A low power flux map at approximately 49% RTP was performed to determine if any gross neutron flux abnormalities existed. At the 49% RTP plateau flux map and again at the 74% RTP plateau flux map, data necessary to perform an excore to incore calibration via the single point methodology was obtained. Per TS

Surveillance 4.3.1.1, Table 4.3-1, Functional Unit 2, Note 6, a flux map at approximately 100% RTP was performed for an excore to incore calibration. The 100% RTP map also verified core power distributions were within the design limits.

A summary of the measured axial flux difference (AFD) and incore tilt for the flux maps performed during the power ascension is provided below. Additional tables provide comparisons of the most limiting measured heat flux hot channel factor (F_Q) and nuclear enthalpy rise hot channel factor ($F_{\Delta}h$), including uncertainties, to their respective limits from each of the flux maps performed during the power ascension. The most limiting F_Q reported is based on minimum margin to the steady state limit that varies as a function of core height.

As shown below, all TS limits were met and no abnormalities in core power distribution were observed during power ascension.

Summary of Measured Axial Flux Difference and Incore Tilt

Power (%RTP)	Burnup (MWD/MTU)	Rod Position (steps)	AFD (%)	Incore Tilt
49.3	8.9	216	5.072	1.0188
73.6	27.2	216	3.821	1.0139
99.9	224.6	216	1.027	1.0107

Comparison of Measured F_Q to F_Q^{RTP} Limit

Power (%RTP)	Burnup (MWD/MTU)	Measured F_Q	F_Q^{RTP} steady state limit	Margin to Transient Limit
49.3	8.9	N/A	N/A	N/A
73.6	27.2	1.8817	3.4075	8.9 %
99.9	224.6	1.8536	2.603	14.8 %

Comparison of Measured $F_{\Delta}h$ to $F_{\Delta}h$ Limit

Power (%RTP)	Burnup (MWD/MTU)	$F_{\Delta}h$	$F_{\Delta}h$ Limit
49.3	8.9	1.491	1.827
73.6	27.2	1.443	1.712
99.9	224.6	1.430	1.586

Presented in Figures 7.2, 7.3 and 7.4 are measured power distribution maps showing percent difference from the predicted power for approximately 49%, 74% and 100% RTP plateaus. These figures show there is good agreement between the measured and predicted assembly powers.

5.2 Boron Measurements

Hot full power ARO boron concentration measurements were performed after reaching equilibrium conditions. The measured ARO, hot full power, equilibrium xenon, boron concentration was 1412 ppm with a predicted value of 1439 ppm. The predicted to measured difference was -204 pcm which met the acceptance criteria of ± 1000 pcm.

5.3 Reactor Coolant System Flow Measurement

The RCS flow rate was determined using a secondary calorimetric heat balance for each loop with the steam generators as the control volumes. The following parameters were measured:

- RCS pressure
- Hot leg temperatures
- Cold leg temperatures
- Feedwater temperatures
- Feedwater flow rates
- Feedwater pressure
- Steam generator pressure

Steam generator blowdown was not isolated during the data acquisition period.

Per TS Surveillance 4.2.3.1.3, the RCS flow was measured within 24 hours after exceeding 90% RTP. The measured flow at 94.4% RTP was 402,787 gallons per minute (gpm) with a minimum required flow of 379,200 gpm. All TS limits were met.

6.0 REFERENCES

6.1 SP 31008, Rev. 008-00, "Low Power Physics Testing (ICCE)"

6.2 EN 31015, Rev. 004-00, "Power Ascension Testing of Millstone Unit 3"

6.3 ETE-NAF-2016-0041, Rev. 000, "Millstone Unit 3 Cycle 18 Nuclear Design Report"

6.4 WCAP-13360-P-A, Revision 1, "Westinghouse Dynamic Rod Worth Measurement Technique"

7.0 FIGURES

FIGURE 7.1
CORE LOADING PATTERN
MILLSTONE UNIT 3 - CYCLE 18

R	P	N	M	L	K	J	H	G	F	E	D	C	B	A	
				18A V22	19A W42	19A W34	19A W23	19A W17	19A W51	18A V23					1
		18B V82	18A V21	20B X55	20B X68	20A X02	20B X62	20A X04	20B X73	20B X57	18A V20	18A V29			2
	18A V38	20B X75	20B X81	20A X39	19B W74	20A X15	19A W16	20A X20	19B W71	20A X43	20B X82	20B X67	18B V81		3
	18A V24	20B X85	19B W69	19B W81	19B W53	19A W15	20A X22	19A W04	19B W59	19B W82	19B W68	20B X69	18A V17		4
18A V25	20B X58	20A X45	19B W78	20A X51	19A W21	20A X31	19B W72	20A X32	19A W22	20A X52	19B W80	20A X38	20B X59	18A V13	5
19A W45	20B X78	19B W62	19B W55	19A W32	20A X05	19A W14	20A X53	19A W27	20A X10	19A W37	19B W60	19B W73	20B X79	19A W44	6
19A W40	20A X11	20A X14	19A W06	20A X35	19A W19	20A X16	19A W41	20A X26	19A W03	20A X27	19A W08	20A X23	20A X01	19A W33	7
19A W18	20B X63	19A W02	20A X24	19B W64	20A X40	19A W48	20A X48	19A W50	20A X49	19B W66	20A X19	19A W09	20B X64	19A W38	8
19A W35	20A X12	20A X21	19A W07	20A X13	19A W13	20A X30	19A W52	20A X18	19A W29	20A X17	19A W01	20A X34	20A X03	19A W26	9
19A W46	20B X76	19B W76	19B W56	19A W36	20A X08	19A W25	20A X46	19A W05	20A X09	19A W24	19B W54	19B W67	20B X77	19A W49	10
18A V18	20B X60	20A X47	19B W84	20A X42	19A W20	20A X33	19B W61	20A X29	19A W39	20A X44	19B W79	20A X37	20B X54	18A V15	11
	18A V26	20B X72	19B W70	19B W83	19B W58	19A W11	20A X36	19A W10	19B W57	19B W77	19B W65	20B X74	18A V28		12
	18B V83	20B X66	20B X80	20A X50	19B W63	20A X28	19A W12	20A X25	19B W75	20A X41	20B X71	20B X70	18A V44		13
		18A V39	18A V19	20B X61	20B X84	20A X06	20B X65	20A X07	20B X83	20B X56	18A V14	18B V78			14
				18A V16	19A W43	19A W31	19A W28	19A W30	19A W47	18A V27					15

90°

0°

LEGEND

R ID	Region Identifier Fuel Assembly Identifier

REGION	ASSEMBLIES	ENRICHMENT
18A	20	4.10
18B	4	4.95
19A	52	4.10
19B	32	4.95
20A	53	4.10
20B	32	4.95

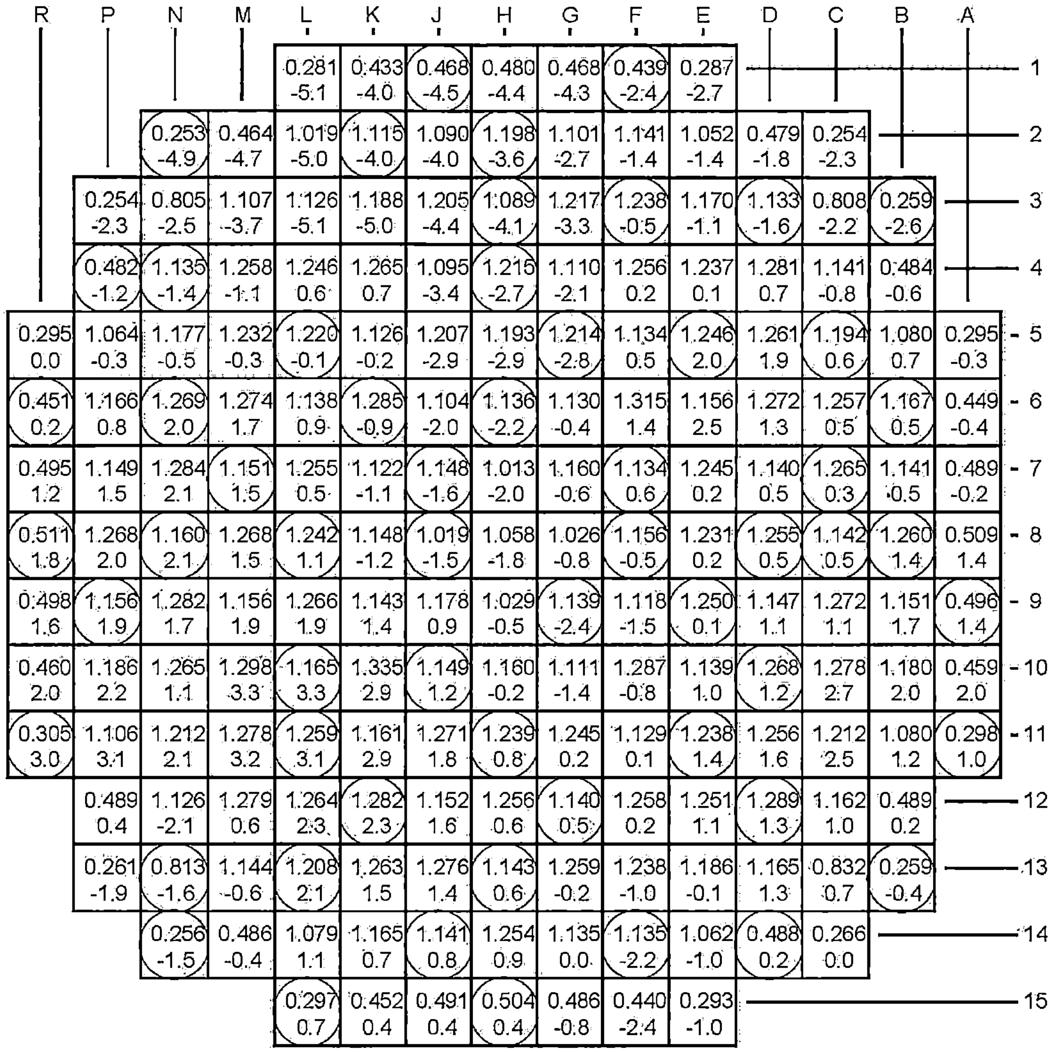
FIGURE 7.2
INCORE Power Distribution - 49.3%
MILLSTONE UNIT 3 - CYCLE 18

	R	P	N	M	L	K	J	H	G	F	E	D	C	B	A
1					0.273 -6.2	0.421 -5.0	○ 0.454 -5.4	0.467 -5.1	0.457 -4.6	○ 0.430 -2.7	0.282 -2.8				
2			○ 0.248 -5.0	0.461 -4.9	1.024 -6.1	○ 1.124 -4.9	1.090 -4.7	○ 1.203 -4.3	1.106 -3.1	1.160 -1.4	1.069 -1.4	0.477 -1.9	0.249 -2.7		
3		0.249 -2.7	0.815 -2.6	1.135 -3.7	1.135 -6.3	1.190 -6.4	1.206 -5.0	○ 1.083 -4.6	1.221 -3.5	○ 1.257 -0.4	1.194 -1.1	○ 1.161 -1.6	0.817 -2.4	○ 0.253 -3.1	
4		○ 0.479 -1.4	○ 1.163 -1.4	1.297 -1.1	1.263 0.5	1.268 0.4	1.081 -3.8	○ 1.205 -2.8	1.099 -2.2	1.264 0.4	1.257 0.1	1.323 0.8	1.168 -0.9	0.481 -0.8	
5	0.290 0.0	1.081 -0.3	1.196 -0.9	1.246 -0.8	○ 1.219 -0.4	1.109 -0.5	1.192 -2.7	1.179 -2.6	○ 1.201 -2.5	1.122 0.6	○ 1.254 2.5	1.283 2.1	○ 1.218 0.6	1.098 0.6	0.288 -1.0
6	○ 0.444 0.5	1.181 0.4	○ 1.280 1.4	1.273 1.1	1.120 0.4	○ 1.267 -0.9	1.078 -1.8	○ 1.111 -1.8	1.101 -0.5	1.296 1.4	1.142 2.4	1.286 1.8	1.280 0.7	○ 1.190 0.7	0.439 -0.9
7	0.486 1.5	1.157 1.4	1.285 1.6	○ 1.137 1.2	1.238 0.5	1.098 -0.7	○ 1.117 -1.2	0.980 -1.3	1.126 -0.4	○ 1.105 0.6	1.230 0.4	1.133 0.8	○ 1.273 0.3	1.149 0.4	0.476 -0.8
8	○ 0.502 2.0	1.282 2.0	○ 1.155 1.8	1.258 1.5	○ 1.225 1.2	1.126 -0.4	○ 0.987 -0.6	1.030 -1.2	0.989 -0.4	○ 1.128 -0.3	1.214 0.2	○ 1.249 0.7	○ 1.141 0.5	○ 1.272 1.2	0.496 0.8
9	0.489 1.9	○ 1.166 1.9	1.287 1.4	1.151 2.4	1.261 2.9	1.122 2.2	1.150 1.7	0.996 0.3	○ 1.111 -1.8	1.093 -1.2	○ 1.234 0.2	1.134 0.9	1.274 0.7	1.155 1.2	○ 0.483 0.8
10	0.456 2.9	1.216 2.9	1.286 1.2	1.320 4.5	○ 1.163 4.3	1.329 4.0	○ 1.121 1.4	1.132 0.1	1.083 -1.4	1.273 -0.4	1.123 0.7	○ 1.272 1.0	1.287 2.0	1.196 1.7	0.449 1.6
11	○ 0.304 4.5	1.141 4.6	1.248 3.1	1.313 4.5	○ 1.270 3.8	1.154 3.5	1.254 1.8	○ 1.222 0.9	1.226 0.1	1.119 0.4	○ 1.236 1.0	1.270 1.1	1.226 1.6	1.094 0.9	○ 0.291 0.3
12		0.492 1.4	1.163 -1.4	1.326 1.1	1.286 2.4	○ 1.290 2.5	1.137 1.2	1.245 0.4	○ 1.128 0.4	1.270 0.6	1.267 0.8	○ 1.324 0.9	1.181 0.1	0.484 -0.4	
13		0.259 -0.8	○ 0.832 -0.6	1.182 0.2	○ 1.234 2.2	1.281 1.5	1.282 1.3	○ 1.141 0.5	1.264 -0.4	1.253 -1.4	1.200 -0.9	1.184 0.4	0.836 -0.1	○ 0.252 -1.6	
14			○ 0.254 -0.8	0.488 0.4	1.107 2.1	1.192 1.4	○ 1.151 0.9	1.269 1.0	1.141 -0.3	○ 1.143 -3.3	1.072 -1.7	○ 0.482 -0.6	0.259 -0.8		
15					○ 0.295 1.7	0.447 1.1	0.481 0.4	○ 0.495 0.6	0.475 -1.0	0.428 -3.4	0.285 -2.1				

☐ Measured Power
% Difference (M-P)/P

○ Measured Location

FIGURE 7.3
INCORE Power Distribution - 73.6%
MILLSTONE UNIT 3 - CYCLE 18

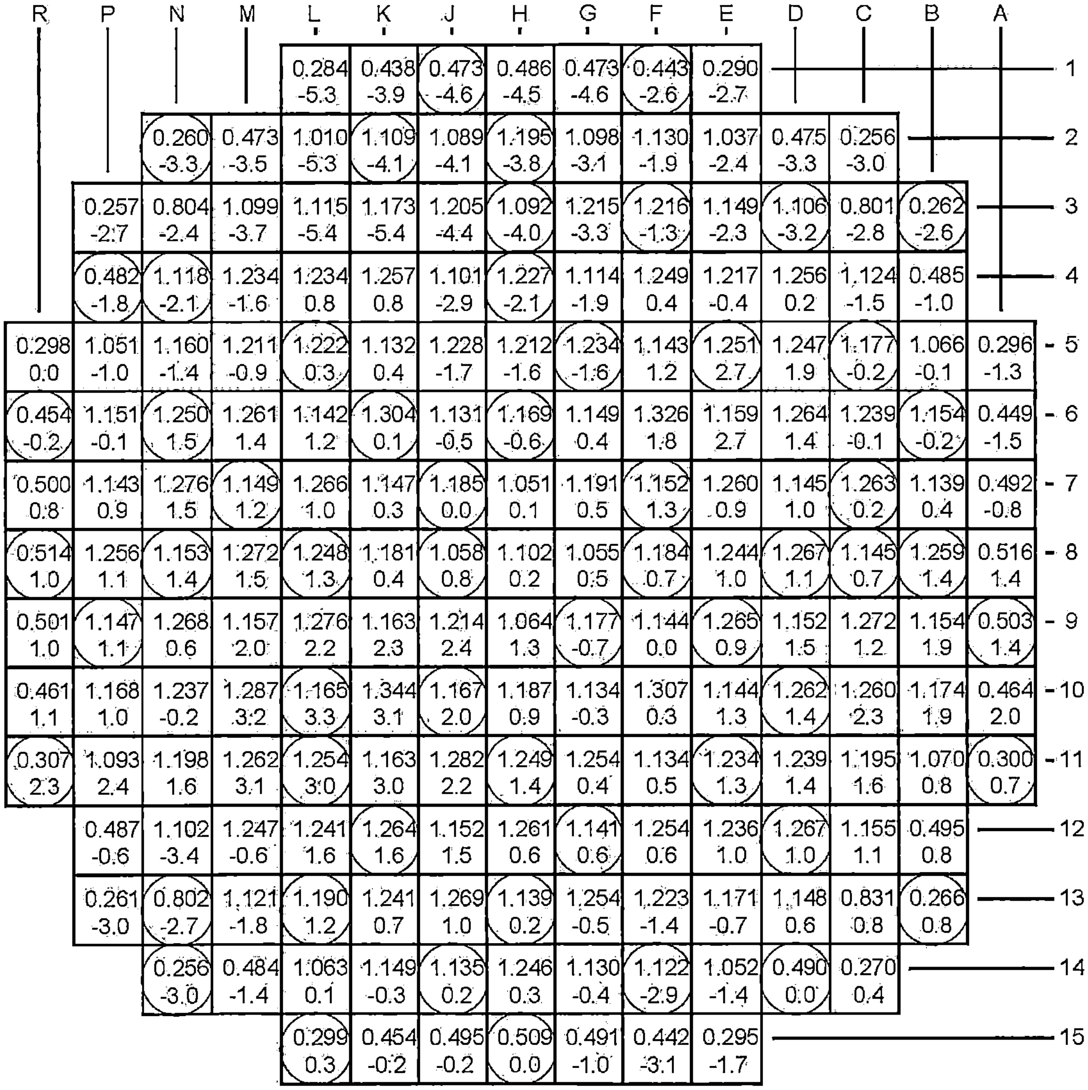


R	P	N	M	L	K	J	H	G	F	E	D	C	B	A	
				0.281 -5.1	0.433 -4.0	0.468 -4.5	0.480 -4.4	0.468 -4.3	0.439 -2.4	0.287 -2.7					1
		0.253 -4.9	0.464 -4.7	1.019 -5.0	1.115 -4.0	1.090 -4.0	1.198 -3.6	1.101 -2.7	1.141 -1.4	1.052 -1.4	0.479 -1.8	0.254 -2.3			2
	0.254 -2.3	0.805 -2.5	1.107 -3.7	1.126 -5.1	1.188 -5.0	1.205 -4.4	1.089 -4.1	1.217 -3.3	1.238 -0.5	1.170 -1.1	1.133 -1.6	0.808 -2.2	0.259 -2.6		3
	0.482 -1.2	1.135 -1.4	1.258 -1.1	1.246 0.6	1.265 0.7	1.095 -3.4	1.215 -2.7	1.110 -2.1	1.256 0.2	1.237 0.1	1.281 0.7	1.141 -0.8	0.484 -0.6		4
0.295 0.0	1.064 -0.3	1.177 -0.5	1.232 -0.3	1.220 -0.1	1.126 -0.2	1.207 -2.9	1.193 -2.9	1.214 -2.8	1.134 0.5	1.246 2.0	1.261 1.9	1.194 0.6	1.080 0.7	0.295 -0.3	5
0.451 0.2	1.166 0.8	1.269 2.0	1.274 1.7	1.138 0.9	1.285 -0.9	1.104 -2.0	1.136 -2.2	1.130 -0.4	1.315 1.4	1.156 2.5	1.272 1.3	1.257 0.5	1.167 0.5	0.449 -0.4	6
0.495 1.2	1.149 1.5	1.284 2.1	1.151 1.5	1.255 0.5	1.122 -1.1	1.148 -1.6	1.013 -2.0	1.160 -0.6	1.134 0.6	1.245 0.2	1.140 0.5	1.265 0.3	1.141 0.5	0.489 -0.2	7
0.511 1.8	1.268 2.0	1.160 2.1	1.268 1.5	1.242 1.1	1.148 -1.2	1.019 -1.5	1.058 -1.8	1.026 -0.8	1.156 -0.5	1.231 0.2	1.255 0.5	1.142 0.5	1.260 1.4	0.509 1.4	8
0.498 1.6	1.156 1.9	1.282 1.7	1.156 1.9	1.266 1.9	1.143 1.4	1.178 0.9	1.029 -0.5	1.139 -2.4	1.118 -1.5	1.250 0.1	1.147 1.1	1.272 1.1	1.151 1.7	0.496 1.4	9
0.460 2.0	1.186 2.2	1.265 1.1	1.298 3.3	1.165 3.3	1.335 2.9	1.149 1.2	1.160 -0.2	1.111 -1.4	1.287 -0.8	1.139 1.0	1.268 1.2	1.278 2.7	1.180 2.0	0.459 2.0	10
0.305 3.0	1.106 3.1	1.212 2.1	1.278 3.2	1.259 3.1	1.161 2.9	1.271 1.8	1.239 0.8	1.245 0.2	1.129 0.1	1.238 1.4	1.256 1.6	1.212 2.5	1.080 1.2	0.298 1.0	11
	0.489 0.4	1.126 -2.1	1.279 0.6	1.264 2.3	1.282 2.3	1.152 1.6	1.256 0.6	1.140 0.5	1.258 0.2	1.251 1.1	1.289 1.3	1.162 1.0	0.489 0.2		12
	0.261 -1.9	0.813 -1.6	1.144 -0.6	1.208 2.1	1.263 1.5	1.276 1.4	1.143 0.6	1.259 -0.2	1.238 -1.0	1.186 -0.1	1.165 1.3	0.832 0.7	0.259 -0.4		13
		0.256 -1.5	0.486 -0.4	1.079 1.1	1.165 0.7	1.141 0.8	1.254 0.9	1.135 0.0	1.135 -2.2	1.062 -1.0	0.488 0.2	0.266 0.0			14
				0.297 0.7	0.452 0.4	0.491 0.4	0.504 0.4	0.486 -0.8	0.440 -2.4	0.293 -1.0					15

□ Measured Power
% Difference (M-P)/P

○ Measured Location

FIGURE 7.4
INCORE Power Distribution - 99.9%
MILLSTONE UNIT 3 - CYCLE 18



	R	P	N	M	L	K	J	H	G	F	E	D	C	B	A
1					0.284 -5.3	0.438 -3.9	0.473 -4.6	0.486 -4.5	0.473 -4.6	0.443 -2.6	0.290 -2.7				
2			0.260 -3.3	0.473 -3.5	1.010 -5.3	1.109 -4.1	1.089 -4.1	1.195 -3.8	1.098 -3.1	1.130 -1.9	1.037 -2.4	0.475 -3.3	0.256 -3.0		
3		0.257 -2.7	0.804 -2.4	1.099 -3.7	1.115 -5.4	1.173 -5.4	1.205 -4.4	1.092 -4.0	1.215 -3.3	1.216 -1.3	1.149 -2.3	1.106 -3.2	0.801 -2.8	0.262 -2.6	
4		0.482 -1.8	1.118 -2.1	1.234 -1.6	1.234 0.8	1.257 0.8	1.101 -2.9	1.227 -2.1	1.114 -1.9	1.249 0.4	1.217 -0.4	1.256 0.2	1.124 -1.5	0.485 -1.0	
5	0.298 0.0	1.051 -1.0	1.160 -1.4	1.211 -0.9	1.222 0.3	1.132 0.4	1.228 -1.7	1.212 -1.6	1.234 -1.6	1.143 1.2	1.251 2.7	1.247 1.9	1.177 -0.2	1.066 -0.1	0.296 -1.3
6	0.454 -0.2	1.151 -0.1	1.250 1.5	1.261 1.4	1.142 1.2	1.304 0.1	1.131 -0.5	1.169 -0.6	1.149 0.4	1.326 1.8	1.159 2.7	1.264 1.4	1.239 -0.1	1.154 -0.2	0.449 -1.5
7	0.500 0.8	1.143 0.9	1.276 1.5	1.149 1.2	1.266 1.0	1.147 0.3	1.185 0.0	1.051 0.1	1.191 0.5	1.152 1.3	1.260 0.9	1.145 1.0	1.263 0.2	1.139 0.4	0.492 -0.8
8	0.514 1.0	1.256 1.1	1.153 1.4	1.272 1.5	1.248 1.3	1.181 0.4	1.058 0.8	1.102 0.2	1.055 0.5	1.184 0.7	1.244 1.0	1.267 1.1	1.145 0.7	1.259 1.4	0.516 1.4
9	0.501 1.0	1.147 1.1	1.268 0.6	1.157 2.0	1.276 2.2	1.163 2.3	1.214 2.4	1.064 1.3	1.177 -0.7	1.144 0.0	1.265 0.9	1.152 1.5	1.272 1.2	1.154 1.9	0.503 1.4
10	0.461 1.1	1.168 1.0	1.237 -0.2	1.287 3.2	1.165 3.3	1.344 3.1	1.167 2.0	1.187 0.9	1.134 -0.3	1.307 0.3	1.144 1.3	1.262 1.4	1.260 2.3	1.174 1.9	0.464 2.0
11	0.307 2.3	1.093 2.4	1.198 1.6	1.262 3.1	1.254 3.0	1.163 3.0	1.282 2.2	1.249 1.4	1.254 0.4	1.134 0.5	1.234 1.3	1.239 1.4	1.195 1.6	1.070 0.8	0.300 0.7
12		0.487 -0.6	1.102 -3.4	1.247 -0.6	1.241 1.6	1.264 1.6	1.152 1.5	1.261 0.6	1.141 0.6	1.254 0.6	1.236 1.0	1.267 1.0	1.155 1.1	0.495 0.8	
13		0.261 -3.0	0.802 -2.7	1.121 -1.8	1.190 1.2	1.241 0.7	1.269 1.0	1.139 0.2	1.254 -0.5	1.223 -1.4	1.171 -0.7	1.148 0.6	0.831 0.8	0.266 0.8	
14			0.256 -3.0	0.484 -1.4	1.063 0.1	1.149 -0.3	1.135 0.2	1.246 0.3	1.130 -0.4	1.122 -2.9	1.052 -1.4	0.490 0.0	0.270 0.4		
15					0.299 0.3	0.454 -0.2	0.495 -0.2	0.509 0.0	0.491 -1.0	0.442 -3.1	0.295 -1.7				

☐ Measured Power
% Difference (M-P)/P

○ Measured Location