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Dominion

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U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
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DOMINION NUCLEAR CONNECTICUT, INC.
MILLSTONE POWER STATION UNIT 3
STARTUP TEST REPORT FOR CYCLE 11

Pursuant to Section 6.9.1.1 of the Millstone Unit 3 Technical Specifications, Dominion Nuclear Connecticut, Inc. hereby submits the enclosed Startup Test Report for Cycle 11.

There are no regulatory commitments contained within this letter.

If you have any questions or require additional information, please contact Mr. David W. Dodson at (860) 447-1791, extension 2346.

Very truly yours,

Stephen Scace

Stephen E. Scace, Director
Nuclear Station Safety and Licensing

IE26

Enclosures: (1)

Commitments made in this letter: None.

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Serial No. 05-804
Docket No. 50-423

Enclosure 1

Startup Test Report

Cycle 11

Millstone Power Station 3
Dominion Nuclear Connecticut, Inc. (DNC)

Table of Contents

1.0 SUMMARY

Low Power Physics Testing and Power Ascension Testing for Millstone Unit 3 Cycle 11 identified no unusual core response or reactivity anomalies. All measured core parameters were determined to be within their acceptance criteria. All Technical Specification surveillance requirements were met.

2.0 INTRODUCTION

The Millstone Unit 3 Cycle 11 fuel reload was completed on October 14, 2005. The attached core map (Figure 1) shows the final core configuration. Reference 6.3 documents that Cycle 11 uses a low leakage loading pattern (L3P) consisting of 73 new Region 13 fuel assemblies, 72 Region 12 once-burned fuel assemblies, and 48 Region 11 twice- burned fuel assemblies. The 73 feed fuel assemblies, 64 of the 72 once-burned fuel assemblies and all 48 twice-burned assemblies are the Westinghouse 17x17 Robust Fuel Assembly (RFA) design. Eight of the once-burned fuel assemblies are Westinghouse 17x17 Next Generation Fuel (NGF) Lead Test Assemblies (LTAs).

The 73 Region 11 assemblies are comprised of 37 assemblies enriched to 4.00 weight percent Uranium-235 (w/o U^{235}) and 36 assemblies enriched to 4.95 w/o U^{235}. The top and bottom regions of all fuel assemblies in the Cycle 11 core are comprised of a 6-inch annular blanket region enriched to 2.6 w/o U^{235}. The fuel assembly locations for the fresh fuel were randomly assigned to prevent power tilts across the core due to systematic deviations in the fresh fuel composition.

Every fuel assembly in Cycle 11 contains an insert from the following list of items:
2 secondary sources, 61 RCCAs, and 130 thimble plugs.

Subsequent operational and testing milestones were completed as follows:

Initial Criticality	October 27, 2005
Low Power Physics Testing completed	October 27, 2005
Main Turbine Online	October 27, 2005
30% Power Testing completed on	October 28, 2005
75% Power Testing completed on	October 30, 2005
100% Power Testing completed on	November 07, 2005

3.0 FUEL DESIGN

The Robust Fuel Assembly (RFA) design comprises 185 out of the 193 assemblies in the Cycle 11 core. This fuel design differs from the previous fuel design in that it incorporates the Westinghouse protective bottom grid (P-Grid), thicker walled control rod guide tubes and instrument tube, and modifications to the mixing vane grids and Intermediate Flow Mixer (IFM) grids. The P-Grid improves the fuel assembly's resistance to debris and thus debris related failures. The thicker walled guide and instrument tubes make the fuel assembly more resistant to bowing and twisting, thereby further reducing the possibility of an incomplete rod insertion event. The modifications to the mixing vanes grids and IFM's improve the fuel assembly thermal performance and increase the margin to fuel-related design limits.

The final 8 assemblies in the Cycle 11 core are Next Generation Fuel (NGF) Lead Test Assemblies (LTA's). These LTAs, designated Region 12C, have several mechanical differences from the RFA assemblies. The LTAs have an Integral Top Nozzle, enhanced structural and IFM grids, two additional IFM grids per assembly, and utilize a tube-in-tube design for the guide tubes. The LTAs also have reduced pressure drop Debris Filter Bottom Nozzles (DFBNs), optimized ZITLO^{TM} cladding, and have had the plenum spring used on an RFA replaced by a spring clip.

4.0 LOW POWER PHYSICS TESTING

The low power physics testing program for Cycle 11 was completed using the procedure in reference 6.1 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 All Rods Out 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)	2160	2156	4 (23 pcm)	± 1000

4.2 Moderator Temperature Coefficient

Isothermal Temperature Coefficient (ITC) data was measured at the All Rods Out configuration. Controlled heat-ups and cool-downs were performed and the reactivity change was measured. These measurements were corrected for ARO conditions and the averages of the corrected results are presented below. They were then compared to the design predictions and review criteria. The review criteria of ±2 pcm/ °F of the predictions were met.

The ARO Moderator Temperature Coefficient (MTC) of -0.01 pcm/°F was calculated by subtracting the design Doppler Temperature Coefficient (-1.78 pcm/°F) from the measured ARO Isothermal Temperature Coefficient of -1.79 pcm/°F. The Technical Specification 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	-1.79	-2.18	+0.39	NA
ARO MTC	-0.01	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 Dynamic Rod Worth Measurement Technique (DRWM). The review criteria is that the measured worth is ±15% or 100 pcm of the individual predicted worth, whichever is greater and 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	828.0	836.3	-8.3	-1.0
Control Bank B	606.5	584.8	21.7	3.7
Control Bank C	860.2	870.2	-10.0	-1.1
Control Bank D	505.2	481.7	23.5	4.9
Shutdown Bank A	342.9	341.2	1.7	0.5
Shutdown Bank B	1071.0	1047.4	23.6	2.3
Shutdown Bank C	322.4	309.0	13.4	4.3
Shutdown Bank D	330.0	313.9	16.1	5.1
Shutdown Bank E	59.0	56.4	2.6	4.6
Totals	4925.2	4840.9	84.3	1.7

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 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

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 Technical Specifications.

A low power flux map, at approximately 29% rated thermal power (RTP), was performed to determine if any gross neutron flux abnormalities existed. At the 30% power plateau flux map, data necessary to perform an INCORE to EXCORE calibration via the single point methodology was obtained. Per Technical Specification Surveillance 4.3.1.1, Table 4.3-1 Functional Unit 2 Note 6, a flux map at approximately 98% power was performed for INCORE to

EXCORE calibration. Once hot full power equilibrium conditions were reached, another flux map was performed to verify 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_{Δ}**h), including uncertainties, to their respective limits from each of the flux maps performed during the power ascension. The most limiting **F_Q** is based on margin to the limit which varies as a function of core height.

As can be seen from the data presented, all Technical Specification 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
29.2	9.0	216	5.027	1.0022
72.0	34.0	216	4.568	1.0021
100.0	343.0	216	1.027	1.0029

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
29.2	9.0	2.156	4.973	N/A
72.0	34.0	1.890	3.491	32.2 %
100.0	343.0	1.860	2.600	14.1 %

Comparison of Measured $F_{\Delta}h$ to $F_{\Delta}h$ limit for each Fuel Type

Power (%RTP)	Burnup (MWD/MTU)	Type 1 (NGF)	Type 1 Limit	Type 2 (RFA)	Type 2 Limit
29.2	9.0	1.413	1.827	1.492	1.912
72.0	34.0	1.391	1.637	1.474	1.713
100.0	343.0	1.362	1.510	1.447	1.580

Presented in Figures 2, 3 and 4 are measured Power Distribution Maps showing percent difference from the predicted power for the 30%, 75% and 100% power plateaus. From these data it can be seen that there is good agreement between the measured and predicted assembly powers.

5.2 Boron Measurements

Hot full power all rods out boron concentration measurements were performed after reaching equilibrium conditions. The measured All Rods Out, Hot Full Power, equilibrium xenon, boron concentration was 1496 ppm with a predicted value of 1478 ppm. The predicted to measured difference was +106 pcm which met the acceptance criteria of ± 1000 pcm.

5.3 Reactor Coolant System Flow Measurement

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

- Reactor Coolant System 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 Technical Specification Surveillance 4.2.3.1.2, the Reactor Coolant System Flow was measured prior to operation above 75% rated thermal power. The measured flow at approximately 72% rated thermal power was 400,244 gallons per minute (gpm) with a minimum required flow of 372,292 gpm. The reactor coolant system flow measurement was re-performed after reaching 100% rated thermal power. The measured flow at 100% power was

398,401 gpm with a minimum required flow of 372,292 gpm. All Technical Specification limits were met.

6.0 REFERENCES

6.1 SP 31008, Rev. 002-06, "Low Power Physics Testing (IPTE)"

6.2 EN 31015, Rev. 001-00, "Power Ascension Testing of Millstone Unit 3"

6.3 Nuclear Design and Core Physics Characteristics of the Millstone Generating Station Unit 3, Cycle 11

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

6.5 NEU-05-36, Letter from W. F. Staley (Westinghouse) to Robert Borchert, "Dominion Nuclear Connecticut Millstone Unit 3 Low Power Physics Tests (LPPT)," dated November 11, 2005.

7.0 FIGURES

FIGURE 1
CORE LOADING PATTERN
MILLSTONE UNIT 3 - CYCLE 11

	R	P	N	M	L	K	J	H	G	F	E	D	C	B	A
1					11B L66	11B L55	11B L76	11B L58	11B L81	11A L40	11B L45				
2			11B L52	11B L69	13B N39	13B N47	13B N56	13B N61	13B N63	13B N49	13B N41	11B L47	11B L71		
3		11B L62	11A L22	13B N69	13A N11	12B M18	12B M29	12B M36	12B M37	12B M20	13A N18	13B N70	11A L17	11B L63	
4		11B L61	13B N55	12B M21	12B M35	13A N21	12B M60	13A N30	12B M57	13A N31	12C M65	12B M26	13B N73	11B L73	
5	11B L70	13B N42	13A N10	12C M68	13A N36	12A M01	13A N02	12A M16	13A N04	12A M13	13A N13	12B M31	13A N25	13B N43	11B L48
6	11A L10	13B N50	12B M27	13A N26	12A M02	12B M56	12C M67	13A N22	12B M33	12B M63	12A M08	13A N23	12B M17	13B N51	11B L68
7	11B L74	13B N57	12B M34	12B M54	13A N05	12B M40	12B M59	12A M10	12B M53	12C M71	13A N06	12B M51	12B M43	13B N66	11B L80
8	11B L67	13B N67	12B M42	13A N17	12A M11	13A N20	12A M05	13A N09	12A M14	13A N29	12A M04	13A N16	12B M39	13B N64	11B L46
9	11B L79	13B N65	12B M45	12B M61	13A N07	12C M70	12B M62	12A M15	12B M52	12B M41	13A N01	12B M49	12B M44	13B N60	11B L78
10	11B L50	13B N52	12B M28	13A N15	12A M07	12B M58	12B M38	13A N34	12C M66	12B M55	12A M09	13A N33	12B M19	13B N46	11A L23
11	11B L42	13B N44	13A N28	12B M46	13A N37	12A M03	13A N08	12A M12	13A N03	12A M06	13A N27	12C M72	13A N24	13B N38	11B L53
12		11B L56	13B N62	12B M24	12C M69	13A N32	12B M50	13A N14	12B M64	13A N35	12B M32	12B M25	13B N54	11B L60	
13		11B L49	11A L07	13B N68	13A N12	12B M22	12B M48	12B M47	12B M30	12B M23	13A N19	13B N59	11A L31	11B L57	
14			11B L43	11B L72	13B N45	13B N53	13B N58	13B N72	13B N71	13B N48	13B N40	11B L44	11B L64		
15					11B L65	11A L08	11B L77	11B L59	11B L75	11B L51	11B L54				

90°

0°

LEGEND

R	Region Identifier
ID	Fuel Assembly Identifier

REGION	ASSEMBLIES	ENRICHMENT
11A	8	4.20
11B	40	4.70
12A	16	4.70
12B	48	4.95
12C	8	4.95
13A	37	4.00
13B	36	4.95

FIGURE 2
INCORE Power Distribution - 29%
MILLSTONE UNIT 3 - CYCLE 11

R	P	N	M	L	K	J	H	G	F	E	D	C	B	A	
				0.277 1.1	0.362 0.8	○ 0.366 -0.3	0.381 -0.3	0.358 -0.6	○ 0.327 0.3	0.268 0.4					1
		○ 0.164 -4.1	0.400 -4.1	1.030 -3.9	1.234 1.0	1.188 -0.1	○ 1.182 -0.2	1.180 0.3	1.216 1.2	1.059 0.1	0.406 -2.2	0.167 -3.5			2
	0.170 -1.7	0.439 -2.0	0.976 -2.7	1.132 -1.4	1.324 0.5	1.277 -0.9	○ 1.296 -0.8	1.281 -0.2	○ 1.330 1.6	1.138 -0.4	○ 0.981 -2.1	0.432 -3.6	○ 0.163 -4.7		3
	○ 0.412 -0.7	○ 0.993 -0.9	1.188 -1.2	1.241 -1.4	1.217 -1.5	1.273 -0.5	○ 1.250 -1.0	1.276 -0.2	1.234 0.2	1.251 -0.1	1.194 -0.7	0.978 -2.5	0.405 -2.9		4
0.269 0.7	1.067 0.9	1.146 0.4	1.254 0.2	○ 1.202 -1.2	1.209 -1.1	1.266 -1.6	1.234 -1.8	○ 1.267 -1.7	1.217 -0.5	○ 1.217 0.1	1.257 -0.1	○ 1.147 -0.1	1.073 0.1	0.275 0.4	5
○ 0.331 1.5	1.232 2.5	○ 1.345 2.8	1.248 1.3	1.224 0.1	○ 1.240 -1.1	1.282 -1.5	○ 1.233 -1.8	1.291 -1.5	1.247 -0.6	1.218 -0.3	1.244 0.7	1.330 0.9	○ 1.233 0.9	0.360 0.3	6
0.368 2.2	1.207 2.5	1.319 2.7	○ 1.308 2.3	1.300 0.9	1.303 -0.5	○ 1.237 -1.4	1.196 -1.6	1.236 -1.4	○ 1.288 -1.1	1.277 -0.8	1.304 1.9	○ 1.305 1.3	1.206 1.4	0.368 0.3	7
○ 0.389 1.8	1.208 2.0	○ 1.332 1.9	1.286 1.9	○ 1.276 1.6	1.248 -0.6	○ 1.201 -1.2	1.200 -0.9	1.206 -0.8	○ 1.245 -0.8	1.249 -0.6	○ 1.277 1.2	○ 1.327 1.5	○ 1.205 1.8	0.385 0.8	8
0.373 1.6	○ 1.211 1.9	1.309 1.6	1.302 1.7	1.303 1.2	1.306 0.3	1.246 -0.6	1.209 -0.6	○ 1.244 -0.8	1.301 -0.7	○ 1.287 -0.2	1.292 1.0	1.300 1.2	1.195 1.5	○ 0.363 0.8	9
0.360 0.3	1.229 0.6	1.327 0.7	1.250 1.2	○ 1.238 1.3	1.264 0.8	○ 1.297 -1.0	1.244 -0.9	1.288 -1.1	1.257 0.2	1.233 0.8	○ 1.241 0.7	1.327 1.4	1.210 0.7	0.327 0.3	10
○ 0.275 0.4	1.077 0.5	1.158 0.9	1.274 1.3	○ 1.227 0.9	1.231 0.7	1.279 -0.8	○ 1.249 -0.6	1.279 -0.6	1.234 1.0	○ 1.231 1.2	1.268 1.3	1.156 1.2	1.055 -0.3	○ 0.266 -0.4	11
	0.420 0.7	1.012 0.9	1.207 0.3	1.253 0.1	○ 1.232 0.0	1.273 -0.5	1.257 -0.4	○ 1.277 -0.2	1.246 0.9	1.272 1.1	1.217 1.2	0.964 -3.8	0.406 -2.2		12
	0.169 -1.2	○ 0.442 -1.3	0.989 -1.3	○ 1.136 -0.5	1.300 -0.7	1.280 -0.3	○ 1.305 -0.2	1.291 0.2	1.322 0.3	1.154 0.5	1.018 1.5	0.442 -1.3	○ 0.166 -4.0		13
		○ 0.170 -1.7	0.409 -1.4	1.043 -1.4	1.185 -1.4	○ 1.165 -1.0	1.172 -1.0	1.181 -0.7	○ 1.219 -0.2	1.079 0.7	○ 0.423 1.4	0.169 -1.2			14
				○ 0.262 -1.9	0.320 -1.8	0.354 -1.7	○ 0.376 -1.6	0.363 -1.1	0.358 -0.3	0.276 0.7					15

☐ Measured Power
% Difference (M-P)/P

○ Measured Location

FIGURE 3
INCORE Power Distribution - 72%
MILLSTONE UNIT 3 - CYCLE 11

	R	P	N	M	L	K	J	H	G	F	E	D	C	B	A
1					0.282 0.7	0.368 0.8	○ 0.372 -0.5	0.387 -0.5	0.366 -0.3	○ 0.337 1.5	0.277 1.5				
2			○ 0.173 -3.9	0.409 -4.0	1.017 -4.1	1.208 0.9	1.161 -0.5	○ 1.156 -0.6	1.163 0.5	1.201 1.8	1.053 0.5	0.416 -2.1	0.175 -3.8		
3		0.179 -1.6	0.452 -2.0	0.969 -3.1	1.112 -2.4	1.277 -1.8	1.251 -1.6	1.270 -1.6	1.264 -0.3	○ 1.320 2.2	1.132 -0.1	○ 0.979 -2.1	0.443 -3.9	○ 0.171 -5.0	
4		○ 0.424 -0.2	○ 0.995 -0.5	1.162 -2.2	1.225 -2.2	1.224 -0.9	1.264 -1.3	○ 1.248 -1.3	1.279 -0.2	1.237 0.2	1.248 0.0	1.182 -0.5	0.978 -2.2	0.416 -2.3	
5	0.277 1.5	1.058 1.0	1.143 0.9	1.257 0.7	1.211 -0.9	1.223 -0.8	1.276 -1.6	1.250 -1.6	○ 1.278 -1.6	1.228 -0.6	○ 1.220 -0.2	1.257 0.3	○ 1.142 0.3	1.063 0.3	0.280 0.0
6	0.342 3.0	1.223 3.6	○ 1.332 3.1	1.270 2.9	1.244 0.7	○ 1.256 -0.8	1.294 -1.6	○ 1.248 -1.9	1.300 -1.7	1.260 -0.5	1.232 -0.1	1.254 1.5	1.319 1.5	○ 1.215 1.5	0.364 -0.3
7	0.378 3.0	1.195 3.3	1.307 3.1	○ 1.310 2.3	1.309 0.8	1.317 -0.5	1.253 -1.4	1.214 -1.8	1.244 -2.1	1.292 -1.7	1.287 -0.8	1.310 2.3	○ 1.294 1.8	1.191 2.1	0.373 -0.3
8	○ 0.395 1.5	1.181 1.5	1.306 1.2	1.283 1.5	○ 1.289 1.5	1.269 -0.2	○ 1.222 -1.1	1.213 -0.8	1.220 -1.3	○ 1.255 -1.3	1.261 -0.7	○ 1.289 2.0	○ 1.319 2.2	1.195 2.8	0.395 1.5
9	0.379 1.3	○ 1.183 1.4	1.272 0.1	1.298 1.3	1.313 1.2	1.319 0.3	1.261 -0.8	1.227 -0.7	○ 1.256 -1.2	1.306 -1.3	1.297 -0.2	1.296 1.2	1.284 1.3	1.180 2.0	○ 0.373 1.6
10	0.367 0.5	1.205 0.7	1.300 0.0	1.247 1.0	○ 1.246 1.1	1.273 0.6	○ 1.310 -1.0	1.259 -1.0	1.300 -1.1	1.265 -0.1	1.244 0.7	○ 1.243 0.7	1.306 1.1	1.191 0.9	0.335 0.9
11	○ 0.283 1.1	1.073 1.2	1.139 0.0	1.265 1.0	○ 1.228 0.5	1.238 0.2	1.288 -0.8	○ 1.264 -0.5	1.291 -0.5	1.241 0.6	○ 1.230 0.7	1.258 0.8	1.145 1.1	1.049 0.1	○ 0.273 0.0
12		0.434 1.9	1.028 2.8	1.196 0.7	1.244 -0.3	○ 1.228 -0.5	1.272 -0.7	1.259 -0.4	○ 1.278 -0.2	1.242 0.6	1.259 0.5	1.194 0.5	0.967 -3.3	0.417 -1.9	
13		0.179 -0.6	○ 0.458 -0.7	0.993 -0.7	○ 1.126 -0.6	1.283 -0.7	1.262 -0.5	○ 1.288 -0.2	1.272 0.1	1.302 0.2	1.149 0.9	1.025 2.5	0.458 -0.7	○ 0.176 -3.3	
14			○ 0.180 -1.1	0.420 -1.2	1.036 -1.1	1.167 -1.1	○ 1.148 -0.8	1.155 -0.7	1.161 -0.5	○ 1.192 -0.4	1.071 1.0	○ 0.437 2.6	0.180 0.0		
15					○ 0.269 -1.5	0.328 -1.2	0.363 -1.1	○ 0.385 -1.0	0.371 -0.8	0.363 -0.5	0.283 1.1				

☐ Measured Power
% Difference (M-P)/P

○ Measured Location

FIGURE 4
INCORE Power Distribution - 100%
MILLSTONE UNIT 3 - CYCLE 11

R	P	N	M	L	K	J	H	G	F	E	D	C	B	A	
				0.287 1.1	0.373 0.8	○ 0.375 -1.1	0.389 -1.3	0.369 -0.8	○ 0.343 1.8	0.282 1.4					1
		○ 0.179 -3.8	0.417 -3.9	1.021 -3.7	1.202 0.9	1.151 -0.9	○ 1.146 -1.0	1.148 -0.3	1.189 1.2	1.047 -0.2	0.420 -2.8	0.180 -3.7			2
	0.184 -1.6	0.459 -2.3	0.977 -3.2	1.137 -0.8	1.285 -0.4	1.239 -1.5	○ 1.258 -1.4	1.244 -0.9	○ 1.292 0.7	1.127 -1.1	○ 0.979 -3.0	0.452 -3.8	○ 0.177 -4.8		3
	○ 0.427 -1.2	○ 0.994 -1.5	1.167 -1.6	1.243 -0.7	1.233 -0.8	1.267 -0.8	○ 1.259 -0.7	1.273 -0.2	1.244 0.2	1.240 -0.6	1.175 -0.9	0.982 -2.7	0.422 -2.8		4
0.278 0.0	1.049 0.0	1.140 0.0	1.245 -0.2	○ 1.225 -0.5	1.227 -0.4	1.293 -0.7	1.260 -0.8	○ 1.294 -0.8	1.234 0.0	○ 1.235 0.3	1.252 0.0	○ 1.135 -1.0	1.051 -0.8	0.281 -1.1	5
0.347 3.0	1.207 2.7	○ 1.315 2.5	1.258 1.4	1.239 0.4	○ 1.254 -0.4	1.300 -0.5	○ 1.267 -0.7	1.306 -0.6	1.260 0.1	1.238 0.5	1.251 0.6	1.292 0.2	○ 1.192 0.1	0.365 -1.4	6
0.383 3.0	1.180 2.4	1.283 2.2	○ 1.302 2.0	1.319 1.2	1.321 0.5	1.257 -0.3	1.225 -0.3	1.254 -0.6	1.304 -0.2	1.303 0.1	1.295 1.4	○ 1.268 0.8	1.171 0.9	0.373 -1.6	7
○ 0.397 0.8	1.171 1.1	○ 1.288 0.9	1.290 1.7	○ 1.293 1.8	1.286 0.8	○ 1.231 0.2	1.232 0.4	1.233 0.3	○ 1.280 0.3	1.273 0.2	○ 1.282 1.1	○ 1.294 1.4	1.180 1.9	0.400 1.5	8
0.381 0.5	○ 1.172 0.9	1.260 0.2	1.299 1.7	1.324 1.7	1.320 1.1	1.264 0.2	1.235 0.5	○ 1.265 0.3	1.318 0.3	○ 1.309 0.4	1.287 0.9	1.267 1.0	1.171 1.6	○ 0.378 1.6	9
0.370 0.0	1.191 0.0	1.272 -1.4	1.254 0.9	○ 1.245 1.1	1.269 0.8	○ 1.313 -0.1	1.277 0.1	1.307 0.1	1.269 0.8	1.244 0.8	○ 1.250 0.7	1.293 0.8	1.180 0.4	0.339 0.6	10
○ 0.288 1.4	1.075 1.4	1.144 -0.2	1.263 0.9	○ 1.237 0.5	1.240 0.5	1.301 -0.2	○ 1.270 0.0	1.300 -0.2	1.242 0.8	○ 1.245 1.1	1.262 1.1	1.154 1.2	1.040 -0.9	○ 0.275 -1.1	11
	0.440 1.4	1.024 1.5	1.188 0.2	1.242 -0.5	○ 1.235 -0.5	1.267 -0.7	1.261 -0.6	○ 1.271 -0.5	1.251 0.6	1.270 1.4	○ 1.205 1.6	1.004 -0.5	0.424 -1.9		12
	0.184 -1.1	○ 0.465 -1.1	0.998 -1.1	○ 1.132 -0.7	1.265 -1.4	1.236 -1.5	○ 1.260 -1.3	1.248 -0.8	1.282 -0.6	1.150 0.3	1.024 1.5	0.469 -0.2	○ 0.182 -2.7		13
		○ 0.185 -1.1	0.427 -1.2	1.036 -1.2	1.154 -1.8	○ 1.132 -1.7	1.139 -1.6	1.148 -1.1	○ 1.172 -1.6	1.058 -0.2	○ 0.438 0.9	0.184 -1.1			14
				○ 0.274 -1.4	0.330 -2.1	0.365 -1.9	○ 0.387 -1.8	0.374 -1.3	0.364 -1.6	0.284 0.0					15

☐ Measured Power
% Difference (M-P)/P

○ Measured Location