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DOMINION NUCLEAR CONNECTICUT, INC.
MILLSTONE POWER STATION UNIT 3
STARTUP TEST REPORT FOR CYCLE 19

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 19.

If you have any questions or require additional information, please contact Mr. Jeffry A. Langan at (860) 444-5544.

Sincerely,

D. C. Lawrence
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 19

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 19 startup testing, performed following completion of the fall 2017 refueling outage, is provided.

2.0 INTRODUCTION

The MPS3 Cycle 19 fuel reload was completed on November 2, 2017. The attached core map (Figure 1) shows the final core configuration. Reference 6.3 documents that Cycle 19 uses a low leakage loading pattern (L3P) consisting of 84 new Region 21 fuel assemblies, 85 Region 20 once-burned fuel assemblies, and 24 Region 19 twice-burned fuel assemblies. All 193 fuel assemblies in the Cycle 19 core are the Westinghouse 17x17 robust fuel assembly (RFA-2) design.

The 84 new Region 21 fuel assemblies are comprised of 44 fuel assemblies enriched to 4.10 weight percent Uranium-235 (w/o U^{235}), 32 fuel assemblies enriched to 4.80 w/o U^{235}, and eight AXIOM™ lead test assemblies (LTAs) enriched to 4.10 w/o U^{235}. The LTAs are the same mechanical design as the rest of Region 21 with the exception of the clad material. The top and bottom regions of all fuel assemblies in the Cycle 19 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 109 re-inserted fuel assemblies were ultrasonically cleaned during the fall 2017 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 19 contains an insert. The inserts consist of 61 rod cluster control assemblies (RCCAs), 130 thimble plugs, and two secondary source assemblies.

Subsequent operational and testing milestones were completed as follows:

Initial Criticality	November 13, 2017
Low Power Physics Testing completed	November 13, 2017
Main Turbine Online	November 14, 2017
49% Power Testing completed	November 15, 2017
74% Power Testing completed	November 16, 2017
100% Power Testing completed	November 20, 2017

3.0 FUEL DESIGN

All of the 193 assemblies in the Cycle 19 core are of the RFA-2 design. This fuel design is the same as that used in Cycle 18.

4.0 LOW POWER PHYSICS TESTING

The Low Power Physics Testing program for Cycle 19 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)	2007	1993	+14 (-90.5 pcm)	±1000

4.2 Moderator Temperature Coefficient

Isothermal temperature coefficient (ITC) data was measured with Control Bank D at 199.5 steps withdrawn. The review criteria of ±2 pcm/degrees Fahrenheit (°F) to the predictions were met. The ARO moderator temperature coefficient (MTC) of +0.06 pcm/°F was calculated by subtracting the design Doppler temperature coefficient (-1.74 pcm/°F) from the measured ITC of -2.25 pcm/°F, and adding the delta (Δ) ITC correction value of +0.57 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	-2.25	-3.00	0.75	NA
ARO MTC	0.06	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	877.3	873.8	3.5	0.4
Control Bank B	579.4	581.2	-1.8	-0.3
Control Bank C	729.5	757.7	-28.2	-3.7
Control Bank D	696.4	631.9	64.5	10.2
Shutdown Bank A	411.5	401.6	9.9	2.5
Shutdown Bank B	878.5	890.9	-12.4	-1.4
Shutdown Bank C	429.8	407.7	22.1	5.4
Shutdown Bank D	434.5	406.8	27.7	6.8
Shutdown Bank E	69.8	69.5	0.3	0.4
Total	5106.7	5021.1	85.6	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 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 74% and 100% RTP.

- Reactor Coolant System (RCS) Flow: The RCS flow rate was measured at approximately 100% 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 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
48.5	13.0	216	5.420	1.0085
73.8	27.5	216	3.297	1.0097
99.9	203.6	216	0.642	1.0087

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
48.5	13.0	N/A	N/A	N/A
73.8	27.5	1.8884	3.3983	13.6 %
99.9	203.6	1.8588	2.6026	17.1 %

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

Power (%RTP)	Burnup (MWD/MTU)	$F_{\Delta}h$	$F_{\Delta}h$ Limit
48.5	13.0	1.486	1.831
73.8	27.5	1.446	1.711
99.9	203.6	1.421	1.586

Figures 2, 3 and 4 are the 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 1344 ppm with a predicted value of 1372 ppm. The predicted to measured difference was -163 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 7 days after exceeding 90% RTP. The measured flow at 100% RTP was 404,664 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. 010-00, "Low Power Physics Testing (ICCE)"

6.2 EN 31015, Rev. 006-00, "Power Ascension Testing of Millstone Unit 3"

6.3 ETE-NAF-2017-0125, Rev. 000, "Millstone Unit 3 Cycle 19 Nuclear Design Report"

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

7.0 FIGURES

Page

FIGURE 1

CORE LOADING PATTERN

MILLSTONE UNIT 3 - CYCLE 19

	R	P	N	M	L	K	J	H	G	F	E	D	C	B	A
1					19A W30	20A X15	20A X13	20A X53	20A X17	20A X20	19A W31				
2			19B W69	19A W47	21B Y46	21B Y58	21A Y31	21B Y53	21A Y34	21B Y60	21B Y48	19A W43	19A W18		
3		19A W28	21B Y61	21B Y70	21A Y03	20A X12	21A Y10	20B X65	21A Y12	20A X03	21A Y21	21B Y72	21B Y66	19B W68	
4		19A W49	21B Y73	20B X75	20B X72	20B X60	20A X47	21A Y22	20A X37	20B X54	20B X74	20B X67	21B Y74	19A W46	
5	19A W26	21B Y49	21A Y02	20B X82	21A Y27	20A X09	21C Y78	20A X52	21C Y80	20A X30	21A Y05	20B X81	21A Y16	21B Y50	19A W35
6	20A X14	21B Y67	20A X04	20B X57	20A X18	21A Y36	20B X83	21A Y42	20B X84	21A Y43	20A X08	20B X55	20A X02	21B Y57	20A X23
7	20A X32	21A Y30	21A Y17	20A X43	21C Y81	20B X77	21A Y13	20A X24	21A Y14	20B X76	21C Y82	20A X39	21A Y09	21A Y44	20A X31
8	20A X40	21B Y54	20B X64	21A Y11	20A X51	21A Y32	20A X36	20A X48	20A X22	21A Y39	20A X44	21A Y01	20B X63	21B Y55	20A X49
9	20A X29	21A Y40	21A Y20	20A X41	21C Y83	20B X79	21A Y08	20A X19	21A Y07	20B X78	21C Y77	20A X50	21A Y25	21A Y37	20A X33
10	20A X21	21B Y68	20A X07	20B X56	20A X10	21A Y38	20B X73	21A Y33	20B X68	21A Y35	20A X16	20B X61	20A X06	21B Y59	20A X34
11	19A W33	21B Y51	21A Y24	20B X71	21A Y19	20A X26	21C Y84	20A X42	21C Y79	20A X05	21A Y28	20B X80	21A Y18	21B Y45	19A W40
12		19A W44	21B Y75	20B X66	20B X85	20B X58	20A X45	21A Y15	20A X38	20B X59	20B X69	20B X70	21B Y69	19A W45	
13		19B W70	21B Y64	21B Y76	21A Y23	20A X11	21A Y06	20B X62	21A Y26	20A X01	21A Y04	21B Y71	21B Y65	19A W23	
14			19A W38	19A W51	21B Y52	21B Y62	21A Y29	21B Y56	21A Y41	21B Y63	21B Y47	19A W42	19B W65		
15					19A W17	20A X28	20A X35	20A X46	20A X27	20A X25	19A W34				

90°

0°

LEGEND

R — Region Identifier
ID — Fuel Assembly Identifier

REGION	ASSEMBLIES	ENRICHMENT
19A	20	4.10
19B	4	4.95
20A	53	4.10
20B	32	4.95
21A	44	4.10
21B	32	4.80
21C	8	4.10

FIGURE 2

INCORE Power Distribution - 49.5%

MILLSTONE UNIT 3 - CYCLE 19

	R	P	N	M	L	K	J	H	G	F	E	D	C	B	A
1					0.299 -2.9	0.431 -2.4	0.444 -2.6	0.460 -2.5	0.444 -2.7	0.432 -2.2	0.301 -2.2				
2			0.265 -4.9	0.477 -4.8	1.068 -2.9	1.142 -2.4	0.999 -2.2	1.184 -2.0	1.009 -1.2	1.166 -0.4	1.097 -0.3	0.503 -0.1	0.267 -1.5		
3		0.263 -2.9	0.856 -2.9	1.134 -3.5	1.226 -2.9	1.109 -2.9	1.205 -1.9	1.212 -1.7	1.219 -0.9	1.156 1.3	1.272 0.6	1.174 -0.1	0.868 -1.5	0.270 -3.0	
4		0.494 -1.9	1.152 -1.9	1.351 -0.6	1.341 1.1	1.290 1.1	1.093 -1.0	1.213 -1.2	1.098 -0.6	1.273 0.3	1.339 1.0	1.375 1.2	1.172 -0.3	0.499 -0.5	
5	0.303 -1.7	1.092 -0.8	1.258 -0.5	1.332 0.4	1.321 -0.3	1.112 -0.5	1.156 -1.7	1.067 -1.6	1.157 -1.6	1.118 -0.2	1.346 1.6	1.350 1.8	1.277 1.1	1.110 1.0	0.309 -0.1
6	0.434 -1.8	1.175 0.3	1.168 2.2	1.292 1.8	1.123 0.3	1.192 -1.0	1.187 -2.0	1.155 -1.9	1.195 -1.3	1.203 -0.1	1.127 0.9	1.286 1.6	1.153 1.0	1.152 0.9	0.441 -0.1
7	0.449 -1.6	1.018 -0.4	1.243 1.1	1.115 0.9	1.177 0.1	1.195 -1.1	1.191 -1.6	1.033 -1.5	1.198 -1.1	1.204 -0.6	1.172 -0.3	1.111 0.6	1.232 0.3	1.024 0.2	0.454 -0.4
8	0.463 -1.9	1.189 -1.6	1.225 -0.6	1.233 0.4	1.085 1.0	1.169 -0.7	1.037 -1.2	0.988 -0.9	1.044 -0.5	1.172 -0.5	1.082 -0.3	1.233 0.4	1.235 0.3	1.208 0.0	0.469 -0.8
9	0.447 -1.9	1.004 -1.7	1.207 -1.8	1.106 0.2	1.186 0.9	1.216 0.4	1.210 -0.1	1.047 -0.2	1.201 -0.8	1.204 -0.7	1.180 0.3	1.113 0.8	1.238 0.7	1.018 -0.4	0.452 -0.8
10	0.431 -2.4	1.142 -2.4	1.113 -2.5	1.280 1.1	1.131 1.2	1.215 0.9	1.225 1.1	1.185 0.7	1.220 0.7	1.211 0.6	1.139 1.6	1.290 1.7	1.174 2.7	1.161 -0.9	0.439 -0.9
11	0.301 -2.3	1.074 -2.4	1.270 0.6	1.341 1.1	1.342 1.3	1.132 1.1	1.192 1.3	1.105 1.8	1.205 2.5	1.149 2.8	1.359 2.5	1.361 2.6	1.297 2.6	1.090 -1.0	0.305 -0.9
12		0.494 -1.6	1.166 -0.8	1.369 0.7	1.348 1.6	1.259 1.6	1.120 1.4	1.252 1.9	1.126 2.0	1.302 2.8	1.359 2.5	1.393 2.5	1.176 0.1	0.495 -1.8	
13		0.276 -0.9	0.874 -0.9	1.178 0.2	1.290 2.1	1.156 1.2	1.237 0.6	1.245 1.1	1.243 1.1	1.155 1.2	1.274 0.9	1.195 1.7	0.884 0.3	0.264 -2.5	
14			0.269 -0.9	0.503 0.0	1.110 0.9	1.176 0.3	1.020 -0.2	1.207 -0.2	1.020 -0.2	1.163 -0.6	1.101 0.1	0.506 0.9	0.276 -0.8		
15					0.306 -0.6	0.439 -0.6	0.453 -0.6	0.469 -0.6	0.453 -0.6	0.439 -0.7	0.308 0.1				

Measured Power
% Difference (M-P)/P

Measured Location

FIGURE 3
INCORE Power Distribution - 73.8%
MILLSTONE UNIT 3 - CYCLE 19

	R	P	N	M	L	K	J	H	G	F	E	D	C	B	A
1					0.301 -2.6	0.439 -1.3	0.453 -1.9	0.469 -1.9	0.451 -2.2	0.442 -0.8	0.307 -0.8				
2			0.270 -3.4	0.484 -3.4	1.057 -2.6	1.142 -1.4	1.001 -1.7	1.183 -1.5	1.010 -0.8	1.166 0.5	1.085 0.0	0.497 -1.1	0.269 -1.2		
3		0.266 -2.3	0.851 -2.3	1.119 -3.1	1.213 -2.6	1.107 -2.6	1.201 -2.0	1.207 -1.8	1.215 -0.9	1.159 1.6	1.251 0.4	1.142 -1.1	0.861 -1.2	0.276 -1.2	
4		0.494 -1.7	1.134 -1.5	1.311 -1.6	1.311 -0.2	1.263 -0.2	1.101 -1.0	1.216 -1.5	1.105 -0.8	1.269 0.1	1.321 0.6	1.338 0.4	1.153 -0.2	0.501 0.1	
5	0.309 -0.3	1.093 -0.3	1.242 -0.3	1.311 -0.2	1.306 -1.1	1.114 -1.3	1.169 -1.7	1.082 -1.9	1.166 -1.9	1.121 -0.9	1.334 1.0	1.330 1.3	1.255 0.8	1.092 0.6	0.309 -0.3
6	0.446 0.1	1.174 1.3	1.162 2.1	1.285 1.4	1.127 -0.3	1.199 -1.5	1.204 -1.9	1.172 -2.0	1.212 -1.3	1.211 -0.5	1.136 0.6	1.278 1.0	1.143 0.6	1.166 0.5	0.444 -0.3
7	0.462 0.1	1.025 0.6	1.243 1.3	1.127 1.2	1.190 0.1	1.216 -1.0	1.210 -1.5	1.058 -1.2	1.219 -0.8	1.223 -0.4	1.184 -0.4	1.117 0.4	1.228 0.2	1.021 0.3	0.461 -0.2
8	0.474 -0.9	1.192 -0.7	1.227 -0.2	1.244 0.7	1.115 1.2	1.159 -0.5	1.061 -1.0	1.008 -0.9	1.067 -0.5	1.188 -0.6	1.096 -0.5	1.235 0.1	1.233 0.3	1.208 0.5	0.480 0.4
9	0.457 -1.0	1.010 -0.8	1.211 -1.1	1.117 0.4	1.198 0.8	1.233 0.4	1.230 0.1	1.071 -0.1	1.219 -0.8	1.218 -0.8	1.189 0.0	1.120 0.6	1.236 0.8	1.025 0.6	0.463 0.4
10	0.439 -1.4	1.142 -1.5	1.113 -2.0	1.266 0.1	1.130 0.1	1.220 0.3	1.244 1.3	1.204 0.8	1.238 0.8	1.218 0.1	1.142 1.0	1.282 1.1	1.167 2.5	1.170 0.9	0.449 0.9
11	0.307 -0.9	1.076 -0.9	1.235 -0.8	1.313 0.0	1.326 0.4	1.136 0.5	1.205 1.4	1.123 1.9	1.219 2.6	1.153 2.2	1.347 1.9	1.340 2.0	1.274 2.3	1.094 0.5	0.312 0.8
12		0.495 -1.1	1.140 -1.3	1.329 -0.3	1.322 0.6	1.277 0.7	1.127 1.2	1.256 1.8	1.133 1.6	1.294 2.3	1.336 1.7	1.355 1.8	1.165 0.9	0.503 0.2	
13		0.278 -0.8	0.865 -0.8	1.155 0.0	1.263 1.4	1.147 0.5	1.230 0.3	1.239 0.8	1.238 1.0	1.152 1.4	1.260 1.2	1.177 1.9	0.881 1.1	0.272 -0.3	
14			0.270 -0.7	0.503 0.2	1.098 1.1	1.166 0.6	1.019 0.1	1.203 0.1	1.020 0.2	1.157 -0.2	1.093 0.8	0.509 1.7	0.282 0.7		
15					0.312 0.8	0.446 0.2	0.462 0.1	0.479 0.2	0.463 0.3	0.444 -0.2	0.312 0.8				

Measured Power
% Difference (M-P)/P

Measured Location

FIGURE 4
INCORE Power Distribution - 99.9%
MILLSTONE UNIT 3 - CYCLE 19

	R	P	N	M	L	K	J	H	G	F	E	D	C	B	A
1					0.304 -3.1	0.444 -1.6	0.460 -2.1	0.477 -1.8	0.460 -1.9	0.449 -0.5	0.313 -0.5				
2			0.272 -4.1	0.484 -4.1	1.048 -3.1	1.138 -1.8	1.002 -1.9	1.181 -1.6	1.013 -0.9	1.162 0.5	1.079 -0.3	0.497 -1.5	0.271 -2.0		
3		0.262 -2.8	0.845 -2.2	1.101 -3.9	1.198 -3.1	1.095 -3.1	1.201 -2.0	1.207 -1.6	1.216 -0.8	1.150 1.4	1.235 -0.2	1.126 -1.8	0.853 -2.0	0.277 -2.2	
4		0.495 -2.2	1.119 -2.4	1.282 -2.4	1.287 -0.9	1.245 -0.9	1.107 -0.7	1.227 -0.8	1.113 -0.3	1.266 0.4	1.301 0.2	1.313 0.0	1.136 -0.9	0.501 -0.6	
5	0.312 -0.7	1.074 -0.8	1.227 -0.5	1.288 -0.5	1.300 -1.0	1.115 -1.0	1.187 -0.6	1.103 -0.5	1.186 -0.6	1.130 -0.1	1.324 0.9	1.311 1.0	1.237 0.1	1.081 0.0	0.311 -1.0
6	0.449 -0.6	1.166 0.5	1.157 2.1	1.275 1.1	1.131 -0.1	1.211 -0.8	1.224 -0.6	1.197 -0.5	1.229 -0.2	1.223 0.2	1.135 0.8	1.272 1.1	1.138 0.4	1.160 0.3	0.446 -1.0
7	0.469 -0.1	1.023 0.2	1.236 0.9	1.128 1.1	1.204 0.8	1.235 0.3	1.235 0.0	1.086 0.3	1.240 0.4	1.238 0.6	1.203 0.8	1.127 1.1	1.226 0.3	1.021 0.0	0.464 -1.1
8	0.452 -0.7	1.157 -1.1	1.217 -0.7	1.245 0.6	1.128 1.7	1.213 0.9	1.089 0.6	1.037 0.7	1.090 0.7	1.208 0.4	1.114 0.4	1.246 0.7	1.233 0.5	1.208 0.6	0.457 0.3
9	0.465 -0.9	1.010 -1.2	1.201 -1.9	1.121 0.5	1.213 1.6	1.249 1.5	1.253 1.4	1.096 1.3	1.245 0.8	1.236 0.3	1.203 0.7	1.126 0.9	1.235 0.7	1.027 0.5	0.471 0.4
10	0.444 -1.5	1.135 -1.6	1.107 -2.3	1.266 0.6	1.137 0.7	1.231 0.9	1.252 1.7	1.221 1.5	1.250 1.6	1.228 0.6	1.142 0.9	1.274 1.0	1.158 2.1	1.172 1.3	0.459 1.3
11	0.311 -0.8	1.072 -0.8	1.229 -0.6	1.305 0.5	1.320 0.5	1.140 0.5	1.211 1.4	1.132 2.0	1.223 2.4	1.152 1.9	1.332 1.5	1.318 1.5	1.257 1.6	1.092 0.9	0.317 0.9
12		0.496 -1.7	1.116 -2.6	1.301 -1.0	1.301 0.1	1.263 0.2	1.126 0.9	1.257 1.6	1.134 1.7	1.254 2.0	1.314 1.2	1.329 1.2	1.150 0.3	0.507 0.1	
13		0.279 -1.5	0.857 -1.6	1.136 -0.9	1.242 0.5	1.132 -0.2	1.222 -0.3	1.231 0.4	1.230 0.4	1.138 0.5	1.239 0.3	1.160 1.2	0.876 0.6	0.275 -0.6	
14			0.273 -1.4	0.504 -0.5	1.087 0.5	1.154 -0.2	1.019 -0.2	1.199 -0.1	1.020 -0.2	1.137 -1.6	1.080 -0.1	0.511 1.3	0.285 0.4		
15					0.316 0.6	0.450 -0.4	0.469 -0.3	0.485 -0.1	0.468 -0.3	0.444 -1.6	0.314 -0.1				

Measured Power
% Difference (M-P)/P

Measured Location