Dominion Nuclear Connecticut, Inc.
Millstone Power Station
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DOMINION NUCLEAR CONNECTICUT, INC.
MILLSTONE POWER STATION UNIT 3
STARTUP TEST REPORT FOR CYCLE 16

Pursuant to Section 6.9.1.1 of the Millstone Power Station Unit 3 Technical Specifications, Dominion Nuclear Connecticut, Inc. hereby submits the enclosed Startup Test Report for Cycle 16.

If you have any questions or require additional information, please contact Mr. William D. Bartron at (860) 444-4301.

Sincerely,

Stephen E. Scace
Site Vice President – Millstone

Enclosure: (1)

Commitments made in this letter: None

IE26
NRR

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*Verification of Accuracy

1. SP 31008, Rev. 005-01, “Low Power Physics Testing (ICCE)”
2. EN 31015, Rev. 003-03, “Power Ascension Testing of Millstone Unit 3”
3. ETE-NAF-2013-0037, Rev. 000, “Nuclear Design and Core Physics Characteristics of the Millstone Generating Station Unit 3, Cycle 16”
4. WCAP-13360-P-A, Revision 1, “Westinghouse Dynamic Rod Worth Measurement Technique”

Action Plan/Commitments (Stated or Implied)

1. None

Required Changes to the UFSAR, ISFSI FSAR or QA Topical Report

1. None

ENCLOSURE

STARTUP TEST REPORT FOR CYCLE 16

DOMINION NUCLEAR CONNECTICUT, INC.
MILLSTONE POWER STATION UNIT 3

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1.0 SUMMARY

This report summarizes the Cycle 16 startup testing performed following the completion of the April-May 2013 refueling outage.

2.0 INTRODUCTION

The Millstone Power Station Unit 3 Cycle 16 fuel reload was completed on May 4, 2013. The attached core map (Figure 1) shows the final core configuration. Reference [6.3] documents that Cycle 16 uses a low leakage loading pattern (L3P) consisting of 85 new Region 18 fuel assemblies, 84 Region 17 once-burned fuel assemblies, and 24 Region 16 twice-burned fuel assemblies. All 193 fuel assemblies in the Cycle 16 core are the Westinghouse 17x17 robust fuel assembly (RFA-2) design.

The 85 Region 18 assemblies are comprised of 53 assemblies enriched to 4.10 weight percent Uranium-235 (w/o U^{235}) and 32 assemblies enriched to 4.95 w/o U^{235}. The top and bottom regions of all fuel assemblies in the Cycle 16 core are comprised of a six 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-insert fuel assemblies were ultrasonically cleaned during the April-May 2013 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 16 contains an insert. The inserts consist of 61 rod cluster control assemblies (RCCAs), 130 thimble plugs, and two secondary source assemblies. The decision to reintroduce two secondary sources in Cycle 15 was based on the future projected core cycles having lower burned fuel assemblies loaded in front of source range detectors resulting in lower available neutron source strengths.

Subsequent operational and testing milestones were completed as follows:

Initial Criticality	May 17, 2013
Low Power Physics Testing completed	May 18, 2013
Main Turbine Online	May 19, 2013
24% Power Testing completed	May 19, 2013
74% Power Testing completed	May 20, 2013
100% Power Testing completed	May 28, 2013

3.0 FUEL DESIGN

All of the 193 assemblies in the Cycle 16 core are of the RFA-2 design. This fuel design is the same as Cycle 15, with the following exceptions:

- Fuel clad material has been changed from Zirlo to Optimized Zirlo

4.0 LOW POWER PHYSICS TESTING

The low power physics testing program for Cycle 16 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 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)	2039	2035	+4 (-25.2 pcm)	± 1000

4.2 Moderator Temperature Coefficient

Isothermal temperature coefficient (ITC) data was measured with Control Bank D at 196 steps withdrawn. The review criteria of ±2 pcm/degrees Fahrenheit (°F) to the predictions were met.

The ARO moderator temperature coefficient (MTC) of +0.22 pcm/°F was calculated by subtracting the design Doppler temperature coefficient (-1.73 pcm/°F) from the measured ARO isothermal temperature coefficient of -1.95 pcm/°F, and adding the delta (Δ) ITC correction value of +0.44 pcm/°F (ΔITC corrects the MTC at the measurement conditions to the minimum temperature for criticality value of 551°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	-1.95	-2.60	+0.65	NA
ARO MTC	+0.22	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 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	722.3	728.4	-6.1	-0.8
Control Bank B	636.3	620.2	16.1	2.6
Control Bank C	737.9	753.0	-15.1	-2.0
Control Bank D	610.2	576.7	33.5	5.8
Shutdown Bank A	479.3	473.7	5.6	1.2
Shutdown Bank B	938.7	952.5	-13.8	-1.4
Shutdown Bank C	422.5	404.5	18.0	4.4
Shutdown Bank D	407.1	395.0	12.1	3.1
Shutdown Bank E	82.1	78.8	3.3	4.2
Totals	5036.4	4982.8	53.6	1.1

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

Testing was performed at specified power plateaus of 24%, 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:

1. Core performance evaluation: Flux mapping was performed at 24%, 74% and 100% RTP using the moveable incore detector system. The resultant peaking factors and power distribution were compared to technical specification (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.
2. 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.
3. 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 24%, 74% and 100% RTP.
4. Reactor Coolant System (RCS) Flow: The RCS flow rate was measured at approximately 90% RTP using a secondary calorimetric heat balance for each loop using 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 24% RTP was performed to determine if any gross neutron flux abnormalities existed. At the 24% RTP plateau flux map and again at the 74% 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 can be seen from the data presented, 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
24.2	5.2	216	3.550	1.0107
73.7	27.0	216	2.234	1.006
99.9	343.9	216	-0.885	1.0056

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
24.2	5.2	N/A	N/A	N/A
73.7	27.0	1.8861	3.528	45.8 %
99.9	343.9	1.8983	2.603	27.06 %

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

Power (%RTP)	Burnup (MWD/MTU)	$F_{\Delta}h$	$F_{\Delta}h$ Limit
24.2	5.2	1.547	1.947
73.7	27.0	1.470	1.711
99.9	343.9	1.444	1.586

Presented in Figures 2, 3 and 4 are measured power distribution maps showing percent difference from the predicted power for the 24%, 74% and 100% RTP plateaus. From this data, it can be seen that 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 1400 ppm with a predicted value of 1373 ppm. The predicted to measured difference was - 163 pcm which met the acceptance criteria of ± 1000 pcm.

5.3 RCS Flow Measurement

The RCS 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:

- 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 90.8% RTP was 399,976 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. 005-01, “Low Power Physics Testing (ICCE)”

6.2 EN 31015, Rev. 003-03, “Power Ascension Testing of Millstone Unit 3”

6.3 ETE-NAF-2013-0037, Rev. 000, “Nuclear Design and Core Physics Characteristics of the Millstone Generating Station Unit 3, Cycle 16”

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

7.0 FIGURES

FIGURE 1
CORE LOADING PATTERN
MILLSTONE UNIT 3 - CYCLE 16

90° (left side), 0° (bottom)

	R	P	N	M	L	K	J	H	G	F	E	D	C	B	A
1					16A S36	16A S16	17A T44	17A T39	17A T18	16A S02	16A S21				
2			16A S11	17A T56	18B V55	18B V75	18A V02	18B V63	18A V04	18B V77	18B V57	17A T50	16B S40		
3		16B S41	18B V78	18B V65	18A V31	17B T62	18A V15	17A T37	18A V18	17B T61	18A V36	18B V66	18B V83	16A S07	
4		17A T22	18B V71	17A T03	17B T78	17A T17	17A T10	18A V38	17A T09	17A T54	17B T80	17A T01	18B V72	17A T30	
5	16A S28	18B V58	18A V47	17B T81	18A V48	17B T71	18A V20	17B T65	18A V26	17B T76	18A V30	17B T82	18A V52	18B V59	16A S22
6	16A S01	18B V84	17B T64	17A T19	17B T69	18A V32	17A T42	18A V42	17A T36	18A V43	17B T75	17A T47	17B T59	18B V74	16A S13
7	17A T28	18A V05	18A V27	17A T12	18A V14	17A T25	18A V10	17A T13	18A V11	17A T32	18A V28	17A T07	18A V16	18A V01	17A T55
8	17A T53	18B V62	17A T43	18A V39	17B T66	18A V40	17A T27	18A V35	17A T49	18A V37	17B T67	18A V29	17A T33	18B V73	17A T24
9	17A T35	18A V12	18A V23	17A T06	18A V24	17A T31	18A V03	17A T46	18A V08	17A T45	18A V21	17A T08	18A V22	18A V09	17A T23
10	16A S03	18B V85	17B T58	17A T48	17B T74	18A V46	17A T51	18A V34	17A T29	18A V33	17B T73	17A T26	17B T60	18B V76	16A S06
11	16A S34	18B V60	18A V51	17B T83	18A V50	17B T72	18A V17	17B T68	18A V19	17B T70	18A V45	17B T77	18A V53	18B V54	16A S30
12		17A T34	18B V64	17A T04	17B T84	17A T38	17A T05	18A V44	17A T11	17A T20	17B T79	17A T02	18B V69	17A T52	
13		16A S08	18B V81	18B V70	18A V41	17B T57	18A V13	17A T41	18A V25	17B T63	18A V49	18B V67	18B V82	16B S38	
14			16B S39	17A T21	18B V61	18B V79	18A V06	18B V68	18A V07	18B V80	18B V56	17A T40	16A S04		
15					16A S33	16A S09	17A T14	17A T16	17A T15	16A S12	16A S26				

LEGEND

R / ID	
R	Region Identifier
ID	Fuel Assembly Identifier

REGION	ASSEMBLIES	ENRICHMENT
16A	20	4.10
16B	4	4.95
17A	56	4.10
17B	28	4.95
18A	53	4.10
18B	32	4.95

FIGURE 2
INCORE Power Distribution - 24%
MILLSTONE UNIT 3 - CYCLE 16

	R	P	N	M	L	K	J	H	G	F	E	D	C	B	A
1					0.297 -2.3	0.369 -1.1	0.454 -1.5	0.474 -1.7	0.458 -0.9	0.382 1.9	0.312 2.0				
2			0.298 -2.6	0.595 -2.3	1.113 -2.0	1.160 -0.9	1.119 -1.1	1.237 -0.8	1.140 0.4	1.206 2.4	1.169 2.0	0.620 1.0	0.310 0.3		
3		0.305 -1.3	0.944 -1.3	1.306 -1.2	1.199 -2.2	1.232 -2.1	1.237 -1.5	1.108 -1.2	1.257 -0.2	1.301 2.8	1.262 1.9	1.351 1.0	0.960 0.4	0.305 -0.3	
4		0.609 -0.8	1.328 -0.7	1.236 0.2	1.217 0.6	1.073 0.6	1.124 -0.3	1.199 0.0	1.138 0.7	1.091 1.8	1.244 1.9	1.255 1.7	1.338 1.2	0.616 1.1	
5	0.307 0.3	1.154 0.7	1.241 0.2	1.231 0.8	1.200 -0.1	1.196 -0.1	1.188 -1.6	1.198 -1.0	1.197 -0.9	1.215 1.3	1.221 1.7	1.236 2.1	1.249 1.9	1.159 2.0	0.308 1.3
6	0.382 1.9	1.203 2.1	1.300 2.7	1.093 2.0	1.211 1.0	1.148 -1.0	1.016 -2.1	1.098 -1.7	1.038 0.0	1.176 1.4	1.218 1.8	1.091 2.2	1.285 2.1	1.196 2.1	0.377 1.1
7	0.470 1.7	1.162 2.4	1.300 3.2	1.157 2.4	1.218 0.8	1.018 -1.9	1.136 -2.6	0.966 -3.1	1.154 -1.0	1.036 -0.2	1.206 -0.1	1.157 2.7	1.283 2.1	1.160 2.5	0.467 1.3
8	0.490 1.7	1.280 2.6	1.158 3.3	1.228 2.4	1.227 1.4	1.090 -2.4	0.963 -3.4	1.021 -3.6	0.981 -1.6	1.104 -1.2	1.211 0.1	1.224 2.1	1.149 2.5	1.285 3.0	0.492 2.1
9	0.469 1.7	1.160 2.5	1.294 3.0	1.138 1.0	1.199 -0.7	1.019 -1.8	1.132 -2.9	0.964 -3.3	1.128 -3.3	1.018 -1.9	1.213 0.4	1.156 2.3	1.293 2.6	1.171 3.2	0.472 2.2
10	0.372 -0.3	1.171 0.0	1.285 2.1	1.059 -0.7	1.187 -0.8	1.145 -1.3	1.023 -1.4	1.092 -2.2	1.013 -2.4	1.141 -1.6	1.209 0.8	1.083 1.0	1.308 3.3	1.184 0.5	0.376 0.3
11	0.297 -2.3	1.112 -2.1	1.220 -0.5	1.201 -0.7	1.200 -0.1	1.194 -0.4	1.204 -0.3	1.202 -0.7	1.206 -0.1	1.192 -0.4	1.215 1.2	1.240 1.6	1.274 2.8	1.122 -2.1	0.300 -2.0
12		0.591 -3.0	1.273 -3.7	1.215 -1.5	1.226 0.4	1.076 0.4	1.133 0.3	1.197 -0.2	1.126 -0.1	1.064 -0.3	1.217 0.6	1.243 0.7	1.324 -1.0	0.593 -3.4	
13		0.292 -4.6	0.914 -4.4	1.297 -3.0	1.247 0.6	1.268 0.2	1.261 0.1	1.118 -0.3	1.249 -0.6	1.251 -0.6	1.220 -0.5	1.327 0.4	0.943 -1.4	0.294 -4.9	
14			0.295 -4.5	0.594 -3.3	1.122 -2.1	1.157 -1.8	1.123 -1.1	1.236 -0.9	1.118 -1.2	1.152 -1.6	1.117 -1.7	0.598 -1.8	0.296 -3.3		
15					0.294 -3.9	0.365 -2.7	0.456 -1.3	0.475 -1.5	0.454 -1.5	0.366 -1.9	0.299 -1.6				

Measured Power
% Difference (M-P)/P

Measured Location

FIGURE 3
INCORE Power Distribution - 74%
MILLSTONE UNIT 3 - CYCLE 16

	R	P	N	M	L	K	J	H	G	F	E	D	C	B	A
1					0.298 -3.2	0.374 -1.3	0.462 -1.9	0.484 -1.4	0.469 -0.6	0.389 2.1	0.317 2.3				
2			0.300 -2.6	0.591 -2.5	1.077 -3.1	1.134 -1.3	1.106 -1.4	1.221 -1.0	1.127 0.2	1.180 2.3	1.135 1.4	0.607 -0.7	0.309 -0.6		
3		0.305 -1.9	0.917 -1.6	1.257 -1.7	1.161 -3.2	1.202 -3.1	1.225 -1.9	1.107 -1.5	1.245 -0.6	1.273 2.1	1.219 0.7	1.284 -0.5	0.929 -0.3	0.307 -0.3	
4		0.603 -1.3	1.277 -1.1	1.191 -0.8	1.193 -0.3	1.070 -0.5	1.134 -0.6	1.206 -0.4	1.145 0.2	1.069 1.0	1.218 0.7	1.204 0.3	1.280 0.1	0.608 0.3	
5	0.313 1.0	1.125 0.5	1.205 -0.5	1.205 -0.2	1.193 -0.7	1.202 -0.6	1.211 -1.3	1.219 -1.0	1.216 -1.0	1.216 0.4	1.210 0.7	1.207 0.8	1.206 0.6	1.119 0.7	0.309 0.3
6	0.392 2.9	1.179 2.2	1.270 1.8	1.090 1.1	1.216 0.4	1.172 -0.9	1.057 -1.5	1.137 -1.3	1.073 -0.1	1.195 1.0	1.227 1.5	1.089 1.3	1.257 1.3	1.164 1.3	0.380 0.3
7	0.483 2.3	1.151 2.3	1.281 2.3	1.164 1.8	1.237 0.7	1.065 -0.8	1.192 -1.3	1.025 -1.5	1.203 -0.4	1.077 0.4	1.231 0.3	1.171 2.6	1.274 2.0	1.148 2.3	0.474 0.6
8	0.499 1.6	1.260 2.2	1.151 2.4	1.236 2.1	1.249 1.5	1.144 -0.7	1.028 -1.2	1.083 -1.5	1.036 -0.5	1.148 -0.3	1.235 0.3	1.236 2.1	1.151 2.4	1.272 3.2	0.503 2.4
9	0.478 1.5	1.145 2.0	1.276 2.2	1.153 1.1	1.228 0.1	1.070 -0.3	1.200 -0.7	1.030 -1.1	1.187 -1.7	1.062 -1.1	1.235 0.6	1.169 2.3	1.285 2.6	1.163 3.4	0.483 2.3
10	0.382 0.8	1.159 0.9	1.257 1.3	1.064 -1.0	1.198 -0.9	1.174 -0.8	1.065 -0.6	1.142 -0.9	1.060 -1.2	1.172 -0.9	1.221 0.8	1.089 1.0	1.291 3.5	1.181 2.3	0.389 2.1
11	0.309 0.3	1.116 0.5	1.180 -1.6	1.186 -0.9	1.195 -0.5	1.208 -0.4	1.227 -0.1	1.233 0.2	1.232 0.4	1.210 0.1	1.217 1.3	1.227 1.7	1.247 3.0	1.126 0.6	0.312 0.6
12		0.595 -1.8	1.230 -3.8	1.172 -2.3	1.198 -0.7	1.071 -0.6	1.143 0.0	1.212 0.1	1.143 0.2	1.078 0.1	1.208 0.8	1.212 1.0	1.286 -0.4	0.600 -1.8	
13		0.297 -3.6	0.900 -3.4	1.256 -2.7	1.205 -0.5	1.240 -0.6	1.249 -0.2	1.122 -0.2	1.244 -0.4	1.238 -0.4	1.194 -0.4	1.287 0.6	0.924 -0.9	0.298 -4.2	
14			0.300 -3.5	0.595 -2.6	1.103 -1.4	1.139 -1.3	1.118 -0.6	1.226 -0.6	1.112 -0.9	1.125 -2.1	1.092 -1.7	0.597 -1.5	0.300 -2.6		
15					0.306 -1.3	0.375 -1.6	0.488 -0.8	0.488 -0.6	0.465 -1.3	0.370 -2.4	0.302 -1.9				

Measured Power
% Difference (M-P)/P

Measured Location

FIGURE 4
INCORE Power Distribution - 100%
MILLSTONE UNIT 3 - CYCLE 16

	R	P	N	M	L	K	J	H	G	F	E	D	C	B	A
1					0.297 -4.5	0.375 -2.1	0.465 -2.5	0.488 -2.0	0.475 -0.6	0.395 2.6	0.321 2.6				
2			0.301 -2.9	0.589 -2.8	1.053 -4.4	1.117 -2.4	1.100 -2.1	1.215 -1.4	1.124 -0.2	1.168 1.7	1.114 0.5	0.597 -2.1	0.308 -1.3		
3		0.304 -2.6	0.901 -2.6	1.226 -2.9	1.138 -4.5	1.173 -4.5	1.222 -2.2	1.108 -1.4	1.241 -1.0	1.241 0.6	1.193 -0.8	1.247 -2.1	0.912 -1.4	0.307 -1.0	
4		0.594 -2.6	1.240 -2.7	1.164 -1.5	1.185 0.1	1.071 0.1	1.137 -0.4	1.222 0.1	1.146 0.3	1.084 1.0	1.192 -0.1	1.180 -0.2	1.252 -0.8	0.604 -0.3	
5	0.314 0.3	1.105 -0.4	1.185 -1.5	1.185 -0.7	1.201 0.1	1.208 0.1	1.230 -0.5	1.234 -0.1	1.236 -0.1	1.223 1.2	1.215 1.2	1.194 0.8	1.192 0.0	1.103 0.1	0.310 -0.3
6	0.396 2.9	1.171 1.9	1.257 1.9	1.088 1.4	1.221 1.1	1.198 0.2	1.084 -0.1	1.173 0.1	1.099 1.3	1.221 2.1	1.237 2.5	1.083 1.2	1.238 0.8	1.152 0.7	0.382 -0.3
7	0.490 2.5	1.152 2.3	1.282 2.3	1.167 2.1	1.255 1.5	1.093 0.7	1.231 0.3	1.081 0.2	1.239 1.0	1.106 1.9	1.255 1.5	1.172 2.7	1.271 1.7	1.143 1.7	0.477 0.0
8	0.504 1.2	1.254 1.8	1.147 2.0	1.250 2.4	1.261 2.1	1.183 0.9	1.067 0.8	1.129 0.4	1.068 0.8	1.184 1.0	1.255 1.6	1.250 2.4	1.149 2.2	1.266 2.8	0.508 2.0
9	0.482 1.0	1.142 1.6	1.288 1.4	1.157 1.4	1.244 0.6	1.094 0.8	1.241 1.1	1.063 0.4	1.221 -0.5	1.087 0.2	1.256 1.5	1.176 2.9	1.286 2.6	1.159 2.9	0.488 2.1
10	0.382 -0.3	1.142 -0.2	1.228 0.0	1.063 -0.7	1.200 -0.6	1.195 -0.1	1.093 0.7	1.174 0.2	1.083 -0.2	1.196 0.0	1.227 1.6	1.092 1.9	1.283 4.0	1.174 2.2	0.393 2.1
11	0.310 -0.3	1.099 -0.3	1.175 -1.4	1.176 -0.7	1.198 -0.2	1.210 0.2	1.247 0.8	1.246 0.9	1.246 0.8	1.208 0.1	1.217 1.4	1.213 1.7	1.238 2.9	1.116 0.6	0.315 0.6
12		0.588 -3.0	1.193 -5.5	1.147 -3.0	1.164 -0.8	1.067 -0.6	1.148 0.4	1.226 0.4	1.147 0.5	1.072 0.2	1.191 0.6	1.191 0.8	1.263 -0.9	0.599 -1.8	
13		0.295 -4.8	0.883 -4.5	1.227 -3.7	1.195 -0.7	1.220 -1.1	1.246 -0.6	1.118 -0.5	1.240 -0.8	1.215 -1.1	1.177 -1.3	1.260 -0.2	0.912 -1.4	0.300 -3.8	
14			0.296 -4.5	0.590 -3.3	1.088 -1.9	1.124 -2.2	1.115 -1.0	1.222 -0.8	1.111 -1.2	1.106 -3.3	1.071 -2.8	0.591 -2.5	0.300 -3.2		
15					0.307 -1.9	0.376 -2.3	0.472 -1.3	0.493 -1.0	0.470 -1.5	0.370 -3.4	0.302 -2.9				

Measured Power
% Difference (M-P)/P

Measured Location