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RERTR-12 Insertion 2 Irradiation Summary Report

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SUMMARY

The Reduced Enrichment for Research and Test Reactor (RERTR) experiment RERTR-12 was designed to provide comprehensive information on the performance of uranium-molybdenum (U-Mo) based monolithic fuels for research reactor applications.[1] RERTR-12 insertion 2 includes the capsules irradiated during the last three irradiation cycles. These capsules include Z, Y1, Y2 and Y3 type capsules.

The following report summarizes the life of the RERTR-12 insertion 2 experiment through end of irradiation, including as-run neutronic analysis results, thermal analysis results and hydraulic testing results.

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FIGURES

TABLES

ACRONYMS

Al	Aluminum
ATR	Advanced Test Reactor
BOC	Beginning of Cycle
DAS	Data Acquisition System
EFPD	Effective Full Power Days
EOC	End of Cycle
FD	Fuel Development
GTRI	Global Threat Reduction Initiative
HIP	Hot Isostatic Pressing
L2AR	Local-to-Average Ratio
LEU	Low Enriched Uranium
MCNP	Monte Carlo N-Particle
MOC	Middle of Cycle
Mo	Molybdenum
RERTR	Reduced Enrichment Research and Test Reactor
U	Uranium
U-Mo	Uranium-Molybdenum Alloy
Zr	Zirconium

RERTR-12 Insertion 2 Irradiation Summary Report

1. EXPERIMENT GOALS

In support of the Global Threat Reduction Initiative (GTRI) Fuel Development (FD) program (historically known as Reduced Enrichment Research and Test Reactor (RERTR)), the RERTR-12 experiment was designed to provide comprehensive information on the performance of uranium-molybdenum (U-Mo) based monolithic fuels for research reactor applications.[1]

The RERTR-12 test assembly holds 4 capsules, designated as A, B, C and D, with A at the top of the assembly and D at the bottom. Each capsule has 2 levels, with 4 plate positions per level, for a total of 8 plate positions per capsule and 32 plate positions per assembly. Within each capsule the 8 plate positions are azimuthally designated as 1 through 4 in the upper level and 5 through 8 in the lower level. There were three different capsule configurations associated with the RERTR-12 experiment, the loading diagram for the RERTR-12 insertion 2 Experiment Capsule Configuration is shown in Table 1. The experiment matrix for RERTR-12-3 (RERTR-12 third irradiation cycle) is shown in Table 2, the experiment matrix for RERTR-12-4 (RERTR-12 fourth irradiation cycle) is shown in Table 3, and the experiment matrix for RERTR-12-5 (RERTR-12 fifth irradiation cycle) is shown in Table 4. The RERTR-12 mini-plates were oriented with the plate identification number face on to the core (see Figure 1).

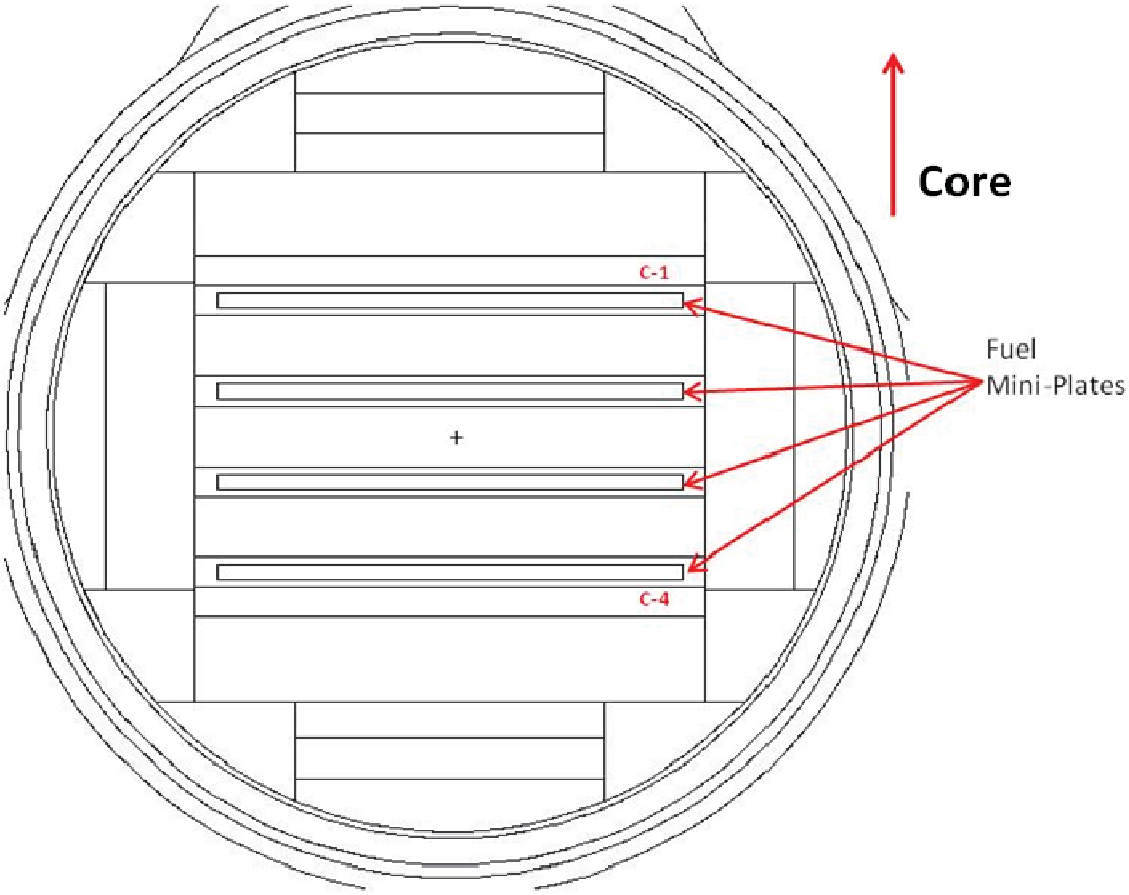

Figure 1: MCNP-Generated radial cross-section view of RERTR-12 test assembly (mini-plates C1 through C4).

Table 1: RERTR-12 Insertion 2 Experiment Capsule Configuration

RERTR Test Train Position	RERTR-12-3 Capsule	RERTR-12-4 Capsule	RERTR-12-5 Capsule
A	Z (2nd Cycle)	Z (3rd Cycle)	DUM
B	DUM	Y1 (1st Cycle)	DUM
C	Y3 (1st Cycle)	Y3 (2nd Cycle)	DUM
D	Y2 (1st Cycle)	Y2 (2nd Cycle)	Y2 (3rd Cycle)

Table 2: RERTR-12-3 Experiment Matrix

Capsule	Column 1	Column 2	Column 3	Column 4
A-Top	**A1**	**A2**	**A3**	**A4**
	U-10Mo 70% Enriched HIP **L1P787**	U-10Mo 40% Enriched HIP **L2P481**	U-10Mo 40% Enriched HIP **L2P498**	U-10Mo 47% Enriched HIP **L1P789**
A-Bottom	**A5**	**A6**	**A7**	**A8**
	U-10Mo 70% Enriched HIP **L1P7A0**	U-10Mo 40% Enriched HIP **L2P482**	U-10Mo 40% Enriched HIP **L2P499**	U-10Mo 70% Enriched HIP **L1P7A1**
B-Top	**B1**	**B2**	**B3**	**B4**
	BLANK	BLANK	BLANK	BLANK
B-Bottom	**B5**	**B6**	**B7**	**B8**
	BLANK	BLANK	BLANK	BLANK
C-Top	**C1**	**C2**	**C3**	**C4**
	U-10Mo 30% Enriched HIP **L5P3B1**	U-10Mo 30% Enriched HIP **L5P3B3**	U-10Mo 20% Enriched HIP **L5P2C9**	U-10Mo 10% Enriched HIP **L5P1A5**
C-Bottom	**C5**	**C6**	**C7**	**C8**
	U-10Mo 30% Enriched HIP **L5P3B2**	U-10Mo 30% Enriched HIP **L5P3C1**	U-10Mo 20% Enriched HIP **L5P2C8**	U-10Mo 10% Enriched HIP **L5P1B8**
D-Top	**D1**	**D2**	**D3**	**D4**
	U-10Mo 30% Enriched HIP **L5P3C2**	U-10Mo 30% Enriched HIP **L5P3B4**	U-10Mo 20% Enriched HIP **L5P2A3**	U-10Mo 10% Enriched HIP **L5P1B7**
D-Bottom	**D5**	**D6**	**D7**	**D8**
	U-10Mo 30% Enriched HIP **L5P3C3**	U-10Mo 30% Enriched HIP **L5P3C6**	U-10Mo 20% Enriched HIP **L5P2C0**	U-10Mo 10% Enriched HIP **L5P1B9**

Table 3: RERTR-12-4 Experiment Matrix

Capsule	Column 1	Column 2	Column 3	Column 4
A-Top	**A1**	**A2**	**A3**	**A4**
	U-10Mo 70% Enriched HIP **L1P787**	U-10Mo 40% Enriched HIP **L2P481**	U-10Mo 40% Enriched HIP **L2P498**	U-10Mo 47% Enriched HIP **L1P789**
A-Bottom	**A5**	**A6**	**A7**	**A8**
	U-10Mo 70% Enriched HIP **L1P7A0**	U-10Mo 40% Enriched HIP **L2P482**	U-10Mo 40% Enriched HIP **L2P499**	U-10Mo 70% Enriched HIP **L1P7A1**
B-Top	**B1**	**B2**	**B3**	**B4**
	U-10Mo 30% Enriched HIP **L5P3F8**	U-10Mo 30% Enriched HIP **L5P3G2**	U-10Mo 20% Enriched HIP **L5P2A4**	U-10Mo 10% Enriched HIP **L5P1B5**
B-Bottom	**B5**	**B6**	**B7**	**B8**
	U-10Mo 30% Enriched HIP **L5P3F0**	U-10Mo 30% Enriched HIP **L5P3G3**	U-10Mo 20% Enriched HIP **L5P2C7**	U-10Mo 10% Enriched HIP **L5P1B0**
C-Top	**C1**	**C2**	**C3**	**C4**
	U-10Mo 30% Enriched HIP **L5P3B1**	U-10Mo 30% Enriched HIP **L5P3B3**	U-10Mo 20% Enriched HIP **L5P2C9**	U-10Mo 10% Enriched HIP **L5P1A5**
C-Bottom	**C5**	**C6**	**C7**	**C8**
	U-10Mo 30% Enriched HIP **L5P3B2**	U-10Mo 30% Enriched HIP **L5P3C1**	U-10Mo 20% Enriched HIP **L5P2C8**	U-10Mo 10% Enriched HIP **L5P1B8**
D-Top	**D1**	**D2**	**D3**	**D4**
	U-10Mo 30% Enriched HIP **L5P3C2**	U-10Mo 30% Enriched HIP **L5P3B4**	U-10Mo 20% Enriched HIP **L5P2A3**	U-10Mo 10% Enriched HIP **L5P1B7**
D-Bottom	**D5**	**D6**	**D7**	**D8**
	U-10Mo 30% Enriched HIP **L5P3C3**	U-10Mo 30% Enriched HIP **L5P3C6**	U-10Mo 20% Enriched HIP **L5P2C0**	U-10Mo 10% Enriched HIP **L5P1B9**

Table 4: RERTR-12-5 Experiment Matrix

Capsule	Column 1	Column 2	Column 3	Column 4
A-Top	**A1**	**A2**	**A3**	**A4**
	BLANK	BLANK	BLANK	BLANK
A-Bottom	**A5**	**A6**	**A7**	**A8**
	BLANK	BLANK	BLANK	BLANK
B-Top	**B1**	**B2**	**B3**	**B4**
	BLANK	BLANK	BLANK	BLANK
B-Bottom	**B5**	**B6**	**B7**	**B8**
	BLANK	BLANK	BLANK	BLANK
C-Top	**C1**	**C2**	**C3**	**C4**
	BLANK	BLANK	BLANK	BLANK
C-Bottom	**C5**	**C6**	**C7**	**C8**
	BLANK	BLANK	BLANK	BLANK
D-Top	**D1**	**D2**	**D3**	**D4**
	U-10Mo 30% Enriched HIP **L5P3C2**	U-10Mo 30% Enriched HIP **L5P3B4**	U-10Mo 20% Enriched HIP **L5P2A3**	U-10Mo 10% Enriched HIP **L5P1B7**
D-Bottom	**D5**	**D6**	**D7**	**D8**
	U-10Mo 30% Enriched HIP **L5P3C3**	U-10Mo 30% Enriched HIP **L5P3C6**	U-10Mo 20% Enriched HIP **L5P2C0**	U-10Mo 10% Enriched HIP **L5P1B9**

2. CONSTITUENT MASSES AND DENSITIES

The constituent masses and densities for plates in the Z, Y1, Y2, and Y3 capsules were obtained from the as-built package plate summary sheets[2,3]. Table 5 summarizes the constituent mass and density for all plates irradiated in RERTR-12-3, RERTR-12-4, and RERTR-12-5.

Table 5: RERTR-12 Constituent masses and densities for plates irradiated in the last three cycles

Fuel Plate ID	Fuel Plate Number	Volume (cc)	Fuel Constituent Masses			Constituent Densities		
			Total-U (g)	U-235 (g)	Mo (g)	Total U (g/cc)	U-235 (g/cc)	Mo (g/cc)
Z-1	L1P787	0.3626	6.055	4.201	0.694	16.701	11.587	1.914
Z-2	L2P481	0.8202	12.196	4.788	1.421	14.870	5.838	1.733
Z-3	L2P498	0.7941	11.395	4.559	1.244	14.349	5.741	1.567
Z-4	L1P789	0.4040	6.064	4.207	0.695	15.009	10.412	1.720
Z-5	L1P7A0	0.4013	6.162	4.291	0.692	15.356	10.693	1.724
Z-6	L2P482	0.7996	12.193	4.820	1.379	15.250	6.028	1.725
Z-7	L2P499	0.7937	11.031	4.413	1.205	13.898	5.560	1.518
Z-8	L1P7A1	0.4013	6.167	4.294	0.693	15.368	10.701	1.727
Y1-1	L5P3F8	1.0107	15.543	4.674	10.869	15.378	4.625	1.709
Y1-2	L5P3G2	1.0517	15.668	4.652	11.016	14.898	4.423	1.660
Y1-3	L5P2A4	1.0100	15.645	3.272	12.373	15.490	3.240	1.727
Y1-4	L5P1B5	1.0494	15.693	1.607	14.086	14.954	1.531	1.664
Y1-5	L5P3F0	1.0071	15.638	4.554	11.084	15.528	4.522	1.721
Y1-6	L5P3G3	1.0086	15.642	4.644	10.998	15.509	4.604	1.728
Y1-7	L5P2C7	1.0561	15.767	3.047	12.720	14.929	2.885	1.659
Y1-8	L5P1B0	0.8870	13.754	1.437	12.317	15.505	1.620	1.724
Y2-1	L5P3C2	1.0540	15.731	4.680	11.051	14.925	4.440	1.664
Y2-2	L5P3B4	1.0603	15.535	4.713	10.822	14.652	4.445	1.629
Y2-3	L5P2A3	1.0100	15.816	3.308	12.508	15.660	3.275	1.746
Y2-4	L5P1B7	1.0087	15.670	1.637	14.033	15.534	1.623	1.727
Y2-5	L5P3C3	1.0076	15.508	4.554	10.954	15.391	4.520	1.708
Y2-6	L5P3C6	0.9714	15.774	4.620	11.154	16.238	4.756	1.788
Y2-7	L5P2C0	1.0962	15.944	3.136	12.808	14.545	2.861	1.623
Y2-8	L5P1B9	0.9986	15.767	1.647	14.120	15.789	1.649	1.755
Y3-1	L5P3B1	1.0561	15.487	4.665	10.822	14.664	4.417	1.623
Y3-2	L5P3B3	1.0563	15.635	4.614	11.021	14.802	4.368	1.645
Y3-3	L5P2C9	1.0556	15.794	3.107	12.687	14.962	2.943	1.669
Y3-4	L5P1A5	1.0063	15.767	1.647	14.120	15.668	1.637	1.742
Y3-5	L5P3B2	1.0551	15.535	4.585	10.950	14.723	4.345	1.637
Y3-6	L5P3C1	1.0541	15.690	4.668	11.022	14.885	4.429	1.660
Y3-7	L5P2C8	1.0556	15.782	3.050	12.732	14.951	2.889	1.661
Y3-8	L5P1B8	1.0097	15.752	1.646	14.106	15.601	1.630	1.734

3. EXPERIMENT HARDWARE

The experiment hardware configuration is identical to that used in the RERTR-7A, -7B, -8, -9A, -9B, -10A and -10B experiments. A list of irradiation hardware drawings used for analysis is given in Table 6.

Table 6: RERTR Irradiation Hardware Drawing List.

Drawing Number	Drawing Title
DWG-630223	RERTR ATR Large B-Position Irradiation Experiment Assembly
DWG-630233	ATR Large B-Position Basket
DWG-630231	ATR Top Spacer Assembly
DWG-630225	ATR Upper Spacer Assembly
DWG-630229	ATR Bottom Spacer Assembly
DWG-630227	ATR Large B-Position Fuel Capsule Assembly
DWG-630237	Fuel Capsule
DWG-630239	Capsule Cap
DWG-630244	RERTR Mini-Plate
DWG-630245	Fuel Plate, 0.020 Monolithic

The RERTR miniplate irradiation assembly, (see Figure 2) shows the main components of the test assembly, which include the bottom spacer, upper and top spacers, experiment capsules and basket. The bottom spacer elevates the experiment capsules to the correct location in the core. The upper and top spacers allow the operators to assure that the experiment is seated fully into the basket. All spacers are similar to the capsule design except the spacers do not have the grooves for the plates. The capsules hold the fuel plates; a capsule cap is welded onto the top of the capsule to keep the plates from sliding out during handling and irradiation. The fuel plate drawings for monolithic and thick monolithic plates (DWG-630244 and DWG-630245, respectively) and RERTR miniplate capsule assembly are shown in Figure 3, Figure 4 and Figure 5, respectively. Each capsule has a notch at the top and a groove at the bottom which allow the capsules to stack and align properly into the core. The basket holds the test assembly in the reactor during irradiation, the notches on the outer wall allow for bypass coolant flow to cool the outer wall. The basket has two guide bars on the inside wall to guide the assembly into the baskets.

Figure 2: RERTR miniplate irradiation assembly.

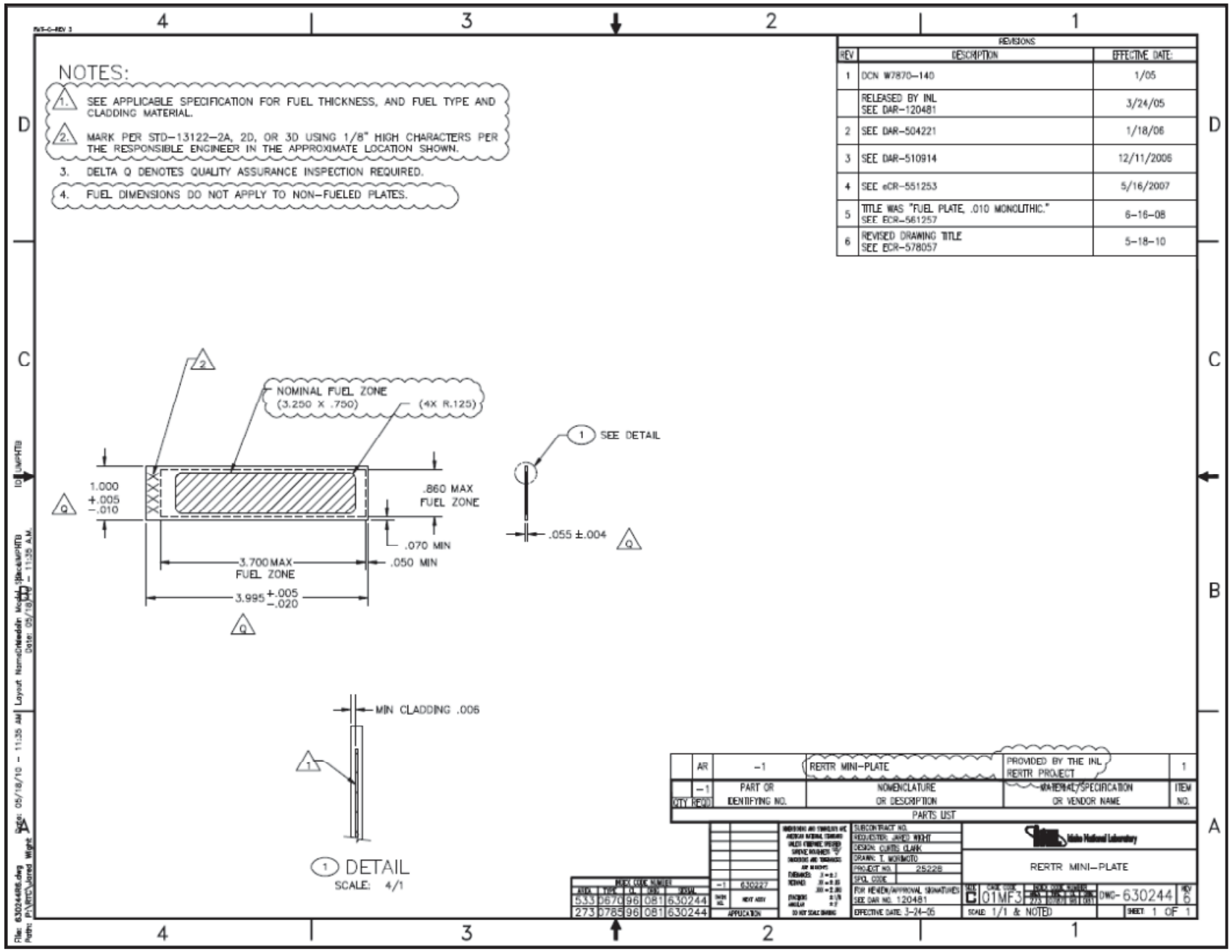

Figure 3: DWG-630244: RERTR monolithic fuel miniplate.

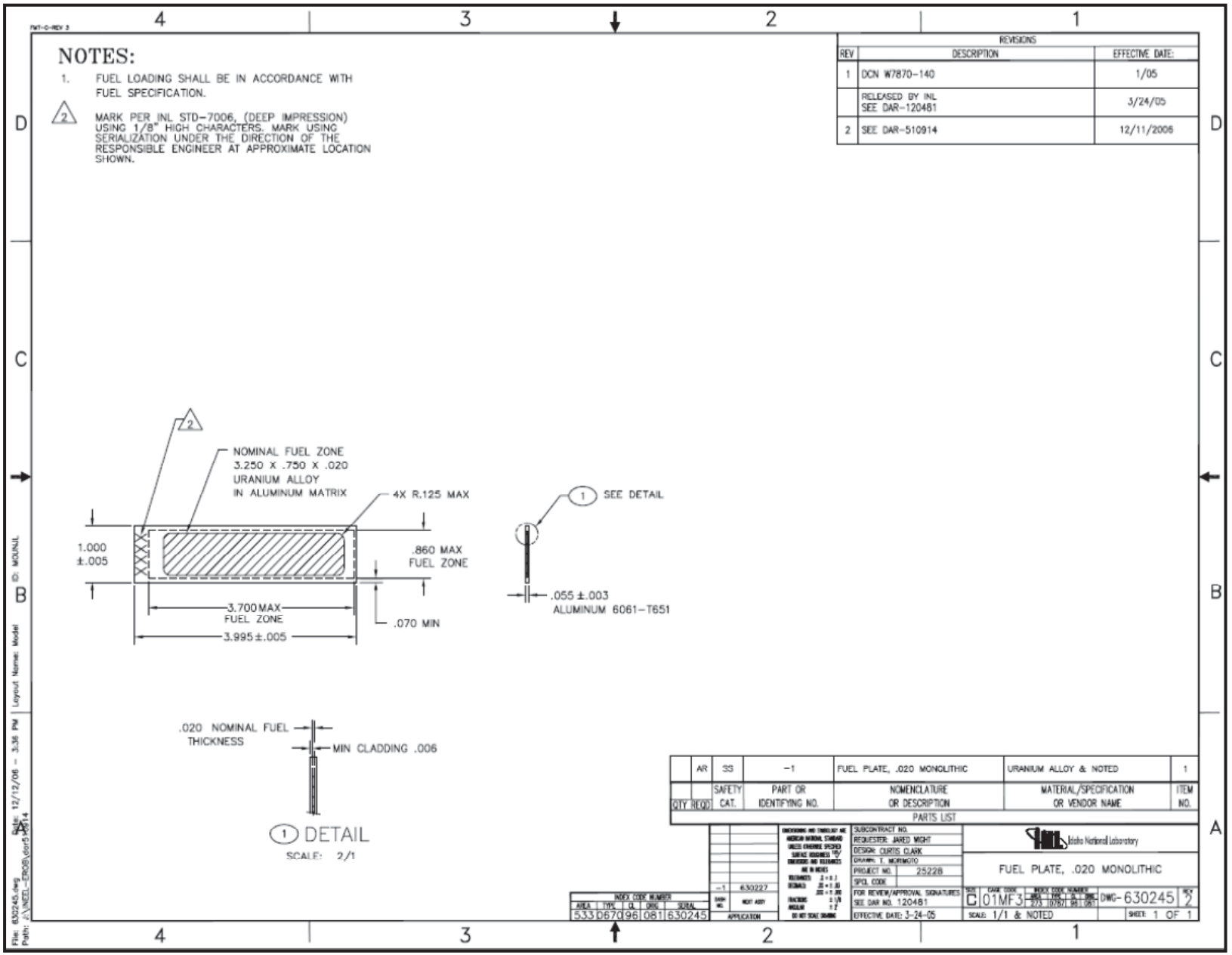

Figure 4: DWG-630245: RERTR thick (0.020 in) monolithic fuel miniplate.

Figure 5: RERTR capsule assembly.

4. IRRADIATION HISTORY

The RERTR-12 insertion 2 test assembly was irradiated in cycle 150B, cycle 151A and cycle 151B. RERTR-12-3 and RERTR-12-4 were irradiated in the large-B position B-9 and RERTR-12-5 was irradiated in the large-B position B-11. The power of position B-9 is represented by the north lobe power which is the average of the NW, C and NE lobe powers, N = (NW + C + NE)/3. The power of position B-11 is represented by the south lobe power which is the average of the SW, C and SE, S = (SW + C + SE)/3. Cycle 150B ran for 41.9 EFPDs at average power of 108.2 MW (north lobe power of 20.7 MW), cycle 151A ran for a total of 56.1 EFPDs at average power of 101.7 MW (north lobe power of 18.4 MW) and cycle 151B ran for a total of 51.3 EFPDs at an average power of 101.5 MW (south lobe power of 22.7 MW).

There were no mid-cycle SCRAMs during Cycle 150B. There was one mid-cycle SCRAM during cycle 151A with a duration of 3 days from 12/25/2011 – 12/28/2011. There were two mid-cycle SRAMs during cycle 151B from 3/22/2012 – 3/25/2012 and 3/27/2012 – 4/7/2012, total duration of 14 days. This information is tabulated in Table 7.

Table 7: Irradiation History for RERTR-12 Insertion 2

ATR CYCLE	RERTR-12 Capsules Irradiated*	Dates Irradiated	Cycle EFPDs	Mid-Cycle Scram Decay Days	North Lobe Source Power (MW)	South Lobe Source Power (MW)	Total Core Power (MW)
150B	A,C,D	10/15/2011 – 11/26/2011	41.9	0	20.7		108.2
151A	A,B,C,D	12/14/2011 – 02/11/2012	56.1	3	18.4		101.7
151B	D	03/01/2012 – 05/05/2012	51.3	14		22.7	101.5

*See Table 1 for capsule configurations

The power history for each cycle is obtained as in ATR Surveillance Report from the ATR Data Acquisition System (DAS). The plots of each lobe power on an hourly basis are shown in Figure 6, Figure 7 and Figure 8 for cycle 150B, 151A and 151B, respectively.

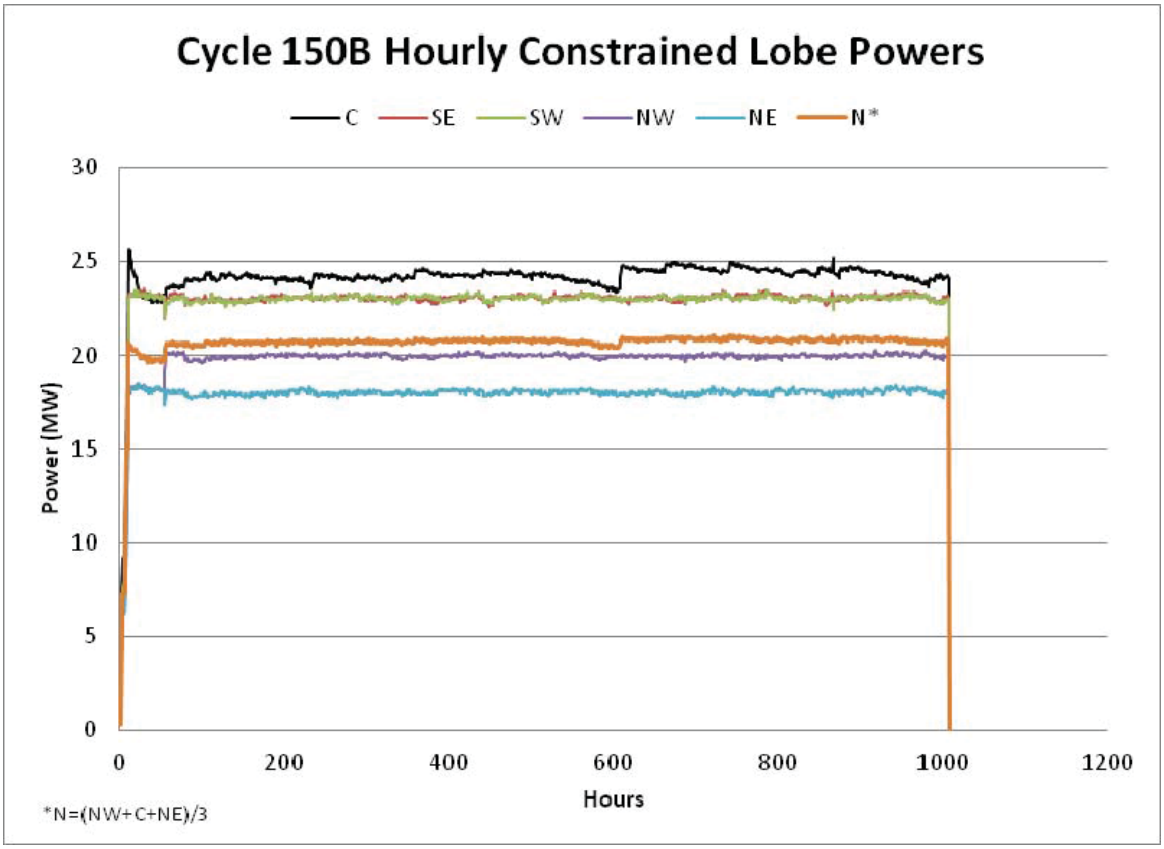

Figure 6: Hourly lobe power history for ATR Cycle 150B.

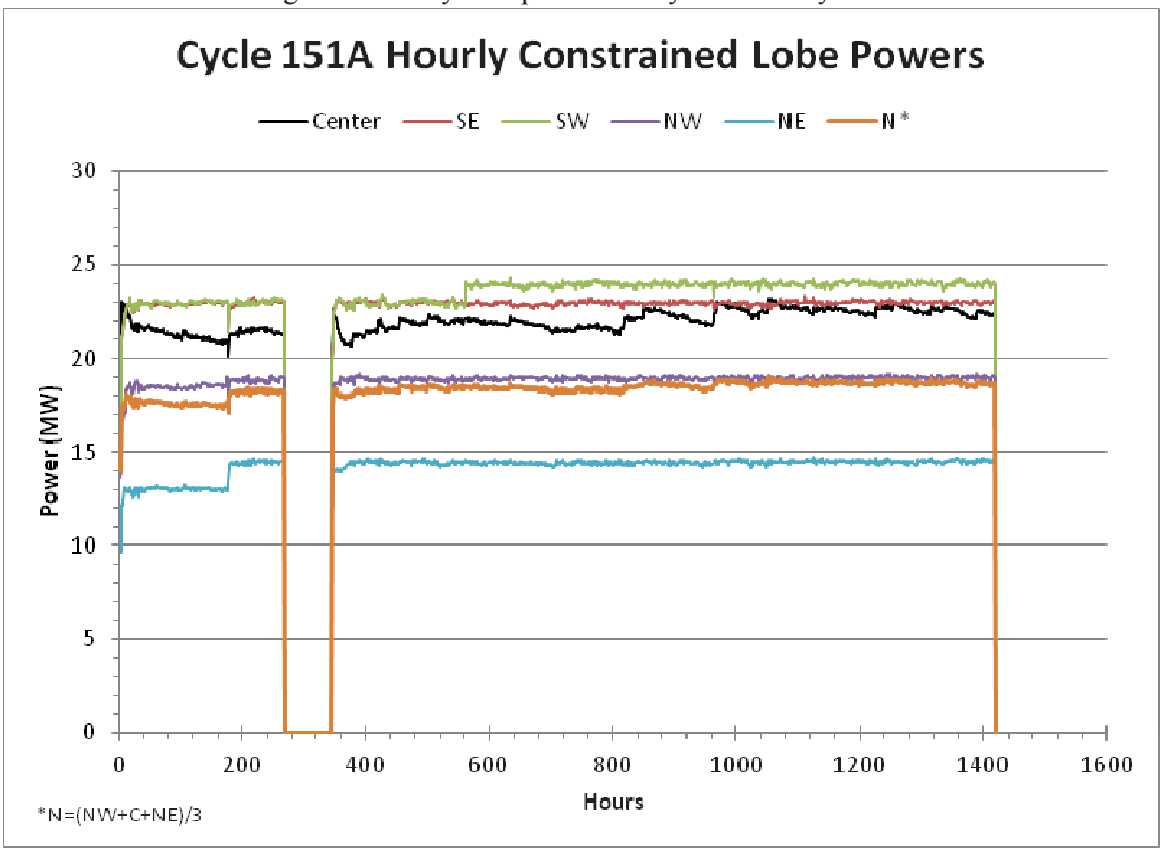

Figure 7: Hourly lobe power history for ATR Cycle 151A.

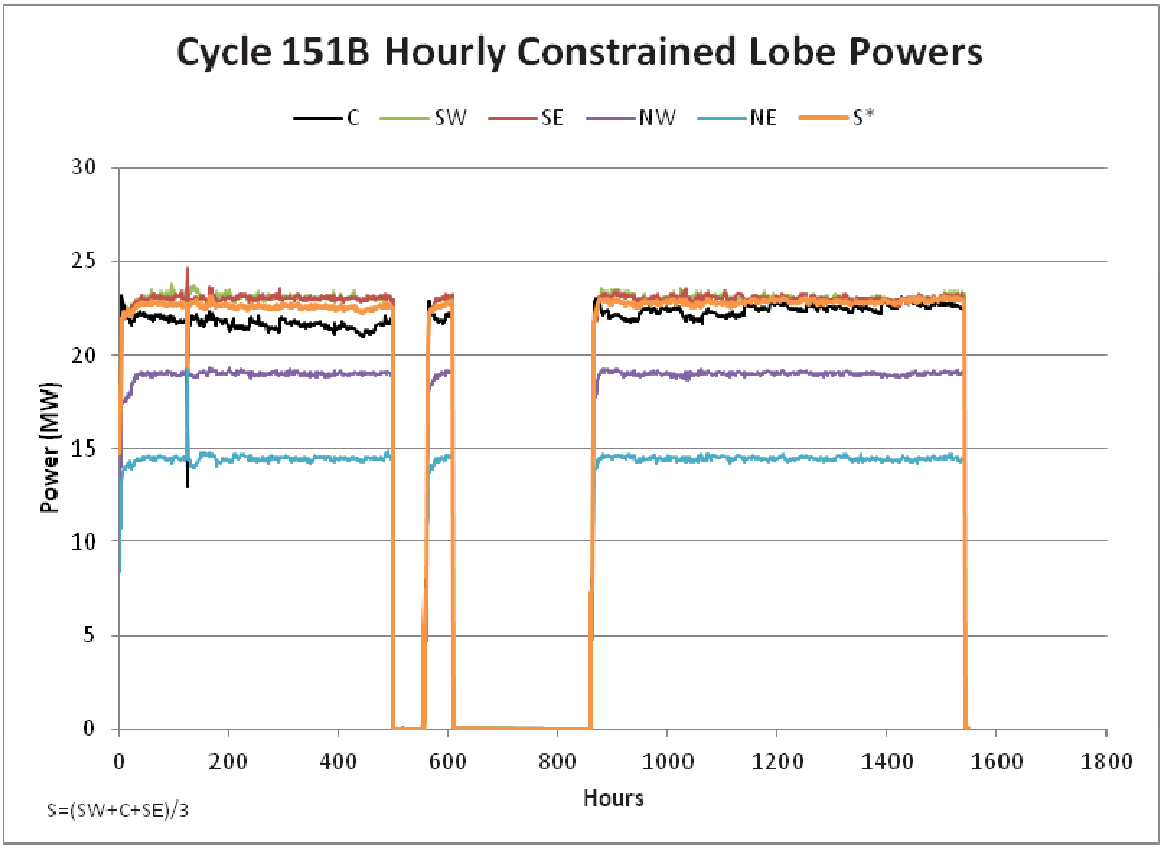

Figure 8. Hourly lobe power history for ATR Cycle 151B.

5. AS-RUN NUCLEAR ANALYSIS

5.1 Neutronics

The as-run calculations were performed using the irradiation history in Table 7 and the Monte Carlo N-Particle (MCNP) code. The calculated as-run fission heat rates, fission densities, and as-run U-235 burnup results for the fueled miniplates reported have an uncertainty band (1σ) of 2.5%.[4,5,6] The time intervals used to calculate the average plate power and burnup is shown in Table 8. The average plate power and burnup for the time intervals for cycle 150B are shown in Table 11 through Table 14. The average plate power and burnup for the time intervals for cycle 151A are shown in Table 15 through Table 18. The average plate power and burnup for the time intervals for cycle 151B are shown in Table 19 through Table 22. The plots of the power and fission density as a function of the ATR Cycle time interval are in Appendix A.

Table 8: Cycle Breakdown

Time Interval	150B (days)	151A (days)	151B (days)
BOC	1.00E-04	1.00E-04	1.00e-4
MOC 1	18.0	15.0	23.0
MOC 2	13.0	19.0	16.0
EOC	10.9	22.1	12.3
Total EFPDs	41.9	56.1	51.3
Cumulative	41.9	98.0	149.3

The MCNP-calculated neutronic results reported were calculated using the nominal fuel foil mass and thickness shown in Table 9 for plates in type Z capsule and Table 10 for plates in type Y capsule.

Table 9: RERTR-12 Calculated Nominal Initial Constituent Masses and Densities for Capsule Type Z Based off a Nominal Fuel Alloy Density of 17.2 g/cc

Plate Position	Enrich.	Fuel Alloy Thick. (mm)	Fuel Alloy Volume (cc)	Fuel Alloy Mass (g)	Fuel Phase Constituent Masses (g)				Fuel Phase Constituent Densities (g/cc)		
					Total U	U-238	U-235	Mo	U-238	U-235	Mo
1	70%	0.254	0.399	6.870	6.183	1.855	4.328	0.687	4.644	10.836	1.720
2	40%	0.508	0.799	13.741	12.366	7.420	4.947	1.374	9.288	6.192	1.720
3	40%	0.508	0.799	13.741	12.366	7.420	4.947	1.374	9.288	6.192	1.720
4	70%	0.254	0.399	6.870	6.183	1.855	4.328	0.687	4.644	10.836	1.720
5	70%	0.254	0.399	6.870	6.183	1.855	4.328	0.687	4.644	10.836	1.720
6	40%	0.508	0.799	13.741	12.366	7.420	4.947	1.374	9.288	6.192	1.720
7	40%	0.508	0.799	13.741	12.366	7.420	4.947	1.374	9.288	6.192	1.720
8	70%	0.254	0.399	6.870	6.183	1.855	4.328	0.687	4.644	10.836	1.720
			Totals	82.444	74.196	37.100	37.100	8.244			

Table 10: RERTR-12 Calculated Nominal Initial Constituent Masses and Densities for Capsule Type Y Based off a Nominal Fuel Alloy Density of 17.2 g/cc

Plate Position	Enrich.	Fuel Alloy Thick. (mm)	Fuel Alloy Volume (cc)	Fuel Alloy Mass (g)	Fuel Phase Constituent Masses (g)				Fuel Phase Constituent Densities (g/cc)		
					Total U	U-238	U-235	Mo	U-238	U-235	Mo
1	30%	0.635	0.999	17.176	15.458	10.821	4.637	1.718	10.836	4.644	1.720
2	30%	0.635	0.999	17.176	15.458	10.821	4.637	1.718	10.836	4.644	1.720
3	20%	0.635	0.999	17.176	15.458	12.366	3.092	1.718	12.384	3.096	1.720
4	10%	0.635	0.999	17.176	15.458	13.912	1.546	1.718	13.932	1.548	1.720
5	30%	0.635	0.999	17.176	15.458	10.821	4.637	1.718	10.836	4.644	1.720
6	30%	0.635	0.999	17.176	15.458	10.821	4.637	1.718	10.836	4.644	1.720
7	20%	0.635	0.999	17.176	15.458	12.366	3.092	1.718	12.384	3.096	1.720
8	10%	0.635	0.999	17.176	15.458	13.912	1.546	1.718	13.932	1.548	1.720
			Totals	137.408	123.664	95.840	27.824	13.744			

Table 11: MCNP-Calculated As-run Results for RERTR-12-3 Irradiated in ATR Position B-9 During Cycle 150B, BOC, Averaged North Lobe Power of 20.7 MW[4]

Configuration		Plate	Density (g/cc)	Fission Power Density (W/cc)	Fission Heat Rate (W/g)	Surface Heat Flux (W/cm^2)	Neutron Flux (n/cm^2sec)	Capsule Cumulative EFPD (Days)
A-1	Z-2	L1P787	16.27	14798.58	909.74	187.94	3.06E+14	39.2
A-2		L2P481	16.85	5608.35	332.77	142.45	2.63E+14	
A-3		L2P498	16.92	4639.97	274.26	117.86	2.39E+14	
A-4		L1P789	16.69	8350.25	500.36	106.05	2.31E+14	
A-5		L1P7A0	16.06	18009.12	1121.63	228.72	3.71E+14	
A-6		L2P482	16.77	7010.03	417.93	178.05	3.28E+14	
A-7		L2P499	16.85	5742.76	340.75	145.87	2.97E+14	
A-8		L1P7A1	16.57	10356.15	624.91	131.52	2.82E+14	
B-1	DUM	Blank	--	--	--	--	--	--
B-2		Blank	--	--	--	--	--	--
B-3		Blank	--	--	--	--	--	--
B-4		Blank	--	--	--	--	--	--
B-5		Blank	--	--	--	--	--	--
B-6		Blank	--	--	--	--	--	--
B-7		Blank	--	--	--	--	--	--
B-8		Blank	--	--	--	--	--	--
C-1	Y3-1	L5P3B1	17.20	10807.24	628.28	343.13	4.56E+14	0.0
C-2		L5P3B3	17.20	7384.53	429.30	234.46	4.03E+14	
C-3		L5P2C9	17.20	4947.33	287.64	157.08	3.62E+14	
C-4		L5P1A5	17.20	2920.41	169.77	92.72	3.29E+14	
C-5		L5P3B2	17.20	10246.54	595.68	325.33	4.37E+14	
C-6		L5P3C1	17.20	6981.42	405.86	221.66	3.90E+14	
C-7		L5P2C8	17.20	4681.50	272.19	148.64	3.55E+14	
C-8		L5P1B8	17.20	2753.99	160.10	87.44	3.20E+14	
D-1	Y2-1	L5P3C2	17.20	9269.21	538.86	294.30	3.92E+14	0.0
D-2		L5P3B4	17.20	6290.80	365.71	199.73	3.49E+14	
D-3		L5P2A3	17.20	4214.37	245.03	133.81	3.13E+14	
D-4		L5P1B7	17.20	2460.58	143.04	78.12	2.87E+14	
D-5		L5P3C3	17.20	7703.98	447.87	244.60	3.29E+14	
D-6		L5P3C6	17.20	5237.51	304.48	166.29	2.89E+14	
D-7		L5P2C0	17.20	3533.04	205.42	112.17	2.63E+14	
D-8		L5P1B9	17.20	2076.18	120.69	65.92	2.37E+14	
Max			--	18009.12	1121.63	343.13	4.56E+14	

Table 12: MCNP-Calculated As-run Results for RERTR-12-3 Irradiated in ATR Position B-9 During Cycle 150B, MOC1 (18 EFPD), Averaged North Lobe Power of 20.7 MW[4]

Configuration		Plate	Density (g/cc)	Fission Power Density (W/cc)	Fission Heat Rate (W/g)	Surface Heat Flux (W/cm^2)	Neutron Flux (n/cm^2sec)	% Depletion U-235 (%)	Fission Density (fissions/cc)	Capsule Cumulative EFPD (Days)
A-1	Z-2	L1P787	15.98	13757.45	860.76	174.72	3.00E+14	14.34%	3.41E+21	57.2
A-2		L2P481	16.74	5308.35	317.05	134.83	2.59E+14	9.47%	1.27E+21	
A-3		L2P498	16.83	4546.03	270.17	115.47	2.38E+14	7.77%	1.04E+21	
A-4		L1P789	16.53	8442.32	510.85	107.22	2.31E+14	8.08%	1.88E+21	
A-5		L1P7A0	15.71	16421.95	1045.38	208.56	3.55E+14	17.59%	4.19E+21	
A-6		L2P482	16.64	6380.17	383.46	162.06	3.11E+14	11.61%	1.56E+21	
A-7		L2P499	16.74	5425.70	324.12	137.81	2.89E+14	9.53%	1.28E+21	
A-8		L1P7A1	16.37	10070.63	615.16	127.90	2.77E+14	9.91%	2.31E+21	
B-1	DUM	Blank	--	--	--	--	--	--	--	--
B-2		Blank	--	--	--	--	--	--	--	--
B-3		Blank	--	--	--	--	--	--	--	--
B-4		Blank	--	--	--	--	--	--	--	--
B-5		Blank	--	--	--	--	--	--	--	--
B-6		Blank	--	--	--	--	--	--	--	--
B-7		Blank	--	--	--	--	--	--	--	--
B-8		Blank	--	--	--	--	--	--	--	--
C-1	Y3-1	L5P3B1	17.00	8926.65	525.05	283.42	4.14E+14	5.63%	5.79E+20	18.0
C-2		L5P3B3	17.06	6048.96	354.50	192.05	3.62E+14	3.87%	3.96E+20	
C-3		L5P2C9	17.11	4150.83	242.63	131.79	3.31E+14	3.87%	2.65E+20	
C-4		L5P1A5	17.14	2582.28	150.61	81.99	3.07E+14	4.56%	1.56E+20	
C-5		L5P3B2	17.01	8457.12	497.20	268.51	3.96E+14	5.38%	5.49E+20	
C-6		L5P3C1	17.07	5762.98	337.57	182.97	3.56E+14	3.70%	3.74E+20	
C-7		L5P2C8	17.11	3976.40	232.36	126.25	3.23E+14	3.72%	2.51E+20	
C-8		L5P1B8	17.15	2475.38	144.36	78.59	3.01E+14	4.31%	1.48E+20	
D-1	Y2-1	L5P3C2	17.03	7923.70	465.29	251.58	3.65E+14	4.87%	4.97E+20	18.0
D-2		L5P3B4	17.08	5240.96	306.77	166.40	3.19E+14	3.36%	3.37E+20	
D-3		L5P2A3	17.12	3629.09	211.96	115.22	2.91E+14	3.34%	2.26E+20	
D-4		L5P1B7	17.15	2220.25	129.43	70.49	2.68E+14	3.86%	1.32E+20	
D-5		L5P3C3	17.06	6773.44	397.11	215.06	3.08E+14	4.03%	4.13E+20	
D-6		L5P3C6	17.10	4566.05	266.98	144.97	2.71E+14	2.77%	2.81E+20	
D-7		L5P2C0	17.13	3131.97	182.80	99.44	2.47E+14	2.81%	1.89E+20	
D-8		L5P1B9	17.16	1924.45	112.15	61.10	2.28E+14	3.28%	1.11E+20	
Max			--	16421.95	1045.38	283.42	4.14E+14	17.59%	4.19E+21	

Table 13: MCNP-Calculated As-run Results for RERTR-12-3 Irradiated in ATR Position B-9 During Cycle 150B, MOC2 (31 EFPD), Averaged North Lobe Power of 20.7 MW[4]

Configuration		Plate	Density (g/cc)	Fission Power Density (W/cc)	Fission Heat Rate (W/g)	Surface Heat Flux (W/cm^2)	Neutron Flux (n/cm^2sec)	% Depletion U-235 (%)	Fission Density (fissions/cc)	Capsule Cumulative EFPD (Days)
A-1	Z-2	L1P787	15.79	15987.26	1012.72	203.04	3.30E+14	16.61%	3.94E+21	70.2
A-2		L2P481	16.67	6352.62	381.09	161.36	2.90E+14	10.98%	1.47E+21	
A-3		L2P498	16.76	5437.81	324.45	138.12	2.69E+14	9.09%	1.21E+21	
A-4		L1P789	16.40	10398.31	633.90	132.06	2.62E+14	9.48%	2.21E+21	
A-5		L1P7A0	15.48	18931.92	1223.22	240.44	3.95E+14	20.25%	4.82E+21	
A-6		L2P482	16.55	7618.69	460.39	193.51	3.46E+14	13.44%	1.81E+21	
A-7		L2P499	16.66	6545.18	392.78	166.25	3.24E+14	11.11%	1.49E+21	
A-8		L1P7A1	16.23	12604.74	776.80	160.08	3.16E+14	11.57%	2.70E+21	
B-1	DUM	Blank	--	--	--	--	--	--	--	--
B-2		Blank	--	--	--	--	--	--	--	--
B-3		Blank	--	--	--	--	--	--	--	--
B-4		Blank	--	--	--	--	--	--	--	--
B-5		Blank	--	--	--	--	--	--	--	--
B-6		Blank	--	--	--	--	--	--	--	--
B-7		Blank	--	--	--	--	--	--	--	--
B-8		Blank	--	--	--	--	--	--	--	--
C-1	Y3-1	L5P3B1	16.88	10249.77	607.27	325.43	4.55E+14	8.99%	9.24E+20	31.0
C-2		L5P3B3	16.98	7289.09	429.27	231.43	4.06E+14	6.22%	6.30E+20	
C-3		L5P2C9	17.05	5116.33	300.07	162.44	3.69E+14	6.30%	4.26E+20	
C-4		L5P1A5	17.11	3248.18	189.84	103.13	3.43E+14	7.49%	2.56E+20	
C-5		L5P3B2	16.89	9853.03	583.22	312.83	4.38E+14	8.57%	8.76E+20	
C-6		L5P3C1	16.99	6987.00	411.23	221.84	3.90E+14	5.88%	5.97E+20	
C-7		L5P2C8	17.06	4987.37	292.40	158.35	3.63E+14	6.00%	4.05E+20	
C-8		L5P1B8	17.11	3171.85	185.35	100.71	3.38E+14	7.11%	2.43E+20	
D-1	Y2-1	L5P3C2	16.92	9152.76	541.04	290.60	4.07E+14	7.90%	8.03E+20	31.0
D-2		L5P3B4	17.01	6396.15	376.03	203.08	3.60E+14	5.38%	5.40E+20	
D-3		L5P2A3	17.07	4559.68	267.10	144.77	3.32E+14	5.38%	3.66E+20	
D-4		L5P1B7	17.12	2871.62	167.71	91.17	3.05E+14	6.38%	2.18E+20	
D-5		L5P3C3	16.96	7893.63	465.31	250.62	3.44E+14	6.64%	6.75E+20	
D-6		L5P3C6	17.04	5611.95	329.37	178.18	3.04E+14	4.54%	4.57E+20	
D-7		L5P2C0	17.09	3959.38	231.69	125.71	2.81E+14	4.63%	3.10E+20	
D-8		L5P1B9	17.13	2554.36	149.08	81.10	2.62E+14	5.47%	1.86E+20	
Max			--	18931.92	1223.22	325.43	4.55E+14	20.25%	4.82E+21	

Table 14: MCNP-Calculated As-run Results for RERTR-12-3 Irradiated in ATR Position B-9 During Cycle 150B, EOC (41.9 EFPD), Averaged North Lobe Power of 20.7 MW[4]

Configuration		Plate	Density (g/cc)	Fission Power Density (W/cc)	Fission Heat Rate (W/g)	Surface Heat Flux (W/cm^2)	Neutron Flux (n/cm^2sec)	% Depletion U-235 (%)	Fission Density (fissions/cc)	Capsule Cumulative EFPD (Days)
A-1	Z-2	L1P787	15.59	15711.54	1007.64	199.54	3.30E+14	18.85%	4.47E+21	81.2
A-2		L2P481	16.59	6297.38	379.54	159.95	2.89E+14	12.50%	1.68E+21	
A-3		L2P498	16.70	5512.59	330.16	140.02	2.70E+14	10.41%	1.39E+21	
A-4		L1P789	16.28	10723.05	658.72	136.18	2.64E+14	10.96%	2.55E+21	
A-5		L1P7A0	15.25	18470.63	1211.35	234.58	3.94E+14	22.88%	5.45E+21	
A-6		L2P482	16.46	7609.56	462.40	193.28	3.48E+14	15.27%	2.06E+21	
A-7		L2P499	16.59	6586.69	397.13	167.30	3.25E+14	12.75%	1.70E+21	
A-8		L1P7A1	16.08	13061.07	812.46	165.88	3.21E+14	13.37%	3.12E+21	
B-1	DUM	Blank	--	--	--	--	--	--	--	--
B-2		Blank	--	--	--	--	--	--	--	--
B-3		Blank	--	--	--	--	--	--	--	--
B-4		Blank	--	--	--	--	--	--	--	--
B-5		Blank	--	--	--	--	--	--	--	--
B-6		Blank	--	--	--	--	--	--	--	--
B-7		Blank	--	--	--	--	--	--	--	--
B-8		Blank	--	--	--	--	--	--	--	--
C-1	Y3-1	L5P3B1	16.76	9969.57	595.02	316.53	4.53E+14	12.35%	1.26E+21	42
C-2		L5P3B3	16.89	7221.38	427.46	229.28	4.05E+14	8.57%	8.71E+20	
C-3		L5P2C9	16.99	5085.36	299.36	161.46	3.70E+14	8.80%	5.95E+20	
C-4		L5P1A5	17.07	3303.94	193.54	104.90	3.47E+14	10.59%	3.64E+20	
C-5		L5P3B2	16.78	9572.40	570.58	303.92	4.34E+14	11.76%	1.20E+21	
C-6		L5P3C1	16.91	6842.32	404.68	217.24	3.89E+14	8.24%	8.28E+20	
C-7		L5P2C8	17.00	4982.05	293.09	158.18	3.63E+14	8.42%	5.70E+20	
C-8		L5P1B8	17.08	3233.34	189.34	102.66	3.43E+14	10.16%	3.48E+20	
D-1	Y2-1	L5P3C2	16.81	8949.20	532.34	284.14	4.03E+14	10.84%	1.11E+21	42
D-2		L5P3B4	16.93	6312.45	372.81	200.42	3.58E+14	7.48%	7.51E+20	
D-3		L5P2A3	17.02	4565.82	268.33	144.96	3.32E+14	7.67%	5.17E+20	
D-4		L5P1B7	17.09	2938.10	171.94	93.28	3.10E+14	9.15%	3.13E+20	
D-5		L5P3C3	16.87	7797.39	462.27	247.57	3.46E+14	9.24%	9.36E+20	
D-6		L5P3C6	16.97	5570.93	328.21	176.88	3.04E+14	6.39%	6.43E+20	
D-7		L5P2C0	17.04	3974.35	233.17	126.19	2.82E+14	6.53%	4.41E+20	
D-8		L5P1B9	17.10	2611.10	152.66	82.90	2.66E+14	7.92%	2.70E+20	
Max			--	18470.63	1211.35	316.53	4.53E+14	22.88%	5.45E+21	

Table 15: MCNP-Calculated As-run Results for RERTR-12-4 Irradiated in ATR Position B-9 During Cycle 151A, BOC, Averaged North Lobe Power of 18.4 MW[5]

Configuration		Plate	Density (g/cc)	Fission Power Density (W/cc)	Fission Heat Rate (W/g)	Surface Heat Flux (W/cm^2)	Neutron Flux (n/cm^2sec)	Capsule Cumulative EFPD (Days)
A-1	Z-3	L1P787	15.59	12248.86	785.57	155.56	2.65E+14	81.1
A-2		L2P481	16.59	4726.62	284.87	120.06	2.30E+14	
A-3		L2P498	16.70	3935.88	235.73	99.97	2.12E+14	
A-4		L1P789	16.28	7187.16	441.51	91.28	2.01E+14	
A-5		L1P7A0	15.25	14338.07	940.33	182.09	3.22E+14	
A-6		L2P482	16.46	5583.62	339.29	141.82	2.80E+14	
A-7		L2P499	16.58	4732.81	285.40	120.21	2.57E+14	
A-8		L1P7A1	16.08	8670.76	539.36	110.12	2.48E+14	
B-1	Y1-1	L5P3F8	17.20	9587.18	557.35	304.39	4.01E+14	0
B-2		L5P3G2	17.20	6601.36	383.77	209.59	3.55E+14	
B-3		L5P2A4	17.20	4418.54	256.90	140.29	3.20E+14	
B-4		L5P1B5	17.20	2637.27	153.31	83.73	2.92E+14	
B-5		L5P3F0	17.20	10115.55	588.07	321.17	4.25E+14	
B-6		L5P3G3	17.20	7015.87	407.87	222.75	3.76E+14	
B-7		L5P2C7	17.20	4682.38	272.24	148.67	3.37E+14	
B-8		L5P1B0	17.20	2779.74	161.59	88.26	3.07E+14	
C-1	Y3-2	L5P3B1	16.76	7763.29	463.34	246.48	3.70E+14	41.9
C-2		L5P3B3	16.89	5317.47	314.76	168.83	3.28E+14	
C-3		L5P2C9	16.99	3637.86	214.15	115.50	2.98E+14	
C-4		L5P1A5	17.07	2239.81	131.21	71.11	2.76E+14	
C-5		L5P3B2	16.78	7432.66	443.03	235.99	3.54E+14	
C-6		L5P3C1	16.91	5149.05	304.53	163.48	3.14E+14	
C-7		L5P2C8	17.00	3545.85	208.60	112.58	2.87E+14	
C-8		L5P1B8	17.08	2152.13	126.02	68.33	2.67E+14	
D-1	Y2-2	L5P3C2	16.81	6804.93	404.84	216.06	3.23E+14	41.9
D-2		L5P3B4	16.93	4781.55	282.40	151.81	2.85E+14	
D-3		L5P2A3	17.02	3264.02	191.83	103.63	2.57E+14	
D-4		L5P1B7	17.09	1991.92	116.57	63.24	2.41E+14	
D-5		L5P3C3	16.87	6008.63	356.22	190.77	2.76E+14	
D-6		L5P3C6	16.97	4085.51	240.70	129.71	2.43E+14	
D-7		L5P2C0	17.04	2827.79	165.91	89.78	2.23E+14	
D-8		L5P1B9	17.10	1714.32	100.23	54.43	2.04E+14	
Max			--	14338.07	940.33	321.17	4.25E+14	

Table 16: MCNP-Calculated As-run Results for RERTR-12-4 Irradiated in ATR Position B-9 During Cycle 151A, MOC1 (15 EFPD), Averaged North Lobe Power of 18.4 MW[5]

Configuration		Plate	Density (g/cc)	Fission Power Density (W/cc)	Fission Heat Rate (W/g)	Surface Heat Flux (W/cm^2)	Neutron Flux (n/cm^2sec)	% Depletion U-235 (%)	Fission Density (fissions/cc)	Capsule Cumulative EFPD (Days)
A-1	Z-3	L1P787	15.39	11455.31	744.29	145.48	2.61E+14	21.15%	5.02E+21	96.1
A-2		L2P481	16.51	4620.04	279.79	117.35	2.28E+14	14.13%	1.89E+21	
A-3		L2P498	16.63	3844.11	231.16	97.64	2.08E+14	11.74%	1.57E+21	
A-4		L1P789	16.16	6952.89	430.27	88.30	2.00E+14	12.33%	2.87E+21	
A-5		L1P7A0	15.01	13258.05	883.26	168.38	3.09E+14	25.58%	6.09E+21	
A-6		L2P482	16.36	5330.63	325.76	135.40	2.68E+14	17.16%	2.31E+21	
A-7		L2P499	16.51	4577.18	277.30	116.26	2.49E+14	14.32%	1.91E+21	
A-8		L1P7A1	15.93	8245.70	517.61	104.72	2.39E+14	15.03%	3.50E+21	
B-1	Y1-1	L5P3F8	17.05	7102.968	416.58	225.52	3.35E+14	4.20%	4.28E+20	15
B-2		L5P3G2	17.10	4794.794	280.45	152.23	2.95E+14	2.94%	2.95E+20	
B-3		L5P2A4	17.13	3212.691	187.56	102.00	2.70E+14	2.96%	1.97E+20	
B-4		L5P1B5	17.16	1989.111	115.91	63.15	2.51E+14	3.45%	1.18E+20	
B-5		L5P3F0	17.04	7403.037	434.34	235.05	3.51E+14	4.37%	4.52E+20	
B-6		L5P3G3	17.09	4971.733	290.88	157.85	3.07E+14	3.11%	3.14E+20	
B-7		L5P2C7	17.13	3358.242	196.10	106.62	2.81E+14	3.11%	2.09E+20	
B-8		L5P1B0	17.16	2085.599	121.55	66.22	2.62E+14	3.63%	1.24E+20	
C-1	Y3-2	L5P3B1	16.63	7230.684	434.83	229.57	3.56E+14	15.71%	1.61E+21	56.9
C-2		L5P3B3	16.80	5039.060	299.87	159.99	3.13E+14	11.01%	1.11E+21	
C-3		L5P2C9	16.93	3424.767	202.31	108.74	2.87E+14	11.16%	7.57E+20	
C-4		L5P1A5	17.03	2061.902	121.04	65.47	2.63E+14	13.46%	4.64E+20	
C-5		L5P3B2	16.65	7004.151	420.57	222.38	3.43E+14	14.96%	1.53E+21	
C-6		L5P3C1	16.82	4929.721	293.05	156.52	3.04E+14	10.50%	1.06E+21	
C-7		L5P2C8	16.94	3334.062	196.83	105.86	2.78E+14	10.78%	7.28E+20	
C-8		L5P1B8	17.04	1986.158	116.56	63.06	2.56E+14	12.91%	4.44E+20	
D-1	Y2-2	L5P3C2	16.70	6432.19	385.24	204.22	3.14E+14	13.78%	1.41E+21	56.9
D-2		L5P3B4	16.86	4511.98	267.67	143.26	2.76E+14	9.58%	9.65E+20	
D-3		L5P2A3	16.96	3086.23	181.93	97.99	2.52E+14	9.80%	6.63E+20	
D-4		L5P1B7	17.06	1867.12	109.46	59.28	2.34E+14	11.72%	4.02E+20	
D-5		L5P3C3	16.77	5675.67	338.43	180.20	2.71E+14	11.85%	1.20E+21	
D-6		L5P3C6	16.91	3993.53	236.22	126.79	2.38E+14	8.24%	8.25E+20	
D-7		L5P2C0	17.00	2682.42	157.83	85.17	2.16E+14	8.42%	5.68E+20	
D-8		L5P1B9	17.08	1607.74	94.15	51.05	2.00E+14	10.16%	3.47E+20	
Max			--	13258.05	883.26	235.05	3.56E+14	25.58%	6.09E+21	

Table 17: MCNP-Calculated As-run Results for RERTR-12-4 Irradiated in ATR Position B-9 During Cycle 151A, MOC2 (34 EFPD), Averaged North Lobe Power of 18.4 MW[5]

Configuration		Plate	Density (g/cc)	Fission Power Density (W/cc)	Fission Heat Rate (W/g)	Surface Heat Flux (W/cm^2)	Neutron Flux (n/cm^2sec)	% Depletion U-235 (%)	Fission Density (fissions/cc)	Capsule Cumulative EFPD (Days)
A-1	Z-3	L1P787	15.15	11584.35	764.57	147.12	2.62E+14	23.89%	5.66E+21	115.1
A-2		L2P481	16.42	4638.66	282.57	117.82	2.30E+14	16.03%	2.15E+21	
A-3		L2P498	16.55	3952.21	238.83	100.39	2.11E+14	13.38%	1.79E+21	
A-4		L1P789	16.01	7067.38	441.32	89.76	2.03E+14	14.02%	3.26E+21	
A-5		L1P7A0	14.74	13182.72	894.65	167.42	3.15E+14	28.68%	6.84E+21	
A-6		L2P482	16.25	5460.42	336.01	138.69	2.74E+14	19.37%	2.61E+21	
A-7		L2P499	16.41	4629.71	282.16	117.59	2.52E+14	16.21%	2.17E+21	
A-8		L1P7A1	15.76	8179.46	519.02	103.88	2.41E+14	17.01%	3.97E+21	
B-1	Y1-1	L5P3F8	16.91	7328.606	433.34	232.68	3.42E+14	8.07%	8.28E+20	34
B-2		L5P3G2	17.00	5011.860	294.81	159.13	3.03E+14	5.63%	5.65E+20	
B-3		L5P2A4	17.07	3400.066	199.24	107.95	2.77E+14	5.61%	3.78E+20	
B-4		L5P1B5	17.12	2067.607	120.77	65.65	2.55E+14	6.73%	2.30E+20	
B-5		L5P3F0	16.89	7568.621	447.98	240.30	3.58E+14	8.49%	8.69E+20	
B-6		L5P3G3	16.99	5238.026	308.26	166.31	3.14E+14	5.88%	5.93E+20	
B-7		L5P2C7	17.06	3514.699	206.04	111.59	2.88E+14	5.93%	3.98E+20	
B-8		L5P1B0	17.12	2161.633	126.29	68.63	2.69E+14	7.06%	2.42E+20	
C-1	Y3-2	L5P3B1	16.48	7053.385	428.03	223.94	3.55E+14	19.64%	2.02E+21	75.9
C-2		L5P3B3	16.70	5068.345	303.49	160.92	3.13E+14	13.78%	1.39E+21	
C-3		L5P2C9	16.86	3365.115	199.61	106.84	2.84E+14	13.97%	9.50E+20	
C-4		L5P1A5	16.99	2015.513	118.62	63.99	2.61E+14	16.77%	5.79E+20	
C-5		L5P3B2	16.51	6927.150	419.62	219.94	3.41E+14	18.83%	1.93E+21	
C-6		L5P3C1	16.72	4943.000	295.63	156.94	3.03E+14	13.19%	1.34E+21	
C-7		L5P2C8	16.87	3332.345	197.52	105.80	2.75E+14	13.52%	9.16E+20	
C-8		L5P1B8	17.00	1980.869	116.52	62.89	2.56E+14	16.11%	5.56E+20	
D-1	Y2-2	L5P3C2	16.57	6399.97	386.32	203.20	3.14E+14	17.31%	1.77E+21	75.9
D-2		L5P3B4	16.76	4528.10	270.16	143.77	2.77E+14	12.10%	1.22E+21	
D-3		L5P2A3	16.90	3054.66	180.76	96.99	2.52E+14	12.37%	8.36E+20	
D-4		L5P1B7	17.02	1816.74	106.76	57.68	2.33E+14	14.73%	5.06E+20	
D-5		L5P3C3	16.65	5723.60	343.66	181.72	2.73E+14	14.96%	1.52E+21	
D-6		L5P3C6	16.82	3969.32	235.97	126.03	2.40E+14	10.42%	1.05E+21	
D-7		L5P2C0	16.94	2717.70	160.42	86.29	2.17E+14	10.63%	7.19E+20	
D-8		L5P1B9	17.04	1603.34	94.09	50.91	1.98E+14	12.76%	4.37E+20	
Max			--	13182.72	894.65	240.30	3.58E+14	28.86%	6.84E+21	

Table 18: MCNP-Calculated As-run Results for RERTR-12-4 Irradiated in ATR Position B-9 During Cycle 151A, EOC (56.1 EFPD), Averaged North Lobe Power of 18.4 MW[5]

Configuration		Plate	Density (g/cc)	Fission Power Density (W/cc)	Fission Heat Rate (W/g)	Surface Heat Flux (W/cm^2)	Neutron Flux (n/cm^2sec)	% Depletion U-235 (%)	Fission Density (fissions/cc)	Capsule Cumulative EFPD (Days)
A-1	Z-3	L1P787	14.87	11250.60	756.54	142.88	2.60E+14	27.09%	6.43E+21	137.2
A-2		L2P481	16.30	4581.27	281.02	116.36	2.29E+14	18.36%	2.46E+21	
A-3		L2P498	16.45	3918.39	238.14	99.53	2.10E+14	15.33%	2.05E+21	
A-4		L1P789	15.84	6969.41	440.02	88.51	2.02E+14	16.04%	3.73E+21	
A-5		L1P7A0	14.42	12720.43	882.41	161.55	3.12E+14	32.35%	7.71E+21	
A-6		L2P482	16.12	5386.03	334.13	136.81	2.73E+14	22.08%	2.98E+21	
A-7		L2P499	16.30	4573.11	280.63	116.16	2.51E+14	18.55%	2.48E+21	
A-8		L1P7A1	15.56	8054.78	517.78	102.30	2.40E+14	19.35%	4.51E+21	
B-1	Y1-1	L5P3F8	16.73	7072.509	422.64	224.55	3.38E+14	12.86%	1.32E+21	56.1
B-2		L5P3G2	16.88	4909.716	290.85	155.88	3.00E+14	8.91%	8.99E+20	
B-3		L5P2A4	16.98	3329.815	196.08	105.72	2.75E+14	8.95%	6.05E+20	
B-4		L5P1B5	17.07	2015.584	118.07	63.99	2.53E+14	10.72%	3.67E+20	
B-5		L5P3F0	16.71	7295.585	436.54	231.63	3.55E+14	13.45%	1.37E+21	
B-6		L5P3G3	16.87	5124.860	303.87	162.71	3.12E+14	9.33%	9.42E+20	
B-7		L5P2C7	16.97	3437.310	202.50	109.13	2.86E+14	9.34%	6.32E+20	
B-8		L5P1B0	17.06	2102.341	123.21	66.75	2.66E+14	11.25%	3.86E+20	
C-1	Y3-2	L5P3B1	16.31	6831.282	418.91	216.89	3.52E+14	24.14%	2.49E+21	98
C-2		L5P3B3	16.58	4994.614	301.30	158.58	3.11E+14	17.06%	1.73E+21	
C-3		L5P2C9	16.78	3314.574	197.58	105.24	2.83E+14	17.24%	1.17E+21	
C-4		L5P1A5	16.94	1968.936	116.22	62.51	2.60E+14	20.50%	7.13E+20	
C-5		L5P3B2	16.34	6708.419	410.52	212.99	3.38E+14	23.23%	2.39E+21	
C-6		L5P3C1	16.60	4864.228	293.06	154.44	3.02E+14	16.45%	1.66E+21	
C-7		L5P2C8	16.79	3281.702	195.45	104.19	2.74E+14	16.71%	1.14E+21	
C-8		L5P1B8	16.95	1934.465	114.12	61.42	2.55E+14	19.82%	6.88E+20	
D-1	Y2-2	L5P3C2	16.41	6211.52	378.57	197.22	3.12E+14	21.46%	2.20E+21	98
D-2		L5P3B4	16.65	4466.04	268.23	141.80	2.76E+14	15.04%	1.52E+21	
D-3		L5P2A3	16.82	3010.03	178.92	95.57	2.51E+14	15.33%	1.04E+21	
D-4		L5P1B7	16.97	1787.51	105.32	56.75	2.33E+14	18.15%	6.27E+20	
D-5		L5P3C3	16.51	5572.72	337.44	176.93	2.71E+14	18.62%	1.90E+21	
D-6		L5P3C6	16.72	3916.86	234.22	124.36	2.39E+14	13.03%	1.31E+21	
D-7		L5P2C0	16.87	2678.69	158.74	85.05	2.16E+14	13.29%	9.00E+20	
D-8		L5P1B9	17.00	1576.89	92.74	50.07	1.97E+14	15.81%	5.44E+20	
Max			--	12720.43	882.41	231.63	3.55E+14	32.35%	7.71E+21	

Table 19: MCNP-Calculated As-run Results for RERTR-12-5 Irradiated in ATR Position B-11 During Cycle 151B, BOC, Averaged South Lobe Power of 22.7 MW[6]

Configuration		Plate	Density (g/cc)	Fission Power Density (W/cc)	Fission Heat Rate (W/g)	Surface Heat Flux (W/cm^2)	Neutron Flux (n/cm^2sec)	Capsule Cumulative EFPD (Days)
A-1	DUM	Blank	--	--	--	--	--	0
A-2		Blank	--	--	--	--	--	
A-3		Blank	--	--	--	--	--	
A-4		Blank	--	--	--	--	--	
A-5		Blank	--	--	--	--	--	
A-6		Blank	--	--	--	--	--	
A-7		Blank	--	--	--	--	--	
A-8		Blank	--	--	--	--	--	
B-1	DUM	Blank	--	--	--	--	--	0
B-2		Blank	--	--	--	--	--	
B-3		Blank	--	--	--	--	--	
B-4		Blank	--	--	--	--	--	
B-5		Blank	--	--	--	--	--	
B-6		Blank	--	--	--	--	--	
B-7		Blank	--	--	--	--	--	
B-8		Blank	--	--	--	--	--	
C-1	DUM	Blank	--	--	--	--	--	0
C-2		Blank	--	--	--	--	--	
C-3		Blank	--	--	--	--	--	
C-4		Blank	--	--	--	--	--	
C-5		Blank	--	--	--	--	--	
C-6		Blank	--	--	--	--	--	
C-7		Blank	--	--	--	--	--	
C-8		Blank	--	--	--	--	--	
D-1	Y2-3	L5P3C2	16.41	8918.168	543.53	283.15	4.43E+14	98
D-2		L5P3B4	16.65	6480.035	389.19	205.74	3.94E+14	
D-3		L5P2A3	16.82	4330.307	257.40	137.49	3.58E+14	
D-4		L5P1B7	16.97	2577.302	151.85	81.83	3.31E+14	
D-5		L5P3C3	16.51	7674.619	464.71	243.67	3.76E+14	
D-6		L5P3C6	16.72	5491.981	328.41	174.37	3.32E+14	
D-7		L5P2C0	16.87	3659.331	216.85	116.18	3.01E+14	
D-8		L5P1B9	17.00	2186.490	128.59	69.42	2.79E+14	
Max			--	8918.17	543.53	283.15	4.43e14	--

Table 20: MCNP-Calculated As-run Results for RERTR-12-5 Irradiated in ATR Position B-11 During Cycle 151B, MOC1 (18.0 EFPD), Averaged South Lobe Power of 22.7 MW[6]

Configuration		Plate	Density (g/cc)	Fission Power Density (W/cc)	Fission Heat Rate (W/g)	Surface Heat Flux (W/cm^2)	Neutron Flux (n/cm^2sec)	% Depletion U-235 (%)	Fission Density (fission/cc)	Capsule Cumulative EFPD (Days)
A-1		Blank	--	--	--	--	--	--	--	18
A-2		Blank	--	--	--	--	--	--	--	
A-3		Blank	--	--	--	--	--	--	--	
A-4	DUM	Blank	--	--	--	--	--	--	--	
A-5		Blank	--	--	--	--	--	--	--	
A-6		Blank	--	--	--	--	--	--	--	
A-7		Blank	--	--	--	--	--	--	--	
A-8		Blank	--	--	--	--	--	--	--	
B-1		Blank	--	--	--	--	--	--	--	18
B-2		Blank	--	--	--	--	--	--	--	
B-3		Blank	--	--	--	--	--	--	--	
B-4	DUM	Blank	--	--	--	--	--	--	--	
B-5		Blank	--	--	--	--	--	--	--	
B-6		Blank	--	--	--	--	--	--	--	
B-7		Blank	--	--	--	--	--	--	--	
B-8		Blank	--	--	--	--	--	--	--	
C-1		Blank	--	--	--	--	--	--	--	18
C-2		Blank	--	--	--	--	--	--	--	
C-3		Blank	--	--	--	--	--	--	--	
C-4	DUM	Blank	--	--	--	--	--	--	--	
C-5		Blank	--	--	--	--	--	--	--	
C-6		Blank	--	--	--	--	--	--	--	
C-7		Blank	--	--	--	--	--	--	--	
C-8		Blank	--	--	--	--	--	--	--	
D-1		L5P3C2	16.19	8292.864	512.21	263.30	4.31E+14	27.23%	2.81E+21	121
D-2		L5P3B4	16.49	6088.874	369.20	193.32	3.82E+14	19.34%	1.96E+21	
D-3		L5P2A3	16.72	4091.504	244.74	129.91	3.49E+14	19.59%	1.34E+21	
D-4	Y2-3	L5P1B7	16.91	2456.581	145.29	78.00	3.25E+14	23.02%	8.03E+20	
D-5		L5P3C3	16.33	7345.464	449.93	233.22	3.73E+14	23.64%	2.43E+21	
D-6		L5P3C6	16.59	5339.482	321.88	169.53	3.30E+14	16.71%	1.69E+21	
D-7		L5P2C0	16.78	3538.852	210.84	112.36	2.99E+14	16.93%	1.15E+21	
D-8		L5P1B9	16.95	2134.087	125.92	67.76	2.79E+14	19.97%	6.93E+20	
Max			--	8292.86	512.21	263.30	4.31E+14	27.23%	2.81E+21	--

Table 21: MCNP-Calculated As-run Results for RERTR-12-5 Irradiated in ATR Position B-11 During Cycle 151B, MOC2 (39.0 EFPD), Averaged South Lobe Power of 18.4 MW[6]

Configuration		Plate	Density (g/cc)	Fission Power Density (W/cc)	Fission Heat Rate (W/g)	Surface Heat Flux (W/cm^2)	Neutron Flux (n/cm^2sec)	% Depletion U-235 (%)	Fission Density (fission/cc)	Capsule Cumulative EFPD (Days)
A-1		Blank	--	--	--	--	--	--	--	39
A-2		Blank	--	--	--	--	--	--	--	
A-3		Blank	--	--	--	--	--	--	--	
A-4	DUM	Blank	--	--	--	--	--	--	--	
A-5		Blank	--	--	--	--	--	--	--	
A-6		Blank	--	--	--	--	--	--	--	
A-7		Blank	--	--	--	--	--	--	--	
A-8		Blank	--	--	--	--	--	--	--	
B-1		Blank	--	--	--	--	--	--	--	39
B-2		Blank	--	--	--	--	--	--	--	
B-3		Blank	--	--	--	--	--	--	--	
B-4	DUM	Blank	--	--	--	--	--	--	--	
B-5		Blank	--	--	--	--	--	--	--	
B-6		Blank	--	--	--	--	--	--	--	
B-7		Blank	--	--	--	--	--	--	--	
B-8		Blank	--	--	--	--	--	--	--	
C-1		Blank	--	--	--	--	--	--	--	39
C-2		Blank	--	--	--	--	--	--	--	
C-3		Blank	--	--	--	--	--	--	--	
C-4	DUM	Blank	--	--	--	--	--	--	--	
C-5		Blank	--	--	--	--	--	--	--	
C-6		Blank	--	--	--	--	--	--	--	
C-7		Blank	--	--	--	--	--	--	--	
C-8		Blank	--	--	--	--	--	--	--	
D-1		L5P3C2	16.05	9094.99	566.70	288.77	4.60E+14	30.97%	3.20E+21	137
D-2		L5P3B4	16.39	6900.02	421.07	219.08	4.10E+14	22.17%	2.25E+21	
D-3		L5P2A3	16.65	4701.92	282.47	149.29	3.75E+14	22.39%	1.53E+21	
D-4	Y2-3	L5P1B7	16.87	2815.24	166.92	89.38	3.50E+14	26.22%	9.20E+20	
D-5		L5P3C3	16.20	8082.95	499.04	256.63	4.00E+14	27.03%	2.78E+21	
D-6		L5P3C6	16.50	6045.37	366.47	191.94	3.56E+14	19.18%	1.94E+21	
D-7		L5P2C0	16.72	4080.72	244.01	129.56	3.22E+14	19.35%	1.32E+21	
D-8		L5P1B9	16.91	2460.36	145.48	78.12	3.01E+14	22.82%	7.94E+20	
Max			--	9094.99	566.70	288.77	4.60E+14	30.97%	3.20E+21	--

Table 22: MCNP-Calculated As-run Results for RERTR-12-5 Irradiated in ATR Position B-11 During Cycle 151B, EOC (51.3 EFPD), Averaged South Lobe Power of 18.4 MW[6]

Configuration		Plate	Density (g/cc)	Fission Power Density (W/cc)	Fission Heat Rate (W/g)	Surface Heat Flux (W/cm^2)	Neutron Flux (n/cm^2sec)	% Depletion U-235 (%)	Fission Density (fission/cc)	Capsule Cumulative EFPD (Days)
A-1		Blank	--	--	--	--	--	--	--	51.3
A-2		Blank	--	--	--	--	--	--	--	
A-3		Blank	--	--	--	--	--	--	--	
A-4	DUM	Blank	--	--	--	--	--	--	--	
A-5		Blank	--	--	--	--	--	--	--	
A-6		Blank	--	--	--	--	--	--	--	
A-7		Blank	--	--	--	--	--	--	--	
A-8		Blank	--	--	--	--	--	--	--	
B-1		Blank	--	--	--	--	--	--	--	51.3
B-2		Blank	--	--	--	--	--	--	--	
B-3		Blank	--	--	--	--	--	--	--	
B-4	DUM	Blank	--	--	--	--	--	--	--	
B-5		Blank	--	--	--	--	--	--	--	
B-6		Blank	--	--	--	--	--	--	--	
B-7		Blank	--	--	--	--	--	--	--	
B-8		Blank	--	--	--	--	--	--	--	
C-1		Blank	--	--	--	--	--	--	--	51.3
C-2		Blank	--	--	--	--	--	--	--	
C-3		Blank	--	--	--	--	--	--	--	
C-4	DUM	Blank	--	--	--	--	--	--	--	
C-5		Blank	--	--	--	--	--	--	--	
C-6		Blank	--	--	--	--	--	--	--	
C-7		Blank	--	--	--	--	--	--	--	
C-8		Blank	--	--	--	--	--	--	--	
D-1		L5P3C2	15.93	8667.96	544.24	275.21	4.53E+14	34.16%	3.54E+21	149.3
D-2		L5P3B4	16.29	6635.45	407.26	210.68	4.02E+14	24.65%	2.51E+21	
D-3		L5P2A3	16.58	4519.68	272.55	143.50	3.69E+14	24.88%	1.70E+21	
D-4	Y2-3	L5P1B7	16.83	2708.14	160.92	85.98	3.45E+14	29.07%	1.02E+21	
D-5		L5P3C3	16.09	7753.62	481.89	246.18	3.94E+14	29.86%	3.08E+21	
D-6		L5P3C6	16.42	5841.13	355.82	185.46	3.50E+14	21.36%	2.17E+21	
D-7		L5P2C0	16.67	3937.23	236.24	125.01	3.17E+14	21.56%	1.47E+21	
D-8		L5P1B9	16.88	2374.69	140.69	75.40	2.97E+14	25.32%	8.85E+20	
Max			--	8667.96	544.24	275.21	4.53E+14	34.16%	3.54E+21	--

5.2 Gradients

The MCNP-calculated power gradients in the transverse and axial directions are represented by the fission rate local-to-average ratios (L2ARs) as a function of position along the fuel foil calculated at the beginning of life. Figure 9 through Figure 12 depict the power gradient in the transverse direction and Figure 13 through Figure 16 depict the power gradient in the axial direction. The 2D gradient map for each plate can be found in Appendix B.

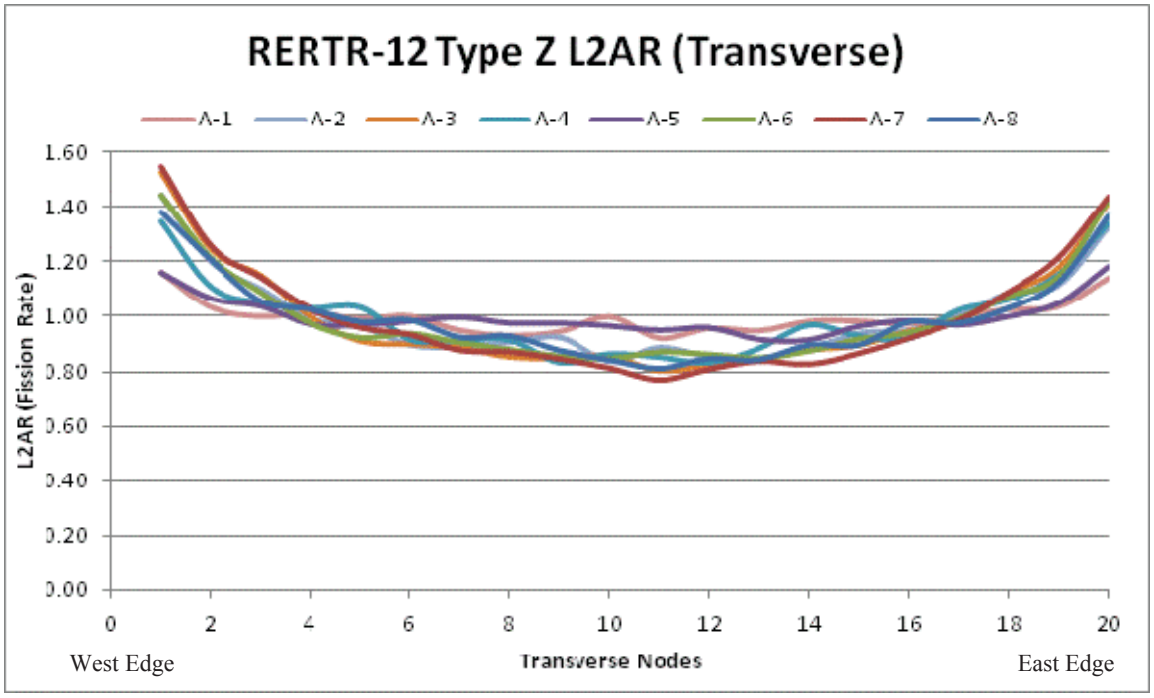

Figure 9: BOL fission rate local to average ratios in the transverse direction for a type Z capsule in the A capsule position.

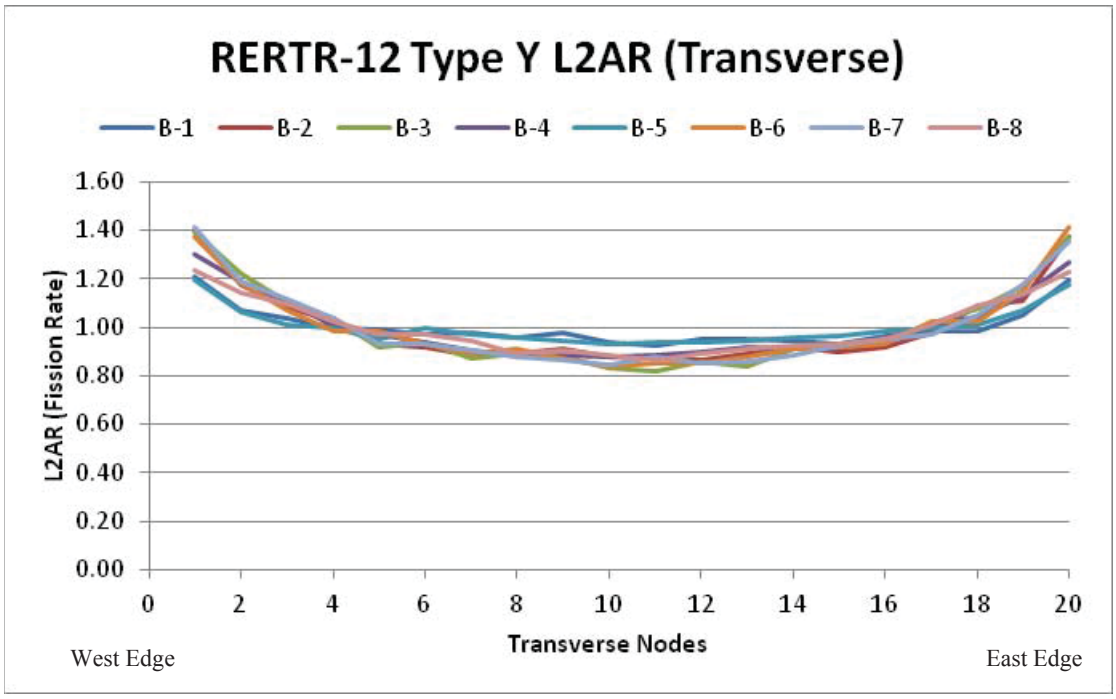

Figure 10: BOL fission rate local to average ratios in the transverse direction for a type Y capsule in the B capsule position.

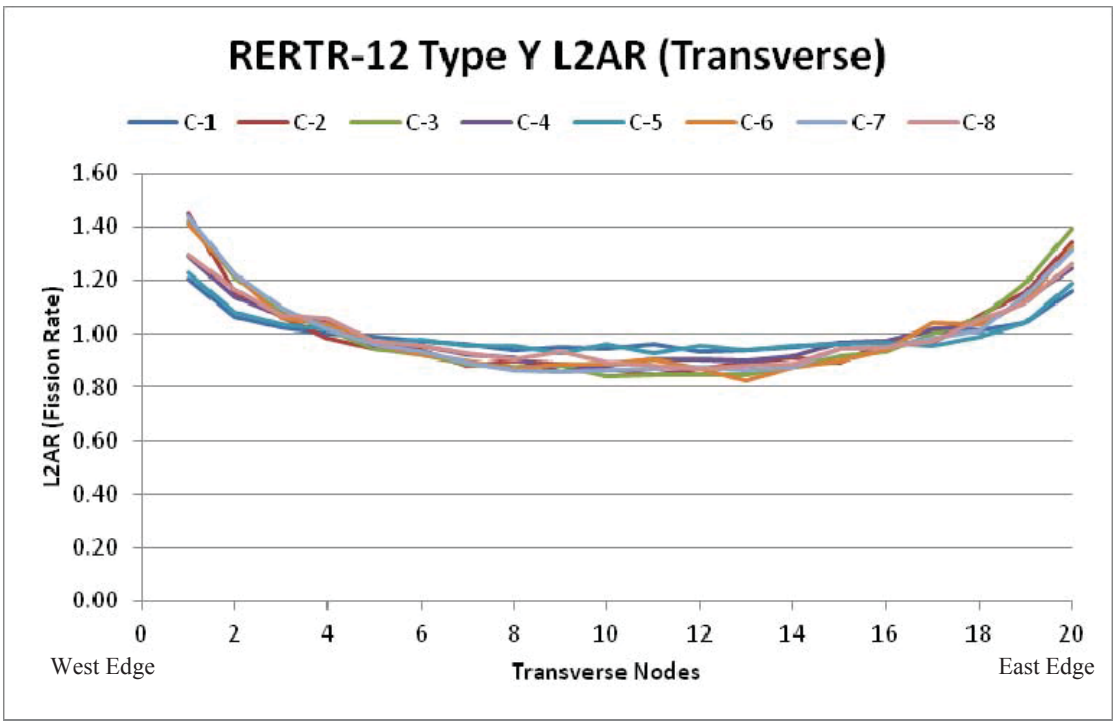

Figure 11: BOL fission rate local to average ratios in the transverse direction for a type Y capsule in the C capsule position.

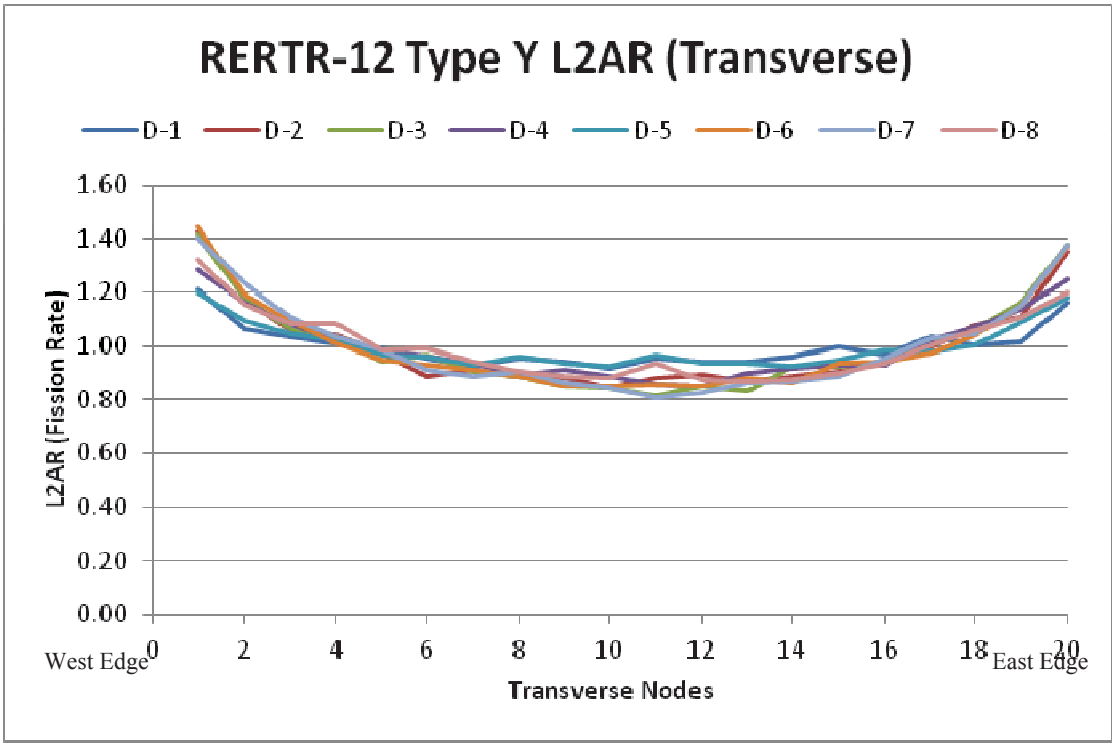

Figure 12: BOL fission rate local to average ratios in the transverse direction for a type Y capsule in the D capsule position.

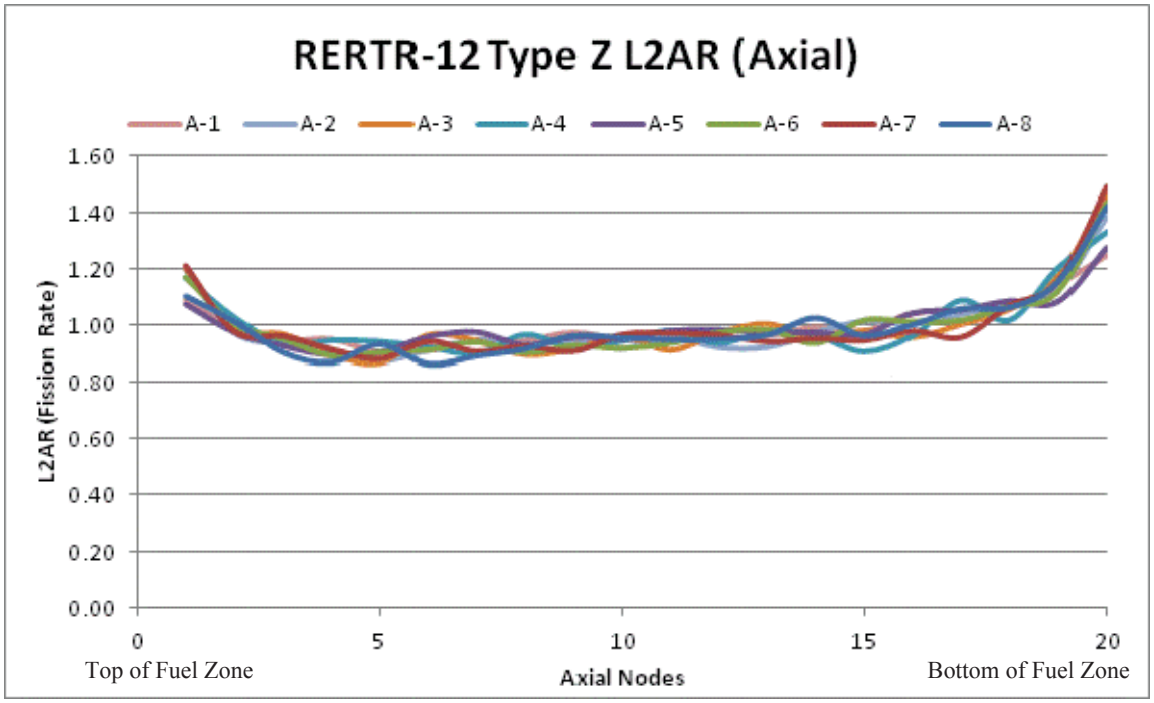

Figure 13: BOL fission rate local to average ratios in the axial direction for a type Z capsule in the A capsule position.

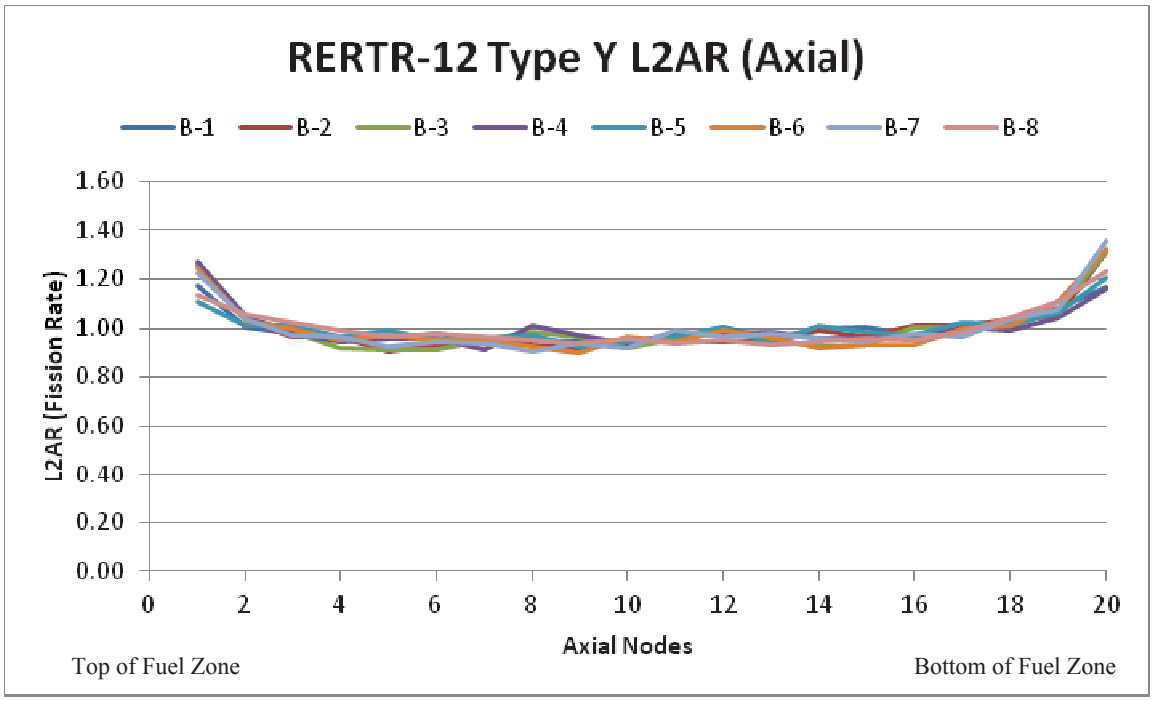

Figure 14: BOL fission rate local to average ratios in the axial direction for a type Y capsule in the B capsule position.

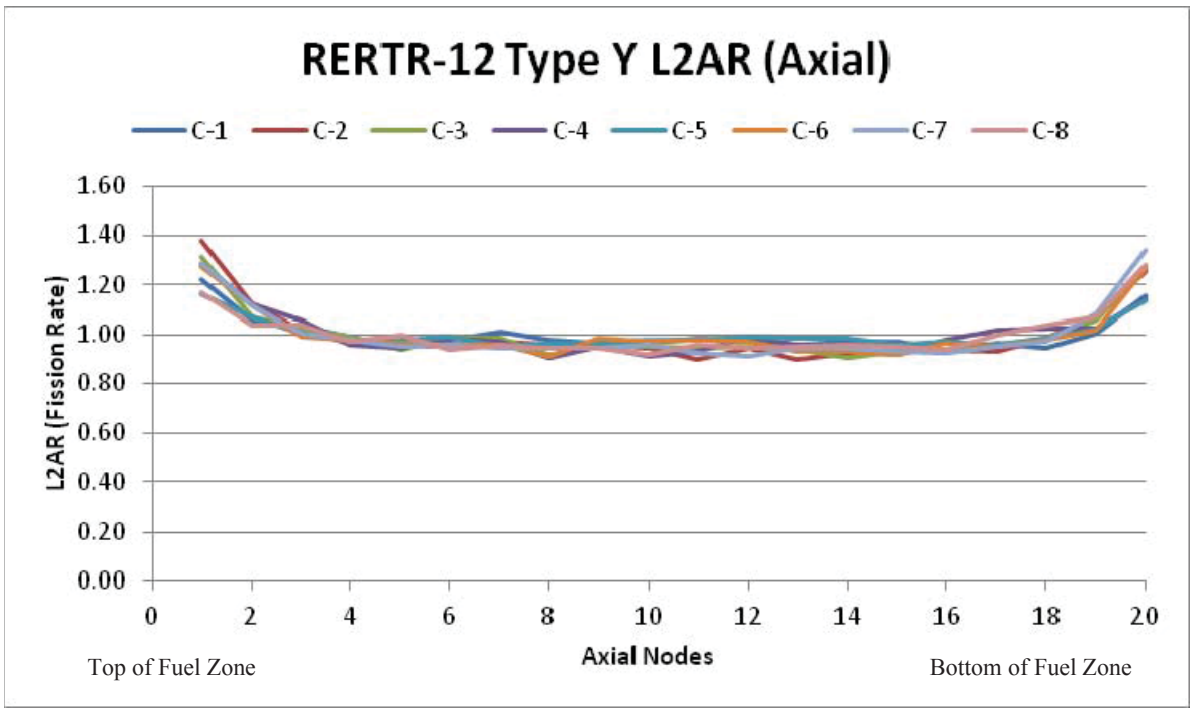

Figure 15: BOL fission rate local to average ratios in the axial direction for a type Y capsule in the C capsule position.

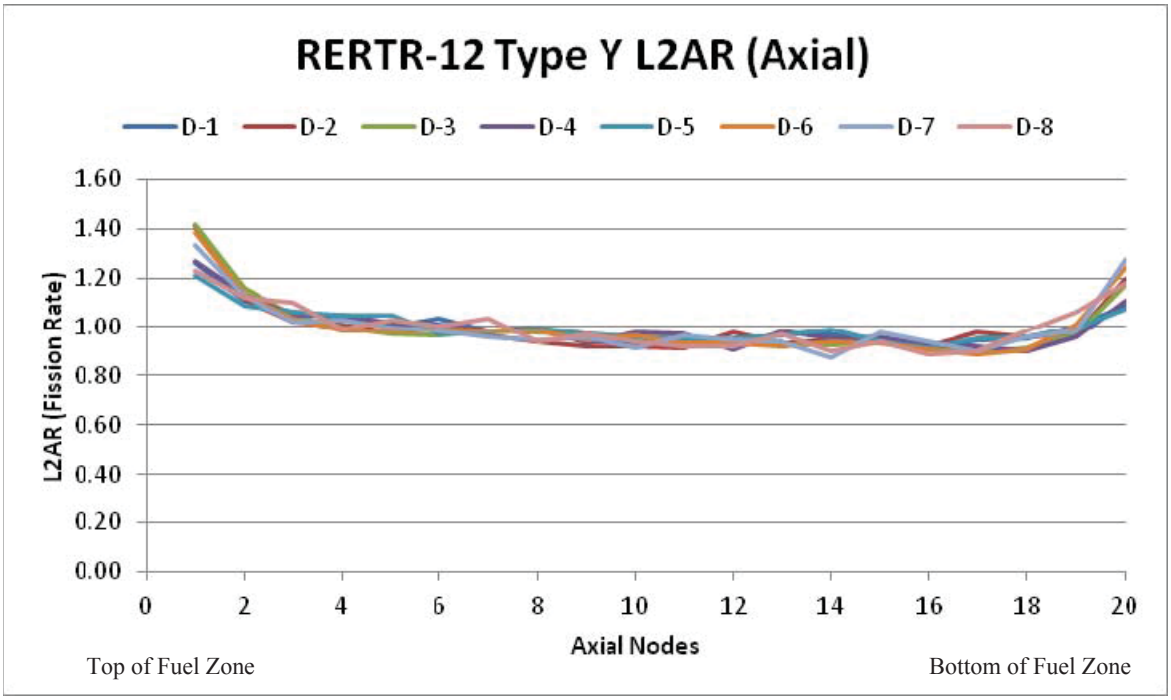

Figure 16: BOL fission rate local to average ratios in the axial direction for a type Y capsule in the D capsule position.

6. HYDRAULIC TESTING

A fully assembled irradiation test vehicle (with simulated fuel plates) was used for testing. The test vehicle was fabricated such that the orifice plates could be easily changed. The hydraulic resistance of the RERTR Large B-Position irradiation test vehicle with various orifice plate sizes were calculated, the results are shown in Table 23.

Table 23: Loss Coefficients for the RERTR Irradiation Test Vehicle Components[7]

Orifice Dia. (mm)	K/A^2 ($1/m^4$)	ATR Coolant Flow Rate (cm^3/sec)
10	5.3041×10^8	1252
9	8.2181×10^8	1046
8	1.6961×10^9	757
7.32	2.9022×10^9	588
7	3.0058×10^9	579
6	4.0784×10^9	500
5	101743×10^{10}	298
Bypass	2.7958×10^8	--
Vehicle	1.4161×10^8	2727

Based on the results from the hydraulic testing, the orifice was removed leaving the capsule in the "Vehicle" configuration to provide an ATR coolant flow rate through the capsules of 2727 cm^3/sec.[8]

7. AS-RUN THERMAL ANALYSIS

The thermal as-run analysis was performed using the as-built geometry, MCNP-calculated surface heat flux (W/cm^2) and nominal coolant channel flow rate. ABAQUS[9] was used to calculate the coolant channel temperatures and plate surface temperatures.

The heat transfer correlation used to calculate these temperatures was calculated from the Colburn equation (equation 5-50c from Reference 10):

$$Nu = \frac{hD}{k} = 0.023 Re^{0.8} Pr^{0.3}$$

Where Nu is the Nusselt number, h is the heat transfer coefficient, D is the hydraulic diameter, k is the thermal conductivity, Re is the Reynolds number and Pr is the Prandlt number.

The thermal analysis was performed using the beginning of life L2ARs shown in Section 5.2.

7.1 Coolant Channel Temperature

The coolant temperature was analyzed at the five flow channels in the capsule (see Figure 17). For each interval, the coolant temperature was plotted as a function of location along the test assembly with 0.0 in. being at the top of the assembly. These plots are shown in Figure 18 through Figure 29.

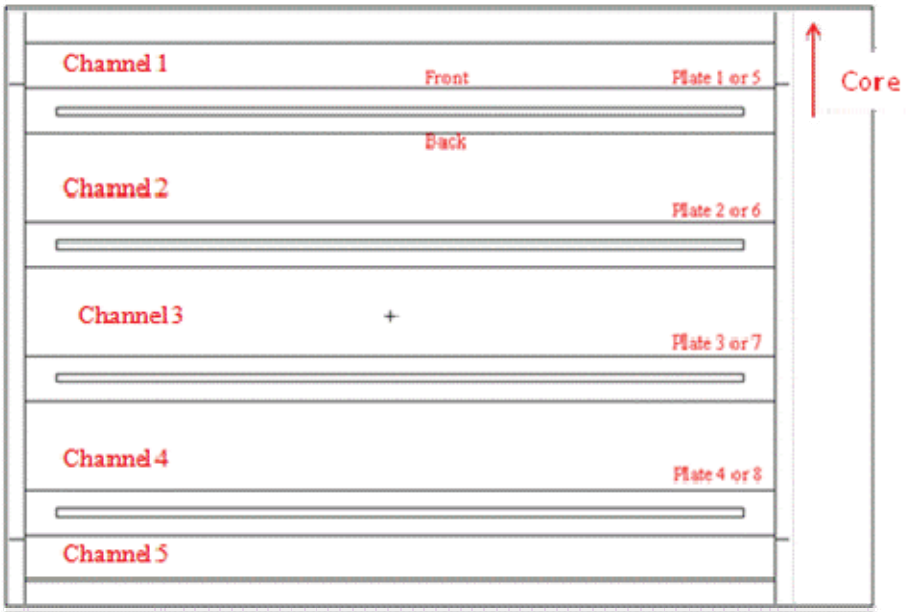

Figure 17: RERTR-12 capsule cross section with the front (side with plate ID) of plate 1 facing the core.

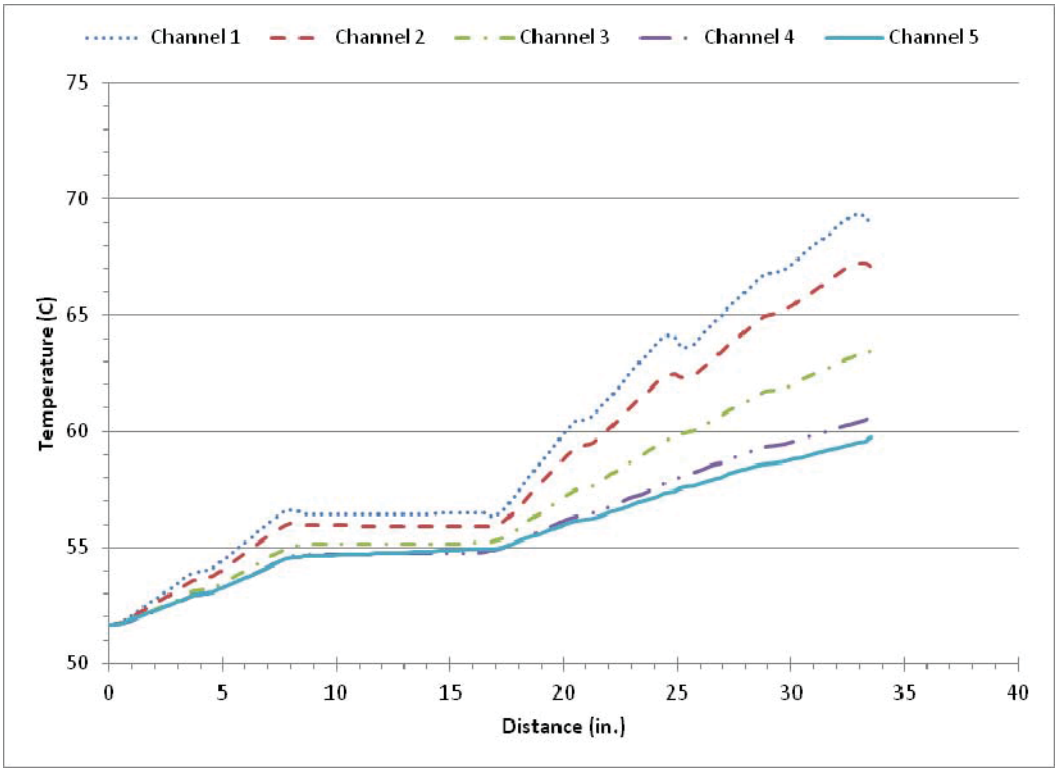

Figure 18: Coolant channel temperatures as a function of location along the RERTR-12 test assembly at BOC 150B (0.0 EFPD).

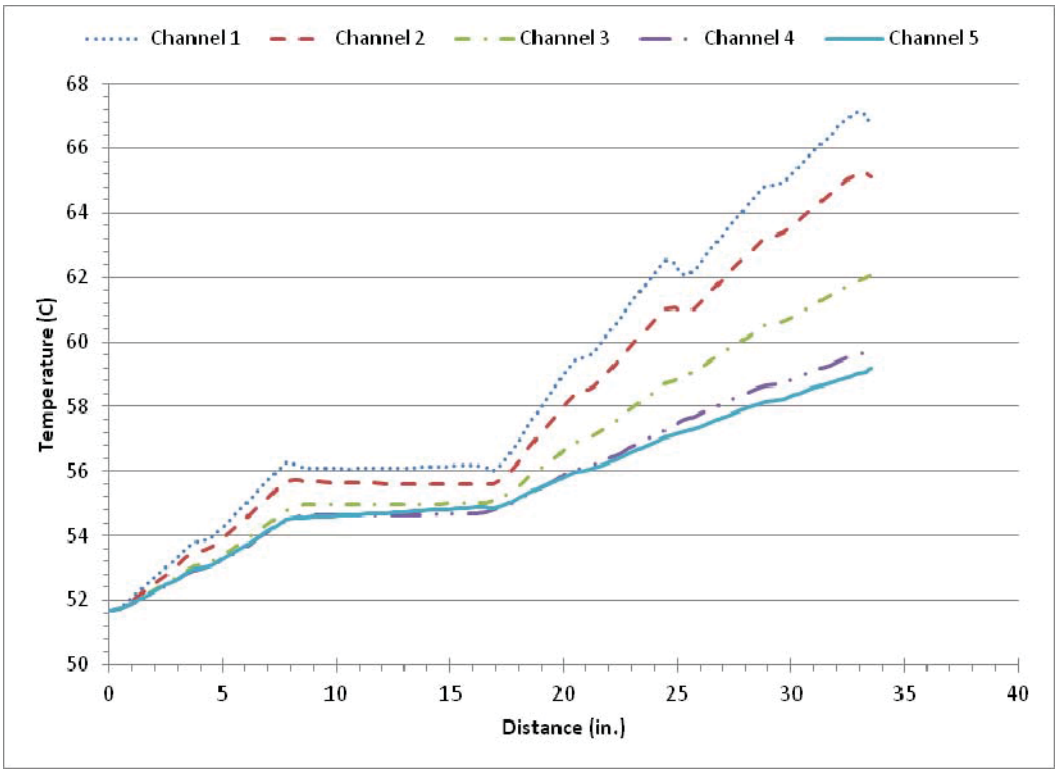

Figure 19: Coolant channel temperature as a function of location along the RERTR-12 test assembly at MOC1 150B (18.0 EFPD).

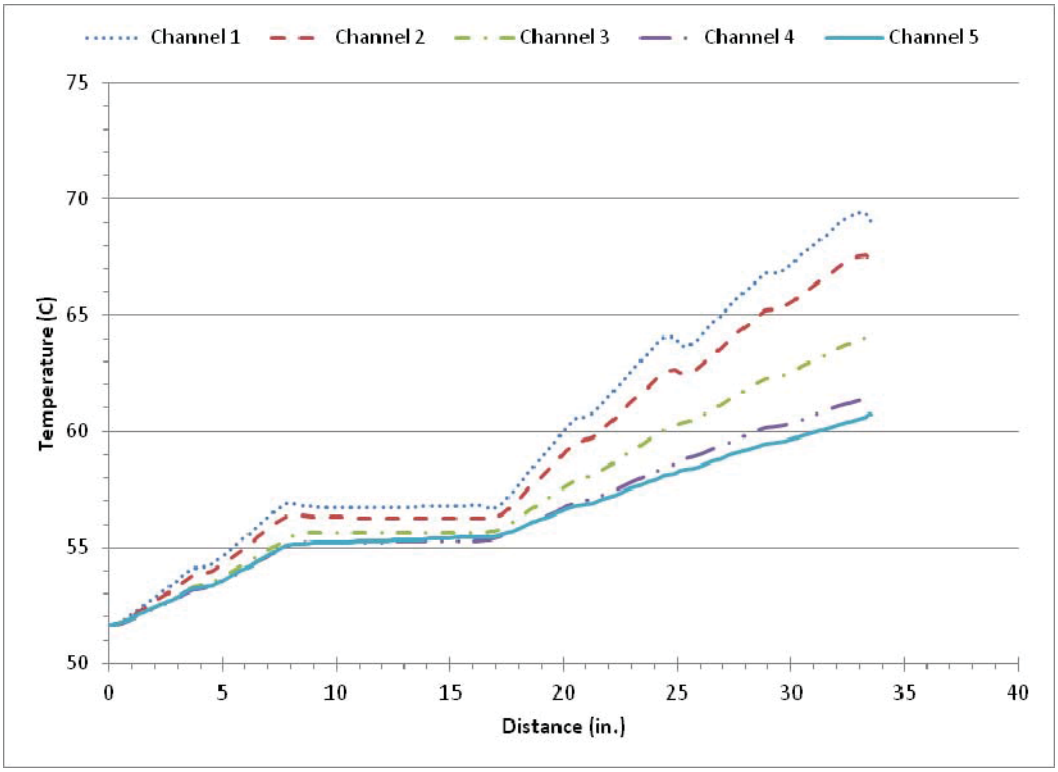

Figure 20: Coolant channel temperature as a function of location along the RERTR-12 test assembly at MOC2 150B (31.0 EFPD).

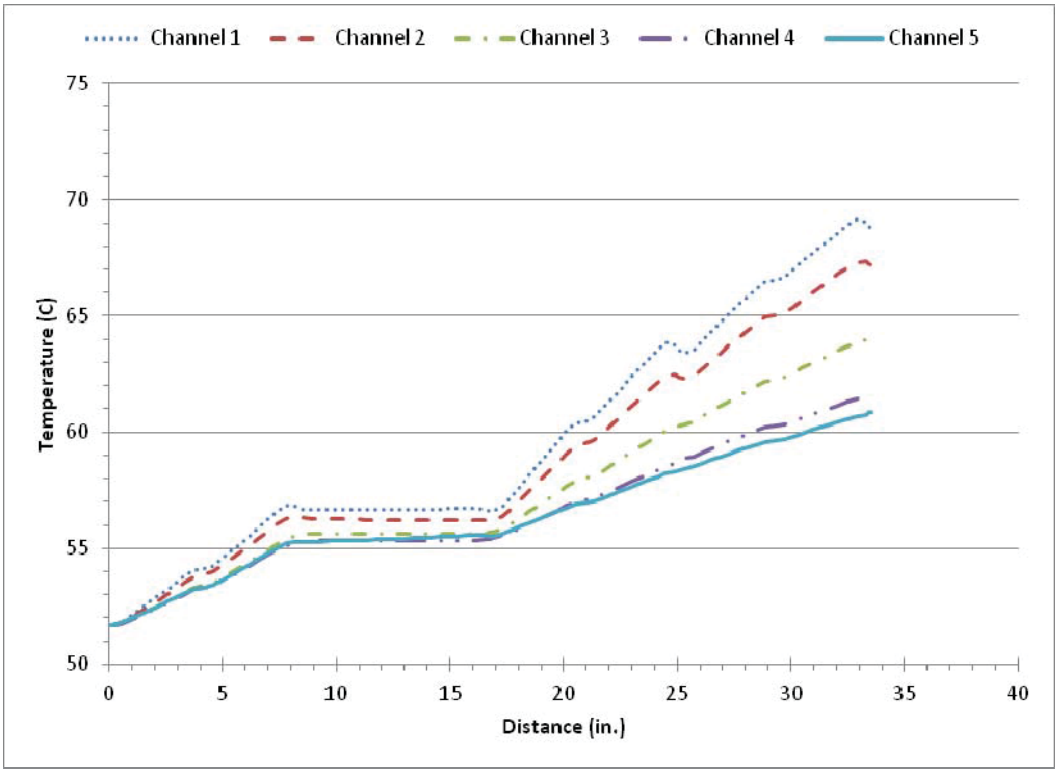

Figure 21: Coolant channel temperature as a function of location along the RERTR-12 test assembly at EOC 150B (41.9 EFPD).

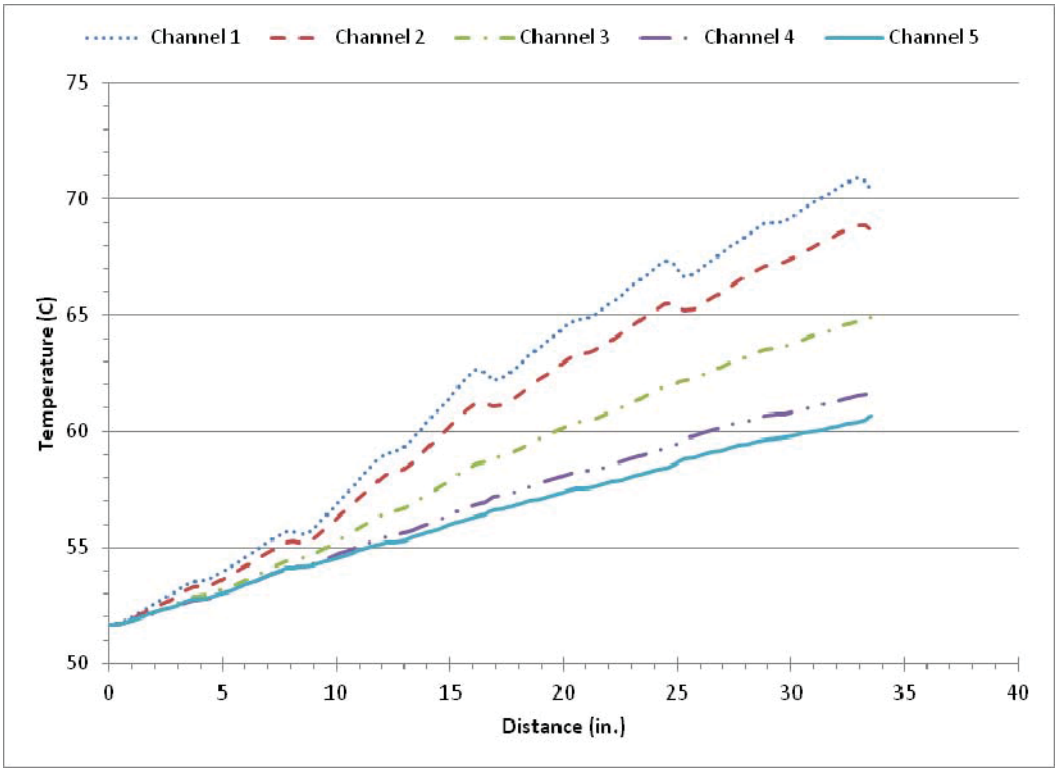

Figure 22: Coolant channel temperatures as a function of location along the RERTR-12 test assembly at BOC 151A (0.0 EFPD).

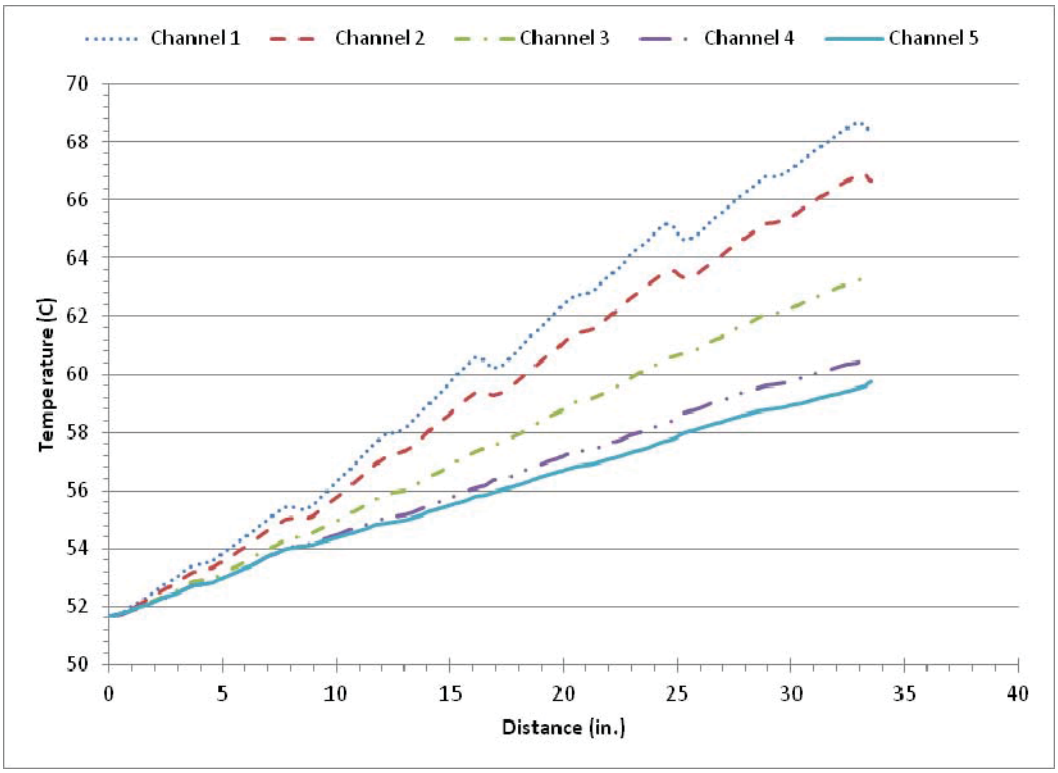

Figure 23: Coolant channel temperature as a function of location along the RERTR-12 test assembly at MOC1 151A (15.0 EFPD).

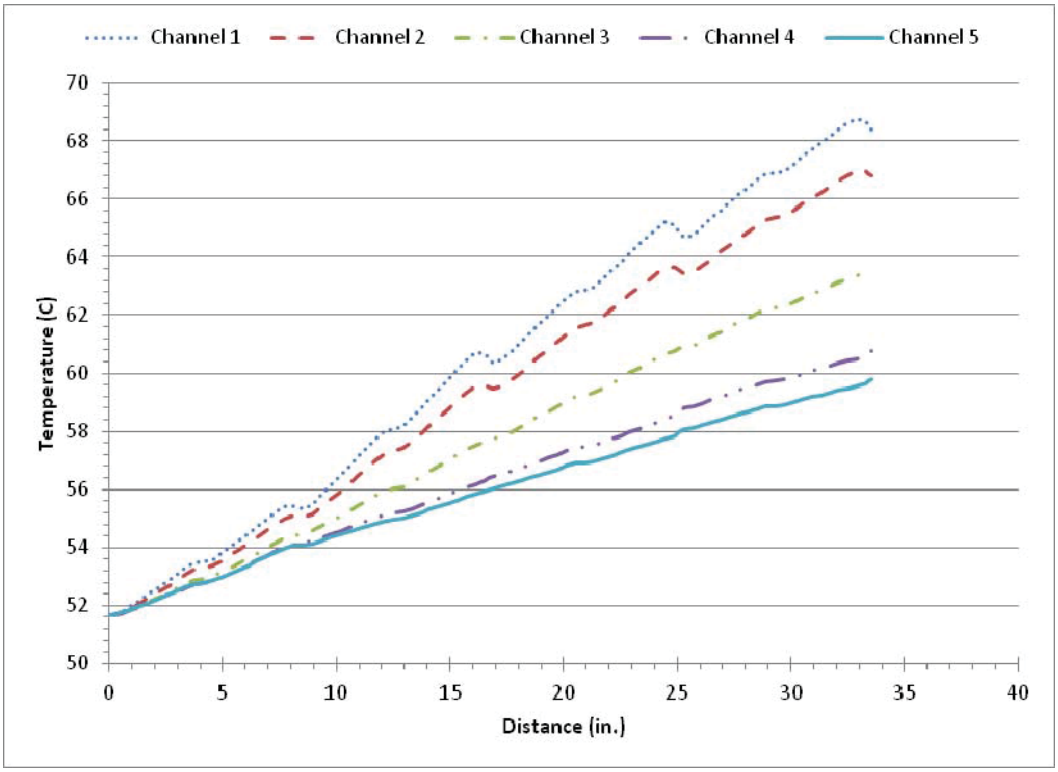

Figure 24: Coolant channel temperature as a function of location along the RERTR-12 test assembly at MOC2 151A (34.0 EFPD).

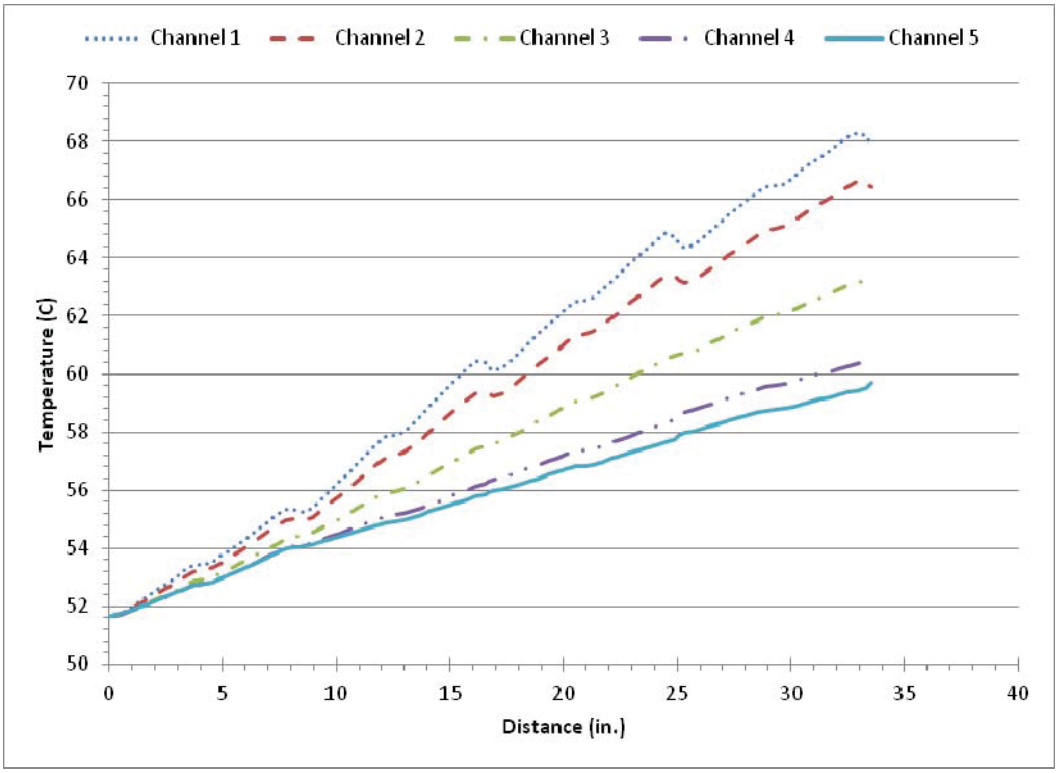

Figure 25: Coolant channel temperature as a function of location along the RERTR-12 test assembly at EOC 151A (56.1 EFPD).

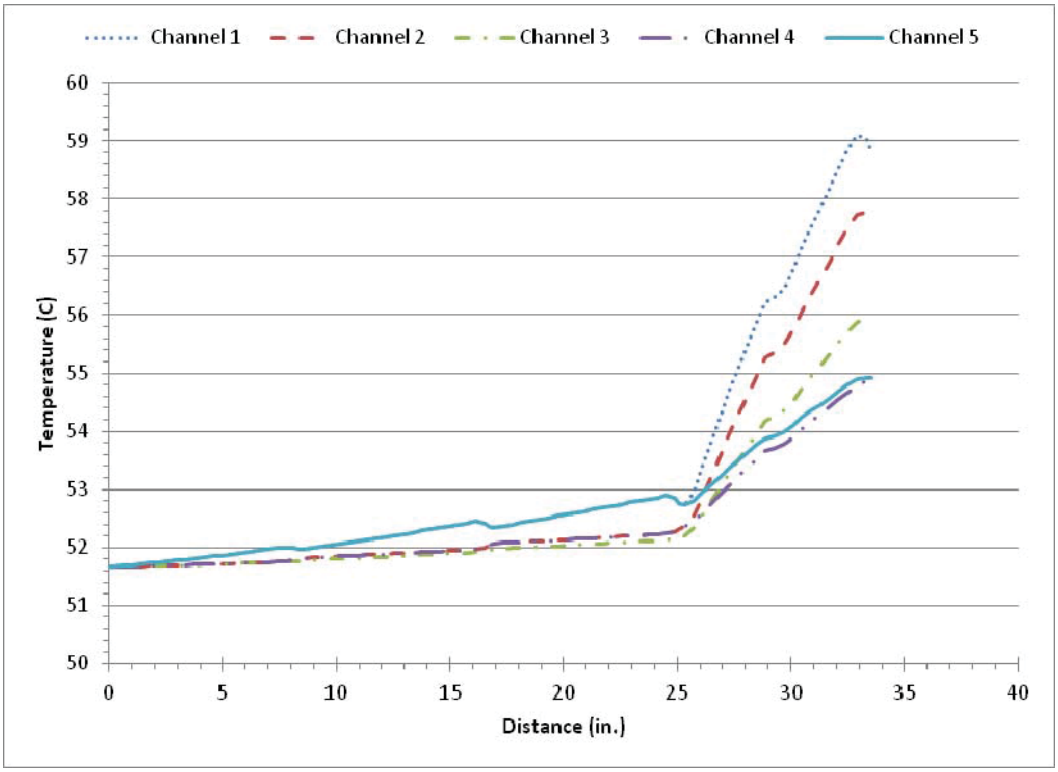

Figure 26: Coolant channel temperature as a function of location along the RERTR-12 test assembly at BOC 151B (0.0 EFPD).

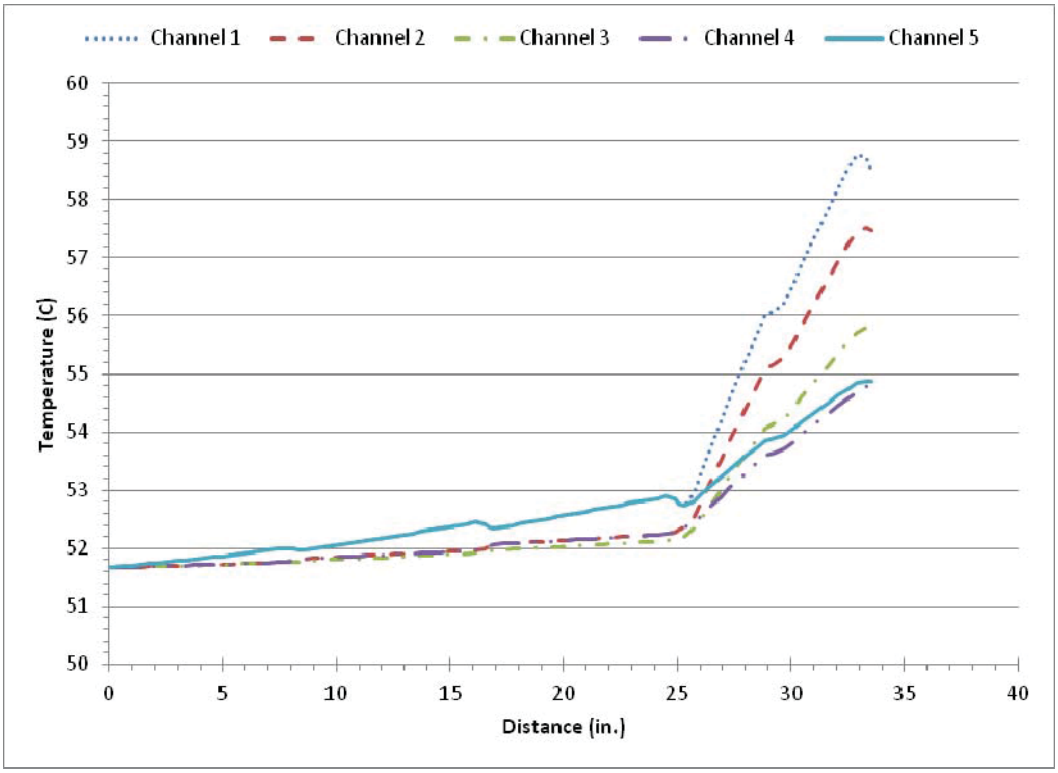

Figure 27: Coolant channel temperature as a function of location along the RERTR-12 test assembly at MOC1 151B (23.0 EFPD).

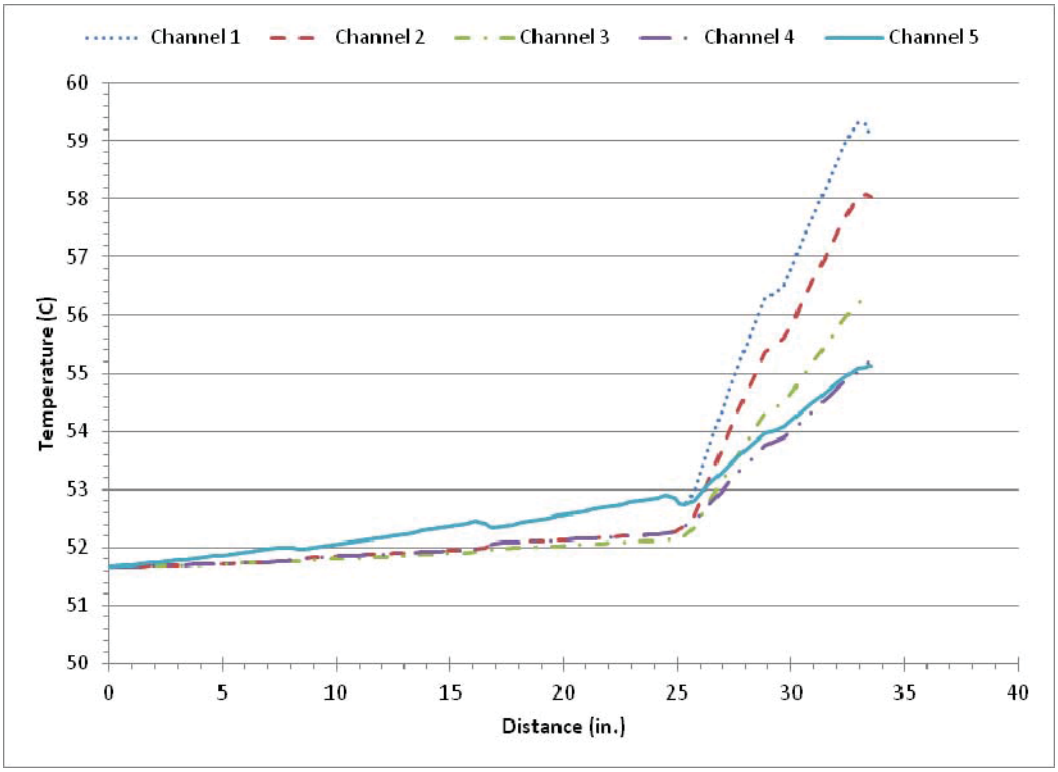

Figure 28: Coolant channel temperature as a function of location along the RERTR-12 test assembly at MOC2 151B (39.0 EFPD).

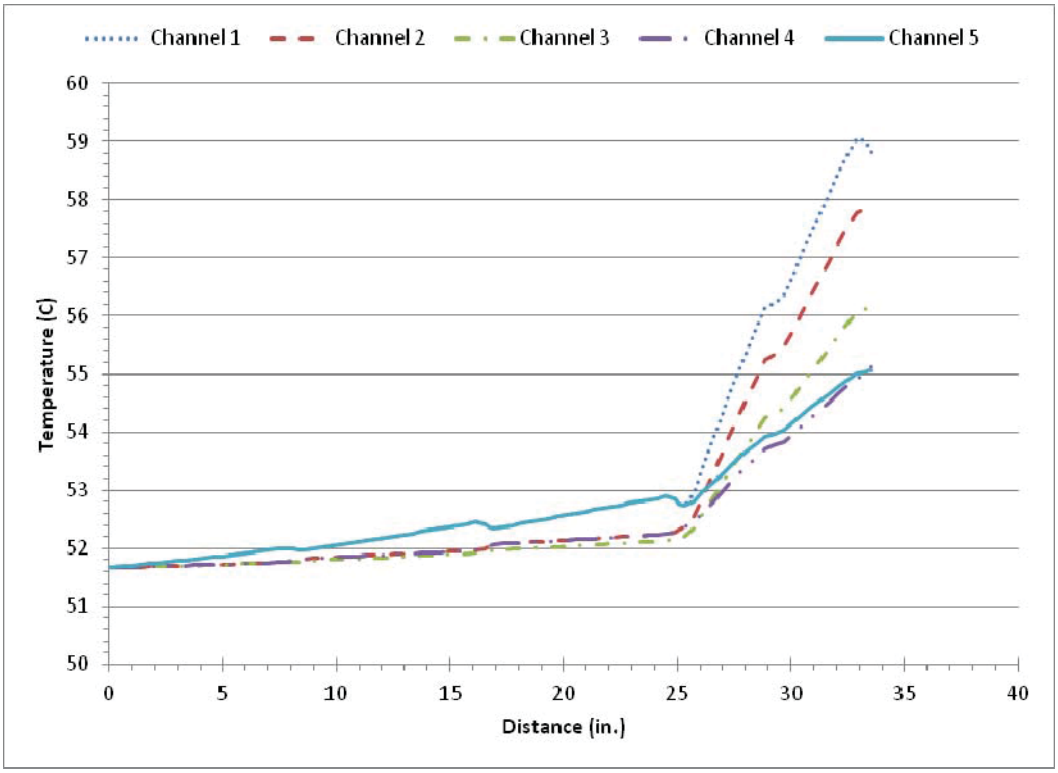

Figure 29: Coolant channel temperature as a function of location along the RERTR-12 test assembly at EOC 151B (51.3 EFPD).

7.2 Plate Surface Temperature

The minimum, maximum and average plate surface temperatures over the fuel zone on each side of the plate are shown in Table 24 through Table 47, where the front of the plate (plate ID side) is facing the core[11], for cycle 150B and 151A the South side of the plate is facing core, for cycle 151B, the North side of the plate is facing core (see Figure 17).

Table 24: As-run minimum, maximum and average plate surface temperatures over fuel zone on the south side of the plate for plates irradiated in Cycle 150B, BOC (0 EFPD)

Plate Location	Plate ID	Minimum Temperature (C)	Maximum Temperature (C)	Average Temperature (C)
A-1	L1P787	62.86	91.31	82.21
A-2	L2P481	61.05	85.74	74.38
A-3	L2P498	59.92	82.74	70.75
A-4	L1P789	59.34	76.57	69.43
A-5	L1P7A0	66.37	99.95	89.40
A-6	L2P482	64.69	95.86	80.78
A-7	L2P499	63.13	91.40	75.99
A-8	L1P7A1	61.61	84.44	74.33
B-1	L5P3B1	75.18	119.45	106.56
B-2	L5P3B3	71.63	105.83	89.96
B-3	L5P2C9	66.11	90.03	79.37
B-4	L5P1A5	61.39	75.38	70.33
B-5	L5P3B2	76.40	119.22	107.10
B-6	L5P3C1	71.82	106.16	90.73
B-7	L5P2C8	66.53	92.48	79.92
B-8	L5P1B8	61.77	77.13	70.75
D-1	L5P3C2	78.40	118.14	105.41
D-2	L5P3B4	74.19	104.84	90.04
D-3	L5P2A3	68.42	89.98	79.61
D-4	L5P1B7	63.04	74.95	70.75
D-5	L5P3C3	78.22	110.80	101.45
D-6	L5P3C6	74.10	100.04	87.85
D-7	L5P2C0	68.10	86.69	78.11
D-8	L5P1B9	63.13	73.92	69.96

Table 25: As-run minimum, maximum and average plate surface temperatures over fuel zone on the north side of the plate for plates irradiated in Cycle 150B, BOC (0 EFPD)

Plate Location	Plate ID	Minimum Temperature (C)	Maximum Temperature (C)	Average Temperature (C)
A-1	L1P787	62.68	89.99	81.24
A-2	L2P481	61.05	85.60	74.30
A-3	L2P498	59.91	82.67	70.72
A-4	L1P789	59.47	77.35	69.99
A-5	L1P7A0	66.12	98.61	88.19
A-6	L2P482	64.63	95.55	80.51
A-7	L2P499	63.10	91.24	75.87
A-8	L1P7A1	61.75	85.21	74.98
B-1	L5P3B1	74.75	116.56	104.08
B-2	L5P3B3	71.52	105.53	89.47
B-3	L5P2C9	66.04	89.53	79.04
B-4	L5P1A5	61.51	76.28	70.97
B-5	L5P3B2	75.90	116.48	104.50
B-6	L5P3C1	71.53	104.97	89.77
B-7	L5P2C8	66.32	91.65	79.24
B-8	L5P1B8	61.85	77.64	71.24
D-1	L5P3C2	77.88	115.19	102.90
D-2	L5P3B4	73.72	103.82	88.80
D-3	L5P2A3	67.98	89.21	78.67
D-4	L5P1B7	63.06	75.44	71.02
D-5	L5P3C3	77.65	108.01	99.04
D-6	L5P3C6	73.51	98.47	86.19
D-7	L5P2C0	67.65	85.29	76.86
D-8	L5P1B9	63.08	73.98	70.05

Table 26: As-run minimum, maximum and average plate surface temperatures over fuel zone on the south side of the plate for plates irradiated in Cycle 150B, MOC1 (18.0 EFPD)

Plate Location	Plate ID	Minimum Temperature (C)	Maximum Temperature (C)	Average Temperature (C)
A-1	L1P787	62.14	88.92	80.33
A-2	L2P481	60.59	84.10	73.29
A-3	L2P498	59.76	82.17	70.39
A-4	L1P789	59.42	76.80	69.61
A-5	L1P7A0	65.24	96.31	86.58
A-6	L2P482	63.68	92.42	78.52
A-7	L2P499	62.59	89.47	74.82
A-8	L1P7A1	61.39	83.66	73.79
B-1	L5P3B1	71.96	109.44	98.60
B-2	L5P3B3	68.80	97.53	84.31
B-3	L5P2C9	64.35	84.80	75.70
B-4	L5P1A5	60.63	73.10	68.59
B-5	L5P3B2	72.99	109.26	99.04
B-6	L5P3C1	69.05	97.97	85.14
B-7	L5P2C8	64.80	87.25	76.39
B-8	L5P1B8	61.03	74.92	69.15
D-1	L5P3C2	75.13	109.81	98.73
D-2	L5P3B4	71.16	97.18	84.74
D-3	L5P2A3	66.52	85.42	76.33
D-4	L5P1B7	62.16	72.96	69.14
D-5	L5P3C3	75.23	104.35	96.03
D-6	L5P3C6	71.48	94.42	83.70
D-7	L5P2C0	66.42	83.08	75.38
D-8	L5P1B9	62.31	72.33	68.64

Table 27: As-run minimum, maximum and average plate surface temperatures over fuel zone on the north side of the plate for plates irradiated in Cycle 150B, MOC1 (18.0 EFPD)

Plate Location	Plate ID	Minimum Temperature (C)	Maximum Temperature (C)	Average Temperature (C)
A-1	L1P787	61.98	87.68	79.43
A-2	L2P481	60.59	83.99	73.22
A-3	L2P498	59.76	82.11	70.37
A-4	L1P789	59.55	77.59	70.17
A-5	L1P7A0	65.01	95.10	85.47
A-6	L2P482	63.63	92.15	78.29
A-7	L2P499	62.57	89.35	74.73
A-8	L1P7A1	61.53	84.41	74.44
B-1	L5P3B1	71.59	106.97	96.48
B-2	L5P3B3	68.71	97.29	83.90
B-3	L5P2C9	64.30	84.41	75.45
B-4	L5P1A5	60.75	73.93	69.20
B-5	L5P3B2	72.55	106.89	96.80
B-6	L5P3C1	68.81	97.01	84.34
B-7	L5P2C8	64.65	86.60	75.86
B-8	L5P1B8	61.12	75.46	69.66
D-1	L5P3C2	74.68	107.24	96.52
D-2	L5P3B4	70.78	96.36	83.73
D-3	L5P2A3	66.18	84.81	75.59
D-4	L5P1B7	62.20	73.50	69.46
D-5	L5P3C3	74.72	101.86	93.86
D-6	L5P3C6	71.01	93.15	82.33
D-7	L5P2C0	66.07	81.97	74.39
D-8	L5P1B9	62.30	72.50	68.83

Table 28: As-run minimum, maximum and average plate surface temperatures over fuel zone on the south side of the plate for plates irradiated in Cycle 150B, MOC2 (31.0 EFPD)

Plate Location	Plate ID	Minimum Temperature (C)	Maximum Temperature (C)	Average Temperature (C)
A-1	L1P787	63.67	93.99	84.32
A-2	L2P481	62.18	89.71	77.02
A-3	L2P498	61.21	87.48	73.67
A-4	L1P789	61.05	81.88	73.30
A-5	L1P7A0	67.09	102.17	91.08
A-6	L2P482	65.75	99.18	82.99
A-7	L2P499	64.60	96.22	78.98
A-8	L1P7A1	63.54	90.57	78.59
B-1	L5P3B1	74.57	116.82	104.54
B-2	L5P3B3	71.76	105.52	89.83
B-3	L5P2C9	66.84	91.39	80.43
B-4	L5P1A5	62.50	77.89	72.30
B-5	L5P3B2	75.97	117.33	105.62
B-6	L5P3C1	72.10	106.38	90.95
B-7	L5P2C8	67.53	94.83	81.59
B-8	L5P1B8	63.07	80.43	73.23
D-1	L5P3C2	78.32	117.58	105.01
D-2	L5P3B4	74.66	105.70	90.67
D-3	L5P2A3	69.59	92.64	81.50
D-4	L5P1B7	64.48	78.16	73.28
D-5	L5P3C3	78.60	111.84	102.29
D-6	L5P3C6	75.11	102.63	89.62
D-7	L5P2C0	69.51	89.96	80.47
D-8	L5P1B9	64.76	77.71	72.95

Table 29: As-run minimum, maximum and average plate surface temperatures over fuel zone on the north side of the plate for plates irradiated in Cycle 150B, MOC2 (31.0 EFPD)

Plate Location	Plate ID	Minimum Temperature (C)	Maximum Temperature (C)	Average Temperature (C)
A-1	L1P787	63.48	92.60	83.29
A-2	L2P481	62.18	89.58	76.95
A-3	L2P498	61.21	87.42	73.65
A-4	L1P789	61.20	82.84	73.97
A-5	L1P7A0	66.83	100.78	89.84
A-6	L2P482	65.69	98.91	82.74
A-7	L2P499	64.58	96.11	78.89
A-8	L1P7A1	63.71	91.50	79.37
B-1	L5P3B1	74.17	114.07	102.20
B-2	L5P3B3	71.66	105.26	89.40
B-3	L5P2C9	66.79	90.96	80.15
B-4	L5P1A5	62.64	78.88	73.02
B-5	L5P3B2	75.50	114.73	103.15
B-6	L5P3C1	71.85	105.34	90.10
B-7	L5P2C8	67.35	94.11	81.00
B-8	L5P1B8	63.17	81.07	73.82
D-1	L5P3C2	77.84	114.73	102.59
D-2	L5P3B4	74.25	104.80	89.56
D-3	L5P2A3	69.20	91.96	80.67
D-4	L5P1B7	64.52	78.76	73.67
D-5	L5P3C3	78.06	109.11	99.94
D-6	L5P3C6	74.59	101.24	88.11
D-7	L5P2C0	69.11	88.70	79.35
D-8	L5P1B9	64.74	77.91	73.17

Table 30: As-run minimum, maximum and average plate surface temperatures over fuel zone on the south side of the plate for plates irradiated in Cycle 150B, EOC (41.9 EFPD)

Plate Location	Plate ID	Minimum Temperature (C)	Maximum Temperature (C)	Average Temperature (C)
A-1	L1P787	63.48	93.38	83.84
A-2	L2P481	62.10	89.41	76.83
A-3	L2P498	61.33	87.91	73.94
A-4	L1P789	61.32	82.70	73.89
A-5	L1P7A0	66.77	101.11	90.28
A-6	L2P482	65.72	99.11	82.93
A-7	L2P499	64.68	96.47	79.13
A-8	L1P7A1	63.91	91.77	79.41
B-1	L5P3B1	74.09	115.33	103.35
B-2	L5P3B3	71.61	105.08	89.52
B-3	L5P2C9	66.80	91.21	80.31
B-4	L5P1A5	62.67	78.29	72.61
B-5	L5P3B2	75.44	115.78	104.37
B-6	L5P3C1	71.79	105.42	90.30
B-7	L5P2C8	67.54	94.79	81.56
B-8	L5P1B8	63.25	80.89	73.56
D-1	L5P3C2	77.84	116.34	104.02
D-2	L5P3B4	74.40	105.07	90.20
D-3	L5P2A3	69.59	92.66	81.51
D-4	L5P1B7	64.67	78.63	73.65
D-5	L5P3C3	78.24	111.12	101.68
D-6	L5P3C6	74.90	102.22	89.29
D-7	L5P2C0	69.53	90.02	80.51
D-8	L5P1B9	64.94	78.13	73.28

Table 31: As-run minimum, maximum and average plate surface temperatures over fuel zone on the north side of the plate for plates irradiated in Cycle 150B, EOC (41.9 EFPD)

Plate Location	Plate ID	Minimum Temperature (C)	Maximum Temperature (C)	Average Temperature (C)
A-1	L1P787	63.29	92.00	82.83
A-2	L2P481	62.10	89.30	76.76
A-3	L2P498	61.33	87.86	73.92
A-4	L1P789	61.48	83.69	74.59
A-5	L1P7A0	66.52	99.76	89.07
A-6	L2P482	65.67	98.86	82.71
A-7	L2P499	64.66	96.38	79.06
A-8	L1P7A1	64.09	92.73	80.23
B-1	L5P3B1	73.69	112.64	101.07
B-2	L5P3B3	71.52	104.84	89.12
B-3	L5P2C9	66.76	90.81	80.06
B-4	L5P1A5	62.81	79.31	73.36
B-5	L5P3B2	74.98	113.26	101.98
B-6	L5P3C1	71.55	104.44	89.50
B-7	L5P2C8	67.37	94.11	81.01
B-8	L5P1B8	63.35	81.56	74.19
D-1	L5P3C2	77.37	113.56	101.66
D-2	L5P3B4	74.01	104.22	89.17
D-3	L5P2A3	69.22	92.03	80.73
D-4	L5P1B7	64.72	79.27	74.07
D-5	L5P3C3	77.72	108.44	99.37
D-6	L5P3C6	74.41	100.91	87.86
D-7	L5P2C0	69.16	88.84	79.45
D-8	L5P1B9	64.93	78.37	73.54

Table 32: As-run minimum, maximum and average plate surface temperatures over fuel zone on the south side of the plate for plates irradiated in Cycle 151A, BOC (0.0 EFPD)

Plate Location	Plate ID	Minimum Temperature (C)	Maximum Temperature (C)	Average Temperature (C)
A-1	L1P787	61.07	85.35	77.54
A-2	L2P481	59.67	80.87	71.13
A-3	L2P498	58.73	78.42	68.08
A-4	L1P789	58.33	73.40	67.15
A-5	L1P7A0	63.68	91.40	82.74
A-6	L2P482	62.30	87.89	75.54
A-7	L2P499	61.28	85.13	72.14
A-8	L1P7A1	60.12	79.64	71.00
B-1	L5P3F8	71.87	112.38	100.78
B-2	L5P3G2	68.07	100.28	86.12
B-3	L5P2A4	63.77	86.96	76.37
B-4	L5P1B5	59.93	72.99	68.23
B-5	L5P3F0	74.30	119.67	105.48
B-6	L5P3G3	71.05	106.29	89.91
B-7	L5P2C7	65.40	91.85	79.07
B-8	L5P1B0	60.67	75.70	70.05
C-1	L5P3B1	74.48	107.44	98.06
C-2	L5P3B3	71.03	96.52	85.02
C-3	L5P2C9	65.89	84.14	76.16
C-4	L5P1A5	61.67	72.67	68.78
C-5	L5P3B2	72.35	100.08	91.96
C-6	L5P3C1	71.58	97.68	86.14
C-7	L5P2C8	66.54	86.76	77.06
C-8	L5P1B8	62.14	74.37	69.32
D-1	L5P3C2	77.19	107.18	97.64
D-2	L5P3B4	73.61	97.47	86.07
D-3	L5P2A3	68.29	85.34	77.21
D-4	L5P1B7	63.45	73.21	69.81
D-5	L5P3C3	77.61	103.50	96.12
D-6	L5P3C6	73.77	94.44	84.81
D-7	L5P2C0	68.22	83.40	76.45
D-8	L5P1B9	63.61	72.62	69.32

Table 33: As-run minimum, maximum and average plate surface temperatures over fuel zone on the north side of the plate for plates irradiated in Cycle 151A, BOC (0.0 EFPD)

Plate Location	Plate ID	Minimum Temperature (C)	Maximum Temperature (C)	Average Temperature (C)
A-1	L1P787	60.92	84.24	76.72
A-2	L2P481	59.67	80.76	71.06
A-3	L2P498	58.73	78.36	68.06
A-4	L1P789	58.44	74.09	67.63
A-5	L1P7A0	63.48	90.32	81.75
A-6	L2P482	62.25	87.64	75.33
A-7	L2P499	61.26	85.01	72.05
A-8	L1P7A1	60.24	80.29	71.56
B-1	L5P3F8	71.51	109.61	98.59
B-2	L5P3G2	67.98	99.66	85.68
B-3	L5P2A4	63.72	86.53	76.08
B-4	L5P1B5	60.02	73.72	68.77
B-5	L5P3F0	73.85	117.00	103.02
B-6	L5P3G3	70.80	105.22	89.04
B-7	L5P2C7	65.22	91.10	78.46
B-8	L5P1B0	60.73	76.14	70.51
C-1	L5P3B1	74.05	104.98	95.90
C-2	L5P3B3	70.69	95.62	83.93
C-3	L5P2C9	65.62	83.12	75.29
C-4	L5P1A5	61.67	73.08	69.01
C-5	L5P3B2	69.61	94.37	83.46
C-6	L5P3C1	71.07	96.03	84.69
C-7	L5P2C8	66.14	85.51	75.94
C-8	L5P1B8	62.09	74.50	69.45
D-1	L5P3C2	76.70	104.70	95.50
D-2	L5P3B4	73.04	96.10	84.56
D-3	L5P2A3	67.73	84.22	75.96
D-4	L5P1B7	63.38	73.40	69.81
D-5	L5P3C3	77.08	101.08	94.00
D-6	L5P3C6	73.09	92.61	82.97
D-7	L5P2C0	67.67	81.77	74.95
D-8	L5P1B9	63.49	72.45	69.19

Table 34: As-run minimum, maximum and average plate surface temperatures over fuel zone on the south side of the plate for plates irradiated in Cycle 151A, MOC1 (15.0 EFPD)

Plate Location	Plate ID	Minimum Temperature (C)	Maximum Temperature (C)	Average Temperature (C)
A-1	L1P787	60.51	83.46	76.06
A-2	L2P481	59.50	80.25	70.72
A-3	L2P498	58.58	77.85	67.73
A-4	L1P789	58.13	72.76	66.69
A-5	L1P7A0	62.89	88.82	80.72
A-6	L2P482	61.87	86.41	74.57
A-7	L2P499	61.00	84.14	71.54
A-8	L1P7A1	59.76	78.43	70.16
B-1	L5P3F8	67.74	99.06	90.20
B-2	L5P3G2	64.56	88.98	78.33
B-3	L5P2A4	61.27	78.70	70.78
B-4	L5P1B5	58.51	68.53	64.91
B-5	L5P3F0	69.50	104.09	93.36
B-6	L5P3G3	66.63	92.67	80.74
B-7	L5P2C7	62.43	82.13	72.63
B-8	L5P1B0	59.09	70.60	66.28
C-1	L5P3B1	72.15	103.16	94.34
C-2	L5P3B3	69.22	93.60	82.56
C-3	L5P2C9	64.53	81.80	74.23
C-4	L5P1A5	60.65	70.82	67.22
C-5	L5P3B2	72.91	101.42	93.07
C-6	L5P3C1	69.77	94.87	83.81
C-7	L5P2C8	65.10	84.27	75.07
C-8	L5P1B8	61.09	72.45	67.75
D-1	L5P3C2	74.87	103.50	94.41
D-2	L5P3B4	71.59	94.27	83.47
D-3	L5P2A3	66.76	83.04	75.27
D-4	L5P1B7	62.34	71.53	68.32
D-5	L5P3C3	75.25	99.95	92.92
D-6	L5P3C6	71.99	92.26	82.81
D-7	L5P2C0	66.71	81.21	74.57
D-8	L5P1B9	62.48	70.98	67.87

Table 35: As-run minimum, maximum and average plate surface temperatures over fuel zone on the north side of the plate for plates irradiated in Cycle 151A, MOC1 (15.0 EFPD)

Plate Location	Plate ID	Minimum Temperature (C)	Maximum Temperature (C)	Average Temperature (C)
A-1	L1P787	60.37	82.41	75.29
A-2	L2P481	59.50	80.16	70.66
A-3	L2P498	58.58	77.79	67.70
A-4	L1P789	58.23	73.43	67.15
A-5	L1P7A0	62.71	87.82	79.81
A-6	L2P482	61.82	86.21	74.39
A-7	L2P499	60.97	84.02	71.44
A-8	L1P7A1	59.87	79.05	70.70
B-1	L5P3F8	67.46	96.84	88.52
B-2	L5P3G2	64.49	88.48	77.96
B-3	L5P2A4	61.22	78.35	70.53
B-4	L5P1B5	58.58	69.09	65.33
B-5	L5P3F0	69.15	101.99	91.45
B-6	L5P3G3	66.43	91.86	80.05
B-7	L5P2C7	62.29	81.55	72.16
B-8	L5P1B0	59.14	70.99	66.66
C-1	L5P3B1	71.76	100.89	92.35
C-2	L5P3B3	68.95	92.91	81.69
C-3	L5P2C9	64.33	80.99	73.56
C-4	L5P1A5	60.68	71.28	67.50
C-5	L5P3B2	69.93	95.06	83.98
C-6	L5P3C1	69.36	93.53	82.62
C-7	L5P2C8	64.79	83.24	74.15
C-8	L5P1B8	61.08	72.66	67.95
D-1	L5P3C2	74.43	101.19	92.41
D-2	L5P3B4	71.09	93.15	82.20
D-3	L5P2A3	66.29	82.10	74.22
D-4	L5P1B7	62.30	71.81	68.40
D-5	L5P3C3	74.77	97.69	90.95
D-6	L5P3C6	71.41	90.74	81.24
D-7	L5P2C0	66.24	79.80	73.28
D-8	L5P1B9	62.40	70.90	67.82

Table 36: As-run minimum, maximum and average plate surface temperatures over fuel zone on the south side of the plate for plates irradiated in Cycle 151A, MOC2 (34.0 EFPD)

Plate Location	Plate ID	Minimum Temperature (C)	Maximum Temperature (C)	Average Temperature (C)
A-1	L1P787	60.61	83.77	76.30
A-2	L2P481	59.53	80.36	70.79
A-3	L2P498	58.76	78.51	68.14
A-4	L1P789	58.23	73.08	66.91
A-5	L1P7A0	62.85	88.66	80.60
A-6	L2P482	62.08	87.13	75.04
A-7	L2P499	61.10	84.49	71.75
A-8	L1P7A1	59.72	78.26	70.06
B-1	L5P3F8	68.12	100.30	91.16
B-2	L5P3G2	65.00	90.37	79.30
B-3	L5P2A4	61.68	80.02	71.68
B-4	L5P1B5	58.69	69.09	65.33
B-5	L5P3F0	69.82	105.10	94.14
B-6	L5P3G3	67.22	94.43	81.95
B-7	L5P2C7	62.81	83.33	73.44
B-8	L5P1B0	59.29	71.19	66.72
C-1	L5P3B1	72.00	102.31	93.70
C-2	L5P3B3	69.42	93.91	82.81
C-3	L5P2C9	64.53	81.55	74.10
C-4	L5P1A5	60.65	70.61	67.09
C-5	L5P3B2	71.58	97.68	86.14
C-6	L5P3C1	69.93	95.06	83.98
C-7	L5P2C8	65.22	84.38	75.19
C-8	L5P1B8	61.16	72.50	67.81
D-1	L5P3C2	74.91	103.40	94.35
D-2	L5P3B4	71.74	94.48	83.64
D-3	L5P2A3	66.81	82.93	75.25
D-4	L5P1B7	62.32	71.28	68.17
D-5	L5P3C3	75.42	100.28	93.20
D-6	L5P3C6	72.06	92.21	82.82
D-7	L5P2C0	66.89	81.55	74.83
D-8	L5P1B9	62.55	71.03	67.92

Table 37: As-run minimum, maximum and average plate surface temperatures over fuel zone on the north side of the plate for plates irradiated in Cycle 151A, MOC2 (34.0 EFPD)

Plate Location	Plate ID	Minimum Temperature (C)	Maximum Temperature (C)	Average Temperature (C)
A-1	L1P787	60.46	82.71	75.52
A-2	L2P481	59.53	80.27	70.74
A-3	L2P498	58.76	78.46	68.11
A-4	L1P789	58.33	73.75	67.39
A-5	L1P7A0	62.67	87.67	79.69
A-6	L2P482	62.04	86.93	74.86
A-7	L2P499	61.08	84.36	71.65
A-8	L1P7A1	59.84	78.88	70.58
B-1	L5P3F8	67.83	98.02	89.45
B-2	L5P3G2	64.93	89.88	78.93
B-3	L5P2A4	61.63	79.65	71.42
B-4	L5P1B5	58.77	69.66	65.76
B-5	L5P3F0	69.47	102.98	92.21
B-6	L5P3G3	67.02	93.64	81.26
B-7	L5P2C7	62.67	82.73	72.94
B-8	L5P1B0	59.33	71.57	67.10
C-1	L5P3B1	71.62	100.09	91.77
C-2	L5P3B3	69.15	93.21	81.94
C-3	L5P2C9	64.32	80.71	73.40
C-4	L5P1A5	60.67	71.03	67.35
C-5	L5P3B2	71.07	96.03	84.69
C-6	L5P3C1	69.52	93.73	82.80
C-7	L5P2C8	64.89	83.31	74.24
C-8	L5P1B8	61.14	72.68	67.99
D-1	L5P3C2	74.48	101.11	92.37
D-2	L5P3B4	71.24	93.36	82.37
D-3	L5P2A3	66.34	81.98	74.17
D-4	L5P1B7	62.28	71.54	68.22
D-5	L5P3C3	74.94	98.04	91.24
D-6	L5P3C6	71.48	90.69	81.25
D-7	L5P2C0	66.41	80.12	73.53
D-8	L5P1B9	62.46	70.93	67.86

Table 38: As-run minimum, maximum and average plate surface temperatures over fuel zone on the south side of the plate for plates irradiated in Cycle 151A, EOC (56.1 EFPD)

Plate Location	Plate ID	Minimum Temperature (C)	Maximum Temperature (C)	Average Temperature (C)
A-1	L1P787	60.37	82.96	75.67
A-2	L2P481	59.44	80.03	70.58
A-3	L2P498	58.70	78.30	68.01
A-4	L1P789	58.14	72.81	66.72
A-5	L1P7A0	62.51	87.54	79.73
A-6	L2P482	61.94	86.69	74.74
A-7	L2P499	61.00	84.13	71.53
A-8	L1P7A1	59.61	77.90	69.81
B-1	L5P3F8	67.63	98.84	90.01
B-2	L5P3G2	64.76	89.66	78.79
B-3	L5P2A4	61.50	79.50	71.32
B-4	L5P1B5	58.56	68.71	65.04
B-5	L5P3F0	69.28	103.43	92.85
B-6	L5P3G3	66.92	93.61	81.37
B-7	L5P2C7	62.61	82.72	73.03
B-8	L5P1B0	59.13	70.74	66.38
C-1	L5P3B1	71.45	100.91	92.56
C-2	L5P3B3	69.13	93.31	82.35
C-3	L5P2C9	64.34	81.12	73.77
C-4	L5P1A5	60.48	70.23	66.79
C-5	L5P3B2	72.92	101.71	93.28
C-6	L5P3C1	69.61	94.37	83.46
C-7	L5P2C8	65.02	83.92	74.84
C-8	L5P1B8	60.99	72.08	67.49
D-1	L5P3C2	74.32	102.07	93.26
D-2	L5P3B4	71.41	93.86	83.16
D-3	L5P2A3	66.57	82.48	74.90
D-4	L5P1B7	62.16	70.99	67.91
D-5	L5P3C3	74.85	99.13	92.22
D-6	L5P3C6	71.70	91.61	82.34
D-7	L5P2C0	66.66	81.12	74.49
D-8	L5P1B9	62.38	70.73	67.67

Table 39: As-run minimum, maximum and average plate surface temperatures over fuel zone on the north side of the plate for plates irradiated in Cycle 151A, EOC (56.1 EFPD)

Plate Location	Plate ID	Minimum Temperature (C)	Maximum Temperature (C)	Average Temperature (C)
A-1	L1P787	60.23	81.93	74.92
A-2	L2P481	59.44	79.95	70.52
A-3	L2P498	58.70	78.25	67.98
A-4	L1P789	58.25	73.48	67.19
A-5	L1P7A0	62.33	86.59	78.85
A-6	L2P482	61.91	86.50	74.58
A-7	L2P499	60.98	84.00	71.44
A-8	L1P7A1	59.73	78.51	70.32
B-1	L5P3F8	67.36	96.65	88.36
B-2	L5P3G2	64.69	89.20	78.45
B-3	L5P2A4	61.45	79.14	71.07
B-4	L5P1B5	58.63	69.27	65.46
B-5	L5P3F0	68.95	101.40	91.00
B-6	L5P3G3	66.73	92.85	80.71
B-7	L5P2C7	62.47	82.13	72.54
B-8	L5P1B0	59.18	71.11	66.75
C-1	L5P3B1	71.09	98.77	90.70
C-2	L5P3B3	68.88	92.65	81.52
C-3	L5P2C9	64.13	80.30	73.09
C-4	L5P1A5	60.50	70.65	67.04
C-5	L5P3B2	69.77	94.87	83.81
C-6	L5P3C1	69.22	93.11	82.33
C-7	L5P2C8	64.69	82.87	73.91
C-8	L5P1B8	60.97	72.27	67.67
D-1	L5P3C2	73.91	99.86	91.35
D-2	L5P3B4	70.91	92.80	81.94
D-3	L5P2A3	66.11	81.56	73.85
D-4	L5P1B7	62.11	71.24	67.97
D-5	L5P3C3	74.39	96.96	90.33
D-6	L5P3C6	71.16	90.17	80.83
D-7	L5P2C0	66.19	79.73	73.22
D-8	L5P1B9	62.29	70.64	67.61

Table 40: As-run minimum, maximum and average plate surface temperatures over fuel zone on the north side of the plate for plates irradiated in Cycle 151B, BOC (0.0 EFPD)

Plate Location	Plate ID	Minimum Temperature (C)	Maximum Temperature (C)	Average Temperature (C)
D-1	L5P3C2	69.70	108.74	96.18
D-2	L5P3B4	67.10	99.27	83.73
D-3	L5P2A3	62.64	85.30	74.31
D-4	L5P1B7	58.54	71.09	66.56
D-5	L5P3C3	69.68	102.78	93.30
D-6	L5P3C6	67.06	94.57	81.58
D-7	L5P2C0	62.34	81.76	72.74
D-8	L5P1B9	58.49	69.89	65.69

Table 41: As-run minimum, maximum and average plate surface temperatures over fuel zone on the south side of the plate for plates irradiated in Cycle 151B, BOC (0.0 EFPD)

Plate Location	Plate ID	Minimum Temperature (C)	Maximum Temperature (C)	Average Temperature (C)
D-1	L5P3C2	69.32	106.20	94.12
D-2	L5P3B4	66.95	99.18	83.49
D-3	L5P2A3	62.56	85.34	74.23
D-4	L5P1B7	58.71	72.12	67.32
D-5	L5P3C3	69.26	100.38	91.28
D-6	L5P3C6	66.90	94.14	80.97
D-7	L5P2C0	62.25	81.27	72.37
D-8	L5P1B9	58.63	70.52	66.30

Table 42: As-run minimum, maximum and average plate surface temperatures over fuel zone on the north side of the plate for plates irradiated in Cycle 151B, MOC1 (23.0 EFPD)

Plate Location	Plate ID	Minimum Temperature (C)	Maximum Temperature (C)	Average Temperature (C)
D-1	L5P3C2	68.64	105.27	93.59
D-2	L5P3B4	66.30	96.79	82.08
D-3	L5P2A3	62.12	83.66	73.22
D-4	L5P1B7	58.29	70.28	65.95
D-5	L5P3C3	68.98	100.83	91.76
D-6	L5P3C6	66.63	93.48	80.79
D-7	L5P2C0	62.01	80.85	72.10
D-8	L5P1B9	58.34	69.48	65.37

Table 43: As-run minimum, maximum and average plate surface temperatures over fuel zone on the south side of the plate for plates irradiated in Cycle 151B, MOC1 (23.0 EFPD)

Plate Location	Plate ID	Minimum Temperature (C)	Maximum Temperature (C)	Average Temperature (C)
D-1	L5P3C2	68.29	102.91	91.65
D-2	L5P3B4	66.16	96.71	81.85
D-3	L5P2A3	62.05	83.71	73.15
D-4	L5P1B7	58.46	71.29	66.69
D-5	L5P3C3	68.58	98.57	89.82
D-6	L5P3C6	66.48	93.07	80.22
D-7	L5P2C0	61.93	80.39	71.76
D-8	L5P1B9	58.48	70.11	65.99

Table 44: As-run minimum, maximum and average plate surface temperatures over fuel zone on the north side of the plate for plates irradiated in Cycle 151B, MOC2 (39.0 EFPD)

Plate Location	Plate ID	Minimum Temperature (C)	Maximum Temperature (C)	Average Temperature (C)
D-1	L5P3C2	70.00	109.71	96.92
D-2	L5P3B4	67.92	101.88	85.46
D-3	L5P2A3	63.42	87.81	75.98
D-4	L5P1B7	59.03	72.67	67.74
D-5	L5P3C3	70.41	105.05	95.09
D-6	L5P3C6	68.27	98.15	83.99
D-7	L5P2C0	63.32	84.72	74.77
D-8	L5P1B9	59.10	71.84	67.15

Table 45: As-run minimum, maximum and average plate surface temperatures over fuel zone on the south side of the plate for plates irradiated in Cycle 151B, MOC2 (39.0 EFPD)

Plate Location	Plate ID	Minimum Temperature (C)	Maximum Temperature (C)	Average Temperature (C)
D-1	L5P3C2	69.62	107.13	94.83
D-2	L5P3B4	67.78	101.80	85.22
D-3	L5P2A3	63.34	87.86	75.89
D-4	L5P1B7	59.21	73.74	68.54
D-5	L5P3C3	69.99	102.57	93.00
D-6	L5P3C6	68.12	97.73	83.41
D-7	L5P2C0	63.23	84.21	74.38
D-8	L5P1B9	59.25	72.50	67.80

Table 46: As-run minimum, maximum and average plate surface temperatures over fuel zone on the north side of the plate for plates irradiated in Cycle 151B, EOC (51.3 EFPD)

Plate Location	Plate ID	Minimum Temperature (C)	Maximum Temperature (C)	Average Temperature (C)
D-1	L5P3C2	69.28	107.35	95.15
D-2	L5P3B4	67.38	100.23	84.36
D-3	L5P2A3	63.03	86.58	75.16
D-4	L5P1B7	58.81	71.96	67.21
D-5	L5P3C3	69.77	103.15	93.59
D-6	L5P3C6	67.78	96.78	83.04
D-7	L5P2C0	62.97	83.69	74.06
D-8	L5P1B9	58.90	71.22	66.68

Table 47: As-run minimum, maximum and average plate surface temperatures over fuel zone on the south side of the plate for plates irradiated in Cycle 151B, EOC (51.3 EFPD)

Plate Location	Plate ID	Minimum Temperature (C)	Maximum Temperature (C)	Average Temperature (C)
D-1	L5P3C2	68.91	104.88	93.15
D-2	L5P3B4	67.25	100.15	84.13
D-3	L5P2A3	62.96	86.63	75.08
D-4	L5P1B7	58.99	73.01	67.99
D-5	L5P3C3	69.36	100.77	91.58
D-6	L5P3C6	67.63	96.39	82.48
D-7	L5P2C0	62.88	83.20	73.69
D-8	L5P1B9	59.04	71.87	67.33

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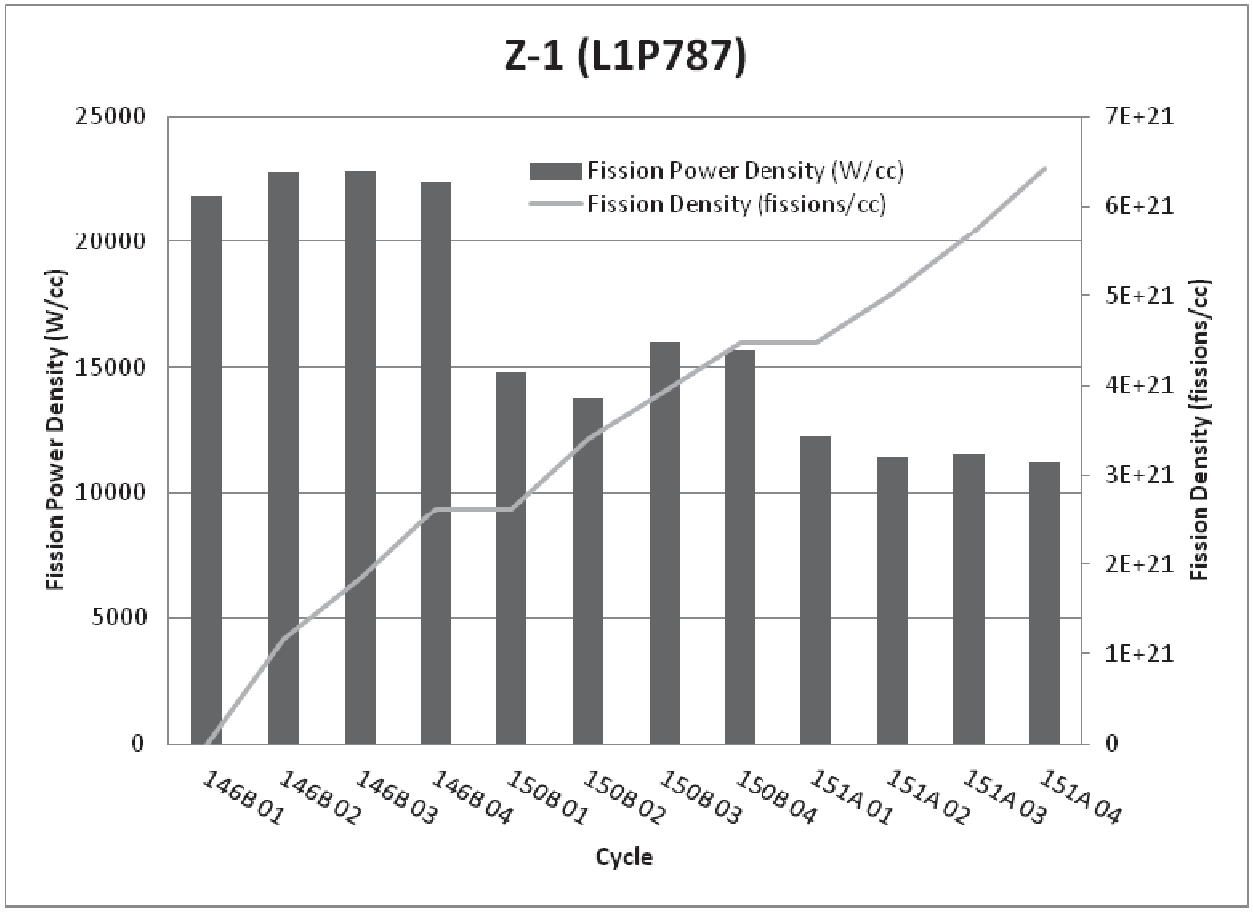
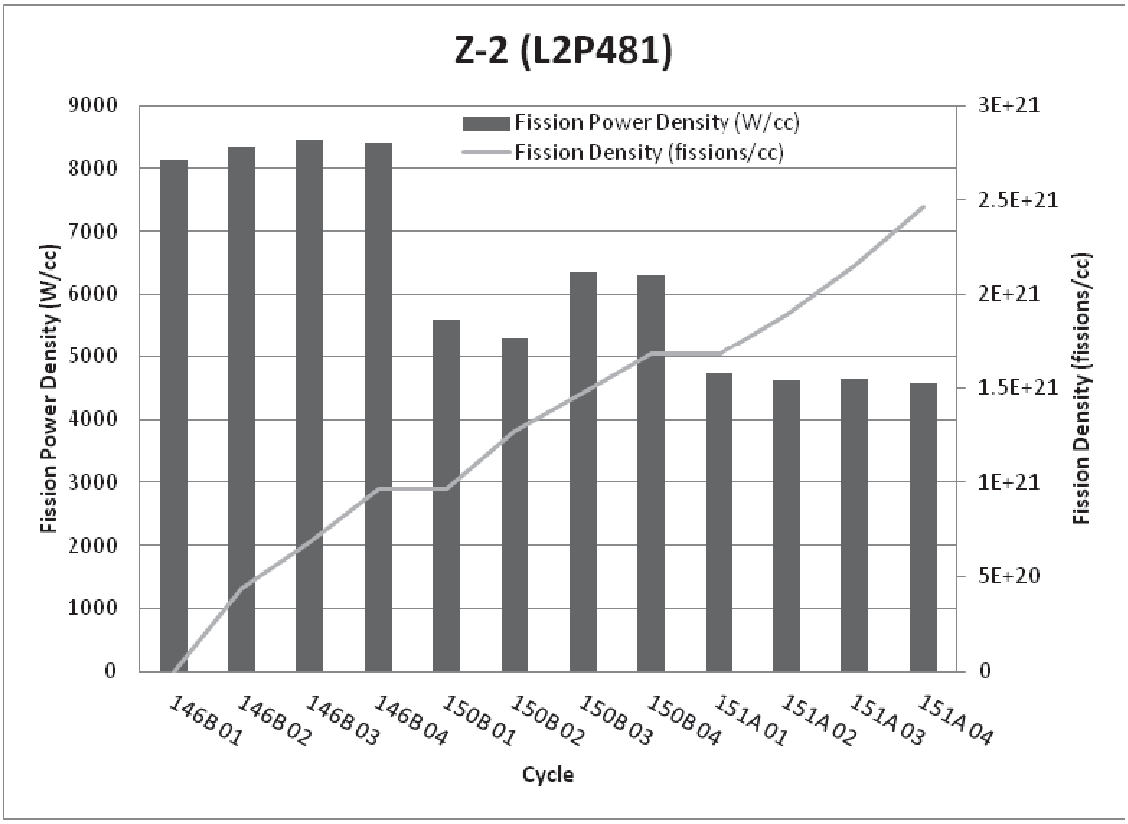
Appendix A

Individual Plate Power and Fission Density Plots

Appendix A
Individual Plate Power and Fission Density Plots

A-1. Capsule Z

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Fission Density (fissions/cc)
Fission Power Density (W/cc)
Fission Density (fissions/cc)
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8000
7000
6000
5000
4000
3000
2000
1000
0
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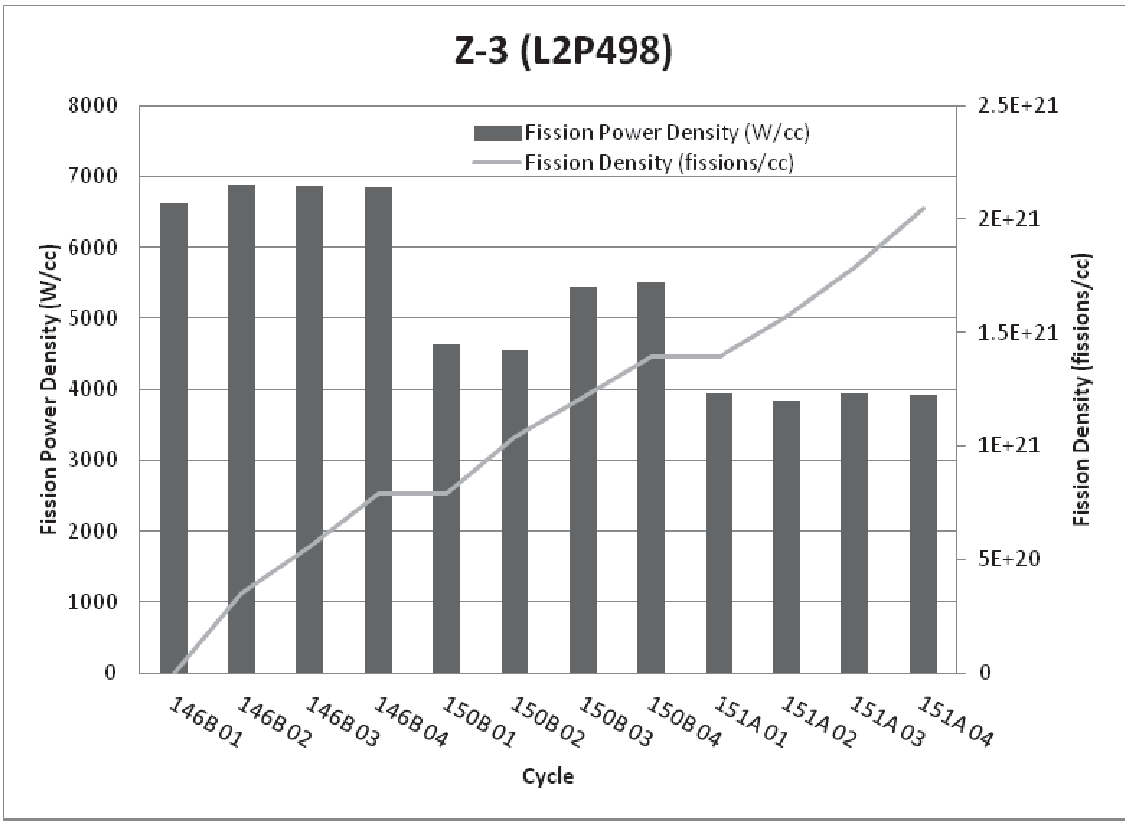
2.5E+21
2E+21
1.5E+21
1E+21
5E+20
0
146B01
146B02
146B03
146B04
150B01
150B02
150B03
150B04
151A01
151A02
151A03
151A04
Cycle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Fission Density (fissions/cc)
Fission Power Density (W/cc)
Fission Density (fissions/cc)
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6000
5000
4000
3000
2000
1000
0
2.5E+21
2E+21
1.5E+21
1E+21
5E+20
0
146B01
146B02
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146B04
150B01
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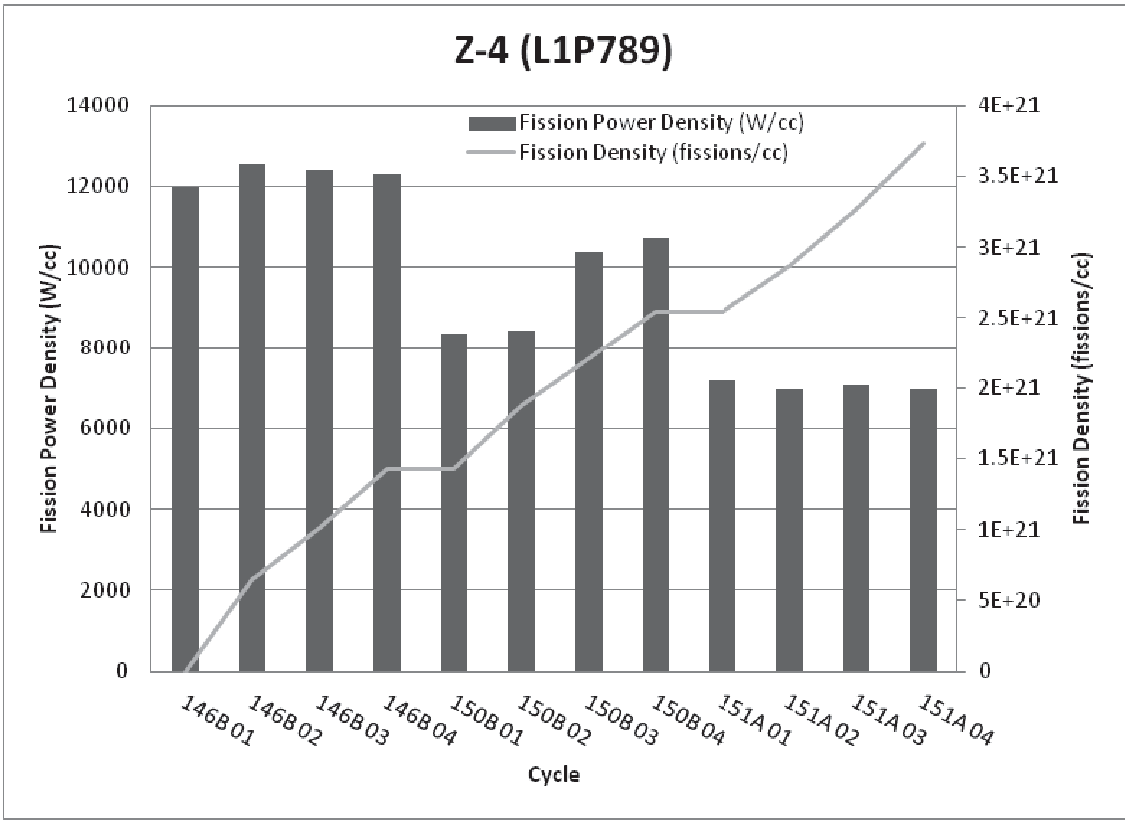
150B04
151A01
151A02
151A03
151A04
Cycle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Fission Density (fissions/cc)
Fission Power Density (W/cc)
Fission Density (fissions/cc)
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12000
10000
8000
6000
4000
2000
0
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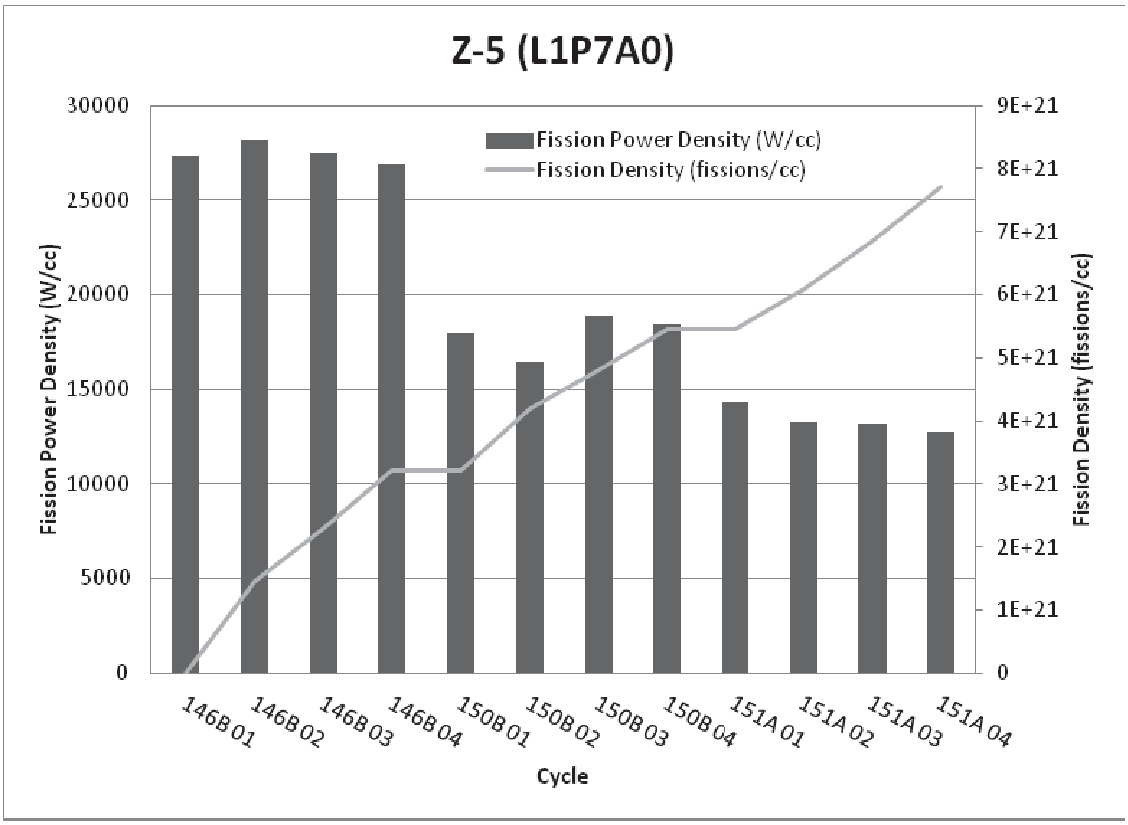
3.5E+21
3E+21
2.5E+21
2E+21
1.5E+21
1E+21
5E+20
0
146B 01
146B 02
146B 03
146B 04
150B 01
150B 02
150B 03
150B 04
151A 01
151A 02
151A 03
151A 04
Cycle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Fission Density (fissions/cc)
Fission Power Density (W/cc)
Fission Density (fissions/cc)
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25000
20000
15000
10000
5000
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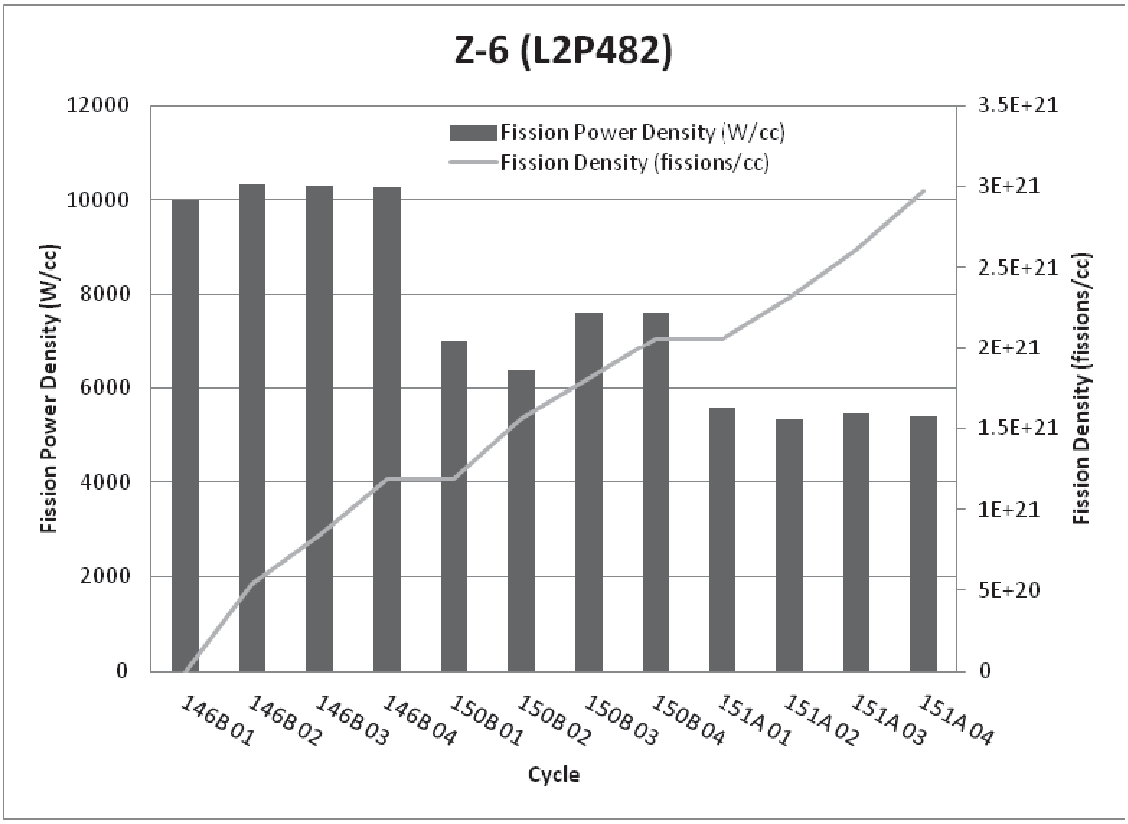
9E+21
8E+21
7E+21
6E+21
5E+21
4E+21
3E+21
2E+21
1E+21
0
146B 01
146B 02
146B 03
146B 04
150B 01
150B 02
150B 03
150B 04
151A 01
151A 02
151A 03
151A 04
Cycle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Fission Density (fissions/cc)
Fission Power Density (W/cc)
Fission Density (fissions/cc)
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10000
8000
6000
4000
2000
0
3.5E+21
3E+21
2.5E+21
2E+21
1.5E+21
1E+21
5E+20
0
146B 01
146B 02
146B 03
146B 04
150B 01
150B 02
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150B 04
151A 01
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151A 03
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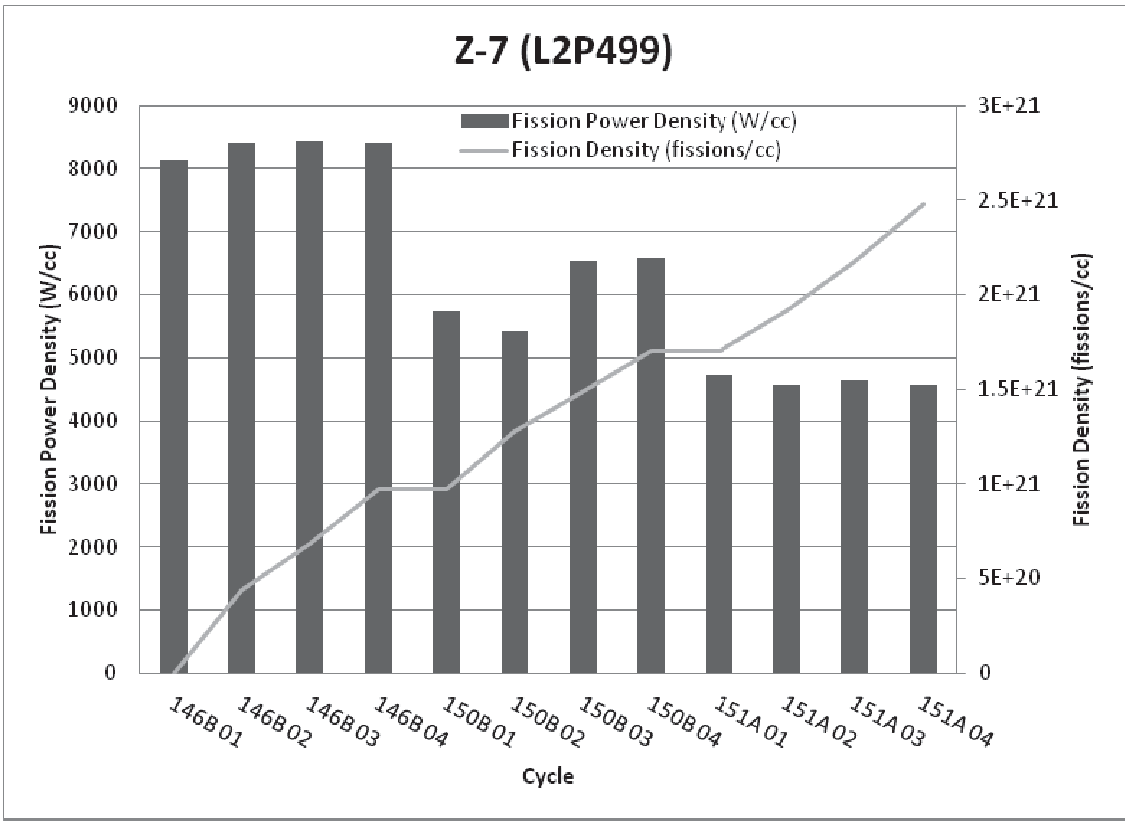
Cycle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Fission Density (fissions/cc)
Fission Power Density (W/cc)
Fission Density (fissions/cc)
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8000
7000
6000
5000
4000
3000
2000
1000
0
3E+21
2.5E+21
2E+21
1.5E+21
1E+21
5E+20
0
146B 01
146B 02
146B 03
146B 04
150B 01
150B 02
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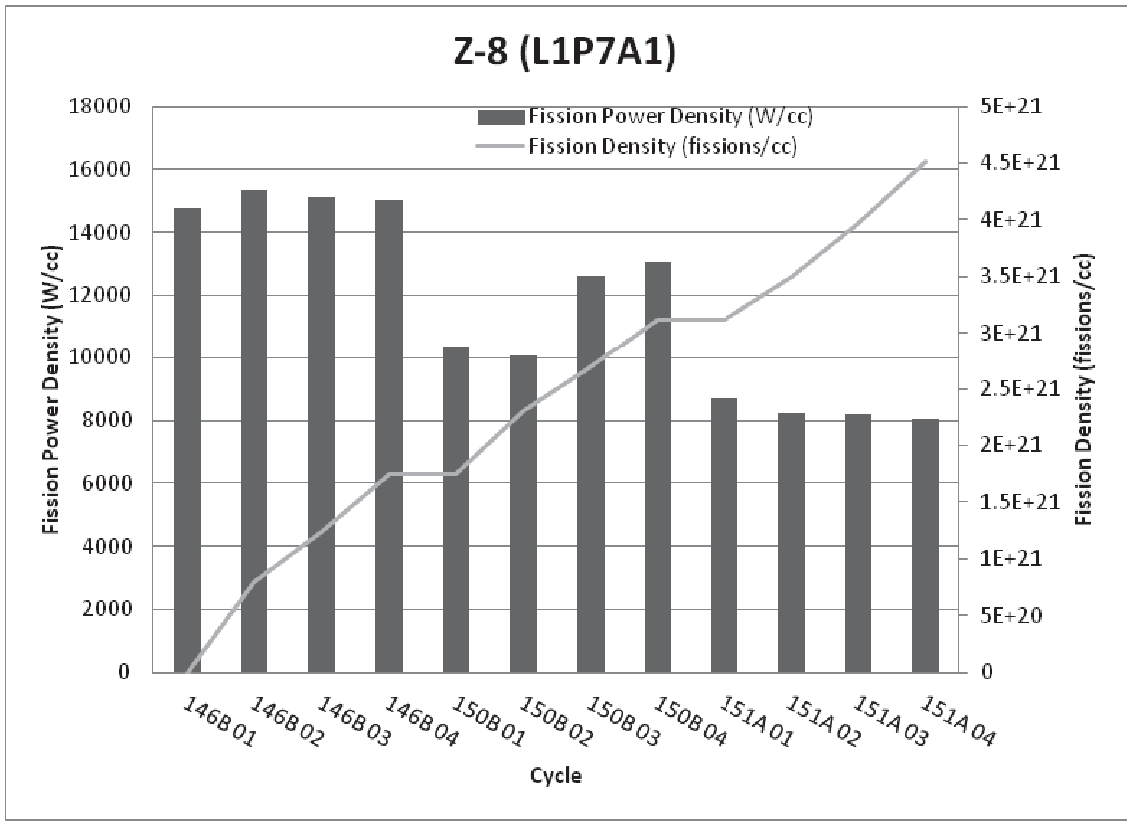
150B 04
151A 01
151A 02
151A 03
151A 04
Cycle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Fission Power Density (W/cc)
Fission Density (fissions/cc)
Fission Power Density (W/cc)
Fission Density (fissions/cc)
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16000
14000
12000
10000
8000
6000
4000
2000
0
5E+21
4.5E+21
4E+21
3.5E+21
3E+21
2.5E+21
2E+21
1.5E+21
1E+21
5E+20
0
146B01
146B02
146B03
146B04
150B01
150B02
150B03
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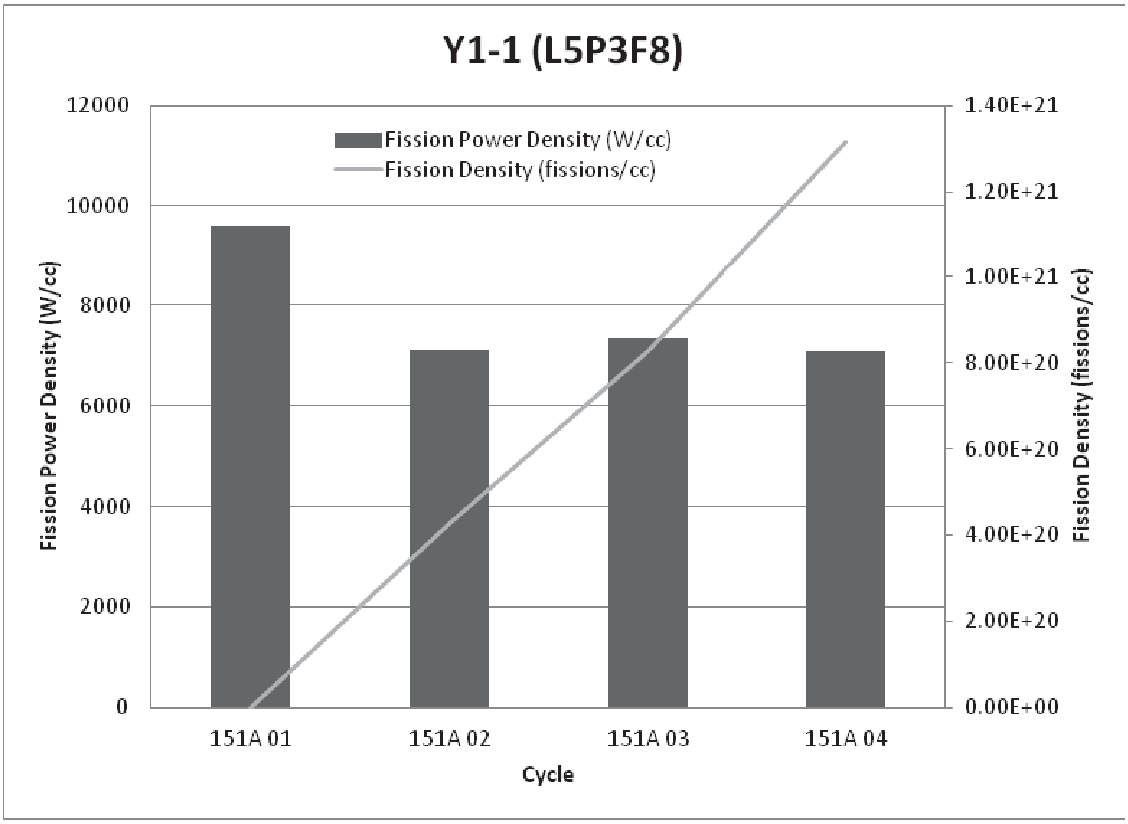
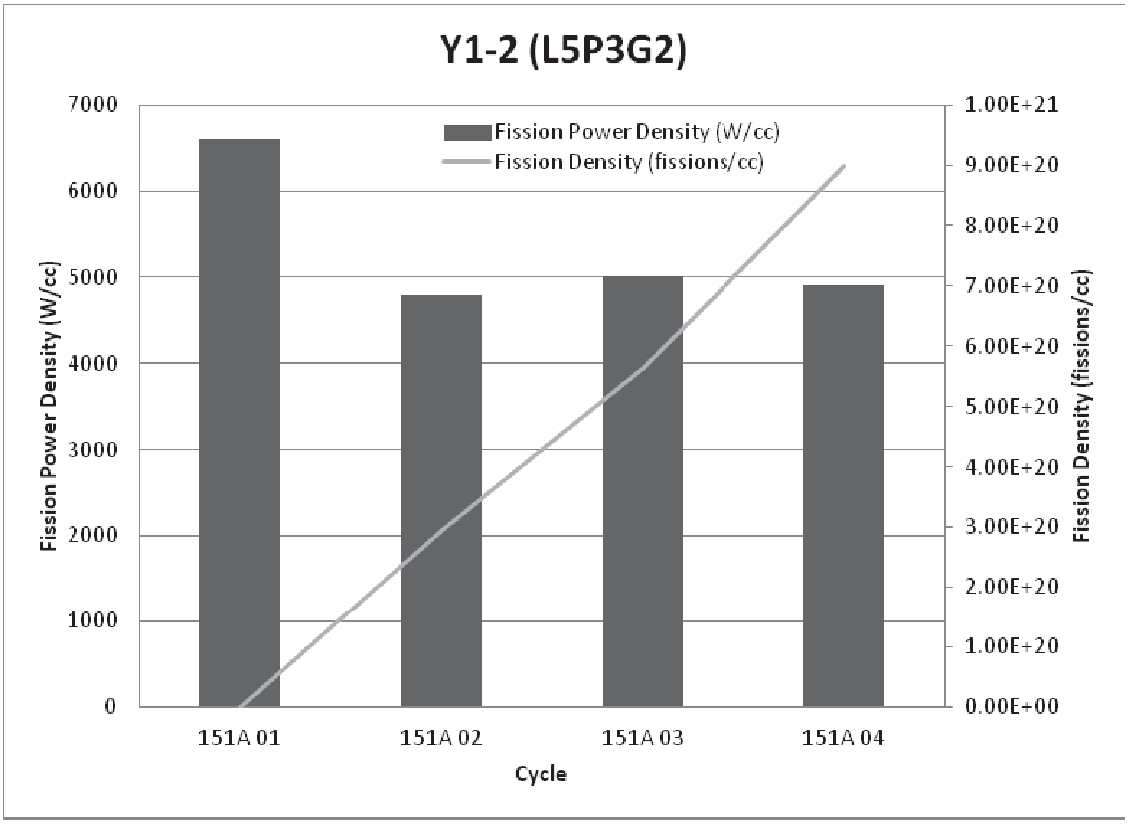
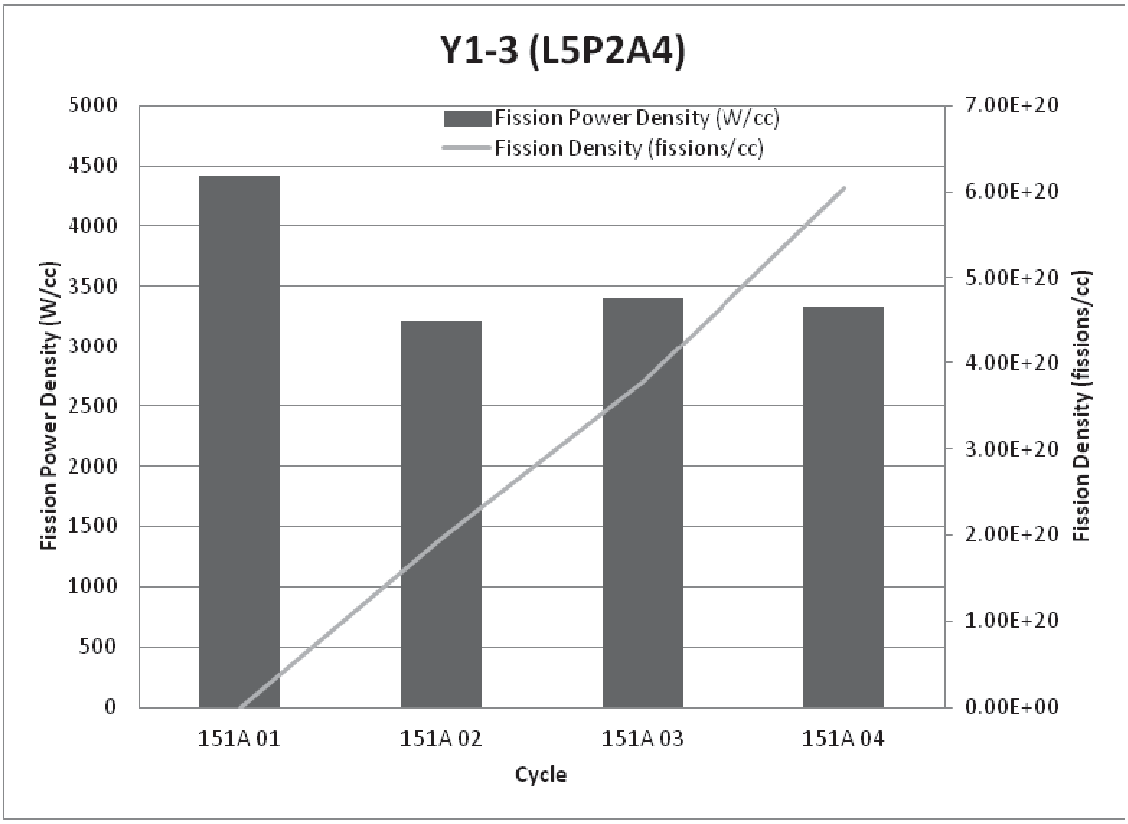
151A02
151A03
151A04
Cycle

A-2. Capsule Y-1



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Fission Density (fissions/cc)
Fission Power Density (W/cc)
Fission Density (fissions/cc)
Cycle
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151A 02
151A 03
151A 04
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1500
2000
2500
3000
3500
4000
4500
5000
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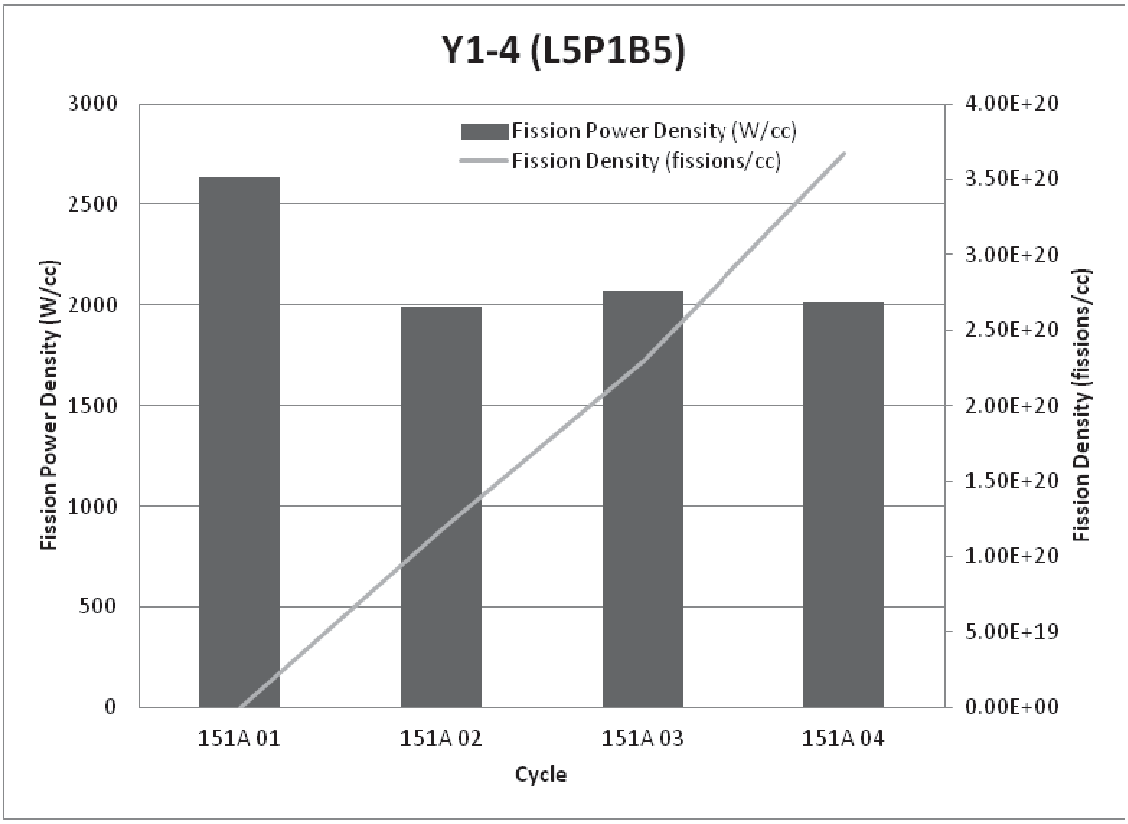
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Fission Density (fissions/cc)
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151A 02
151A 03
151A 04
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1000
1500
2000
2500
3000
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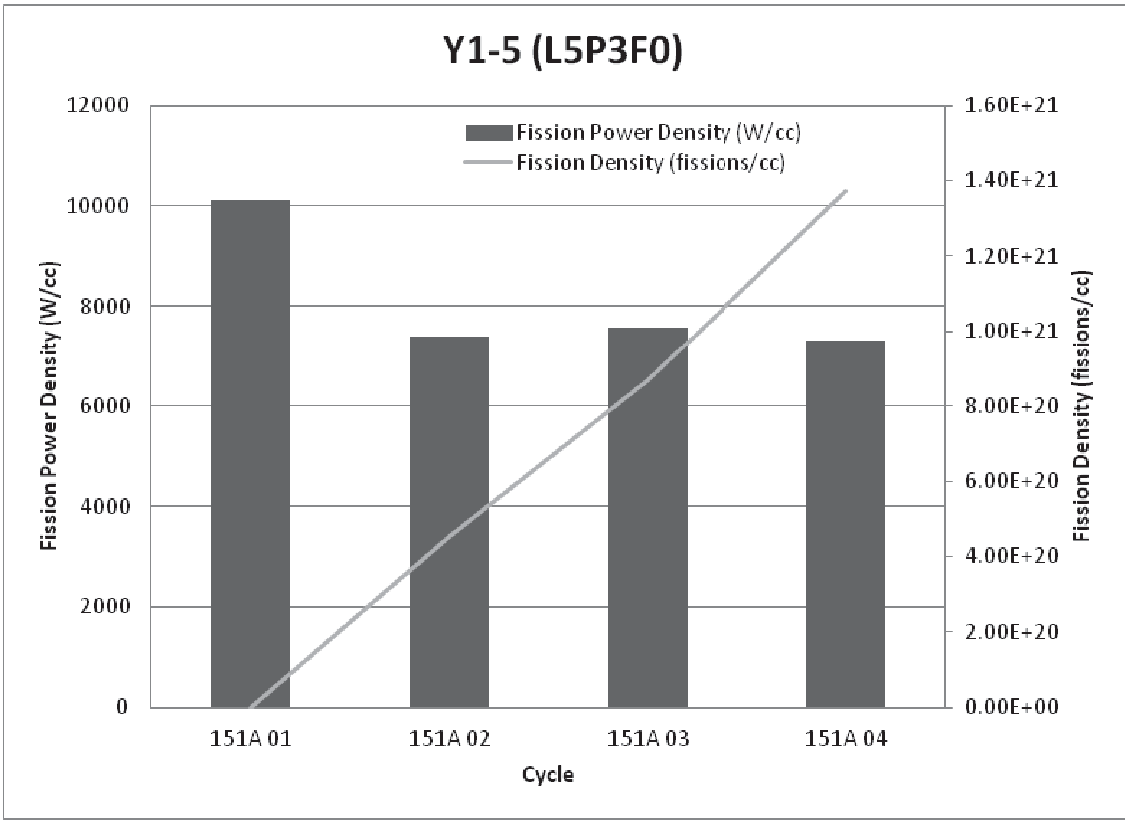
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Fission Density (fissions/cc)
Fission Power Density (W/cc)
Fission Density (fissions/cc)
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8000
6000
4000
2000
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8.00E+20
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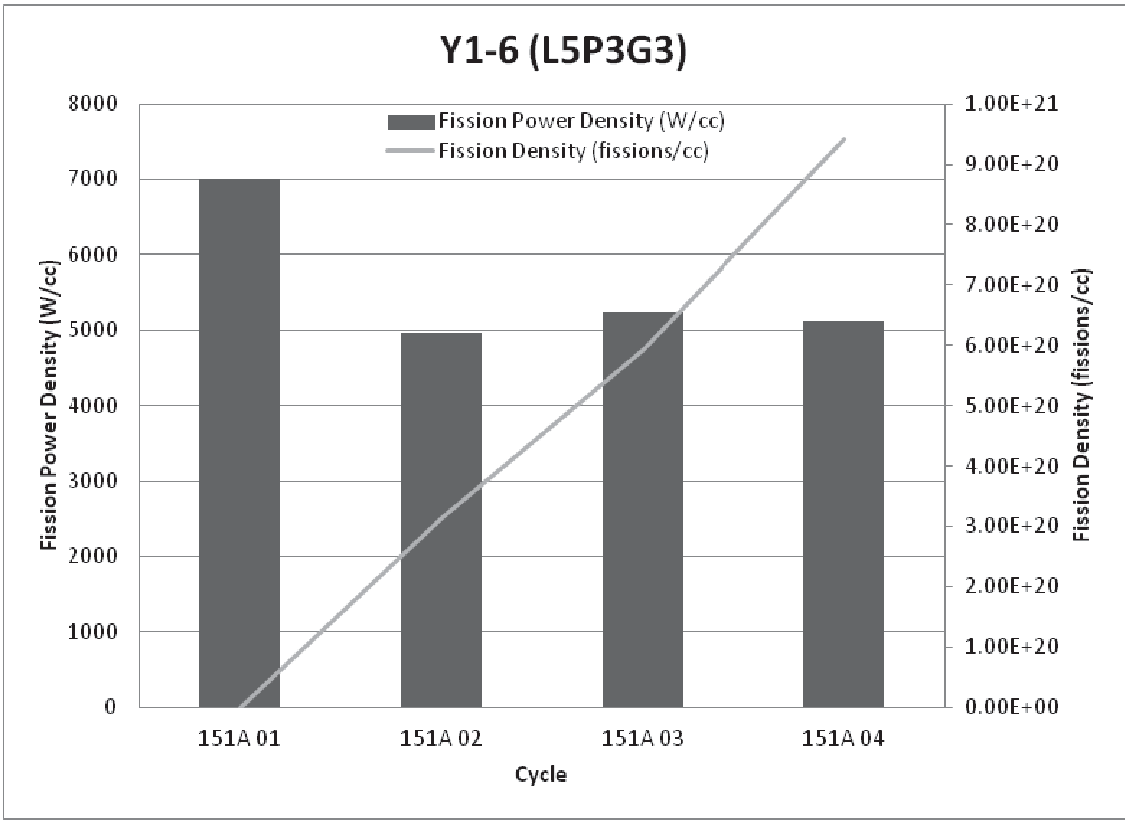
Cycle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Fission Density (fissions/cc)
Fission Power Density (W/cc)
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4000
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2000
1000
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7.00E+20
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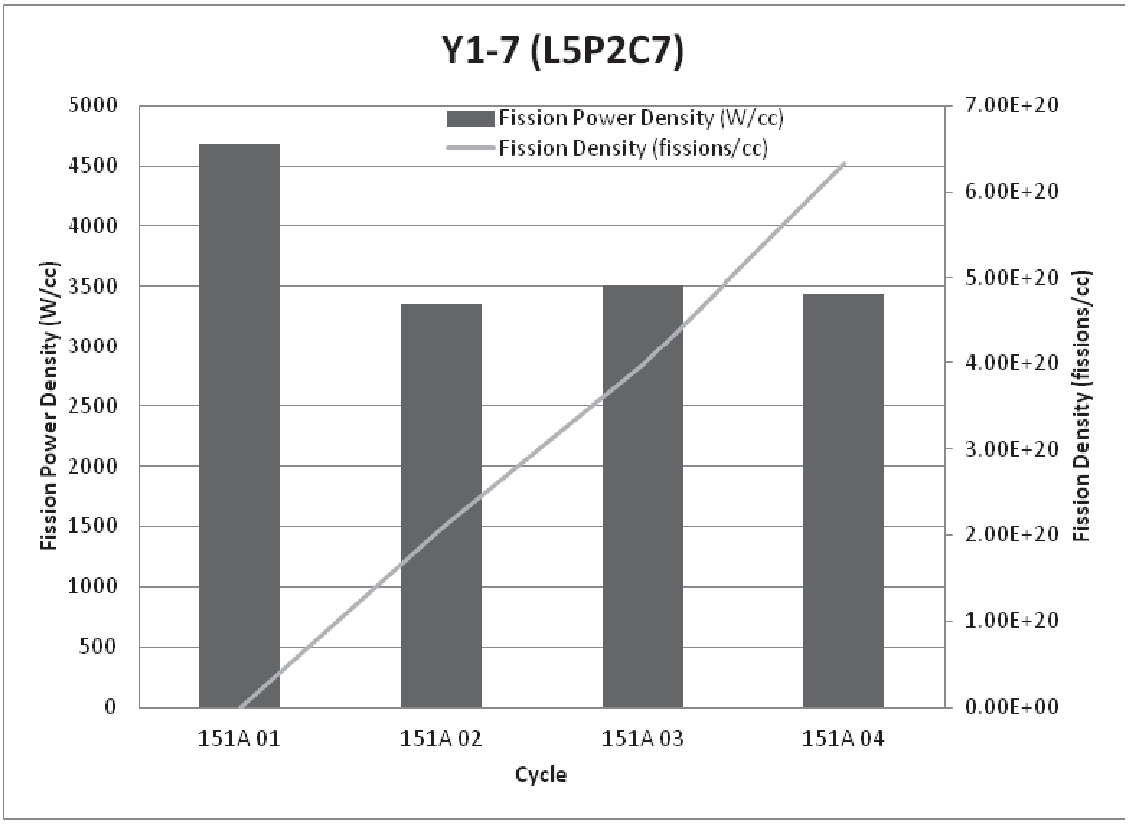
Cycle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Fission Density (fissions/cc)
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4000
3500
3000
2500
2000
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1000
500
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6.00E+20
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3.00E+20
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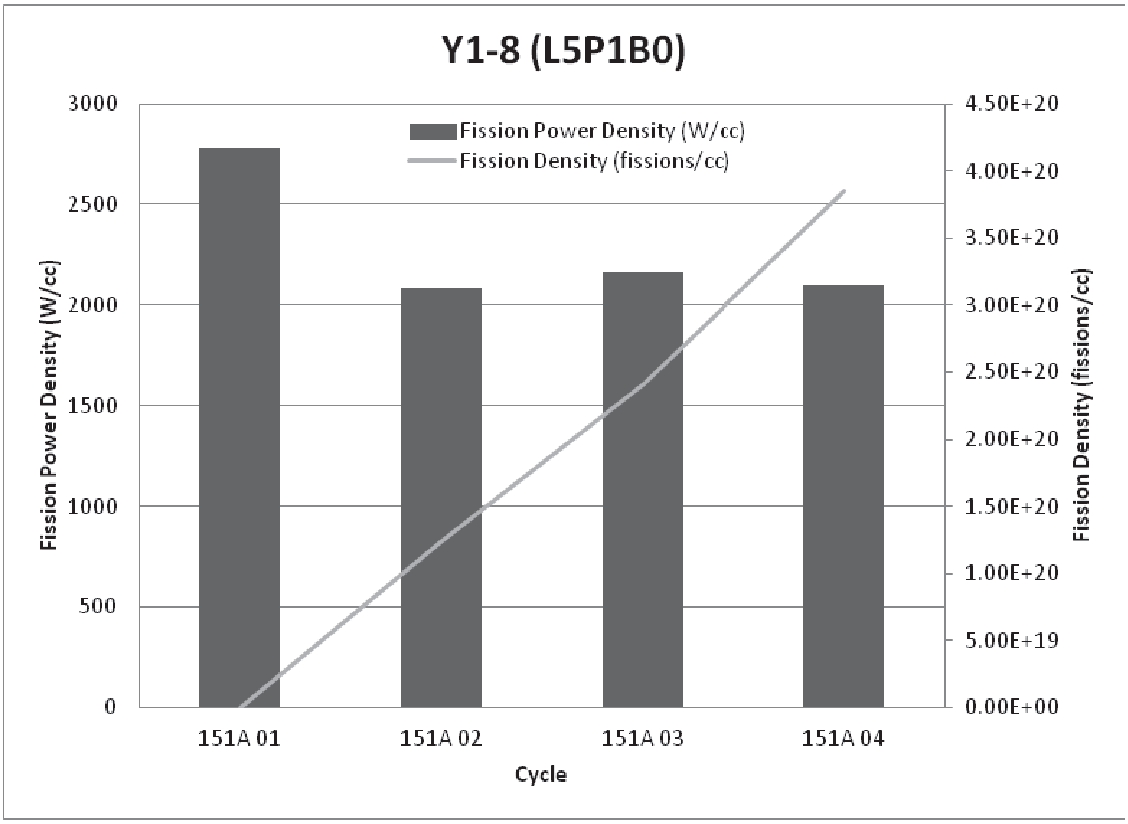
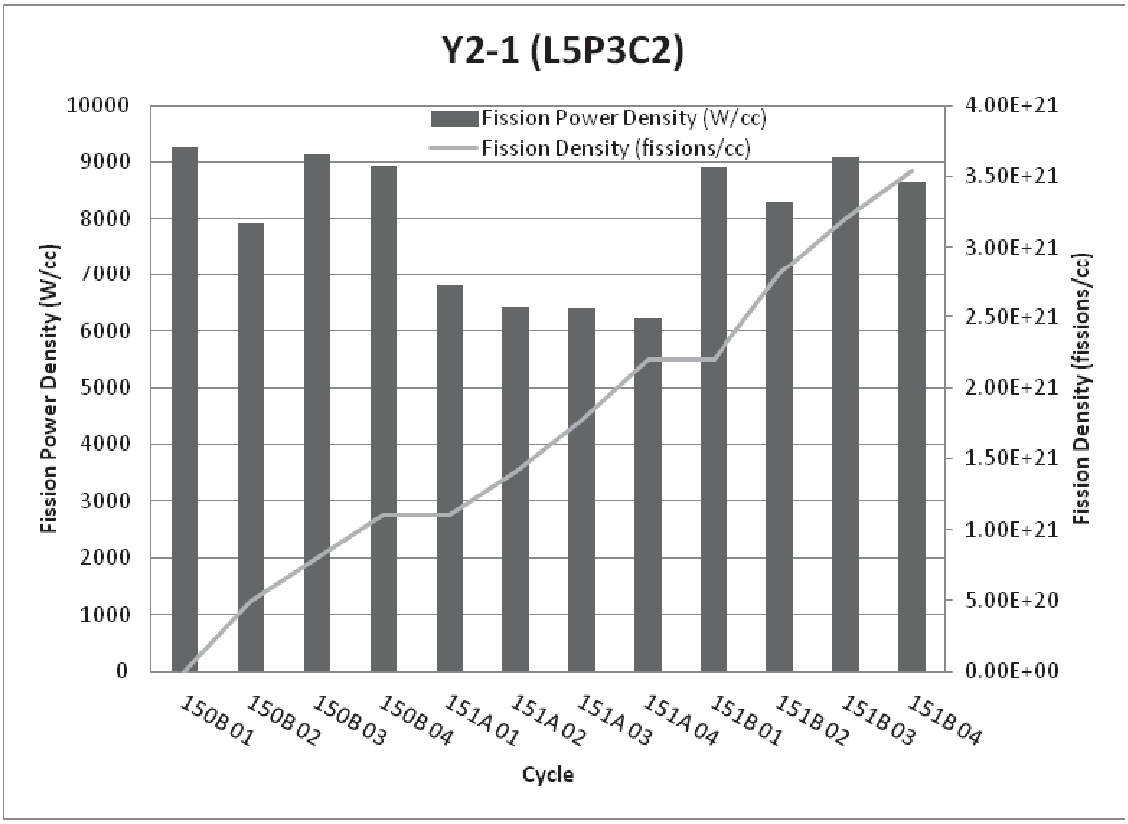
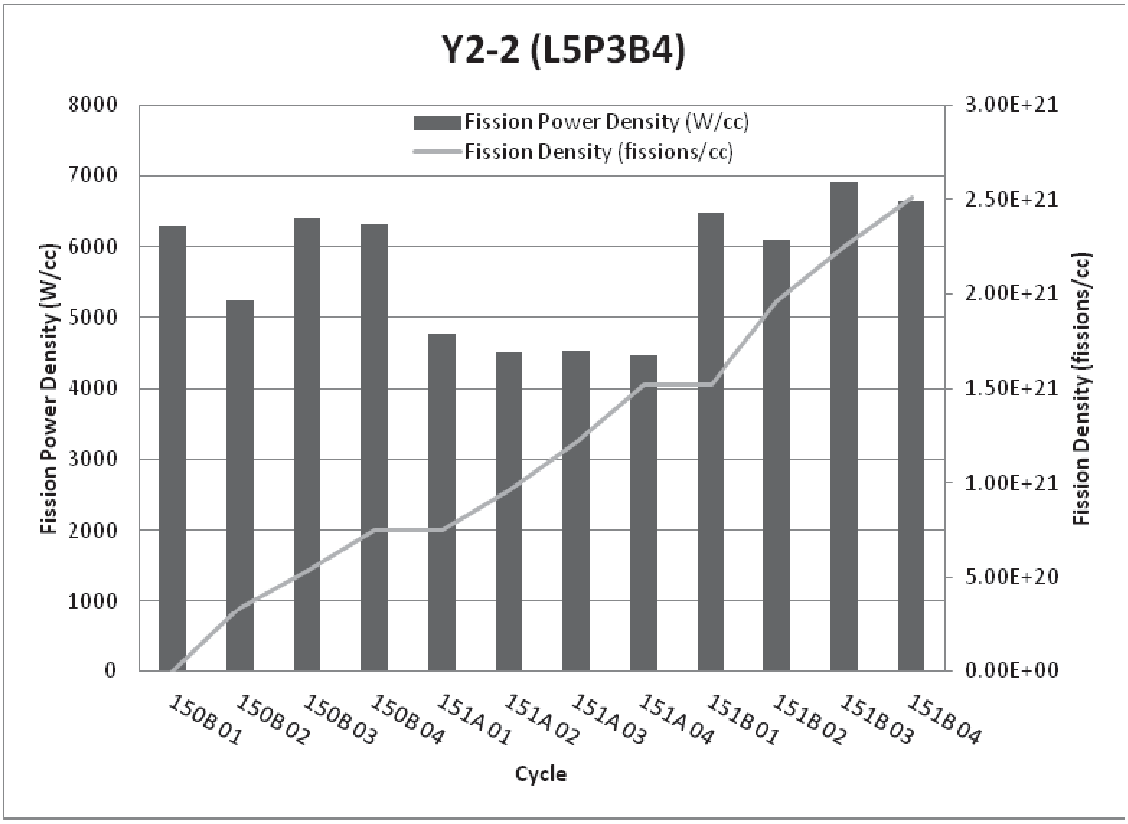
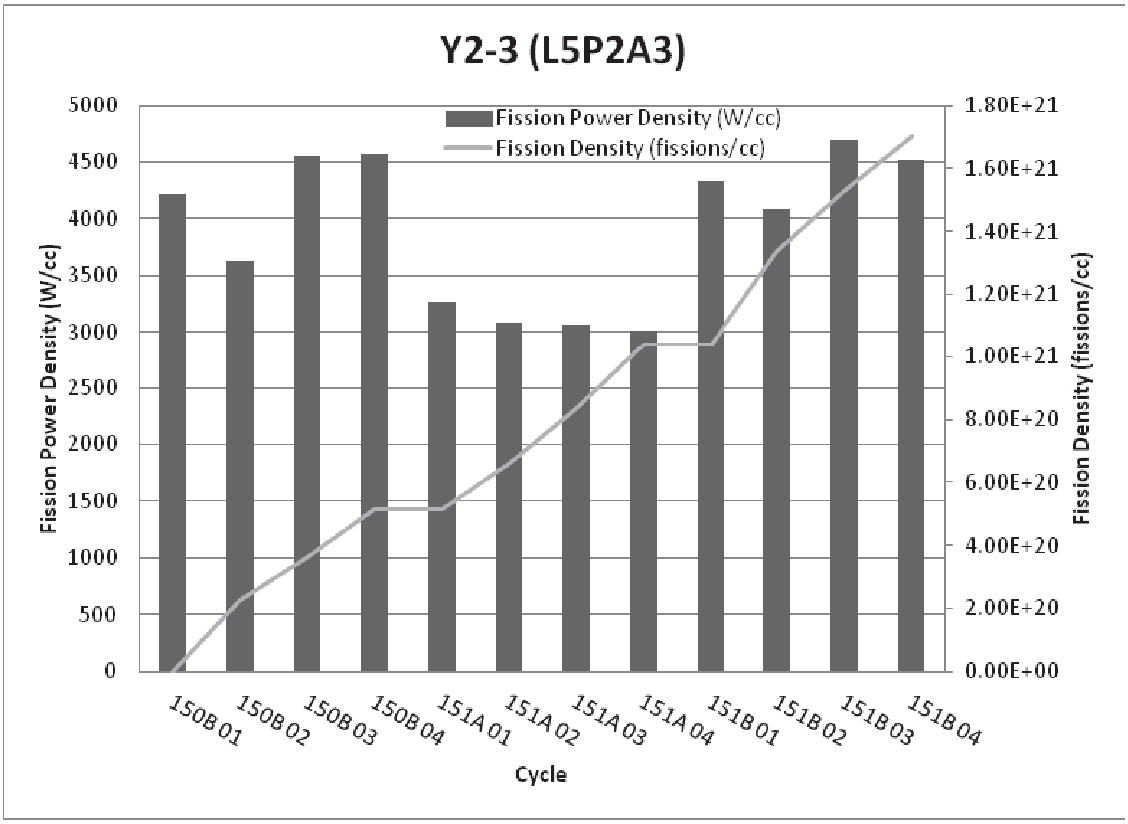
1.00E+20
0.00E+00
151A 01
151A 02
151A 03
151A 04

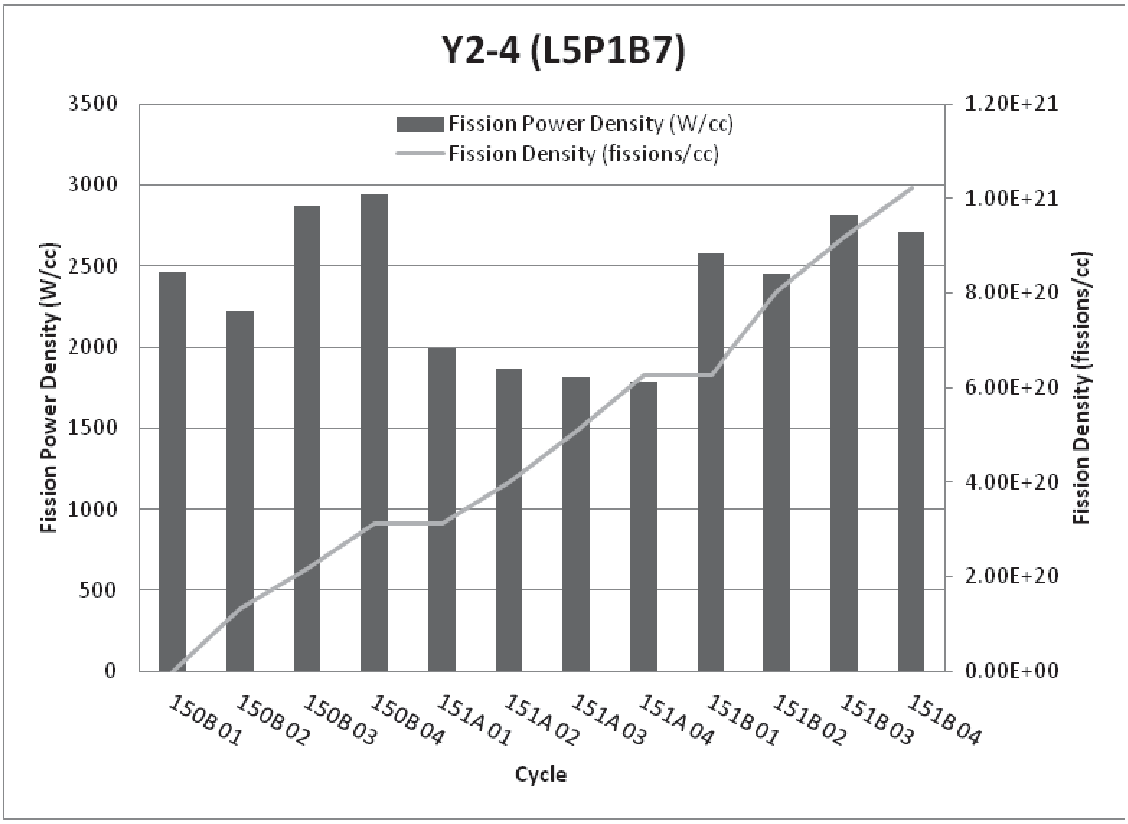

Y1-8 (L5P1B0)
Fission Power Density (W/cc)
Fission Density (fissions/cc)
Fission Power Density (W/cc)
Fission Density (fissions/cc)
Cycle
3000
2500
2000
1500
1000
500
0
4.50E+20
4.00E+20
3.50E+20
3.00E+20
2.50E+20
2.00E+20
1.50E+20
1.00E+20
5.00E+19
0.00E+00
151A 01
151A 02
151A 03
151A 04

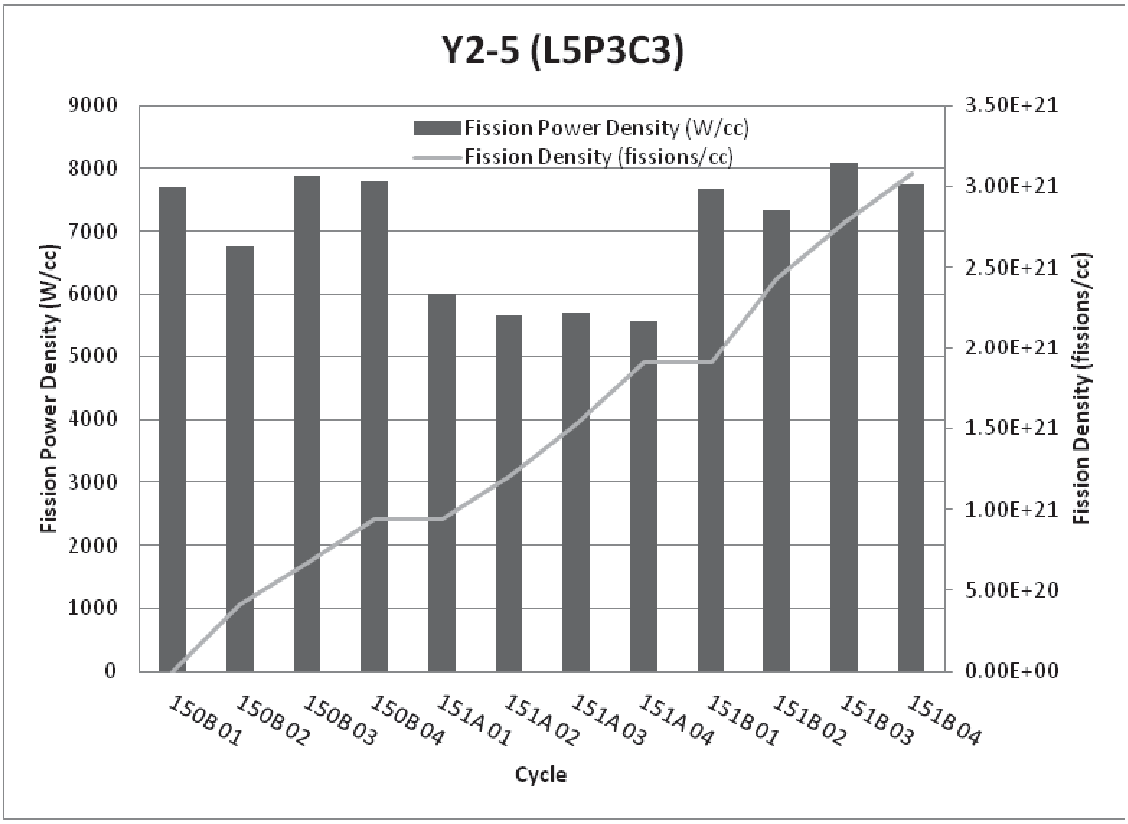
A-3. Capsule Y-2

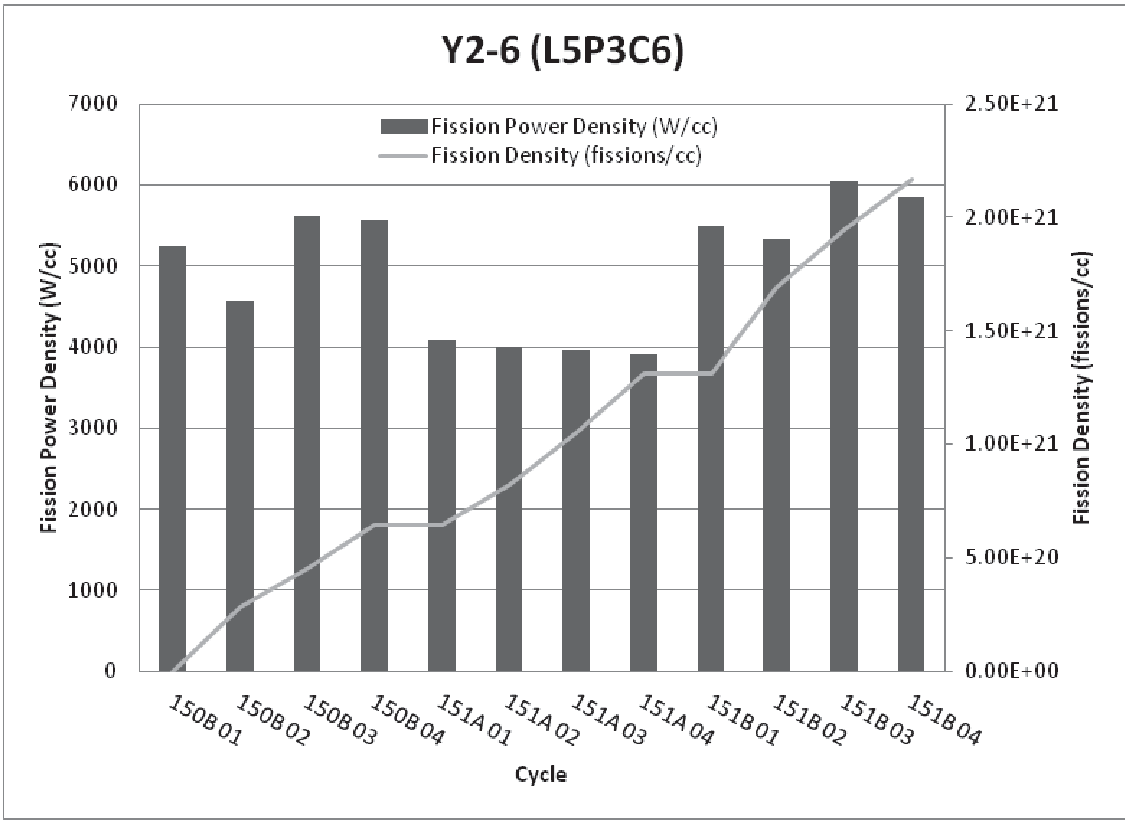


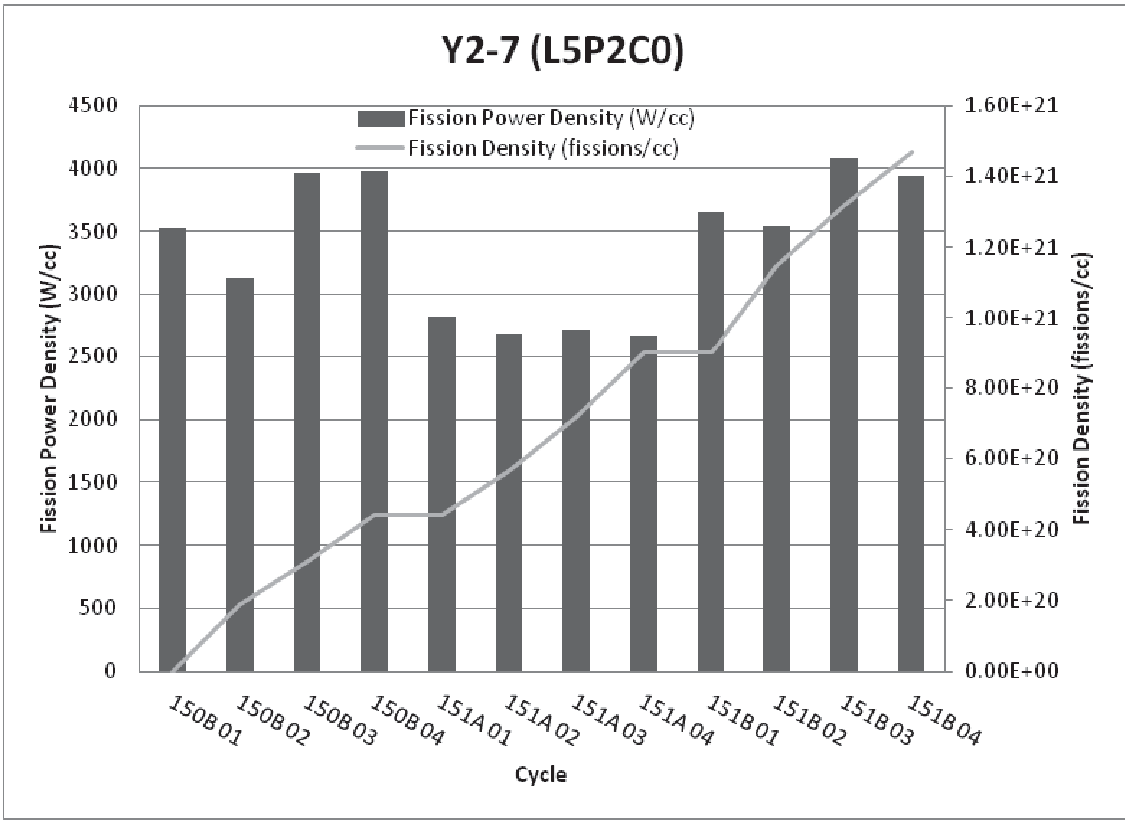


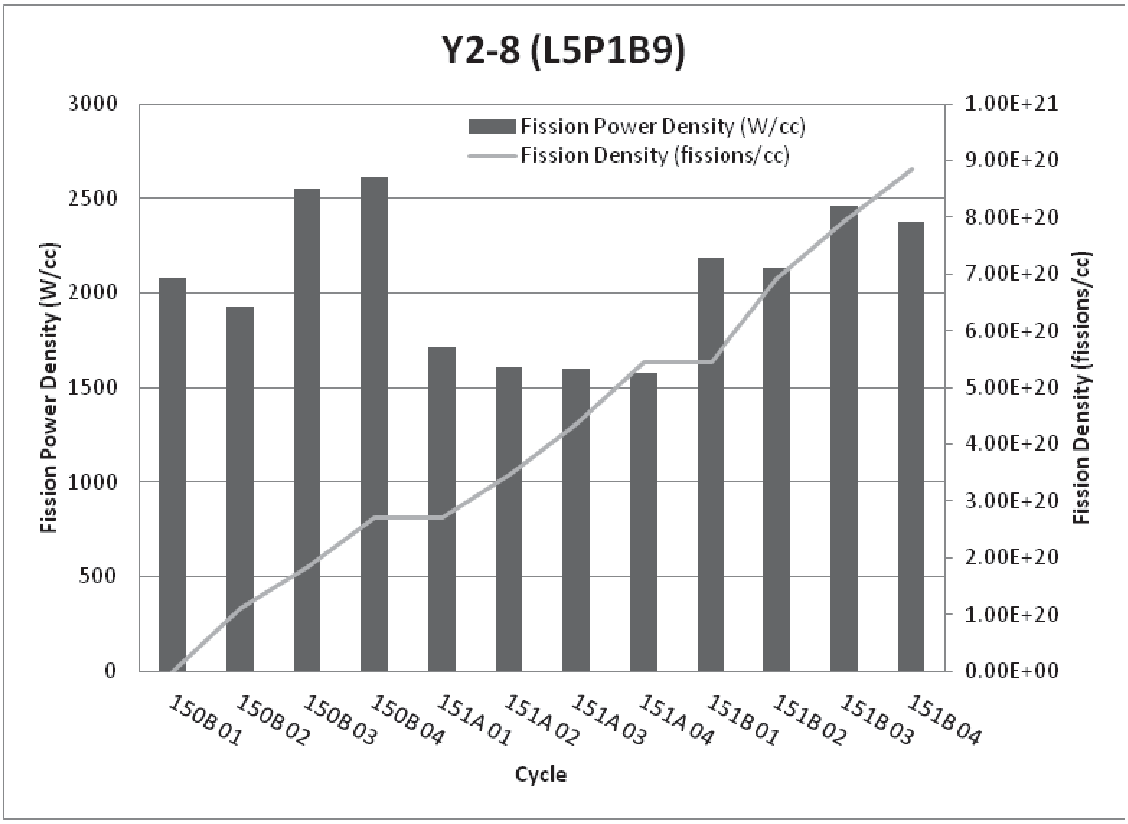

Y2-3 (L5P2A3)
Fission Power Density (W/cc)
Fission Density (fissions/cc)
Fission Power Density (W/cc)
Fission Density (fissions/cc)
Cycle
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
1.80E+21
1.60E+21
1.40E+21
1.20E+21
1.00E+21
8.00E+20
6.00E+20
4.00E+20
2.00E+20
0.00E+00
150B01
150B02
150B03
150B04
151A01
151A02
151A03
151A04
151B01
151B02
151B03
151B04


Y2-4 (L5P1B7)
Fission Power Density (W/cc)
Fission Density (fissions/cc)
Fission Power Density (W/cc)
Fission Density (fissions/cc)
Cycle
3500
3000
2500
2000
1500
1000
500
0
1.20E+21
1.00E+21
8.00E+20
6.00E+20
4.00E+20
2.00E+20
0.00E+00
150B01
150B02
150B03
150B04
151A01
151A02
151A03
151A04
151B01
151B02
151B03
151B04

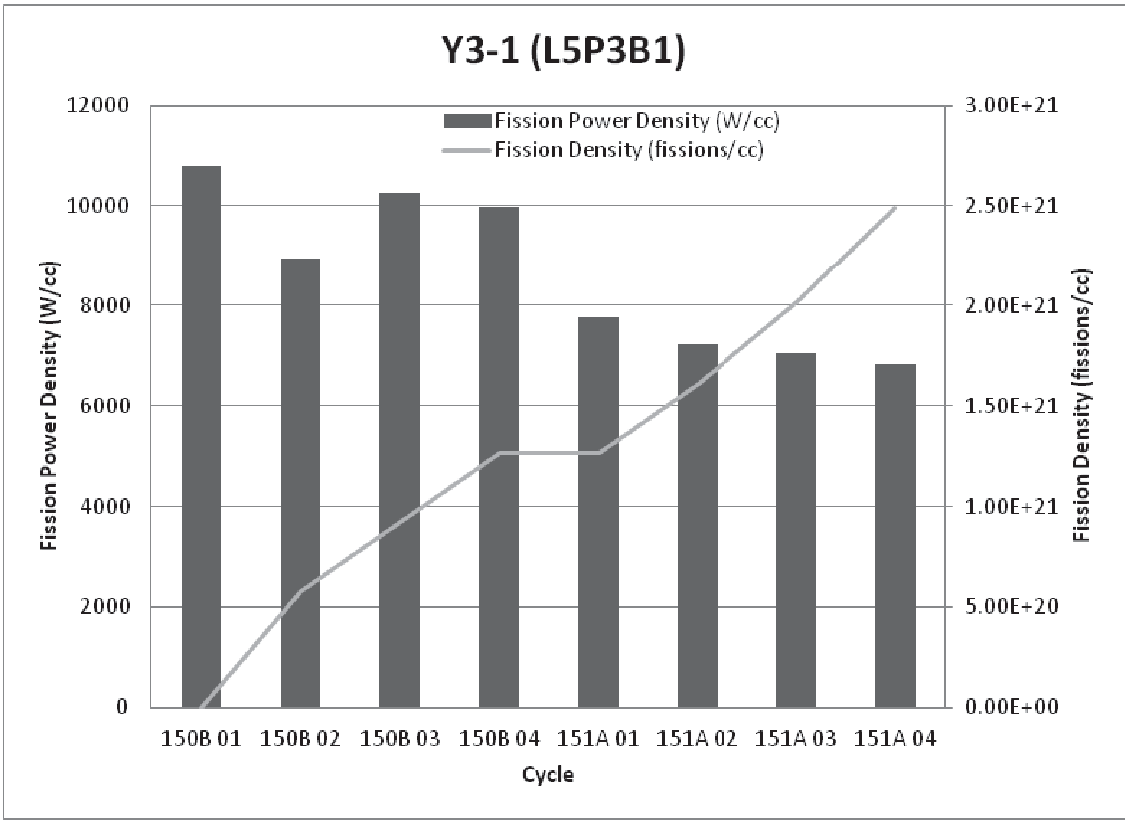

Y2-5 (L5P3C3)
Fission Power Density (W/cc)
Fission Density (fissions/cc)
Fission Power Density (W/cc)
Fission Density (fissions/cc)
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
3.50E+21
3.00E+21
2.50E+21
2.00E+21
1.50E+21
1.00E+21
5.00E+20
0.00E+00
150B01
150B02
150B03
150B04
151A01
151A02
151A03
151A04
151B01
151B02
151B03
151B04
Cycle

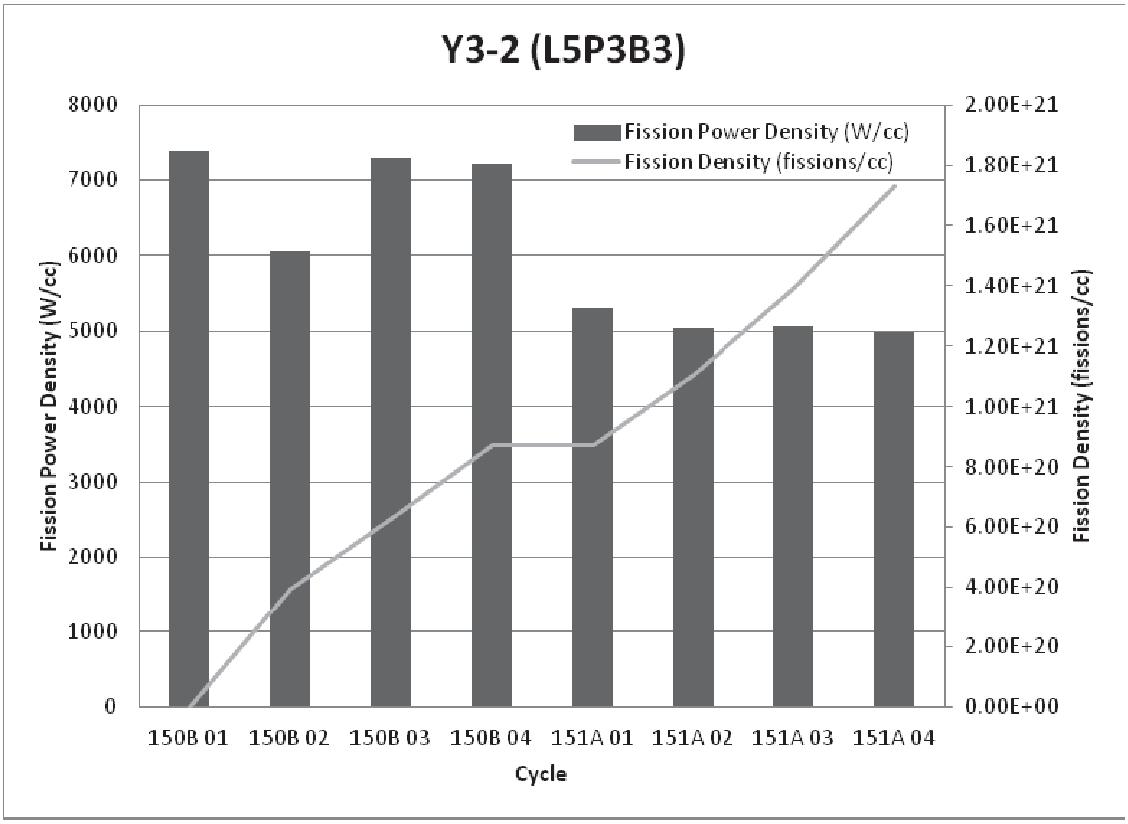

Y2-6 (L5P3C6)
Fission Power Density (W/cc)
Fission Density (fissions/cc)
Fission Power Density (W/cc)
Fission Density (fissions/cc)
7000
6000
5000
4000
3000
2000
1000
0
2.50E+21
2.00E+21
1.50E+21
1.00E+21
5.00E+20
0.00E+00
150B01
150B02
150B03
150B04
151A01
151A02
151A03
151A04
151B01
151B02
151B03
151B04
Cycle

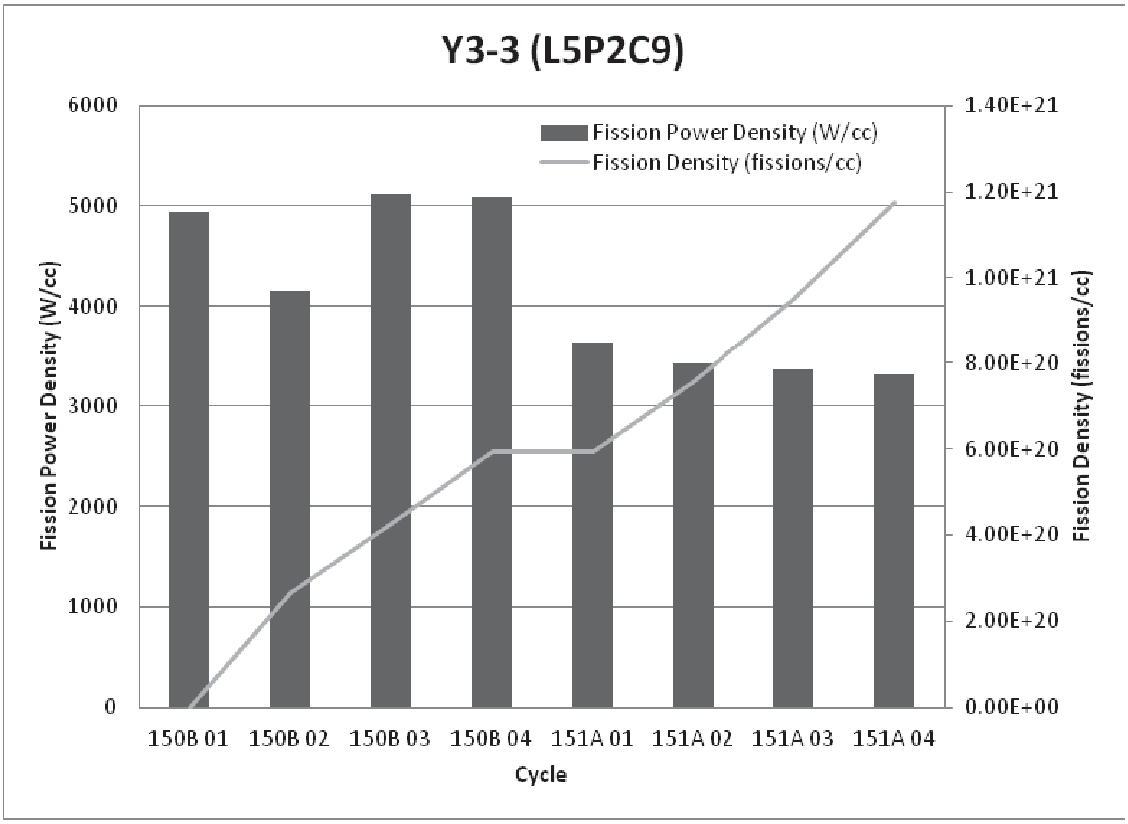

Y2-7 (L5P2C0)
Fission Power Density (W/cc)
Fission Density (fissions/cc)
Fission Power Density (W/cc)
Fission Density (fissions/cc)
Cycle
4500
4000
3500
3000
2500
2000
1500
1000
500
0
1.60E+21
1.40E+21
1.20E+21
1.00E+21
8.00E+20
6.00E+20
4.00E+20
2.00E+20
0.00E+00
150B01
150B02
150B03
150B04
151A01
151A02
151A03
151A04
151B01
151B02
151B03
151B04

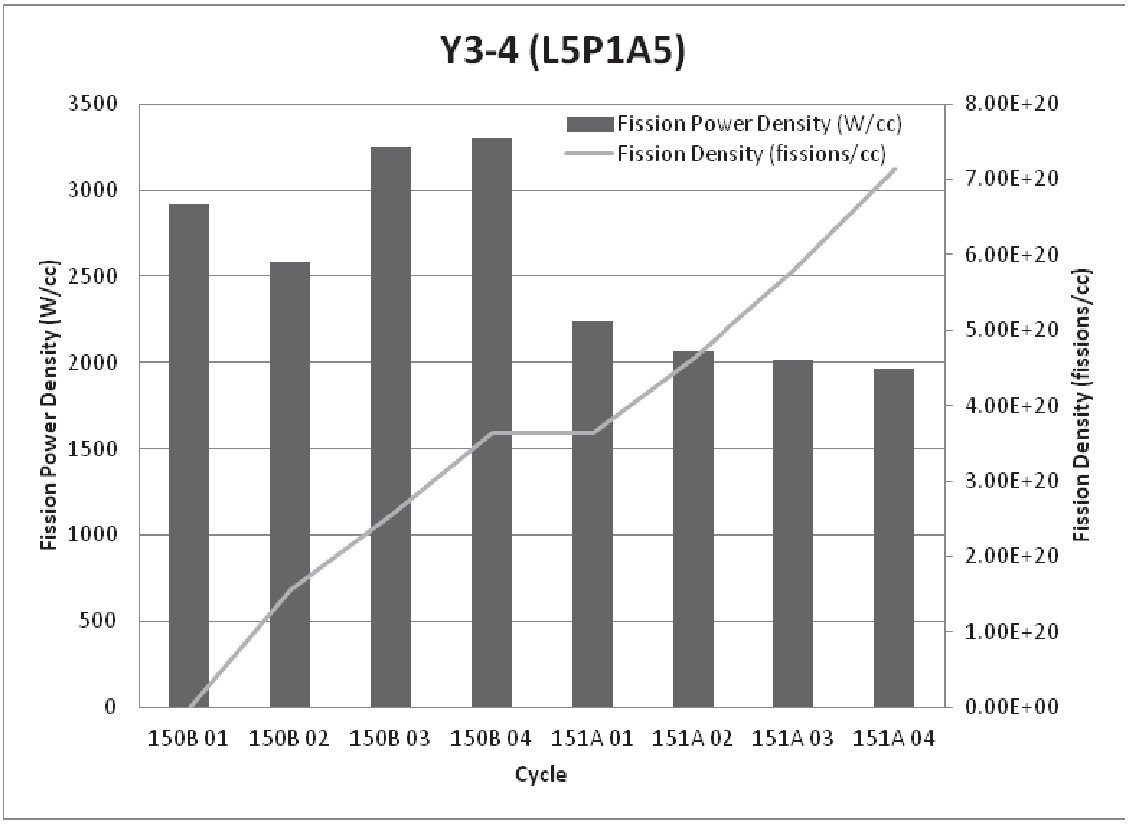

Y2-8 (L5P1B9)
Fission Power Density (W/cc)
Fission Density (fissions/cc)
Fission Power Density (W/cc)
Fission Density (fissions/cc)
Cycle
3000
2500
2000
1500
1000
500
0
1.00E+21
9.00E+20
8.00E+20
7.00E+20
6.00E+20
5.00E+20
4.00E+20
3.00E+20
2.00E+20
1.00E+20
0.00E+00
150B01
150B02
150B03
150B04
151A01
151A02
151A03
151A04
151B01
151B02
151B03
151B04

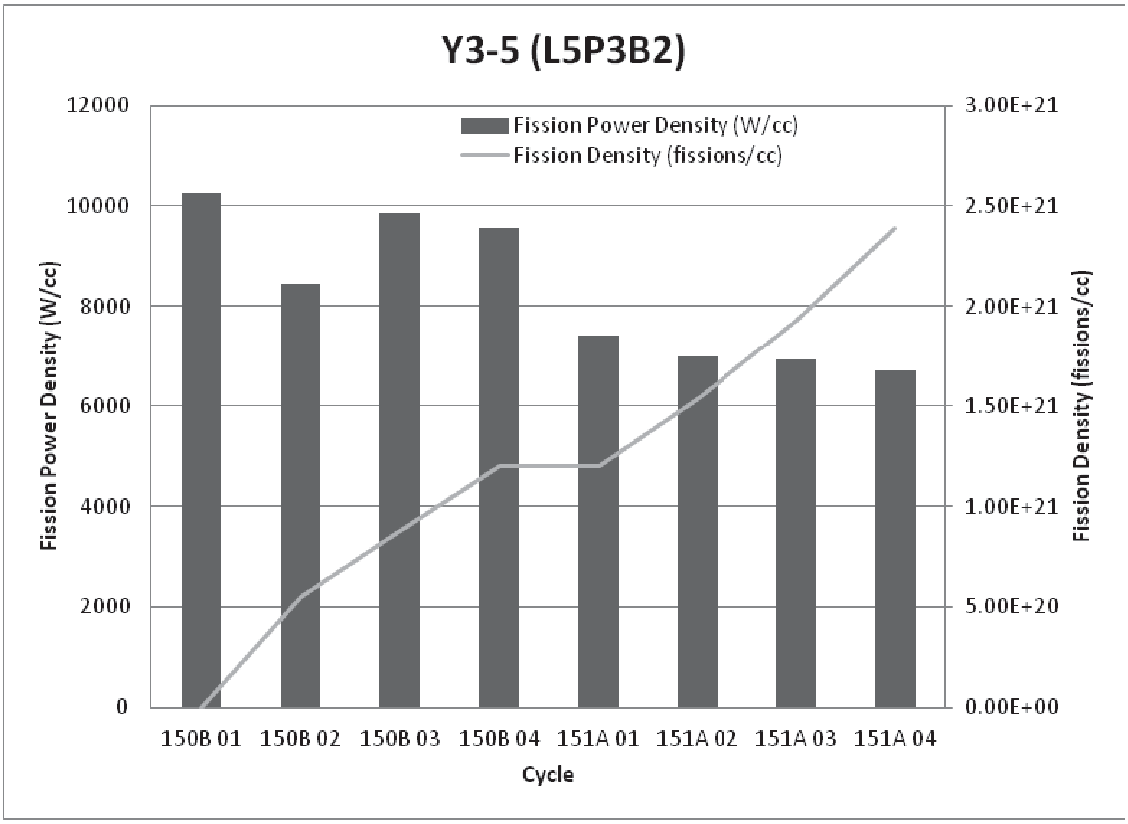
A-4. Capsule Y-3

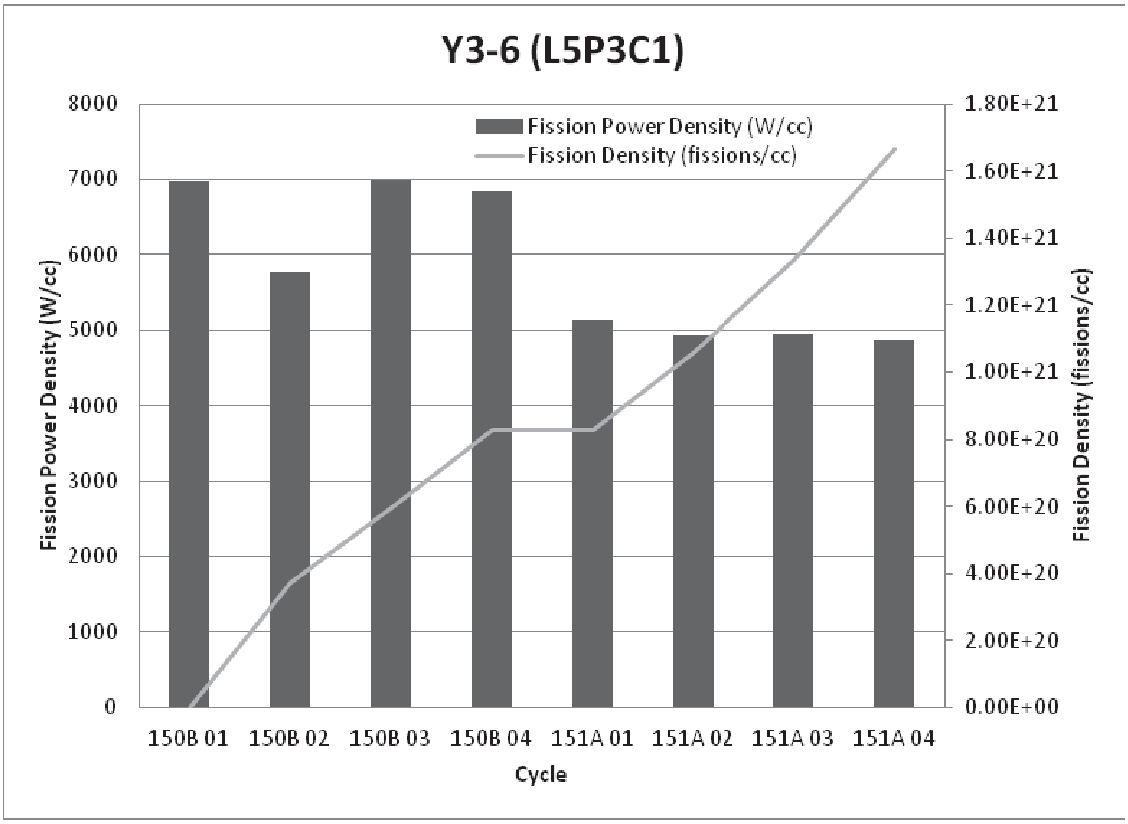


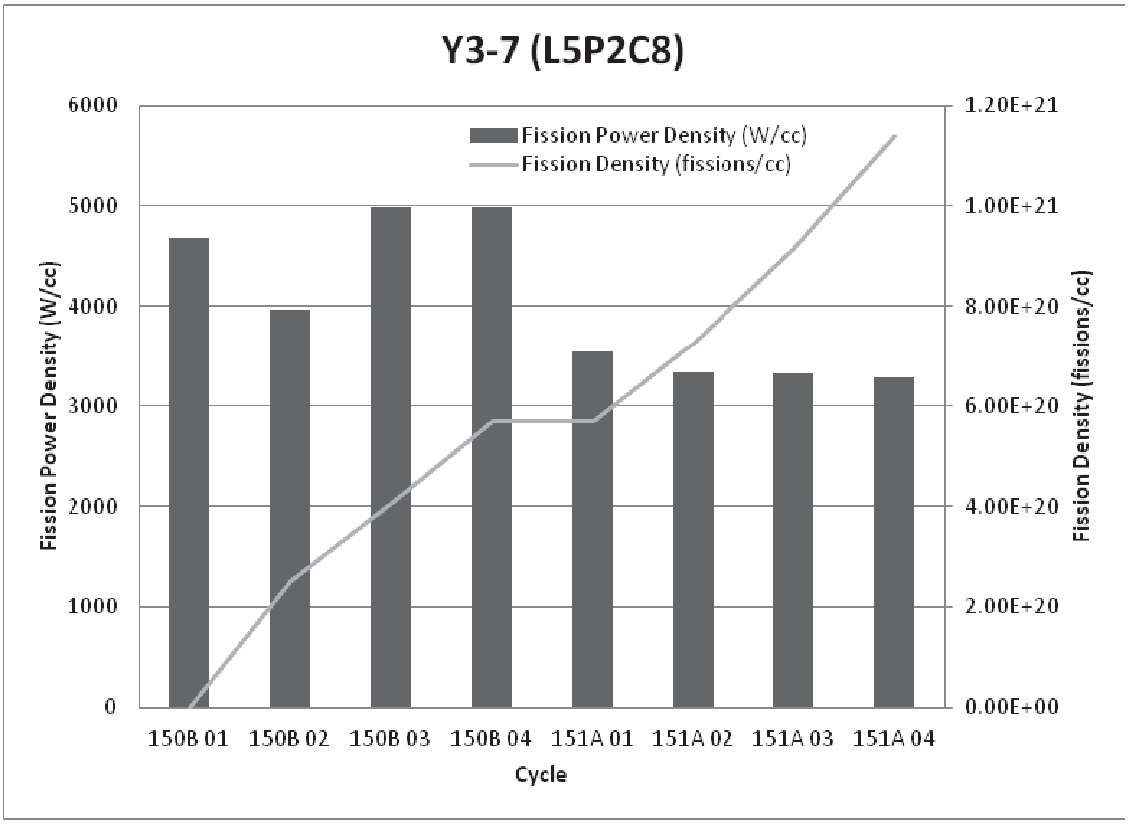


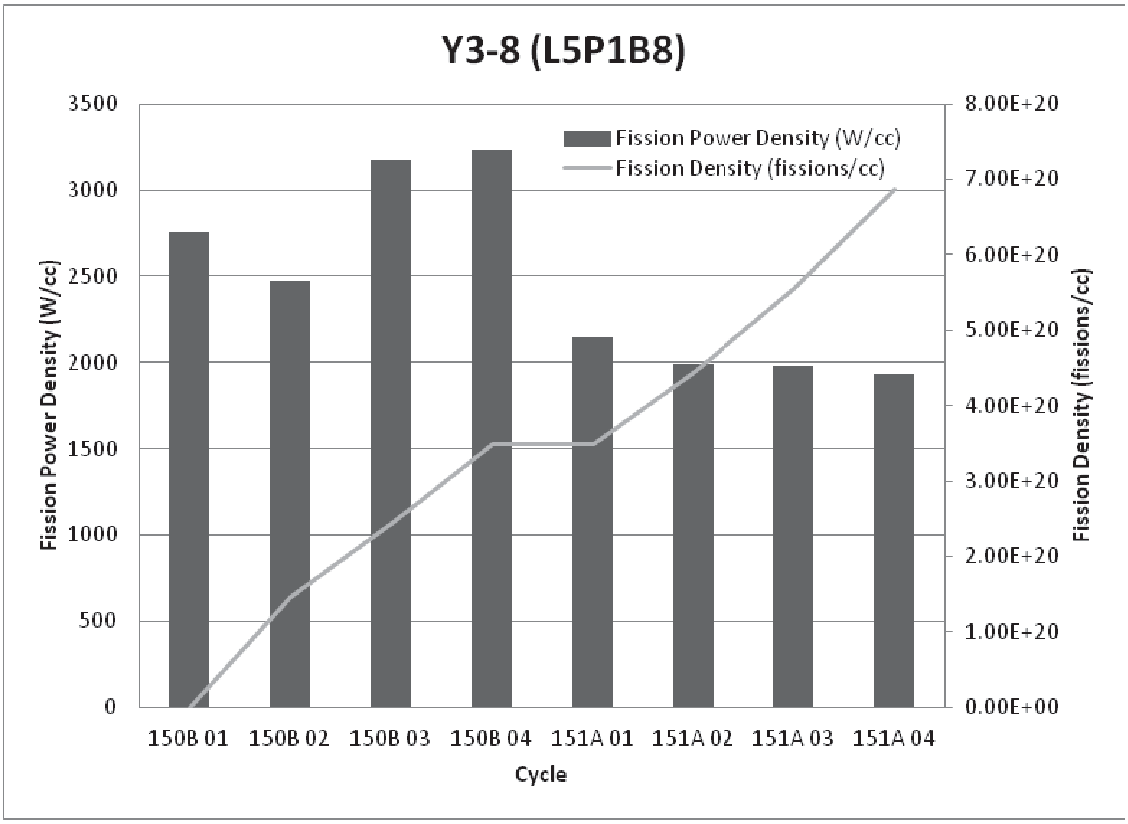

Y3-3 (L5P2C9)
Fission Power Density (W/cc)
Fission Density (fissions/cc)
Fission Power Density (W/cc)
Fission Density (fissions/cc)
Cycle
6000
5000
4000
3000
2000
1000
0
1.40E+21
1.20E+21
1.00E+21
8.00E+20
6.00E+20
4.00E+20
2.00E+20
0.00E+00
150B 01
150B 02
150B 03
150B 04
151A 01
151A 02
151A 03
151A 04


Y3-4 (L5P1A5)
Fission Power Density (W/cc)
Fission Density (fissions/cc)
Fission Power Density (W/cc)
Fission Density (fissions/cc)
Cycle
3500
3000
2500
2000
1500
1000
500
0
8.00E+20
7.00E+20
6.00E+20
5.00E+20
4.00E+20
3.00E+20
2.00E+20
1.00E+20
0.00E+00
150B 01
150B 02
150B 03
150B 04
151A 01
151A 02
151A 03
151A 04


Y3-5 (L5P3B2)
Fission Power Density (W/cc)
Fission Density (fissions/cc)
Fission Power Density (W/cc)
Fission Density (fissions/cc)
12000
10000
8000
6000
4000
2000
0
3.00E+21
2.50E+21
2.00E+21
1.50E+21
1.00E+21
5.00E+20
0.00E+00
150B 01
150B 02
150B 03
150B 04
151A 01
151A 02
151A 03
151A 04
Cycle


Y3-6 (L5P3C1)
Fission Power Density (W/cc)
Fission Density (fissions/cc)
Fission Power Density (W/cc)
Fission Density (fissions/cc)
8000
7000
6000
5000
4000
3000
2000
1000
0
1.80E+21
1.60E+21
1.40E+21
1.20E+21
1.00E+21
8.00E+20
6.00E+20
4.00E+20
2.00E+20
0.00E+00
150B 01
150B 02
150B 03
150B 04
151A 01
151A 02
151A 03
151A 04
Cycle


Y3-7 (L5P2C8)
Fission Power Density (W/cc)
Fission Density (fissions/cc)
Fission Power Density (W/cc)
Fission Density (fissions/cc)
6000
5000
4000
3000
2000
1000
0
1.20E+21
1.00E+21
8.00E+20
6.00E+20
4.00E+20
2.00E+20
0.00E+00
150B 01
150B 02
150B 03
150B 04
151A 01
151A 02
151A 03
151A 04
Cycle


Y3-8 (L5P1B8)
Fission Power Density (W/cc)
Fission Density (fissions/cc)
Fission Power Density (W/cc)
Fission Density (fissions/cc)
3500
3000
2500
2000
1500
1000
500
0
8.00E+20
7.00E+20
6.00E+20
5.00E+20
4.00E+20
3.00E+20
2.00E+20
1.00E+20
0.00E+00
150B 01
150B 02
150B 03
150B 04
151A 01
151A 02
151A 03
151A 04
Cycle

Appendix B
Fission Rate Local to Average Ratio 2D Gradient Maps

Appendix B
Fission Rate Local to Average Ratio 2D Gradient Maps

Table B-1: 2D gradient map of plate A-1 where point (1, 1) is the top west corner of the plate and point (20, 20) is the bottom east corner of the plate.

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
1	1.27	1.13	1.09	1.11	1.08	1.09	1.03	1.01	1.03	1.09	1.00	1.04	1.03	1.07	1.07	1.06	1.09	1.12	1.13	1.25
2	1.15	1.02	0.99	1.00	0.98	0.99	0.94	0.92	0.94	0.99	0.91	0.95	0.94	0.97	0.97	0.96	0.99	1.02	1.03	1.13
3	1.10	0.98	0.95	0.96	0.94	0.95	0.90	0.88	0.90	0.95	0.87	0.91	0.90	0.93	0.93	0.92	0.95	0.97	0.98	1.08
4	1.11	0.98	0.95	0.96	0.94	0.95	0.90	0.88	0.90	0.95	0.88	0.91	0.90	0.93	0.94	0.93	0.95	0.98	0.99	1.09
5	1.05	0.94	0.91	0.92	0.90	0.91	0.86	0.84	0.86	0.90	0.83	0.87	0.86	0.89	0.89	0.88	0.91	0.93	0.94	1.03
6	1.06	0.94	0.91	0.92	0.90	0.91	0.86	0.85	0.86	0.91	0.84	0.87	0.86	0.90	0.90	0.89	0.91	0.94	0.94	1.04
7	1.11	0.98	0.95	0.96	0.94	0.95	0.90	0.88	0.90	0.95	0.87	0.91	0.90	0.93	0.93	0.92	0.95	0.98	0.98	1.09
8	1.10	0.98	0.95	0.96	0.94	0.95	0.90	0.88	0.89	0.95	0.87	0.91	0.90	0.93	0.93	0.92	0.95	0.97	0.98	1.08
9	1.13	1.01	0.98	0.99	0.97	0.98	0.92	0.91	0.92	0.97	0.90	0.93	0.92	0.96	0.96	0.95	0.98	1.00	1.01	1.11
10	1.11	0.98	0.95	0.96	0.94	0.95	0.90	0.88	0.90	0.95	0.87	0.91	0.90	0.93	0.93	0.92	0.95	0.97	0.98	1.08
11	1.11	0.98	0.95	0.96	0.94	0.95	0.90	0.88	0.90	0.95	0.88	0.91	0.90	0.93	0.94	0.93	0.95	0.98	0.99	1.09
12	1.10	0.98	0.95	0.96	0.94	0.95	0.90	0.88	0.90	0.95	0.87	0.91	0.90	0.93	0.93	0.92	0.95	0.97	0.98	1.08
13	1.12	1.00	0.97	0.98	0.96	0.97	0.91	0.90	0.91	0.96	0.89	0.92	0.91	0.95	0.95	0.94	0.97	0.99	1.00	1.10
14	1.16	1.03	0.99	1.01	0.98	1.00	0.94	0.92	0.94	0.99	0.91	0.95	0.94	0.98	0.98	0.97	0.99	1.02	1.03	1.14
15	1.14	1.01	0.98	0.99	0.97	0.98	0.93	0.91	0.93	0.98	0.90	0.94	0.93	0.96	0.96	0.95	0.98	1.01	1.02	1.12
16	1.21	1.08	1.04	1.06	1.03	1.04	0.99	0.97	0.98	1.04	0.96	1.00	0.99	1.02	1.02	1.01	1.04	1.07	1.08	1.19
17	1.22	1.09	1.05	1.07	1.04	1.05	1.00	0.98	0.99	1.05	0.97	1.01	1.00	1.03	1.03	1.02	1.05	1.08	1.09	1.20
18	1.23	1.10	1.06	1.07	1.05	1.06	1.00	0.98	1.00	1.06	0.98	1.01	1.00	1.04	1.04	1.03	1.06	1.09	1.10	1.21
19	1.33	1.18	1.15	1.16	1.14	1.15	1.09	1.06	1.08	1.14	1.05	1.10	1.09	1.13	1.13	1.11	1.15	1.18	1.19	1.31
20	1.45	1.29	1.25	1.26	1.24	1.25	1.18	1.16	1.18	1.25	1.15	1.19	1.18	1.23	1.23	1.21	1.25	1.28	1.29	1.43

Table B-2: 2D gradient map of plate A-2 where point (1, 1) is the top west corner of the plate and point (20, 20) is the bottom east corner of the plate.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	1.73	1.44	1.32	1.19	1.15	1.07	1.06	1.08	1.11	1.00	1.06	1.02	1.01	1.06	1.12	1.14	1.20	1.30	1.34	1.59
2	1.41	1.17	1.08	0.97	0.94	0.87	0.87	0.88	0.90	0.82	0.87	0.83	0.83	0.86	0.92	0.93	0.97	1.06	1.09	1.30
3	1.35	1.12	1.03	0.93	0.90	0.84	0.83	0.84	0.86	0.78	0.83	0.79	0.79	0.82	0.88	0.89	0.93	1.01	1.04	1.24
4	1.30	1.08	0.99	0.90	0.87	0.81	0.80	0.82	0.83	0.75	0.80	0.77	0.76	0.80	0.85	0.86	0.90	0.98	1.01	1.20
5	1.26	1.05	0.96	0.87	0.84	0.78	0.78	0.79	0.81	0.73	0.77	0.74	0.74	0.77	0.82	0.83	0.87	0.95	0.97	1.16
6	1.32	1.10	1.01	0.91	0.88	0.82	0.81	0.83	0.84	0.76	0.81	0.78	0.77	0.81	0.86	0.87	0.91	0.99	1.02	1.21
7	1.37	1.14	1.04	0.94	0.91	0.85	0.84	0.86	0.87	0.79	0.84	0.81	0.80	0.84	0.89	0.90	0.95	1.03	1.06	1.26
8	1.35	1.12	1.02	0.92	0.90	0.83	0.83	0.84	0.86	0.78	0.82	0.79	0.79	0.82	0.87	0.88	0.93	1.01	1.04	1.24
9	1.36	1.13	1.04	0.94	0.91	0.84	0.84	0.85	0.87	0.79	0.84	0.80	0.80	0.83	0.88	0.89	0.94	1.02	1.05	1.25
10	1.33	1.10	1.01	0.91	0.88	0.82	0.81	0.83	0.85	0.77	0.81	0.78	0.78	0.81	0.86	0.87	0.92	1.00	1.02	1.22
11	1.39	1.15	1.06	0.95	0.92	0.86	0.85	0.87	0.89	0.80	0.85	0.82	0.81	0.85	0.90	0.91	0.96	1.04	1.07	1.27
12	1.33	1.11	1.02	0.92	0.89	0.83	0.82	0.83	0.85	0.77	0.82	0.79	0.78	0.81	0.86	0.87	0.92	1.00	1.03	1.23
13	1.34	1.11	1.02	0.92	0.89	0.83	0.82	0.83	0.85	0.77	0.82	0.79	0.78	0.81	0.87	0.88	0.92	1.00	1.03	1.23
14	1.41	1.17	1.07	0.97	0.94	0.87	0.87	0.88	0.90	0.82	0.86	0.83	0.83	0.86	0.91	0.93	0.97	1.06	1.09	1.30
15	1.47	1.22	1.12	1.01	0.98	0.91	0.90	0.92	0.94	0.85	0.90	0.86	0.86	0.89	0.95	0.96	1.01	1.10	1.13	1.35
16	1.45	1.21	1.11	1.00	0.97	0.90	0.89	0.91	0.93	0.84	0.89	0.86	0.85	0.89	0.94	0.95	1.00	1.09	1.12	1.33
17	1.50	1.25	1.14	1.03	1.00	0.93	0.92	0.94	0.96	0.87	0.92	0.88	0.88	0.92	0.97	0.99	1.04	1.13	1.16	1.38
18	1.56	1.30	1.19	1.07	1.04	0.97	0.96	0.98	1.00	0.90	0.96	0.92	0.91	0.95	1.01	1.02	1.08	1.17	1.20	1.43
19	1.63	1.36	1.24	1.12	1.09	1.01	1.00	1.02	1.04	0.95	1.00	0.96	0.96	1.00	1.06	1.07	1.13	1.23	1.26	1.50
20	2.00	1.66	1.52	1.37	1.33	1.24	1.23	1.25	1.28	1.16	1.23	1.18	1.17	1.22	1.30	1.31	1.38	1.51	1.54	1.84

Table B-3: 2D gradient map of plate A-3 where point (1, 1) is the top west corner of the plate and point (20, 20) is the bottom east corner of the plate.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	1.83	1.49	1.38	1.20	1.09	1.08	1.06	1.02	1.01	1.02	0.96	0.99	1.01	1.05	1.07	1.13	1.18	1.30	1.41	1.70
2	1.51	1.23	1.13	0.98	0.89	0.88	0.87	0.84	0.83	0.84	0.79	0.81	0.83	0.86	0.88	0.93	0.97	1.07	1.16	1.40
3	1.47	1.20	1.11	0.96	0.88	0.86	0.85	0.82	0.82	0.82	0.77	0.79	0.81	0.84	0.86	0.91	0.95	1.05	1.13	1.37
4	1.36	1.11	1.03	0.89	0.81	0.80	0.79	0.76	0.76	0.76	0.71	0.73	0.75	0.78	0.80	0.84	0.88	0.97	1.05	1.27
5	1.32	1.08	0.99	0.86	0.78	0.77	0.76	0.73	0.73	0.74	0.69	0.71	0.73	0.76	0.77	0.82	0.85	0.94	1.02	1.22
6	1.47	1.20	1.11	0.96	0.87	0.86	0.85	0.82	0.81	0.82	0.77	0.79	0.81	0.84	0.86	0.91	0.95	1.04	1.13	1.36
7	1.44	1.17	1.08	0.94	0.85	0.84	0.83	0.80	0.80	0.80	0.75	0.77	0.79	0.82	0.84	0.89	0.92	1.02	1.11	1.33
8	1.36	1.11	1.03	0.89	0.81	0.80	0.79	0.76	0.75	0.76	0.71	0.73	0.75	0.78	0.80	0.84	0.88	0.97	1.05	1.26
9	1.39	1.14	1.05	0.91	0.83	0.82	0.81	0.78	0.77	0.78	0.73	0.75	0.77	0.80	0.81	0.86	0.90	0.99	1.07	1.29
10	1.46	1.19	1.10	0.95	0.87	0.86	0.85	0.81	0.81	0.82	0.77	0.79	0.81	0.84	0.85	0.90	0.94	1.04	1.13	1.36
11	1.39	1.13	1.04	0.90	0.82	0.81	0.80	0.77	0.77	0.77	0.73	0.75	0.76	0.79	0.81	0.86	0.89	0.99	1.07	1.29
12	1.48	1.21	1.11	0.97	0.88	0.87	0.86	0.82	0.82	0.83	0.77	0.80	0.81	0.85	0.86	0.92	0.95	1.05	1.14	1.37
13	1.53	1.25	1.15	1.00	0.91	0.90	0.88	0.85	0.85	0.85	0.80	0.82	0.84	0.88	0.89	0.95	0.98	1.09	1.18	1.42
14	1.45	1.18	1.09	0.94	0.86	0.85	0.84	0.81	0.80	0.81	0.76	0.78	0.80	0.83	0.85	0.90	0.93	1.03	1.11	1.34
15	1.49	1.21	1.12	0.97	0.89	0.88	0.86	0.83	0.82	0.83	0.78	0.80	0.82	0.85	0.87	0.92	0.96	1.06	1.15	1.38
16	1.46	1.19	1.10	0.95	0.87	0.86	0.84	0.81	0.81	0.81	0.76	0.78	0.80	0.83	0.85	0.90	0.94	1.04	1.12	1.35
17	1.53	1.24	1.15	1.00	0.91	0.90	0.88	0.85	0.85	0.85	0.80	0.82	0.84	0.88	0.89	0.94	0.98	1.09	1.18	1.42
18	1.61	1.31	1.21	1.05	0.96	0.94	0.93	0.90	0.89	0.90	0.84	0.87	0.89	0.92	0.94	0.99	1.03	1.14	1.24	1.49
19	1.79	1.46	1.35	1.17	1.06	1.05	1.03	1.00	0.99	1.00	0.94	0.96	0.98	1.02	1.04	1.11	1.15	1.27	1.38	1.66
20	2.23	1.82	1.68	1.45	1.32	1.31	1.29	1.24	1.23	1.24	1.17	1.20	1.23	1.28	1.30	1.38	1.43	1.58	1.72	2.07

Table B-4: 2D gradient map of plate A-4 where point (1, 1) is the top west corner of the plate and point (20, 20) is the bottom east corner of the plate.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	1.58	1.30	1.23	1.20	1.21	1.07	1.07	1.07	0.97	1.01	1.00	0.97	1.03	1.13	1.09	1.08	1.20	1.24	1.35	1.57
2	1.39	1.14	1.08	1.06	1.06	0.94	0.94	0.94	0.86	0.89	0.88	0.86	0.91	1.00	0.96	0.95	1.05	1.09	1.19	1.38
3	1.26	1.03	0.98	0.96	0.96	0.85	0.85	0.85	0.77	0.80	0.79	0.77	0.82	0.90	0.86	0.86	0.95	0.99	1.07	1.25
4	1.28	1.05	0.99	0.97	0.98	0.87	0.86	0.86	0.79	0.82	0.81	0.79	0.84	0.92	0.88	0.87	0.97	1.00	1.09	1.27
5	1.27	1.04	0.99	0.97	0.97	0.86	0.86	0.86	0.78	0.81	0.80	0.78	0.83	0.91	0.88	0.87	0.96	1.00	1.09	1.26
6	1.24	1.02	0.97	0.95	0.95	0.84	0.84	0.84	0.77	0.80	0.79	0.77	0.81	0.89	0.86	0.85	0.94	0.98	1.06	1.24
7	1.21	0.99	0.94	0.92	0.93	0.82	0.82	0.82	0.75	0.77	0.76	0.75	0.79	0.87	0.83	0.83	0.92	0.95	1.03	1.20
8	1.30	1.07	1.02	1.00	1.00	0.88	0.88	0.88	0.80	0.83	0.82	0.80	0.85	0.94	0.90	0.89	0.99	1.03	1.11	1.30
9	1.24	1.02	0.97	0.95	0.95	0.84	0.84	0.84	0.77	0.80	0.78	0.77	0.81	0.89	0.86	0.85	0.94	0.98	1.06	1.23
10	1.27	1.05	0.99	0.97	0.98	0.86	0.86	0.86	0.79	0.81	0.80	0.79	0.83	0.91	0.88	0.87	0.97	1.00	1.09	1.27
11	1.32	1.08	1.03	1.01	1.01	0.90	0.89	0.89	0.81	0.85	0.83	0.81	0.87	0.95	0.91	0.90	1.00	1.04	1.13	1.31
12	1.26	1.04	0.98	0.96	0.97	0.86	0.85	0.85	0.78	0.81	0.80	0.78	0.83	0.91	0.87	0.86	0.96	0.99	1.08	1.25
13	1.32	1.08	1.03	1.01	1.01	0.89	0.89	0.89	0.81	0.84	0.83	0.81	0.86	0.95	0.91	0.90	1.00	1.04	1.13	1.31
14	1.30	1.07	1.01	0.99	1.00	0.88	0.88	0.88	0.80	0.83	0.82	0.80	0.85	0.93	0.89	0.89	0.99	1.02	1.11	1.29
15	1.22	1.00	0.95	0.93	0.94	0.83	0.83	0.83	0.75	0.78	0.77	0.75	0.80	0.88	0.84	0.83	0.93	0.96	1.04	1.21
16	1.30	1.07	1.01	0.99	0.99	0.88	0.88	0.88	0.80	0.83	0.82	0.80	0.85	0.93	0.89	0.89	0.98	1.02	1.11	1.29
17	1.47	1.21	1.14	1.12	1.13	1.00	0.99	0.99	0.91	0.94	0.93	0.91	0.96	1.05	1.01	1.00	1.11	1.16	1.26	1.46
18	1.37	1.13	1.07	1.05	1.05	0.93	0.93	0.93	0.85	0.88	0.87	0.85	0.90	0.98	0.94	0.94	1.04	1.08	1.17	1.36
19	1.62	1.33	1.26	1.24	1.24	1.10	1.10	1.10	1.00	1.04	1.02	1.00	1.06	1.16	1.12	1.11	1.23	1.28	1.39	1.61
20	1.80	1.48	1.40	1.37	1.38	1.22	1.22	1.22	1.11	1.15	1.13	1.11	1.18	1.29	1.24	1.23	1.36	1.42	1.54	1.79

Table B-5: 2D gradient map of plate A-5 where point (1, 1) is the top west corner of the plate and point (20, 20) is the bottom east corner of the plate.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	1.22	1.14	1.12	1.05	1.04	1.07	1.08	1.05	1.05	1.03	1.02	1.04	1.00	1.00	1.05	1.07	1.05	1.07	1.12	1.23
2	1.11	1.04	1.02	0.96	0.94	0.98	0.98	0.95	0.96	0.94	0.93	0.94	0.91	0.91	0.96	0.97	0.96	0.98	1.02	1.12
3	1.05	0.98	0.96	0.91	0.89	0.92	0.93	0.90	0.91	0.89	0.88	0.89	0.86	0.86	0.91	0.92	0.90	0.92	0.96	1.06
4	1.01	0.95	0.93	0.88	0.86	0.89	0.90	0.87	0.88	0.86	0.85	0.86	0.83	0.83	0.88	0.89	0.87	0.89	0.93	1.02
5	1.02	0.96	0.94	0.88	0.87	0.90	0.90	0.88	0.88	0.87	0.86	0.87	0.84	0.84	0.88	0.89	0.88	0.90	0.94	1.03
6	1.09	1.02	1.01	0.94	0.93	0.96	0.97	0.94	0.94	0.93	0.92	0.93	0.90	0.90	0.95	0.96	0.94	0.96	1.00	1.10
7	1.11	1.04	1.02	0.96	0.95	0.98	0.98	0.95	0.96	0.94	0.93	0.95	0.91	0.91	0.96	0.97	0.96	0.98	1.02	1.12
8	1.05	0.99	0.97	0.91	0.90	0.93	0.93	0.91	0.91	0.89	0.88	0.90	0.87	0.86	0.91	0.92	0.91	0.93	0.97	1.06
9	1.09	1.02	1.00	0.94	0.93	0.96	0.96	0.94	0.94	0.93	0.91	0.93	0.90	0.89	0.94	0.96	0.94	0.96	1.00	1.10
10	1.08	1.02	1.00	0.94	0.92	0.96	0.96	0.93	0.94	0.92	0.91	0.92	0.89	0.89	0.94	0.95	0.93	0.96	1.00	1.09
11	1.12	1.05	1.03	0.97	0.96	0.99	0.99	0.97	0.97	0.95	0.94	0.96	0.92	0.92	0.97	0.98	0.97	0.99	1.03	1.13
12	1.12	1.05	1.03	0.97	0.95	0.99	0.99	0.96	0.97	0.95	0.94	0.96	0.92	0.92	0.97	0.98	0.97	0.99	1.03	1.13
13	1.11	1.04	1.02	0.96	0.94	0.98	0.98	0.95	0.96	0.94	0.93	0.95	0.91	0.91	0.96	0.97	0.96	0.98	1.02	1.12
14	1.11	1.04	1.02	0.96	0.95	0.98	0.98	0.96	0.96	0.94	0.93	0.95	0.91	0.91	0.96	0.97	0.96	0.98	1.02	1.12
15	1.10	1.03	1.01	0.95	0.94	0.97	0.97	0.95	0.95	0.94	0.92	0.94	0.91	0.90	0.95	0.97	0.95	0.97	1.01	1.11
16	1.18	1.11	1.09	1.02	1.01	1.05	1.05	1.02	1.02	1.01	0.99	1.01	0.97	0.97	1.03	1.04	1.02	1.04	1.09	1.19
17	1.19	1.11	1.09	1.03	1.01	1.05	1.05	1.02	1.03	1.01	1.00	1.01	0.98	0.97	1.03	1.04	1.03	1.05	1.09	1.20
18	1.22	1.14	1.12	1.06	1.04	1.08	1.08	1.05	1.06	1.04	1.02	1.04	1.00	1.00	1.06	1.07	1.05	1.08	1.12	1.23
19	1.23	1.15	1.13	1.06	1.04	1.08	1.08	1.06	1.06	1.04	1.03	1.04	1.01	1.00	1.06	1.07	1.06	1.08	1.13	1.23
20	1.43	1.34	1.32	1.24	1.22	1.26	1.26	1.23	1.24	1.22	1.20	1.22	1.18	1.17	1.24	1.25	1.23	1.26	1.31	1.44

Table B-6: 2D gradient map of plate A-6 where point (1, 1) is the top west corner of the plate and point (20, 20) is the bottom east corner of the plate.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	1.65	1.39	1.27	1.16	1.09	1.12	1.10	1.02	1.01	1.00	1.04	1.03	1.01	1.03	1.07	1.12	1.15	1.25	1.34	1.64
2	1.41	1.19	1.08	0.99	0.93	0.96	0.94	0.87	0.86	0.86	0.89	0.88	0.86	0.88	0.92	0.95	0.99	1.07	1.14	1.40
3	1.34	1.13	1.03	0.94	0.88	0.91	0.89	0.82	0.82	0.81	0.84	0.84	0.82	0.83	0.87	0.90	0.94	1.02	1.08	1.33
4	1.25	1.05	0.96	0.88	0.83	0.85	0.83	0.77	0.77	0.76	0.79	0.78	0.77	0.78	0.81	0.85	0.88	0.95	1.01	1.25
5	1.26	1.07	0.97	0.89	0.83	0.86	0.84	0.78	0.77	0.77	0.80	0.79	0.77	0.79	0.82	0.85	0.88	0.96	1.02	1.26
6	1.28	1.08	0.99	0.90	0.85	0.87	0.85	0.79	0.79	0.78	0.81	0.80	0.79	0.80	0.83	0.87	0.90	0.98	1.04	1.28
7	1.32	1.12	1.02	0.93	0.87	0.90	0.88	0.82	0.81	0.81	0.83	0.83	0.81	0.82	0.86	0.89	0.93	1.01	1.07	1.32
8	1.27	1.07	0.98	0.89	0.84	0.87	0.84	0.78	0.78	0.77	0.80	0.80	0.78	0.79	0.83	0.86	0.89	0.97	1.03	1.27
9	1.31	1.11	1.01	0.92	0.87	0.89	0.87	0.81	0.80	0.80	0.83	0.82	0.80	0.81	0.85	0.89	0.92	1.00	1.06	1.31
10	1.29	1.09	0.99	0.90	0.85	0.88	0.86	0.79	0.79	0.78	0.81	0.81	0.79	0.80	0.84	0.87	0.90	0.98	1.04	1.29
11	1.31	1.11	1.01	0.92	0.87	0.90	0.87	0.81	0.81	0.80	0.83	0.82	0.80	0.82	0.85	0.89	0.92	1.00	1.06	1.31
12	1.36	1.15	1.05	0.96	0.90	0.93	0.91	0.84	0.84	0.83	0.86	0.86	0.84	0.85	0.89	0.92	0.96	1.04	1.11	1.36
13	1.39	1.17	1.07	0.97	0.92	0.94	0.92	0.86	0.85	0.84	0.87	0.87	0.85	0.86	0.90	0.94	0.97	1.05	1.12	1.38
14	1.32	1.12	1.02	0.93	0.87	0.90	0.88	0.82	0.81	0.81	0.83	0.83	0.81	0.82	0.86	0.89	0.93	1.00	1.07	1.32
15	1.42	1.20	1.09	1.00	0.94	0.97	0.95	0.88	0.87	0.87	0.90	0.89	0.87	0.89	0.92	0.96	1.00	1.08	1.15	1.42
16	1.43	1.20	1.10	1.00	0.94	0.97	0.95	0.88	0.88	0.87	0.90	0.89	0.87	0.89	0.93	0.97	1.00	1.08	1.16	1.42
17	1.42	1.20	1.09	1.00	0.94	0.97	0.95	0.88	0.87	0.87	0.90	0.89	0.87	0.88	0.92	0.96	1.00	1.08	1.15	1.42
18	1.48	1.25	1.14	1.04	0.98	1.01	0.99	0.91	0.91	0.90	0.93	0.93	0.91	0.92	0.96	1.00	1.04	1.13	1.20	1.48
19	1.56	1.32	1.20	1.09	1.03	1.06	1.04	0.96	0.96	0.95	0.98	0.98	0.95	0.97	1.01	1.06	1.09	1.19	1.26	1.56
20	2.00	1.69	1.54	1.40	1.32	1.36	1.33	1.23	1.23	1.22	1.26	1.25	1.22	1.24	1.30	1.35	1.40	1.52	1.62	1.99

Table B-7: 2D gradient map of plate A-7 where point (1, 1) is the top west corner of the plate and point (20, 20) is the bottom east corner of the plate.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	1.83	1.50	1.39	1.22	1.18	1.12	1.09	1.07	1.03	1.00	0.96	0.97	1.03	1.03	1.04	1.12	1.20	1.32	1.47	1.75
2	1.47	1.21	1.12	0.98	0.95	0.90	0.88	0.86	0.83	0.80	0.77	0.78	0.83	0.83	0.84	0.90	0.97	1.06	1.18	1.40
3	1.44	1.18	1.09	0.96	0.93	0.88	0.86	0.84	0.81	0.79	0.76	0.77	0.81	0.81	0.82	0.88	0.95	1.04	1.16	1.38
4	1.38	1.13	1.05	0.92	0.89	0.85	0.82	0.81	0.78	0.76	0.72	0.73	0.78	0.78	0.78	0.85	0.91	1.00	1.11	1.32
5	1.32	1.08	1.00	0.88	0.85	0.81	0.79	0.77	0.74	0.72	0.69	0.70	0.74	0.75	0.75	0.81	0.87	0.95	1.06	1.26
6	1.41	1.16	1.07	0.94	0.91	0.87	0.84	0.83	0.80	0.77	0.74	0.75	0.80	0.80	0.80	0.87	0.93	1.02	1.14	1.35
7	1.37	1.13	1.04	0.92	0.88	0.84	0.82	0.81	0.77	0.75	0.72	0.73	0.77	0.78	0.78	0.84	0.90	0.99	1.11	1.31
8	1.40	1.15	1.06	0.94	0.90	0.86	0.84	0.82	0.79	0.77	0.73	0.74	0.79	0.79	0.80	0.86	0.92	1.01	1.13	1.34
9	1.37	1.12	1.04	0.92	0.88	0.84	0.82	0.80	0.77	0.75	0.72	0.73	0.77	0.77	0.78	0.84	0.90	0.99	1.10	1.31
10	1.45	1.19	1.10	0.97	0.93	0.89	0.86	0.85	0.82	0.79	0.76	0.77	0.82	0.82	0.82	0.89	0.95	1.05	1.17	1.38
11	1.47	1.20	1.12	0.98	0.95	0.90	0.88	0.86	0.83	0.80	0.77	0.78	0.83	0.83	0.84	0.90	0.97	1.06	1.18	1.40
12	1.45	1.19	1.10	0.97	0.93	0.89	0.87	0.85	0.82	0.79	0.76	0.77	0.82	0.82	0.82	0.89	0.95	1.05	1.17	1.39
13	1.41	1.16	1.07	0.94	0.91	0.86	0.84	0.83	0.80	0.77	0.74	0.75	0.80	0.80	0.80	0.87	0.93	1.02	1.14	1.35
14	1.44	1.18	1.09	0.96	0.92	0.88	0.86	0.84	0.81	0.79	0.75	0.76	0.81	0.81	0.82	0.88	0.94	1.04	1.16	1.37
15	1.42	1.17	1.08	0.95	0.91	0.87	0.85	0.83	0.80	0.78	0.74	0.75	0.80	0.80	0.81	0.87	0.93	1.03	1.14	1.36
16	1.47	1.21	1.12	0.98	0.95	0.90	0.88	0.86	0.83	0.80	0.77	0.78	0.83	0.83	0.84	0.90	0.97	1.06	1.18	1.41
17	1.43	1.17	1.09	0.96	0.92	0.88	0.85	0.84	0.81	0.78	0.75	0.76	0.81	0.81	0.81	0.88	0.94	1.03	1.15	1.37
18	1.57	1.29	1.19	1.05	1.01	0.96	0.94	0.92	0.89	0.86	0.82	0.83	0.89	0.89	0.89	0.96	1.03	1.14	1.27	1.50
19	1.74	1.42	1.32	1.16	1.12	1.06	1.04	1.02	0.98	0.95	0.91	0.92	0.98	0.98	0.99	1.07	1.14	1.25	1.40	1.66
20	2.22	1.82	1.69	1.49	1.43	1.36	1.33	1.30	1.25	1.22	1.17	1.18	1.25	1.26	1.26	1.36	1.46	1.61	1.79	2.12

Table B-8: 2D gradient map of plate A-8 where point (1, 1) is the top west corner of the plate and point (20, 20) is the bottom east corner of the plate.

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
1	1.49	1.29	1.17	1.14	1.08	1.09	1.03	1.04	0.96	0.93	0.88	0.93	0.94	0.99	1.01	1.08	1.09	1.13	1.22	1.50
2	1.38	1.19	1.08	1.06	1.00	1.01	0.95	0.96	0.89	0.86	0.81	0.86	0.87	0.92	0.93	0.99	1.01	1.05	1.13	1.38
3	1.23	1.06	0.96	0.94	0.89	0.90	0.85	0.86	0.79	0.77	0.72	0.77	0.77	0.82	0.83	0.89	0.90	0.93	1.01	1.23
4	1.19	1.03	0.93	0.91	0.86	0.87	0.82	0.83	0.77	0.74	0.70	0.74	0.75	0.79	0.81	0.86	0.87	0.90	0.98	1.19
5	1.28	1.11	1.00	0.98	0.93	0.93	0.88	0.89	0.82	0.80	0.75	0.80	0.80	0.85	0.87	0.92	0.94	0.97	1.05	1.28
6	1.18	1.02	0.92	0.90	0.85	0.86	0.81	0.82	0.76	0.74	0.69	0.73	0.74	0.78	0.80	0.85	0.86	0.89	0.96	1.18
7	1.21	1.05	0.95	0.93	0.88	0.89	0.84	0.85	0.78	0.76	0.72	0.76	0.76	0.81	0.82	0.88	0.89	0.92	1.00	1.22
8	1.25	1.08	0.98	0.96	0.91	0.91	0.86	0.87	0.80	0.78	0.74	0.78	0.78	0.83	0.85	0.90	0.92	0.95	1.02	1.25
9	1.29	1.12	1.01	0.99	0.94	0.94	0.89	0.90	0.83	0.81	0.76	0.80	0.81	0.86	0.87	0.93	0.94	0.98	1.06	1.29
10	1.31	1.14	1.03	1.00	0.95	0.96	0.90	0.92	0.84	0.82	0.77	0.82	0.82	0.87	0.89	0.95	0.96	1.00	1.08	1.32
11	1.29	1.12	1.01	0.99	0.94	0.94	0.89	0.90	0.83	0.81	0.76	0.81	0.81	0.86	0.88	0.93	0.95	0.98	1.06	1.30
12	1.30	1.13	1.02	1.00	0.94	0.95	0.90	0.91	0.84	0.81	0.77	0.81	0.82	0.87	0.88	0.94	0.95	0.99	1.07	1.31
13	1.32	1.14	1.03	1.01	0.96	0.96	0.91	0.92	0.85	0.82	0.78	0.82	0.83	0.88	0.89	0.95	0.96	1.00	1.08	1.32
14	1.39	1.21	1.09	1.07	1.01	1.02	0.96	0.97	0.90	0.87	0.82	0.87	0.87	0.93	0.94	1.00	1.02	1.06	1.14	1.40
15	1.31	1.13	1.02	1.00	0.95	0.95	0.90	0.91	0.84	0.82	0.77	0.81	0.82	0.87	0.88	0.94	0.96	0.99	1.07	1.31
16	1.36	1.18	1.06	1.04	0.99	0.99	0.93	0.95	0.87	0.85	0.80	0.85	0.85	0.90	0.92	0.98	0.99	1.03	1.11	1.36
17	1.44	1.24	1.13	1.10	1.04	1.05	0.99	1.00	0.93	0.90	0.85	0.90	0.90	0.96	0.97	1.04	1.05	1.09	1.18	1.44
18	1.44	1.24	1.12	1.10	1.04	1.05	0.99	1.00	0.92	0.90	0.85	0.89	0.90	0.96	0.97	1.04	1.05	1.09	1.18	1.44
19	1.56	1.35	1.22	1.19	1.13	1.14	1.07	1.09	1.00	0.98	0.92	0.97	0.98	1.04	1.06	1.12	1.14	1.18	1.28	1.57
20	1.92	1.66	1.50	1.47	1.39	1.40	1.32	1.34	1.23	1.20	1.13	1.19	1.20	1.28	1.30	1.38	1.40	1.46	1.57	1.92

Table B-9: 2D gradient map of plate B-1 where point (1, 1) is the top west corner of the plate and point (20, 20) is the bottom east corner of the plate.

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
1	1.42	1.26	1.21	1.17	1.16	1.14	1.15	1.12	1.15	1.10	1.09	1.12	1.12	1.11	1.10	1.13	1.15	1.16	1.23	1.40
2	1.21	1.07	1.04	1.00	1.00	0.97	0.98	0.96	0.98	0.94	0.93	0.96	0.96	0.95	0.94	0.97	0.99	0.99	1.05	1.20
3	1.18	1.05	1.01	0.97	0.97	0.95	0.95	0.93	0.95	0.92	0.90	0.93	0.93	0.92	0.91	0.94	0.96	0.96	1.02	1.17
4	1.16	1.03	0.99	0.96	0.95	0.93	0.94	0.92	0.94	0.90	0.89	0.92	0.92	0.91	0.90	0.93	0.95	0.95	1.01	1.15
5	1.16	1.03	0.99	0.96	0.95	0.93	0.94	0.92	0.94	0.90	0.89	0.92	0.92	0.90	0.90	0.93	0.94	0.95	1.01	1.15
6	1.18	1.05	1.01	0.97	0.97	0.95	0.95	0.93	0.95	0.92	0.90	0.93	0.93	0.92	0.91	0.94	0.96	0.96	1.02	1.17
7	1.15	1.02	0.98	0.95	0.94	0.92	0.93	0.91	0.93	0.89	0.88	0.90	0.90	0.89	0.89	0.92	0.93	0.94	0.99	1.14
8	1.15	1.02	0.98	0.95	0.94	0.92	0.93	0.91	0.93	0.89	0.88	0.91	0.91	0.90	0.89	0.92	0.94	0.94	1.00	1.14
9	1.14	1.01	0.98	0.94	0.94	0.92	0.92	0.90	0.92	0.88	0.87	0.90	0.90	0.89	0.88	0.91	0.93	0.93	0.99	1.13
10	1.15	1.02	0.98	0.95	0.94	0.92	0.93	0.91	0.93	0.89	0.88	0.90	0.90	0.89	0.89	0.91	0.93	0.93	0.99	1.14
11	1.16	1.02	0.99	0.95	0.95	0.93	0.93	0.91	0.93	0.90	0.88	0.91	0.91	0.90	0.89	0.92	0.94	0.94	1.00	1.14
12	1.21	1.07	1.03	1.00	0.99	0.97	0.98	0.96	0.98	0.94	0.92	0.95	0.95	0.94	0.93	0.96	0.98	0.99	1.05	1.20
13	1.16	1.03	0.99	0.96	0.95	0.93	0.94	0.92	0.94	0.90	0.89	0.91	0.91	0.90	0.90	0.93	0.94	0.95	1.01	1.15
14	1.20	1.06	1.03	0.99	0.99	0.96	0.97	0.95	0.97	0.93	0.92	0.95	0.95	0.94	0.93	0.96	0.98	0.98	1.04	1.19
15	1.22	1.08	1.04	1.00	1.00	0.98	0.98	0.96	0.98	0.94	0.93	0.96	0.96	0.95	0.94	0.97	0.99	0.99	1.05	1.20
16	1.18	1.04	1.01	0.97	0.96	0.94	0.95	0.93	0.95	0.91	0.90	0.93	0.93	0.92	0.91	0.94	0.96	0.96	1.02	1.16
17	1.21	1.07	1.04	1.00	1.00	0.98	0.98	0.96	0.98	0.94	0.93	0.96	0.96	0.95	0.94	0.97	0.99	0.99	1.05	1.20
18	1.23	1.08	1.05	1.01	1.01	0.98	0.99	0.97	0.99	0.95	0.94	0.97	0.97	0.95	0.95	0.98	1.00	1.00	1.06	1.21
19	1.31	1.16	1.12	1.08	1.07	1.05	1.06	1.03	1.06	1.01	1.00	1.03	1.03	1.02	1.01	1.04	1.06	1.07	1.13	1.30
20	1.41	1.25	1.20	1.16	1.15	1.13	1.14	1.11	1.14	1.09	1.08	1.11	1.11	1.10	1.09	1.12	1.15	1.15	1.22	1.39

Table B-10: 2D gradient map of plate B-2 where point (1, 1) is the top west corner of the plate and point (20, 20) is the bottom east corner of the plate.

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
1	1.76	1.48	1.36	1.29	1.17	1.15	1.11	1.12	1.15	1.10	1.10	1.09	1.12	1.16	1.13	1.16	1.23	1.37	1.39	1.73
2	1.45	1.22	1.12	1.06	0.96	0.95	0.91	0.93	0.94	0.91	0.90	0.89	0.92	0.95	0.93	0.95	1.01	1.13	1.15	1.42
3	1.34	1.13	1.04	0.98	0.89	0.88	0.85	0.86	0.88	0.84	0.84	0.83	0.86	0.88	0.87	0.89	0.94	1.04	1.06	1.32
4	1.35	1.13	1.04	0.99	0.89	0.88	0.85	0.86	0.88	0.85	0.84	0.83	0.86	0.89	0.87	0.89	0.94	1.05	1.07	1.32
5	1.26	1.06	0.98	0.93	0.84	0.83	0.80	0.81	0.82	0.79	0.79	0.78	0.81	0.83	0.81	0.83	0.89	0.98	1.00	1.24
6	1.30	1.09	1.01	0.95	0.86	0.85	0.82	0.83	0.85	0.82	0.81	0.80	0.83	0.85	0.84	0.86	0.91	1.01	1.03	1.28
7	1.31	1.10	1.02	0.96	0.87	0.86	0.83	0.84	0.85	0.82	0.82	0.81	0.84	0.86	0.84	0.86	0.92	1.02	1.04	1.29
8	1.30	1.09	1.01	0.95	0.86	0.85	0.82	0.83	0.85	0.82	0.81	0.80	0.83	0.85	0.84	0.85	0.91	1.01	1.03	1.27
9	1.29	1.08	1.00	0.94	0.85	0.84	0.81	0.82	0.84	0.81	0.80	0.79	0.82	0.85	0.83	0.85	0.90	1.00	1.02	1.26
10	1.34	1.13	1.04	0.98	0.89	0.88	0.84	0.86	0.87	0.84	0.83	0.83	0.85	0.88	0.86	0.88	0.94	1.04	1.06	1.31
11	1.32	1.11	1.03	0.97	0.88	0.87	0.84	0.85	0.86	0.83	0.83	0.82	0.84	0.87	0.85	0.87	0.93	1.03	1.05	1.30
12	1.32	1.11	1.02	0.96	0.87	0.86	0.83	0.84	0.86	0.83	0.82	0.81	0.84	0.87	0.85	0.87	0.92	1.02	1.04	1.29
13	1.33	1.12	1.03	0.97	0.88	0.87	0.84	0.85	0.87	0.84	0.83	0.82	0.85	0.87	0.86	0.88	0.93	1.03	1.05	1.31
14	1.39	1.16	1.07	1.01	0.92	0.91	0.87	0.89	0.90	0.87	0.86	0.86	0.88	0.91	0.89	0.91	0.97	1.08	1.10	1.36
15	1.34	1.13	1.04	0.98	0.89	0.88	0.85	0.86	0.88	0.84	0.84	0.83	0.86	0.88	0.87	0.89	0.94	1.05	1.07	1.32
16	1.41	1.18	1.09	1.03	0.93	0.92	0.89	0.90	0.92	0.88	0.88	0.87	0.90	0.93	0.91	0.93	0.99	1.09	1.12	1.38
17	1.41	1.19	1.09	1.03	0.94	0.92	0.89	0.90	0.92	0.89	0.88	0.87	0.90	0.93	0.91	0.93	0.99	1.10	1.12	1.39
18	1.45	1.22	1.12	1.06	0.96	0.95	0.91	0.93	0.94	0.91	0.90	0.89	0.92	0.95	0.93	0.95	1.01	1.13	1.15	1.42
19	1.47	1.23	1.14	1.07	0.97	0.96	0.93	0.94	0.96	0.92	0.91	0.90	0.93	0.96	0.94	0.97	1.03	1.14	1.16	1.44
20	1.83	1.54	1.42	1.34	1.21	1.20	1.15	1.17	1.19	1.15	1.14	1.13	1.16	1.20	1.18	1.20	1.28	1.42	1.45	1.80

Table B-11: 2D gradient map of plate B-3 where point (1, 1) is the top west corner of the plate and point (20, 20) is the bottom east corner of the plate.

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
1	1.76	1.55	1.40	1.31	1.16	1.18	1.10	1.13	1.11	1.05	1.04	1.09	1.06	1.15	1.16	1.18	1.29	1.36	1.48	1.74
2	1.46	1.28	1.16	1.08	0.96	0.98	0.91	0.93	0.92	0.87	0.86	0.90	0.88	0.95	0.96	0.98	1.06	1.13	1.22	1.44
3	1.37	1.20	1.09	1.02	0.91	0.92	0.86	0.88	0.86	0.82	0.81	0.85	0.83	0.89	0.90	0.92	1.00	1.06	1.15	1.36
4	1.28	1.12	1.02	0.95	0.85	0.86	0.80	0.82	0.80	0.76	0.75	0.79	0.77	0.83	0.84	0.86	0.93	0.99	1.07	1.26
5	1.27	1.12	1.01	0.94	0.84	0.85	0.79	0.82	0.80	0.76	0.75	0.79	0.77	0.83	0.84	0.86	0.93	0.99	1.07	1.26
6	1.27	1.12	1.01	0.94	0.84	0.85	0.79	0.81	0.80	0.76	0.75	0.79	0.77	0.83	0.84	0.86	0.93	0.98	1.07	1.26
7	1.32	1.16	1.05	0.98	0.87	0.89	0.82	0.85	0.83	0.79	0.78	0.82	0.79	0.86	0.87	0.89	0.96	1.02	1.11	1.30
8	1.37	1.20	1.09	1.02	0.91	0.92	0.86	0.88	0.86	0.82	0.81	0.85	0.82	0.89	0.90	0.92	1.00	1.06	1.15	1.35
9	1.35	1.18	1.07	1.00	0.89	0.90	0.84	0.86	0.85	0.80	0.79	0.83	0.81	0.88	0.88	0.91	0.98	1.04	1.13	1.33
10	1.28	1.12	1.01	0.95	0.84	0.86	0.80	0.82	0.80	0.76	0.75	0.79	0.77	0.83	0.84	0.86	0.93	0.99	1.07	1.26
11	1.33	1.17	1.06	0.99	0.88	0.89	0.83	0.85	0.84	0.79	0.78	0.82	0.80	0.87	0.87	0.90	0.97	1.03	1.12	1.31
12	1.37	1.21	1.09	1.02	0.91	0.92	0.86	0.88	0.86	0.82	0.81	0.85	0.83	0.90	0.90	0.92	1.00	1.06	1.15	1.36
13	1.32	1.16	1.05	0.98	0.87	0.89	0.83	0.85	0.83	0.79	0.78	0.82	0.80	0.86	0.87	0.89	0.97	1.02	1.11	1.31
14	1.29	1.13	1.02	0.95	0.85	0.86	0.80	0.82	0.81	0.77	0.76	0.80	0.77	0.84	0.85	0.87	0.94	1.00	1.08	1.27
15	1.30	1.14	1.03	0.97	0.86	0.87	0.81	0.83	0.82	0.77	0.77	0.80	0.78	0.85	0.86	0.88	0.95	1.01	1.09	1.29
16	1.40	1.23	1.11	1.04	0.92	0.94	0.87	0.90	0.88	0.83	0.82	0.86	0.84	0.91	0.92	0.94	1.02	1.08	1.17	1.38
17	1.40	1.23	1.11	1.04	0.93	0.94	0.88	0.90	0.88	0.83	0.82	0.87	0.84	0.91	0.92	0.94	1.02	1.09	1.18	1.39
18	1.40	1.23	1.11	1.04	0.92	0.94	0.87	0.89	0.88	0.83	0.82	0.86	0.84	0.91	0.92	0.94	1.02	1.08	1.17	1.38
19	1.50	1.31	1.19	1.11	0.99	1.00	0.93	0.96	0.94	0.89	0.88	0.92	0.90	0.98	0.98	1.01	1.09	1.16	1.26	1.48
20	1.83	1.60	1.45	1.35	1.21	1.23	1.14	1.17	1.15	1.09	1.07	1.13	1.10	1.19	1.20	1.23	1.33	1.41	1.53	1.80

Table B-12: 2D gradient map of plate B-4 where point (1, 1) is the top west corner of the plate and point (20, 20) is the bottom east corner of the plate.

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
1	1.65	1.51	1.41	1.27	1.24	1.19	1.15	1.13	1.12	1.12	1.12	1.14	1.17	1.16	1.16	1.22	1.28	1.33	1.44	1.61
2	1.36	1.25	1.17	1.05	1.02	0.99	0.95	0.93	0.93	0.93	0.93	0.94	0.97	0.96	0.96	1.00	1.06	1.10	1.19	1.33
3	1.27	1.16	1.09	0.98	0.95	0.92	0.89	0.87	0.86	0.86	0.86	0.88	0.90	0.89	0.89	0.94	0.99	1.02	1.11	1.24
4	1.23	1.12	1.05	0.95	0.92	0.89	0.86	0.84	0.84	0.83	0.84	0.85	0.87	0.87	0.86	0.91	0.96	0.99	1.07	1.20
5	1.25	1.14	1.07	0.96	0.93	0.90	0.87	0.85	0.85	0.85	0.85	0.86	0.88	0.88	0.88	0.92	0.97	1.00	1.09	1.22
6	1.25	1.14	1.07	0.96	0.93	0.90	0.87	0.85	0.85	0.85	0.85	0.86	0.88	0.88	0.87	0.92	0.97	1.00	1.09	1.22
7	1.18	1.08	1.01	0.91	0.89	0.86	0.83	0.81	0.80	0.80	0.80	0.82	0.84	0.83	0.83	0.87	0.92	0.95	1.03	1.16
8	1.31	1.20	1.12	1.01	0.98	0.95	0.91	0.89	0.89	0.89	0.89	0.90	0.93	0.92	0.92	0.96	1.02	1.05	1.14	1.28
9	1.26	1.15	1.07	0.97	0.94	0.91	0.88	0.86	0.85	0.85	0.85	0.87	0.89	0.88	0.88	0.93	0.98	1.01	1.09	1.23
10	1.22	1.11	1.04	0.94	0.91	0.88	0.85	0.83	0.83	0.83	0.83	0.84	0.86	0.86	0.86	0.90	0.95	0.98	1.06	1.19
11	1.27	1.16	1.09	0.98	0.95	0.92	0.89	0.86	0.86	0.86	0.86	0.88	0.90	0.89	0.89	0.93	0.99	1.02	1.11	1.24
12	1.27	1.16	1.08	0.98	0.95	0.92	0.88	0.86	0.86	0.86	0.86	0.88	0.90	0.89	0.89	0.93	0.99	1.02	1.10	1.24
13	1.27	1.16	1.09	0.98	0.95	0.92	0.89	0.87	0.87	0.86	0.87	0.88	0.90	0.90	0.89	0.94	0.99	1.02	1.11	1.24
14	1.24	1.13	1.06	0.96	0.93	0.90	0.87	0.85	0.84	0.84	0.84	0.86	0.88	0.87	0.87	0.91	0.96	1.00	1.08	1.21
15	1.24	1.13	1.06	0.96	0.93	0.90	0.87	0.85	0.84	0.84	0.84	0.86	0.88	0.87	0.87	0.91	0.96	1.00	1.08	1.21
16	1.25	1.14	1.07	0.96	0.94	0.90	0.87	0.85	0.85	0.85	0.85	0.86	0.88	0.88	0.88	0.92	0.97	1.01	1.09	1.22
17	1.30	1.19	1.11	1.00	0.98	0.94	0.91	0.89	0.89	0.88	0.88	0.90	0.92	0.92	0.91	0.96	1.01	1.05	1.13	1.27
18	1.29	1.18	1.10	0.99	0.97	0.93	0.90	0.88	0.88	0.87	0.88	0.89	0.91	0.91	0.90	0.95	1.00	1.04	1.12	1.26
19	1.36	1.24	1.16	1.05	1.02	0.98	0.95	0.92	0.92	0.92	0.92	0.94	0.96	0.95	0.95	1.00	1.05	1.09	1.18	1.32
20	1.51	1.38	1.29	1.16	1.13	1.09	1.05	1.03	1.03	1.02	1.03	1.04	1.07	1.06	1.06	1.11	1.17	1.21	1.31	1.47

Table B-13: 2D gradient map of plate B-5 where point (1, 1) is the top west corner of the plate and point (20, 20) is the bottom east corner of the plate.

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
1	1.33	1.18	1.12	1.11	1.06	1.11	1.08	1.06	1.05	1.03	1.04	1.04	1.05	1.06	1.07	1.09	1.11	1.12	1.19	1.30
2	1.21	1.08	1.02	1.01	0.96	1.01	0.98	0.97	0.95	0.94	0.95	0.95	0.95	0.97	0.98	0.99	1.01	1.02	1.08	1.19
3	1.20	1.07	1.02	1.00	0.96	1.01	0.98	0.96	0.95	0.94	0.95	0.94	0.95	0.96	0.97	0.99	1.01	1.02	1.08	1.18
4	1.15	1.02	0.97	0.96	0.92	0.96	0.94	0.92	0.91	0.90	0.90	0.90	0.91	0.92	0.93	0.95	0.96	0.97	1.03	1.13
5	1.18	1.05	1.00	0.98	0.94	0.99	0.96	0.94	0.93	0.92	0.93	0.93	0.93	0.95	0.95	0.97	0.99	1.00	1.06	1.16
6	1.14	1.01	0.96	0.95	0.91	0.95	0.93	0.91	0.90	0.89	0.89	0.89	0.90	0.91	0.92	0.94	0.95	0.96	1.02	1.12
7	1.14	1.02	0.96	0.95	0.91	0.96	0.93	0.92	0.90	0.89	0.90	0.90	0.90	0.92	0.92	0.94	0.96	0.97	1.03	1.12
8	1.16	1.03	0.98	0.97	0.92	0.97	0.94	0.93	0.91	0.90	0.91	0.91	0.91	0.93	0.93	0.95	0.97	0.98	1.04	1.14
9	1.11	0.98	0.93	0.92	0.88	0.92	0.90	0.88	0.87	0.86	0.87	0.87	0.87	0.89	0.89	0.91	0.92	0.93	0.99	1.09
10	1.13	1.00	0.95	0.94	0.90	0.94	0.92	0.90	0.89	0.88	0.89	0.88	0.89	0.90	0.91	0.93	0.94	0.95	1.01	1.11
11	1.15	1.02	0.97	0.96	0.92	0.96	0.94	0.92	0.91	0.90	0.90	0.90	0.91	0.92	0.93	0.95	0.96	0.97	1.03	1.13
12	1.20	1.07	1.01	1.00	0.96	1.00	0.98	0.96	0.95	0.94	0.94	0.94	0.95	0.96	0.97	0.99	1.00	1.01	1.08	1.18
13	1.12	1.00	0.95	0.94	0.90	0.94	0.91	0.90	0.89	0.88	0.88	0.88	0.89	0.90	0.91	0.92	0.94	0.95	1.01	1.10
14	1.21	1.07	1.02	1.01	0.96	1.01	0.98	0.97	0.95	0.94	0.95	0.95	0.95	0.97	0.97	0.99	1.01	1.02	1.08	1.19
15	1.17	1.04	0.99	0.98	0.94	0.98	0.95	0.94	0.93	0.91	0.92	0.92	0.92	0.94	0.95	0.97	0.98	0.99	1.05	1.15
16	1.16	1.03	0.98	0.97	0.93	0.97	0.95	0.93	0.92	0.91	0.91	0.91	0.92	0.93	0.94	0.96	0.97	0.98	1.04	1.14
17	1.22	1.09	1.03	1.02	0.98	1.02	1.00	0.98	0.97	0.95	0.96	0.96	0.97	0.98	0.99	1.01	1.02	1.03	1.10	1.20
18	1.21	1.08	1.02	1.01	0.97	1.01	0.99	0.97	0.96	0.94	0.95	0.95	0.96	0.97	0.98	1.00	1.01	1.02	1.09	1.19
19	1.27	1.13	1.07	1.06	1.01	1.06	1.03	1.02	1.00	0.99	1.00	1.00	1.00	1.02	1.02	1.04	1.06	1.07	1.14	1.25
20	1.44	1.29	1.22	1.20	1.15	1.21	1.18	1.16	1.14	1.13	1.14	1.13	1.14	1.16	1.17	1.19	1.21	1.22	1.29	1.42

Table B-14: 2D gradient map of plate B-6 where point (1, 1) is the top west corner of the plate and point (20, 20) is the bottom east corner of the plate.

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
1	1.72	1.48	1.33	1.23	1.23	1.16	1.11	1.14	1.09	1.05	1.06	1.07	1.09	1.14	1.15	1.16	1.28	1.28	1.43	1.77
2	1.41	1.22	1.10	1.01	1.01	0.95	0.92	0.94	0.90	0.86	0.87	0.88	0.90	0.94	0.95	0.95	1.05	1.05	1.18	1.46
3	1.37	1.18	1.07	0.98	0.98	0.93	0.89	0.91	0.87	0.84	0.85	0.85	0.87	0.91	0.92	0.93	1.02	1.02	1.15	1.41
4	1.31	1.13	1.02	0.94	0.93	0.88	0.85	0.87	0.83	0.80	0.81	0.81	0.83	0.87	0.88	0.88	0.97	0.98	1.09	1.35
5	1.33	1.15	1.03	0.95	0.95	0.90	0.86	0.88	0.85	0.81	0.82	0.83	0.85	0.88	0.89	0.90	0.99	0.99	1.11	1.37
6	1.31	1.13	1.02	0.94	0.94	0.88	0.85	0.87	0.83	0.80	0.81	0.81	0.84	0.87	0.88	0.88	0.98	0.98	1.10	1.35
7	1.31	1.12	1.01	0.93	0.93	0.88	0.85	0.87	0.83	0.80	0.81	0.81	0.83	0.86	0.87	0.88	0.97	0.97	1.09	1.34
8	1.27	1.09	0.99	0.91	0.91	0.86	0.82	0.84	0.81	0.78	0.78	0.79	0.81	0.84	0.85	0.86	0.95	0.95	1.06	1.31
9	1.23	1.06	0.96	0.88	0.88	0.83	0.80	0.82	0.78	0.75	0.76	0.77	0.79	0.82	0.83	0.83	0.92	0.92	1.03	1.27
10	1.32	1.14	1.03	0.95	0.95	0.89	0.86	0.88	0.84	0.81	0.82	0.82	0.84	0.88	0.89	0.89	0.99	0.99	1.11	1.36
11	1.30	1.12	1.01	0.93	0.93	0.88	0.84	0.86	0.83	0.79	0.80	0.81	0.83	0.86	0.87	0.88	0.97	0.97	1.09	1.34
12	1.37	1.18	1.06	0.98	0.98	0.92	0.88	0.91	0.87	0.83	0.84	0.85	0.87	0.90	0.91	0.92	1.02	1.02	1.14	1.41
13	1.32	1.14	1.03	0.95	0.95	0.89	0.86	0.88	0.84	0.81	0.82	0.82	0.84	0.88	0.89	0.89	0.99	0.99	1.11	1.36
14	1.27	1.09	0.98	0.91	0.91	0.85	0.82	0.84	0.81	0.77	0.78	0.79	0.81	0.84	0.85	0.85	0.94	0.94	1.06	1.30
15	1.28	1.11	1.00	0.92	0.92	0.87	0.83	0.85	0.82	0.78	0.79	0.80	0.82	0.85	0.86	0.87	0.96	0.96	1.07	1.32
16	1.28	1.10	0.99	0.92	0.91	0.86	0.83	0.85	0.81	0.78	0.79	0.79	0.82	0.85	0.86	0.86	0.95	0.95	1.07	1.32
17	1.37	1.18	1.07	0.98	0.98	0.93	0.89	0.91	0.87	0.84	0.85	0.85	0.88	0.91	0.92	0.93	1.02	1.03	1.15	1.42
18	1.39	1.20	1.08	1.00	1.00	0.94	0.90	0.92	0.89	0.85	0.86	0.87	0.89	0.92	0.93	0.94	1.04	1.04	1.16	1.43
19	1.52	1.31	1.18	1.09	1.09	1.03	0.99	1.01	0.97	0.93	0.94	0.95	0.97	1.01	1.02	1.03	1.13	1.14	1.27	1.57
20	1.82	1.57	1.41	1.30	1.30	1.23	1.18	1.21	1.16	1.11	1.12	1.13	1.16	1.20	1.22	1.23	1.36	1.36	1.52	1.87

Table B-15: 2D gradient map of plate B-7 where point (1, 1) is the top west corner of the plate and point (20, 20) is the bottom east corner of the plate.

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
1	1.74	1.46	1.37	1.27	1.14	1.14	1.11	1.07	1.06	1.04	1.08	1.04	1.05	1.09	1.13	1.16	1.19	1.29	1.44	1.66
2	1.46	1.23	1.15	1.07	0.96	0.96	0.93	0.91	0.89	0.88	0.91	0.88	0.89	0.92	0.96	0.98	1.00	1.09	1.21	1.40
3	1.38	1.16	1.08	1.01	0.90	0.90	0.88	0.85	0.84	0.82	0.85	0.83	0.83	0.86	0.90	0.92	0.94	1.02	1.14	1.32
4	1.36	1.14	1.07	1.00	0.90	0.89	0.87	0.84	0.83	0.82	0.85	0.82	0.83	0.86	0.89	0.91	0.93	1.01	1.13	1.31
5	1.31	1.10	1.03	0.96	0.86	0.86	0.83	0.81	0.80	0.78	0.81	0.78	0.79	0.82	0.85	0.87	0.89	0.97	1.08	1.25
6	1.34	1.12	1.05	0.98	0.88	0.88	0.85	0.83	0.82	0.80	0.83	0.80	0.81	0.84	0.87	0.90	0.92	1.00	1.11	1.28
7	1.33	1.12	1.05	0.97	0.87	0.87	0.85	0.82	0.81	0.80	0.82	0.80	0.81	0.83	0.87	0.89	0.91	0.99	1.10	1.27
8	1.28	1.08	1.01	0.94	0.84	0.84	0.82	0.79	0.78	0.77	0.80	0.77	0.78	0.81	0.84	0.86	0.88	0.96	1.07	1.23
9	1.33	1.12	1.05	0.97	0.87	0.87	0.85	0.82	0.81	0.80	0.83	0.80	0.81	0.83	0.87	0.89	0.91	0.99	1.10	1.28
10	1.30	1.09	1.02	0.95	0.85	0.85	0.83	0.80	0.79	0.78	0.80	0.78	0.79	0.81	0.85	0.87	0.89	0.96	1.08	1.24
11	1.40	1.17	1.10	1.02	0.92	0.92	0.89	0.87	0.85	0.84	0.87	0.84	0.85	0.88	0.91	0.94	0.96	1.04	1.16	1.34
12	1.36	1.14	1.07	1.00	0.90	0.89	0.87	0.84	0.83	0.82	0.85	0.82	0.83	0.86	0.89	0.91	0.93	1.01	1.13	1.31
13	1.38	1.16	1.08	1.01	0.91	0.90	0.88	0.85	0.84	0.83	0.86	0.83	0.84	0.86	0.90	0.92	0.94	1.03	1.14	1.32
14	1.35	1.14	1.06	0.99	0.89	0.89	0.86	0.84	0.82	0.81	0.84	0.81	0.82	0.85	0.88	0.91	0.93	1.01	1.12	1.30
15	1.34	1.13	1.06	0.98	0.88	0.88	0.85	0.83	0.82	0.80	0.83	0.80	0.81	0.84	0.88	0.90	0.92	1.00	1.11	1.29
16	1.38	1.16	1.09	1.01	0.91	0.91	0.88	0.85	0.84	0.83	0.86	0.83	0.84	0.87	0.90	0.92	0.94	1.03	1.15	1.32
17	1.36	1.15	1.07	1.00	0.90	0.90	0.87	0.84	0.83	0.82	0.85	0.82	0.83	0.86	0.89	0.91	0.93	1.02	1.13	1.31
18	1.47	1.23	1.15	1.07	0.96	0.96	0.93	0.91	0.89	0.88	0.91	0.88	0.89	0.92	0.96	0.98	1.00	1.09	1.22	1.40
19	1.52	1.28	1.20	1.11	1.00	1.00	0.97	0.94	0.93	0.91	0.94	0.91	0.92	0.95	0.99	1.02	1.04	1.13	1.26	1.46
20	1.92	1.61	1.51	1.41	1.26	1.26	1.22	1.19	1.17	1.15	1.19	1.15	1.16	1.20	1.25	1.29	1.31	1.43	1.59	1.84

Table B-16: 2D gradient map of plate B-8 where point (1, 1) is the top west corner of the plate and point (20, 20) is the bottom east corner of the plate.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	1.40	1.30	1.25	1.17	1.11	1.10	1.07	1.02	1.03	1.01	0.99	1.01	1.04	1.05	1.06	1.08	1.15	1.24	1.29	1.39
2	1.30	1.21	1.16	1.08	1.03	1.02	1.00	0.94	0.96	0.94	0.92	0.94	0.96	0.98	0.98	1.01	1.07	1.15	1.20	1.30
3	1.26	1.17	1.12	1.05	0.99	0.99	0.97	0.91	0.93	0.90	0.89	0.91	0.93	0.94	0.95	0.97	1.03	1.11	1.16	1.25
4	1.22	1.13	1.09	1.02	0.96	0.96	0.94	0.89	0.90	0.88	0.86	0.88	0.90	0.91	0.92	0.94	1.00	1.08	1.13	1.22
5	1.19	1.10	1.06	0.99	0.94	0.93	0.91	0.86	0.87	0.85	0.84	0.86	0.88	0.89	0.89	0.92	0.97	1.05	1.09	1.18
6	1.21	1.12	1.07	1.00	0.95	0.95	0.92	0.87	0.89	0.87	0.85	0.87	0.89	0.90	0.91	0.93	0.99	1.06	1.11	1.20
7	1.19	1.10	1.06	0.99	0.94	0.93	0.91	0.86	0.87	0.85	0.84	0.86	0.88	0.89	0.90	0.92	0.97	1.05	1.09	1.18
8	1.18	1.09	1.05	0.98	0.93	0.92	0.90	0.85	0.86	0.84	0.83	0.85	0.87	0.88	0.89	0.91	0.96	1.04	1.08	1.17
9	1.15	1.07	1.03	0.96	0.91	0.91	0.88	0.83	0.85	0.83	0.81	0.83	0.85	0.86	0.87	0.89	0.94	1.02	1.06	1.15
10	1.18	1.09	1.05	0.98	0.93	0.93	0.90	0.85	0.87	0.85	0.83	0.85	0.87	0.88	0.89	0.91	0.97	1.04	1.08	1.17
11	1.16	1.07	1.03	0.96	0.91	0.91	0.89	0.84	0.85	0.83	0.81	0.84	0.85	0.87	0.87	0.89	0.95	1.02	1.06	1.15
12	1.17	1.08	1.04	0.97	0.92	0.92	0.90	0.85	0.86	0.84	0.82	0.84	0.86	0.87	0.88	0.90	0.96	1.03	1.08	1.16
13	1.15	1.07	1.03	0.96	0.91	0.91	0.88	0.83	0.85	0.83	0.81	0.83	0.85	0.86	0.87	0.89	0.94	1.02	1.06	1.15
14	1.16	1.08	1.03	0.97	0.92	0.91	0.89	0.84	0.85	0.83	0.82	0.84	0.86	0.87	0.88	0.90	0.95	1.02	1.07	1.15
15	1.18	1.09	1.05	0.98	0.93	0.93	0.90	0.85	0.87	0.85	0.83	0.85	0.87	0.88	0.89	0.91	0.97	1.04	1.09	1.17
16	1.17	1.09	1.05	0.98	0.93	0.92	0.90	0.85	0.86	0.84	0.83	0.85	0.87	0.88	0.88	0.91	0.96	1.03	1.08	1.17
17	1.21	1.13	1.08	1.01	0.96	0.95	0.93	0.88	0.89	0.87	0.85	0.88	0.90	0.91	0.92	0.94	1.00	1.07	1.12	1.21
18	1.29	1.19	1.15	1.07	1.02	1.01	0.99	0.93	0.95	0.93	0.91	0.93	0.95	0.96	0.97	0.99	1.06	1.14	1.19	1.28
19	1.37	1.27	1.22	1.14	1.08	1.08	1.05	0.99	1.00	0.98	0.96	0.99	1.01	1.02	1.03	1.06	1.12	1.21	1.26	1.36
20	1.52	1.41	1.35	1.26	1.20	1.20	1.16	1.10	1.12	1.09	1.07	1.10	1.12	1.14	1.15	1.17	1.25	1.34	1.40	1.51

Table B-17: 2D gradient map of plate C-1 where point (1, 1) is the top west corner of the plate and point (20, 20) is the bottom east corner of the plate.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	1.47	1.30	1.26	1.22	1.21	1.19	1.17	1.15	1.16	1.15	1.18	1.14	1.15	1.16	1.18	1.19	1.24	1.24	1.27	1.42
2	1.27	1.13	1.09	1.06	1.05	1.03	1.02	0.99	1.01	1.00	1.02	0.99	0.99	1.01	1.02	1.03	1.07	1.07	1.10	1.23
3	1.24	1.10	1.06	1.03	1.02	1.00	0.99	0.97	0.98	0.97	0.99	0.96	0.97	0.98	1.00	1.00	1.04	1.04	1.07	1.19
4	1.19	1.06	1.02	0.99	0.98	0.96	0.95	0.93	0.94	0.93	0.95	0.93	0.93	0.94	0.96	0.96	1.00	1.00	1.03	1.15
5	1.14	1.01	0.97	0.95	0.93	0.92	0.91	0.89	0.90	0.89	0.91	0.88	0.89	0.90	0.91	0.92	0.96	0.96	0.99	1.10
6	1.18	1.04	1.00	0.98	0.97	0.95	0.94	0.92	0.93	0.92	0.94	0.91	0.92	0.93	0.94	0.95	0.99	0.99	1.02	1.13
7	1.22	1.08	1.04	1.01	1.00	0.99	0.97	0.95	0.97	0.96	0.98	0.95	0.95	0.96	0.98	0.98	1.02	1.03	1.06	1.17
8	1.18	1.04	1.00	0.98	0.97	0.95	0.94	0.92	0.93	0.92	0.94	0.91	0.92	0.93	0.94	0.95	0.99	0.99	1.02	1.13
9	1.16	1.03	0.99	0.96	0.95	0.94	0.92	0.91	0.92	0.91	0.93	0.90	0.90	0.92	0.93	0.93	0.97	0.98	1.00	1.12
10	1.17	1.03	0.99	0.97	0.96	0.94	0.93	0.91	0.92	0.91	0.93	0.90	0.91	0.92	0.93	0.94	0.98	0.98	1.01	1.12
11	1.18	1.05	1.01	0.98	0.97	0.96	0.94	0.92	0.94	0.93	0.95	0.92	0.92	0.93	0.95	0.95	0.99	1.00	1.02	1.14
12	1.17	1.04	1.00	0.98	0.96	0.95	0.94	0.92	0.93	0.92	0.94	0.91	0.91	0.93	0.94	0.95	0.99	0.99	1.02	1.13
13	1.15	1.02	0.98	0.96	0.94	0.93	0.92	0.90	0.91	0.90	0.92	0.89	0.90	0.91	0.92	0.93	0.97	0.97	1.00	1.11
14	1.17	1.03	0.99	0.97	0.96	0.94	0.93	0.91	0.92	0.91	0.93	0.90	0.91	0.92	0.93	0.94	0.98	0.98	1.01	1.12
15	1.17	1.04	1.00	0.97	0.96	0.95	0.93	0.91	0.93	0.92	0.94	0.91	0.91	0.92	0.94	0.94	0.98	0.98	1.01	1.13
16	1.12	0.99	0.96	0.93	0.92	0.91	0.89	0.88	0.89	0.88	0.90	0.87	0.87	0.89	0.90	0.90	0.94	0.94	0.97	1.08
17	1.16	1.02	0.99	0.96	0.95	0.94	0.92	0.90	0.92	0.91	0.93	0.90	0.90	0.92	0.93	0.93	0.97	0.97	1.00	1.12
18	1.14	1.01	0.97	0.95	0.93	0.92	0.91	0.89	0.90	0.89	0.91	0.88	0.89	0.90	0.91	0.92	0.96	0.96	0.98	1.10
19	1.21	1.07	1.03	1.00	0.99	0.98	0.96	0.94	0.96	0.95	0.97	0.94	0.94	0.96	0.97	0.97	1.01	1.02	1.05	1.16
20	1.39	1.23	1.18	1.16	1.14	1.12	1.11	1.09	1.10	1.09	1.11	1.08	1.08	1.10	1.12	1.12	1.17	1.17	1.20	1.34

Table B-18: 2D gradient map of plate C-2 where point (1, 1) is the top west corner of the plate and point (20, 20) is the bottom east corner of the plate.

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
1	2.01	1.60	1.47	1.36	1.31	1.30	1.22	1.24	1.23	1.21	1.17	1.20	1.24	1.25	1.24	1.34	1.33	1.48	1.60	1.86
2	1.63	1.30	1.19	1.10	1.06	1.05	0.99	1.01	0.99	0.98	0.95	0.98	1.00	1.02	1.00	1.09	1.08	1.20	1.30	1.51
3	1.48	1.18	1.08	1.00	0.96	0.96	0.90	0.91	0.90	0.89	0.87	0.89	0.91	0.92	0.91	0.98	0.98	1.09	1.18	1.37
4	1.40	1.11	1.02	0.95	0.91	0.90	0.85	0.86	0.85	0.84	0.82	0.84	0.86	0.87	0.86	0.93	0.93	1.03	1.11	1.29
5	1.39	1.11	1.02	0.94	0.91	0.90	0.85	0.86	0.85	0.84	0.81	0.84	0.86	0.87	0.86	0.93	0.93	1.02	1.11	1.29
6	1.38	1.10	1.01	0.94	0.90	0.89	0.84	0.85	0.84	0.83	0.81	0.83	0.85	0.86	0.85	0.92	0.92	1.02	1.10	1.28
7	1.41	1.12	1.03	0.96	0.92	0.91	0.86	0.87	0.86	0.85	0.83	0.85	0.87	0.88	0.87	0.94	0.94	1.04	1.12	1.31
8	1.39	1.11	1.02	0.94	0.91	0.90	0.85	0.86	0.85	0.84	0.81	0.83	0.86	0.87	0.86	0.93	0.92	1.02	1.11	1.29
9	1.39	1.11	1.02	0.94	0.91	0.90	0.85	0.86	0.85	0.84	0.82	0.84	0.86	0.87	0.86	0.93	0.93	1.03	1.11	1.29
10	1.37	1.09	1.00	0.93	0.89	0.89	0.83	0.85	0.84	0.82	0.80	0.82	0.84	0.86	0.84	0.91	0.91	1.01	1.09	1.27
11	1.30	1.04	0.95	0.88	0.85	0.84	0.79	0.81	0.80	0.78	0.76	0.78	0.80	0.81	0.80	0.87	0.87	0.96	1.04	1.21
12	1.37	1.09	1.00	0.93	0.89	0.89	0.84	0.85	0.84	0.83	0.80	0.82	0.85	0.86	0.84	0.91	0.91	1.01	1.09	1.27
13	1.30	1.04	0.95	0.88	0.85	0.84	0.79	0.81	0.80	0.78	0.76	0.78	0.80	0.81	0.80	0.87	0.87	0.96	1.04	1.21
14	1.34	1.07	0.98	0.91	0.87	0.87	0.82	0.83	0.82	0.81	0.78	0.80	0.83	0.84	0.82	0.89	0.89	0.98	1.07	1.24
15	1.36	1.08	1.00	0.92	0.89	0.88	0.83	0.84	0.83	0.82	0.80	0.82	0.84	0.85	0.84	0.91	0.90	1.00	1.08	1.26
16	1.36	1.08	0.99	0.92	0.88	0.88	0.83	0.84	0.83	0.82	0.79	0.81	0.84	0.85	0.84	0.90	0.90	1.00	1.08	1.26
17	1.35	1.08	0.99	0.92	0.88	0.88	0.82	0.84	0.83	0.81	0.79	0.81	0.83	0.85	0.83	0.90	0.90	1.00	1.08	1.25
18	1.43	1.14	1.04	0.97	0.93	0.92	0.87	0.88	0.87	0.86	0.83	0.86	0.88	0.89	0.88	0.95	0.95	1.05	1.14	1.32
19	1.55	1.24	1.14	1.05	1.01	1.00	0.95	0.96	0.95	0.93	0.91	0.93	0.96	0.97	0.96	1.03	1.03	1.14	1.24	1.44
20	1.82	1.45	1.33	1.23	1.19	1.18	1.11	1.13	1.11	1.09	1.06	1.09	1.12	1.14	1.12	1.21	1.21	1.34	1.45	1.69

Table B-19: 2D gradient map of plate C-3 where point (1, 1) is the top west corner of the plate and point (20, 20) is the bottom east corner of the plate.

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
1	1.87	1.59	1.42	1.34	1.24	1.21	1.17	1.15	1.16	1.11	1.11	1.12	1.12	1.15	1.21	1.23	1.32	1.39	1.56	1.83
2	1.52	1.29	1.16	1.09	1.01	0.98	0.95	0.94	0.94	0.90	0.91	0.91	0.91	0.93	0.98	1.00	1.07	1.13	1.27	1.49
3	1.46	1.24	1.11	1.04	0.97	0.95	0.91	0.90	0.90	0.86	0.87	0.87	0.87	0.90	0.94	0.96	1.03	1.08	1.22	1.43
4	1.41	1.20	1.07	1.01	0.94	0.91	0.88	0.87	0.87	0.83	0.84	0.84	0.84	0.87	0.91	0.92	0.99	1.05	1.18	1.38
5	1.33	1.13	1.01	0.95	0.88	0.86	0.83	0.82	0.82	0.79	0.79	0.79	0.80	0.82	0.86	0.87	0.94	0.99	1.11	1.30
6	1.41	1.20	1.07	1.01	0.94	0.91	0.88	0.87	0.87	0.83	0.84	0.84	0.84	0.87	0.91	0.92	0.99	1.05	1.18	1.38
7	1.39	1.19	1.06	1.00	0.93	0.91	0.87	0.86	0.86	0.83	0.83	0.83	0.83	0.86	0.90	0.92	0.98	1.04	1.16	1.36
8	1.31	1.12	1.00	0.94	0.87	0.85	0.82	0.81	0.81	0.78	0.78	0.78	0.78	0.81	0.84	0.86	0.92	0.97	1.09	1.28
9	1.36	1.16	1.03	0.97	0.90	0.88	0.85	0.84	0.84	0.80	0.81	0.81	0.81	0.83	0.87	0.89	0.95	1.01	1.13	1.33
10	1.35	1.16	1.03	0.97	0.90	0.88	0.85	0.84	0.84	0.80	0.81	0.81	0.81	0.83	0.87	0.89	0.95	1.01	1.13	1.33
11	1.34	1.14	1.02	0.96	0.89	0.87	0.84	0.83	0.83	0.79	0.80	0.80	0.80	0.83	0.87	0.88	0.94	1.00	1.12	1.31
12	1.35	1.15	1.03	0.97	0.90	0.88	0.84	0.83	0.84	0.80	0.80	0.81	0.81	0.83	0.87	0.89	0.95	1.00	1.13	1.32
13	1.33	1.14	1.01	0.95	0.89	0.86	0.83	0.82	0.82	0.79	0.79	0.80	0.80	0.82	0.86	0.87	0.94	0.99	1.11	1.30
14	1.28	1.09	0.98	0.92	0.85	0.83	0.80	0.79	0.79	0.76	0.77	0.77	0.77	0.79	0.83	0.84	0.90	0.95	1.07	1.26
15	1.33	1.13	1.01	0.95	0.88	0.86	0.83	0.82	0.82	0.79	0.79	0.79	0.79	0.82	0.86	0.87	0.93	0.99	1.11	1.30
16	1.33	1.13	1.01	0.95	0.88	0.86	0.83	0.82	0.82	0.79	0.79	0.79	0.79	0.82	0.86	0.87	0.93	0.99	1.11	1.30
17	1.36	1.16	1.04	0.98	0.91	0.88	0.85	0.84	0.84	0.81	0.81	0.81	0.81	0.84	0.88	0.89	0.96	1.01	1.14	1.33
18	1.39	1.19	1.06	1.00	0.93	0.91	0.87	0.86	0.86	0.83	0.83	0.83	0.83	0.86	0.90	0.92	0.98	1.04	1.16	1.37
19	1.50	1.28	1.14	1.07	1.00	0.97	0.94	0.92	0.93	0.89	0.89	0.90	0.90	0.92	0.97	0.98	1.06	1.12	1.25	1.47
20	1.81	1.55	1.38	1.30	1.21	1.18	1.13	1.12	1.12	1.07	1.08	1.08	1.08	1.12	1.17	1.19	1.28	1.35	1.51	1.77

Table B-20: 2D gradient map of plate C-4 where point (1, 1) is the top west corner of the plate and point (20, 20) is the bottom east corner of the plate.

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
1	1.66	1.46	1.37	1.34	1.23	1.22	1.18	1.17	1.10	1.13	1.16	1.16	1.15	1.17	1.24	1.25	1.31	1.33	1.45	1.60
2	1.45	1.27	1.20	1.17	1.07	1.07	1.03	1.02	0.96	0.99	1.01	1.01	1.00	1.02	1.08	1.09	1.14	1.16	1.26	1.40
3	1.37	1.20	1.13	1.10	1.01	1.01	0.97	0.96	0.91	0.93	0.95	0.95	0.95	0.97	1.02	1.03	1.07	1.09	1.19	1.32
4	1.24	1.09	1.02	1.00	0.92	0.91	0.88	0.87	0.82	0.84	0.86	0.86	0.86	0.87	0.92	0.93	0.97	0.99	1.08	1.19
5	1.22	1.08	1.01	0.99	0.91	0.90	0.87	0.86	0.81	0.84	0.86	0.86	0.85	0.87	0.91	0.92	0.96	0.98	1.07	1.18
6	1.27	1.12	1.05	1.02	0.94	0.94	0.90	0.90	0.84	0.87	0.89	0.89	0.88	0.90	0.95	0.95	1.00	1.02	1.11	1.22
7	1.26	1.10	1.04	1.01	0.93	0.93	0.89	0.88	0.83	0.86	0.88	0.88	0.87	0.89	0.94	0.94	0.99	1.00	1.09	1.21
8	1.17	1.03	0.97	0.95	0.87	0.87	0.83	0.83	0.78	0.80	0.82	0.82	0.81	0.83	0.88	0.88	0.92	0.94	1.02	1.13
9	1.23	1.08	1.01	0.99	0.91	0.90	0.87	0.86	0.81	0.84	0.86	0.86	0.85	0.87	0.91	0.92	0.96	0.98	1.07	1.18
10	1.18	1.04	0.98	0.95	0.87	0.87	0.84	0.83	0.78	0.80	0.82	0.82	0.82	0.83	0.88	0.89	0.93	0.94	1.03	1.14
11	1.20	1.06	1.00	0.97	0.89	0.89	0.86	0.85	0.80	0.82	0.84	0.84	0.83	0.85	0.90	0.90	0.95	0.96	1.05	1.16
12	1.28	1.12	1.06	1.03	0.95	0.94	0.91	0.90	0.85	0.87	0.89	0.89	0.89	0.90	0.95	0.96	1.00	1.02	1.11	1.23
13	1.24	1.09	1.02	1.00	0.91	0.91	0.88	0.87	0.82	0.84	0.86	0.86	0.86	0.87	0.92	0.93	0.97	0.99	1.08	1.19
14	1.21	1.06	1.00	0.98	0.90	0.89	0.86	0.85	0.80	0.83	0.84	0.85	0.84	0.85	0.90	0.91	0.95	0.97	1.05	1.16
15	1.19	1.05	0.99	0.96	0.88	0.88	0.85	0.84	0.79	0.81	0.83	0.83	0.83	0.84	0.89	0.89	0.94	0.95	1.04	1.15
16	1.26	1.11	1.04	1.02	0.93	0.93	0.90	0.89	0.84	0.86	0.88	0.88	0.88	0.89	0.94	0.95	0.99	1.01	1.10	1.22
17	1.32	1.16	1.09	1.06	0.97	0.97	0.94	0.93	0.87	0.90	0.92	0.92	0.91	0.93	0.98	0.99	1.03	1.05	1.15	1.27
18	1.33	1.16	1.10	1.07	0.98	0.98	0.94	0.93	0.88	0.90	0.93	0.93	0.92	0.94	0.99	1.00	1.04	1.06	1.15	1.28
19	1.33	1.16	1.10	1.07	0.98	0.98	0.94	0.93	0.88	0.90	0.93	0.93	0.92	0.94	0.99	1.00	1.04	1.06	1.15	1.28
20	1.48	1.30	1.22	1.19	1.09	1.09	1.05	1.04	0.98	1.01	1.03	1.03	1.02	1.04	1.10	1.11	1.16	1.18	1.28	1.42

Table B-21: 2D gradient map of plate C-5 where point (1, 1) is the top west corner of the plate and point (20, 20) is the bottom east corner of the plate.

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
1	1.43	1.26	1.20	1.18	1.13	1.14	1.11	1.11	1.08	1.12	1.08	1.12	1.09	1.11	1.12	1.13	1.11	1.15	1.21	1.39
2	1.31	1.16	1.10	1.08	1.03	1.04	1.02	1.02	0.99	1.03	0.99	1.02	1.00	1.02	1.02	1.03	1.02	1.06	1.11	1.27
3	1.23	1.09	1.04	1.02	0.97	0.98	0.96	0.96	0.93	0.96	0.93	0.96	0.94	0.96	0.96	0.97	0.96	0.99	1.05	1.19
4	1.20	1.06	1.01	0.99	0.94	0.95	0.93	0.93	0.91	0.94	0.91	0.94	0.92	0.93	0.94	0.94	0.93	0.97	1.02	1.16
5	1.21	1.06	1.01	1.00	0.95	0.96	0.93	0.94	0.91	0.94	0.91	0.94	0.92	0.94	0.94	0.95	0.94	0.97	1.02	1.17
6	1.22	1.07	1.02	1.00	0.96	0.97	0.94	0.95	0.92	0.95	0.92	0.95	0.93	0.94	0.95	0.96	0.94	0.98	1.03	1.18
7	1.17	1.03	0.98	0.97	0.92	0.93	0.91	0.91	0.88	0.92	0.89	0.91	0.90	0.91	0.92	0.92	0.91	0.94	0.99	1.14
8	1.19	1.04	1.00	0.98	0.93	0.94	0.92	0.92	0.89	0.93	0.90	0.92	0.91	0.92	0.93	0.93	0.92	0.95	1.01	1.15
9	1.19	1.04	0.99	0.98	0.93	0.94	0.92	0.92	0.89	0.93	0.89	0.92	0.90	0.92	0.92	0.93	0.92	0.95	1.00	1.15
10	1.21	1.06	1.01	1.00	0.95	0.96	0.93	0.94	0.91	0.94	0.91	0.94	0.92	0.93	0.94	0.95	0.94	0.97	1.02	1.17
11	1.21	1.06	1.01	1.00	0.95	0.96	0.94	0.94	0.91	0.94	0.91	0.94	0.92	0.94	0.94	0.95	0.94	0.97	1.02	1.17
12	1.22	1.07	1.02	1.01	0.96	0.97	0.94	0.95	0.92	0.95	0.92	0.95	0.93	0.94	0.95	0.96	0.95	0.98	1.03	1.18
13	1.21	1.06	1.01	1.00	0.95	0.96	0.94	0.94	0.91	0.95	0.91	0.94	0.92	0.94	0.94	0.95	0.94	0.97	1.02	1.17
14	1.21	1.06	1.02	1.00	0.95	0.96	0.94	0.94	0.91	0.95	0.91	0.94	0.92	0.94	0.94	0.95	0.94	0.97	1.02	1.17
15	1.18	1.04	0.99	0.97	0.93	0.94	0.91	0.92	0.89	0.92	0.89	0.92	0.90	0.91	0.92	0.93	0.92	0.95	1.00	1.14
16	1.19	1.05	1.00	0.98	0.94	0.95	0.93	0.93	0.90	0.93	0.90	0.93	0.91	0.93	0.93	0.94	0.93	0.96	1.01	1.16
17	1.17	1.03	0.99	0.97	0.92	0.93	0.91	0.91	0.89	0.92	0.89	0.91	0.90	0.91	0.92	0.92	0.91	0.95	1.00	1.14
18	1.22	1.07	1.02	1.00	0.96	0.96	0.94	0.95	0.92	0.95	0.92	0.95	0.93	0.94	0.95	0.96	0.94	0.98	1.03	1.18
19	1.26	1.11	1.05	1.04	0.99	1.00	0.97	0.98	0.95	0.98	0.95	0.98	0.96	0.97	0.98	0.99	0.98	1.01	1.06	1.22
20	1.40	1.23	1.17	1.16	1.10	1.11	1.08	1.09	1.06	1.09	1.06	1.09	1.07	1.09	1.09	1.10	1.09	1.13	1.19	1.35

Table B-22: 2D gradient map of plate C-6 where point (1, 1) is the top west corner of the plate and point (20, 20) is the bottom east corner of the plate.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	1.80	1.56	1.35	1.32	1.23	1.17	1.14	1.11	1.13	1.13	1.15	1.11	1.05	1.12	1.14	1.20	1.33	1.32	1.43	1.69
2	1.57	1.36	1.18	1.15	1.07	1.03	1.00	0.97	0.99	0.99	1.00	0.97	0.92	0.98	1.00	1.05	1.16	1.15	1.25	1.48
3	1.40	1.21	1.05	1.02	0.95	0.91	0.89	0.86	0.88	0.88	0.89	0.86	0.82	0.87	0.89	0.93	1.03	1.03	1.11	1.31
4	1.38	1.20	1.04	1.01	0.94	0.90	0.88	0.85	0.86	0.87	0.88	0.85	0.81	0.86	0.88	0.92	1.02	1.01	1.10	1.29
5	1.36	1.18	1.02	1.00	0.93	0.89	0.86	0.84	0.85	0.86	0.87	0.84	0.80	0.85	0.86	0.90	1.00	1.00	1.08	1.28
6	1.35	1.17	1.02	0.99	0.92	0.88	0.86	0.83	0.85	0.85	0.86	0.83	0.79	0.84	0.86	0.90	1.00	0.99	1.07	1.27
7	1.35	1.17	1.01	0.99	0.92	0.88	0.86	0.83	0.85	0.85	0.86	0.83	0.79	0.84	0.86	0.90	1.00	0.99	1.07	1.27
8	1.29	1.12	0.97	0.94	0.88	0.84	0.82	0.80	0.81	0.81	0.82	0.79	0.75	0.80	0.82	0.86	0.95	0.95	1.02	1.21
9	1.39	1.20	1.04	1.02	0.95	0.91	0.88	0.86	0.87	0.87	0.89	0.86	0.81	0.86	0.88	0.92	1.02	1.02	1.10	1.30
10	1.37	1.19	1.03	1.00	0.93	0.89	0.87	0.84	0.86	0.86	0.87	0.84	0.80	0.85	0.87	0.91	1.01	1.00	1.09	1.28
11	1.39	1.20	1.04	1.01	0.94	0.90	0.88	0.86	0.87	0.87	0.88	0.85	0.81	0.86	0.88	0.92	1.02	1.02	1.10	1.30
12	1.37	1.19	1.03	1.00	0.93	0.89	0.87	0.84	0.86	0.86	0.87	0.84	0.80	0.85	0.87	0.91	1.01	1.00	1.09	1.28
13	1.31	1.14	0.99	0.96	0.89	0.86	0.83	0.81	0.82	0.83	0.84	0.81	0.77	0.82	0.83	0.87	0.97	0.96	1.04	1.23
14	1.32	1.14	0.99	0.97	0.90	0.86	0.84	0.81	0.83	0.83	0.84	0.81	0.77	0.82	0.84	0.88	0.97	0.97	1.05	1.24
15	1.30	1.12	0.97	0.95	0.88	0.84	0.82	0.80	0.81	0.82	0.83	0.80	0.76	0.81	0.82	0.86	0.95	0.95	1.03	1.22
16	1.36	1.18	1.02	1.00	0.92	0.89	0.86	0.84	0.85	0.86	0.87	0.84	0.80	0.84	0.86	0.90	1.00	1.00	1.08	1.28
17	1.35	1.17	1.01	0.99	0.92	0.88	0.86	0.83	0.85	0.85	0.86	0.83	0.79	0.84	0.86	0.89	0.99	0.99	1.07	1.26
18	1.38	1.20	1.04	1.01	0.94	0.90	0.88	0.85	0.87	0.87	0.88	0.85	0.81	0.86	0.88	0.92	1.02	1.01	1.10	1.29
19	1.43	1.24	1.08	1.05	0.98	0.93	0.91	0.89	0.90	0.90	0.92	0.88	0.84	0.89	0.91	0.95	1.06	1.05	1.14	1.35
20	1.80	1.56	1.35	1.31	1.22	1.17	1.14	1.11	1.13	1.13	1.15	1.11	1.05	1.12	1.14	1.19	1.32	1.32	1.43	1.68

Table B-23: 2D gradient map of plate C-7 where point (1, 1) is the top west corner of the plate and point (20, 20) is the bottom east corner of the plate.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	1.85	1.57	1.41	1.31	1.24	1.20	1.15	1.11	1.10	1.11	1.12	1.12	1.11	1.12	1.21	1.22	1.27	1.30	1.47	1.69
2	1.61	1.36	1.22	1.13	1.08	1.04	1.00	0.96	0.96	0.97	0.97	0.98	0.97	0.98	1.05	1.06	1.10	1.13	1.27	1.47
3	1.45	1.23	1.10	1.02	0.97	0.94	0.90	0.87	0.86	0.87	0.88	0.88	0.87	0.88	0.95	0.96	0.99	1.02	1.15	1.32
4	1.41	1.19	1.07	0.99	0.94	0.91	0.87	0.84	0.84	0.85	0.85	0.86	0.85	0.85	0.92	0.93	0.96	0.99	1.12	1.29
5	1.37	1.16	1.04	0.96	0.91	0.88	0.85	0.82	0.81	0.82	0.83	0.83	0.82	0.83	0.89	0.90	0.93	0.96	1.08	1.25
6	1.38	1.17	1.05	0.97	0.92	0.89	0.85	0.82	0.82	0.83	0.83	0.84	0.83	0.84	0.90	0.91	0.94	0.97	1.09	1.26
7	1.37	1.16	1.04	0.96	0.91	0.88	0.85	0.82	0.81	0.82	0.83	0.83	0.82	0.83	0.89	0.90	0.93	0.96	1.08	1.25
8	1.36	1.15	1.04	0.96	0.91	0.88	0.84	0.81	0.81	0.82	0.82	0.83	0.82	0.83	0.89	0.90	0.93	0.96	1.08	1.24
9	1.36	1.15	1.04	0.96	0.91	0.88	0.84	0.82	0.81	0.82	0.82	0.83	0.82	0.83	0.89	0.90	0.93	0.96	1.08	1.24
10	1.38	1.17	1.05	0.97	0.92	0.89	0.85	0.83	0.82	0.83	0.83	0.84	0.83	0.84	0.90	0.91	0.94	0.97	1.09	1.26
11	1.33	1.13	1.01	0.94	0.89	0.86	0.83	0.80	0.79	0.80	0.81	0.81	0.80	0.81	0.87	0.88	0.91	0.94	1.05	1.22
12	1.32	1.12	1.00	0.93	0.88	0.85	0.82	0.79	0.79	0.79	0.80	0.80	0.79	0.80	0.86	0.87	0.90	0.93	1.04	1.20
13	1.36	1.15	1.03	0.96	0.91	0.88	0.84	0.81	0.81	0.82	0.82	0.82	0.82	0.82	0.89	0.90	0.93	0.96	1.08	1.24
14	1.36	1.15	1.03	0.96	0.91	0.88	0.84	0.81	0.81	0.82	0.82	0.82	0.82	0.82	0.89	0.90	0.93	0.96	1.08	1.24
15	1.34	1.14	1.02	0.94	0.90	0.87	0.83	0.80	0.80	0.80	0.81	0.81	0.80	0.81	0.88	0.88	0.92	0.94	1.06	1.22
16	1.34	1.13	1.02	0.94	0.89	0.86	0.83	0.80	0.80	0.80	0.81	0.81	0.80	0.81	0.88	0.88	0.91	0.94	1.06	1.22
17	1.37	1.16	1.04	0.96	0.91	0.88	0.85	0.82	0.82	0.82	0.83	0.83	0.82	0.83	0.90	0.90	0.94	0.96	1.08	1.25
18	1.40	1.19	1.07	0.99	0.94	0.91	0.87	0.84	0.84	0.84	0.85	0.85	0.84	0.85	0.92	0.93	0.96	0.99	1.11	1.28
19	1.56	1.33	1.19	1.10	1.05	1.01	0.97	0.94	0.93	0.94	0.95	0.95	0.94	0.95	1.02	1.03	1.07	1.10	1.24	1.43
20	1.93	1.64	1.47	1.36	1.29	1.25	1.20	1.15	1.15	1.16	1.17	1.17	1.16	1.17	1.26	1.27	1.32	1.36	1.53	1.76

Table B-24: 2D gradient map of plate C-8 where point (1, 1) is the top west corner of the plate and point (20, 20) is the bottom east corner of the plate.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	1.52	1.37	1.25	1.24	1.14	1.12	1.09	1.06	1.10	1.05	1.03	1.02	1.03	1.04	1.11	1.12	1.14	1.23	1.31	1.48
2	1.34	1.21	1.11	1.09	1.01	0.99	0.96	0.94	0.97	0.93	0.91	0.90	0.91	0.92	0.98	0.99	1.01	1.09	1.16	1.31
3	1.34	1.21	1.11	1.09	1.01	0.99	0.96	0.94	0.97	0.93	0.91	0.90	0.91	0.92	0.98	0.99	1.01	1.09	1.16	1.31
4	1.26	1.13	1.04	1.02	0.95	0.93	0.90	0.88	0.91	0.87	0.85	0.85	0.85	0.86	0.92	0.92	0.95	1.02	1.08	1.22
5	1.29	1.16	1.07	1.05	0.97	0.95	0.92	0.90	0.93	0.89	0.88	0.87	0.88	0.88	0.94	0.95	0.97	1.05	1.11	1.26
6	1.22	1.09	1.00	0.99	0.91	0.90	0.87	0.85	0.88	0.84	0.82	0.82	0.83	0.83	0.88	0.89	0.91	0.99	1.05	1.18
7	1.25	1.12	1.03	1.01	0.94	0.92	0.89	0.87	0.90	0.86	0.84	0.84	0.85	0.85	0.91	0.91	0.94	1.01	1.07	1.21
8	1.23	1.10	1.01	1.00	0.92	0.91	0.88	0.86	0.88	0.85	0.83	0.83	0.83	0.84	0.89	0.90	0.92	1.00	1.06	1.19
9	1.22	1.10	1.01	1.00	0.92	0.90	0.87	0.85	0.88	0.84	0.83	0.82	0.83	0.84	0.89	0.90	0.92	1.00	1.05	1.19
10	1.19	1.07	0.99	0.97	0.90	0.88	0.85	0.83	0.86	0.82	0.81	0.80	0.81	0.81	0.87	0.88	0.90	0.97	1.03	1.16
11	1.24	1.11	1.02	1.01	0.93	0.91	0.89	0.86	0.89	0.85	0.84	0.83	0.84	0.85	0.90	0.91	0.93	1.01	1.07	1.20
12	1.22	1.10	1.01	0.99	0.92	0.90	0.87	0.85	0.88	0.84	0.83	0.82	0.83	0.83	0.89	0.90	0.92	0.99	1.05	1.19
13	1.23	1.10	1.01	1.00	0.92	0.91	0.88	0.86	0.89	0.85	0.83	0.83	0.83	0.84	0.89	0.90	0.92	1.00	1.06	1.20
14	1.24	1.12	1.03	1.01	0.94	0.92	0.89	0.87	0.90	0.86	0.84	0.84	0.85	0.85	0.91	0.91	0.94	1.01	1.07	1.21
15	1.24	1.11	1.02	1.01	0.93	0.91	0.88	0.86	0.89	0.85	0.84	0.83	0.84	0.84	0.90	0.91	0.93	1.00	1.06	1.20
16	1.21	1.09	1.00	0.99	0.91	0.90	0.87	0.85	0.87	0.84	0.82	0.82	0.82	0.83	0.88	0.89	0.91	0.99	1.04	1.18
17	1.29	1.16	1.07	1.05	0.97	0.95	0.92	0.90	0.93	0.89	0.88	0.87	0.88	0.88	0.94	0.95	0.97	1.05	1.11	1.26
18	1.34	1.21	1.11	1.09	1.01	0.99	0.96	0.94	0.97	0.92	0.91	0.90	0.91	0.92	0.98	0.99	1.01	1.09	1.16	1.31
19	1.39	1.25	1.15	1.13	1.05	1.03	0.99	0.97	1.00	0.96	0.94	0.94	0.94	0.95	1.01	1.02	1.05	1.13	1.20	1.35
20	1.66	1.49	1.37	1.36	1.25	1.23	1.19	1.16	1.20	1.15	1.13	1.12	1.13	1.14	1.21	1.22	1.25	1.35	1.43	1.62

Table B-25: 2D gradient map of plate D-1 where point (1, 1) is the top west corner of the plate and point (20, 20) is the bottom east corner of the plate.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	1.53	1.34	1.30	1.27	1.25	1.21	1.16	1.20	1.19	1.16	1.21	1.19	1.19	1.21	1.26	1.22	1.30	1.27	1.28	1.47
2	1.34	1.18	1.14	1.12	1.09	1.06	1.02	1.05	1.04	1.02	1.06	1.04	1.04	1.06	1.10	1.07	1.14	1.11	1.12	1.28
3	1.28	1.13	1.09	1.07	1.05	1.01	0.98	1.01	1.00	0.97	1.01	1.00	1.00	1.02	1.06	1.02	1.09	1.06	1.08	1.23
4	1.26	1.11	1.07	1.05	1.03	0.99	0.96	0.99	0.98	0.96	0.99	0.98	0.98	1.00	1.04	1.00	1.07	1.04	1.06	1.21
5	1.21	1.07	1.03	1.01	0.99	0.96	0.93	0.96	0.94	0.92	0.96	0.95	0.94	0.96	1.00	0.97	1.04	1.01	1.02	1.17
6	1.26	1.11	1.07	1.05	1.03	0.99	0.96	0.99	0.98	0.96	0.99	0.98	0.98	1.00	1.04	1.00	1.07	1.04	1.06	1.21
7	1.19	1.05	1.02	0.99	0.97	0.94	0.91	0.94	0.93	0.91	0.94	0.93	0.93	0.95	0.98	0.95	1.02	0.99	1.00	1.14
8	1.20	1.06	1.03	1.00	0.98	0.95	0.92	0.95	0.94	0.91	0.95	0.94	0.94	0.96	0.99	0.96	1.03	1.00	1.01	1.16
9	1.14	1.00	0.97	0.95	0.93	0.90	0.87	0.90	0.88	0.86	0.90	0.89	0.89	0.90	0.94	0.91	0.97	0.94	0.96	1.09
10	1.14	1.00	0.97	0.95	0.93	0.90	0.87	0.90	0.88	0.86	0.90	0.89	0.89	0.90	0.94	0.91	0.97	0.94	0.96	1.09
11	1.13	0.99	0.96	0.94	0.92	0.89	0.86	0.89	0.88	0.86	0.89	0.88	0.88	0.90	0.93	0.90	0.96	0.93	0.95	1.08
12	1.14	1.00	0.97	0.95	0.93	0.90	0.87	0.90	0.88	0.86	0.90	0.89	0.89	0.90	0.94	0.91	0.97	0.94	0.96	1.09
13	1.18	1.04	1.00	0.98	0.96	0.93	0.90	0.93	0.91	0.89	0.93	0.92	0.92	0.93	0.97	0.94	1.00	0.97	0.99	1.13
14	1.17	1.03	1.00	0.98	0.96	0.93	0.90	0.92	0.91	0.89	0.93	0.92	0.91	0.93	0.97	0.94	1.00	0.97	0.99	1.13
15	1.14	1.00	0.97	0.95	0.93	0.90	0.87	0.90	0.89	0.87	0.90	0.89	0.89	0.91	0.94	0.91	0.97	0.94	0.96	1.10
16	1.10	0.97	0.94	0.92	0.90	0.87	0.84	0.86	0.85	0.83	0.87	0.86	0.85	0.87	0.90	0.88	0.94	0.91	0.92	1.05
17	1.14	1.01	0.97	0.95	0.93	0.90	0.87	0.90	0.89	0.87	0.90	0.89	0.89	0.91	0.94	0.91	0.97	0.95	0.96	1.10
18	1.15	1.02	0.98	0.96	0.94	0.91	0.88	0.91	0.90	0.88	0.91	0.90	0.90	0.92	0.95	0.92	0.99	0.96	0.97	1.11
19	1.22	1.07	1.04	1.02	1.00	0.96	0.93	0.96	0.95	0.92	0.96	0.95	0.95	0.97	1.00	0.97	1.04	1.01	1.02	1.17
20	1.32	1.16	1.12	1.10	1.08	1.04	1.00	1.04	1.02	1.00	1.04	1.03	1.02	1.05	1.08	1.05	1.12	1.09	1.11	1.26

Table B-26: 2D gradient map of plate D-2 where point (1, 1) is the top west corner of the plate and point (20, 20) is the bottom east corner of the plate.

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
1	2.02	1.67	1.50	1.47	1.38	1.25	1.29	1.25	1.24	1.19	1.25	1.26	1.23	1.25	1.28	1.33	1.41	1.52	1.56	1.92
2	1.58	1.31	1.18	1.15	1.08	0.98	1.02	0.98	0.98	0.94	0.98	0.99	0.97	0.99	1.00	1.05	1.11	1.19	1.23	1.51
3	1.46	1.21	1.08	1.06	1.00	0.91	0.94	0.91	0.90	0.86	0.90	0.91	0.89	0.91	0.92	0.96	1.02	1.10	1.13	1.39
4	1.44	1.19	1.07	1.05	0.98	0.90	0.92	0.89	0.89	0.85	0.89	0.90	0.88	0.90	0.91	0.95	1.01	1.09	1.12	1.37
5	1.39	1.15	1.04	1.01	0.95	0.87	0.89	0.87	0.86	0.82	0.86	0.87	0.85	0.87	0.88	0.92	0.98	1.05	1.08	1.33
6	1.42	1.17	1.06	1.03	0.97	0.88	0.91	0.88	0.88	0.84	0.88	0.89	0.87	0.88	0.90	0.94	1.00	1.07	1.10	1.35
7	1.37	1.14	1.02	1.00	0.94	0.85	0.88	0.85	0.85	0.81	0.85	0.86	0.84	0.85	0.87	0.91	0.96	1.03	1.06	1.31
8	1.34	1.11	1.00	0.98	0.91	0.83	0.86	0.83	0.83	0.79	0.83	0.84	0.82	0.83	0.85	0.88	0.94	1.01	1.04	1.27
9	1.31	1.08	0.97	0.95	0.89	0.81	0.84	0.81	0.81	0.77	0.81	0.82	0.80	0.81	0.83	0.86	0.92	0.99	1.01	1.24
10	1.31	1.09	0.97	0.96	0.89	0.82	0.84	0.81	0.81	0.78	0.81	0.82	0.80	0.82	0.83	0.87	0.92	0.99	1.02	1.25
11	1.31	1.08	0.97	0.95	0.89	0.81	0.84	0.81	0.80	0.77	0.81	0.82	0.80	0.81	0.83	0.86	0.92	0.98	1.01	1.24
12	1.39	1.15	1.03	1.01	0.95	0.86	0.89	0.86	0.86	0.82	0.86	0.87	0.85	0.86	0.88	0.92	0.98	1.05	1.08	1.32
13	1.33	1.10	0.99	0.97	0.90	0.82	0.85	0.82	0.82	0.78	0.82	0.83	0.81	0.82	0.84	0.88	0.93	1.00	1.03	1.26
14	1.35	1.12	1.00	0.98	0.92	0.84	0.87	0.84	0.83	0.80	0.84	0.85	0.82	0.84	0.86	0.89	0.95	1.02	1.05	1.29
15	1.34	1.11	1.00	0.98	0.91	0.83	0.86	0.83	0.83	0.79	0.83	0.84	0.82	0.83	0.85	0.88	0.94	1.01	1.04	1.27
16	1.31	1.08	0.97	0.95	0.89	0.81	0.84	0.81	0.81	0.77	0.81	0.82	0.80	0.81	0.83	0.86	0.92	0.99	1.01	1.25
17	1.40	1.16	1.04	1.02	0.95	0.87	0.90	0.87	0.86	0.83	0.86	0.87	0.85	0.87	0.88	0.92	0.98	1.05	1.08	1.33
18	1.37	1.13	1.02	1.00	0.93	0.85	0.88	0.85	0.84	0.81	0.85	0.86	0.83	0.85	0.87	0.90	0.96	1.03	1.06	1.30
19	1.39	1.15	1.03	1.01	0.95	0.86	0.89	0.86	0.86	0.82	0.86	0.87	0.85	0.86	0.88	0.92	0.97	1.05	1.08	1.32
20	1.70	1.41	1.27	1.24	1.16	1.06	1.09	1.06	1.05	1.01	1.05	1.07	1.04	1.06	1.08	1.12	1.20	1.28	1.32	1.62

Table B-27: 2D gradient map of plate D-3 where point (1, 1) is the top west corner of the plate and point (20, 20) is the bottom east corner of the plate.

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
1	2.00	1.68	1.51	1.47	1.34	1.38	1.29	1.26	1.20	1.20	1.15	1.21	1.18	1.31	1.31	1.34	1.43	1.51	1.65	1.95
2	1.63	1.36	1.23	1.19	1.09	1.12	1.05	1.02	0.98	0.98	0.94	0.98	0.96	1.07	1.07	1.09	1.17	1.23	1.35	1.59
3	1.48	1.24	1.12	1.08	0.99	1.02	0.95	0.93	0.89	0.89	0.85	0.89	0.87	0.97	0.97	0.99	1.06	1.11	1.22	1.44
4	1.41	1.17	1.06	1.03	0.94	0.97	0.90	0.88	0.84	0.84	0.81	0.85	0.83	0.92	0.92	0.94	1.00	1.06	1.16	1.37
5	1.37	1.15	1.03	1.00	0.92	0.94	0.88	0.86	0.82	0.82	0.79	0.83	0.81	0.89	0.90	0.92	0.98	1.03	1.13	1.34
6	1.36	1.14	1.03	1.00	0.91	0.94	0.88	0.86	0.82	0.82	0.78	0.82	0.81	0.89	0.89	0.91	0.97	1.03	1.13	1.33
7	1.39	1.16	1.05	1.02	0.93	0.96	0.89	0.87	0.84	0.83	0.80	0.84	0.82	0.91	0.91	0.93	0.99	1.05	1.15	1.36
8	1.38	1.15	1.04	1.01	0.92	0.95	0.89	0.86	0.83	0.83	0.79	0.83	0.81	0.90	0.90	0.92	0.98	1.04	1.14	1.34
9	1.37	1.15	1.04	1.00	0.92	0.94	0.88	0.86	0.82	0.82	0.79	0.83	0.81	0.90	0.90	0.92	0.98	1.03	1.13	1.34
10	1.36	1.13	1.02	0.99	0.91	0.93	0.87	0.85	0.81	0.81	0.78	0.82	0.80	0.89	0.89	0.91	0.97	1.02	1.12	1.32
11	1.35	1.13	1.02	0.99	0.90	0.93	0.87	0.85	0.81	0.81	0.78	0.81	0.80	0.88	0.88	0.90	0.96	1.02	1.12	1.32
12	1.34	1.12	1.01	0.98	0.89	0.92	0.86	0.84	0.80	0.80	0.77	0.81	0.79	0.87	0.87	0.89	0.95	1.01	1.10	1.30
13	1.31	1.09	0.99	0.96	0.87	0.90	0.84	0.82	0.78	0.78	0.75	0.79	0.77	0.85	0.85	0.87	0.93	0.98	1.08	1.27
14	1.31	1.10	0.99	0.96	0.88	0.90	0.84	0.82	0.79	0.79	0.75	0.79	0.77	0.86	0.86	0.88	0.94	0.99	1.08	1.28
15	1.33	1.11	1.00	0.97	0.89	0.91	0.85	0.83	0.80	0.80	0.76	0.80	0.79	0.87	0.87	0.89	0.95	1.00	1.10	1.30
16	1.29	1.08	0.97	0.94	0.86	0.89	0.83	0.81	0.77	0.77	0.74	0.78	0.76	0.84	0.84	0.86	0.92	0.97	1.06	1.26
17	1.26	1.06	0.95	0.92	0.84	0.87	0.81	0.79	0.76	0.76	0.73	0.76	0.75	0.82	0.82	0.84	0.90	0.95	1.04	1.23
18	1.29	1.08	0.97	0.94	0.86	0.88	0.83	0.81	0.77	0.77	0.74	0.78	0.76	0.84	0.84	0.86	0.92	0.97	1.06	1.25
19	1.37	1.15	1.04	1.00	0.92	0.94	0.88	0.86	0.82	0.82	0.79	0.83	0.81	0.90	0.90	0.92	0.98	1.03	1.13	1.34
20	1.65	1.38	1.25	1.21	1.10	1.13	1.06	1.04	0.99	0.99	0.95	1.00	0.98	1.08	1.08	1.10	1.18	1.24	1.36	1.61

Table B-28: 2D gradient map of plate D-4 where point (1, 1) is the top west corner of the plate and point (20, 20) is the bottom east corner of the plate.

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
1	1.64	1.48	1.38	1.30	1.25	1.22	1.19	1.14	1.16	1.12	1.09	1.08	1.14	1.16	1.18	1.18	1.30	1.36	1.45	1.58
2	1.46	1.32	1.23	1.16	1.11	1.09	1.06	1.01	1.03	1.00	0.97	0.96	1.02	1.04	1.06	1.05	1.16	1.21	1.29	1.41
3	1.35	1.22	1.14	1.08	1.03	1.01	0.99	0.94	0.96	0.93	0.90	0.89	0.94	0.96	0.98	0.98	1.07	1.13	1.20	1.31
4	1.35	1.22	1.14	1.08	1.03	1.01	0.99	0.94	0.96	0.93	0.90	0.89	0.94	0.96	0.98	0.98	1.07	1.13	1.20	1.31
5	1.31	1.18	1.10	1.04	1.00	0.98	0.96	0.91	0.93	0.90	0.87	0.86	0.91	0.93	0.95	0.95	1.04	1.09	1.16	1.27
6	1.30	1.17	1.10	1.03	0.99	0.97	0.95	0.90	0.92	0.89	0.86	0.86	0.90	0.92	0.94	0.94	1.03	1.08	1.15	1.26
7	1.27	1.14	1.07	1.01	0.97	0.94	0.92	0.88	0.90	0.87	0.84	0.84	0.88	0.90	0.92	0.91	1.00	1.05	1.12	1.23
8	1.29	1.16	1.08	1.02	0.98	0.96	0.94	0.89	0.91	0.88	0.85	0.85	0.90	0.91	0.93	0.93	1.02	1.07	1.14	1.25
9	1.20	1.09	1.01	0.95	0.92	0.90	0.88	0.83	0.85	0.82	0.80	0.79	0.84	0.85	0.87	0.87	0.95	1.00	1.06	1.16
10	1.26	1.14	1.06	1.00	0.96	0.94	0.92	0.87	0.89	0.86	0.83	0.83	0.88	0.89	0.91	0.91	1.00	1.05	1.11	1.22
11	1.25	1.13	1.06	1.00	0.96	0.93	0.91	0.87	0.89	0.86	0.83	0.83	0.87	0.89	0.91	0.90	0.99	1.04	1.11	1.21
12	1.17	1.06	0.99	0.93	0.89	0.87	0.85	0.81	0.83	0.80	0.78	0.77	0.81	0.83	0.85	0.84	0.93	0.97	1.04	1.13
13	1.27	1.15	1.07	1.01	0.97	0.95	0.92	0.88	0.90	0.87	0.84	0.84	0.88	0.90	0.92	0.91	1.00	1.05	1.12	1.23
14	1.23	1.11	1.04	0.98	0.94	0.92	0.90	0.85	0.87	0.84	0.82	0.81	0.86	0.87	0.89	0.89	0.97	1.02	1.09	1.19
15	1.23	1.11	1.04	0.98	0.94	0.92	0.90	0.85	0.87	0.84	0.82	0.81	0.86	0.87	0.89	0.89	0.97	1.02	1.09	1.19
16	1.19	1.08	1.01	0.95	0.91	0.89	0.87	0.83	0.84	0.82	0.79	0.79	0.83	0.85	0.86	0.86	0.95	0.99	1.06	1.16
17	1.18	1.07	0.99	0.94	0.90	0.88	0.86	0.82	0.83	0.81	0.78	0.78	0.82	0.84	0.85	0.85	0.93	0.98	1.05	1.14
18	1.16	1.05	0.97	0.92	0.88	0.86	0.84	0.80	0.82	0.79	0.77	0.76	0.81	0.82	0.84	0.83	0.92	0.96	1.02	1.12
19	1.24	1.12	1.04	0.98	0.94	0.92	0.90	0.86	0.87	0.85	0.82	0.82	0.86	0.88	0.89	0.89	0.98	1.03	1.10	1.20
20	1.43	1.29	1.20	1.14	1.09	1.07	1.04	0.99	1.01	0.98	0.95	0.94	0.99	1.02	1.03	1.03	1.13	1.19	1.27	1.38

Table B-29: 2D gradient map of plate D-5 where point (1, 1) is the top west corner of the plate and point (20, 20) is the bottom east corner of the plate.

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
1	1.45	1.33	1.27	1.24	1.17	1.16	1.13	1.17	1.13	1.12	1.17	1.14	1.14	1.12	1.15	1.20	1.19	1.22	1.32	1.43
2	1.30	1.19	1.13	1.11	1.05	1.04	1.01	1.04	1.01	1.00	1.05	1.02	1.02	1.01	1.03	1.07	1.06	1.09	1.18	1.28
3	1.27	1.17	1.11	1.09	1.03	1.02	0.99	1.02	1.00	0.99	1.03	1.00	1.00	0.99	1.01	1.05	1.04	1.07	1.16	1.26
4	1.25	1.15	1.10	1.07	1.01	1.00	0.98	1.01	0.98	0.97	1.01	0.98	0.98	0.97	0.99	1.04	1.02	1.05	1.14	1.24
5	1.25	1.15	1.09	1.07	1.01	1.00	0.98	1.01	0.98	0.97	1.01	0.98	0.98	0.97	0.99	1.03	1.02	1.05	1.14	1.24
6	1.16	1.06	1.01	0.99	0.94	0.93	0.90	0.93	0.91	0.90	0.94	0.91	0.91	0.90	0.92	0.96	0.95	0.97	1.05	1.15
7	1.17	1.07	1.02	0.99	0.94	0.93	0.91	0.94	0.91	0.90	0.94	0.91	0.91	0.90	0.92	0.96	0.95	0.98	1.06	1.15
8	1.19	1.09	1.04	1.02	0.96	0.95	0.93	0.96	0.93	0.92	0.96	0.93	0.93	0.92	0.94	0.98	0.97	1.00	1.08	1.18
9	1.16	1.07	1.02	0.99	0.94	0.93	0.91	0.94	0.91	0.90	0.94	0.91	0.91	0.90	0.92	0.96	0.95	0.98	1.06	1.15
10	1.15	1.05	1.00	0.98	0.92	0.92	0.89	0.92	0.90	0.89	0.93	0.90	0.90	0.89	0.91	0.95	0.94	0.96	1.04	1.13
11	1.13	1.04	0.99	0.97	0.92	0.91	0.88	0.91	0.89	0.88	0.92	0.89	0.89	0.88	0.90	0.94	0.93	0.95	1.03	1.12
12	1.14	1.04	0.99	0.97	0.92	0.91	0.89	0.92	0.89	0.88	0.92	0.89	0.89	0.88	0.90	0.94	0.93	0.96	1.03	1.12
13	1.16	1.06	1.01	0.98	0.93	0.93	0.90	0.93	0.90	0.89	0.93	0.91	0.90	0.89	0.92	0.95	0.94	0.97	1.05	1.14
14	1.18	1.08	1.03	1.01	0.95	0.95	0.92	0.95	0.92	0.92	0.95	0.93	0.93	0.92	0.94	0.98	0.97	0.99	1.07	1.17
15	1.12	1.03	0.98	0.96	0.90	0.90	0.87	0.90	0.88	0.87	0.90	0.88	0.88	0.87	0.89	0.93	0.92	0.94	1.02	1.11
16	1.09	1.00	0.95	0.93	0.88	0.88	0.85	0.88	0.85	0.85	0.88	0.86	0.86	0.85	0.87	0.90	0.89	0.92	0.99	1.08
17	1.14	1.04	0.99	0.97	0.92	0.91	0.89	0.92	0.89	0.88	0.92	0.89	0.89	0.88	0.90	0.94	0.93	0.96	1.03	1.12
18	1.14	1.05	1.00	0.97	0.92	0.92	0.89	0.92	0.89	0.89	0.92	0.90	0.89	0.89	0.91	0.94	0.93	0.96	1.04	1.13
19	1.19	1.09	1.04	1.02	0.96	0.95	0.93	0.96	0.93	0.92	0.96	0.93	0.93	0.92	0.94	0.98	0.97	1.00	1.08	1.18
20	1.29	1.18	1.13	1.10	1.04	1.03	1.00	1.04	1.01	1.00	1.04	1.01	1.01	1.00	1.02	1.06	1.05	1.08	1.17	1.27

Table B-30: 2D gradient map of plate D-6 where point (1, 1) is the top west corner of the plate and point (20, 20) is the bottom east corner of the plate.

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
1	2.00	1.65	1.52	1.40	1.32	1.29	1.27	1.23	1.17	1.18	1.19	1.18	1.22	1.19	1.30	1.30	1.35	1.44	1.59	1.90
2	1.64	1.36	1.25	1.14	1.08	1.06	1.04	1.01	0.96	0.97	0.97	0.97	1.00	0.98	1.06	1.07	1.11	1.18	1.31	1.55
3	1.50	1.24	1.14	1.04	0.98	0.97	0.95	0.92	0.88	0.88	0.89	0.88	0.91	0.89	0.97	0.97	1.01	1.07	1.19	1.42
4	1.42	1.18	1.08	0.99	0.94	0.92	0.90	0.87	0.84	0.84	0.84	0.84	0.87	0.85	0.92	0.93	0.96	1.02	1.13	1.35
5	1.42	1.18	1.08	0.99	0.93	0.92	0.90	0.87	0.83	0.84	0.84	0.84	0.87	0.85	0.92	0.93	0.96	1.02	1.13	1.35
6	1.43	1.18	1.09	1.00	0.94	0.92	0.91	0.88	0.84	0.84	0.85	0.84	0.88	0.86	0.93	0.93	0.97	1.03	1.14	1.36
7	1.42	1.17	1.08	0.99	0.93	0.92	0.90	0.87	0.83	0.84	0.84	0.84	0.87	0.85	0.92	0.92	0.96	1.02	1.13	1.34
8	1.43	1.18	1.08	0.99	0.94	0.92	0.90	0.88	0.84	0.84	0.85	0.84	0.87	0.85	0.92	0.93	0.96	1.02	1.13	1.35
9	1.37	1.13	1.04	0.96	0.90	0.88	0.87	0.84	0.80	0.81	0.81	0.81	0.84	0.82	0.89	0.89	0.92	0.98	1.09	1.30
10	1.40	1.15	1.06	0.97	0.92	0.90	0.88	0.86	0.82	0.82	0.83	0.82	0.85	0.83	0.90	0.91	0.94	1.00	1.11	1.32
11	1.35	1.12	1.03	0.94	0.89	0.87	0.85	0.83	0.79	0.80	0.80	0.80	0.83	0.81	0.88	0.88	0.91	0.97	1.08	1.28
12	1.35	1.11	1.02	0.94	0.88	0.87	0.85	0.82	0.79	0.79	0.80	0.79	0.82	0.80	0.87	0.88	0.91	0.96	1.07	1.27
13	1.33	1.10	1.01	0.93	0.87	0.86	0.84	0.82	0.78	0.78	0.79	0.78	0.81	0.79	0.86	0.87	0.90	0.95	1.06	1.26
14	1.36	1.12	1.03	0.95	0.89	0.88	0.86	0.83	0.80	0.80	0.80	0.80	0.83	0.81	0.88	0.88	0.91	0.97	1.08	1.29
15	1.35	1.12	1.03	0.94	0.89	0.87	0.85	0.83	0.79	0.80	0.80	0.80	0.82	0.81	0.87	0.88	0.91	0.97	1.07	1.28
16	1.31	1.08	0.99	0.91	0.86	0.84	0.83	0.80	0.77	0.77	0.78	0.77	0.80	0.78	0.85	0.85	0.88	0.94	1.04	1.24
17	1.29	1.06	0.98	0.90	0.85	0.83	0.81	0.79	0.75	0.76	0.76	0.76	0.78	0.77	0.83	0.84	0.87	0.92	1.02	1.22
18	1.31	1.09	1.00	0.92	0.86	0.85	0.83	0.81	0.77	0.77	0.78	0.77	0.80	0.78	0.85	0.86	0.88	0.94	1.04	1.24
19	1.46	1.20	1.11	1.02	0.96	0.94	0.92	0.89	0.85	0.86	0.86	0.86	0.89	0.87	0.94	0.95	0.98	1.05	1.16	1.38
20	1.80	1.48	1.36	1.25	1.18	1.16	1.13	1.10	1.05	1.06	1.06	1.06	1.10	1.07	1.16	1.17	1.21	1.29	1.43	1.70

Table B-31: 2D gradient map of plate D-7 where point (1, 1) is the top west corner of the plate and point (20, 20) is the bottom east corner of the plate.

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
1	1.87	1.64	1.47	1.38	1.31	1.21	1.18	1.21	1.15	1.12	1.08	1.10	1.14	1.16	1.18	1.27	1.37	1.39	1.53	1.83
2	1.58	1.39	1.24	1.17	1.11	1.03	1.00	1.02	0.97	0.95	0.91	0.93	0.97	0.98	1.00	1.07	1.16	1.18	1.29	1.55
3	1.43	1.26	1.13	1.06	1.01	0.93	0.91	0.93	0.88	0.86	0.82	0.85	0.88	0.89	0.91	0.97	1.05	1.07	1.17	1.41
4	1.44	1.27	1.14	1.07	1.01	0.94	0.91	0.93	0.89	0.87	0.83	0.85	0.88	0.90	0.91	0.98	1.06	1.08	1.18	1.42
5	1.40	1.23	1.10	1.03	0.98	0.91	0.89	0.91	0.86	0.84	0.81	0.83	0.86	0.87	0.89	0.95	1.03	1.04	1.15	1.38
6	1.38	1.21	1.09	1.02	0.97	0.90	0.87	0.89	0.85	0.83	0.80	0.82	0.85	0.86	0.87	0.94	1.01	1.03	1.13	1.36
7	1.34	1.18	1.06	0.99	0.94	0.87	0.85	0.87	0.83	0.81	0.77	0.79	0.82	0.83	0.85	0.91	0.99	1.00	1.10	1.32
8	1.32	1.16	1.04	0.98	0.93	0.86	0.84	0.86	0.82	0.79	0.76	0.78	0.81	0.82	0.84	0.90	0.97	0.99	1.08	1.30
9	1.35	1.18	1.06	0.99	0.95	0.88	0.85	0.87	0.83	0.81	0.78	0.80	0.83	0.84	0.85	0.91	0.99	1.00	1.10	1.32
10	1.28	1.12	1.01	0.94	0.90	0.83	0.81	0.83	0.79	0.77	0.74	0.75	0.78	0.79	0.81	0.87	0.94	0.95	1.05	1.25
11	1.35	1.19	1.06	1.00	0.95	0.88	0.86	0.88	0.83	0.81	0.78	0.80	0.83	0.84	0.86	0.92	0.99	1.01	1.11	1.33
12	1.32	1.16	1.04	0.98	0.93	0.86	0.84	0.86	0.82	0.80	0.76	0.78	0.81	0.82	0.84	0.90	0.97	0.99	1.08	1.30
13	1.32	1.16	1.04	0.97	0.93	0.86	0.83	0.85	0.81	0.79	0.76	0.78	0.81	0.82	0.84	0.89	0.97	0.98	1.08	1.30
14	1.22	1.08	0.96	0.90	0.86	0.80	0.77	0.79	0.75	0.74	0.71	0.72	0.75	0.76	0.78	0.83	0.90	0.91	1.00	1.20
15	1.38	1.21	1.08	1.02	0.97	0.89	0.87	0.89	0.85	0.83	0.79	0.81	0.84	0.85	0.87	0.93	1.01	1.03	1.13	1.35
16	1.31	1.15	1.03	0.97	0.92	0.85	0.83	0.85	0.81	0.79	0.76	0.78	0.81	0.81	0.83	0.89	0.96	0.98	1.08	1.29
17	1.26	1.11	0.99	0.93	0.89	0.82	0.80	0.82	0.78	0.76	0.73	0.75	0.77	0.78	0.80	0.86	0.93	0.94	1.03	1.24
18	1.34	1.18	1.06	0.99	0.94	0.87	0.85	0.87	0.83	0.81	0.77	0.79	0.82	0.83	0.85	0.91	0.98	1.00	1.10	1.32
19	1.38	1.21	1.09	1.02	0.97	0.90	0.87	0.89	0.85	0.83	0.80	0.82	0.85	0.86	0.88	0.94	1.01	1.03	1.13	1.36
20	1.79	1.57	1.41	1.32	1.26	1.16	1.13	1.16	1.10	1.07	1.03	1.06	1.10	1.11	1.13	1.21	1.31	1.33	1.46	1.75

Table B-32: 2D gradient map of plate D-8 where point (1, 1) is the top west corner of the plate and point (20, 20) is the bottom east corner of the plate.

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
1	1.63	1.42	1.34	1.33	1.22	1.22	1.16	1.12	1.10	1.09	1.15	1.08	1.07	1.08	1.11	1.15	1.24	1.31	1.36	1.48
2	1.48	1.29	1.21	1.21	1.10	1.11	1.05	1.01	1.00	0.99	1.04	0.98	0.97	0.98	1.01	1.05	1.12	1.18	1.24	1.34
3	1.45	1.27	1.19	1.19	1.09	1.09	1.04	1.00	0.98	0.97	1.03	0.96	0.96	0.96	0.99	1.03	1.11	1.17	1.22	1.32
4	1.31	1.14	1.07	1.07	0.98	0.98	0.93	0.90	0.88	0.87	0.92	0.87	0.86	0.86	0.89	0.92	0.99	1.05	1.10	1.19
5	1.36	1.19	1.11	1.11	1.01	1.02	0.97	0.93	0.91	0.90	0.96	0.90	0.89	0.90	0.92	0.96	1.03	1.09	1.14	1.23
6	1.32	1.16	1.09	1.09	0.99	0.99	0.94	0.91	0.89	0.88	0.94	0.88	0.87	0.88	0.90	0.94	1.01	1.06	1.11	1.21
7	1.36	1.19	1.12	1.12	1.02	1.02	0.97	0.94	0.92	0.91	0.96	0.91	0.90	0.90	0.93	0.97	1.04	1.09	1.14	1.24
8	1.24	1.08	1.01	1.01	0.92	0.93	0.88	0.85	0.83	0.82	0.87	0.82	0.81	0.82	0.84	0.87	0.94	0.99	1.04	1.12
9	1.28	1.12	1.05	1.05	0.96	0.96	0.91	0.88	0.86	0.85	0.90	0.85	0.84	0.84	0.87	0.90	0.97	1.03	1.07	1.16
10	1.23	1.08	1.01	1.01	0.92	0.93	0.88	0.85	0.83	0.82	0.87	0.82	0.81	0.82	0.84	0.87	0.94	0.99	1.04	1.12
11	1.21	1.06	0.99	0.99	0.91	0.91	0.86	0.83	0.82	0.81	0.86	0.80	0.80	0.80	0.82	0.86	0.92	0.97	1.02	1.10
12	1.21	1.06	1.00	0.99	0.91	0.91	0.86	0.83	0.82	0.81	0.86	0.81	0.80	0.80	0.83	0.86	0.92	0.97	1.02	1.10
13	1.28	1.12	1.05	1.05	0.96	0.96	0.91	0.88	0.86	0.86	0.91	0.85	0.84	0.85	0.87	0.91	0.98	1.03	1.07	1.17
14	1.19	1.04	0.97	0.97	0.89	0.89	0.85	0.81	0.80	0.79	0.84	0.79	0.78	0.78	0.81	0.84	0.90	0.95	1.00	1.08
15	1.24	1.09	1.02	1.02	0.93	0.93	0.88	0.85	0.84	0.83	0.88	0.82	0.82	0.82	0.85	0.88	0.94	1.00	1.04	1.13
16	1.17	1.03	0.96	0.96	0.88	0.88	0.84	0.80	0.79	0.78	0.83	0.78	0.77	0.78	0.80	0.83	0.89	0.94	0.98	1.07
17	1.19	1.04	0.98	0.98	0.89	0.89	0.85	0.82	0.80	0.80	0.84	0.79	0.78	0.79	0.81	0.84	0.91	0.96	1.00	1.08
18	1.30	1.14	1.07	1.06	0.97	0.97	0.92	0.89	0.87	0.87	0.92	0.86	0.85	0.86	0.88	0.92	0.99	1.04	1.09	1.18
19	1.40	1.23	1.15	1.15	1.05	1.05	1.00	0.96	0.95	0.94	0.99	0.93	0.92	0.93	0.96	0.99	1.07	1.13	1.18	1.28
20	1.56	1.36	1.28	1.28	1.17	1.17	1.11	1.07	1.05	1.04	1.10	1.03	1.03	1.03	1.06	1.10	1.19	1.25	1.31	1.42