ECAR Title: As-Run Neutronic Analysis of the AGC-1 Experiment Irradiated in the ATR South Flux Trap

ECAR No.: 1406 ECAR Rev. No.: 0 Project File No.: 23843 Date: March 22, 2011

1. Index Codes

   Building/Type: NA SSC ID: NA Site Area: NA

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3. Objective/Purpose:

   This Engineering Calculations Analysis Report (ECAR) documents the results of the Advanced Test Reactor (ATR) detailed physics analyses performed to calculate the displacements per atom (DPA) and the fast neutron fluence (E > 0.1 MeV) of the Advanced Graphite Creep (AGC) experiment, AGC-1, irradiated in the ATR South Flux Trap (SFT) (see Figure 1) during ATR Cycle 145A, Cycle 145B, Cycle 146A, Cycle 146B, Cycle 147A, Cycle 148A and Cycle 148B. The results for these evaluations and analysis are reported herein.

4. Conclusions/Recommendations:

   The AGC-1 specimen neutron fast fluence (E > 0.1 MeV) and DPA calculations were performed using the ATR power history summary data provided in Table 3 in the attached report. All calculated results are tabulated in the attached report.

ENGINEERING CALCULATIONS AND ANALYSIS REPORT

ECAR Title: As-Run Neutronic Analysis of the AGC-1 Experiment Irradiated in the ATR South Flux Trap

ECAR No.: 1406 ECAR Rev. No.: 0 Project File No.: ~~22843~~ 23843 TKA 3-23-11 Date: March 2011

5. Review (R) and Approval (A) and Acceptance (Ac)[1]:			
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1. Review and Approval are required. See LWP-10200 for definitions and responsibilities.
2. Electronic Change Request (ECR) numbers in lieu of signatures on this page indicate electronic final review, approval and acceptance by the listed individuals.
3. As Required per LWP-10200.

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1.0 Introduction, Purpose, and Scope

This Engineering Calculations Analysis Report (ECAR) documents the results of the Advanced Test Reactor (ATR) detailed physics analyses performed to calculate the displacements per atom (DPA) and the fast neutron fluence (E > 0.1 MeV) of the Advanced Graphite Creep (AGC) experiment, AGC-1, irradiated in the ATR South Flux Trap (SFT) (see Figure 1) during ATR Cycle 145A, Cycle 145B, Cycle 146A, Cycle 146B, Cycle 147A, Cycle 148A and Cycle 148B. The results for these evaluations and analysis are reported herein.

2.0 Assumptions

The assumptions used in this analysis are stated below.

1. ATR Cycle 145A had as-run averaged lobe powers of 18.0-17.9-23.2-23.8-25.7 (NW-NE-C-SW-SE) with 54.7 EFPDs of irradiation [1].

2. ATR Cycle 145B had as-run averaged lobe powers of17.8-17.8-23.0-24.6-25.8 (NW-NE-C-SW-SE) with 57.3 EFPDs of irradiation [1].

3. ATR Cycle 146A had as-run averaged lobe powers of 18.0-18.0-24.3-25.8-26.0 (NW-NE-C-SW-SE) with 50.5 EFPDs of irradiation [1].

4. ATR Cycle 146B had as-run averaged lobe powers of 23.0-18.0-26.0-23.0-26.0 (NW-NE-C-SW-SE) with 39.2 EFPDs of irradiation [1].

5. ATR Cycle 147A had as-run averaged lobe powers of 23.0-18.0-24.1-20.9-23.0 (NW-NE-C-SW-SE) with 50.2 EFPDs of irradiation [1].

6. ATR Cycle 148A had as-run averaged lobe powers of 18.0-18.0-23.6-22.0-23.0 (NW-NE-C-SW-SE) with 47.5 EFPDs of irradiation [1].

7. ATR Cycle 148B had as-run averaged lobe powers of 18.0-18.0-23.0-23.8-23.0 (NW-NE-C-SW-SE) with 51.5 EFPDs of irradiation [1].

8. The ATR SFT power is assumed to be best represented by the average of the SW, C and SE lobe powers, S = (SW + C + SE) / 3.

3.0 Experiment Description

The AGC-1 experiment was irradiated in the SFT test position of the ATR (shown in Figure 1). The AGC-1 experiment assembly consisted of a single capsule that served as the pressure boundary of the experiment. The capsule contains a specimen holder with 6 equally spaced graphite specimen openings around a single central graphite specimen opening. The outer diameter of the specimen holder varied axially to provide a varying gas gap used to maintain the specified temperature conditions [3] for the graphite specimens. A thermal heat shield was incorporated in the experiment assembly to aid in temperature control. The heat shield was incorporated to impede the thermal radiation heat transfer in the experiment.

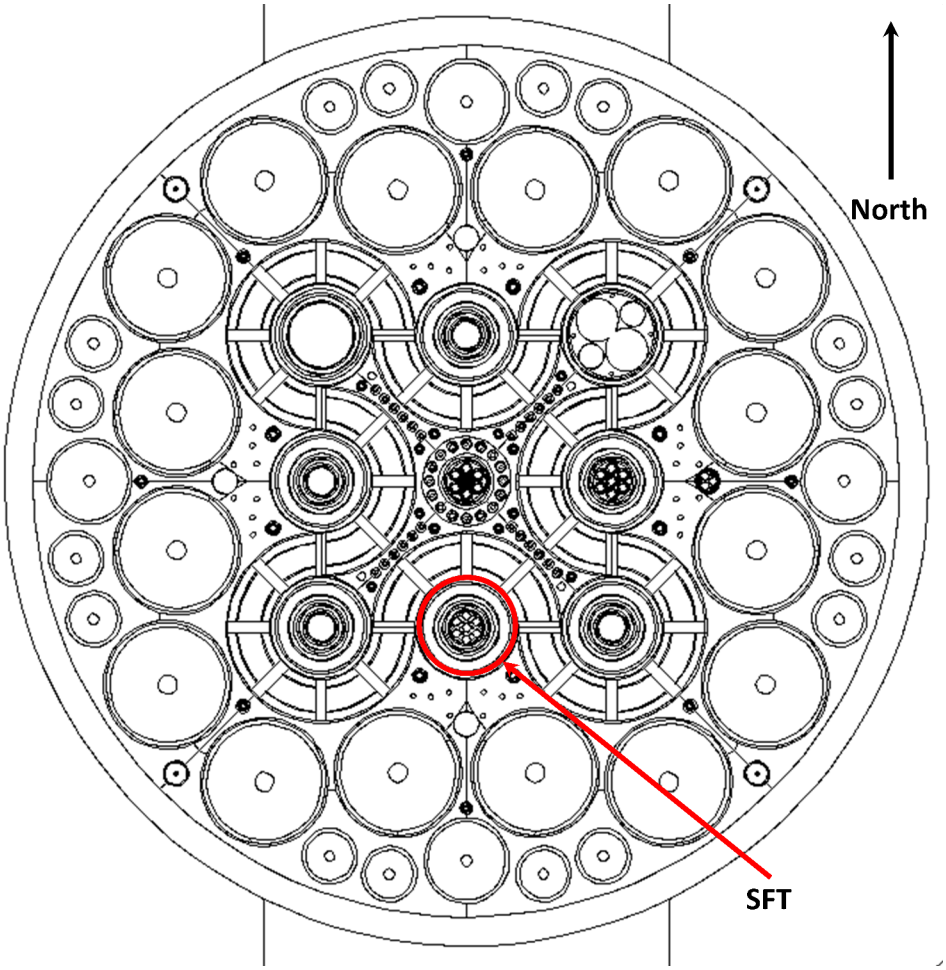

Figure 1 Cross-sectional view of ATR core model generated by the MCNP plotter.

Graphite specimens were stacked in the specimen openings of the specimen holder. The specimens had a diameter of 0.5 inches and were either 1 inch or 0.25 inches in length. Graphite spacers having diameter of 0.5 inches and a length of 0.25 inches separated the specimens. The outer 6 specimen stacks were designed in a way to apply a compressive stress to the specimens located above the core mid-plane while leaving the specimens below the core mid-plane unstressed. The specimens in the

center specimen stack location were all unstressed. Pneumatic pistons located outside of the high neutron and gamma fields of the reactor provided the stress on the specimens. The stress was measured and controlled with in-line load cells that were also located outside of the high neutron and gamma fields. The pushrods transferring the load directly to the specimens were composed of graphite.

The temperature of the experiment were monitored using 12 thermocouples (TCs) inserted into the experiment assembly. The 12 TCs were located in the specimen holder at 6 equally spaced azimuthal locations between the 6 outer specimen stack locations and two different radial distances from the experiment center. Each TC is located axially in the experiment assembly at a unique elevation. A radial cross section view of the experiment assembly is shown in Figure 2 and Figure 3.

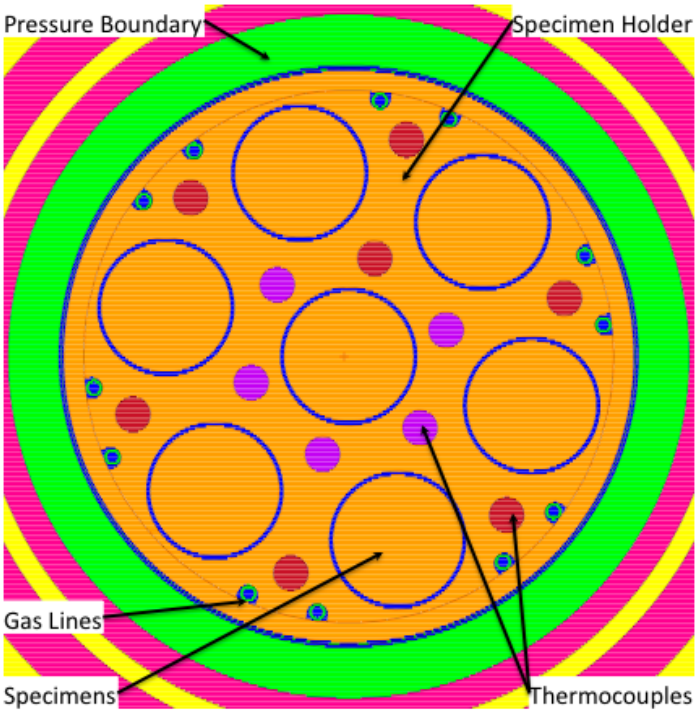

Figure 2 Radial view of the AGC-1 experiment.

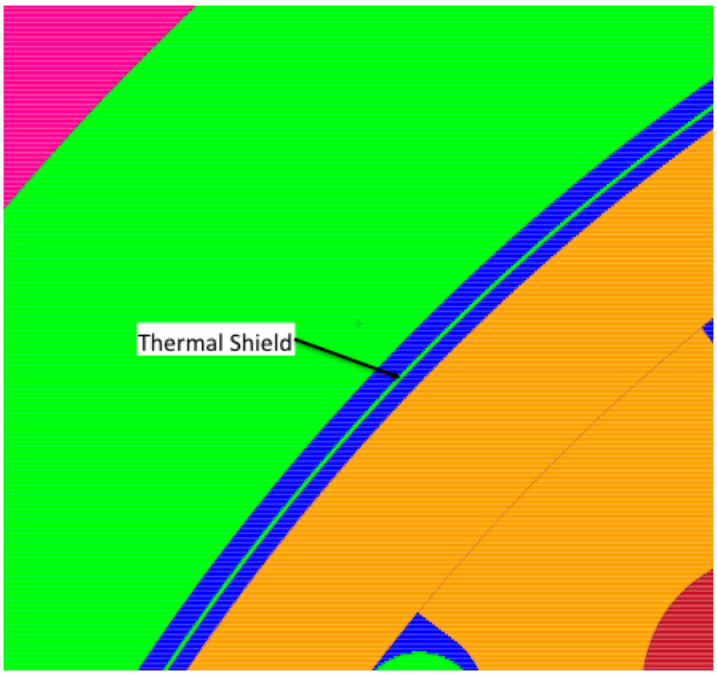

Figure 3 Close-up radial view of the AGC-1 Experiment.

4.0 Modeling Information

MCNP [3] [4], a general purpose Monte Carlo N-Particle transport code, was used to model and evaluate the DPA and the neutron fast fluence of the AGC-1 experiment assembly. The MCNP built-in cross-section data libraries were used in the analysis.

The MCNP model used for as-run analysis was identical to that used in the projected neutronic analysis reported in ECAR-215 which used drawings shown in Table 1 [5].

Table 1. INL Drawings for the AGC-1 Experiment.

INL Drawing	Revision	Drawing Title
DWG-630427	-	ATR Advanced Graphite Test Graphite Component Details
DWG-630428	-	ATR Advanced Graphite Test Stainless Steel Component Details
DWG-630430	-	ATR Advanced Graphite Test Capsule Facility Assembly
DWG-630431	-	ATR Advanced Graphite Test Graphite Specimen Stack-up Arrangements
DWG-630432	-	ATR Advanced Graphite Test Transitioned Thermal Heat Shield Details and Assembly
DWG-630434	-	ATR Advanced Graphite Test Pressure Boundary Tube

4.1 Data Libraries

The standard MCNP cross-section data libraries were used to calculate the fast neutron fluence for the specimens. The flux is converted into DPA by MCNP using a flux-to-dose conversion factor calculated by Greenwood [6].

4.2 Core Power Splits

The core power splits modeled and used in this analysis were based on the as-run lobe powers recorded in the ATR Surveillance Data (ASUDAS) Report for each cycle. Table 2 summarizes the power history for each cycle. Table 3 summarizes the irradiation history for the AGC-1 experiment.

Table 2. ATR Power History Data Summary for the ACT-1 Experiment.

ATR Cycle	Average NW Lobe Power (MW)	Average NE Lobe Power (MW)	Average C Lobe Power (MW)	Average SW Lobe Power (MW)	Average SE Lobe Power (MW)
145A	18.0	17.9	23.2	23.8	25.7
145B	17.8	17.8	23.0	24.6	25.8
146A	18.0	18.0	24.3	25.8	26.0
146B	23.0	18.0	26.0	23.0	26.0
147A	23.0	18.0	24.1	20.9	23.0
148A	18.0	18.0	23.6	22.0	23.0
148B	18.0	18.0	23.0	23.8	23.0

Table 3. ATR Irradiation History Data Summary for the AGC-1 Experiment.

ATR CYCLE	Test ID	Dates Irradiated	Cycle EFPDs	Mid-Cycle Scram Decay Days	Average SFT Power (MW)
145A	AGC-1	09/05/2009 – 11/06/2009	54.7	7	24.2
145B	AGC-1	11/24/2009 – 01/24/2010	57.3	3	24.5
146A	AGC-1	02/08/2010 – 04/03/2010	50.5	4	25.4
146B	AGC-1	04/21/2010 – 05/30/2010	39.2	0	25.0
147A	AGC-1	06/19/2010 – 08/14/2010	50.2	2	22.7
148A	AGC-1	09/01/2010 – 10/23/2010	47.5	5	22.9
148B	AGC-1	11/18/2010 – 01/08/2011	51.5	3.7	23.3

5.0 Calculations and Analysis

MCNP was used to calculate the AGC-1 neutron fast flux (E > 0.1 MeV) and DPA. MCNP reports tally results normalized per source particle. The flux tallies have units of neutrons/cm^2 per fission neutron and the DPA tallies have units of DPA-barns/cm^2 per fission neutron [6].

5.1 MCNP Neutron Flux Calculations

The MCNP type 4 flux tally results are used to generate the neutron flux. The neutron flux conversion factor (NFCF) is defined by equation (1).

$$\mathrm{NFCF} = \left(\frac{2.43\ \text{fission neutrons}}{\text{fission}}\right)\left(\frac{\text{fission}}{200\ \text{MeV}}\right)\left(\frac{\text{MeV}}{1.60219\times10^{-13}\ \text{J}}\right)\left(\frac{\text{J}}{\text{W}-\text{s}}\right)\left(\frac{1.0\times10^{6}\ \text{W}}{\text{MW}}\right)$$

$$\mathrm{NFCF} = 7.583\times10^{16}\frac{\text{fission neutrons}}{\text{MW - s}} \tag{1}$$

The neutron flux values are calculated using the MCNP tally type 4 results, the NFCF, and the ATR core power. The neutron flux is calculated using equation (2). The neutron fast fluence (E > 0.1 MeV) is obtained by multiplying the neutron flux by the time step EFPD.

$$\Phi_{\text{neutron}} = \left(\text{type 4 tally}\frac{\text{neutrons}}{\text{cm}^2\text{ - fission neutron}}\right)\left(7.583\times10^{16}\ \frac{\text{fission neutrons}}{\text{MW - s}}\right)\left(\text{MW}_{\text{Core Power}}\right)$$

$$\Phi_{\text{neutron}} = (\text{f4})(\text{NFCF})(\text{Core Power}) = \frac{\text{neutrons}}{\text{cm}^2\text{ - s}} \tag{2}$$

5.2 MCNP DPA Calculations

Using a flux-to-dose conversion factor calculated by Greenwood [6], the MCNP type 4 tally results are also used to calculate the DPA. The DPA normalization factor (DNF) is defined by equation (3).

$$\mathrm{DNF} = \left(\frac{2.43\ \text{fission neutrons}}{\text{fission}}\right)\left(\frac{\text{fission}}{200\ \text{MeV}}\right)\left(\frac{6.24146\text{x}10^{18}\text{MeV}}{\text{MW}_{\text{core power}}-\text{s}}\right)\left(\frac{10^{-24}\text{cm}^2}{\text{barn}}\right)$$

$$\mathrm{DNF} = 7.583\text{x}10^{-8}\frac{\text{DPA}}{\text{MW}_{\text{core power}}-\text{s}} \tag{3}$$

The DPA values are calculated using the MCNP modified type 4 tally results, the DNF, the ATR core power and the time step EFPD. The DPA is calculated using equation (4).

$$\text{DPA} = (\text{modified type 4 tally})(\text{DNF})(\text{Core Power})(\text{EFPD}) \quad (4)$$

6.0 Software

Table 4 identifies the computer code used to perform the calculations and analyses documented by this ECAR. This computer code is listed in the INL Enterprise Architecture Repository and is accepted as qualified scientific and engineering analysis software [7].

Table 4. INL Qualified Analysis Software Version and Tracking Number

Code Name	Version	Software ID / Record
MCNP	5 (Release 1.40)	234166

MCNP has been validated for use at the INL by running the 42 sample problems transmitted on the Radiation Safety Information Computational Center (RSICC) installation CD and comparing the results against the standard results provided on the installation CD [3] [4]. Additionally, the input model for the ATR criticality benchmark [8] was executed and results identical to the published results were obtained [8]. The computer configurations listed in Table 5 were used to perform the MCNP calculations reported by this ECAR.

Table 5. Computer Configurations with INL Qualified MCNP5 Installations

Computer Model	Processor	Operating System
Dell PowerEdge 1950 distributed memory cluster	122 compute nodes with two dual core Intel Xeon processors each 44 compute nodes with two quad core Intel Xeon processors each 840 compute cores total, 2.66 GHz clock speed 1 login node with 8 cores 2 GB memory per core, 1680 GB memory total Gigabit Ethernet interconnect network	OpenSUSE 11.1
SGI Altix ICE 8200 distributed memory blade cluster	256 compute blades with two quad core Intel Xeon processors each 2,048 compute cores total, 2.66 GHz clock speed 2 login nodes, each with 8 cores 2 GB memory per core, 4 TB memory total DDR 4X InfiniBand interconnect network	SUSE Linux Enterprise Server 10

7.0 Results, Conclusions, and Recommendations

All components of the AGC-1 experiment except for the specimens were divided into 6 azimuthal segments. The segments are designated as North, Northeast, Southeast, South, Southwest, and Northwest as shown in Figure 4. The specimen locations were designated as S-1, S-2, S-3, S-4, S-5, S-6, and S-7 as indicated in the following figure.

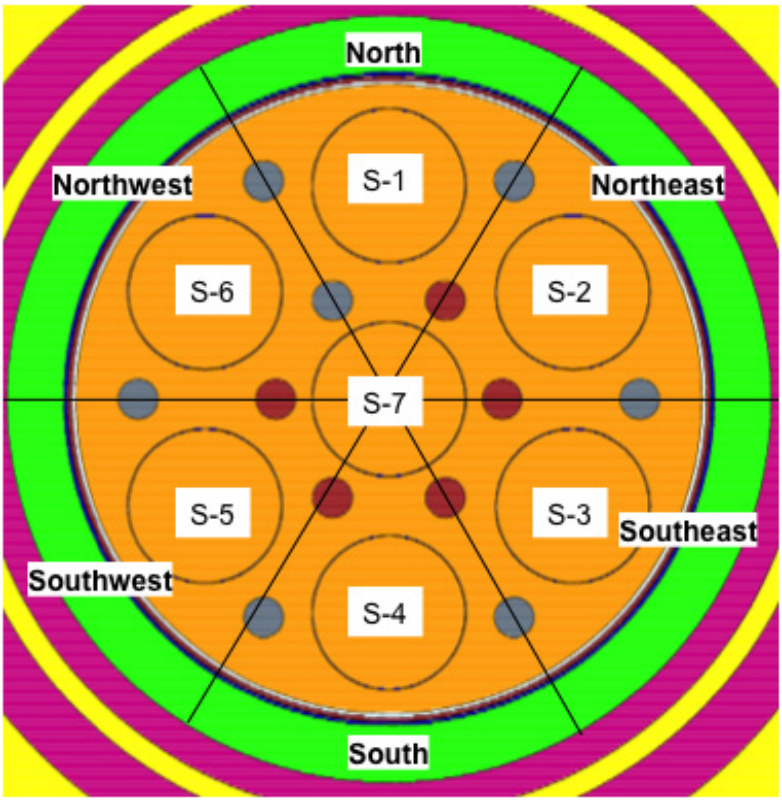

Figure 4 Segment designation for the AGC-1 experiment.

7.1 AGC-1 Specimen Fast Fluence

The as-run fast neutron fluence (E > 0.1MeV) for the AGC-1 test specimens at the end of cycle (EOC) for Cycle 145A, Cycle 145B, Cycle 146A and Cycle 146B are shown in Table 6, Table 7, Table 8 and Table 9, respectively. The experiment was rotated 180 degrees for Cycle 147A, Cycle 148 A and Cycle 148B and the EOC neutron fast fluence (E > 0.1 MeV) for each test specimen is shown in Table 10, Table 11 and Table 12, respectively. The fast neutron fluence for the specimen stacks for Cycle 145A, Cycle 145B, Cycle 146A, Cycle 146B, Cycle 147A, Cycle 148A and Cycle 148B can also be seen in Figure 5, Figure 6, Figure 7, Figure 8, Figure 9, Figure 10 and Figure 11, respectively.

Table 6. AGC-1 specimen fast fluence (E > 0.1 MeV) at EOC 145A.

Distance Relative to Core Mid-Plane (inches)	Center S-7 n/cm^2	North S-1 n/cm^2	NorthEast S-2 n/cm^2	SouthEast S-3 n/cm^2	South S-4 n/cm^2	SouthWest S-5 n/cm^2	NorthWest S-6 n/cm^2
-24.1	3.61E+20	4.03E+20	3.85E+20	3.46E+20	3.15E+20	3.35E+20	3.80E+20
-23.1	4.98E+20	5.63E+20	5.29E+20	4.64E+20	4.30E+20	4.54E+20	5.25E+20
-22.1	5.97E+20	6.75E+20	6.51E+20	5.59E+20	5.08E+20	5.56E+20	6.36E+20
-21.1	6.88E+20	7.64E+20	7.39E+20	6.45E+20	5.89E+20	6.39E+20	7.31E+20
-20.1	7.79E+20	8.58E+20	8.29E+20	7.31E+20	6.69E+20	7.18E+20	8.13E+20
-19.1	8.52E+20	9.40E+20	9.10E+20	8.06E+20	7.44E+20	8.03E+20	8.98E+20
-18.1	9.38E+20	1.04E+21	1.00E+21	8.83E+20	8.03E+20	8.78E+20	9.93E+20
-17.1	1.01E+21	1.13E+21	1.07E+21	9.52E+20	8.80E+20	9.44E+20	1.07E+21
-16.1	1.09E+21	1.21E+21	1.15E+21	1.03E+21	9.42E+20	1.01E+21	1.14E+21
-15.1	1.13E+21	1.26E+21	1.21E+21	1.07E+21	9.89E+20	1.05E+21	1.19E+21
-14.1	1.19E+21	1.31E+21	1.26E+21	1.13E+21	1.04E+21	1.12E+21	1.25E+21
-13.1	1.23E+21	1.35E+21	1.32E+21	1.17E+21	1.09E+21	1.16E+21	1.30E+21
-12.1	1.28E+21	1.42E+21	1.37E+21	1.22E+21	1.12E+21	1.21E+21	1.35E+21
-11.1	1.33E+21	1.46E+21	1.42E+21	1.26E+21	1.16E+21	1.25E+21	1.40E+21
-10.1	1.36E+21	1.50E+21	1.43E+21	1.28E+21	1.19E+21	1.28E+21	1.43E+21
-9.1	1.40E+21	1.52E+21	1.49E+21	1.32E+21	1.23E+21	1.31E+21	1.46E+21
-8.1	1.42E+21	1.54E+21	1.50E+21	1.35E+21	1.25E+21	1.32E+21	1.49E+21
-7.1	1.43E+21	1.57E+21	1.53E+21	1.38E+21	1.26E+21	1.35E+21	1.51E+21
-6.1	1.46E+21	1.58E+21	1.54E+21	1.39E+21	1.29E+21	1.37E+21	1.53E+21
-5.1	1.46E+21	1.60E+21	1.56E+21	1.41E+21	1.29E+21	1.38E+21	1.54E+21
-4.1	1.48E+21	1.62E+21	1.57E+21	1.41E+21	1.30E+21	1.41E+21	1.55E+21
-3.1	1.48E+21	1.62E+21	1.59E+21	1.43E+21	1.32E+21	1.39E+21	1.57E+21
-2.1	1.49E+21	1.62E+21	1.58E+21	1.43E+21	1.33E+21	1.42E+21	1.56E+21
-1.1	1.49E+21	1.62E+21	1.59E+21	1.43E+21	1.31E+21	1.40E+21	1.57E+21
-0.1	1.50E+21	1.64E+21	1.58E+21	1.42E+21	1.32E+21	1.40E+21	1.56E+21
0.9	1.50E+21	1.63E+21	1.59E+21	1.43E+21	1.32E+21	1.40E+21	1.57E+21
1.9	1.50E+21	1.63E+21	1.58E+21	1.43E+21	1.32E+21	1.41E+21	1.57E+21
2.9	1.47E+21	1.61E+21	1.55E+21	1.41E+21	1.30E+21	1.40E+21	1.54E+21
3.9	1.47E+21	1.60E+21	1.55E+21	1.40E+21	1.29E+21	1.38E+21	1.53E+21
4.9	1.45E+21	1.58E+21	1.54E+21	1.39E+21	1.27E+21	1.36E+21	1.53E+21
5.9	1.43E+21	1.56E+21	1.51E+21	1.37E+21	1.26E+21	1.34E+21	1.51E+21
6.9	1.39E+21	1.54E+21	1.49E+21	1.33E+21	1.23E+21	1.32E+21	1.47E+21
7.9	1.37E+21	1.51E+21	1.46E+21	1.30E+21	1.20E+21	1.30E+21	1.44E+21
8.9	1.34E+21	1.48E+21	1.43E+21	1.29E+21	1.18E+21	1.25E+21	1.41E+21
9.9	1.32E+21	1.43E+21	1.40E+21	1.25E+21	1.14E+21	1.24E+21	1.37E+21
10.9	1.26E+21	1.39E+21	1.35E+21	1.19E+21	1.11E+21	1.19E+21	1.33E+21
11.9	1.21E+21	1.34E+21	1.29E+21	1.16E+21	1.06E+21	1.14E+21	1.29E+21
12.9	1.15E+21	1.29E+21	1.23E+21	1.10E+21	1.02E+21	1.09E+21	1.22E+21
13.9	1.11E+21	1.21E+21	1.18E+21	1.05E+21	9.60E+20	1.03E+21	1.15E+21
14.9	1.03E+21	1.17E+21	1.12E+21	9.93E+20	9.13E+20	9.79E+20	1.11E+21
15.9	9.86E+20	1.09E+21	1.05E+21	9.30E+20	8.51E+20	9.23E+20	1.04E+21
16.9	9.12E+20	1.02E+21	9.77E+20	8.53E+20	7.84E+20	8.52E+20	9.62E+20
17.9	8.21E+20	9.17E+20	8.76E+20	7.75E+20	7.08E+20	7.64E+20	8.69E+20
18.9	7.40E+20	8.09E+20	7.85E+20	6.85E+20	6.41E+20	6.79E+20	7.71E+20
19.9	6.49E+20	7.17E+20	6.86E+20	6.08E+20	5.59E+20	6.03E+20	6.78E+20
20.9	5.63E+20	6.33E+20	6.03E+20	5.30E+20	4.88E+20	5.21E+20	5.99E+20
21.9	4.80E+20	5.44E+20	5.26E+20	4.58E+20	4.14E+20	4.50E+20	5.08E+20
22.9	4.05E+20	4.44E+20	4.32E+20	3.81E+20	3.43E+20	3.73E+20	4.18E+20
23.9	3.13E+20	3.55E+20	3.34E+20	2.98E+20	2.72E+20	2.95E+20	3.28E+20

Table 7. AGC-1 specimen fast fluence (E >0.1 MeV) at EOC 145B.

Distance Relative to Core Mid-Plane (inches)	Center S-7 n/cm^2	North S-1 n/cm^2	NorthEast S-2 n/cm^2	SouthEast S-3 n/cm^2	South S-4 n/cm^2	SouthWest S-5 n/cm^2	NorthWest S-6 n/cm^2
-24.1	7.52E+20	8.36E+20	8.05E+20	7.14E+20	6.58E+20	7.00E+20	7.90E+20
-23.1	1.04E+21	1.16E+21	1.10E+21	9.67E+20	8.89E+20	9.53E+20	1.09E+21
-22.1	1.25E+21	1.40E+21	1.33E+21	1.16E+21	1.07E+21	1.15E+21	1.32E+21
-21.1	1.43E+21	1.59E+21	1.53E+21	1.34E+21	1.22E+21	1.32E+21	1.51E+21
-20.1	1.61E+21	1.78E+21	1.72E+21	1.52E+21	1.38E+21	1.48E+21	1.70E+21
-19.1	1.77E+21	1.96E+21	1.89E+21	1.67E+21	1.54E+21	1.66E+21	1.86E+21
-18.1	1.94E+21	2.15E+21	2.08E+21	1.82E+21	1.68E+21	1.82E+21	2.04E+21
-17.1	2.08E+21	2.33E+21	2.23E+21	1.97E+21	1.82E+21	1.95E+21	2.20E+21
-16.1	2.24E+21	2.48E+21	2.38E+21	2.12E+21	1.94E+21	2.09E+21	2.36E+21
-15.1	2.34E+21	2.59E+21	2.50E+21	2.21E+21	2.04E+21	2.18E+21	2.47E+21
-14.1	2.45E+21	2.71E+21	2.61E+21	2.33E+21	2.14E+21	2.29E+21	2.58E+21
-13.1	2.53E+21	2.79E+21	2.71E+21	2.43E+21	2.22E+21	2.40E+21	2.68E+21
-12.1	2.64E+21	2.90E+21	2.82E+21	2.50E+21	2.32E+21	2.50E+21	2.78E+21
-11.1	2.71E+21	2.98E+21	2.90E+21	2.59E+21	2.38E+21	2.56E+21	2.86E+21
-10.1	2.80E+21	3.08E+21	2.95E+21	2.65E+21	2.45E+21	2.64E+21	2.94E+21
-9.1	2.85E+21	3.11E+21	3.04E+21	2.71E+21	2.51E+21	2.70E+21	2.99E+21
-8.1	2.91E+21	3.17E+21	3.07E+21	2.77E+21	2.56E+21	2.71E+21	3.03E+21
-7.1	2.93E+21	3.20E+21	3.13E+21	2.79E+21	2.58E+21	2.76E+21	3.09E+21
-6.1	2.98E+21	3.25E+21	3.15E+21	2.84E+21	2.63E+21	2.83E+21	3.13E+21
-5.1	2.99E+21	3.27E+21	3.17E+21	2.87E+21	2.63E+21	2.83E+21	3.16E+21
-4.1	3.03E+21	3.30E+21	3.19E+21	2.88E+21	2.67E+21	2.88E+21	3.18E+21
-3.1	3.03E+21	3.31E+21	3.25E+21	2.91E+21	2.69E+21	2.86E+21	3.20E+21
-2.1	3.03E+21	3.30E+21	3.23E+21	2.91E+21	2.72E+21	2.89E+21	3.19E+21
-1.1	3.04E+21	3.32E+21	3.25E+21	2.92E+21	2.70E+21	2.88E+21	3.23E+21
-0.1	3.07E+21	3.34E+21	3.24E+21	2.90E+21	2.70E+21	2.86E+21	3.19E+21
0.9	3.05E+21	3.32E+21	3.23E+21	2.90E+21	2.70E+21	2.87E+21	3.20E+21
1.9	3.05E+21	3.32E+21	3.24E+21	2.92E+21	2.69E+21	2.87E+21	3.20E+21
2.9	3.01E+21	3.28E+21	3.17E+21	2.87E+21	2.66E+21	2.86E+21	3.16E+21
3.9	3.02E+21	3.28E+21	3.18E+21	2.88E+21	2.65E+21	2.84E+21	3.14E+21
4.9	2.97E+21	3.22E+21	3.14E+21	2.83E+21	2.61E+21	2.80E+21	3.11E+21
5.9	2.92E+21	3.19E+21	3.10E+21	2.79E+21	2.57E+21	2.76E+21	3.09E+21
6.9	2.86E+21	3.15E+21	3.05E+21	2.74E+21	2.53E+21	2.72E+21	3.02E+21
7.9	2.83E+21	3.10E+21	2.98E+21	2.68E+21	2.49E+21	2.67E+21	2.96E+21
8.9	2.76E+21	3.04E+21	2.94E+21	2.65E+21	2.43E+21	2.58E+21	2.92E+21
9.9	2.71E+21	2.95E+21	2.87E+21	2.57E+21	2.35E+21	2.54E+21	2.82E+21
10.9	2.59E+21	2.85E+21	2.78E+21	2.46E+21	2.28E+21	2.46E+21	2.74E+21
11.9	2.49E+21	2.75E+21	2.66E+21	2.38E+21	2.18E+21	2.33E+21	2.66E+21
12.9	2.39E+21	2.67E+21	2.54E+21	2.27E+21	2.10E+21	2.26E+21	2.53E+21
13.9	2.31E+21	2.52E+21	2.42E+21	2.16E+21	1.99E+21	2.13E+21	2.39E+21
14.9	2.16E+21	2.41E+21	2.31E+21	2.05E+21	1.88E+21	2.03E+21	2.29E+21
15.9	2.03E+21	2.25E+21	2.17E+21	1.92E+21	1.75E+21	1.89E+21	2.14E+21
16.9	1.87E+21	2.10E+21	2.00E+21	1.75E+21	1.62E+21	1.75E+21	1.99E+21
17.9	1.70E+21	1.89E+21	1.81E+21	1.61E+21	1.47E+21	1.58E+21	1.80E+21
18.9	1.52E+21	1.68E+21	1.62E+21	1.43E+21	1.32E+21	1.41E+21	1.61E+21
19.9	1.35E+21	1.50E+21	1.42E+21	1.26E+21	1.16E+21	1.25E+21	1.40E+21
20.9	1.17E+21	1.32E+21	1.26E+21	1.10E+21	1.01E+21	1.09E+21	1.25E+21
21.9	1.01E+21	1.13E+21	1.08E+21	9.56E+20	8.61E+20	9.39E+20	1.06E+21
22.9	8.35E+20	9.31E+20	8.97E+20	7.81E+20	7.15E+20	7.72E+20	8.81E+20
23.9	6.51E+20	7.31E+20	6.93E+20	6.16E+20	5.64E+20	6.09E+20	6.91E+20

Table 8. AGC-1 specimen fast fluence (E > 0.1 MeV) at EOC 146A.

Distance Relative to Core Mid-Plane (inches)	Center S-7 n/cm^2	North S-1 n/cm^2	NorthEast S-2 n/cm^2	SouthEast S-3 n/cm^2	South S-4 n/cm^2	SouthWest S-5 n/cm^2	NorthWest S-6 n/cm^2
-24.1	1.11E+21	1.23E+21	1.18E+21	1.04E+21	9.65E+20	1.03E+21	1.17E+21
-23.1	1.52E+21	1.71E+21	1.62E+21	1.42E+21	1.30E+21	1.41E+21	1.61E+21
-22.1	1.84E+21	2.06E+21	1.95E+21	1.70E+21	1.56E+21	1.69E+21	1.95E+21
-21.1	2.10E+21	2.35E+21	2.26E+21	1.96E+21	1.80E+21	1.94E+21	2.21E+21
-20.1	2.35E+21	2.62E+21	2.52E+21	2.22E+21	2.03E+21	2.19E+21	2.50E+21
-19.1	2.60E+21	2.88E+21	2.77E+21	2.44E+21	2.26E+21	2.43E+21	2.74E+21
-18.1	2.84E+21	3.16E+21	3.04E+21	2.66E+21	2.46E+21	2.67E+21	3.01E+21
-17.1	3.06E+21	3.42E+21	3.28E+21	2.89E+21	2.67E+21	2.87E+21	3.24E+21
-16.1	3.28E+21	3.65E+21	3.48E+21	3.09E+21	2.84E+21	3.07E+21	3.47E+21
-15.1	3.43E+21	3.81E+21	3.67E+21	3.23E+21	2.99E+21	3.20E+21	3.63E+21
-14.1	3.58E+21	3.97E+21	3.83E+21	3.41E+21	3.14E+21	3.37E+21	3.79E+21
-13.1	3.72E+21	4.11E+21	3.97E+21	3.55E+21	3.25E+21	3.51E+21	3.95E+21
-12.1	3.87E+21	4.25E+21	4.13E+21	3.66E+21	3.40E+21	3.66E+21	4.08E+21
-11.1	3.98E+21	4.37E+21	4.25E+21	3.79E+21	3.48E+21	3.76E+21	4.20E+21
-10.1	4.11E+21	4.51E+21	4.33E+21	3.87E+21	3.59E+21	3.88E+21	4.31E+21
-9.1	4.17E+21	4.57E+21	4.45E+21	3.96E+21	3.69E+21	3.94E+21	4.40E+21
-8.1	4.25E+21	4.65E+21	4.49E+21	4.04E+21	3.75E+21	3.98E+21	4.45E+21
-7.1	4.29E+21	4.69E+21	4.58E+21	4.08E+21	3.79E+21	4.05E+21	4.52E+21
-6.1	4.36E+21	4.75E+21	4.61E+21	4.15E+21	3.85E+21	4.15E+21	4.60E+21
-5.1	4.38E+21	4.79E+21	4.65E+21	4.20E+21	3.86E+21	4.15E+21	4.63E+21
-4.1	4.43E+21	4.84E+21	4.69E+21	4.21E+21	3.91E+21	4.23E+21	4.66E+21
-3.1	4.43E+21	4.86E+21	4.74E+21	4.26E+21	3.94E+21	4.20E+21	4.68E+21
-2.1	4.44E+21	4.85E+21	4.73E+21	4.26E+21	3.97E+21	4.25E+21	4.68E+21
-1.1	4.45E+21	4.86E+21	4.75E+21	4.27E+21	3.96E+21	4.24E+21	4.73E+21
-0.1	4.49E+21	4.89E+21	4.76E+21	4.25E+21	3.95E+21	4.20E+21	4.68E+21
0.9	4.48E+21	4.87E+21	4.74E+21	4.25E+21	3.95E+21	4.20E+21	4.69E+21
1.9	4.47E+21	4.86E+21	4.73E+21	4.26E+21	3.92E+21	4.20E+21	4.68E+21
2.9	4.42E+21	4.81E+21	4.64E+21	4.21E+21	3.90E+21	4.20E+21	4.64E+21
3.9	4.41E+21	4.80E+21	4.66E+21	4.21E+21	3.88E+21	4.17E+21	4.61E+21
4.9	4.36E+21	4.73E+21	4.61E+21	4.14E+21	3.81E+21	4.11E+21	4.56E+21
5.9	4.28E+21	4.67E+21	4.55E+21	4.09E+21	3.77E+21	4.06E+21	4.53E+21
6.9	4.20E+21	4.62E+21	4.47E+21	4.02E+21	3.71E+21	4.00E+21	4.44E+21
7.9	4.15E+21	4.55E+21	4.38E+21	3.94E+21	3.64E+21	3.92E+21	4.34E+21
8.9	4.04E+21	4.46E+21	4.32E+21	3.88E+21	3.56E+21	3.79E+21	4.27E+21
9.9	3.98E+21	4.34E+21	4.19E+21	3.76E+21	3.44E+21	3.73E+21	4.16E+21
10.9	3.80E+21	4.18E+21	4.06E+21	3.60E+21	3.35E+21	3.61E+21	4.03E+21
11.9	3.66E+21	4.06E+21	3.90E+21	3.49E+21	3.20E+21	3.43E+21	3.90E+21
12.9	3.51E+21	3.92E+21	3.73E+21	3.32E+21	3.08E+21	3.31E+21	3.73E+21
13.9	3.37E+21	3.72E+21	3.55E+21	3.16E+21	2.92E+21	3.12E+21	3.51E+21
14.9	3.17E+21	3.54E+21	3.39E+21	3.00E+21	2.76E+21	2.98E+21	3.36E+21
15.9	2.98E+21	3.31E+21	3.19E+21	2.80E+21	2.57E+21	2.77E+21	3.15E+21
16.9	2.74E+21	3.07E+21	2.94E+21	2.58E+21	2.38E+21	2.58E+21	2.93E+21
17.9	2.49E+21	2.79E+21	2.66E+21	2.36E+21	2.16E+21	2.33E+21	2.66E+21
18.9	2.24E+21	2.48E+21	2.37E+21	2.09E+21	1.94E+21	2.08E+21	2.36E+21
19.9	1.99E+21	2.21E+21	2.08E+21	1.85E+21	1.71E+21	1.84E+21	2.06E+21
20.9	1.72E+21	1.94E+21	1.85E+21	1.61E+21	1.49E+21	1.61E+21	1.84E+21
21.9	1.48E+21	1.66E+21	1.59E+21	1.39E+21	1.27E+21	1.38E+21	1.56E+21
22.9	1.22E+21	1.37E+21	1.31E+21	1.15E+21	1.05E+21	1.13E+21	1.30E+21
23.9	9.51E+20	1.07E+21	1.02E+21	9.08E+20	8.31E+20	8.94E+20	1.01E+21

Table 9. AGC-1 specimen fast fluence (E > 0.1 MeV) at EOC 146B.

Distance Relative to Core Mid-Plane (inches)	Center S-7 n/cm^2	North S-1 n/cm^2	NorthEast S-2 n/cm^2	SouthEast S-3 n/cm^2	South S-4 n/cm^2	SouthWest S-5 n/cm^2	NorthWest S-6 n/cm^2
-24.1	1.37E+21	1.52E+21	1.46E+21	1.29E+21	1.19E+21	1.27E+21	1.44E+21
-23.1	1.87E+21	2.11E+21	2.00E+21	1.76E+21	1.61E+21	1.74E+21	1.99E+21
-22.1	2.26E+21	2.55E+21	2.41E+21	2.10E+21	1.93E+21	2.08E+21	2.40E+21
-21.1	2.59E+21	2.90E+21	2.79E+21	2.43E+21	2.23E+21	2.40E+21	2.73E+21
-20.1	2.90E+21	3.24E+21	3.11E+21	2.74E+21	2.50E+21	2.70E+21	3.09E+21
-19.1	3.21E+21	3.56E+21	3.43E+21	3.01E+21	2.79E+21	3.00E+21	3.39E+21
-18.1	3.51E+21	3.92E+21	3.75E+21	3.29E+21	3.03E+21	3.30E+21	3.72E+21
-17.1	3.80E+21	4.25E+21	4.06E+21	3.58E+21	3.29E+21	3.54E+21	4.01E+21
-16.1	4.06E+21	4.52E+21	4.32E+21	3.82E+21	3.51E+21	3.79E+21	4.29E+21
-15.1	4.26E+21	4.73E+21	4.55E+21	4.00E+21	3.71E+21	3.96E+21	4.50E+21
-14.1	4.44E+21	4.94E+21	4.75E+21	4.22E+21	3.89E+21	4.17E+21	4.69E+21
-13.1	4.61E+21	5.10E+21	4.93E+21	4.39E+21	4.02E+21	4.35E+21	4.89E+21
-12.1	4.80E+21	5.29E+21	5.12E+21	4.54E+21	4.20E+21	4.54E+21	5.05E+21
-11.1	4.94E+21	5.44E+21	5.27E+21	4.70E+21	4.31E+21	4.66E+21	5.22E+21
-10.1	5.10E+21	5.60E+21	5.39E+21	4.81E+21	4.46E+21	4.81E+21	5.34E+21
-9.1	5.19E+21	5.69E+21	5.55E+21	4.93E+21	4.58E+21	4.89E+21	5.46E+21
-8.1	5.27E+21	5.79E+21	5.61E+21	5.02E+21	4.66E+21	4.95E+21	5.53E+21
-7.1	5.34E+21	5.86E+21	5.71E+21	5.08E+21	4.69E+21	5.03E+21	5.62E+21
-6.1	5.42E+21	5.92E+21	5.75E+21	5.17E+21	4.77E+21	5.14E+21	5.72E+21
-5.1	5.44E+21	5.97E+21	5.80E+21	5.23E+21	4.79E+21	5.15E+21	5.76E+21
-4.1	5.51E+21	6.03E+21	5.85E+21	5.24E+21	4.85E+21	5.24E+21	5.81E+21
-3.1	5.54E+21	6.06E+21	5.91E+21	5.30E+21	4.89E+21	5.22E+21	5.83E+21
-2.1	5.53E+21	6.04E+21	5.91E+21	5.31E+21	4.92E+21	5.27E+21	5.82E+21
-1.1	5.55E+21	6.05E+21	5.92E+21	5.31E+21	4.92E+21	5.26E+21	5.87E+21
-0.1	5.56E+21	6.09E+21	5.93E+21	5.31E+21	4.92E+21	5.21E+21	5.82E+21
0.9	5.56E+21	6.08E+21	5.91E+21	5.29E+21	4.90E+21	5.22E+21	5.84E+21
1.9	5.56E+21	6.07E+21	5.90E+21	5.29E+21	4.87E+21	5.22E+21	5.83E+21
2.9	5.49E+21	6.02E+21	5.81E+21	5.25E+21	4.84E+21	5.20E+21	5.78E+21
3.9	5.48E+21	6.00E+21	5.80E+21	5.24E+21	4.81E+21	5.16E+21	5.73E+21
4.9	5.42E+21	5.91E+21	5.75E+21	5.15E+21	4.73E+21	5.10E+21	5.69E+21
5.9	5.32E+21	5.81E+21	5.66E+21	5.09E+21	4.68E+21	5.03E+21	5.63E+21
6.9	5.22E+21	5.74E+21	5.56E+21	4.99E+21	4.59E+21	4.95E+21	5.52E+21
7.9	5.15E+21	5.66E+21	5.45E+21	4.89E+21	4.52E+21	4.85E+21	5.39E+21
8.9	5.01E+21	5.55E+21	5.37E+21	4.81E+21	4.42E+21	4.70E+21	5.29E+21
9.9	4.92E+21	5.40E+21	5.21E+21	4.66E+21	4.27E+21	4.62E+21	5.16E+21
10.9	4.71E+21	5.21E+21	5.04E+21	4.46E+21	4.15E+21	4.46E+21	5.00E+21
11.9	4.54E+21	5.04E+21	4.83E+21	4.33E+21	3.96E+21	4.25E+21	4.82E+21
12.9	4.35E+21	4.86E+21	4.62E+21	4.12E+21	3.81E+21	4.09E+21	4.62E+21
13.9	4.17E+21	4.61E+21	4.40E+21	3.91E+21	3.61E+21	3.87E+21	4.35E+21
14.9	3.92E+21	4.39E+21	4.20E+21	3.71E+21	3.41E+21	3.67E+21	4.15E+21
15.9	3.69E+21	4.11E+21	3.94E+21	3.47E+21	3.18E+21	3.43E+21	3.89E+21
16.9	3.39E+21	3.81E+21	3.63E+21	3.19E+21	2.95E+21	3.17E+21	3.61E+21
17.9	3.08E+21	3.44E+21	3.28E+21	2.91E+21	2.66E+21	2.87E+21	3.28E+21
18.9	2.76E+21	3.07E+21	2.93E+21	2.59E+21	2.39E+21	2.57E+21	2.91E+21
19.9	2.45E+21	2.73E+21	2.58E+21	2.28E+21	2.11E+21	2.27E+21	2.55E+21
20.9	2.13E+21	2.40E+21	2.28E+21	1.99E+21	1.85E+21	1.98E+21	2.26E+21
21.9	1.82E+21	2.05E+21	1.96E+21	1.72E+21	1.57E+21	1.70E+21	1.93E+21
22.9	1.51E+21	1.69E+21	1.62E+21	1.42E+21	1.29E+21	1.39E+21	1.60E+21
23.9	1.17E+21	1.32E+21	1.26E+21	1.12E+21	1.03E+21	1.10E+21	1.25E+21

Table 10. AGC-1 specimen fast fluence (E > 0.1 MeV) at EOC 147A.

Distance Relative to Core Mid-Plane (inches)	Center S-7 n/cm^2	North S-4 n/cm^2	NorthEast S-5 n/cm^2	SouthEast S-6 n/cm^2	South S-1 n/cm^2	SouthWest S-2 n/cm^2	NorthWest S-3 n/cm^2
-24.1	1.68E+21	1.55E+21	1.61E+21	1.74E+21	1.79E+21	1.75E+21	1.63E+21
-23.1	2.32E+21	2.10E+21	2.21E+21	2.40E+21	2.49E+21	2.41E+21	2.23E+21
-22.1	2.79E+21	2.52E+21	2.65E+21	2.89E+21	2.99E+21	2.90E+21	2.66E+21
-21.1	3.20E+21	2.92E+21	3.05E+21	3.30E+21	3.42E+21	3.36E+21	3.07E+21
-20.1	3.58E+21	3.26E+21	3.44E+21	3.73E+21	3.82E+21	3.74E+21	3.45E+21
-19.1	3.96E+21	3.63E+21	3.80E+21	4.09E+21	4.20E+21	4.13E+21	3.79E+21
-18.1	4.33E+21	3.95E+21	4.18E+21	4.49E+21	4.63E+21	4.52E+21	4.15E+21
-17.1	4.68E+21	4.28E+21	4.49E+21	4.85E+21	5.02E+21	4.89E+21	4.50E+21
-16.1	5.01E+21	4.56E+21	4.81E+21	5.17E+21	5.34E+21	5.21E+21	4.83E+21
-15.1	5.25E+21	4.81E+21	5.04E+21	5.44E+21	5.60E+21	5.48E+21	5.06E+21
-14.1	5.48E+21	5.05E+21	5.28E+21	5.68E+21	5.84E+21	5.72E+21	5.33E+21
-13.1	5.69E+21	5.22E+21	5.50E+21	5.92E+21	6.05E+21	5.95E+21	5.54E+21
-12.1	5.93E+21	5.44E+21	5.74E+21	6.11E+21	6.27E+21	6.18E+21	5.73E+21
-11.1	6.10E+21	5.59E+21	5.91E+21	6.32E+21	6.45E+21	6.36E+21	5.93E+21
-10.1	6.30E+21	5.77E+21	6.08E+21	6.47E+21	6.64E+21	6.52E+21	6.06E+21
-9.1	6.41E+21	5.93E+21	6.19E+21	6.62E+21	6.76E+21	6.69E+21	6.21E+21
-8.1	6.52E+21	6.02E+21	6.26E+21	6.72E+21	6.87E+21	6.77E+21	6.32E+21
-7.1	6.59E+21	6.08E+21	6.36E+21	6.83E+21	6.96E+21	6.89E+21	6.41E+21
-6.1	6.69E+21	6.17E+21	6.49E+21	6.93E+21	7.03E+21	6.95E+21	6.50E+21
-5.1	6.72E+21	6.21E+21	6.51E+21	6.98E+21	7.10E+21	7.00E+21	6.59E+21
-4.1	6.80E+21	6.27E+21	6.62E+21	7.04E+21	7.16E+21	7.06E+21	6.61E+21
-3.1	6.84E+21	6.31E+21	6.60E+21	7.07E+21	7.20E+21	7.14E+21	6.68E+21
-2.1	6.83E+21	6.36E+21	6.66E+21	7.06E+21	7.17E+21	7.14E+21	6.69E+21
-1.1	6.85E+21	6.35E+21	6.65E+21	7.12E+21	7.21E+21	7.16E+21	6.69E+21
-0.1	6.86E+21	6.36E+21	6.60E+21	7.06E+21	7.24E+21	7.15E+21	6.70E+21
0.9	6.86E+21	6.35E+21	6.61E+21	7.09E+21	7.22E+21	7.14E+21	6.68E+21
1.9	6.86E+21	6.32E+21	6.62E+21	7.07E+21	7.22E+21	7.13E+21	6.66E+21
2.9	6.78E+21	6.26E+21	6.57E+21	7.01E+21	7.15E+21	7.03E+21	6.61E+21
3.9	6.77E+21	6.23E+21	6.53E+21	6.95E+21	7.11E+21	7.01E+21	6.60E+21
4.9	6.68E+21	6.13E+21	6.46E+21	6.89E+21	7.02E+21	6.93E+21	6.48E+21
5.9	6.57E+21	6.06E+21	6.35E+21	6.80E+21	6.90E+21	6.85E+21	6.40E+21
6.9	6.45E+21	5.97E+21	6.26E+21	6.69E+21	6.82E+21	6.72E+21	6.29E+21
7.9	6.35E+21	5.84E+21	6.13E+21	6.53E+21	6.71E+21	6.58E+21	6.15E+21
8.9	6.19E+21	5.73E+21	5.96E+21	6.41E+21	6.57E+21	6.48E+21	6.06E+21
9.9	6.06E+21	5.55E+21	5.85E+21	6.25E+21	6.39E+21	6.28E+21	5.88E+21
10.9	5.81E+21	5.38E+21	5.66E+21	6.06E+21	6.17E+21	6.08E+21	5.62E+21
11.9	5.61E+21	5.15E+21	5.40E+21	5.83E+21	5.96E+21	5.83E+21	5.45E+21
12.9	5.36E+21	4.95E+21	5.17E+21	5.57E+21	5.75E+21	5.57E+21	5.19E+21
13.9	5.14E+21	4.68E+21	4.90E+21	5.25E+21	5.45E+21	5.30E+21	4.94E+21
14.9	4.83E+21	4.43E+21	4.65E+21	5.02E+21	5.18E+21	5.05E+21	4.68E+21
15.9	4.54E+21	4.15E+21	4.35E+21	4.70E+21	4.85E+21	4.74E+21	4.38E+21
16.9	4.18E+21	3.84E+21	4.02E+21	4.35E+21	4.48E+21	4.36E+21	4.03E+21
17.9	3.79E+21	3.48E+21	3.64E+21	3.96E+21	4.06E+21	3.95E+21	3.67E+21
18.9	3.40E+21	3.11E+21	3.26E+21	3.51E+21	3.62E+21	3.53E+21	3.26E+21
19.9	3.02E+21	2.74E+21	2.87E+21	3.08E+21	3.21E+21	3.10E+21	2.88E+21
20.9	2.63E+21	2.40E+21	2.52E+21	2.73E+21	2.82E+21	2.75E+21	2.51E+21
21.9	2.24E+21	2.05E+21	2.16E+21	2.33E+21	2.41E+21	2.35E+21	2.17E+21
22.9	1.86E+21	1.69E+21	1.77E+21	1.94E+21	1.99E+21	1.94E+21	1.78E+21
23.9	1.45E+21	1.34E+21	1.40E+21	1.50E+21	1.56E+21	1.51E+21	1.41E+21

Table 11. AGC-1 specimen fast fluence (E > 0.1 MeV) at EOC 148A.

Distance Relative to Core Mid-Plane (inches)	Center S-7 n/cm^2	North S-4 n/cm^2	NorthEast S-5 n/cm^2	SouthEast S-6 n/cm^2	South S-1 n/cm^2	SouthWest S-2 n/cm^2	NorthWest S-3 n/cm^2
-24.1	1.97E+21	1.87E+21	1.91E+21	2.01E+21	2.04E+21	2.02E+21	1.93E+21
-23.1	2.71E+21	2.54E+21	2.63E+21	2.77E+21	2.82E+21	2.77E+21	2.66E+21
-22.1	3.26E+21	3.06E+21	3.16E+21	3.34E+21	3.40E+21	3.34E+21	3.17E+21
-21.1	3.75E+21	3.53E+21	3.64E+21	3.81E+21	3.90E+21	3.87E+21	3.65E+21
-20.1	4.20E+21	3.96E+21	4.10E+21	4.30E+21	4.35E+21	4.32E+21	4.11E+21
-19.1	4.65E+21	4.40E+21	4.54E+21	4.73E+21	4.79E+21	4.77E+21	4.53E+21
-18.1	5.09E+21	4.80E+21	4.99E+21	5.19E+21	5.28E+21	5.23E+21	4.97E+21
-17.1	5.51E+21	5.20E+21	5.37E+21	5.62E+21	5.73E+21	5.66E+21	5.37E+21
-16.1	5.89E+21	5.55E+21	5.74E+21	6.00E+21	6.10E+21	6.04E+21	5.77E+21
-15.1	6.18E+21	5.85E+21	6.03E+21	6.31E+21	6.41E+21	6.35E+21	6.04E+21
-14.1	6.46E+21	6.13E+21	6.31E+21	6.60E+21	6.69E+21	6.64E+21	6.36E+21
-13.1	6.71E+21	6.35E+21	6.58E+21	6.89E+21	6.93E+21	6.91E+21	6.61E+21
-12.1	6.99E+21	6.62E+21	6.87E+21	7.11E+21	7.18E+21	7.18E+21	6.86E+21
-11.1	7.21E+21	6.81E+21	7.08E+21	7.35E+21	7.40E+21	7.40E+21	7.11E+21
-10.1	7.43E+21	7.03E+21	7.27E+21	7.54E+21	7.63E+21	7.58E+21	7.26E+21
-9.1	7.57E+21	7.20E+21	7.42E+21	7.71E+21	7.77E+21	7.77E+21	7.44E+21
-8.1	7.71E+21	7.32E+21	7.52E+21	7.85E+21	7.91E+21	7.89E+21	7.58E+21
-7.1	7.79E+21	7.40E+21	7.64E+21	7.96E+21	8.01E+21	8.02E+21	7.69E+21
-6.1	7.92E+21	7.52E+21	7.78E+21	8.08E+21	8.10E+21	8.10E+21	7.79E+21
-5.1	7.95E+21	7.58E+21	7.82E+21	8.15E+21	8.18E+21	8.17E+21	7.89E+21
-4.1	8.05E+21	7.64E+21	7.94E+21	8.22E+21	8.26E+21	8.25E+21	7.94E+21
-3.1	8.09E+21	7.70E+21	7.95E+21	8.27E+21	8.30E+21	8.33E+21	8.01E+21
-2.1	8.09E+21	7.74E+21	7.99E+21	8.25E+21	8.29E+21	8.33E+21	8.02E+21
-1.1	8.11E+21	7.74E+21	8.00E+21	8.32E+21	8.33E+21	8.35E+21	8.03E+21
-0.1	8.13E+21	7.76E+21	7.94E+21	8.28E+21	8.36E+21	8.34E+21	8.04E+21
0.9	8.12E+21	7.74E+21	7.96E+21	8.29E+21	8.32E+21	8.32E+21	8.03E+21
1.9	8.13E+21	7.69E+21	7.95E+21	8.27E+21	8.32E+21	8.32E+21	8.00E+21
2.9	8.03E+21	7.63E+21	7.90E+21	8.19E+21	8.23E+21	8.21E+21	7.92E+21
3.9	8.01E+21	7.59E+21	7.85E+21	8.12E+21	8.19E+21	8.18E+21	7.90E+21
4.9	7.90E+21	7.48E+21	7.76E+21	8.06E+21	8.09E+21	8.09E+21	7.77E+21
5.9	7.78E+21	7.38E+21	7.63E+21	7.93E+21	7.95E+21	7.97E+21	7.68E+21
6.9	7.63E+21	7.26E+21	7.50E+21	7.79E+21	7.84E+21	7.84E+21	7.54E+21
7.9	7.51E+21	7.12E+21	7.35E+21	7.62E+21	7.71E+21	7.66E+21	7.37E+21
8.9	7.31E+21	6.97E+21	7.15E+21	7.46E+21	7.54E+21	7.53E+21	7.24E+21
9.9	7.15E+21	6.74E+21	7.00E+21	7.27E+21	7.34E+21	7.30E+21	7.03E+21
10.9	6.84E+21	6.53E+21	6.77E+21	7.04E+21	7.07E+21	7.06E+21	6.73E+21
11.9	6.61E+21	6.26E+21	6.46E+21	6.78E+21	6.83E+21	6.76E+21	6.53E+21
12.9	6.32E+21	6.02E+21	6.18E+21	6.48E+21	6.58E+21	6.46E+21	6.21E+21
13.9	6.04E+21	5.68E+21	5.85E+21	6.09E+21	6.23E+21	6.14E+21	5.89E+21
14.9	5.68E+21	5.38E+21	5.55E+21	5.82E+21	5.92E+21	5.85E+21	5.59E+21
15.9	5.33E+21	5.02E+21	5.19E+21	5.45E+21	5.53E+21	5.48E+21	5.23E+21
16.9	4.91E+21	4.64E+21	4.80E+21	5.03E+21	5.11E+21	5.04E+21	4.80E+21
17.9	4.45E+21	4.21E+21	4.34E+21	4.57E+21	4.63E+21	4.56E+21	4.36E+21
18.9	3.99E+21	3.76E+21	3.88E+21	4.06E+21	4.13E+21	4.07E+21	3.88E+21
19.9	3.54E+21	3.31E+21	3.42E+21	3.56E+21	3.65E+21	3.58E+21	3.41E+21
20.9	3.08E+21	2.90E+21	2.99E+21	3.16E+21	3.21E+21	3.16E+21	2.99E+21
21.9	2.63E+21	2.48E+21	2.57E+21	2.69E+21	2.74E+21	2.70E+21	2.58E+21
22.9	2.17E+21	2.05E+21	2.10E+21	2.23E+21	2.27E+21	2.24E+21	2.13E+21
23.9	1.70E+21	1.61E+21	1.66E+21	1.74E+21	1.77E+21	1.75E+21	1.67E+21

Table 12. AGC-1 specimen fast fluence (E > 0.1 MeV) at EOC 148B.

Distance Relative to Core Mid-Plane (inches)	Center S-7 n/cm^2	North S-4 n/cm^2	NorthEast S-5 n/cm^2	SouthEast S-6 n/cm^2	South S-1 n/cm^2	SouthWest S-2 n/cm^2	NorthWest S-3 n/cm^2
-24.1	2.28E+21	2.22E+21	2.25E+21	2.31E+21	2.31E+21	2.32E+21	2.27E+21
-23.1	3.13E+21	3.02E+21	3.08E+21	3.17E+21	3.19E+21	3.17E+21	3.11E+21
-22.1	3.78E+21	3.64E+21	3.70E+21	3.82E+21	3.85E+21	3.82E+21	3.72E+21
-21.1	4.35E+21	4.19E+21	4.28E+21	4.37E+21	4.42E+21	4.43E+21	4.29E+21
-20.1	4.87E+21	4.70E+21	4.81E+21	4.93E+21	4.94E+21	4.95E+21	4.83E+21
-19.1	5.39E+21	5.22E+21	5.33E+21	5.42E+21	5.44E+21	5.48E+21	5.32E+21
-18.1	5.91E+21	5.71E+21	5.86E+21	5.96E+21	5.99E+21	6.00E+21	5.84E+21
-17.1	6.40E+21	6.20E+21	6.32E+21	6.47E+21	6.50E+21	6.50E+21	6.32E+21
-16.1	6.84E+21	6.60E+21	6.75E+21	6.89E+21	6.94E+21	6.94E+21	6.78E+21
-15.1	7.19E+21	6.98E+21	7.10E+21	7.25E+21	7.28E+21	7.29E+21	7.10E+21
-14.1	7.52E+21	7.31E+21	7.41E+21	7.61E+21	7.61E+21	7.65E+21	7.50E+21
-13.1	7.82E+21	7.58E+21	7.76E+21	7.93E+21	7.90E+21	7.96E+21	7.80E+21
-12.1	8.15E+21	7.90E+21	8.09E+21	8.19E+21	8.19E+21	8.27E+21	8.09E+21
-11.1	8.42E+21	8.14E+21	8.34E+21	8.49E+21	8.44E+21	8.54E+21	8.40E+21
-10.1	8.69E+21	8.40E+21	8.58E+21	8.70E+21	8.72E+21	8.76E+21	8.59E+21
-9.1	8.83E+21	8.61E+21	8.77E+21	8.90E+21	8.88E+21	8.98E+21	8.79E+21
-8.1	9.00E+21	8.75E+21	8.88E+21	9.07E+21	9.06E+21	9.12E+21	8.98E+21
-7.1	9.11E+21	8.87E+21	9.03E+21	9.20E+21	9.17E+21	9.28E+21	9.09E+21
-6.1	9.26E+21	9.00E+21	9.19E+21	9.35E+21	9.28E+21	9.38E+21	9.23E+21
-5.1	9.30E+21	9.07E+21	9.25E+21	9.43E+21	9.38E+21	9.47E+21	9.36E+21
-4.1	9.43E+21	9.16E+21	9.40E+21	9.53E+21	9.47E+21	9.56E+21	9.41E+21
-3.1	9.48E+21	9.23E+21	9.41E+21	9.58E+21	9.52E+21	9.65E+21	9.48E+21
-2.1	9.48E+21	9.28E+21	9.47E+21	9.57E+21	9.51E+21	9.67E+21	9.50E+21
-1.1	9.50E+21	9.28E+21	9.47E+21	9.62E+21	9.56E+21	9.68E+21	9.50E+21
-0.1	9.51E+21	9.29E+21	9.42E+21	9.59E+21	9.59E+21	9.66E+21	9.50E+21
0.9	9.52E+21	9.28E+21	9.43E+21	9.61E+21	9.53E+21	9.64E+21	9.51E+21
1.9	9.52E+21	9.22E+21	9.41E+21	9.58E+21	9.54E+21	9.65E+21	9.47E+21
2.9	9.42E+21	9.15E+21	9.36E+21	9.49E+21	9.44E+21	9.52E+21	9.39E+21
3.9	9.37E+21	9.09E+21	9.29E+21	9.41E+21	9.40E+21	9.49E+21	9.36E+21
4.9	9.25E+21	8.96E+21	9.20E+21	9.31E+21	9.25E+21	9.38E+21	9.20E+21
5.9	9.09E+21	8.82E+21	9.03E+21	9.17E+21	9.10E+21	9.24E+21	9.10E+21
6.9	8.92E+21	8.69E+21	8.87E+21	9.00E+21	8.98E+21	9.06E+21	8.91E+21
7.9	8.77E+21	8.51E+21	8.68E+21	8.81E+21	8.82E+21	8.87E+21	8.71E+21
8.9	8.54E+21	8.34E+21	8.45E+21	8.62E+21	8.60E+21	8.68E+21	8.54E+21
9.9	8.35E+21	8.06E+21	8.25E+21	8.39E+21	8.37E+21	8.43E+21	8.30E+21
10.9	7.99E+21	7.79E+21	7.98E+21	8.11E+21	8.08E+21	8.16E+21	7.95E+21
11.9	7.71E+21	7.47E+21	7.61E+21	7.81E+21	7.79E+21	7.80E+21	7.70E+21
12.9	7.36E+21	7.17E+21	7.28E+21	7.45E+21	7.49E+21	7.44E+21	7.32E+21
13.9	7.02E+21	6.77E+21	6.88E+21	7.01E+21	7.08E+21	7.07E+21	6.93E+21
14.9	6.61E+21	6.40E+21	6.52E+21	6.68E+21	6.72E+21	6.72E+21	6.56E+21
15.9	6.19E+21	5.97E+21	6.09E+21	6.25E+21	6.28E+21	6.30E+21	6.15E+21
16.9	5.70E+21	5.52E+21	5.63E+21	5.77E+21	5.80E+21	5.79E+21	5.65E+21
17.9	5.16E+21	5.00E+21	5.10E+21	5.24E+21	5.26E+21	5.23E+21	5.12E+21
18.9	4.63E+21	4.46E+21	4.55E+21	4.65E+21	4.68E+21	4.67E+21	4.55E+21
19.9	4.09E+21	3.93E+21	4.00E+21	4.08E+21	4.14E+21	4.11E+21	4.01E+21
20.9	3.56E+21	3.44E+21	3.50E+21	3.60E+21	3.64E+21	3.62E+21	3.51E+21
21.9	3.04E+21	2.94E+21	3.00E+21	3.07E+21	3.10E+21	3.09E+21	3.02E+21
22.9	2.52E+21	2.43E+21	2.46E+21	2.55E+21	2.57E+21	2.57E+21	2.49E+21
23.9	1.97E+21	1.90E+21	1.94E+21	1.99E+21	2.01E+21	2.00E+21	1.95E+21

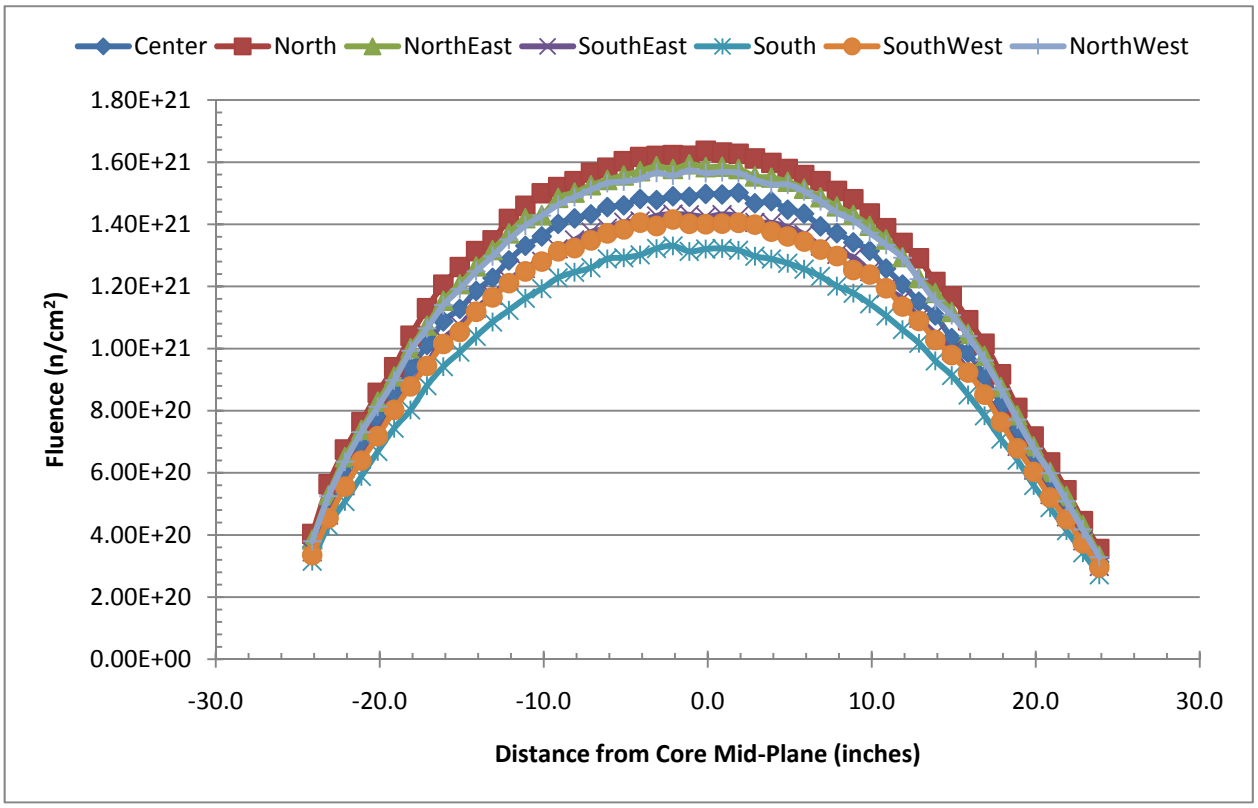

Figure 5 AGC-1 specimen fast fluence (E > 0.1 MeV) at EOC 145A.

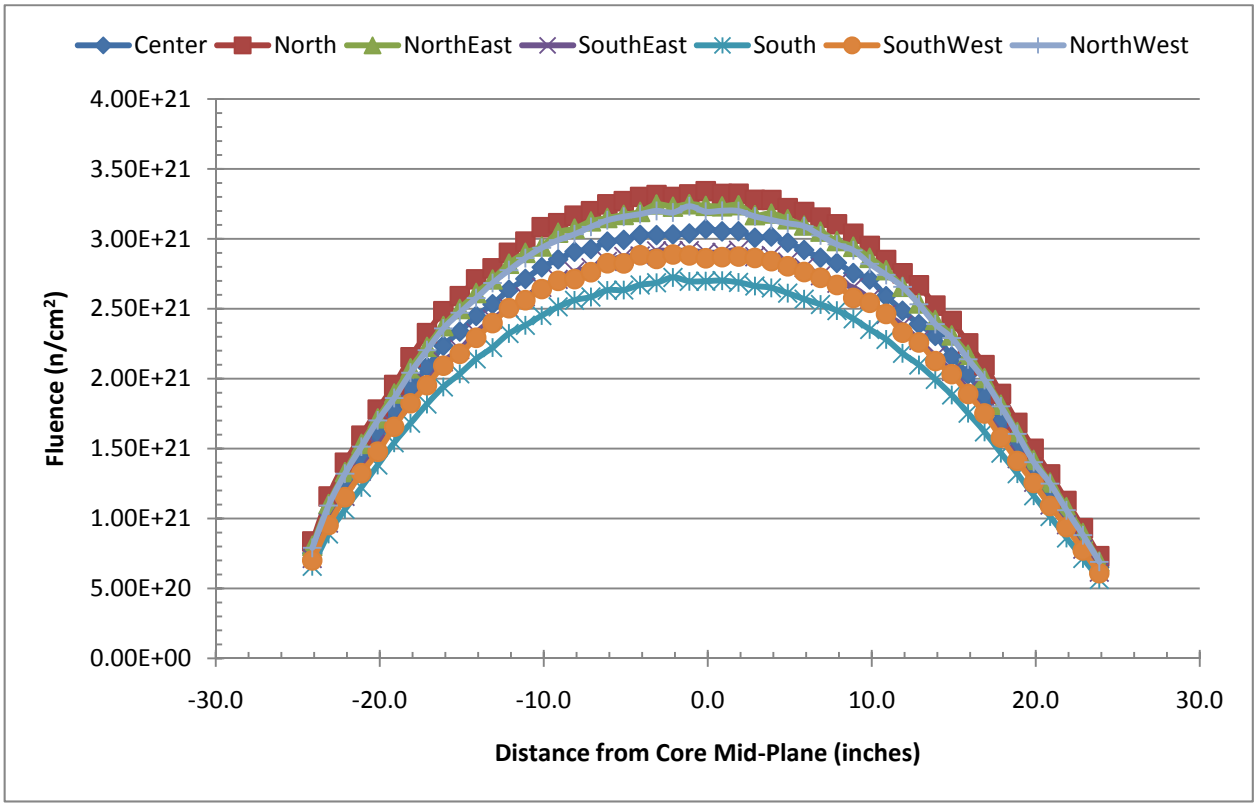

Figure 6 AGC-1 specimen fast fluence (E > 0.1 MeV) at EOC 145B.

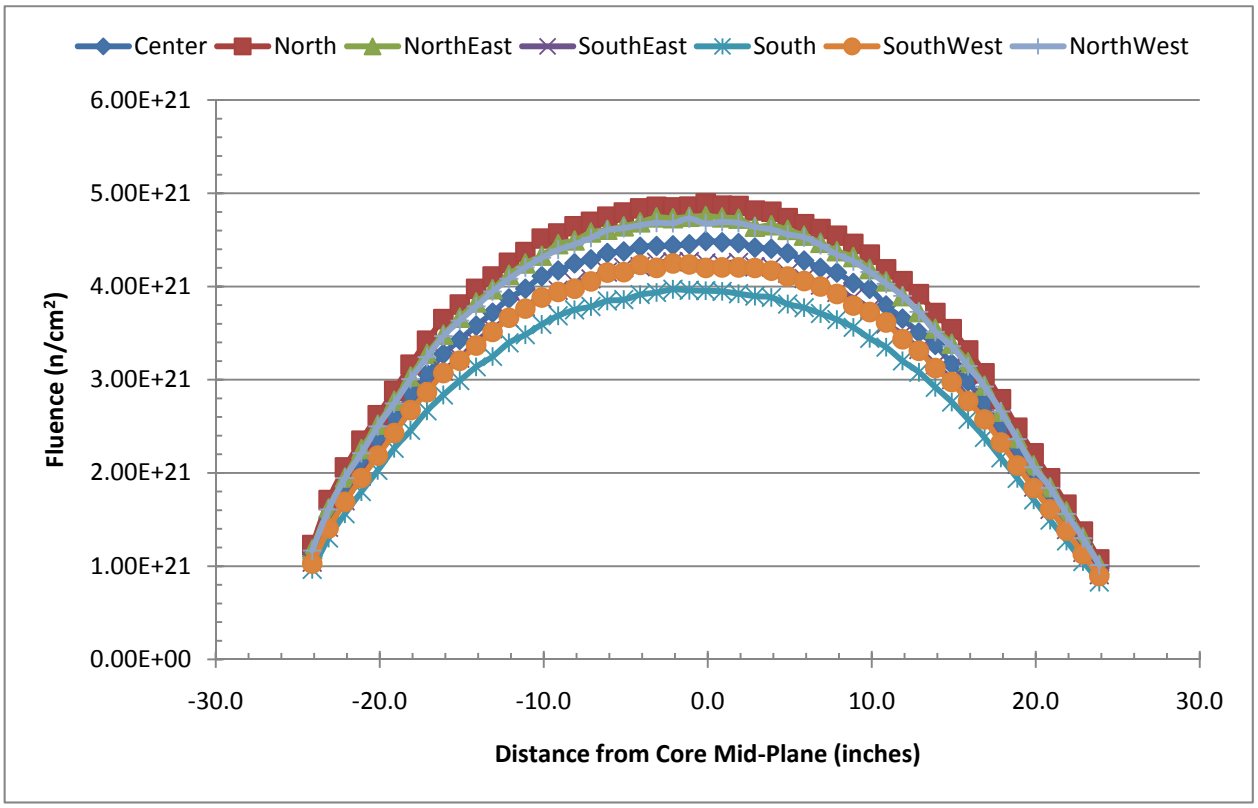

Figure 7 AGC-1 specimen fast fluence (E > 0.1 MeV) at EOC 146A.

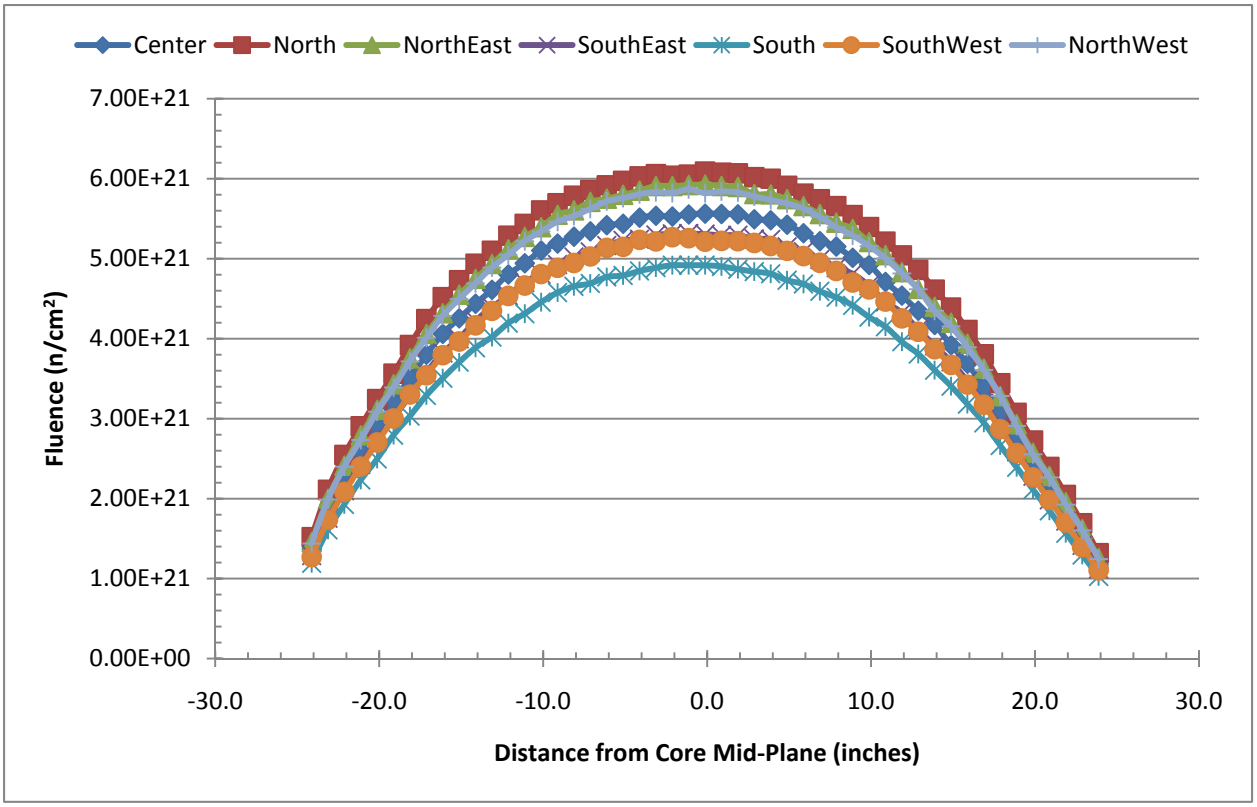

Figure 8 AGC-1 specimen fast fluence (E > 0.1 MeV) at EOC 146B.

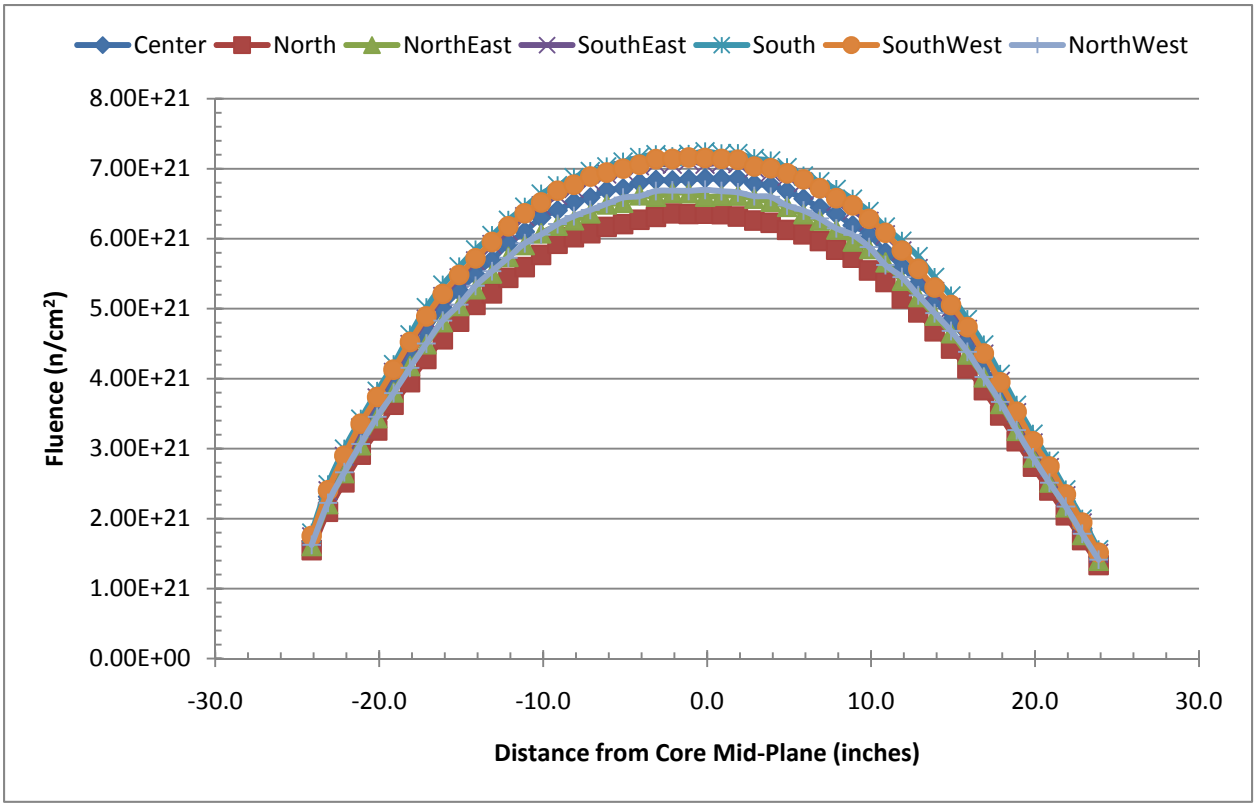

Figure 9 AGC-1 specimen fast fluence (E > 0.1 MeV) at EOC 147A.

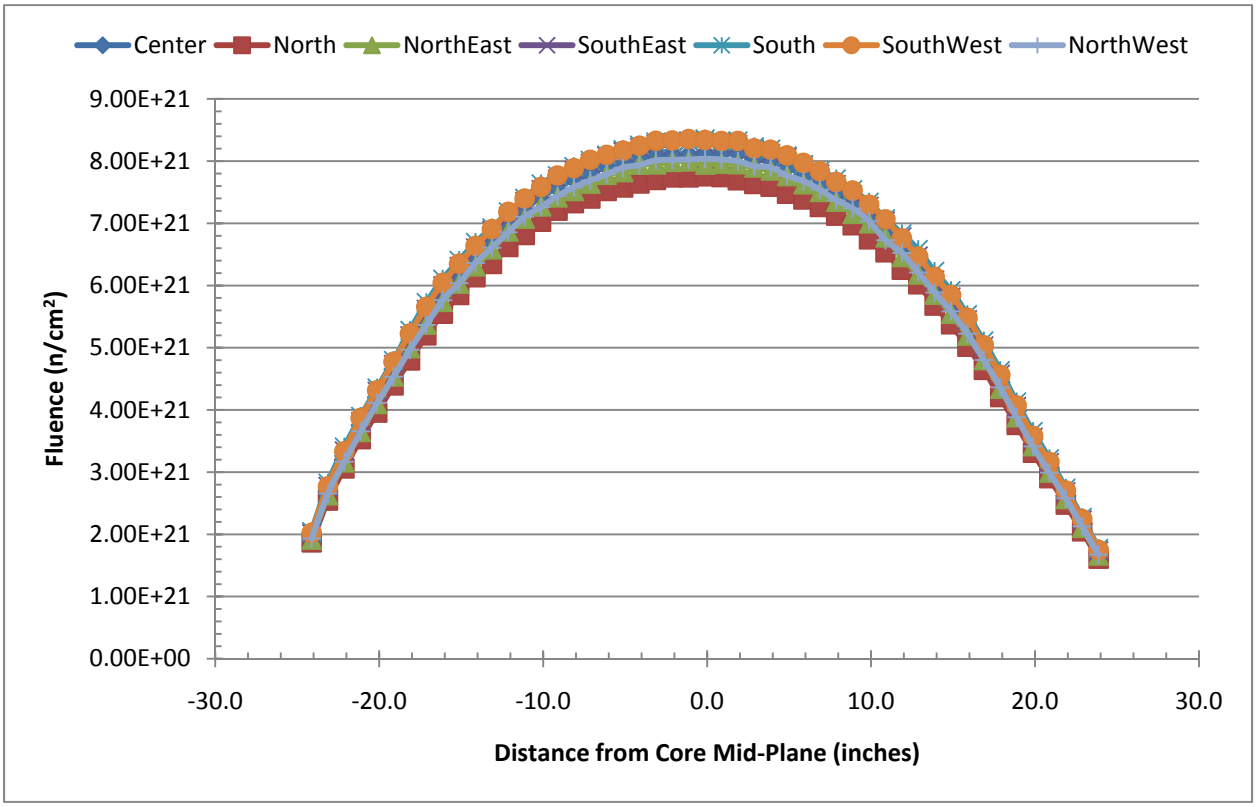

Figure 10 AGC-1 specimen fast fluence (E > 0.1 MeV) at EOC 148A.

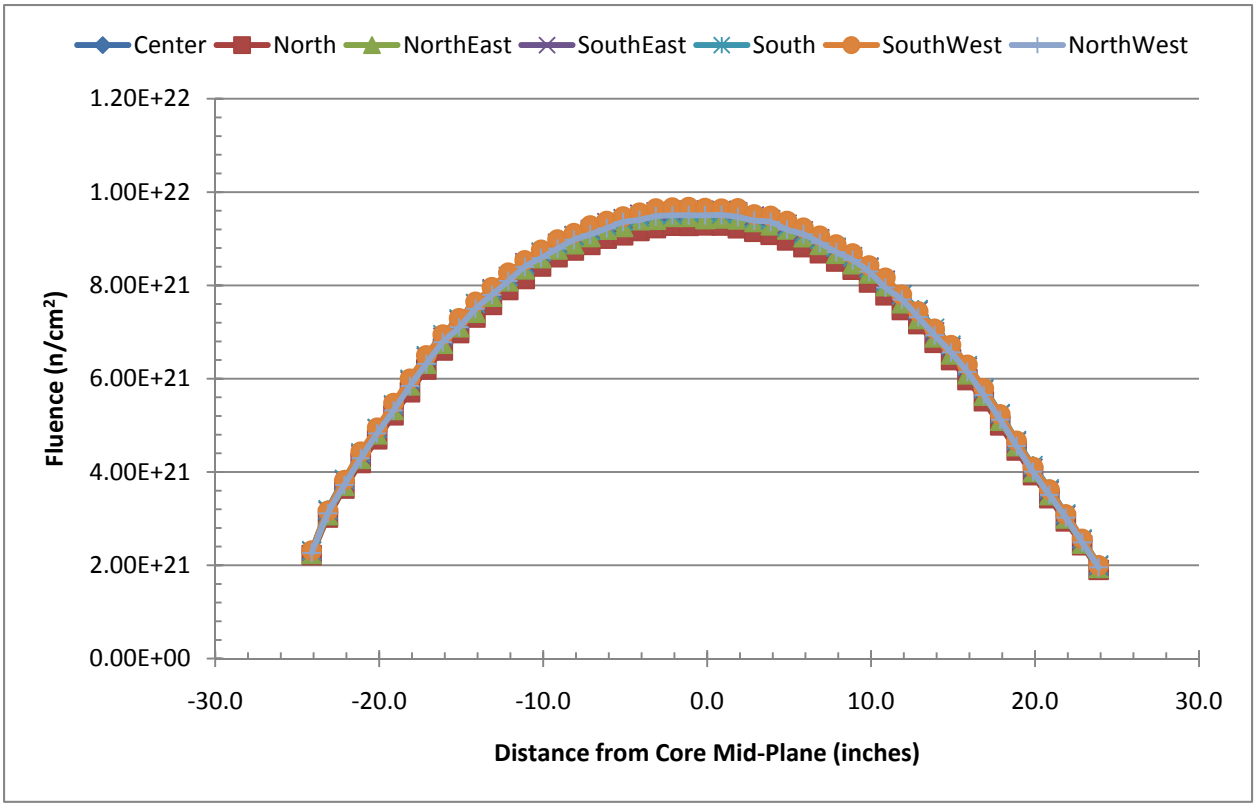

Figure 11 AGC-1 specimen fast fluence (E > 0.1 MeV) at EOC 148B.

7.2 AGC-1 Specimen DPA

The as-run DPA for the AGC-1 test specimens at the end of cycle (EOC) for Cycle 145A, Cycle 145B, Cycle 146A and Cycle 146B are shown in Table 13, Table 14, Table 15 and Table 16, respectively. The experiment was rotated 180 degrees for Cycle 147A, Cycle 148 A and Cycle 148B and the EOC DPA for each test specimen is shown in Table 17, Table 18 and Table 19, respectively. The DPA for the specimen stacks for Cycle 145A, Cycle 145B, Cycle 146A, Cycle 146B, Cycle 147A, Cycle 148A and Cycle 148B can also be seen in Figure 12, Figure 13, Figure 14, Figure 15, Figure 16, Figure 17 and Figure 18, respectively.

Table 13. AGC-1 specimen DPA at EOC 145A.

Distance Relative to Core Mid-Plane (inches)	Center S-7 DPA	North S-1 DPA	NorthEast S-2 DPA	SouthEast S-3 DPA	South S-4 DPA	SouthWest S-5 DPA	NorthWest S-6 DPA
-24.1	2.58E-01	2.87E-01	2.75E-01	2.47E-01	2.25E-01	2.39E-01	2.71E-01
-23.1	3.56E-01	4.03E-01	3.78E-01	3.33E-01	3.09E-01	3.25E-01	3.75E-01
-22.1	4.26E-01	4.82E-01	4.64E-01	4.00E-01	3.64E-01	3.98E-01	4.54E-01
-21.1	4.91E-01	5.46E-01	5.28E-01	4.62E-01	4.23E-01	4.58E-01	5.22E-01
-20.1	5.55E-01	6.11E-01	5.93E-01	5.24E-01	4.79E-01	5.14E-01	5.81E-01
-19.1	6.09E-01	6.72E-01	6.49E-01	5.76E-01	5.33E-01	5.74E-01	6.42E-01
-18.1	6.70E-01	7.44E-01	7.16E-01	6.33E-01	5.76E-01	6.29E-01	7.11E-01
-17.1	7.23E-01	8.06E-01	7.67E-01	6.80E-01	6.31E-01	6.75E-01	7.60E-01
-16.1	7.77E-01	8.60E-01	8.26E-01	7.36E-01	6.73E-01	7.26E-01	8.15E-01
-15.1	8.08E-01	9.01E-01	8.65E-01	7.69E-01	7.10E-01	7.55E-01	8.53E-01
-14.1	8.49E-01	9.40E-01	9.04E-01	8.08E-01	7.46E-01	8.01E-01	8.92E-01
-13.1	8.78E-01	9.65E-01	9.40E-01	8.38E-01	7.78E-01	8.34E-01	9.29E-01
-12.1	9.17E-01	1.01E+00	9.79E-01	8.72E-01	8.06E-01	8.66E-01	9.66E-01
-11.1	9.50E-01	1.04E+00	1.01E+00	8.99E-01	8.32E-01	8.94E-01	9.97E-01
-10.1	9.74E-01	1.07E+00	1.02E+00	9.17E-01	8.55E-01	9.18E-01	1.02E+00
-9.1	1.00E+00	1.09E+00	1.06E+00	9.47E-01	8.81E-01	9.38E-01	1.05E+00
-8.1	1.02E+00	1.10E+00	1.07E+00	9.65E-01	8.94E-01	9.47E-01	1.06E+00
-7.1	1.02E+00	1.12E+00	1.09E+00	9.85E-01	9.03E-01	9.66E-01	1.08E+00
-6.1	1.04E+00	1.13E+00	1.10E+00	9.93E-01	9.25E-01	9.81E-01	1.09E+00
-5.1	1.05E+00	1.14E+00	1.11E+00	1.01E+00	9.26E-01	9.91E-01	1.10E+00
-4.1	1.06E+00	1.16E+00	1.12E+00	1.01E+00	9.33E-01	1.01E+00	1.11E+00
-3.1	1.06E+00	1.16E+00	1.13E+00	1.02E+00	9.49E-01	9.99E-01	1.12E+00
-2.1	1.07E+00	1.16E+00	1.13E+00	1.02E+00	9.54E-01	1.01E+00	1.11E+00
-1.1	1.07E+00	1.16E+00	1.14E+00	1.02E+00	9.42E-01	1.00E+00	1.12E+00
-0.1	1.07E+00	1.17E+00	1.13E+00	1.02E+00	9.45E-01	1.00E+00	1.12E+00
0.9	1.07E+00	1.17E+00	1.13E+00	1.03E+00	9.47E-01	1.00E+00	1.12E+00
1.9	1.07E+00	1.16E+00	1.13E+00	1.02E+00	9.45E-01	1.01E+00	1.12E+00
2.9	1.05E+00	1.15E+00	1.11E+00	1.01E+00	9.32E-01	1.00E+00	1.10E+00
3.9	1.06E+00	1.14E+00	1.11E+00	1.01E+00	9.25E-01	9.86E-01	1.09E+00
4.9	1.03E+00	1.13E+00	1.10E+00	9.95E-01	9.15E-01	9.74E-01	1.09E+00
5.9	1.03E+00	1.11E+00	1.08E+00	9.77E-01	8.99E-01	9.62E-01	1.08E+00
6.9	9.98E-01	1.10E+00	1.06E+00	9.51E-01	8.83E-01	9.42E-01	1.05E+00
7.9	9.80E-01	1.08E+00	1.04E+00	9.34E-01	8.62E-01	9.29E-01	1.03E+00
8.9	9.61E-01	1.06E+00	1.02E+00	9.25E-01	8.47E-01	9.00E-01	1.01E+00
9.9	9.42E-01	1.02E+00	9.98E-01	8.94E-01	8.20E-01	8.85E-01	9.80E-01
10.9	8.99E-01	9.92E-01	9.65E-01	8.56E-01	7.93E-01	8.55E-01	9.53E-01
11.9	8.65E-01	9.57E-01	9.25E-01	8.29E-01	7.60E-01	8.13E-01	9.23E-01
12.9	8.24E-01	9.21E-01	8.79E-01	7.86E-01	7.30E-01	7.81E-01	8.75E-01
13.9	7.92E-01	8.68E-01	8.44E-01	7.50E-01	6.87E-01	7.38E-01	8.25E-01
14.9	7.39E-01	8.33E-01	7.99E-01	7.11E-01	6.55E-01	7.01E-01	7.92E-01
15.9	7.05E-01	7.80E-01	7.49E-01	6.67E-01	6.10E-01	6.60E-01	7.42E-01
16.9	6.51E-01	7.24E-01	6.98E-01	6.10E-01	5.62E-01	6.08E-01	6.87E-01
17.9	5.87E-01	6.54E-01	6.26E-01	5.55E-01	5.08E-01	5.47E-01	6.20E-01
18.9	5.28E-01	5.78E-01	5.60E-01	4.91E-01	4.59E-01	4.86E-01	5.53E-01
19.9	4.64E-01	5.12E-01	4.90E-01	4.35E-01	4.01E-01	4.32E-01	4.85E-01
20.9	4.03E-01	4.53E-01	4.31E-01	3.80E-01	3.50E-01	3.73E-01	4.28E-01
21.9	3.45E-01	3.89E-01	3.76E-01	3.29E-01	2.98E-01	3.24E-01	3.63E-01
22.9	2.89E-01	3.17E-01	3.09E-01	2.73E-01	2.46E-01	2.67E-01	2.99E-01
23.9	2.24E-01	2.54E-01	2.38E-01	2.14E-01	1.95E-01	2.11E-01	2.35E-01

Table 14. AGC-1 specimen DPA at EOC 145B.

Distance Relative to Core Mid-Plane (inches)	Center S-7 DPA	North S-1 DPA	NorthEast S-2 DPA	SouthEast S-3 DPA	South S-4 DPA	SouthWest S-5 DPA	NorthWest S-6 DPA
-24.1	5.37E-01	5.96E-01	5.75E-01	5.10E-01	4.70E-01	5.01E-01	5.64E-01
-23.1	7.41E-01	8.27E-01	7.89E-01	6.92E-01	6.37E-01	6.82E-01	7.80E-01
-22.1	8.91E-01	1.00E+00	9.51E-01	8.29E-01	7.62E-01	8.26E-01	9.43E-01
-21.1	1.02E+00	1.14E+00	1.10E+00	9.58E-01	8.76E-01	9.49E-01	1.08E+00
-20.1	1.15E+00	1.27E+00	1.23E+00	1.09E+00	9.92E-01	1.06E+00	1.22E+00
-19.1	1.27E+00	1.40E+00	1.35E+00	1.20E+00	1.11E+00	1.18E+00	1.33E+00
-18.1	1.39E+00	1.54E+00	1.48E+00	1.30E+00	1.21E+00	1.31E+00	1.46E+00
-17.1	1.49E+00	1.66E+00	1.59E+00	1.41E+00	1.30E+00	1.40E+00	1.58E+00
-16.1	1.60E+00	1.77E+00	1.70E+00	1.52E+00	1.39E+00	1.50E+00	1.69E+00
-15.1	1.67E+00	1.85E+00	1.79E+00	1.58E+00	1.46E+00	1.56E+00	1.77E+00
-14.1	1.75E+00	1.94E+00	1.87E+00	1.67E+00	1.54E+00	1.64E+00	1.84E+00
-13.1	1.81E+00	1.99E+00	1.94E+00	1.73E+00	1.59E+00	1.72E+00	1.92E+00
-12.1	1.89E+00	2.07E+00	2.02E+00	1.79E+00	1.67E+00	1.79E+00	1.98E+00
-11.1	1.94E+00	2.13E+00	2.07E+00	1.85E+00	1.71E+00	1.83E+00	2.04E+00
-10.1	2.00E+00	2.20E+00	2.11E+00	1.90E+00	1.76E+00	1.89E+00	2.10E+00
-9.1	2.04E+00	2.22E+00	2.18E+00	1.94E+00	1.81E+00	1.93E+00	2.14E+00
-8.1	2.08E+00	2.26E+00	2.20E+00	1.98E+00	1.84E+00	1.94E+00	2.17E+00
-7.1	2.10E+00	2.28E+00	2.23E+00	2.00E+00	1.85E+00	1.98E+00	2.20E+00
-6.1	2.13E+00	2.32E+00	2.25E+00	2.03E+00	1.89E+00	2.02E+00	2.24E+00
-5.1	2.14E+00	2.33E+00	2.27E+00	2.06E+00	1.89E+00	2.03E+00	2.26E+00
-4.1	2.16E+00	2.36E+00	2.28E+00	2.06E+00	1.91E+00	2.06E+00	2.27E+00
-3.1	2.16E+00	2.37E+00	2.32E+00	2.09E+00	1.93E+00	2.04E+00	2.29E+00
-2.1	2.17E+00	2.36E+00	2.31E+00	2.08E+00	1.95E+00	2.07E+00	2.28E+00
-1.1	2.17E+00	2.37E+00	2.32E+00	2.08E+00	1.93E+00	2.06E+00	2.31E+00
-0.1	2.20E+00	2.38E+00	2.31E+00	2.08E+00	1.93E+00	2.05E+00	2.28E+00
0.9	2.18E+00	2.38E+00	2.31E+00	2.08E+00	1.93E+00	2.05E+00	2.29E+00
1.9	2.18E+00	2.38E+00	2.32E+00	2.09E+00	1.93E+00	2.06E+00	2.29E+00
2.9	2.15E+00	2.34E+00	2.27E+00	2.06E+00	1.91E+00	2.05E+00	2.26E+00
3.9	2.16E+00	2.34E+00	2.28E+00	2.06E+00	1.90E+00	2.03E+00	2.24E+00
4.9	2.13E+00	2.30E+00	2.25E+00	2.03E+00	1.88E+00	2.01E+00	2.23E+00
5.9	2.09E+00	2.28E+00	2.21E+00	2.00E+00	1.84E+00	1.98E+00	2.21E+00
6.9	2.05E+00	2.25E+00	2.18E+00	1.96E+00	1.81E+00	1.95E+00	2.16E+00
7.9	2.02E+00	2.22E+00	2.13E+00	1.92E+00	1.78E+00	1.91E+00	2.12E+00
8.9	1.97E+00	2.17E+00	2.10E+00	1.90E+00	1.74E+00	1.85E+00	2.08E+00
9.9	1.94E+00	2.11E+00	2.05E+00	1.84E+00	1.68E+00	1.82E+00	2.02E+00
10.9	1.85E+00	2.04E+00	1.98E+00	1.76E+00	1.64E+00	1.76E+00	1.96E+00
11.9	1.78E+00	1.97E+00	1.90E+00	1.70E+00	1.56E+00	1.67E+00	1.90E+00
12.9	1.71E+00	1.90E+00	1.82E+00	1.63E+00	1.50E+00	1.62E+00	1.81E+00
13.9	1.65E+00	1.80E+00	1.73E+00	1.55E+00	1.43E+00	1.52E+00	1.71E+00
14.9	1.54E+00	1.72E+00	1.65E+00	1.47E+00	1.35E+00	1.45E+00	1.64E+00
15.9	1.45E+00	1.61E+00	1.55E+00	1.37E+00	1.26E+00	1.35E+00	1.53E+00
16.9	1.34E+00	1.50E+00	1.43E+00	1.26E+00	1.16E+00	1.25E+00	1.42E+00
17.9	1.22E+00	1.35E+00	1.30E+00	1.15E+00	1.05E+00	1.13E+00	1.29E+00
18.9	1.09E+00	1.20E+00	1.16E+00	1.02E+00	9.47E-01	1.01E+00	1.15E+00
19.9	9.68E-01	1.07E+00	1.02E+00	9.01E-01	8.34E-01	8.99E-01	1.00E+00
20.9	8.38E-01	9.41E-01	8.97E-01	7.86E-01	7.26E-01	7.81E-01	8.93E-01
21.9	7.20E-01	8.06E-01	7.73E-01	6.84E-01	6.20E-01	6.73E-01	7.55E-01
22.9	5.98E-01	6.65E-01	6.41E-01	5.59E-01	5.12E-01	5.51E-01	6.30E-01
23.9	4.66E-01	5.22E-01	4.95E-01	4.41E-01	4.05E-01	4.36E-01	4.94E-01

Table 15. AGC-1 specimen DPA at EOC 146A.

Distance Relative to Core Mid-Plane (inches)	Center S-7 DPA	North S-1 DPA	NorthEast S-2 DPA	SouthEast S-3 DPA	South S-4 DPA	SouthWest S-5 DPA	NorthWest S-6 DPA
-24.1	7.89E-01	8.75E-01	8.43E-01	7.46E-01	6.89E-01	7.35E-01	8.33E-01
-23.1	1.09E+00	1.22E+00	1.16E+00	1.01E+00	9.32E-01	1.00E+00	1.15E+00
-22.1	1.31E+00	1.47E+00	1.39E+00	1.22E+00	1.12E+00	1.21E+00	1.39E+00
-21.1	1.50E+00	1.68E+00	1.61E+00	1.41E+00	1.29E+00	1.39E+00	1.58E+00
-20.1	1.68E+00	1.87E+00	1.80E+00	1.59E+00	1.45E+00	1.56E+00	1.79E+00
-19.1	1.86E+00	2.06E+00	1.98E+00	1.75E+00	1.62E+00	1.74E+00	1.96E+00
-18.1	2.03E+00	2.26E+00	2.17E+00	1.91E+00	1.76E+00	1.91E+00	2.15E+00
-17.1	2.19E+00	2.44E+00	2.34E+00	2.07E+00	1.91E+00	2.05E+00	2.32E+00
-16.1	2.34E+00	2.61E+00	2.49E+00	2.21E+00	2.03E+00	2.20E+00	2.48E+00
-15.1	2.45E+00	2.72E+00	2.62E+00	2.32E+00	2.15E+00	2.30E+00	2.60E+00
-14.1	2.56E+00	2.84E+00	2.74E+00	2.44E+00	2.25E+00	2.41E+00	2.70E+00
-13.1	2.66E+00	2.94E+00	2.84E+00	2.53E+00	2.33E+00	2.51E+00	2.82E+00
-12.1	2.77E+00	3.04E+00	2.95E+00	2.62E+00	2.44E+00	2.62E+00	2.92E+00
-11.1	2.84E+00	3.12E+00	3.04E+00	2.71E+00	2.50E+00	2.69E+00	3.00E+00
-10.1	2.94E+00	3.22E+00	3.10E+00	2.77E+00	2.58E+00	2.78E+00	3.08E+00
-9.1	2.99E+00	3.26E+00	3.18E+00	2.84E+00	2.64E+00	2.82E+00	3.15E+00
-8.1	3.04E+00	3.32E+00	3.21E+00	2.89E+00	2.69E+00	2.85E+00	3.18E+00
-7.1	3.07E+00	3.35E+00	3.27E+00	2.92E+00	2.71E+00	2.90E+00	3.23E+00
-6.1	3.12E+00	3.39E+00	3.29E+00	2.97E+00	2.76E+00	2.97E+00	3.29E+00
-5.1	3.13E+00	3.42E+00	3.32E+00	3.01E+00	2.77E+00	2.98E+00	3.31E+00
-4.1	3.16E+00	3.46E+00	3.35E+00	3.01E+00	2.80E+00	3.03E+00	3.33E+00
-3.1	3.17E+00	3.47E+00	3.39E+00	3.05E+00	2.82E+00	3.00E+00	3.35E+00
-2.1	3.18E+00	3.46E+00	3.38E+00	3.05E+00	2.85E+00	3.04E+00	3.34E+00
-1.1	3.19E+00	3.47E+00	3.39E+00	3.05E+00	2.84E+00	3.03E+00	3.38E+00
-0.1	3.21E+00	3.49E+00	3.40E+00	3.04E+00	2.83E+00	3.01E+00	3.34E+00
0.9	3.20E+00	3.48E+00	3.39E+00	3.04E+00	2.83E+00	3.01E+00	3.36E+00
1.9	3.19E+00	3.48E+00	3.38E+00	3.05E+00	2.81E+00	3.01E+00	3.35E+00
2.9	3.16E+00	3.44E+00	3.32E+00	3.02E+00	2.80E+00	3.00E+00	3.32E+00
3.9	3.15E+00	3.43E+00	3.33E+00	3.02E+00	2.78E+00	2.98E+00	3.29E+00
4.9	3.12E+00	3.38E+00	3.29E+00	2.96E+00	2.74E+00	2.94E+00	3.26E+00
5.9	3.06E+00	3.34E+00	3.25E+00	2.92E+00	2.70E+00	2.90E+00	3.24E+00
6.9	3.01E+00	3.30E+00	3.19E+00	2.87E+00	2.66E+00	2.86E+00	3.18E+00
7.9	2.97E+00	3.24E+00	3.13E+00	2.82E+00	2.61E+00	2.81E+00	3.10E+00
8.9	2.89E+00	3.18E+00	3.09E+00	2.77E+00	2.56E+00	2.72E+00	3.05E+00
9.9	2.84E+00	3.10E+00	2.99E+00	2.69E+00	2.47E+00	2.66E+00	2.97E+00
10.9	2.72E+00	2.99E+00	2.90E+00	2.58E+00	2.40E+00	2.59E+00	2.88E+00
11.9	2.62E+00	2.90E+00	2.79E+00	2.49E+00	2.30E+00	2.46E+00	2.78E+00
12.9	2.51E+00	2.80E+00	2.66E+00	2.38E+00	2.21E+00	2.37E+00	2.66E+00
13.9	2.41E+00	2.65E+00	2.54E+00	2.27E+00	2.09E+00	2.24E+00	2.51E+00
14.9	2.27E+00	2.53E+00	2.42E+00	2.15E+00	1.98E+00	2.13E+00	2.40E+00
15.9	2.13E+00	2.37E+00	2.28E+00	2.01E+00	1.85E+00	1.98E+00	2.25E+00
16.9	1.96E+00	2.19E+00	2.10E+00	1.85E+00	1.71E+00	1.84E+00	2.09E+00
17.9	1.78E+00	1.99E+00	1.90E+00	1.69E+00	1.55E+00	1.67E+00	1.90E+00
18.9	1.60E+00	1.77E+00	1.69E+00	1.50E+00	1.39E+00	1.49E+00	1.69E+00
19.9	1.42E+00	1.58E+00	1.49E+00	1.32E+00	1.23E+00	1.32E+00	1.47E+00
20.9	1.23E+00	1.39E+00	1.32E+00	1.15E+00	1.07E+00	1.15E+00	1.32E+00
21.9	1.06E+00	1.19E+00	1.13E+00	9.96E-01	9.12E-01	9.90E-01	1.11E+00
22.9	8.76E-01	9.79E-01	9.38E-01	8.21E-01	7.52E-01	8.06E-01	9.29E-01
23.9	6.81E-01	7.66E-01	7.27E-01	6.51E-01	5.95E-01	6.40E-01	7.25E-01

Table 16. AGC-1 specimen DPA at EOC 146B.

Distance Relative to Core Mid-Plane (inches)	Center S-7 DPA	North S-1 DPA	NorthEast S-2 DPA	SouthEast S-3 DPA	South S-4 DPA	SouthWest S-5 DPA	NorthWest S-6 DPA
-24.1	9.81E-01	1.09E+00	1.04E+00	9.24E-01	8.55E-01	9.12E-01	1.03E+00
-23.1	1.34E+00	1.51E+00	1.43E+00	1.26E+00	1.16E+00	1.25E+00	1.42E+00
-22.1	1.62E+00	1.83E+00	1.73E+00	1.51E+00	1.38E+00	1.50E+00	1.72E+00
-21.1	1.86E+00	2.08E+00	2.00E+00	1.74E+00	1.61E+00	1.73E+00	1.96E+00
-20.1	2.08E+00	2.32E+00	2.23E+00	1.97E+00	1.80E+00	1.94E+00	2.21E+00
-19.1	2.31E+00	2.56E+00	2.46E+00	2.16E+00	2.01E+00	2.16E+00	2.44E+00
-18.1	2.52E+00	2.81E+00	2.70E+00	2.37E+00	2.18E+00	2.37E+00	2.67E+00
-17.1	2.73E+00	3.04E+00	2.91E+00	2.57E+00	2.37E+00	2.55E+00	2.88E+00
-16.1	2.92E+00	3.24E+00	3.10E+00	2.75E+00	2.52E+00	2.73E+00	3.08E+00
-15.1	3.06E+00	3.39E+00	3.27E+00	2.88E+00	2.67E+00	2.85E+00	3.23E+00
-14.1	3.19E+00	3.54E+00	3.41E+00	3.03E+00	2.80E+00	3.00E+00	3.36E+00
-13.1	3.31E+00	3.66E+00	3.54E+00	3.15E+00	2.90E+00	3.12E+00	3.51E+00
-12.1	3.45E+00	3.80E+00	3.67E+00	3.26E+00	3.02E+00	3.25E+00	3.62E+00
-11.1	3.55E+00	3.90E+00	3.79E+00	3.38E+00	3.10E+00	3.35E+00	3.74E+00
-10.1	3.66E+00	4.02E+00	3.88E+00	3.45E+00	3.21E+00	3.46E+00	3.83E+00
-9.1	3.73E+00	4.09E+00	3.98E+00	3.54E+00	3.30E+00	3.51E+00	3.93E+00
-8.1	3.79E+00	4.15E+00	4.02E+00	3.61E+00	3.35E+00	3.56E+00	3.97E+00
-7.1	3.84E+00	4.20E+00	4.10E+00	3.66E+00	3.38E+00	3.62E+00	4.04E+00
-6.1	3.90E+00	4.25E+00	4.13E+00	3.71E+00	3.44E+00	3.69E+00	4.10E+00
-5.1	3.91E+00	4.28E+00	4.16E+00	3.76E+00	3.45E+00	3.70E+00	4.14E+00
-4.1	3.96E+00	4.33E+00	4.20E+00	3.77E+00	3.49E+00	3.76E+00	4.17E+00
-3.1	3.97E+00	4.34E+00	4.24E+00	3.81E+00	3.52E+00	3.75E+00	4.18E+00
-2.1	3.97E+00	4.33E+00	4.24E+00	3.82E+00	3.54E+00	3.78E+00	4.18E+00
-1.1	3.99E+00	4.34E+00	4.25E+00	3.82E+00	3.54E+00	3.78E+00	4.21E+00
-0.1	4.00E+00	4.37E+00	4.25E+00	3.82E+00	3.53E+00	3.75E+00	4.17E+00
0.9	3.99E+00	4.36E+00	4.24E+00	3.81E+00	3.53E+00	3.76E+00	4.19E+00
1.9	3.99E+00	4.35E+00	4.24E+00	3.81E+00	3.51E+00	3.76E+00	4.19E+00
2.9	3.95E+00	4.32E+00	4.17E+00	3.77E+00	3.49E+00	3.73E+00	4.15E+00
3.9	3.94E+00	4.30E+00	4.17E+00	3.77E+00	3.46E+00	3.71E+00	4.11E+00
4.9	3.90E+00	4.24E+00	4.13E+00	3.70E+00	3.41E+00	3.66E+00	4.09E+00
5.9	3.82E+00	4.18E+00	4.06E+00	3.65E+00	3.37E+00	3.62E+00	4.04E+00
6.9	3.75E+00	4.12E+00	3.98E+00	3.59E+00	3.31E+00	3.55E+00	3.96E+00
7.9	3.70E+00	4.05E+00	3.91E+00	3.51E+00	3.25E+00	3.48E+00	3.87E+00
8.9	3.60E+00	3.98E+00	3.86E+00	3.46E+00	3.18E+00	3.39E+00	3.79E+00
9.9	3.53E+00	3.87E+00	3.74E+00	3.35E+00	3.07E+00	3.31E+00	3.70E+00
10.9	3.38E+00	3.74E+00	3.62E+00	3.21E+00	2.99E+00	3.21E+00	3.59E+00
11.9	3.27E+00	3.61E+00	3.47E+00	3.11E+00	2.85E+00	3.06E+00	3.45E+00
12.9	3.12E+00	3.48E+00	3.32E+00	2.96E+00	2.74E+00	2.94E+00	3.31E+00
13.9	2.99E+00	3.31E+00	3.16E+00	2.81E+00	2.59E+00	2.78E+00	3.12E+00
14.9	2.82E+00	3.14E+00	3.01E+00	2.67E+00	2.45E+00	2.64E+00	2.98E+00
15.9	2.65E+00	2.95E+00	2.82E+00	2.49E+00	2.29E+00	2.46E+00	2.79E+00
16.9	2.43E+00	2.73E+00	2.60E+00	2.29E+00	2.12E+00	2.28E+00	2.59E+00
17.9	2.21E+00	2.47E+00	2.35E+00	2.09E+00	1.92E+00	2.06E+00	2.35E+00
18.9	1.98E+00	2.20E+00	2.10E+00	1.86E+00	1.72E+00	1.85E+00	2.09E+00
19.9	1.76E+00	1.95E+00	1.85E+00	1.64E+00	1.52E+00	1.63E+00	1.83E+00
20.9	1.53E+00	1.72E+00	1.64E+00	1.43E+00	1.33E+00	1.43E+00	1.63E+00
21.9	1.31E+00	1.47E+00	1.40E+00	1.24E+00	1.13E+00	1.22E+00	1.38E+00
22.9	1.09E+00	1.21E+00	1.16E+00	1.02E+00	9.31E-01	1.00E+00	1.15E+00
23.9	8.44E-01	9.45E-01	9.03E-01	8.07E-01	7.38E-01	7.93E-01	8.95E-01

Table 17. AGC-1 specimen DPA at EOC 147A.

Distance Relative to Core Mid-Plane (inches)	Center S-7 DPA	North S-4 DPA	NorthEast S-5 DPA	SouthEast S-6 DPA	South S-1 DPA	SouthWest S-2 DPA	NorthWest S-3 DPA
-24.1	1.21E+00	1.11E+00	1.15E+00	1.25E+00	1.28E+00	1.26E+00	1.17E+00
-23.1	1.66E+00	1.51E+00	1.58E+00	1.72E+00	1.78E+00	1.72E+00	1.60E+00
-22.1	2.00E+00	1.81E+00	1.90E+00	2.07E+00	2.15E+00	2.08E+00	1.91E+00
-21.1	2.30E+00	2.09E+00	2.19E+00	2.37E+00	2.45E+00	2.41E+00	2.20E+00
-20.1	2.57E+00	2.34E+00	2.46E+00	2.67E+00	2.74E+00	2.68E+00	2.48E+00
-19.1	2.84E+00	2.61E+00	2.73E+00	2.94E+00	3.02E+00	2.96E+00	2.72E+00
-18.1	3.11E+00	2.84E+00	3.00E+00	3.22E+00	3.32E+00	3.25E+00	2.99E+00
-17.1	3.36E+00	3.08E+00	3.22E+00	3.48E+00	3.59E+00	3.50E+00	3.23E+00
-16.1	3.59E+00	3.27E+00	3.45E+00	3.71E+00	3.83E+00	3.74E+00	3.47E+00
-15.1	3.77E+00	3.46E+00	3.62E+00	3.90E+00	4.02E+00	3.93E+00	3.63E+00
-14.1	3.94E+00	3.63E+00	3.79E+00	4.07E+00	4.19E+00	4.11E+00	3.82E+00
-13.1	4.09E+00	3.75E+00	3.95E+00	4.25E+00	4.34E+00	4.27E+00	3.97E+00
-12.1	4.25E+00	3.91E+00	4.11E+00	4.38E+00	4.50E+00	4.43E+00	4.11E+00
-11.1	4.38E+00	4.02E+00	4.24E+00	4.53E+00	4.62E+00	4.57E+00	4.25E+00
-10.1	4.52E+00	4.14E+00	4.36E+00	4.64E+00	4.76E+00	4.68E+00	4.35E+00
-9.1	4.60E+00	4.26E+00	4.44E+00	4.75E+00	4.85E+00	4.80E+00	4.46E+00
-8.1	4.68E+00	4.33E+00	4.50E+00	4.82E+00	4.93E+00	4.86E+00	4.54E+00
-7.1	4.73E+00	4.37E+00	4.57E+00	4.90E+00	4.99E+00	4.94E+00	4.60E+00
-6.1	4.81E+00	4.44E+00	4.66E+00	4.97E+00	5.04E+00	4.98E+00	4.67E+00
-5.1	4.83E+00	4.46E+00	4.68E+00	5.01E+00	5.09E+00	5.03E+00	4.73E+00
-4.1	4.88E+00	4.51E+00	4.75E+00	5.05E+00	5.14E+00	5.07E+00	4.74E+00
-3.1	4.90E+00	4.54E+00	4.74E+00	5.07E+00	5.17E+00	5.12E+00	4.80E+00
-2.1	4.90E+00	4.57E+00	4.78E+00	5.07E+00	5.14E+00	5.12E+00	4.80E+00
-1.1	4.92E+00	4.57E+00	4.77E+00	5.10E+00	5.17E+00	5.13E+00	4.80E+00
-0.1	4.93E+00	4.56E+00	4.74E+00	5.07E+00	5.19E+00	5.13E+00	4.81E+00
0.9	4.92E+00	4.56E+00	4.75E+00	5.09E+00	5.18E+00	5.12E+00	4.80E+00
1.9	4.92E+00	4.54E+00	4.75E+00	5.08E+00	5.18E+00	5.12E+00	4.79E+00
2.9	4.87E+00	4.50E+00	4.72E+00	5.03E+00	5.13E+00	5.05E+00	4.75E+00
3.9	4.86E+00	4.48E+00	4.69E+00	4.99E+00	5.10E+00	5.03E+00	4.74E+00
4.9	4.80E+00	4.40E+00	4.63E+00	4.95E+00	5.03E+00	4.97E+00	4.65E+00
5.9	4.71E+00	4.35E+00	4.56E+00	4.89E+00	4.95E+00	4.91E+00	4.60E+00
6.9	4.63E+00	4.29E+00	4.49E+00	4.80E+00	4.89E+00	4.82E+00	4.51E+00
7.9	4.56E+00	4.20E+00	4.40E+00	4.69E+00	4.80E+00	4.72E+00	4.41E+00
8.9	4.45E+00	4.12E+00	4.28E+00	4.59E+00	4.71E+00	4.64E+00	4.35E+00
9.9	4.35E+00	3.99E+00	4.20E+00	4.48E+00	4.58E+00	4.51E+00	4.22E+00
10.9	4.17E+00	3.87E+00	4.06E+00	4.34E+00	4.43E+00	4.36E+00	4.04E+00
11.9	4.03E+00	3.70E+00	3.88E+00	4.18E+00	4.27E+00	4.18E+00	3.91E+00
12.9	3.85E+00	3.55E+00	3.71E+00	4.00E+00	4.12E+00	4.00E+00	3.73E+00
13.9	3.68E+00	3.36E+00	3.52E+00	3.76E+00	3.90E+00	3.81E+00	3.54E+00
14.9	3.47E+00	3.19E+00	3.34E+00	3.60E+00	3.71E+00	3.62E+00	3.36E+00
15.9	3.26E+00	2.98E+00	3.12E+00	3.38E+00	3.48E+00	3.40E+00	3.15E+00
16.9	3.00E+00	2.76E+00	2.88E+00	3.12E+00	3.21E+00	3.13E+00	2.89E+00
17.9	2.72E+00	2.49E+00	2.61E+00	2.84E+00	2.91E+00	2.83E+00	2.63E+00
18.9	2.44E+00	2.23E+00	2.34E+00	2.52E+00	2.60E+00	2.53E+00	2.34E+00
19.9	2.16E+00	1.97E+00	2.06E+00	2.21E+00	2.30E+00	2.23E+00	2.06E+00
20.9	1.89E+00	1.72E+00	1.81E+00	1.96E+00	2.02E+00	1.97E+00	1.81E+00
21.9	1.61E+00	1.47E+00	1.55E+00	1.67E+00	1.73E+00	1.68E+00	1.56E+00
22.9	1.33E+00	1.22E+00	1.27E+00	1.39E+00	1.43E+00	1.39E+00	1.28E+00
23.9	1.04E+00	9.59E-01	1.00E+00	1.08E+00	1.12E+00	1.09E+00	1.01E+00

Table 18. AGC-1 specimen DPA at EOC 148A.

Distance Relative to Core Mid-Plane (inches)	Center S-7 DPA	North S-4 DPA	NorthEast S-5 DPA	SouthEast S-6 DPA	South S-1 DPA	SouthWest S-2 DPA	NorthWest S-3 DPA
-24.1	1.41E+00	1.34E+00	1.37E+00	1.44E+00	1.46E+00	1.45E+00	1.38E+00
-23.1	1.94E+00	1.82E+00	1.88E+00	1.98E+00	2.02E+00	1.99E+00	1.90E+00
-22.1	2.34E+00	2.19E+00	2.26E+00	2.39E+00	2.44E+00	2.39E+00	2.27E+00
-21.1	2.69E+00	2.53E+00	2.61E+00	2.74E+00	2.79E+00	2.77E+00	2.62E+00
-20.1	3.01E+00	2.84E+00	2.94E+00	3.08E+00	3.12E+00	3.09E+00	2.95E+00
-19.1	3.34E+00	3.16E+00	3.25E+00	3.39E+00	3.44E+00	3.42E+00	3.25E+00
-18.1	3.65E+00	3.44E+00	3.58E+00	3.72E+00	3.79E+00	3.75E+00	3.57E+00
-17.1	3.95E+00	3.73E+00	3.85E+00	4.03E+00	4.10E+00	4.05E+00	3.85E+00
-16.1	4.22E+00	3.98E+00	4.11E+00	4.30E+00	4.37E+00	4.33E+00	4.14E+00
-15.1	4.44E+00	4.20E+00	4.33E+00	4.53E+00	4.60E+00	4.56E+00	4.33E+00
-14.1	4.64E+00	4.40E+00	4.53E+00	4.73E+00	4.80E+00	4.76E+00	4.56E+00
-13.1	4.82E+00	4.56E+00	4.72E+00	4.94E+00	4.97E+00	4.95E+00	4.74E+00
-12.1	5.01E+00	4.75E+00	4.92E+00	5.10E+00	5.16E+00	5.15E+00	4.92E+00
-11.1	5.17E+00	4.89E+00	5.08E+00	5.27E+00	5.31E+00	5.31E+00	5.09E+00
-10.1	5.33E+00	5.04E+00	5.22E+00	5.41E+00	5.47E+00	5.44E+00	5.21E+00
-9.1	5.43E+00	5.17E+00	5.32E+00	5.54E+00	5.57E+00	5.57E+00	5.34E+00
-8.1	5.53E+00	5.26E+00	5.40E+00	5.63E+00	5.68E+00	5.66E+00	5.44E+00
-7.1	5.59E+00	5.31E+00	5.48E+00	5.71E+00	5.74E+00	5.75E+00	5.52E+00
-6.1	5.68E+00	5.40E+00	5.58E+00	5.79E+00	5.81E+00	5.81E+00	5.59E+00
-5.1	5.71E+00	5.44E+00	5.62E+00	5.85E+00	5.87E+00	5.86E+00	5.66E+00
-4.1	5.77E+00	5.48E+00	5.70E+00	5.89E+00	5.92E+00	5.92E+00	5.69E+00
-3.1	5.79E+00	5.53E+00	5.70E+00	5.93E+00	5.96E+00	5.97E+00	5.75E+00
-2.1	5.80E+00	5.56E+00	5.73E+00	5.92E+00	5.95E+00	5.98E+00	5.75E+00
-1.1	5.82E+00	5.56E+00	5.74E+00	5.96E+00	5.97E+00	5.99E+00	5.75E+00
-0.1	5.83E+00	5.56E+00	5.70E+00	5.93E+00	5.99E+00	5.98E+00	5.77E+00
0.9	5.83E+00	5.56E+00	5.71E+00	5.94E+00	5.97E+00	5.97E+00	5.76E+00
1.9	5.83E+00	5.52E+00	5.71E+00	5.93E+00	5.97E+00	5.97E+00	5.74E+00
2.9	5.77E+00	5.48E+00	5.67E+00	5.88E+00	5.91E+00	5.89E+00	5.68E+00
3.9	5.75E+00	5.45E+00	5.63E+00	5.82E+00	5.87E+00	5.87E+00	5.67E+00
4.9	5.67E+00	5.37E+00	5.56E+00	5.78E+00	5.80E+00	5.80E+00	5.57E+00
5.9	5.58E+00	5.30E+00	5.47E+00	5.69E+00	5.70E+00	5.72E+00	5.51E+00
6.9	5.47E+00	5.21E+00	5.38E+00	5.59E+00	5.62E+00	5.61E+00	5.41E+00
7.9	5.38E+00	5.11E+00	5.27E+00	5.47E+00	5.53E+00	5.50E+00	5.28E+00
8.9	5.25E+00	5.00E+00	5.13E+00	5.34E+00	5.41E+00	5.40E+00	5.19E+00
9.9	5.13E+00	4.84E+00	5.02E+00	5.22E+00	5.26E+00	5.24E+00	5.05E+00
10.9	4.91E+00	4.69E+00	4.85E+00	5.05E+00	5.08E+00	5.06E+00	4.83E+00
11.9	4.75E+00	4.49E+00	4.63E+00	4.86E+00	4.90E+00	4.85E+00	4.68E+00
12.9	4.53E+00	4.32E+00	4.43E+00	4.64E+00	4.71E+00	4.64E+00	4.45E+00
13.9	4.33E+00	4.07E+00	4.20E+00	4.37E+00	4.46E+00	4.41E+00	4.23E+00
14.9	4.08E+00	3.86E+00	3.98E+00	4.17E+00	4.24E+00	4.19E+00	4.01E+00
15.9	3.82E+00	3.60E+00	3.72E+00	3.91E+00	3.97E+00	3.93E+00	3.75E+00
16.9	3.52E+00	3.34E+00	3.44E+00	3.61E+00	3.66E+00	3.61E+00	3.44E+00
17.9	3.19E+00	3.02E+00	3.12E+00	3.27E+00	3.32E+00	3.27E+00	3.13E+00
18.9	2.86E+00	2.70E+00	2.78E+00	2.91E+00	2.96E+00	2.92E+00	2.79E+00
19.9	2.53E+00	2.37E+00	2.45E+00	2.55E+00	2.62E+00	2.57E+00	2.45E+00
20.9	2.21E+00	2.08E+00	2.15E+00	2.26E+00	2.30E+00	2.27E+00	2.15E+00
21.9	1.89E+00	1.78E+00	1.84E+00	1.92E+00	1.97E+00	1.94E+00	1.85E+00
22.9	1.56E+00	1.47E+00	1.51E+00	1.60E+00	1.63E+00	1.61E+00	1.53E+00
23.9	1.22E+00	1.15E+00	1.19E+00	1.25E+00	1.27E+00	1.25E+00	1.20E+00

Table 19. AGC-1 specimen DPA at EOC 148B.

Distance Relative to Core Mid-Plane (inches)	Center S-7 DPA	North S-4 DPA	NorthEast S-5 DPA	SouthEast S-6 DPA	South S-1 DPA	SouthWest S-2 DPA	NorthWest S-3 DPA
-24.1	1.64E+00	1.59E+00	1.61E+00	1.65E+00	1.66E+00	1.66E+00	1.62E+00
-23.1	2.24E+00	2.17E+00	2.20E+00	2.27E+00	2.29E+00	2.27E+00	2.23E+00
-22.1	2.71E+00	2.61E+00	2.65E+00	2.73E+00	2.76E+00	2.74E+00	2.67E+00
-21.1	3.12E+00	3.01E+00	3.07E+00	3.14E+00	3.16E+00	3.18E+00	3.08E+00
-20.1	3.49E+00	3.37E+00	3.44E+00	3.53E+00	3.54E+00	3.55E+00	3.46E+00
-19.1	3.87E+00	3.74E+00	3.82E+00	3.89E+00	3.91E+00	3.92E+00	3.81E+00
-18.1	4.23E+00	4.10E+00	4.20E+00	4.27E+00	4.29E+00	4.30E+00	4.19E+00
-17.1	4.59E+00	4.45E+00	4.53E+00	4.63E+00	4.66E+00	4.65E+00	4.53E+00
-16.1	4.90E+00	4.73E+00	4.84E+00	4.94E+00	4.98E+00	4.98E+00	4.86E+00
-15.1	5.15E+00	5.01E+00	5.09E+00	5.21E+00	5.23E+00	5.23E+00	5.10E+00
-14.1	5.40E+00	5.24E+00	5.32E+00	5.45E+00	5.46E+00	5.49E+00	5.37E+00
-13.1	5.61E+00	5.44E+00	5.56E+00	5.69E+00	5.67E+00	5.71E+00	5.59E+00
-12.1	5.84E+00	5.67E+00	5.79E+00	5.87E+00	5.88E+00	5.93E+00	5.80E+00
-11.1	6.04E+00	5.83E+00	5.98E+00	6.08E+00	6.05E+00	6.12E+00	6.01E+00
-10.1	6.23E+00	6.03E+00	6.15E+00	6.24E+00	6.25E+00	6.29E+00	6.16E+00
-9.1	6.34E+00	6.17E+00	6.28E+00	6.39E+00	6.37E+00	6.44E+00	6.30E+00
-8.1	6.46E+00	6.28E+00	6.37E+00	6.50E+00	6.50E+00	6.54E+00	6.44E+00
-7.1	6.54E+00	6.36E+00	6.48E+00	6.60E+00	6.57E+00	6.66E+00	6.52E+00
-6.1	6.64E+00	6.46E+00	6.59E+00	6.70E+00	6.66E+00	6.72E+00	6.62E+00
-5.1	6.68E+00	6.51E+00	6.64E+00	6.76E+00	6.72E+00	6.80E+00	6.71E+00
-4.1	6.76E+00	6.57E+00	6.74E+00	6.83E+00	6.79E+00	6.85E+00	6.74E+00
-3.1	6.79E+00	6.62E+00	6.74E+00	6.87E+00	6.83E+00	6.91E+00	6.81E+00
-2.1	6.80E+00	6.66E+00	6.79E+00	6.86E+00	6.82E+00	6.93E+00	6.81E+00
-1.1	6.82E+00	6.66E+00	6.79E+00	6.89E+00	6.86E+00	6.94E+00	6.81E+00
-0.1	6.83E+00	6.65E+00	6.75E+00	6.87E+00	6.87E+00	6.92E+00	6.81E+00
0.9	6.83E+00	6.66E+00	6.76E+00	6.89E+00	6.85E+00	6.92E+00	6.82E+00
1.9	6.83E+00	6.62E+00	6.75E+00	6.87E+00	6.84E+00	6.92E+00	6.79E+00
2.9	6.76E+00	6.57E+00	6.71E+00	6.80E+00	6.77E+00	6.83E+00	6.73E+00
3.9	6.72E+00	6.52E+00	6.66E+00	6.74E+00	6.74E+00	6.81E+00	6.71E+00
4.9	6.64E+00	6.43E+00	6.59E+00	6.68E+00	6.64E+00	6.73E+00	6.59E+00
5.9	6.51E+00	6.32E+00	6.47E+00	6.58E+00	6.53E+00	6.62E+00	6.52E+00
6.9	6.40E+00	6.23E+00	6.35E+00	6.46E+00	6.44E+00	6.49E+00	6.39E+00
7.9	6.29E+00	6.10E+00	6.22E+00	6.32E+00	6.32E+00	6.36E+00	6.25E+00
8.9	6.12E+00	5.98E+00	6.06E+00	6.17E+00	6.17E+00	6.23E+00	6.12E+00
9.9	5.98E+00	5.78E+00	5.91E+00	6.02E+00	6.01E+00	6.04E+00	5.95E+00
10.9	5.73E+00	5.59E+00	5.72E+00	5.81E+00	5.79E+00	5.85E+00	5.70E+00
11.9	5.53E+00	5.36E+00	5.46E+00	5.59E+00	5.58E+00	5.59E+00	5.52E+00
12.9	5.27E+00	5.14E+00	5.22E+00	5.34E+00	5.37E+00	5.34E+00	5.25E+00
13.9	5.03E+00	4.85E+00	4.94E+00	5.03E+00	5.08E+00	5.07E+00	4.97E+00
14.9	4.74E+00	4.59E+00	4.68E+00	4.79E+00	4.82E+00	4.82E+00	4.71E+00
15.9	4.44E+00	4.28E+00	4.37E+00	4.48E+00	4.51E+00	4.51E+00	4.41E+00
16.9	4.08E+00	3.96E+00	4.04E+00	4.14E+00	4.15E+00	4.15E+00	4.05E+00
17.9	3.71E+00	3.58E+00	3.66E+00	3.75E+00	3.77E+00	3.75E+00	3.67E+00
18.9	3.32E+00	3.20E+00	3.26E+00	3.34E+00	3.35E+00	3.34E+00	3.27E+00
19.9	2.93E+00	2.82E+00	2.87E+00	2.93E+00	2.97E+00	2.95E+00	2.87E+00
20.9	2.55E+00	2.47E+00	2.51E+00	2.58E+00	2.61E+00	2.60E+00	2.52E+00
21.9	2.18E+00	2.11E+00	2.15E+00	2.20E+00	2.23E+00	2.21E+00	2.17E+00
22.9	1.80E+00	1.74E+00	1.77E+00	1.82E+00	1.84E+00	1.84E+00	1.78E+00
23.9	1.41E+00	1.36E+00	1.39E+00	1.43E+00	1.44E+00	1.43E+00	1.40E+00

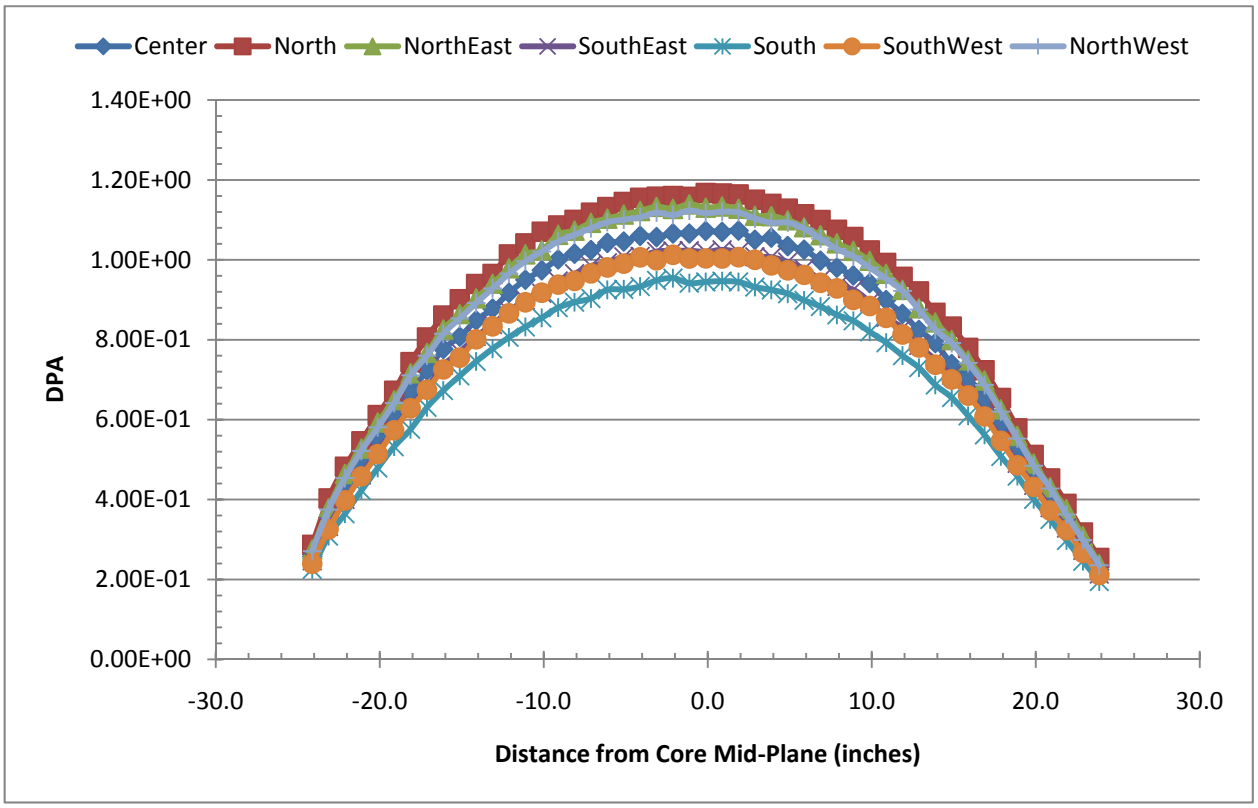

Figure 12 AGC-1 specimen DPA at EOC 145A.

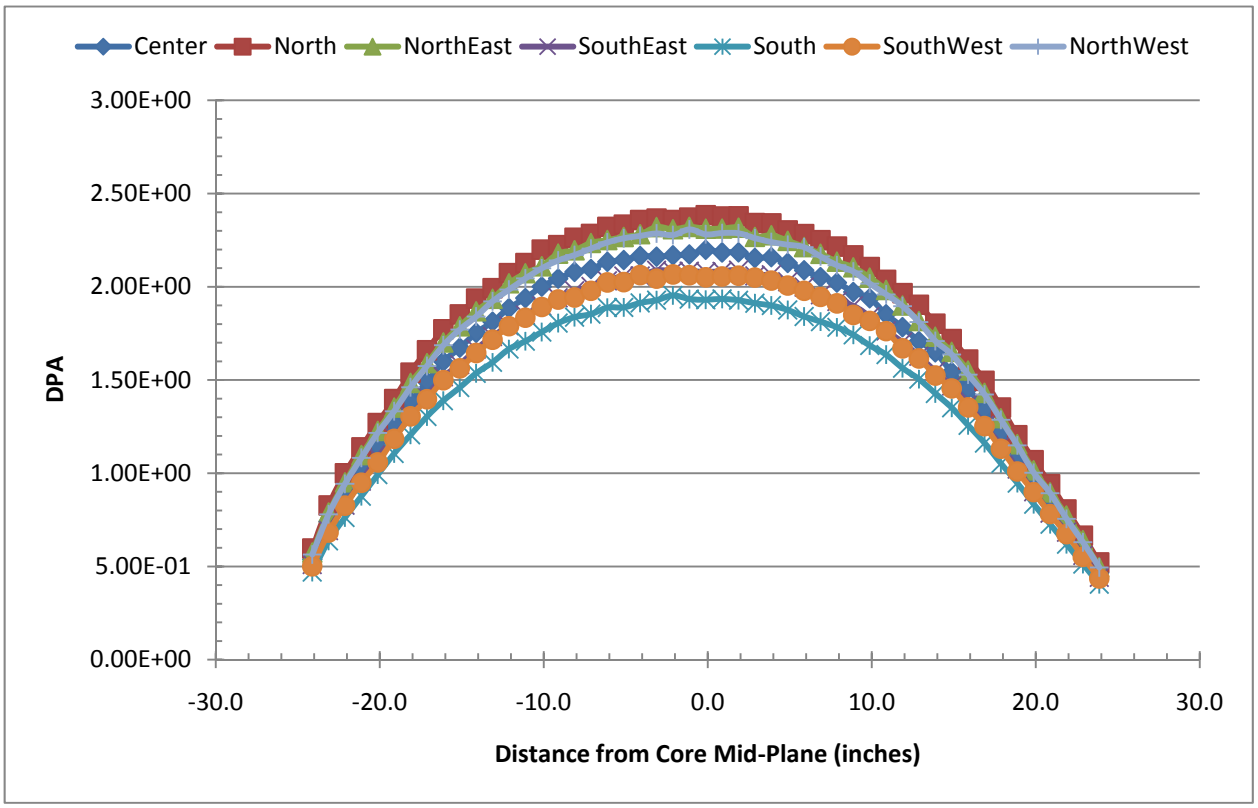

Figure 13 AGC-1 specimen DPA at EOC 145B.

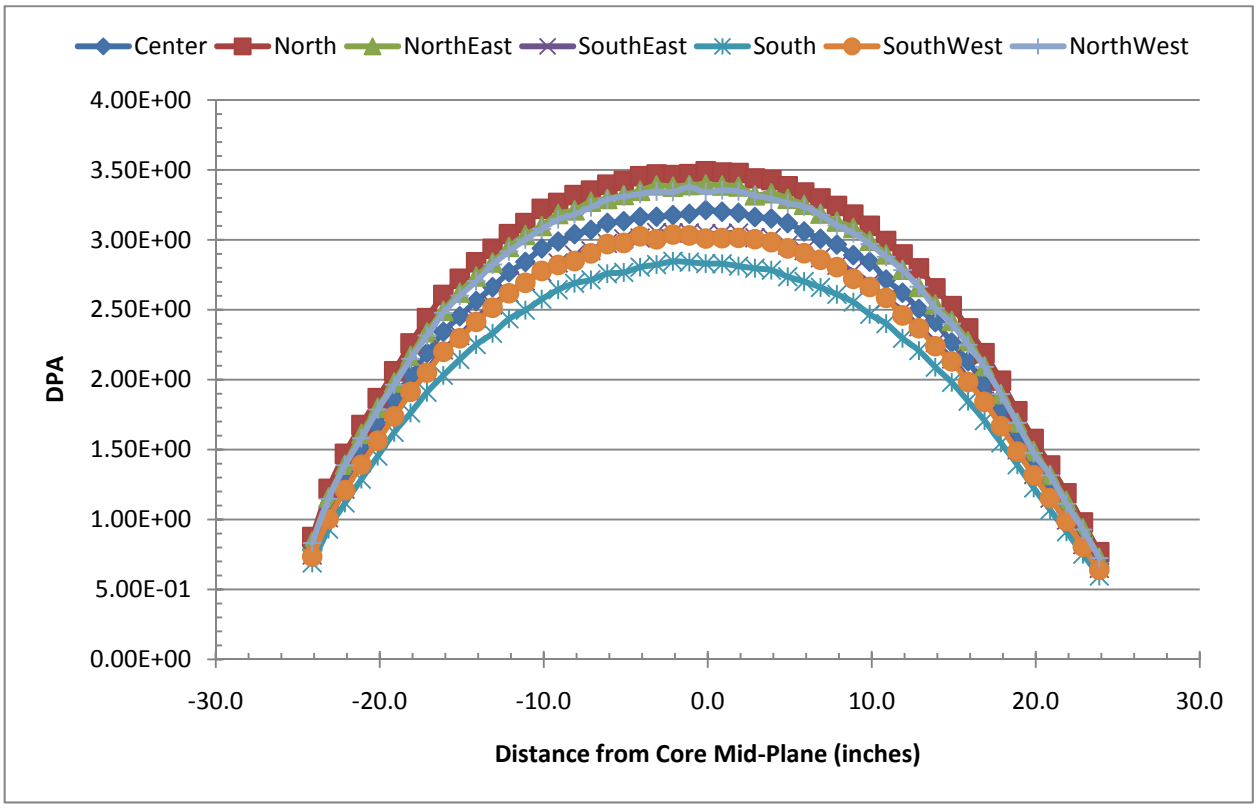

Figure 14 AGC-1 specimen DPA at EOC 146A.

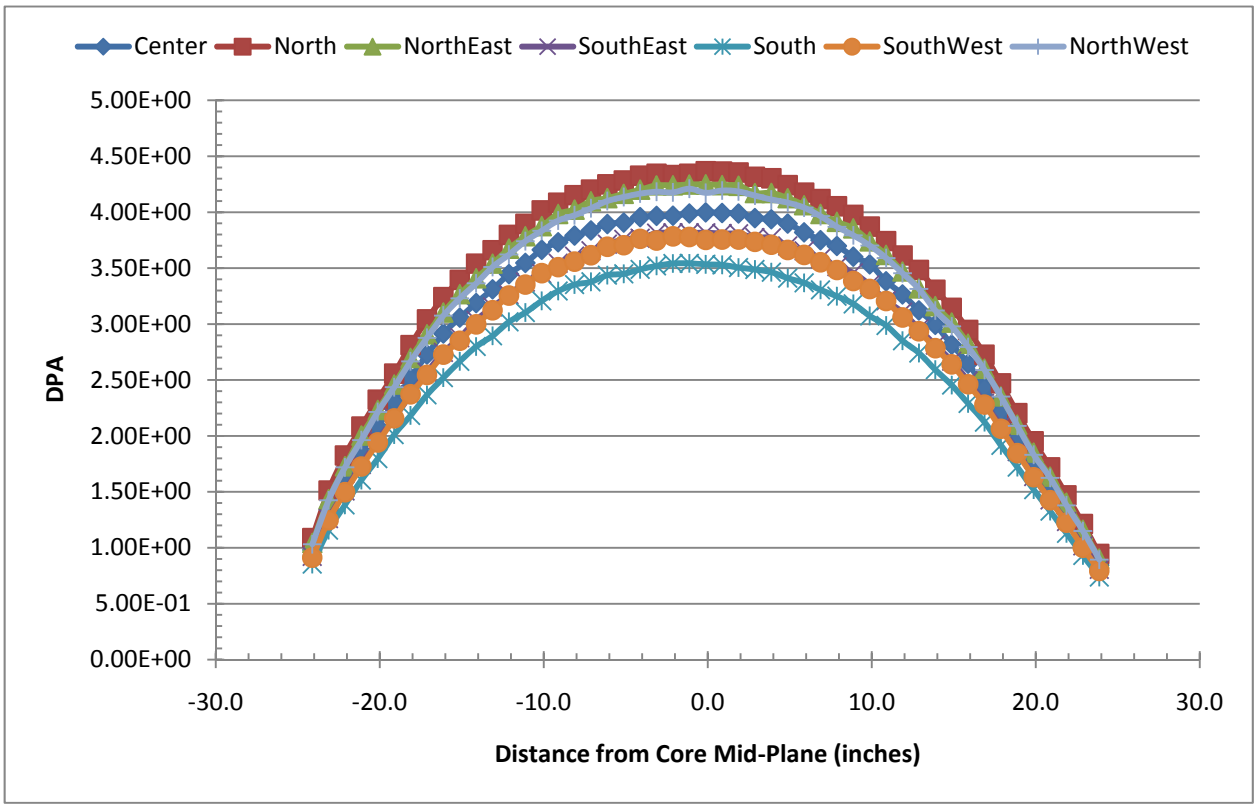

Figure 15 AGC-1 specimen DPA at EOC 146B.

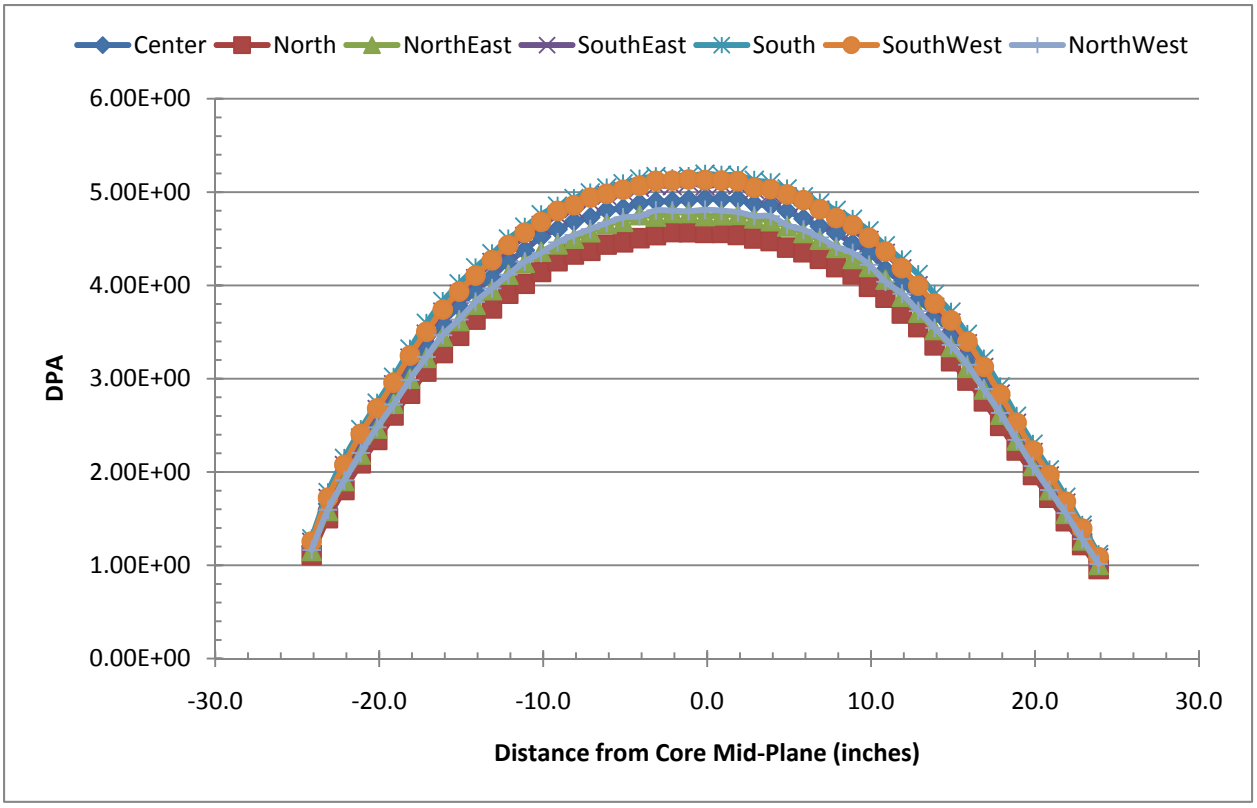

Figure 16 AGC-1 specimen DPA at EOC 147A.

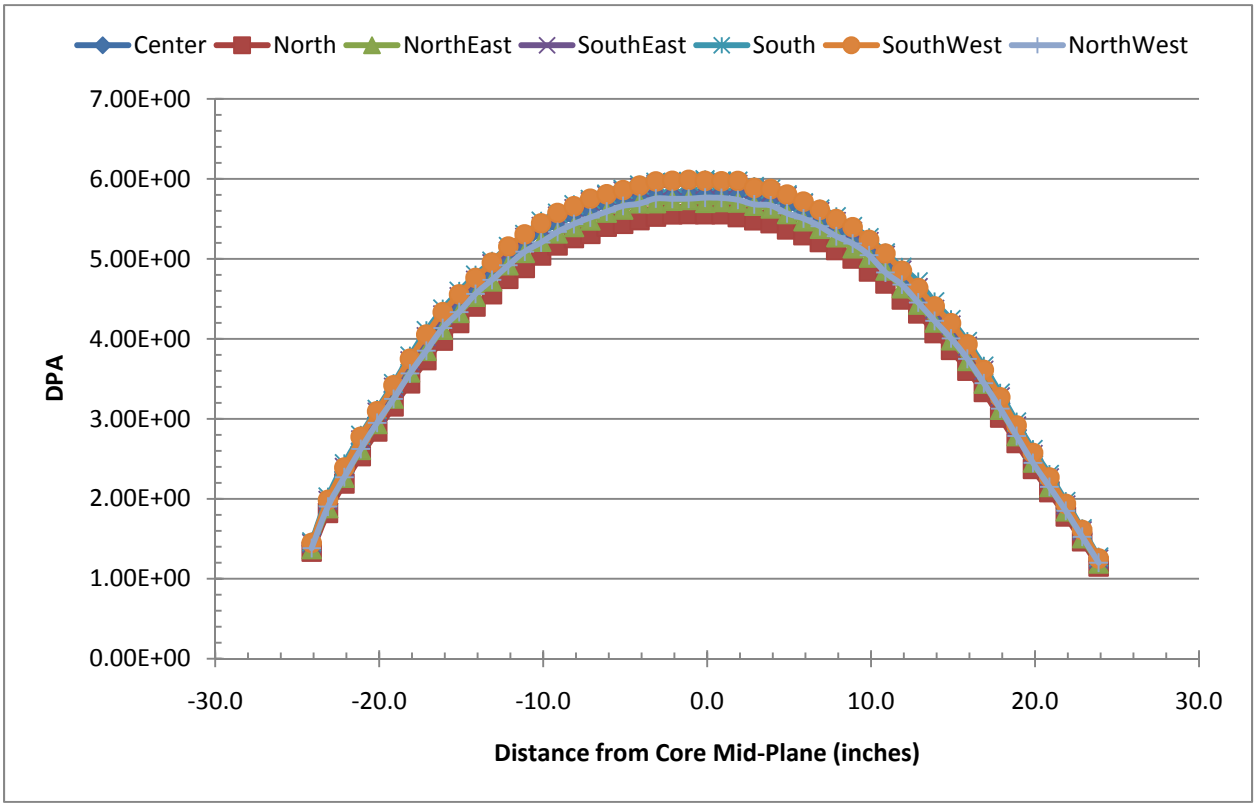

Figure 17 AGC-1 specimen DPA at EOC 148A.

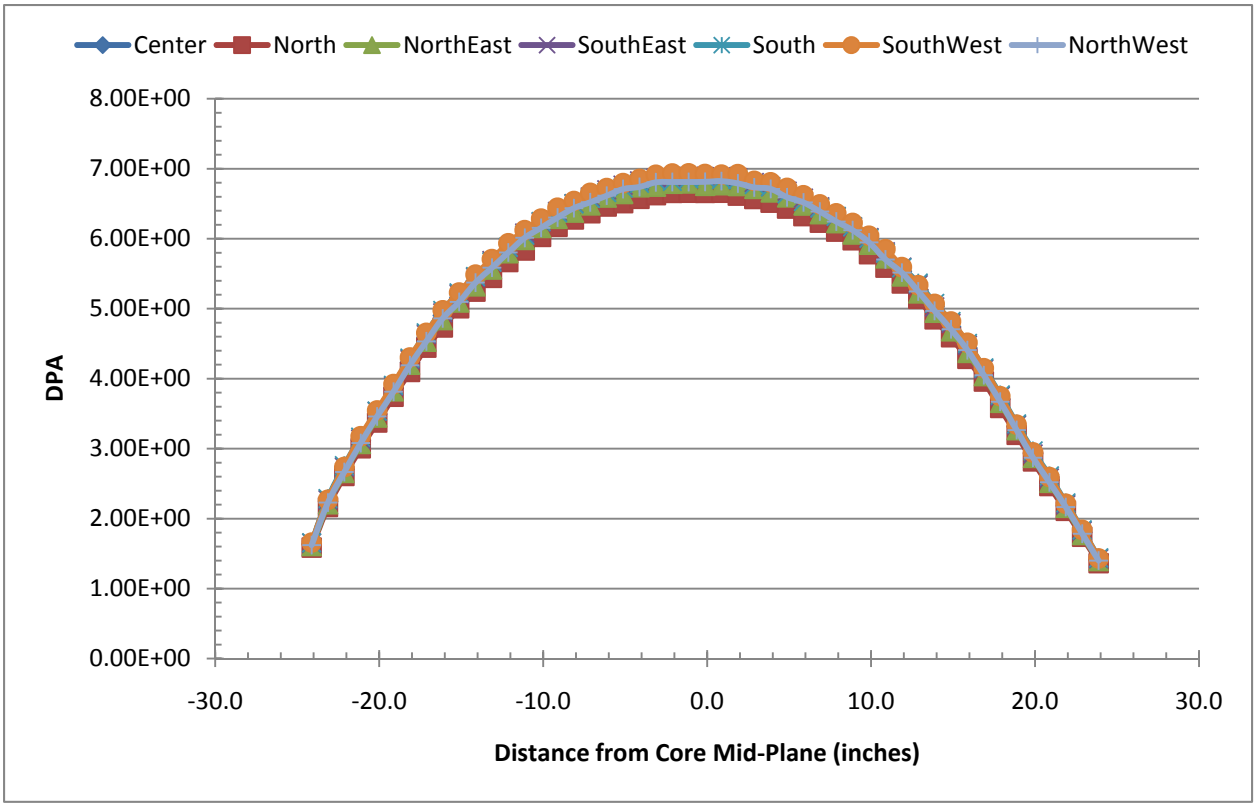

Figure 18 AGC-1 specimen DPA at EOC 148B.

8.0 References

1. D. E. Hale, letter to J. C. Chapman, DEH-01-11, “Advanced Test Reactor (ATR) Power History Through Cycle 148B-1,” January 12, 2011 (See Attachment B – Power History).
2. Technical and Functional Requirements, “Advanced Graphite Capsule Temperature Control System,” TFR-509, Idaho National Laboratory, 2008.
3. MCNP Team, “MCNP 5.1.40 RSICC Release Notes,” LA-UR-05-8617 November 2005.
4. X-5 Monte Carlo Team, “MCNP—A General Monte Carlo N-Particle Transport Code, Version 5,” Volume I, LA-UR-03-1987, Los Alamos National Laboratory, April 24, 2003 (Revised 10/3/05) and Volume II, LA-CP-0245, Los Alamos National Laboratory, April 24, 2003 (Revised 10/3/05) (Vol. II is available with a licensed copy of MCNP).
5. J. R. Parry, “Neutronic Analysis of the AGC-1 Experiment Irradiated in the ATR South Flux Trap,” ECAR-215 Rev.1, April 2009.
6. L. R. Greenwood and R. K. Smither, "SPECTER: Neutron Damage Calculations For Materials Irradiations," ANL/FPP/TM-197 (January 1985).
7. M. A. Lillo, J. R. Mitchell, “Software Management, MCNP Version 5, Release 1.40,” INL/INT-08-15171 Rev. 0, August 2010, INL Record Number 243166.
8. S. S. Kim, B. G. Schnitzler, “Advanced Test Reactor: Serpentine Arrangement of Highly Enriched Water-Moderated Uranium-Aluminide Fuel Plates Reflected by Beryllium,” INL/EXT-05-00780, September 2005; published in “International Handbook of Evaluated Criticality Safety Benchmark Experiments,” NEA/NSC/DOC/(95)03/II, Volume II, HEU-MET-THERM-022, September 2005 Edition.

Attachment A – Analysis Request

EAPT Rev. 2

Experiment Analysis Planning Tool and Analysis Request Forms

Note, electronic format and submission are preferred. Please fill in the information on the appropriate pages as completely as possible. Fill in applicable calculation and analysis requests on the subsequent page to request analysis from Irradiation Testing (C630). Email the filled-out form(s) to Misti Lillo (misti.lillo@inl.gov) for finalization. Contact Misti at 526-5843 or by email with any questions, comments, or suggestions.

Requester Information

Requester Name: Blaine Grover | Date: 2/23/2011 | Rev:

Office Phone: (208)526-4489 | Cell: (208)521-1975 | E-mail: blaine.grover@inl.gov | MS: 3870

Type of Analysis Being Requested: As-Run

Comments:

Project Information

Project Name: Advanced Graphite Capsule | Project Number: 23747

Project Manager: Blaine Grover | Office Location: 3WE7

Office Phone: (208)526-4489 | Cell: (208)521-1975 | E-mail: blaine.grover@inl.com | MS: 3870

Experiment Information

Test Name: AGC-1

Test Information:

Test Location: SFT or E | Insertion Cycle: 9/5/2009 | Final Discharge Cycle: 1/8/2011 | Duration: 350 EFPD

Specific ATR Position(s): SFT | ATR Cycle(s): 145A, 145B, 146A, 146B, 147A, 148A, 148B

Backup Test Information:

Is this a fueled test? Yes ☐ No ☒ *If yes, complete fueled tests sections.*

Is an Experiment Safety Analysis (ESA) author needed? Yes ☐ No ☒ *If yes, request ESA author from ATR Nuclear Safety (Dave McDaniel 533-4281).*

ESA Author:

Experiment References Used to Support Calculation & Analysis

Test Plan:

Test Design:

TFR: TFR-508, "Advanced Graphite Capsule AGC-1 Experiment Test Train"

Drawings: 629068

ESA:

ECARs: ECAR-215, "Neutronic Analysis of the AGC-1 Experiment Irradiated in the ATR South Flux Trap"

Analyses:

Emails/Letters:

As-Built Data:

Quality Level: 2 | Quality Level Database Number: RTC-000169 Rev. 2

CUI Information:

Other:

Provide either electronic (preferred) or hardcopy of the references listed above if they are not readily available through EDMS or other publicly available resources.

EAPT Rev. 2

Experiment Analysis Planning Tool and Analysis Request Forms

Neutronics/Physics Calculation & Analysis Request Form

Neutronics Analysis Request

Requesting a neutronics/physics analysis? Yes ☒ No☐ *If yes, please fill out the information on this page.*

Deliverable ECAR Deliverable Title As-Run Neutronic Analysis of the AGC-1 Experiment Irradiated in the ATR South Flux Trap

Draft Due Date _____ Final/Approved Due Date 4/1/2011 Charge Number 101817503

Comments _____

Purpose of Analysis Provide as-run neutron damage and heating rates to support final irradiation report on AGC-1

Persons assigned to support calculation & analysis tasks (as applicable).

Performer/Author	D. M. Perez, J. R. Parry
Technical Checker	
Independent Peer Reviewer	
Performer's Manager	S. K. Penny
Requester	B. Grover
Nuclear Safety Review	
Engineering Manager	

Calculated Parameter	Scoping	Design	Projection	As-Run
Calculations for All Tests (typically required to support ESA)				
Neutron Heating Rates W/g _____	☐	☐	☐	☒
Gamma Heating Rates W/g _____	☐	☐	☐	☒
Test Reactivity Worth ($) relative to Water-Filled	☐	☐	☐	☐
Backup Test Reactivity Worth ($) relative to Water-Filled	☐	☐	☐	☐
Axial Flux Profile (FE(s) and coolant channel(s)?) _____	☐	☐	☐	☐
Other Fast Fluence	☐	☐	☐	☒
Calculations for Tests in Flux Traps (typically required to support ESA)				
Temperature Coefficient of PCS (Flux Traps only) ($/°F)	☐	☐	☐	☐
Other _____	☐	☐	☐	☐
Additional Calculations for All Tests (not necessarily required to support ESA)				
Activation Ci/cc Irradiation Time _____ days	☐	☐	☐	☐
Decay Heat W/cc Cooling Time _____ days	☐	☐	☐	☐
DPA _____	☐	☐	☐	☒
Other _____	☐	☐	☐	☐
Calculations for Fueled Tests (not necessarily required to support ESA)				
Fuel Burnup _____	☐	☐	☐	☐
Fission Heating _____ Fission Density _____	☐	☐	☐	☐
Flux _____ (Fast/Thermal) _____	☐	☐	☐	☐
Fluence _____ (Fast/Thermal) _____	☐	☐	☐	☐
Fission Products _____	☐	☐	☐	☐
Local- or Point-to-Average Ratios _____	☐	☐	☐	☐
Other _____	☐	☐	☐	☐

Attachment B – Power History

INTEROFFICE MEMORANDUM

Idaho National Laboratory INL

Date: January 12, 2011

To: J. C. Chapman, MS 7136

From: D. E. Hale, MS 7136

Subject: ADVANCED TEST REACTOR (ATR) POWER HISTORY THROUGH CYCLE 148B-1

References:
(a) A. V. Briscoe letter to J. L. Durney, AVB-9-77, ATR Power History Through Cycle 34C-1, June 7, 1977
(b) C. C. Swanson letter to J. L. Durney, CAS-05-86, ATR Power History Through Cycle 72A-1, February 3, 1986
(c) L. S. Loret letter to E. C. Anderson, Sr., LSL-11-94, ATR Power History Through Cycle 102B-1, February 28, 1994
(d) D. E. Hale letter to J. C. Chapman, DEH-05-04, Advanced Test Reactor (ATR) Power History Through Cycle 133B-1, August 18, 2004

Table 1 lists the ATR N-16 constrained power history data since the Beryllium VI Core Internals Changeout (Cycle 134A-1) through Cycle 148B-1. The ATR power history prior to Cycle 134A-1 is presented in the references.

Table 2 lists the accumulated N-16 total lobe MWd and total core MWd as obtained from the ATR DAS for Cycle 134A-1 through 148B-1.

DEH

cc: J. D. Abrashoff, MS 7136
K. E. Barrett, MS 3835
E. R. Carlson, MS 7101
G. S. Chang, MS 3870
B. J. Curnutt, MS 7104
C. A. Dahl, MS 3201
S. L. Drussel, MS 7114
R. L. Fulks, MS 7130
R. C. Howard, MS 7101
C. D. Jackson, MS 7106
C. C. Jensen, MS 7113
W. F. Jones, MS 3818
A. W. LaPorta, MS 7136
M. A. Lillo, MS 3870

J. C. Chapman
January 12, 2011
Page 2

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C. J. Stanley, MS 7136
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M. E. Stengel (2), MS 7103
K. D. Stueve, MS 7106
C. R. Tyler, MS 3835
J. F. Williams, MS 7101
CSAP Surveillance File
D. E. Hale Letter File (DEH-01-11)

Uniform File Code: 8153
Disposition Authority: A17-32-b-1
Retention Schedule: Destroy when 6 years old

NOTE: Original disposition authority, retention schedule, and Uniform Filing Code applied by the sender may not be appropriate for all recipients. Make adjustments as needed.

TABLE 1
SUMMARY OF ATR POWER HISTORY

Cycle No.	N-16 Average Lobe Powers (MW)					N-16 Lobe MWd						
	NW	NE	C	SW	SE	NW	NE	C	SW	SE	Total	EFPD
134A-1	----	----	----	----	----	0	0	0	0	0	0	----
134A-2	----	----	----	----	----	0.2	0.3	0.4	0.4	0.4	2.0	----
						0.2	0.3	0.4	0.4	0.4	2.0	
134B-1	18.0	18.0	24.5	23.0	25.0	452.8	452.2	615.5	578.5	628.6	2727.6	25.1
134B-2	18.0	18.0	25.8	23.0	25.0	385.6	385.8	553.5	493.2	536.1	2354.2	21.4
						838.4	838.0	1169.0	1071.7	1164.7	5081.8	46.5
135A-1	18.0	18.0	29.8	28.1	35.4	236.2	236.0	391.1	368.6	464.0	1695.8	13.1
135B-1	18.0	18.0	24.8	23.0	25.0	458.3	458.4	630.8	585.3	636.5	2769.2	25.5
135B-2	18.0	18.0	25.2	23.0	25.0	405.0	405.7	567.4	517.8	563.0	2458.9	22.5
						863.3	864.1	1198.2	1103.1	1199.5	5228.1	48.0
135C-1	18.0	18.0	25.0	23.0	25.0	729.9	729.7	1013.5	933.0	1013.9	4419.9	40.6
136A-1	18.0	18.0	24.0	23.0	23.0	916.2	916.4	1218.9	1169.5	1170.2	5391.1	50.9
136B-1	18.0	18.0	23.9	23.0	23.0	701.9	702.3	931.2	896.9	897.0	4129.4	39.0
137A-1	18.0	18.0	24.7	20.0	25.0	975.4	974.8	1336.2	1083.2	1353.3	5722.8	54.1
137B-1	20.0	17.9	35.5	56.6	30.4	242.0	217.0	429.6	685.4	367.6	1941.6	12.1
138A-1	18.0	18.0	23.6	23.0	25.0	1046.9	1047.7	1370.7	1336.4	1453.5	6255.1	58.1
138B-1	18.0	18.0	23.3	23.0	25.0	838.5	839.6	1084.8	1070.9	1164.6	4998.5	46.6
139A-1	18.0	18.0	23.9	23.0	25.0	928.7	929.1	1231.1	1186.3	1289.5	5564.6	51.6
139B-1	18.0	18.0	23.2	23.0	23.0	919.7	919.7	1187.5	1174.9	1175.0	5376.8	51.1
140A-1	18.0	18.0	21.8	23.0	23.0	837.0	837.2	1012.9	1069.7	1069.4	4826.1	46.5
140B-1	18.0	17.7	21.8	23.6	23.0	641.7	629.5	777.2	842.9	820.0	3711.3	35.7
141A-1	18.0	18.0	23.4	23.0	23.0	583.3	583.1	756.8	745.1	745.5	3413.7	32.4
142A-1	23.0	18.0	24.7	24.8	23.0	1104.9	864.8	1186.0	1192.5	1104.0	5452.2	48.0
142B-1	23.0	18.0	25.4	25.4	25.0	1196.9	936.7	1323.4	1322.5	1298.7	6078.2	52.0
143A-1/2	18.0	18.0	24.3	26.9	25.0	880.0	882.5	1187.7	1315.4	1223.1	5488.7	48.9
143B-1	18.0	18.0	24.9	27.0	25.1	1032.1	1032.6	1423.5	1543.7	1435.0	6466.9	57.3
144A-1	18.0	18.0	23.1	23.0	25.1	787.0	787.0	1006.7	1004.5	1093.4	4678.6	43.7
144B-1	18.0	18.1	22.4	23.0	23.0	932.3	933.4	1155.7	1190.7	1190.9	5403.0	51.7

TABLE 1
SUMMARY OF ATR POWER HISTORY

Cycle No.	N-16 Average Lobe Powers (MW)					N-16 Lobe MWd						
	NW	NE	C	SW	SE	NW	NE	C	SW	SE	Total	EFPD
145A-1	18.0	17.9	23.2	23.8	25.7	983.0	980.9	1267.3	1299.5	1407.8	5938.4	54.7
145B-1	17.8	17.8	23.0	24.6	25.8	1020.5	1020.0	1321.4	1407.8	1478.3	6247.9	57.3
146A-1	18.0	18.0	24.3	25.8	26.0	906.8	906.8	1225.7	1300.0	1312.6	5651.9	50.5
146B-1	23.0	18.0	26.0	23.0	26.0	903.7	707.1	1021.6	903.9	1021.0	4557.2	39.2
147A-1	23.0	18.0	24.1	20.9	23.0	1156.9	904.4	1208.4	1049.4	1155.2	5474.3	50.2
148A-1	18.0	18.0	23.6	22.0	23.0	856.0	855.8	1121.4	1043.8	1093.6	4970.6	47.5
148B-1	18.0	18.0	23.0	23.8	23.0	927.5	926.7	1181.6	1224.0	1185.0	5444.8	51.5

TABLE 2
SUMMARY OF ACCUMULATED N-16 MWd

Cycle No.	Lobe					Total MWd
	NW	NE	C	SW	SE	
134A-1	0	0	0	0	0	0
134A-2	0.2	0.3	0.4	0.4	0.4	2.0
134B-1	453.0	452.5	615.9	578.9	629.0	2729.6
134B-2	838.6	838.3	1169.4	1072.1	1165.1	5083.8
135A-1	1074.8	1074.3	1560.4	1440.8	1629.0	6779.7
135B-1	1533.1	1532.7	2191.2	2026.0	2265.5	9548.9
135B-2	1938.1	1938.4	2758.6	2543.8	2828.5	12007.8
135C-1	2668.0	2668.1	3772.1	3476.8	3842.4	16427.7
136A-1	3584.2	3584.5	4991.0	4646.3	5012.6	21818.8
136B-1	4286.1	4286.8	5922.2	5543.2	5909.5	25948.2
137A-1	5261.5	5261.6	7258.3	6626.4	7262.8	31670.9
137B-1	5503.5	5478.6	7687.9	7311.8	7630.5	33612.5
138A-1	6550.3	6526.3	9058.6	8648.2	9083.9	39867.7
138B-1	7388.9	7365.9	10143.4	9719.2	10248.6	44866.2
139A-1	8317.6	8295.0	11374.5	10905.4	11538.1	50430.8
139B-1	9237.3	9214.6	12562.0	12080.3	12713.1	55807.6
140A-1	10074.3	10051.8	13574.9	13150.0	13782.5	60633.7
140B-1	10716.0	10681.3	14352.1	13992.9	14602.5	64345.0
141A-1	11299.3	11264.4	15108.9	14737.9	15347.9	67758.6
142A-1	12404.2	12129.1	16294.9	15930.4	16452.0	73210.9
142B-1	13601.1	13065.8	17618.4	17252.8	17750.7	79289.0
143A-1/2	14481.1	13948.3	18806.0	18568.3	18973.7	84777.7
143B-1	15513.1	14980.9	20229.6	20112.0	20408.8	91244.7

TABLE 2 (Continued)
SUMMARY OF ACCUMULATED N-16 MWd

Cycle No.	Lobe					Total MWd
	NW	NE	C	SW	SE	
144A-1	16300.1	15767.9	21236.2	21116.6	21502.2	95923.3
144B-1	17232.4	16701.4	22392.0	22307.3	22693.1	101326.3
145A-1	18215.3	17682.2	23659.3	23606.8	24100.8	107264.8
145B-1	19235.8	18702.2	24980.7	25014.6	25579.1	113512.6
146A-1	20142.5	19609.0	26206.5	26314.6	26891.6	119164.5
146B-1	21046.2	20316.1	27228.1	27218.4	27912.6	123721.7
147A-1	22203.1	21220.5	28436.5	28267.8	29067.7	129196.0
148A-1	23059.1	22076.3	29557.9	29311.6	30161.4	134166.5
148B-1	23986.6	23003.0	30739.5	30535.6	31346.4	139611.4