ENGINEERING CALCULATIONS AND ANALYSIS REPORT

ECAR No.: ECAR-363 ECAR Rev. No.: Rev. 0 Project File No.: 23841 Date: April 2010

Title: Physics Evaluations for the AGR-2 Experiment Irradiated in the ATR B-12 Position

1. Index Codes

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2. Quality Level: 2 *(Required Element)*

3. Objective/Purpose

This ECAR documents the results of the Advanced Test Reactor (ATR) detailed Monte Carlo N-Particle (MCNP) full-core model physics analyses performed to support the final design activities for the Advanced Gas Reactor (AGR) experiment, AGR-2 in the ATR B-12 position.

The purpose of this analysis is to calculate:

- Neutron/gamma heating rates versus Effective Full Power Days (EFPD) for the B4C graphite holders in the AGR-2 capsules,
- AGR-2 fuel compact fission power density and burnup (%fissions per initial metal atom [FIMA]) versus EFPD, and
- AGR-2 fuel compact fast flux (E > 0.18MeV) and fast fluence versus EFPD.

The results of this analysis should be used to support final design activities for the AGR-2 experiment in the ATR B-12 position. These calculations were performed using the computer codes MCNP and ORIGEN2 coupled via the UNIX script MCWO. The neutronics model, analysis details, and results are presented in the attached report.

4. Conclusions/Recommendations

Physics calculations have been performed to evaluate:

- B4C graphite holder neutron/gamma heating rates versus EFPD for the AGR-2 capsule assemblies,
- AGR-2 fuel compact fission power density and burnup (%FIMA) versus EFPD, and
- AGR-2 fuel compact fast flux (E > 0.18MeV) and fast fluence versus EFPD.

The analysis was performed using 50-day irradiation intervals for a total of 750 EFPD of irradiation. The nominal middle of cycle operating conditions that were used in the evaluations included outer shim control cylinder (OSCC) positions of 90.5°- 90.0°- 91.1°- 87.5° for NW-NE-SW-SE, respectively. The calculated results have been scaled to a west lobe source power of 22.33 MW, which is based on ATR nominal source lobe powers of 18.0-18.0-24.0-25.0-25.0 MW (NW-NE-C-SW-SE). These conditions do not address conditions associated with ATR PALM operating cycles. The heat rates would need to be scaled to higher operating powers of a PALM cycle to represent the higher power conditions.

The Monte Carlo with ORIGEN2 (MCWO)-calculated projected neutron/gamma heating rate calculations for the B4C graphite holders vs. EFPDs were performed for 750 EFPD of irradiation in 50-day intervals. The B4C graphite

holder heating rate results are tabulated in Table 9 and Table 10 of this document.

The MCWO-calculated projected fuel fission power density (W/cm^3) and burnup (% FIMA) were evaluated for 750 EFPDs of irradiation in 50-day intervals. The fuel compact fission power density and burnup results are tabulated in Table 11 through Table 14.

The AGR-2 fuel compact projected peak fuel fission power density of 119.12 W/cm^3 occurred in capsule 2, stack 2, top fuel compact (cell 33, stack 2, facing core center towards SE) at 200 EFPD.

The AGR-2 fuel compact projected peak burnup occurs in capsule 1, stack 1, top fuel compact (cell 89, stack 1, facing core center towards NE) at 750 EFPD.

The AGR program requires a minimum fast neutron fluence (E > 0.18 MeV) of greater than 1.5x10^{25} n/m^2 and a maximum fast neutron fluence of less than 5.0x10^{25} n/m^2 [12] [13]. The fast neutron fluence minimum and maximum requirements within the AGR-2 fuel compacts were evaluated using MCNP. The MCNP-calculated projected fast neutron flux and fast neutron fluence are tabulated in Table 15 through Table 18.

The minimum fast neutron fluence requirement of greater than 1.5x10^{25} n/m^2 for all AGR-2 fuel compacts was determined to happen after 450 EFPD. The last fuel compact to exceed the minimum is projected to occur in capsule 6, stack 3, top fuel compact of capsule stack (cell 97, stack 3, facing away from core center and towards W), at 450 EFPD with a value of 1.55x10^{25} n/m^2 .

The maximum fast neutron fluence that was achieved during the analyzed 750 EFPD of irradiation was in capsule 3, stack 1, top fuel compact (cell 84, stack 1, facing core center towards NE) with a value of 4.95x10^{25} n/m^2, which satisfies the project requirement of a maximum fast neutron fluence of less than 5.0x10^{25} n/m^2.

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Table of Contents

1.0 Introduction, Purpose, and Scope 6
2.0 Assumptions 6
3.0 AGR-2 Experiment Capsule Assembly Description 7
4.0 Model Description and Data 9
4.1 Data Libraries 10
4.2 Power Data and Shim Positions 10
4.3 Fuel Compact Data 10
4.4 Graphite Holder Data 11
4.5 Hafnium Shroud Data 11
5.0 Analysis and Calculations 12
6.0 Software 13
7.0 Data Retention 14
8.0 Results and Conclusions 14
8.1 Projected B4C Graphite Holder Neutron/Gamma Heating 14
8.2 Projected Fuel Compact Fission Power Density and Fuel Burnup 14
8.3 Projected Fuel Compact Fast Flux and Fast Fluence 15
9.0 References 42
Attachment A 43
Attachment B 45

1.0 Introduction, Purpose, and Scope

This ECAR documents the results of the Advanced Test Reactor (ATR) detailed MCNP full core model physics analyses performed to support final design activities for the Advanced Gas Reactor (AGR) experiment, AGR-2 in the ATR B-12 position (see Figure 1) as requested by project staff (see Attachemnt A).

The purpose of this analysis is to calculate:

- neutron/gamma heating rates versus Effective Full Power Days (EFPD) for the B4C graphite holders in the AGR-2 capsules,
- AGR-2 fuel compact fission power density and burnup (%FIMA) versus EFPD, and
- AGR-2 fuel compact fast flux (E > 0.18MeV) and fast fluence versus EFPD.

The analysis results reported herein should be used to support final design activities for the AGR-2 experiment in the ATR B-12 position.

2.0 Assumptions

The assumptions used in this analysis are stated below.

1. The ATR B-12 irradiation position is located between the Northwest (NW) and Southwest (SW) quadrants of the ATR (see Figure 1) which is best represented by the west flux trap source power.

2. An increase in lobe power for any lobe on the west side of the reactor (NW, SW or C lobe) will result in a change in test heating. Therefore, any power changes must be accounted for as a function of the ratio of the actual west flux trap source power to the analyzed west flux trap source power.

3. The west lobe source power is defined as the average of the NW, C and SW lobe powers, W = (NW + C + SW) / 3.

4. The heating rates, projected peak fuel fission power density, and projected fuel burnup analyses were performed using typical ATR middle of cycle (MOC) operating conditions.

5. Neutronics models and analyses performed in this ECAR were based upon the AGR-1 experiment models and analyses as reported by EDF-7120 [1].

6. The AGR-2 capsule assembly structural components were modeled using the data reported for the AGR-1 experiment structural components as reported by EDF-7120 [1]. Any change in structural materials will have a minimal effect on the experiment temperatures since the majority of the heating is from the fission in the fuel compacts.

7. Heating rate values reported for the B4C graphite holder include energy deposition from prompt neutrons, prompt gammas, and delayed fission product gammas.

8. Delayed gamma heating is assumed to be 20% of the prompt gamma heating rate.

3.0 AGR-2 Experiment Capsule Assembly Description

The AGR-2 experiment capsule assembly consists of 6 capsules axially stacked. Each capsule contains a graphite holder with 3 equally spaced fuel compact holder openings (see Figure 2). Each holder opening accommodates 4 axially stacked fuel compacts1 inch in length or 2 axially stacked fuel compacts 2 inches in length. The bottom capsule will contain 2-inch long fuel compacts. Thus, each of the top 5 capsules has 3 stacks × 4 fuel compacts/stack for a total of 12 fuel compacts per capsule and the bottom capsule has 3 stacks × 2 fuel compacts/stack for a total of 6 fuel compacts. So, within the entire AGR-2 experiment capsule assembly, there are 5 capsules × 12 fuel compacts/capsule and 1 capsule × 6 fuel compacts/capsule for a total of 66 fuel compacts.

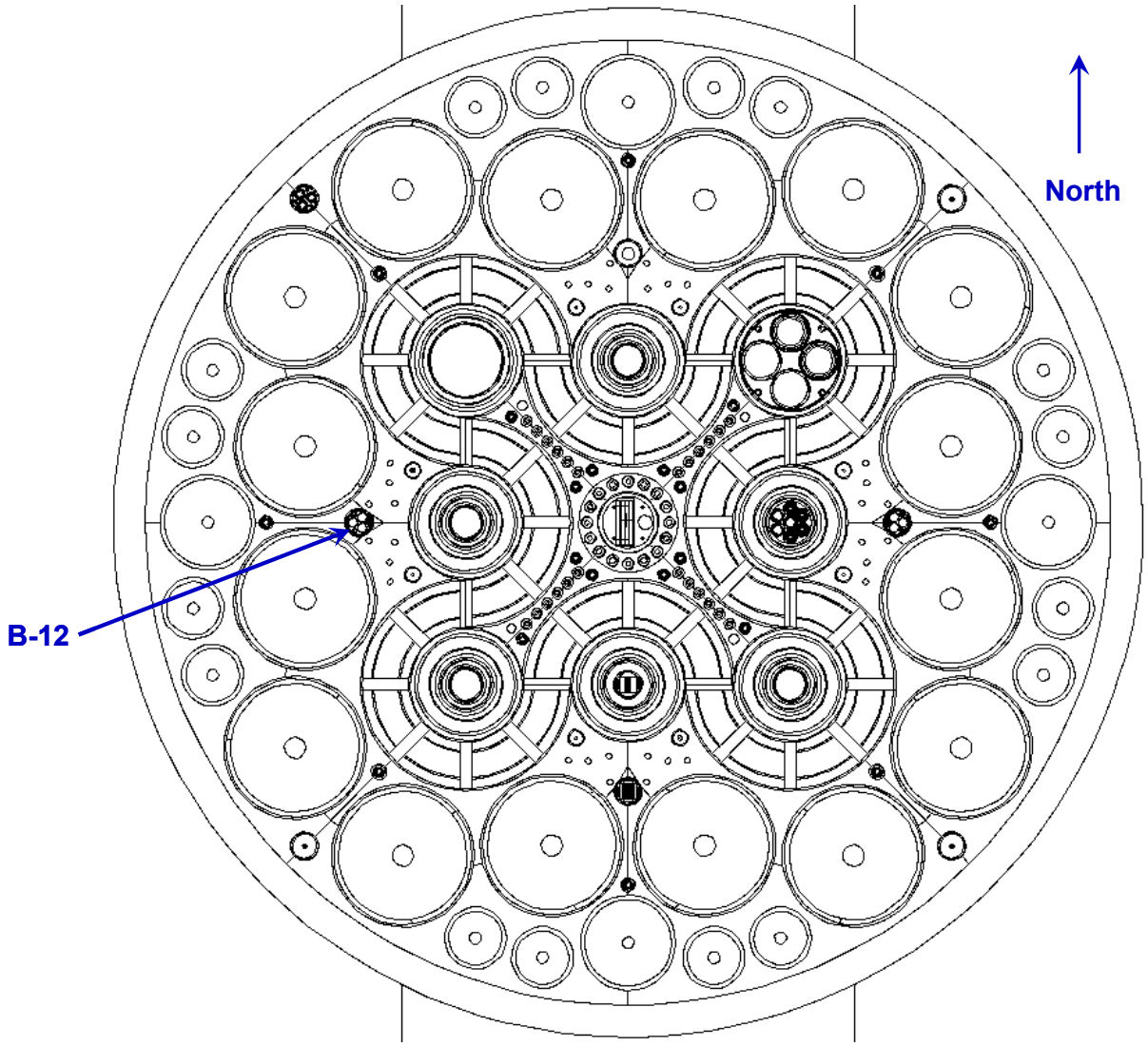

Figure 1. Radial cross section view of the ATR reactor core and B-12 irradiation test position.

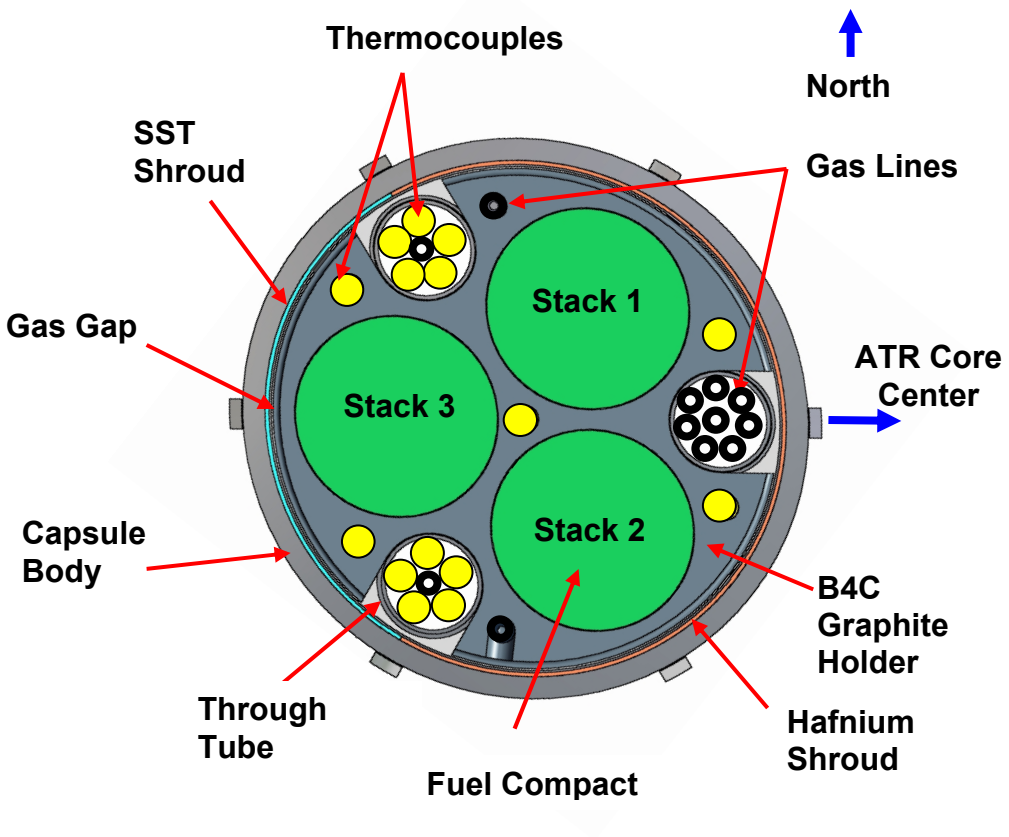

Figure 2. Radial cross section view of an AGR-2 experiment capsule assembly, (Components shown include: fuel compacts, borated graphite holder, through tubes, SS Sleeve, Hf/SS Shroud, TC and gas-line openings, capsule body, gas gaps, and water gap)

For the analysis, UCO fuel compacts were placed in capsule 6 (top capsule), capsule 5, and capsule 2. South African (SA) UO2 in capsule 4, B&W UO2 in Capsule 3, and French UO2 in capsule 1 (bottom capsule with 2-inch compacts). See Attachment B for the fuel compact compositions. Each AGR-2 fuel compact was subdivided into 1/2-inch/cells. Thus stack 1 is comprised of cells 49-96 (8 cells per capsule × 6 capsules), stack 2 is comprised of cells 1-48, and stack 3 is comprised of cells 97-144. Figure 3 shows the axial arrangement for stack 2.

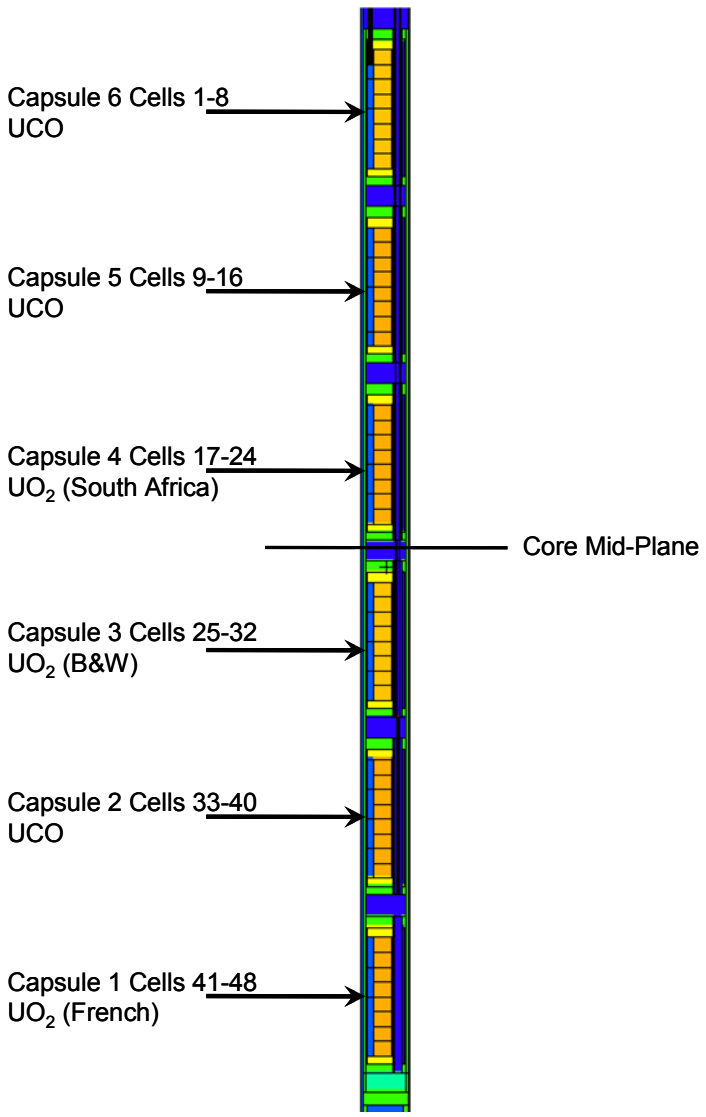

Figure 3. Axial cross-section view of the 6 capsules in an AGR-2 experiment capsule assembly

4.0 Model Description and Data

MCNP [2] [3], a general purpose Monte Carlo N-Particle transport code, was used to model and evaluate the AGR-2 neutron and gamma heating rates of the AGR-2 capsule assembly components. The depletion

methodology MCWO, MCNP coupled with ORIGEN2 [4], was used to model and evaluate the depletion and activation of the AGR-2 capsule components to provide the AGR-2 fuel compact fission power density and burnup versus EFPD, as well as the burnup of the B4C holders and hafnium shrouds.

For the AGR-2 final design analysis, the MCNP and ORIGEN2 models were based upon the drawings listed in Table 1, as well as data from experiment designers, vendors, project staff, and project related EDF's

Table 1: INL drawings for the AGR-2 experiment.

INL Drawing	Revision	Drawing Title
DWG-600904	Draft	ATR Advanced Gas Reactor (AGR) AGR-2 Capsule Train Assembly and Details
DWG-600910 to 600915	Draft	ATR Advanced Gas Reactor 2(AGR-2) Capsules 1 through 6 Assemblies and Details

4.1 Data Libraries

Both the MCNP standard cross-section data libraries and the JENDL-3.2 cross-section library were used to calculate the neutron and gamma heating rates for the AGR-2 test assembly structural components as well as the AGR-2 fuel fission density (see Attachment B of reference [1] for a listing of the specific cross-sections used with the MCWO methodology and a justification discussion). The ORIGEN2 libraries ATRXS and HTGRXS were used to calculate the fuel compact and absorber burnup within the AGR-2 test assembly.

4.2 Power Data and Shim Positions

The final analysis results were scaled using a west lobe source power of 22.33 MW, which is based on ATR nominal source lobe powers of 18.0-18.0-24.0-25.0-25.0 MW (NW-NE-C-SW-SE). The final physics analysis used the OSCC positions summarized in Table 2.

Table 2: OSCC positions used in preliminary physics analysis.

Time Step Interval	NW Lobe (Deg)	NE Lobe (Deg)	SW Lobe (Deg)	SE Lobe (Deg)
All	90.5	90.0	91.1	87.5

4.3 Fuel Compact Data

The AGR-2 fuel compacts were modeled using data from Attachment B. To simplify the MCNP model geometry, nominal fuel compact dimensions were used. For the analysis, UCO fuel compacts were placed in capsule 6 (top capsule), capsule 5, and capsule 2. SA UO2 in capsule 4, B&W UO2 in Capsule 3, and French UO2 in capsule 1 (bottom capsule with 2-inch compacts). Each AGR-2 fuel compact was subdivided into 1/2-inch/cells. Thus stack 1 is comprised of cells 49-96 (8 cells per capsule times 6 capsules), stack 2 is comprised of cells 1-48, and stack 3 is comprised of cells 97-144. These subdivisions were implemented to match the nodalization used by the thermal analysis.

4.4 Graphite Holder Data

The AGR-2 fuel compact graphite holders were modeled using material and element data from standard references (e.g., Chart of the Nuclides, ASTM standards, etc . . .). Note that the outer radius for each of the six graphite holders will be defined by the thermal analysis. The graphite holder material compositions are listed in Table 3.

The 5.7 weight % B4C graphite holders were placed in capsule 5 (second from top capsule) and capsule 2 (second from bottom capsule), while the 4.25 Weight % B4C graphite holders were placed in the remaining four capsules (capsules 1, 3, 4, and 6).

Table 3: AGR-2 graphite holders material composition.

4.25 Weight % B4C Graphite Holder Material Composition			
Materials	**Mass (gm)**	**Volume (cc)**	**Density (g/cc)**
B4C	0.04250	0.01687	2.52
B-10	0.00613	--	--
B-11	0.02713	--	--
C	0.00924	--	--
C	0.95750	0.55029	1.74
Total	1.00000	0.56715	1.763

5.7 Weight % B4C Graphite Holder Material			
Materials	**Mass (gm)**	**Volume (cc)**	**Density (g/cc)**
B4C	0.05700	0.02262	2.52
B-10	0.00822	--	--
B-11	0.03639	--	--
C	0.01239	--	--
C	0.94300	0.54195	1.74
Total	1.00000	0.56457	**1.771**

4.5 Hafnium Shroud Data

The AGR-2 hafnium shroud was modeled using data from AGR-1 [1]. Within a capsule, the hafnium shroud occupies a 240° arc with the midpoint facing core center. For the MCNP model, the hafnium shroud is subdivided azimuthally into 4 equal-sized cells/cells (see Figure 2 for details). The hafnium with 2.35 weight percent zirconium was modeled in capsules 6, 4, and 2. The hafnium with 1.76 weight percent zirconium was modeled in capsules 5, 3, and 1. The hafnium shroud dimensions and composition based on actual material received from the vendor [1] are provided in Table 4 and Table 5 respectively. This is expected to be representative of the hafnium used in the AGR-2 experiment. Hafnium depletion was modeled in the analysis.

Table 4: AGR-2 Hf shroud dimensions.

Component	Outer Diameter (in)	Outer Radius (cm)	Inner Diameter (in)	Inner Radius (cm)	Reference
Hf Shroud (240° arc)	1.297	1.64719	1.277	1.62179	DWG-628635, Item 24, sheet 6

Table 5: Hf shroud material density (calculated).

Zr in Hf (%)	Length (cm)	Width (cm)	Height (cm)	Volume (cc)	Mass (gm)	Density (gm/cc)
2.35%	25.12957	8.13841	0.0259	5.296932	67.878	12.815
1.76%	25.09495	8.0288	0.02638	5.315104	65.17	12.261

5.0 Analysis and Calculations

MCNP was used to calculate the AGR-2 fuel-compact fuel fission power density and B4C graphite holder heating rate. The depletion methodology MCWO (using ORIGEN2) was used to calculate the AGR-2 fuel compact and burnable absorber depletion.

MCNP reports tally results normalized per source particle. The flux tallies have units of neutrons/cm^2 per fission neutron. Additionally, the MCNP tally results must be scaled to reactor operating conditions. The following conversion factors were used to convert the MCNP-calculated flux tallies to the results reported by this ECAR.

Neutron Flux Conversion Factor

Note: the MCNP f4 tally has units of 1/cm^2 per source neutron.

$$\left(\frac{fission\ neutrons}{fission}\right)\left(\frac{fission}{MeV}\right)\left(\frac{MeV}{MW_{core\ power}-s}\right) = Flux\ Conversion$$

$$\left(\frac{2.43\ fission\ neutrons}{fission}\right)\left(\frac{fission}{200\ MeV}\right)\left(\frac{6.24146\times10^{18}\ MeV}{MW_{core\ power}-s}\right) = 7.58\times10^{16}\frac{fission\ neutrons}{MW_{core\ power}-s}$$

Fission or Neutron/Gamma Heating Conversion Factor

Note: the MCNP f6 and f7 tally have units of MeV/g per source neutron.

$$\left(\frac{fission\ neutrons}{MW-s}\right)\left(\frac{W-s}{MeV}\right) = Heat\ Conversion$$

$$\left(\frac{7.58\times10^{16}\ fission\ neutrons}{MW_{core\ power}-s}\right)\left(\frac{1.60219\times10^{-13}W-s}{MeV}\right) = 1.21\times10^{4}\ \frac{fission\ neutrons-W}{MW_{core\ power}-MeV}$$

The delayed gamma heating contribution is estimated to be 20% of the prompt gamma heating. Thus, the total heating within the B4C graphite holders was calculated as follows:

$$\begin{aligned} Total\ Heating\ = & \left(heating\ due\ to\ prompt\ fission\ neutrons\right) + \\ & \left(heating\ due\ to\ prompt\ fission\ gammas\right) + \\ & 0.20 \times \left(heating\ due\ to\ prompt\ fission\ gammas\right) \end{aligned}$$

6.0 Software

The three computer codes (MCNP, MCWO, and ORIGEN2) used to perform this analysis are listed in the INL Enterprise Architecture Repository and are accepted as qualified scientific and engineering analysis software. The software version and tracking number information is provided in Table 6.

Table 6: INL qualified analysis software version and tracking number.

Code Name	Version	V&V Tracking Number
MCNP	5 (Release 1.30)	171103, 198740
MCWO	0	149879
ORIGEN2	2.2	201298

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 CD. With the retirement of the ozone computer system, this validation process was performed on the Helios computer system for MCNP Version 5 (Release 1.30). The 42 sample problems were run on Helios and the results were compared against the standard results provided on the RSICC CD. Additionally, the input model for the ATR criticality benchmark [5] was executed on Helios and results identical to the published results were obtained [5].

MCWO has been validated at the INL by benchmarking calculated flux magnitudes with measured flux levels for several experiments in several test positions in the ATR core [6], [7], [8]. Additionally, MCWO and the ATR core model have been benchmarked for heat-rate evaluations by comparing the measured temperatures to predicted temperatures in various ATR experiments [9].

ORIGEN2 has been verified for use at the INL by running eight verification problems on the ozone computer system as described in the V&V documentation [10]. With the retirement of the ozone computer system, this validation process was performed on a Dell computer system running Windows XP for ORIGEN2 Version 2.2 and results in agreement to the published results were obtained.

The following computer configurations (Table 7 and Table 8) were used to perform the MCNP, MCWO, and ORIGEN2 calculations reported by this ECAR.

Table 7: computer configurations for INL qualified MCNP5 installations.

Computer Model	Processor	Operating System
Dell Precision 670 Dell PowerEdge 1950 (w/166 dual socket nodes)	Dual Intel Xeon 126 nodes w/dual core Intel Xeon 5150 processors (2.66 GHz), 8 GB RAM 40 nodes w/quad core Intel Xeon X5355 processors (2.66 GHz), 16 GB RAM	Windows XP openSUSE 10.2, gcc version 4.1.2, kernel version 2.6.18.8-0.3 (all nodes)

Table 8: Computer configuration for INL qualified MCWO/ORIGEN2 installation.

Computer Model	Processor	Operating System
Dell Precision 670	Dual Intel Xeon	Windows XP

7.0 Data Retention

The input, output, and data files generated to support this analysis and ECAR will be recorded to a CD or DVD and stored within the project file.

8.0 Results and Conclusions

Physics calculations were performed to evaluate:

- B4C graphite holder neutron/gamma heating rates versus EFPD for the AGR-2 capsule assemblies,
- AGR-2 fuel compact fission power density and burnup (%FIMA) versus EFPD, and
- AGR-2 fuel compact fast flux (E > 0.18MeV) and fast fluence versus EFPD.

The analysis was performed using 50-day irradiation intervals for a total of 750 EFPD of irradiation. The nominal middle of cycle operating conditions that were used in the evaluations included OSCC positions of 90.5°- 90.0°- 91.1°- 87.5° for NW-NE-SW-SE, respectively. The calculated results have been scaled to a west lobe source power of 22.33 MW, which is based on ATR nominal source lobe powers of 18.0-18.0-24.0-25.0-25.0 MW (NW-NE-C-SW-SE). These conditions do not address conditions associated with ATR PALM operating cycles. The heat rates would need to be scaled to higher operating powers of a PALM cycle to represent the higher power conditions.

8.1 Projected B4C Graphite Holder Neutron/Gamma Heating

The MCWO-calculated projected neutron/gamma heating rate calculations for the B4C graphite holders vs. EFPDs were performed for 750 EFPD of irradiation in 50-day intervals. The B4C graphite holder heating rate results are tabulated in Table 9 and Table 10 of this document.

8.2 Projected Fuel Compact Fission Power Density and Fuel Burnup

The MCWO-calculated projected fuel fission power density (W/cm^3) and burnup (% FIMA) were evaluated for 750 EFPDs of irradiation in 50-day intervals. The fuel compact fission power density and burnup

results are tabulated in Table 11 through Table 14. Percent FIMA was calculated as defined in reference [11] using the following formula:

$$\frac{GWd}{T} \times \frac{\%FIMA}{9.6GWd/T} = \%FIMA$$

The AGR-2 fuel compact projected peak fuel fission power density of 119.12 W/cm^3 occurred in capsule 2, stack 2, top fuel compact (cell 33, stack 2, facing core center towards SE) at 200 EFPD.

The AGR-2 fuel compact projected peak burnup occurs in capsule 1, stack 1, top fuel compact (cell 89, stack 1, facing core center towards NE) at 750 EFPD.

8.3 Projected Fuel Compact Fast Flux and Fast Fluence

The AGR program requires a minimum fast neutron fluence (E > 0.18 MeV) of greater than 1.5x10^{25} n/m^2 and a maximum fast neutron fluence of less than 5.0x10^{25} n/m^2 [12] [13]. The fast neutron fluence minimum and maximum requirements within the AGR-2 fuel compacts were evaluated using MCNP. The MCNP-calculated projected fast neutron flux and fast neutron fluence are tabulated in Table 15 through Table 18.

The minimum fast neutron fluence requirement of greater than 1.5x10^{25} n/m^2 for all AGR-2 fuel compacts was determined to happen after 450 EFPD. The last fuel compact to exceed the minimum is projected to occur in capsule 6, stack 3, top fuel compact of capsule stack (cell 97, stack 3, facing away from core center and towards W), at 450 EFPD with a value of 1.55x10^{25} n/m^2 .

The maximum fast neutron fluence that was achieved during the analyzed 750 EFPD of irradiation was in capsule 3, stack 1, top fuel compact (cell 84, stack 1, facing core center towards NE) with a value of 4.95x10^{25} n/m^2, which satisfies the project requirement of a maximum fast neutron fluence of less than 5.0x10^{25} n/m^2.

Table 9: AGR-2 B4C graphite holder projected neutron/gamma heating rates vs. EFPD (0-350 days, irradiated in ATR B-12 position).

	EFPD	0	50	100	150	200	250	300	350
Capsule	Relative Cell Position	Total Heating (W/g)	Total Heating (W/g)	Total Heating (W/g)	Total Heating (W/g)	Total Heating (W/g)	Total Heating (W/g)	Total Heating (W/g)	Total Heating (W/g)
Capsule 6	0.0" to 0.5" (Top)	11.22	9.93	8.57	7.09	5.64	4.37	3.38	2.72
4.25% B4C	0.5" to 1.0"	9.73	9.05	8.30	7.31	6.19	5.03	3.96	3.12
(UCO)	1.0" to 2.0"	9.95	9.29	8.51	7.55	6.37	5.13	4.01	3.18
	2.0" to 4.0" (Bottom)	11.72	10.65	9.34	7.80	6.19	4.71	3.61	2.93
Capsule 5	0.0" to 1.0" (Top)	16.14	14.65	12.78	10.48	7.97	5.69	4.12	3.29
5.7% B4C	1.0" to 2.0"	14.93	13.98	12.66	10.85	8.69	6.36	4.55	3.53
(UCO)	2.0" to 3.5"	15.81	14.65	13.16	11.04	8.52	6.07	4.33	3.47
	3.5" to 4.0" (Bottom)	19.60	17.07	13.94	10.35	7.08	4.85	3.72	3.28
Capsule 4	0.0" to 1.0" (Top)	17.81	15.03	11.60	8.10	5.40	3.97	3.44	3.27
4.25% B4C	1.0" to 2.0"	15.88	14.22	11.80	8.84	6.05	4.29	3.56	3.31
(SA UO_2)	2.0" to 3.0"	16.02	14.41	11.91	8.86	6.00	4.26	3.57	3.34
	3.0" to 4.0" (Bottom)	18.06	15.29	11.79	8.12	5.37	3.97	3.48	3.32
Capsule 3	0.0" to 1.0" (Top)	18.58	15.59	11.87	8.02	5.26	3.94	3.49	3.36
4.25% B4C	1.0" to 2.0"	16.58	14.70	12.02	8.80	5.86	4.17	3.55	3.36
(B&W UO_2)	2.0" to 3.0"	16.29	14.52	12.05	8.85	5.91	4.19	3.54	3.33
	3.0" to 4.0" (Bottom)	18.06	15.28	11.78	8.09	5.31	3.92	3.43	3.28
Capsule 2	0.0" to 1.0" (Top)	19.18	17.04	14.21	10.82	7.43	5.01	3.82	3.37
5.7% B4C	1.0" to 2.0"	16.26	15.11	13.50	11.32	8.59	5.97	4.22	3.45
(UCO)	2.0" to 3.0"	15.73	14.64	13.16	11.20	8.67	6.11	4.30	3.43
	3.0" to 4.0" (Bottom)	17.59	15.86	13.55	10.70	7.75	5.29	3.84	3.23
Capsule 1	0.0" to 1.0" (Top)	14.61	12.70	10.47	7.99	5.75	4.15	3.26	2.87
4.25% B4C	1.0" to 2.0"	12.25	11.28	9.99	8.33	6.46	4.73	3.54	2.93
(Fr. UO_2)	2.0" to 4.0" (Bottom)	11.74	10.72	9.43	7.91	6.25	4.69	3.53	2.84

Note: 1) All table values have a relative uncertainty band of 1σ = 2.5%.
2) MCNP-calculated results were scaled to a west flux trap source power of 22.33 MW.

Table 10: AGR-2 B4C graphite holder projected neutron/gamma heating rates vs. EFPD (400-750 days, irradiated in ATR B-12 position).

	EFPD	400	450	500	550	600	650	700	750
Capsule	Relative Cell Position	Total Heating (W/g)	Total Heating (W/g)	Total Heating (W/g)	Total Heating (W/g)	Total Heating (W/g)	Total Heating (W/g)	Total Heating (W/g)	Total Heating (W/g)
Capsule 6	0.0" to 0.5" (Top)	2.33	2.11	2.00	1.94	1.91	1.89	1.88	1.87
4.25% B4C	0.5" to 1.0"	2.59	2.29	2.13	2.05	2.01	1.99	1.97	1.95
(UCO)	1.0" to 2.0"	2.65	2.37	2.22	2.15	2.12	2.09	2.08	2.07
	2.0" to 4.0" (Bottom)	2.58	2.42	2.34	2.30	2.28	2.27	2.25	2.24
Capsule 5	0.0" to 1.0" (Top)	2.94	2.80	2.75	2.72	2.70	2.69	2.68	2.67
5.7% B4C	1.0" to 2.0"	3.09	2.93	2.87	2.84	2.82	2.80	2.78	2.78
(UCO)	2.0" to 3.5"	3.13	3.00	2.95	2.92	2.91	2.89	2.88	2.88
	3.5" to 4.0" (Bottom)	3.12	3.06	3.03	3.02	3.00	2.99	2.99	2.98
Capsule 4	0.0" to 1.0" (Top)	3.21	3.18	3.16	3.15	3.14	3.13	3.12	3.12
4.25% B4C	1.0" to 2.0"	3.23	3.19	3.17	3.16	3.15	3.14	3.14	3.13
(SA UO_2)	2.0" to 3.0"	3.27	3.24	3.22	3.20	3.19	3.18	3.18	3.17
	3.0" to 4.0" (Bottom)	3.27	3.24	3.22	3.21	3.20	3.19	3.18	3.18
Capsule 3	0.0" to 1.0" (Top)	3.31	3.28	3.27	3.26	3.25	3.25	3.24	3.23
4.25% B4C	1.0" to 2.0"	3.30	3.27	3.25	3.24	3.23	3.22	3.21	3.21
(B&W UO_2)	2.0" to 3.0"	3.27	3.24	3.22	3.21	3.20	3.19	3.18	3.18
	3.0" to 4.0" (Bottom)	3.23	3.21	3.19	3.18	3.17	3.16	3.15	3.15
Capsule 2	0.0" to 1.0" (Top)	3.22	3.17	3.14	3.13	3.11	3.10	3.09	3.08
5.7% B4C	1.0" to 2.0"	3.17	3.07	3.04	3.02	3.00	2.99	2.98	2.97
(UCO)	2.0" to 3.0"	3.11	3.00	2.95	2.92	2.91	2.90	2.89	2.88
	3.0" to 4.0" (Bottom)	3.01	2.94	2.90	2.88	2.87	2.86	2.85	2.85
Capsule 1	0.0" to 1.0" (Top)	2.71	2.64	2.61	2.60	2.59	2.57	2.57	2.56
4.25% B4C	1.0" to 2.0"	2.66	2.55	2.50	2.48	2.46	2.45	2.44	2.43
(Fr. UO_2)	2.0" to 4.0" (Bottom)	2.51	2.36	2.29	2.26	2.24	2.23	2.22	2.21

Note: 1) All table values have a relative uncertainty band of 1σ = 2.5%.
2) MCNP-calculated results were scaled to a west lobe source power of 22.33 MW.

Table 11: AGR-2 fuel compact projected fission power density and burnup vs. EFPD (0-150 days, irradiated in ATR B-12 position).

Stack ID or Cell ID Stack 2	Fuel Type	Cell mid-point distance to core center (in)	0 EFPD		50 EFPD		100 EFPD		150 EFPD	
			Fission Power Density (W/cm^3)	Burnup (% FIMA)	Fission Power Density (W/cm^3)	Burnup (% FIMA)	Fission Power Density (W/cm^3)	Burnup (% FIMA)	Fission Power Density (W/cm^3)	Burnup (% FIMA)
Cell 1	UCO (U-235 14.03 wt%)	16.25	56.18	0.00%	60.32	0.70%	64.70	1.45%	69.23	2.25%
Cell 2		15.75	46.02	0.00%	51.21	0.57%	57.69	1.21%	63.62	1.92%
Cell 3		15.25	47.04	0.00%	52.79	0.58%	59.32	1.24%	65.60	1.98%
Cell 4		14.75	49.07	0.00%	55.29	0.61%	62.31	1.30%	69.10	2.07%
Cell 5		14.50	51.03	0.00%	58.22	0.63%	65.89	1.36%	73.63	2.17%
Cell 6		14.25	51.95	0.00%	58.54	0.64%	67.84	1.37%	75.42	2.21%
Cell 7		13.75	57.22	0.00%	64.03	0.71%	72.24	1.51%	79.65	2.40%
Cell 8		13.25	72.78	0.00%	78.27	0.90%	83.65	1.88%	88.17	2.91%
Cell 9	UCO (U-235 14.03 wt%)	10.25	71.69	0.00%	79.09	0.89%	86.68	1.87%	93.97	2.95%
Cell 10		9.75	57.02	0.00%	66.59	0.71%	77.21	1.53%	87.62	2.49%
Cell 11		9.25	54.74	0.00%	63.34	0.68%	73.85	1.47%	84.69	2.38%
Cell 12		8.75	54.88	0.00%	63.97	0.68%	74.70	1.48%	86.23	2.40%
Cell 13		8.50	56.26	0.00%	65.84	0.70%	76.93	1.52%	88.77	2.47%
Cell 14		8.25	59.62	0.00%	69.36	0.74%	80.38	1.60%	92.68	2.60%
Cell 15		7.75	61.79	0.00%	73.63	0.77%	85.29	1.68%	96.96	2.74%
Cell 16		7.25	79.62	0.00%	89.74	0.99%	100.11	2.10%	107.88	3.35%
Cell 17	SA UO_2 (U-235 9.6 wt%)	4.25	*	*	*	*	*	*	*	*
Cell 18		3.75	*	*	*	*	*	*	*	*
Cell 19		3.25	*	*	*	*	*	*	*	*
Cell 20		2.75	*	*	*	*	*	*	*	*
Cell 21		2.50	*	*	*	*	*	*	*	*
Cell 22		2.25	*	*	*	*	*	*	*	*
Cell 23		1.75	*	*	*	*	*	*	*	*
Cell 24		1.25	*	*	*	*	*	*	*	*
Cell 25	B&W UO_2 (U-235 9.6 wt%)	-1.75	57.23	0.00%	65.75	0.90%	73.41	1.93%	77.66	3.08%
Cell 26		-2.25	45.22	0.00%	56.74	0.71%	68.27	1.60%	77.18	2.67%
Cell 27		-2.75	43.72	0.00%	54.06	0.69%	65.49	1.54%	74.52	2.56%
Cell 28		-3.25	44.26	0.00%	54.46	0.70%	66.13	1.55%	76.71	2.59%
Cell 29		-3.50	43.12	0.00%	53.62	0.68%	65.39	1.52%	74.71	2.55%
Cell 30		-3.75	44.38	0.00%	54.14	0.70%	65.72	1.55%	74.82	2.58%
Cell 31		-4.25	45.94	0.00%	56.03	0.72%	67.07	1.60%	75.48	2.65%
Cell 32		-4.75	55.60	0.00%	63.54	0.87%	70.64	1.87%	75.08	2.98%
Cell 33	UCO (U-235 14.03 wt%)	-7.75	86.48	0.00%	96.32	1.07%	106.70	2.27%	115.96	3.59%
Cell 34		-8.25	66.13	0.00%	78.58	0.82%	94.21	1.80%	107.50	2.97%
Cell 35		-8.75	62.56	0.00%	74.29	0.78%	89.30	1.70%	104.22	2.81%
Cell 36		-9.25	59.29	0.00%	71.22	0.74%	83.13	1.62%	96.32	2.65%
Cell 37		-9.50	58.13	0.00%	67.66	0.72%	79.88	1.56%	92.75	2.55%
Cell 38		-9.75	59.27	0.00%	69.21	0.74%	80.68	1.59%	94.22	2.60%
Cell 39		-10.25	59.32	0.00%	70.93	0.74%	83.55	1.62%	97.52	2.65%
Cell 40		-10.75	75.41	0.00%	84.63	0.94%	93.99	1.99%	103.59	3.15%
Cell 41	French UO_2 (U-235 19.75 wt%)	-13.75	*	*	*	*	*	*	*	*
Cell 42		-14.25	*	*	*	*	*	*	*	*
Cell 43		-14.75	*	*	*	*	*	*	*	*
Cell 44		-15.25	*	*	*	*	*	*	*	*
Cell 45		-15.50	*	*	*	*	*	*	*	*
Cell 46		-15.75	*	*	*	*	*	*	*	*
Cell 47		-16.25	*	*	*	*	*	*	*	*
Cell 48		-16.75	*	*	*	*	*	*	*	*

Note: 1) All table values have a relative uncertainty band of $1\sigma = 2.5\%$.
2) MCNP-calculated results were scaled to a west lobe source power of 22.33 MW.
3) Data represented by a * can be requested from the project.

Table 11: AGR-2 fuel compact projected fission power density and burnup vs. EFPD (0-150 days, irradiated in ATR B-12 position). (continued)

Stack ID or Cell ID Stack 1	Fuel Type	Cell mid-point distance to core center (in)	0 EFPD		50 EFPD		100 EFPD		150 EFPD	
			Fission Power Density (W/cm^3)	Burnup (% FIMA)	Fission Power Density (W/cm^3)	Burnup (% FIMA)	Fission Power Density (W/cm^3)	Burnup (% FIMA)	Fission Power Density (W/cm^3)	Burnup (% FIMA)
Cell 49	UCO (U-235 14.03 wt%)	16.25	57.51	0.00%	62.48	0.71%	67.36	1.49%	71.11	2.33%
Cell 50		15.75	45.04	0.00%	49.92	0.56%	56.02	1.18%	62.20	1.87%
Cell 51		15.25	45.87	0.00%	51.49	0.57%	58.05	1.21%	64.83	1.93%
Cell 52		14.75	48.61	0.00%	54.04	0.60%	60.77	1.27%	67.51	2.03%
Cell 53		14.50	49.39	0.00%	56.35	0.61%	63.37	1.31%	70.43	2.10%
Cell 54		14.25	54.01	0.00%	61.49	0.67%	68.89	1.43%	75.64	2.29%
Cell 55		13.75	56.66	0.00%	63.26	0.70%	71.83	1.49%	79.73	2.38%
Cell 56		13.25	72.34	0.00%	76.34	0.90%	81.49	1.85%	86.53	2.86%
Cell 57	UCO (U-235 14.03 wt%)	10.25	68.21	0.00%	75.90	0.85%	84.84	1.79%	91.42	2.84%
Cell 58		9.75	55.44	0.00%	64.73	0.69%	76.25	1.49%	87.91	2.44%
Cell 59		9.25	53.02	0.00%	62.80	0.66%	73.42	1.44%	84.99	2.35%
Cell 60		8.75	54.82	0.00%	63.89	0.68%	73.63	1.47%	85.04	2.39%
Cell 61		8.50	55.74	0.00%	65.27	0.69%	77.71	1.50%	89.58	2.47%
Cell 62		8.25	58.98	0.00%	68.66	0.73%	79.75	1.58%	92.30	2.57%
Cell 63		7.75	62.37	0.00%	73.15	0.77%	85.99	1.68%	98.43	2.75%
Cell 64		7.25	80.44	0.00%	90.82	1.00%	100.96	2.13%	108.66	3.38%
Cell 65	SA UO_2 (U-235 9.6 wt%)	4.25	*	*	*	*	*	*	*	*
Cell 66		3.75	*	*	*	*	*	*	*	*
Cell 67		3.25	*	*	*	*	*	*	*	*
Cell 68		2.75	*	*	*	*	*	*	*	*
Cell 69		2.50	*	*	*	*	*	*	*	*
Cell 70		2.25	*	*	*	*	*	*	*	*
Cell 71		1.75	*	*	*	*	*	*	*	*
Cell 72		1.25	*	*	*	*	*	*	*	*
Cell 73	B&W UO_2 (U-235 9.6 wt%)	-1.75	54.80	0.00%	63.60	0.86%	72.48	1.86%	77.07	3.00%
Cell 74		-2.25	46.05	0.00%	56.93	0.72%	67.93	1.62%	75.77	2.68%
Cell 75		-2.75	43.28	0.00%	53.73	0.68%	65.35	1.52%	74.16	2.55%
Cell 76		-3.25	43.24	0.00%	53.59	0.68%	64.24	1.52%	74.04	2.53%
Cell 77		-3.50	40.94	0.00%	50.32	0.64%	61.67	1.43%	71.75	2.40%
Cell 78		-3.75	43.47	0.00%	53.05	0.68%	64.21	1.52%	72.97	2.52%
Cell 79		-4.25	45.14	0.00%	55.46	0.71%	65.68	1.58%	73.52	2.61%
Cell 80		-4.75	53.07	0.00%	61.81	0.83%	70.31	1.80%	77.36	2.91%
Cell 81	UCO (U-235 14.03 wt%)	-7.75	83.37	0.00%	94.12	1.03%	104.85	2.20%	114.05	3.50%
Cell 82		-8.25	65.48	0.00%	78.65	0.81%	93.78	1.79%	109.82	2.95%
Cell 83		-8.75	61.77	0.00%	72.16	0.77%	85.92	1.66%	101.25	2.73%
Cell 84		-9.25	59.19	0.00%	68.85	0.73%	80.82	1.59%	94.30	2.59%
Cell 85		-9.50	58.88	0.00%	69.15	0.73%	81.73	1.59%	94.69	2.60%
Cell 86		-9.75	57.72	0.00%	68.07	0.72%	80.59	1.56%	93.94	2.56%
Cell 87		-10.25	60.85	0.00%	72.74	0.76%	85.23	1.66%	97.57	2.72%
Cell 88		-10.75	75.45	0.00%	83.82	0.94%	92.53	1.98%	101.34	3.13%
Cell 89	French UO_2 (U-235 19.75 wt%)	-13.75	*	*	*	*	*	*	*	*
Cell 90		-14.25	*	*	*	*	*	*	*	*
Cell 91		-14.75	*	*	*	*	*	*	*	*
Cell 92		-15.25	*	*	*	*	*	*	*	*
Cell 93		-15.50	*	*	*	*	*	*	*	*
Cell 94		-15.75	*	*	*	*	*	*	*	*
Cell 95		-16.25	*	*	*	*	*	*	*	*
Cell 96		-16.75	*	*	*	*	*	*	*	*

Note: 1) All table values have a relative uncertainty band of 1σ = 2.5%.
2) MCNP-calculated results were scaled to a west lobe source power of 22.33 MW.
3) Data represented by a * can be requested from the project.

Table 11: AGR-2 fuel compact projected fission power density and burnup vs. EFPD (0-150 days, irradiated in ATR B-12 position). (continued)

Stack ID or Cell ID Stack 3	Fuel Type	Cell mid-point distance to core center (in)	0 EFPD		50 EFPD		100 EFPD		150 EFPD	
			Fission Power Density (W/cm^3)	Burnup (% FIMA)	Fission Power Density (W/cm^3)	Burnup (% FIMA)	Fission Power Density (W/cm^3)	Burnup (% FIMA)	Fission Power Density (W/cm^3)	Burnup (% FIMA)
Cell 97	UCO (U-235 14.03 wt%)	16.25	36.85	0.00%	40.85	0.46%	46.72	0.96%	51.70	1.54%
Cell 98		15.75	28.02	0.00%	32.13	0.35%	38.50	0.75%	45.22	1.22%
Cell 99		15.25	25.95	0.00%	30.55	0.32%	36.84	0.70%	44.04	1.16%
Cell 100		14.75	25.30	0.00%	30.37	0.31%	36.64	0.69%	45.33	1.15%
Cell 101		14.50	26.69	0.00%	33.26	0.33%	40.96	0.74%	49.91	1.25%
Cell 102		14.25	28.95	0.00%	36.11	0.36%	43.70	0.81%	52.83	1.35%
Cell 103		13.75	33.03	0.00%	39.90	0.41%	48.03	0.91%	57.57	1.50%
Cell 104		13.25	44.66	0.00%	50.62	0.55%	58.22	1.18%	65.65	1.91%
Cell 105	UCO (U-235 14.0 3wt%)	10.25	42.21	0.00%	49.53	0.52%	58.43	1.14%	67.77	1.86%
Cell 106		9.75	31.10	0.00%	39.07	0.39%	48.90	0.87%	62.63	1.48%
Cell 107		9.25	28.84	0.00%	35.57	0.36%	45.41	0.80%	58.56	1.36%
Cell 108		8.75	29.60	0.00%	37.02	0.37%	47.45	0.83%	60.34	1.42%
Cell 109		8.50	29.86	0.00%	37.83	0.37%	48.71	0.84%	62.01	1.45%
Cell 110		8.25	30.81	0.00%	38.50	0.38%	50.66	0.86%	65.72	1.49%
Cell 111		7.75	35.01	0.00%	44.91	0.43%	57.10	0.99%	72.55	1.70%
Cell 112		7.25	48.70	0.00%	57.48	0.60%	68.85	1.32%	81.20	2.17%
Cell 113	SA UO_2 (U-235 9.6 wt%)	4.25	*	*	*	*	*	*	*	*
Cell 114		3.75	*	*	*	*	*	*	*	*
Cell 115		3.25	*	*	*	*	*	*	*	*
Cell 116		2.75	*	*	*	*	*	*	*	*
Cell 117		2.50	*	*	*	*	*	*	*	*
Cell 118		2.25	*	*	*	*	*	*	*	*
Cell 119		1.75	*	*	*	*	*	*	*	*
Cell 120		1.25	*	*	*	*	*	*	*	*
Cell 121	B&W UO_2 (U-235 9.6 wt%)	-1.75	35.72	0.00%	44.91	0.56%	55.73	1.27%	63.97	2.14%
Cell 122		-2.25	27.26	0.00%	37.58	0.43%	50.39	1.02%	62.84	1.81%
Cell 123		-2.75	25.36	0.00%	34.96	0.40%	47.35	0.95%	59.20	1.69%
Cell 124		-3.25	24.50	0.00%	33.55	0.38%	45.11	0.91%	58.32	1.62%
Cell 125		-3.50	24.24	0.00%	33.45	0.38%	46.97	0.91%	59.84	1.64%
Cell 126		-3.75	25.06	0.00%	33.65	0.39%	46.34	0.92%	59.05	1.65%
Cell 127		-4.25	27.35	0.00%	37.41	0.43%	49.87	1.02%	61.60	1.80%
Cell 128		-4.75	34.97	0.00%	43.64	0.55%	53.85	1.23%	63.26	2.08%
Cell 129	UCO (U-235 14.03 wt%)	-7.75	54.71	0.00%	63.29	0.68%	76.21	1.46%	89.84	2.41%
Cell 130		-8.25	36.77	0.00%	48.44	0.46%	63.66	1.06%	80.60	1.85%
Cell 131		-8.75	32.23	0.00%	41.88	0.40%	55.83	0.92%	72.86	1.61%
Cell 132		-9.25	31.96	0.00%	40.62	0.40%	53.56	0.90%	69.78	1.57%
Cell 133		-9.50	31.08	0.00%	39.62	0.39%	51.48	0.88%	66.96	1.52%
Cell 134		-9.75	31.79	0.00%	40.43	0.39%	52.59	0.90%	68.83	1.55%
Cell 135		-10.25	34.56	0.00%	44.59	0.43%	57.79	0.98%	73.98	1.70%
Cell 136		-10.75	49.27	0.00%	57.16	0.61%	67.98	1.32%	78.81	2.17%
Cell 137	French UO_2 (U-235 19.75 wt%)	-13.75	*	*	*	*	*	*	*	*
Cell 138		-14.25	*	*	*	*	*	*	*	*
Cell 139		-14.75	*	*	*	*	*	*	*	*
Cell 140		-15.25	*	*	*	*	*	*	*	*
Cell 141		-15.50	*	*	*	*	*	*	*	*
Cell 142		-15.75	*	*	*	*	*	*	*	*
Cell 143		-16.25	*	*	*	*	*	*	*	*
Cell 144		-16.75	*	*	*	*	*	*	*	*

Note: 1) All table values have a relative uncertainty band of 1σ = 2.5%.
2) MCNP-calculated results were scaled to a west lobe source power of 22.33 MW.
3) Data represented by a * can be requested from the project.

Table 12: AGR-2 fuel compact projected fission power density and burnup vs. EFPD (200-350 days, irradiated in ATR B-12 position).

Stack ID or Cell ID Stack 2	Fuel Type	Cell mid-point distance to core center (in)	200 EFPD		250 EFPD		300 EFPD		350 EFPD	
			Fission Power Density (W/cm^3)	Burnup (% FIMA)	Fission Power Density (W/cm^3)	Burnup (% FIMA)	Fission Power Density (W/cm^3)	Burnup (% FIMA)	Fission Power Density (W/cm^3)	Burnup (% FIMA)
Cell 1	UCO (U-235 14.03 wt%)	16.25	71.50	3.11%	73.02	4.00%	71.69	4.90%	68.91	5.79%
Cell 2		15.75	68.66	2.71%	72.95	3.57%	73.54	4.47%	71.83	5.38%
Cell 3		15.25	70.95	2.79%	76.41	3.67%	77.22	4.62%	75.18	5.58%
Cell 4		14.75	74.74	2.93%	78.91	3.85%	79.46	4.83%	77.04	5.82%
Cell 5		14.50	80.10	3.09%	83.12	4.08%	82.96	5.11%	79.02	6.14%
Cell 6		14.25	82.81	3.15%	85.57	4.18%	84.50	5.24%	80.48	6.29%
Cell 7		13.75	85.53	3.39%	86.95	4.45%	85.81	5.53%	80.32	6.60%
Cell 8		13.25	90.55	4.01%	90.34	5.13%	86.90	6.25%	79.57	7.33%
Cell 9	UCO (U-235 14.03 wt%)	10.25	99.44	4.11%	100.14	5.35%	94.58	6.59%	86.62	7.77%
Cell 10		9.75	99.16	3.58%	102.57	4.81%	99.14	6.08%	91.24	7.32%
Cell 11		9.25	97.00	3.43%	103.43	4.64%	102.65	5.92%	93.40	7.20%
Cell 12		8.75	97.85	3.47%	105.39	4.69%	103.71	6.00%	95.74	7.28%
Cell 13		8.50	98.57	3.57%	105.68	4.80%	103.16	6.11%	93.96	7.39%
Cell 14		8.25	103.31	3.75%	107.41	5.03%	102.16	6.37%	92.58	7.63%
Cell 15		7.75	105.88	3.94%	107.75	5.26%	103.23	6.60%	92.45	7.88%
Cell 16		7.25	111.77	4.68%	107.48	6.07%	98.20	7.41%	87.30	8.63%
Cell 17	SA UO_2 (U-235 9.6 wt%)	4.25	*	*	*	*	*	*	*	*
Cell 18		3.75	*	*	*	*	*	*	*	*
Cell 19		3.25	*	*	*	*	*	*	*	*
Cell 20		2.75	*	*	*	*	*	*	*	*
Cell 21		2.50	*	*	*	*	*	*	*	*
Cell 22		2.25	*	*	*	*	*	*	*	*
Cell 23		1.75	*	*	*	*	*	*	*	*
Cell 24		1.25	*	*	*	*	*	*	*	*
Cell 25	B&W UO_2 (U-235 9.6 wt%)	-1.75	76.33	4.30%	68.56	5.50%	59.98	6.58%	52.35	7.52%
Cell 26		-2.25	78.65	3.89%	72.62	5.12%	64.37	6.26%	56.90	7.27%
Cell 27		-2.75	77.16	3.73%	72.07	4.95%	63.94	6.08%	55.63	7.08%
Cell 28		-3.25	79.95	3.79%	74.49	5.05%	66.74	6.22%	58.44	7.27%
Cell 29		-3.50	78.08	3.72%	73.68	4.95%	65.48	6.10%	57.42	7.13%
Cell 30		-3.75	77.59	3.75%	72.62	4.97%	64.10	6.11%	56.15	7.12%
Cell 31		-4.25	75.98	3.84%	70.87	5.03%	62.46	6.15%	54.92	7.13%
Cell 32		-4.75	73.61	4.16%	67.09	5.32%	58.85	6.37%	51.75	7.29%
Cell 33	UCO (U-235 14.03 wt%)	-7.75	119.12	5.03%	114.46	6.51%	102.96	7.93%	90.14	9.21%
Cell 34		-8.25	114.92	4.30%	115.02	5.73%	105.72	7.15%	93.36	8.47%
Cell 35		-8.75	114.41	4.10%	117.62	5.52%	111.34	6.98%	99.17	8.36%
Cell 36		-9.25	108.98	3.85%	114.63	5.20%	109.96	6.62%	98.80	7.99%
Cell 37		-9.50	105.16	3.70%	111.70	5.01%	106.48	6.40%	96.35	7.72%
Cell 38		-9.75	107.11	3.77%	112.65	5.10%	108.70	6.49%	99.14	7.84%
Cell 39		-10.25	108.70	3.86%	112.34	5.21%	105.42	6.61%	94.34	7.92%
Cell 40		-10.75	109.65	4.44%	108.35	5.80%	100.39	7.15%	89.54	8.39%
Cell 41	French UO_2 (U-235 19.75 wt%)	-13.75	*	*	*	*	*	*	*	*
Cell 42		-14.25	*	*	*	*	*	*	*	*
Cell 43		-14.75	*	*	*	*	*	*	*	*
Cell 44		-15.25	*	*	*	*	*	*	*	*
Cell 45		-15.50	*	*	*	*	*	*	*	*
Cell 46		-15.75	*	*	*	*	*	*	*	*
Cell 47		-16.25	*	*	*	*	*	*	*	*
Cell 48		-16.75	*	*	*	*	*	*	*	*

Note: 1) All table values have a relative uncertainty band of 1σ = 2.5%.
2) MCNP-calculated results were scaled to a west lobe source power of 22.33 MW.
3) Data represented by a * can be requested from the project.

Table 12: AGR-2 fuel compact projected fission power density and burnup vs. EFPD (200-350 days, irradiated in ATR B-12 position). (continued)

Stack ID or Cell ID Stack 1	Fuel Type	Cell mid-point distance to core center (in)	200 EFPD		250 EFPD		300 EFPD		350 EFPD	
			Fission Power Density (W/cm^3)	Burnup (% FIMA)	Fission Power Density (W/cm^3)	Burnup (% FIMA)	Fission Power Density (W/cm^3)	Burnup (% FIMA)	Fission Power Density (W/cm^3)	Burnup (% FIMA)
Cell 49	UCO (U-235 14.03 wt%)	16.25	73.77	3.21%	73.99	4.12%	72.95	5.04%	69.55	5.95%
Cell 50		15.75	67.33	2.65%	71.37	3.48%	73.41	4.37%	71.06	5.28%
Cell 51		15.25	70.78	2.73%	75.12	3.61%	76.09	4.55%	74.47	5.49%
Cell 52		14.75	73.55	2.87%	77.43	3.78%	78.11	4.74%	76.54	5.71%
Cell 53		14.50	77.65	2.97%	80.33	3.94%	81.50	4.93%	77.93	5.95%
Cell 54		14.25	82.50	3.23%	84.57	4.25%	83.49	5.30%	78.56	6.34%
Cell 55		13.75	84.73	3.37%	87.18	4.42%	83.78	5.50%	78.04	6.54%
Cell 56		13.25	87.74	3.93%	86.78	5.02%	82.69	6.10%	76.31	7.12%
Cell 57	UCO (U-235 14.03 wt%)	10.25	98.31	3.98%	98.41	5.20%	94.14	6.42%	85.98	7.59%
Cell 58		9.75	97.81	3.53%	103.09	4.74%	100.28	6.02%	91.44	7.27%
Cell 59		9.25	96.93	3.40%	102.57	4.61%	100.61	5.88%	92.85	7.13%
Cell 60		8.75	95.66	3.44%	101.59	4.63%	100.56	5.89%	91.86	7.14%
Cell 61		8.50	101.68	3.58%	107.50	4.84%	103.74	6.18%	94.53	7.46%
Cell 62		8.25	102.73	3.72%	107.93	5.00%	104.01	6.34%	94.61	7.63%
Cell 63		7.75	107.02	3.97%	108.73	5.30%	103.20	6.65%	93.34	7.93%
Cell 64		7.25	111.99	4.73%	109.61	6.12%	99.66	7.48%	89.22	8.72%
Cell 65	SA UO_2 (U-235 9.6 wt%)	4.25	*	*	*	*	*	*	*	*
Cell 66		3.75	*	*	*	*	*	*	*	*
Cell 67		3.25	*	*	*	*	*	*	*	*
Cell 68		2.75	*	*	*	*	*	*	*	*
Cell 69		2.50	*	*	*	*	*	*	*	*
Cell 70		2.25	*	*	*	*	*	*	*	*
Cell 71		1.75	*	*	*	*	*	*	*	*
Cell 72		1.25	*	*	*	*	*	*	*	*
Cell 73	B&W UO_2 (U-235 9.6 wt%)	-1.75	76.37	4.21%	68.72	5.41%	61.28	6.49%	53.85	7.45%
Cell 74		-2.25	75.91	3.87%	69.88	5.07%	61.15	6.16%	53.33	7.12%
Cell 75		-2.75	77.05	3.71%	71.21	4.92%	61.98	6.04%	54.73	7.02%
Cell 76		-3.25	78.86	3.69%	74.66	4.93%	66.62	6.10%	59.07	7.15%
Cell 77		-3.50	76.37	3.53%	72.03	4.73%	63.48	5.86%	55.56	6.86%
Cell 78		-3.75	74.60	3.67%	70.39	4.84%	62.04	5.95%	54.01	6.92%
Cell 79		-4.25	75.56	3.77%	70.06	4.95%	62.23	6.05%	54.37	7.03%
Cell 80		-4.75	77.37	4.12%	71.44	5.34%	63.57	6.46%	55.68	7.46%
Cell 81	UCO (U-235 14.03 wt%)	-7.75	118.00	4.92%	113.06	6.39%	102.15	7.79%	88.89	9.06%
Cell 82		-8.25	118.62	4.32%	117.74	5.79%	107.79	7.25%	94.61	8.59%
Cell 83		-8.75	112.36	3.99%	115.30	5.38%	107.33	6.81%	94.37	8.14%
Cell 84		-9.25	106.96	3.76%	111.20	5.09%	105.63	6.47%	94.18	7.78%
Cell 85		-9.50	106.73	3.78%	111.95	5.10%	108.75	6.49%	97.97	7.84%
Cell 86		-9.75	105.00	3.73%	111.04	5.03%	106.68	6.41%	96.24	7.73%
Cell 87		-10.25	107.88	3.93%	111.05	5.27%	104.23	6.65%	92.87	7.94%
Cell 88		-10.75	108.11	4.38%	106.73	5.73%	98.09	7.05%	87.41	8.27%
Cell 89	French UO_2 (U-235 19.75 wt%)	-13.75	*	*	*	*	*	*	*	*
Cell 90		-14.25	*	*	*	*	*	*	*	*
Cell 91		-14.75	*	*	*	*	*	*	*	*
Cell 92		-15.25	*	*	*	*	*	*	*	*
Cell 93		-15.50	*	*	*	*	*	*	*	*
Cell 94		-15.75	*	*	*	*	*	*	*	*
Cell 95		-16.25	*	*	*	*	*	*	*	*
Cell 96		-16.75	*	*	*	*	*	*	*	*

Note: 1) All table values have a relative uncertainty band of 1σ = 2.5%.
2) MCNP-calculated results were scaled to a west lobe source power of 22.33 MW.
3) Data represented by a * can be requested from the project.

Table 12: AGR-2 fuel compact projected fission power density and burnup vs. EFPD (200-350 days, irradiated in ATR B-12 position). (continued)

Stack ID or Cell ID Stack 3	Fuel Type	Cell mid-point distance to core center (in)	200 EFPD		250 EFPD		300 EFPD		350 EFPD	
			Fission Power Density (W/cm^3)	Burnup (% FIMA)	Fission Power Density (W/cm^3)	Burnup (% FIMA)	Fission Power Density (W/cm^3)	Burnup (% FIMA)	Fission Power Density (W/cm^3)	Burnup (% FIMA)
Cell 97	UCO (U-235 14.03 wt%)	16.25	56.24	2.19%	59.27	2.88%	60.56	3.62%	59.95	4.37%
Cell 98		15.75	51.98	1.79%	58.55	2.43%	62.70	3.16%	63.05	3.94%
Cell 99		15.25	52.20	1.71%	59.38	2.35%	64.16	3.09%	66.76	3.89%
Cell 100		14.75	54.22	1.71%	60.94	2.38%	65.25	3.14%	66.66	3.95%
Cell 101		14.50	58.59	1.87%	66.66	2.60%	71.60	3.43%	72.51	4.32%
Cell 102		14.25	62.23	2.01%	68.44	2.78%	71.04	3.63%	71.15	4.51%
Cell 103		13.75	67.54	2.22%	73.66	3.05%	75.86	3.97%	74.96	4.91%
Cell 104		13.25	71.85	2.72%	74.76	3.61%	75.64	4.54%	73.00	5.48%
Cell 105	UCO (U-235 14.03 wt%)	10.25	77.60	2.71%	84.12	3.67%	86.43	4.71%	82.50	5.79%
Cell 106		9.75	76.26	2.26%	85.63	3.20%	89.01	4.27%	86.10	5.37%
Cell 107		9.25	73.80	2.09%	87.37	3.01%	93.16	4.09%	89.86	5.25%
Cell 108		8.75	74.15	2.17%	88.26	3.09%	93.80	4.18%	90.57	5.35%
Cell 109		8.50	77.04	2.21%	90.46	3.17%	94.69	4.29%	91.45	5.47%
Cell 110		8.25	82.06	2.31%	94.60	3.32%	98.41	4.50%	94.77	5.72%
Cell 111		7.75	87.41	2.60%	96.84	3.69%	96.62	4.89%	92.39	6.09%
Cell 112		7.25	90.95	3.18%	94.85	4.31%	91.57	5.49%	85.11	6.62%
Cell 113	SA UO_2 (U-235 9.6 wt%)	4.25	*	*	*	*	*	*	*	*
Cell 114		3.75	*	*	*	*	*	*	*	*
Cell 115		3.25	*	*	*	*	*	*	*	*
Cell 116		2.75	*	*	*	*	*	*	*	*
Cell 117		2.50	*	*	*	*	*	*	*	*
Cell 118		2.25	*	*	*	*	*	*	*	*
Cell 119		1.75	*	*	*	*	*	*	*	*
Cell 120		1.25	*	*	*	*	*	*	*	*
Cell 121	B&W UO_2 (U-235 9.6 wt%)	-1.75	67.95	3.15%	65.05	4.21%	59.23	5.23%	53.11	6.16%
Cell 122		-2.25	69.09	2.80%	66.44	3.88%	60.89	4.92%	54.39	5.88%
Cell 123		-2.75	66.20	2.62%	65.50	3.66%	60.08	4.69%	53.74	5.63%
Cell 124		-3.25	66.22	2.54%	65.76	3.58%	60.50	4.61%	54.74	5.56%
Cell 125		-3.50	69.42	2.58%	70.02	3.67%	64.62	4.77%	57.95	5.79%
Cell 126		-3.75	67.68	2.58%	66.31	3.64%	61.11	4.68%	55.10	5.64%
Cell 127		-4.25	68.36	2.77%	66.76	3.84%	61.07	4.89%	54.50	5.85%
Cell 128		-4.75	67.40	3.07%	65.26	4.13%	60.01	5.16%	54.18	6.10%
Cell 129	UCO (U-235 14.03 wt%)	-7.75	100.58	3.53%	103.70	4.77%	97.98	6.06%	88.75	7.28%
Cell 130		-8.25	96.12	2.85%	104.47	4.04%	101.76	5.34%	93.43	6.60%
Cell 131		-8.75	90.89	2.52%	104.11	3.65%	104.18	4.94%	97.50	6.23%
Cell 132		-9.25	88.31	2.43%	102.31	3.53%	103.06	4.80%	97.43	6.08%
Cell 133		-9.50	85.77	2.35%	99.73	3.41%	103.00	4.65%	97.44	5.93%
Cell 134		-9.75	85.21	2.40%	99.58	3.46%	102.88	4.70%	97.51	5.97%
Cell 135		-10.25	90.53	2.62%	102.05	3.74%	102.41	5.01%	96.13	6.28%
Cell 136		-10.75	89.78	3.14%	95.36	4.26%	93.56	5.44%	87.30	6.60%
Cell 137	French UO_2 (U-235 19.75 wt%)	-13.75	*	*	*	*	*	*	*	*
Cell 138		-14.25	*	*	*	*	*	*	*	*
Cell 139		-14.75	*	*	*	*	*	*	*	*
Cell 140		-15.25	*	*	*	*	*	*	*	*
Cell 141		-15.50	*	*	*	*	*	*	*	*
Cell 142		-15.75	*	*	*	*	*	*	*	*
Cell 143		-16.25	*	*	*	*	*	*	*	*
Cell 144		-16.75	*	*	*	*	*	*	*	*

Note: 1) All table values have a relative uncertainty band of 1σ = 2.5%.
2) MCNP-calculated results were scaled to a west lobe source power of 22.33 MW.
3) Data represented by a * can be requested from the project.

Table 13: AGR-2 fuel compact projected fission power density and burnup vs. EFPD (400-550 days, irradiated in ATR B-12 position).

Stack ID or Cell ID Stack 2	Fuel Type	Cell mid-point distance to core center (in)	400 EFPD		450 EFPD		500 EFPD		550 EFPD	
			Fission Power Density (W/cm^3)	Burnup (% FIMA)	Fission Power Density (W/cm^3)	Burnup (% FIMA)	Fission Power Density (W/cm^3)	Burnup (% FIMA)	Fission Power Density (W/cm^3)	Burnup (% FIMA)
Cell 1	UCO (U-235 14.03 wt%)	16.25	64.77	6.65%	59.59	7.45%	54.43	8.19%	49.65	8.87%
Cell 2		15.75	67.72	6.28%	63.07	7.12%	58.27	7.90%	53.11	8.62%
Cell 3		15.25	70.98	6.51%	65.88	7.39%	59.72	8.21%	54.44	8.95%
Cell 4		14.75	72.24	6.78%	66.15	7.67%	59.48	8.49%	53.93	9.23%
Cell 5		14.50	72.90	7.13%	65.72	8.03%	59.50	8.85%	53.61	9.58%
Cell 6		14.25	74.35	7.29%	67.26	8.21%	60.81	9.05%	54.69	9.80%
Cell 7		13.75	73.01	7.59%	65.30	8.50%	58.72	9.31%	52.81	10.04%
Cell 8		13.25	72.80	8.32%	65.46	9.22%	59.19	10.04%	53.75	10.77%
Cell 9	UCO (U-235 14.03 wt%)	10.25	77.76	8.84%	69.06	9.81%	61.61	10.66%	55.46	11.43%
Cell 10		9.75	80.87	8.45%	71.33	9.45%	62.44	10.34%	55.15	11.11%
Cell 11		9.25	82.81	8.36%	73.00	9.38%	64.28	10.29%	56.82	11.09%
Cell 12		8.75	84.69	8.47%	74.17	9.52%	65.32	10.44%	57.15	11.26%
Cell 13		8.50	82.90	8.56%	72.84	9.58%	63.56	10.49%	55.83	11.28%
Cell 14		8.25	81.02	8.78%	70.39	9.79%	61.19	10.66%	54.12	11.42%
Cell 15		7.75	80.75	9.02%	70.45	10.03%	61.59	10.90%	54.36	11.67%
Cell 16		7.25	76.61	9.71%	67.13	10.66%	59.15	11.49%	52.94	12.23%
Cell 17	SA UO_2 (U-235 9.6 wt%)	4.25	*	*	*	*	*	*	*	*
Cell 18		3.75	*	*	*	*	*	*	*	*
Cell 19		3.25	*	*	*	*	*	*	*	*
Cell 20		2.75	*	*	*	*	*	*	*	*
Cell 21		2.50	*	*	*	*	*	*	*	*
Cell 22		2.25	*	*	*	*	*	*	*	*
Cell 23		1.75	*	*	*	*	*	*	*	*
Cell 24		1.25	*	*	*	*	*	*	*	*
Cell 25	B&W UO_2 (U-235 9.6 wt%)	-1.75	46.43	8.34%	41.74	9.07%	38.42	9.73%	35.64	10.33%
Cell 26		-2.25	50.59	8.16%	45.54	8.96%	41.85	9.67%	38.74	10.33%
Cell 27		-2.75	48.59	7.96%	43.07	8.72%	38.97	9.39%	35.79	10.01%
Cell 28		-3.25	51.91	8.18%	46.40	9.00%	42.33	9.73%	39.46	10.39%
Cell 29		-3.50	50.93	8.03%	45.76	8.83%	41.90	9.55%	38.80	10.21%
Cell 30		-3.75	49.01	8.00%	43.74	8.77%	39.64	9.46%	36.59	10.08%
Cell 31		-4.25	48.22	7.99%	42.88	8.75%	39.06	9.42%	36.67	10.03%
Cell 32		-4.75	45.57	8.11%	40.99	8.82%	37.30	9.46%	34.40	10.05%
Cell 33	UCO (U-235 14.03 wt%)	-7.75	78.33	10.33%	68.66	11.30%	61.11	12.15%	54.89	12.91%
Cell 34		-8.25	81.57	9.63%	71.00	10.64%	62.69	11.52%	55.87	12.30%
Cell 35		-8.75	86.60	9.59%	75.86	10.67%	66.68	11.61%	59.45	12.44%
Cell 36		-9.25	85.97	9.22%	74.92	10.28%	65.15	11.21%	57.67	12.02%
Cell 37		-9.50	84.92	8.91%	73.51	9.97%	64.29	10.88%	56.57	11.68%
Cell 38		-9.75	87.17	9.07%	76.17	10.16%	67.11	11.10%	59.57	11.93%
Cell 39		-10.25	82.75	9.09%	72.30	10.12%	63.42	11.01%	56.46	11.80%
Cell 40		-10.75	78.34	9.50%	68.98	10.48%	60.70	11.33%	54.61	12.09%
Cell 41	French UO_2 (U-235 19.75 wt%)	-13.75	*	*	*	*	*	*	*	*
Cell 42		-14.25	*	*	*	*	*	*	*	*
Cell 43		-14.75	*	*	*	*	*	*	*	*
Cell 44		-15.25	*	*	*	*	*	*	*	*
Cell 45		-15.50	*	*	*	*	*	*	*	*
Cell 46		-15.75	*	*	*	*	*	*	*	*
Cell 47		-16.25	*	*	*	*	*	*	*	*
Cell 48		-16.75	*	*	*	*	*	*	*	*

Note: 1) All table values have a relative uncertainty band of 1σ = 2.5%.
2) MCNP-calculated results were scaled to a west lobe source power of 22.33 MW.
3) Data represented by a * can be requested from the project.

Table 13: AGR-2 fuel compact projected fission power density and burnup vs. EFPD (400-550 days, irradiated in ATR B-12 position). (continued)

Stack ID or Cell ID Stack 1	Fuel Type	Cell mid-point distance to core center (in)	400 EFPD		450 EFPD		500 EFPD		550 EFPD	
			Fission Power Density (W/cm^3)	Burnup (% FIMA)	Fission Power Density (W/cm^3)	Burnup (% FIMA)	Fission Power Density (W/cm^3)	Burnup (% FIMA)	Fission Power Density (W/cm^3)	Burnup (% FIMA)
Cell 49	UCO (U-235 14.03 wt%)	16.25	65.94	6.81%	60.94	7.63%	55.96	8.39%	51.22	9.08%
Cell 50		15.75	67.62	6.16%	62.83	7.00%	57.40	7.78%	52.74	8.49%
Cell 51		15.25	70.11	6.41%	64.96	7.28%	58.95	8.09%	54.22	8.82%
Cell 52		14.75	71.34	6.66%	65.70	7.55%	59.62	8.36%	53.99	9.10%
Cell 53		14.50	72.49	6.91%	66.19	7.81%	60.77	8.64%	55.26	9.39%
Cell 54		14.25	72.62	7.31%	66.22	8.22%	59.90	9.04%	54.30	9.78%
Cell 55		13.75	70.81	7.51%	63.90	8.39%	57.32	9.19%	51.34	9.90%
Cell 56		13.25	68.77	8.07%	61.61	8.93%	55.43	9.69%	50.01	10.38%
Cell 57	UCO (U-235 14.03 wt%)	10.25	76.89	8.66%	67.68	9.61%	59.78	10.45%	53.35	11.19%
Cell 58		9.75	81.32	8.40%	71.56	9.41%	62.77	10.30%	55.77	11.08%
Cell 59		9.25	82.50	8.28%	72.65	9.31%	63.57	10.21%	55.80	11.00%
Cell 60		8.75	81.83	8.28%	71.83	9.30%	62.67	10.19%	55.31	10.97%
Cell 61		8.50	84.07	8.64%	73.82	9.68%	64.26	10.60%	56.95	11.39%
Cell 62		8.25	83.81	8.80%	73.19	9.84%	63.88	10.75%	56.24	11.54%
Cell 63		7.75	82.36	9.09%	72.34	10.11%	63.68	11.01%	57.02	11.80%
Cell 64		7.25	78.40	9.82%	69.14	10.80%	61.64	11.66%	55.72	12.42%
Cell 65	SA UO_2 (U-235 9.6 wt%)	4.25	*	*	*	*	*	*	*	*
Cell 66		3.75	*	*	*	*	*	*	*	*
Cell 67		3.25	*	*	*	*	*	*	*	*
Cell 68		2.75	*	*	*	*	*	*	*	*
Cell 69		2.50	*	*	*	*	*	*	*	*
Cell 70		2.25	*	*	*	*	*	*	*	*
Cell 71		1.75	*	*	*	*	*	*	*	*
Cell 72		1.25	*	*	*	*	*	*	*	*
Cell 73	B&W UO_2 (U-235 9.6 wt%)	-1.75	48.05	8.29%	43.59	9.05%	40.15	9.73%	37.50	10.36%
Cell 74		-2.25	46.97	7.96%	41.80	8.70%	38.23	9.35%	35.21	9.96%
Cell 75		-2.75	48.18	7.88%	43.19	8.63%	39.15	9.31%	35.88	9.92%
Cell 76		-3.25	52.07	8.08%	46.75	8.89%	43.06	9.63%	39.75	10.30%
Cell 77		-3.50	48.84	7.73%	43.58	8.49%	39.93	9.18%	36.83	9.81%
Cell 78		-3.75	47.15	7.77%	41.67	8.51%	37.61	9.16%	34.41	9.75%
Cell 79		-4.25	48.16	7.88%	43.24	8.64%	39.05	9.32%	35.94	9.93%
Cell 80		-4.75	49.16	8.33%	44.28	9.10%	40.27	9.80%	37.30	10.43%
Cell 81	UCO (U-235 14.03 wt%)	-7.75	76.96	10.16%	67.13	11.12%	59.00	11.95%	52.59	12.68%
Cell 82		-8.25	82.33	9.76%	71.78	10.79%	63.47	11.68%	56.52	12.46%
Cell 83		-8.75	82.34	9.32%	71.44	10.34%	62.54	11.22%	55.41	12.00%
Cell 84		-9.25	81.79	8.95%	71.04	9.97%	62.01	10.85%	54.85	11.62%
Cell 85		-9.50	85.59	9.06%	74.10	10.12%	64.39	11.04%	56.44	11.84%
Cell 86		-9.75	84.10	8.93%	73.23	9.97%	64.07	10.88%	56.55	11.68%
Cell 87		-10.25	80.93	9.09%	69.90	10.10%	60.54	10.96%	52.99	11.72%
Cell 88		-10.75	76.60	9.35%	67.14	10.30%	59.15	11.14%	52.84	11.87%
Cell 89	French UO_2 (U-235 19.75 wt%)	-13.75	*	*	*	*	*	*	*	*
Cell 90		-14.25	*	*	*	*	*	*	*	*
Cell 91		-14.75	*	*	*	*	*	*	*	*
Cell 92		-15.25	*	*	*	*	*	*	*	*
Cell 93		-15.50	*	*	*	*	*	*	*	*
Cell 94		-15.75	*	*	*	*	*	*	*	*
Cell 95		-16.25	*	*	*	*	*	*	*	*
Cell 96		-16.75	*	*	*	*	*	*	*	*

Note: 1) All table values have a relative uncertainty band of 1σ = 2.5%.
2) MCNP-calculated results were scaled to a west lobe source power of 22.33 MW.
3) Data represented by a * can be requested from the project.

Table 13: AGR-2 fuel compact projected fission power density and burnup vs. EFPD (400-550 days, irradiated in ATR B-12 position). (continued)

Stack ID or Cell ID Stack 3	Fuel Type	Cell mid-point distance to core center (in)	400 EFPD		450 EFPD		500 EFPD		550 EFPD	
			Fission Power Density (W/cm^3)	Burnup (% FIMA)	Fission Power Density (W/cm^3)	Burnup (% FIMA)	Fission Power Density (W/cm^3)	Burnup (% FIMA)	Fission Power Density (W/cm^3)	Burnup (% FIMA)
Cell 97	UCO (U-235 14.03 wt%)	16.25	58.24	5.12%	55.26	5.84%	52.07	6.53%	48.57	7.17%
Cell 98		15.75	61.79	4.72%	59.33	5.49%	55.39	6.22%	52.05	6.91%
Cell 99		15.25	65.44	4.72%	62.90	5.53%	59.66	6.31%	56.11	7.05%
Cell 100		14.75	65.60	4.78%	62.00	5.59%	57.70	6.36%	53.64	7.08%
Cell 101		14.50	69.19	5.22%	65.37	6.07%	60.62	6.89%	56.27	7.64%
Cell 102		14.25	67.60	5.39%	63.48	6.23%	58.74	7.02%	54.30	7.75%
Cell 103		13.75	71.33	5.84%	66.84	6.73%	62.12	7.56%	57.28	8.33%
Cell 104		13.25	68.59	6.39%	63.87	7.24%	58.51	8.03%	53.70	8.76%
Cell 105	UCO (U-235 14.03 wt%)	10.25	76.98	6.81%	70.39	7.77%	64.62	8.64%	59.33	9.44%
Cell 106		9.75	80.45	6.44%	73.03	7.44%	66.57	8.34%	60.44	9.17%
Cell 107		9.25	83.68	6.36%	75.94	7.40%	68.75	8.34%	62.21	9.20%
Cell 108		8.75	84.03	6.47%	75.46	7.51%	67.18	8.45%	60.38	9.28%
Cell 109		8.50	84.82	6.60%	77.11	7.66%	69.00	8.61%	62.00	9.47%
Cell 110		8.25	86.51	6.90%	77.91	7.97%	69.55	8.94%	62.12	9.80%
Cell 111		7.75	84.57	7.23%	76.26	8.28%	68.32	9.23%	61.26	10.08%
Cell 112		7.25	77.19	7.68%	69.38	8.64%	62.18	9.50%	56.77	10.27%
Cell 113	SA UO_2 (U-235 9.6 wt%)	4.25	*	*	*	*	*	*	*	*
Cell 114		3.75	*	*	*	*	*	*	*	*
Cell 115		3.25	*	*	*	*	*	*	*	*
Cell 116		2.75	*	*	*	*	*	*	*	*
Cell 117		2.50	*	*	*	*	*	*	*	*
Cell 118		2.25	*	*	*	*	*	*	*	*
Cell 119		1.75	*	*	*	*	*	*	*	*
Cell 120		1.25	*	*	*	*	*	*	*	*
Cell 121	B&W UO_2 (U-235 9.6 wt%)	-1.75	48.04	7.00%	43.68	7.75%	39.97	8.44%	36.86	9.07%
Cell 122		-2.25	48.53	6.73%	43.63	7.50%	39.51	8.18%	36.26	8.80%
Cell 123		-2.75	47.81	6.48%	43.20	7.23%	39.10	7.90%	35.74	8.52%
Cell 124		-3.25	48.34	6.42%	43.63	7.18%	39.61	7.86%	36.21	8.48%
Cell 125		-3.50	51.63	6.70%	46.73	7.51%	42.67	8.24%	39.16	8.91%
Cell 126		-3.75	49.21	6.51%	44.49	7.28%	40.38	7.98%	36.84	8.61%
Cell 127		-4.25	48.58	6.70%	43.80	7.47%	39.72	8.15%	36.50	8.78%
Cell 128		-4.75	48.43	6.95%	44.08	7.71%	40.22	8.40%	37.11	9.03%
Cell 129	UCO (U-235 14.03 wt%)	-7.75	79.55	8.38%	70.96	9.37%	63.31	10.25%	56.58	11.03%
Cell 130		-8.25	84.10	7.76%	73.88	8.81%	65.69	9.72%	58.63	10.54%
Cell 131		-8.75	88.54	7.44%	79.30	8.54%	70.40	9.53%	62.89	10.40%
Cell 132		-9.25	88.30	7.29%	79.52	8.38%	70.57	9.37%	63.55	10.25%
Cell 133		-9.50	88.28	7.14%	79.18	8.23%	70.99	9.22%	63.42	10.10%
Cell 134		-9.75	88.23	7.19%	79.39	8.28%	71.37	9.27%	64.22	10.15%
Cell 135		-10.25	86.97	7.47%	77.74	8.55%	68.84	9.52%	61.45	10.37%
Cell 136		-10.75	78.62	7.69%	70.82	8.66%	63.18	9.54%	56.79	10.33%
Cell 137	French UO_2 (U-235 19.75 wt%)	-13.75	*	*	*	*	*	*	*	*
Cell 138		-14.25	*	*	*	*	*	*	*	*
Cell 139		-14.75	*	*	*	*	*	*	*	*
Cell 140		-15.25	*	*	*	*	*	*	*	*
Cell 141		-15.50	*	*	*	*	*	*	*	*
Cell 142		-15.75	*	*	*	*	*	*	*	*
Cell 143		-16.25	*	*	*	*	*	*	*	*
Cell 144		-16.75	*	*	*	*	*	*	*	*

Note: 1) All table values have a relative uncertainty band of 1σ = 2.5%.
2) MCNP-calculated results were scaled to a west lobe source power of 22.33 MW.
3) Data represented by a * can be requested from the project.

Table 14: AGR-2 fuel compact projected fission power density and burnup vs. EFPD (600-750 days, irradiated in ATR B-12 position).

Stack ID or Cell ID Stack 2	Fuel Type	Cell mid-point distance to core center (in)	600 EFPD		650 EFPD		700 EFPD		750 EFPD	
			Fission Power Density (W/cm^3)	Burnup (% FIMA)	Fission Power Density (W/cm^3)	Burnup (% FIMA)	Fission Power Density (W/cm^3)	Burnup (% FIMA)	Fission Power Density (W/cm^3)	Burnup (% FIMA)
Cell 1	UCO (U-235 14.03 wt%)	16.25	45.57	9.48%	41.67	10.05%	38.35	10.57%	35.44	11.04%
Cell 2		15.75	48.47	9.28%	44.16	9.88%	40.43	10.43%	37.30	10.93%
Cell 3		15.25	49.71	9.63%	45.40	10.24%	41.13	10.81%	37.75	11.32%
Cell 4		14.75	48.81	9.90%	44.40	10.51%	40.62	11.06%	37.42	11.56%
Cell 5		14.50	48.45	10.25%	44.35	10.85%	40.74	11.40%	37.59	11.91%
Cell 6		14.25	49.61	10.48%	45.24	11.10%	41.24	11.66%	38.20	12.17%
Cell 7		13.75	47.52	10.70%	43.10	11.29%	39.36	11.82%	36.17	12.31%
Cell 8		13.25	49.20	11.44%	45.57	12.05%	42.49	12.61%	39.70	13.14%
Cell 9	UCO (U-235 14.03 wt%)	10.25	49.91	12.12%	45.62	12.74%	42.11	13.30%	39.60	13.83%
Cell 10		9.75	49.18	11.80%	44.29	12.41%	40.61	12.96%	37.76	13.46%
Cell 11		9.25	50.80	11.79%	45.48	12.42%	41.35	12.99%	38.11	13.50%
Cell 12		8.75	51.03	11.96%	45.92	12.60%	41.77	13.17%	38.97	13.69%
Cell 13		8.50	49.44	11.97%	44.18	12.58%	40.04	13.13%	36.82	13.63%
Cell 14		8.25	48.57	12.09%	43.86	12.70%	40.01	13.24%	37.08	13.74%
Cell 15		7.75	48.43	12.34%	43.67	12.94%	40.04	13.48%	37.12	13.98%
Cell 16		7.25	47.92	12.88%	43.84	13.48%	40.67	14.02%	38.22	14.53%
Cell 17	SA UO_2 (U-235 9.6 wt%)	4.25	*	*	*	*	*	*	*	*
Cell 18		3.75	*	*	*	*	*	*	*	*
Cell 19		3.25	*	*	*	*	*	*	*	*
Cell 20		2.75	*	*	*	*	*	*	*	*
Cell 21		2.50	*	*	*	*	*	*	*	*
Cell 22		2.25	*	*	*	*	*	*	*	*
Cell 23		1.75	*	*	*	*	*	*	*	*
Cell 24		1.25	*	*	*	*	*	*	*	*
Cell 25	B&W UO_2 (U-235 9.6 wt%)	-1.75	33.48	10.89%	31.98	11.42%	30.93	11.92%	29.98	12.40%
Cell 26		-2.25	36.39	10.94%	34.75	11.51%	33.33	12.06%	32.02	12.58%
Cell 27		-2.75	33.42	10.57%	31.75	11.09%	30.50	11.59%	29.53	12.07%
Cell 28		-3.25	37.14	11.01%	35.45	11.60%	34.02	12.15%	33.09	12.69%
Cell 29		-3.50	36.53	10.82%	34.89	11.39%	33.56	11.94%	32.40	12.47%
Cell 30		-3.75	34.26	10.65%	32.48	11.19%	31.11	11.70%	29.90	12.19%
Cell 31		-4.25	34.48	10.61%	32.78	11.15%	31.65	11.67%	30.61	12.16%
Cell 32		-4.75	32.24	10.59%	30.61	11.10%	29.45	11.58%	28.54	12.04%
Cell 33	UCO (U-235 14.03 wt%)	-7.75	49.86	13.59%	45.97	14.21%	42.77	14.78%	40.51	15.32%
Cell 34		-8.25	50.29	12.99%	46.01	13.62%	42.81	14.19%	40.40	14.72%
Cell 35		-8.75	53.59	13.18%	49.05	13.84%	45.52	14.45%	42.87	15.02%
Cell 36		-9.25	51.68	12.74%	46.72	13.38%	42.89	13.96%	39.59	14.49%
Cell 37		-9.50	50.15	12.38%	44.99	13.00%	41.17	13.56%	38.00	14.07%
Cell 38		-9.75	53.66	12.67%	48.78	13.34%	45.06	13.95%	41.99	14.51%
Cell 39		-10.25	50.97	12.50%	46.40	13.13%	42.73	13.71%	39.69	14.24%
Cell 40		-10.75	49.69	12.76%	45.60	13.38%	42.41	13.95%	39.74	14.47%
Cell 41	French UO_2 (U-235 19.75 wt%)	-13.75	*	*	*	*	*	*	*	*
Cell 42		-14.25	*	*	*	*	*	*	*	*
Cell 43		-14.75	*	*	*	*	*	*	*	*
Cell 44		-15.25	*	*	*	*	*	*	*	*
Cell 45		-15.50	*	*	*	*	*	*	*	*
Cell 46		-15.75	*	*	*	*	*	*	*	*
Cell 47		-16.25	*	*	*	*	*	*	*	*
Cell 48		-16.75	*	*	*	*	*	*	*	*

Note: 1) All table values have a relative uncertainty band of 1σ = 2.5%.
2) MCNP-calculated results were scaled to a west lobe source power of 22.33 MW.
3) Data represented by a * can be requested from the project.

Table 14: AGR-2 fuel compact projected fission power density and burnup vs. EFPD (600-750 days, irradiated in ATR B-12 position). (continued)

Stack ID or Cell ID Stack 1	Fuel Type	Cell mid-point distance to core center (in)	600 EFPD		650 EFPD		700 EFPD		750 EFPD	
			Fission Power Density (W/cm^3)	Burnup (% FIMA)	Fission Power Density (W/cm^3)	Burnup (% FIMA)	Fission Power Density (W/cm^3)	Burnup (% FIMA)	Fission Power Density (W/cm^3)	Burnup (% FIMA)
Cell 49	UCO (U-235 14.03 wt%)	16.25	47.23	9.72%	43.24	10.30%	40.19	10.84%	37.38	11.34%
Cell 50		15.75	48.36	9.15%	44.12	9.75%	40.47	10.30%	37.26	10.80%
Cell 51		15.25	49.46	9.50%	45.10	10.11%	41.35	10.67%	38.13	11.18%
Cell 52		14.75	48.93	9.77%	44.38	10.38%	40.47	10.93%	37.18	11.43%
Cell 53		14.50	50.47	10.08%	45.83	10.70%	42.09	11.27%	38.99	11.79%
Cell 54		14.25	48.84	10.45%	43.96	11.06%	39.78	11.61%	36.54	12.10%
Cell 55		13.75	45.93	10.53%	41.23	11.10%	37.44	11.62%	34.15	12.08%
Cell 56		13.25	45.13	11.00%	41.21	11.56%	37.83	12.07%	34.82	12.54%
Cell 57	UCO (U-235 14.03 wt%)	10.25	47.87	11.85%	43.47	12.45%	39.94	12.99%	37.01	13.48%
Cell 58		9.75	49.75	11.77%	44.74	12.39%	41.11	12.95%	38.09	13.46%
Cell 59		9.25	49.58	11.69%	44.48	12.31%	40.46	12.86%	37.36	13.36%
Cell 60		8.75	49.04	11.65%	43.96	12.26%	39.89	12.81%	36.69	13.30%
Cell 61		8.50	51.05	12.10%	46.38	12.74%	42.81	13.31%	39.98	13.84%
Cell 62		8.25	50.04	12.24%	45.40	12.86%	41.38	13.43%	38.39	13.94%
Cell 63		7.75	51.13	12.51%	46.49	13.14%	42.82	13.72%	39.82	14.25%
Cell 64		7.25	50.65	13.11%	46.85	13.74%	43.67	14.32%	41.18	14.86%
Cell 65	SA UO_2 (U-235 9.6 wt%)	4.25	*	*	*	*	*	*	*	*
Cell 66		3.75	*	*	*	*	*	*	*	*
Cell 67		3.25	*	*	*	*	*	*	*	*
Cell 68		2.75	*	*	*	*	*	*	*	*
Cell 69		2.50	*	*	*	*	*	*	*	*
Cell 70		2.25	*	*	*	*	*	*	*	*
Cell 71		1.75	*	*	*	*	*	*	*	*
Cell 72		1.25	*	*	*	*	*	*	*	*
Cell 73	B&W UO_2 (U-235 9.6 wt%)	-1.75	35.35	10.95%	33.89	11.51%	32.73	12.04%	31.61	12.55%
Cell 74		-2.25	32.87	10.51%	31.09	11.02%	29.80	11.51%	28.76	11.98%
Cell 75		-2.75	33.54	10.49%	31.46	11.01%	29.97	11.51%	28.96	11.98%
Cell 76		-3.25	37.16	10.93%	35.08	11.51%	33.51	12.06%	32.23	12.59%
Cell 77		-3.50	34.15	10.38%	32.22	10.92%	30.86	11.43%	29.64	11.91%
Cell 78		-3.75	31.97	10.29%	30.38	10.80%	29.11	11.27%	27.90	11.73%
Cell 79		-4.25	33.57	10.50%	31.54	11.02%	30.12	11.52%	28.88	11.99%
Cell 80		-4.75	34.97	11.02%	32.97	11.57%	31.32	12.08%	30.18	12.58%
Cell 81	UCO (U-235 14.03 wt%)	-7.75	47.28	13.33%	43.78	13.92%	40.61	14.46%	38.11	14.97%
Cell 82		-8.25	51.03	13.17%	46.50	13.80%	42.90	14.38%	39.97	14.91%
Cell 83		-8.75	49.58	12.69%	45.18	13.30%	41.84	13.87%	38.91	14.38%
Cell 84		-9.25	48.85	12.30%	44.01	12.91%	40.14	13.45%	37.14	13.95%
Cell 85		-9.50	50.18	12.54%	45.40	13.17%	41.28	13.73%	38.15	14.24%
Cell 86		-9.75	50.45	12.38%	45.63	13.01%	41.76	13.57%	38.64	14.09%
Cell 87		-10.25	46.80	12.37%	42.00	12.95%	38.12	13.48%	35.07	13.95%
Cell 88		-10.75	47.70	12.53%	43.42	13.12%	40.25	13.66%	37.68	14.16%
Cell 89	French UO_2 (U-235 19.75 wt%)	-13.75	*	*	*	*	*	*	*	*
Cell 90		-14.25	*	*	*	*	*	*	*	*
Cell 91		-14.75	*	*	*	*	*	*	*	*
Cell 92		-15.25	*	*	*	*	*	*	*	*
Cell 93		-15.50	*	*	*	*	*	*	*	*
Cell 94		-15.75	*	*	*	*	*	*	*	*
Cell 95		-16.25	*	*	*	*	*	*	*	*
Cell 96		-16.75	*	*	*	*	*	*	*	*

Note: 1) All table values have a relative uncertainty band of 1σ = 2.5%.
2) MCNP-calculated results were scaled to a west lobe source power of 22.33 MW.
3) Data represented by a * can be requested from the project.

Table 14: AGR-2 fuel compact projected fission power density and burnup vs. EFPD (600-750 days, irradiated in ATR B-12 position). (continued)

Stack ID or Cell ID Stack 3	Fuel Type	Cell mid-point distance to core center (in)	600 EFPD		650 EFPD		700 EFPD		750 EFPD	
			Fission Power Density (W/cm^3)	Burnup (% FIMA)	Fission Power Density (W/cm^3)	Burnup (% FIMA)	Fission Power Density (W/cm^3)	Burnup (% FIMA)	Fission Power Density (W/cm^3)	Burnup (% FIMA)
Cell 97	UCO (U-235 14.03 wt%)	16.25	45.51	7.77%	42.48	8.34%	39.79	8.87%	37.12	9.36%
Cell 98		15.75	48.86	7.56%	45.70	8.16%	42.79	8.73%	40.04	9.26%
Cell 99		15.25	52.24	7.75%	48.62	8.39%	45.27	9.00%	42.26	9.56%
Cell 100		14.75	49.42	7.74%	45.48	8.36%	42.14	8.92%	38.91	9.44%
Cell 101		14.50	52.08	8.34%	48.43	8.98%	45.15	9.59%	42.15	10.15%
Cell 102		14.25	49.50	8.42%	45.36	9.04%	41.79	9.60%	38.47	10.12%
Cell 103		13.75	52.57	9.04%	48.70	9.69%	44.87	10.30%	41.75	10.85%
Cell 104		13.25	49.08	9.42%	45.29	10.03%	41.49	10.59%	38.50	11.11%
Cell 105	UCO (U-235 14.03 wt%)	10.25	54.39	10.18%	50.05	10.85%	46.27	11.47%	42.90	12.05%
Cell 106		9.75	54.79	9.92%	50.13	10.60%	45.91	11.22%	42.21	11.79%
Cell 107		9.25	56.12	9.97%	51.09	10.67%	46.66	11.30%	42.71	11.88%
Cell 108		8.75	54.26	10.03%	49.15	10.71%	44.44	11.32%	40.41	11.87%
Cell 109		8.50	56.02	10.24%	50.45	10.94%	45.81	11.56%	41.85	12.13%
Cell 110		8.25	56.07	10.57%	50.50	11.27%	45.65	11.89%	41.69	12.46%
Cell 111		7.75	55.21	10.84%	50.11	11.53%	45.71	12.15%	42.01	12.71%
Cell 112		7.25	51.29	10.98%	46.87	11.61%	43.01	12.19%	39.66	12.73%
Cell 113	SA UO_2 (U-235 9.6 wt%)	4.25	*	*	*	*	*	*	*	*
Cell 114		3.75	*	*	*	*	*	*	*	*
Cell 115		3.25	*	*	*	*	*	*	*	*
Cell 116		2.75	*	*	*	*	*	*	*	*
Cell 117		2.50	*	*	*	*	*	*	*	*
Cell 118		2.25	*	*	*	*	*	*	*	*
Cell 119		1.75	*	*	*	*	*	*	*	*
Cell 120		1.25	*	*	*	*	*	*	*	*
Cell 121	B&W UO_2 (U-235 9.6 wt%)	-1.75	34.34	9.65%	32.37	10.18%	30.68	10.69%	29.23	11.17%
Cell 122		-2.25	33.61	9.37%	31.57	9.90%	29.79	10.40%	28.34	10.86%
Cell 123		-2.75	32.94	9.08%	30.65	9.60%	28.64	10.08%	27.12	10.53%
Cell 124		-3.25	33.37	9.05%	31.20	9.58%	29.36	10.07%	27.90	10.53%
Cell 125		-3.50	36.18	9.53%	33.85	10.10%	31.91	10.63%	30.18	11.13%
Cell 126		-3.75	34.14	9.19%	31.91	9.73%	30.10	10.23%	28.55	10.70%
Cell 127		-4.25	33.78	9.35%	31.61	9.88%	29.70	10.38%	28.10	10.84%
Cell 128		-4.75	34.58	9.62%	32.59	10.16%	30.88	10.67%	29.52	11.16%
Cell 129	UCO (U-235 14.03 wt%)	-7.75	51.55	11.74%	47.16	12.38%	43.50	12.96%	40.37	13.50%
Cell 130		-8.25	52.97	11.27%	47.90	11.92%	43.39	12.52%	39.92	13.06%
Cell 131		-8.75	56.22	11.18%	50.90	11.88%	46.50	12.51%	42.69	13.09%
Cell 132		-9.25	57.31	11.04%	51.75	11.75%	47.20	12.39%	43.26	12.98%
Cell 133		-9.50	57.07	10.89%	51.53	11.59%	47.04	12.23%	43.45	12.82%
Cell 134		-9.75	57.94	10.95%	52.65	11.67%	48.08	12.32%	44.16	12.92%
Cell 135		-10.25	55.18	11.14%	49.79	11.82%	45.09	12.44%	41.40	13.00%
Cell 136		-10.75	51.44	11.03%	47.06	11.67%	42.96	12.25%	39.52	12.79%
Cell 137	French UO_2 (U-235 19.75 wt%)	-13.75	*	*	*	*	*	*	*	*
Cell 138		-14.25	*	*	*	*	*	*	*	*
Cell 139		-14.75	*	*	*	*	*	*	*	*
Cell 140		-15.25	*	*	*	*	*	*	*	*
Cell 141		-15.50	*	*	*	*	*	*	*	*
Cell 142		-15.75	*	*	*	*	*	*	*	*
Cell 143		-16.25	*	*	*	*	*	*	*	*
Cell 144		-16.75	*	*	*	*	*	*	*	*

Note: 1) All table values have a relative uncertainty band of 1σ = 2.5%.
2) MCNP-calculated results were scaled to a west lobe source power of 22.33 MW.
3) Data represented by a * can be requested from the project.

Table 15: AGR-2 Fuel Compact Projected Fast Flux and Fast Fluence vs. EFPD (0-150 days, irradiated in ATR B-12 position).

Stack ID or Cell ID Stack 2	Fuel Type	Cell mid-point distance to core center (in)	0 EFPD		50 EFPD		100 EFPD		150 EFPD	
			Fast Flux $\times 10^{14}$ (n/cm^{2}sec)	Fast Fluence $\times 10^{25}$ (n/m^2)	Fast Flux $\times 10^{14}$ (n/cm^{2}sec)	Fast Fluence $\times 10^{25}$ (n/m^2)	Fast Flux $\times 10^{14}$ (n/cm^{2}sec)	Fast Fluence $\times 10^{25}$ (n/m^2)	Fast Flux $\times 10^{14}$ (n/cm^{2}sec)	Fast Fluence $\times 10^{25}$ (n/m^2)
Cell 1	UCO (U-235 14.03 wt%)	16.25	0.42	0.00	0.43	0.18	0.43	0.37	0.43	0.55
Cell 2		15.75	0.46	0.00	0.46	0.20	0.47	0.40	0.48	0.60
Cell 3		15.25	0.48	0.00	0.48	0.21	0.49	0.41	0.50	0.62
Cell 4		14.75	0.47	0.00	0.48	0.20	0.49	0.41	0.50	0.63
Cell 5		14.50	0.51	0.00	0.52	0.22	0.53	0.44	0.54	0.67
Cell 6		14.25	0.53	0.00	0.54	0.23	0.55	0.46	0.56	0.70
Cell 7		13.75	0.55	0.00	0.56	0.24	0.57	0.48	0.58	0.73
Cell 8		13.25	0.58	0.00	0.59	0.25	0.59	0.50	0.60	0.76
Cell 9	UCO (U-235 14.03 wt%)	10.25	0.62	0.00	0.63	0.27	0.64	0.54	0.65	0.82
Cell 10		9.75	0.62	0.00	0.63	0.27	0.65	0.54	0.66	0.82
Cell 11		9.25	0.65	0.00	0.67	0.28	0.68	0.57	0.69	0.86
Cell 12		8.75	0.68	0.00	0.69	0.29	0.71	0.59	0.72	0.90
Cell 13		8.50	0.66	0.00	0.67	0.29	0.69	0.58	0.71	0.87
Cell 14		8.25	0.68	0.00	0.69	0.29	0.71	0.59	0.72	0.90
Cell 15		7.75	0.70	0.00	0.71	0.30	0.72	0.61	0.74	0.92
Cell 16		7.25	0.72	0.00	0.73	0.31	0.74	0.63	0.75	0.95
Cell 17	SA UO_2 (U-235 9.6 wt%)	4.25	*	*	*	*	*	*	*	*
Cell 18		3.75	*	*	*	*	*	*	*	*
Cell 19		3.25	*	*	*	*	*	*	*	*
Cell 20		2.75	*	*	*	*	*	*	*	*
Cell 21		2.50	*	*	*	*	*	*	*	*
Cell 22		2.25	*	*	*	*	*	*	*	*
Cell 23		1.75	*	*	*	*	*	*	*	*
Cell 24		1.25	*	*	*	*	*	*	*	*
Cell 25	B&W UO_2 (U-235 9.6 wt%)	-1.75	0.74	0.00	0.75	0.32	0.76	0.64	0.77	0.97
Cell 26		-2.25	0.73	0.00	0.75	0.32	0.76	0.64	0.77	0.97
Cell 27		-2.75	0.73	0.00	0.74	0.31	0.76	0.64	0.77	0.96
Cell 28		-3.25	0.74	0.00	0.75	0.32	0.77	0.65	0.78	0.98
Cell 29		-3.50	0.73	0.00	0.75	0.32	0.76	0.64	0.77	0.97
Cell 30		-3.75	0.73	0.00	0.74	0.31	0.76	0.63	0.77	0.96
Cell 31		-4.25	0.73	0.00	0.74	0.32	0.76	0.63	0.77	0.96
Cell 32		-4.75	0.74	0.00	0.75	0.32	0.76	0.64	0.77	0.97
Cell 33	UCO (U-235 14.03 wt%)	-7.75	0.74	0.00	0.75	0.32	0.76	0.64	0.77	0.97
Cell 34		-8.25	0.72	0.00	0.73	0.31	0.75	0.62	0.76	0.95
Cell 35		-8.75	0.71	0.00	0.72	0.31	0.74	0.62	0.76	0.94
Cell 36		-9.25	0.70	0.00	0.71	0.30	0.73	0.61	0.75	0.93
Cell 37		-9.50	0.68	0.00	0.69	0.29	0.71	0.59	0.72	0.90
Cell 38		-9.75	0.70	0.00	0.71	0.30	0.73	0.61	0.74	0.92
Cell 39		-10.25	0.68	0.00	0.69	0.29	0.71	0.59	0.72	0.89
Cell 40		-10.75	0.68	0.00	0.69	0.30	0.70	0.60	0.71	0.90
Cell 41	French UO_2 (U-235 19.75 wt%)	-13.75	*	*	*	*	*	*	*	*
Cell 42		-14.25	*	*	*	*	*	*	*	*
Cell 43		-14.75	*	*	*	*	*	*	*	*
Cell 44		-15.25	*	*	*	*	*	*	*	*
Cell 45		-15.50	*	*	*	*	*	*	*	*
Cell 46		-15.75	*	*	*	*	*	*	*	*
Cell 47		-16.25	*	*	*	*	*	*	*	*
Cell 48		-16.75	*	*	*	*	*	*	*	*

Note: 1) All table values have a relative uncertainty band of $1\sigma = 2.5\%$.
2) MCNP-calculated results were scaled to a west lobe source power of 22.33 MW.
3) Data represented by a * can be requested from the project.

Table 15: AGR-2 Fuel Compact Projected Fast Flux and Fast Fluence vs. EFPD (0-150 days, irradiated in ATR B-12 position). (continued)

Stack ID or Cell ID Stack 1	Fuel Type	Cell mid-point distance to core center (in)	0 EFPD		50 EFPD		100 EFPD		150 EFPD	
			Fast Flux $\times 10^{14}$ (n/cm^{2}sec)	Fast Fluence $\times 10^{25}$ (n/m^2)	Fast Flux $\times 10^{14}$ (n/cm^{2}sec)	Fast Fluence $\times 10^{25}$ (n/m^2)	Fast Flux $\times 10^{14}$ (n/cm^{2}sec)	Fast Fluence $\times 10^{25}$ (n/m^2)	Fast Flux $\times 10^{14}$ (n/cm^{2}sec)	Fast Fluence $\times 10^{25}$ (n/m^2)
Cell 49	UCO (U-235 14.03 wt%)	16.25	0.43	0.00	0.44	0.19	0.44	0.38	0.45	0.57
Cell 50		15.75	0.45	0.00	0.46	0.20	0.47	0.40	0.48	0.60
Cell 51		15.25	0.48	0.00	0.48	0.21	0.49	0.42	0.50	0.63
Cell 52		14.75	0.50	0.00	0.51	0.22	0.52	0.44	0.53	0.66
Cell 53		14.50	0.50	0.00	0.51	0.22	0.52	0.44	0.53	0.66
Cell 54		14.25	0.52	0.00	0.53	0.23	0.54	0.45	0.55	0.69
Cell 55		13.75	0.55	0.00	0.56	0.24	0.57	0.48	0.58	0.73
Cell 56		13.25	0.57	0.00	0.58	0.25	0.59	0.50	0.59	0.75
Cell 57	UCO (U-235 14.03 wt%)	10.25	0.62	0.00	0.63	0.27	0.64	0.54	0.65	0.81
Cell 58		9.75	0.64	0.00	0.65	0.28	0.66	0.56	0.67	0.84
Cell 59		9.25	0.65	0.00	0.66	0.28	0.67	0.56	0.68	0.85
Cell 60		8.75	0.66	0.00	0.67	0.29	0.69	0.58	0.70	0.88
Cell 61		8.50	0.66	0.00	0.68	0.29	0.69	0.58	0.71	0.88
Cell 62		8.25	0.68	0.00	0.69	0.29	0.71	0.59	0.72	0.90
Cell 63		7.75	0.68	0.00	0.69	0.29	0.70	0.59	0.72	0.90
Cell 64		7.25	0.70	0.00	0.71	0.30	0.72	0.61	0.73	0.92
Cell 65	SA UO_2 (U-235 9.6 wt%)	4.25	*	*	*	*	*	*	*	*
Cell 66		3.75	*	*	*	*	*	*	*	*
Cell 67		3.25	*	*	*	*	*	*	*	*
Cell 68		2.75	*	*	*	*	*	*	*	*
Cell 69		2.50	*	*	*	*	*	*	*	*
Cell 70		2.25	*	*	*	*	*	*	*	*
Cell 71		1.75	*	*	*	*	*	*	*	*
Cell 72		1.25	*	*	*	*	*	*	*	*
Cell 73	B&W UO_2 (U-235 9.6 wt%)	-1.75	0.73	0.00	0.74	0.32	0.75	0.64	0.76	0.96
Cell 74		-2.25	0.75	0.00	0.77	0.33	0.78	0.66	0.79	0.99
Cell 75		-2.75	0.74	0.00	0.76	0.32	0.77	0.65	0.78	0.98
Cell 76		-3.25	0.73	0.00	0.74	0.32	0.76	0.64	0.77	0.96
Cell 77		-3.50	0.73	0.00	0.74	0.31	0.75	0.63	0.77	0.96
Cell 78		-3.75	0.72	0.00	0.73	0.31	0.74	0.62	0.75	0.95
Cell 79		-4.25	0.72	0.00	0.73	0.31	0.74	0.62	0.75	0.94
Cell 80		-4.75	0.72	0.00	0.73	0.31	0.74	0.63	0.75	0.95
Cell 81	UCO (U-235 14.03 wt%)	-7.75	0.72	0.00	0.73	0.31	0.74	0.63	0.76	0.95
Cell 82		-8.25	0.72	0.00	0.73	0.31	0.76	0.63	0.77	0.96
Cell 83		-8.75	0.73	0.00	0.74	0.31	0.76	0.63	0.78	0.96
Cell 84		-9.25	0.70	0.00	0.71	0.30	0.73	0.61	0.75	0.92
Cell 85		-9.50	0.69	0.00	0.70	0.30	0.72	0.60	0.73	0.91
Cell 86		-9.75	0.69	0.00	0.70	0.30	0.72	0.60	0.74	0.91
Cell 87		-10.25	0.67	0.00	0.68	0.29	0.70	0.59	0.72	0.89
Cell 88		-10.75	0.65	0.00	0.66	0.28	0.67	0.56	0.68	0.85
Cell 89	French UO_2 (U-235 19.75 wt%)	-13.75	*	*	*	*	*	*	*	*
Cell 90		-14.25	*	*	*	*	*	*	*	*
Cell 91		-14.75	*	*	*	*	*	*	*	*
Cell 92		-15.25	*	*	*	*	*	*	*	*
Cell 93		-15.50	*	*	*	*	*	*	*	*
Cell 94		-15.75	*	*	*	*	*	*	*	*
Cell 95		-16.25	*	*	*	*	*	*	*	*
Cell 96		-16.75	*	*	*	*	*	*	*	*

Note: 1) All table values have a relative uncertainty band of $1\sigma = 2.5\%$.
2) MCNP-calculated results were scaled to a west lobe source power of 22.33 MW.
3) Data represented by a * can be requested from the project.

Table 15: AGR-2 Fuel Compact Projected Fast Flux and Fast Fluence vs. EFPD (0-150 days, irradiated in ATR B-12 position). (continued)

Stack ID or Cell ID Stack 3	Fuel Type	Cell mid-point distance to core center (in)	0 EFPD		50 EFPD		100 EFPD		150 EFPD	
			Fast Flux $\times 10^{14}$ (n/cm^{2}sec)	Fast Fluence $\times 10^{25}$ (n/m^2)	Fast Flux $\times 10^{14}$ (n/cm^{2}sec)	Fast Fluence $\times 10^{25}$ (n/m^2)	Fast Flux $\times 10^{14}$ (n/cm^{2}sec)	Fast Fluence $\times 10^{25}$ (n/m^2)	Fast Flux $\times 10^{14}$ (n/cm^{2}sec)	Fast Fluence $\times 10^{25}$ (n/m^2)
Cell 97	UCO (U-235 14.03 wt%)	16.25	0.38	0.00	0.39	0.16	0.39	0.33	0.40	0.50
Cell 98		15.75	0.39	0.00	0.40	0.17	0.41	0.34	0.41	0.52
Cell 99		15.25	0.41	0.00	0.42	0.18	0.42	0.36	0.43	0.54
Cell 100		14.75	0.42	0.00	0.43	0.18	0.43	0.37	0.44	0.55
Cell 101		14.50	0.45	0.00	0.45	0.19	0.46	0.39	0.47	0.59
Cell 102		14.25	0.45	0.00	0.46	0.20	0.47	0.39	0.48	0.60
Cell 103		13.75	0.48	0.00	0.49	0.21	0.50	0.42	0.51	0.64
Cell 104		13.25	0.49	0.00	0.50	0.21	0.51	0.43	0.51	0.64
Cell 105	UCO (U-235 14.03 wt%)	10.25	0.54	0.00	0.54	0.23	0.56	0.47	0.57	0.71
Cell 106		9.75	0.56	0.00	0.57	0.24	0.58	0.49	0.60	0.74
Cell 107		9.25	0.55	0.00	0.55	0.24	0.57	0.48	0.58	0.72
Cell 108		8.75	0.58	0.00	0.59	0.25	0.60	0.50	0.62	0.76
Cell 109		8.50	0.58	0.00	0.59	0.25	0.60	0.51	0.62	0.77
Cell 110		8.25	0.60	0.00	0.61	0.26	0.62	0.52	0.64	0.79
Cell 111		7.75	0.59	0.00	0.61	0.26	0.63	0.52	0.64	0.79
Cell 112		7.25	0.62	0.00	0.63	0.27	0.64	0.54	0.65	0.81
Cell 113	SA UO_2 (U-235 9.6 wt%)	4.25	*	*	*	*	*	*	*	*
Cell 114		3.75	*	*	*	*	*	*	*	*
Cell 115		3.25	*	*	*	*	*	*	*	*
Cell 116		2.75	*	*	*	*	*	*	*	*
Cell 117		2.50	*	*	*	*	*	*	*	*
Cell 118		2.25	*	*	*	*	*	*	*	*
Cell 119		1.75	*	*	*	*	*	*	*	*
Cell 120		1.25	*	*	*	*	*	*	*	*
Cell 121	B&W UO_2 (U-235 9.6 wt%)	-1.75	0.65	0.00	0.66	0.28	0.67	0.56	0.68	0.85
Cell 122		-2.25	0.67	0.00	0.68	0.29	0.69	0.58	0.70	0.88
Cell 123		-2.75	0.66	0.00	0.67	0.28	0.68	0.57	0.70	0.87
Cell 124		-3.25	0.65	0.00	0.66	0.28	0.67	0.56	0.68	0.85
Cell 125		-3.50	0.65	0.00	0.66	0.28	0.68	0.56	0.69	0.86
Cell 126		-3.75	0.64	0.00	0.65	0.28	0.67	0.56	0.68	0.85
Cell 127		-4.25	0.64	0.00	0.64	0.28	0.66	0.55	0.67	0.84
Cell 128		-4.75	0.64	0.00	0.65	0.28	0.66	0.56	0.67	0.84
Cell 129	UCO (U-235 14.03 wt%)	-7.75	0.62	0.00	0.64	0.27	0.65	0.54	0.66	0.83
Cell 130		-8.25	0.62	0.00	0.63	0.27	0.66	0.54	0.68	0.83
Cell 131		-8.75	0.62	0.00	0.63	0.27	0.65	0.54	0.67	0.82
Cell 132		-9.25	0.61	0.00	0.62	0.26	0.64	0.53	0.66	0.80
Cell 133		-9.50	0.61	0.00	0.62	0.26	0.64	0.53	0.66	0.81
Cell 134		-9.75	0.60	0.00	0.61	0.26	0.63	0.52	0.64	0.80
Cell 135		-10.25	0.58	0.00	0.60	0.25	0.61	0.51	0.63	0.78
Cell 136		-10.75	0.58	0.00	0.59	0.25	0.60	0.51	0.61	0.77
Cell 137	French UO_2 (U-235 19.75 wt%)	-13.75	*	*	*	*	*	*	*	*
Cell 138		-14.25	*	*	*	*	*	*	*	*
Cell 139		-14.75	*	*	*	*	*	*	*	*
Cell 140		-15.25	*	*	*	*	*	*	*	*
Cell 141		-15.50	*	*	*	*	*	*	*	*
Cell 142		-15.75	*	*	*	*	*	*	*	*
Cell 143		-16.25	*	*	*	*	*	*	*	*
Cell 144		-16.75	*	*	*	*	*	*	*	*

Note: 1) All table values have a relative uncertainty band of $1\sigma = 2.5\%$.
2) MCNP-calculated results were scaled to a west lobe source power of 22.33 MW.
3) Data represented by a * can be requested from the project.

Table 16: AGR-2 Fuel Compact Projected Fast Flux and Fast Fluence vs. EFPD (200-350 days, irradiated in ATR B-12 position).

Stack ID or Cell ID Stack 2	Fuel Type	Cell mid-point distance to core center (in)	200 EFPD		250 EFPD		300 EFPD		350 EFPD	
			Fast Flux $\times 10^{14}$ (n/cm^{2}sec)	Fast Fluence $\times 10^{25}$ (n/m^2)	Fast Flux $\times 10^{14}$ (n/cm^{2}sec)	Fast Fluence $\times 10^{25}$ (n/m^2)	Fast Flux $\times 10^{14}$ (n/cm^{2}sec)	Fast Fluence $\times 10^{25}$ (n/m^2)	Fast Flux $\times 10^{14}$ (n/cm^{2}sec)	Fast Fluence $\times 10^{25}$ (n/m^2)
Cell 1	UCO (U-235 14.03 wt%)	16.25	0.44	0.74	0.44	0.93	0.44	1.12	0.44	1.32
Cell 2		15.75	0.48	0.81	0.49	1.02	0.49	1.23	0.49	1.44
Cell 3		15.25	0.50	0.84	0.51	1.06	0.51	1.28	0.51	1.50
Cell 4		14.75	0.51	0.84	0.51	1.06	0.51	1.28	0.51	1.50
Cell 5		14.50	0.55	0.91	0.55	1.14	0.55	1.38	0.55	1.62
Cell 6		14.25	0.57	0.94	0.57	1.18	0.57	1.43	0.56	1.67
Cell 7		13.75	0.59	0.98	0.59	1.23	0.59	1.49	0.59	1.74
Cell 8		13.25	0.60	1.02	0.60	1.28	0.60	1.54	0.60	1.80
Cell 9	UCO (U-235 14.03 wt%)	10.25	0.66	1.10	0.66	1.38	0.66	1.67	0.66	1.95
Cell 10		9.75	0.67	1.11	0.67	1.40	0.68	1.69	0.67	1.98
Cell 11		9.25	0.71	1.16	0.72	1.47	0.72	1.78	0.71	2.09
Cell 12		8.75	0.73	1.21	0.74	1.52	0.74	1.84	0.73	2.16
Cell 13		8.50	0.72	1.18	0.73	1.49	0.72	1.80	0.72	2.12
Cell 14		8.25	0.74	1.21	0.74	1.53	0.73	1.85	0.72	2.16
Cell 15		7.75	0.75	1.24	0.75	1.56	0.75	1.88	0.73	2.21
Cell 16		7.25	0.76	1.27	0.76	1.60	0.75	1.93	0.74	2.25
Cell 17	SA UO_2 (U-235 9.6 wt%)	4.25	*	*	*	*	*	*	*	*
Cell 18		3.75	*	*	*	*	*	*	*	*
Cell 19		3.25	*	*	*	*	*	*	*	*
Cell 20		2.75	*	*	*	*	*	*	*	*
Cell 21		2.50	*	*	*	*	*	*	*	*
Cell 22		2.25	*	*	*	*	*	*	*	*
Cell 23		1.75	*	*	*	*	*	*	*	*
Cell 24		1.25	*	*	*	*	*	*	*	*
Cell 25	B&W UO_2 (U-235 9.6 wt%)	-1.75	0.78	1.31	0.77	1.64	0.76	1.97	0.75	2.30
Cell 26		-2.25	0.78	1.30	0.77	1.64	0.76	1.97	0.75	2.30
Cell 27		-2.75	0.77	1.29	0.77	1.63	0.76	1.96	0.75	2.29
Cell 28		-3.25	0.79	1.31	0.78	1.65	0.77	1.99	0.77	2.32
Cell 29		-3.50	0.78	1.30	0.77	1.64	0.76	1.97	0.76	2.30
Cell 30		-3.75	0.78	1.29	0.77	1.63	0.76	1.96	0.75	2.29
Cell 31		-4.25	0.77	1.30	0.76	1.63	0.76	1.96	0.75	2.28
Cell 32		-4.75	0.77	1.30	0.76	1.63	0.75	1.96	0.75	2.29
Cell 33	UCO (U-235 14.03 wt%)	-7.75	0.78	1.31	0.78	1.64	0.77	1.98	0.76	2.31
Cell 34		-8.25	0.77	1.27	0.77	1.61	0.77	1.94	0.75	2.27
Cell 35		-8.75	0.77	1.27	0.78	1.60	0.77	1.94	0.76	2.27
Cell 36		-9.25	0.76	1.25	0.77	1.58	0.77	1.91	0.76	2.24
Cell 37		-9.50	0.74	1.21	0.75	1.53	0.75	1.85	0.74	2.18
Cell 38		-9.75	0.76	1.24	0.77	1.57	0.77	1.90	0.75	2.23
Cell 39		-10.25	0.73	1.20	0.73	1.52	0.73	1.84	0.71	2.15
Cell 40		-10.75	0.72	1.21	0.72	1.52	0.72	1.83	0.71	2.14
Cell 41	French UO_2 (U-235 19.75 wt%)	-13.75	*	*	*	*	*	*	*	*
Cell 42		-14.25	*	*	*	*	*	*	*	*
Cell 43		-14.75	*	*	*	*	*	*	*	*
Cell 44		-15.25	*	*	*	*	*	*	*	*
Cell 45		-15.50	*	*	*	*	*	*	*	*
Cell 46		-15.75	*	*	*	*	*	*	*	*
Cell 47		-16.25	*	*	*	*	*	*	*	*
Cell 48		-16.75	*	*	*	*	*	*	*	*

Note: 1) All table values have a relative uncertainty band of $1\sigma = 2.5\%$.
2) MCNP-calculated results were scaled to a west lobe source power of 22.33 MW.
3) Data represented by a * can be requested from the project.

Table 16: AGR-2 Fuel Compact Projected Fast Flux and Fast Fluence vs. EFPD (200-350 days, irradiated in ATR B-12 position). (continued)

Stack ID or Cell ID Stack 1	Fuel Type	Cell mid-point distance to core center (in)	200 EFPD		250 EFPD		300 EFPD		350 EFPD	
			Fast Flux $\times 10^{14}$ (n/cm^{2}sec)	Fast Fluence $\times 10^{25}$ (n/m^2)	Fast Flux $\times 10^{14}$ (n/cm^{2}sec)	Fast Fluence $\times 10^{25}$ (n/m^2)	Fast Flux $\times 10^{14}$ (n/cm^{2}sec)	Fast Fluence $\times 10^{25}$ (n/m^2)	Fast Flux $\times 10^{14}$ (n/cm^{2}sec)	Fast Fluence $\times 10^{25}$ (n/m^2)
Cell 49	UCO (U-235 14.03 wt%)	16.25	0.45	0.76	0.46	0.96	0.45	1.15	0.45	1.35
Cell 50		15.75	0.49	0.81	0.49	1.02	0.49	1.23	0.49	1.44
Cell 51		15.25	0.51	0.84	0.51	1.06	0.52	1.29	0.52	1.51
Cell 52		14.75	0.53	0.89	0.54	1.12	0.54	1.35	0.53	1.58
Cell 53		14.50	0.54	0.89	0.55	1.13	0.55	1.36	0.54	1.60
Cell 54		14.25	0.56	0.93	0.57	1.17	0.57	1.42	0.56	1.66
Cell 55		13.75	0.59	0.98	0.59	1.23	0.59	1.49	0.58	1.74
Cell 56		13.25	0.59	1.00	0.60	1.26	0.60	1.52	0.59	1.78
Cell 57	UCO (U-235 14.03 wt%)	10.25	0.66	1.10	0.66	1.38	0.66	1.67	0.66	1.95
Cell 58		9.75	0.69	1.13	0.69	1.43	0.69	1.73	0.69	2.03
Cell 59		9.25	0.69	1.15	0.71	1.45	0.71	1.75	0.71	2.06
Cell 60		8.75	0.71	1.18	0.73	1.49	0.73	1.80	0.72	2.11
Cell 61		8.50	0.73	1.19	0.74	1.50	0.73	1.82	0.72	2.13
Cell 62		8.25	0.74	1.21	0.74	1.53	0.74	1.85	0.73	2.17
Cell 63		7.75	0.73	1.21	0.74	1.52	0.73	1.84	0.72	2.16
Cell 64		7.25	0.74	1.23	0.74	1.55	0.74	1.87	0.73	2.19
Cell 65	SA UO_2 (U-235 9.6 wt%)	4.25	*	*	*	*	*	*	*	*
Cell 66		3.75	*	*	*	*	*	*	*	*
Cell 67		3.25	*	*	*	*	*	*	*	*
Cell 68		2.75	*	*	*	*	*	*	*	*
Cell 69		2.50	*	*	*	*	*	*	*	*
Cell 70		2.25	*	*	*	*	*	*	*	*
Cell 71		1.75	*	*	*	*	*	*	*	*
Cell 72		1.25	*	*	*	*	*	*	*	*
Cell 73	B&W UO_2 (U-235 9.6 wt%)	-1.75	0.76	1.29	0.76	1.62	0.75	1.95	0.74	2.27
Cell 74		-2.25	0.80	1.33	0.79	1.68	0.78	2.02	0.77	2.36
Cell 75		-2.75	0.79	1.32	0.78	1.66	0.77	2.00	0.76	2.33
Cell 76		-3.25	0.77	1.29	0.77	1.63	0.76	1.96	0.75	2.29
Cell 77		-3.50	0.77	1.29	0.77	1.62	0.76	1.95	0.75	2.28
Cell 78		-3.75	0.76	1.27	0.75	1.60	0.75	1.92	0.74	2.24
Cell 79		-4.25	0.75	1.27	0.75	1.59	0.75	1.92	0.74	2.24
Cell 80		-4.75	0.75	1.27	0.75	1.59	0.74	1.92	0.74	2.24
Cell 81	UCO (U-235 14.03 wt%)	-7.75	0.77	1.28	0.77	1.61	0.75	1.94	0.74	2.27
Cell 82		-8.25	0.78	1.29	0.79	1.63	0.77	1.97	0.76	2.30
Cell 83		-8.75	0.80	1.30	0.80	1.65	0.79	1.99	0.78	2.34
Cell 84		-9.25	0.77	1.25	0.77	1.58	0.77	1.91	0.75	2.25
Cell 85		-9.50	0.75	1.23	0.76	1.55	0.76	1.88	0.75	2.20
Cell 86		-9.75	0.75	1.23	0.76	1.56	0.75	1.88	0.74	2.21
Cell 87		-10.25	0.73	1.20	0.74	1.51	0.73	1.83	0.72	2.15
Cell 88		-10.75	0.69	1.15	0.69	1.45	0.69	1.75	0.68	2.04
Cell 89	French UO_2 (U-235 19.75 wt%)	-13.75	*	*	*	*	*	*	*	*
Cell 90		-14.25	*	*	*	*	*	*	*	*
Cell 91		-14.75	*	*	*	*	*	*	*	*
Cell 92		-15.25	*	*	*	*	*	*	*	*
Cell 93		-15.50	*	*	*	*	*	*	*	*
Cell 94		-15.75	*	*	*	*	*	*	*	*
Cell 95		-16.25	*	*	*	*	*	*	*	*
Cell 96		-16.75	*	*	*	*	*	*	*	*

Note: 1) All table values have a relative uncertainty band of $1\sigma = 2.5\%$.
2) MCNP-calculated results were scaled to a west lobe source power of 22.33 MW.
3) Data represented by a * can be requested from the project.

Table 16: AGR-2 Fuel Compact Projected Fast Flux and Fast Fluence vs. EFPD (200-350 days, irradiated in ATR B-12 position). (continued)

Stack ID or Cell ID Stack 3	Fuel Type	Cell mid-point distance to core center (in)	200 EFPD		250 EFPD		300 EFPD		350 EFPD	
			Fast Flux $\times 10^{14}$ (n/cm^{2}sec)	Fast Fluence $\times 10^{25}$ (n/m^2)	Fast Flux $\times 10^{14}$ (n/cm^{2}sec)	Fast Fluence $\times 10^{25}$ (n/m^2)	Fast Flux $\times 10^{14}$ (n/cm^{2}sec)	Fast Fluence $\times 10^{25}$ (n/m^2)	Fast Flux $\times 10^{14}$ (n/cm^{2}sec)	Fast Fluence $\times 10^{25}$ (n/m^2)
Cell 97	UCO (U-235 14.03 wt%)	16.25	0.40	0.67	0.41	0.85	0.41	1.02	0.40	1.20
Cell 98		15.75	0.42	0.70	0.43	0.88	0.43	1.07	0.43	1.25
Cell 99		15.25	0.44	0.72	0.45	0.91	0.45	1.11	0.45	1.30
Cell 100		14.75	0.45	0.74	0.46	0.94	0.46	1.14	0.46	1.34
Cell 101		14.50	0.48	0.79	0.49	1.00	0.49	1.21	0.49	1.42
Cell 102		14.25	0.49	0.81	0.50	1.02	0.50	1.23	0.50	1.45
Cell 103		13.75	0.52	0.86	0.52	1.08	0.53	1.31	0.52	1.54
Cell 104		13.25	0.52	0.87	0.52	1.09	0.52	1.31	0.52	1.54
Cell 105	UCO (U-235 14.03 wt%)	10.25	0.57	0.95	0.58	1.20	0.58	1.45	0.58	1.70
Cell 106		9.75	0.61	0.99	0.62	1.26	0.62	1.53	0.62	1.80
Cell 107		9.25	0.60	0.98	0.61	1.23	0.62	1.50	0.62	1.77
Cell 108		8.75	0.64	1.03	0.65	1.31	0.66	1.59	0.65	1.87
Cell 109		8.50	0.63	1.03	0.64	1.30	0.64	1.58	0.64	1.86
Cell 110		8.25	0.66	1.07	0.67	1.36	0.67	1.65	0.67	1.94
Cell 111		7.75	0.66	1.07	0.67	1.35	0.67	1.64	0.66	1.93
Cell 112		7.25	0.66	1.09	0.66	1.38	0.66	1.66	0.65	1.94
Cell 113	SA UO_2 (U-235 9.6 wt%)	4.25	*	*	*	*	*	*	*	*
Cell 114		3.75	*	*	*	*	*	*	*	*
Cell 115		3.25	*	*	*	*	*	*	*	*
Cell 116		2.75	*	*	*	*	*	*	*	*
Cell 117		2.50	*	*	*	*	*	*	*	*
Cell 118		2.25	*	*	*	*	*	*	*	*
Cell 119		1.75	*	*	*	*	*	*	*	*
Cell 120		1.25	*	*	*	*	*	*	*	*
Cell 121	B&W UO_2 (U-235 9.6 wt%)	-1.75	0.68	1.15	0.68	1.44	0.67	1.74	0.67	2.03
Cell 122		-2.25	0.71	1.18	0.71	1.49	0.70	1.80	0.69	2.10
Cell 123		-2.75	0.70	1.17	0.70	1.47	0.69	1.77	0.69	2.07
Cell 124		-3.25	0.69	1.15	0.69	1.45	0.68	1.74	0.67	2.04
Cell 125		-3.50	0.69	1.15	0.69	1.45	0.69	1.75	0.68	2.05
Cell 126		-3.75	0.68	1.14	0.68	1.43	0.68	1.73	0.67	2.02
Cell 127		-4.25	0.68	1.13	0.68	1.42	0.67	1.71	0.66	2.00
Cell 128		-4.75	0.67	1.13	0.67	1.42	0.66	1.71	0.66	2.00
Cell 129	UCO (U-235 14.03 wt%)	-7.75	0.67	1.11	0.67	1.40	0.67	1.69	0.66	1.98
Cell 130		-8.25	0.69	1.12	0.70	1.42	0.69	1.72	0.68	2.02
Cell 131		-8.75	0.69	1.11	0.70	1.41	0.70	1.71	0.68	2.01
Cell 132		-9.25	0.67	1.09	0.69	1.38	0.69	1.68	0.68	1.97
Cell 133		-9.50	0.68	1.09	0.69	1.39	0.70	1.69	0.69	1.99
Cell 134		-9.75	0.66	1.07	0.67	1.36	0.67	1.65	0.66	1.94
Cell 135		-10.25	0.64	1.05	0.65	1.33	0.65	1.61	0.64	1.89
Cell 136		-10.75	0.63	1.03	0.63	1.31	0.63	1.58	0.62	1.85
Cell 137	French UO_2 (U-235 19.75 wt%)	-13.75	*	*	*	*	*	*	*	*
Cell 138		-14.25	*	*	*	*	*	*	*	*
Cell 139		-14.75	*	*	*	*	*	*	*	*
Cell 140		-15.25	*	*	*	*	*	*	*	*
Cell 141		-15.50	*	*	*	*	*	*	*	*
Cell 142		-15.75	*	*	*	*	*	*	*	*
Cell 143		-16.25	*	*	*	*	*	*	*	*
Cell 144		-16.75	*	*	*	*	*	*	*	*

Note: 1) All table values have a relative uncertainty band of $1\sigma = 2.5\%$.
2) MCNP-calculated results were scaled to a west lobe source power of 22.33 MW.
3) Data represented by a * can be requested from the project.

Table 17: AGR-2 Fuel Compact Projected Fast Flux and Fast Fluence vs. EFPD (400-550 days, irradiated in ATR B-12 position).

Stack ID or Cell ID Stack 2	Fuel Type	Cell mid-point distance to core center (in)	400 EFPD		450 EFPD		500 EFPD		550 EFPD	
			Fast Flux $\times 10^{14}$ (n/cm^{2}sec)	Fast Fluence $\times 10^{25}$ (n/m^2)	Fast Flux $\times 10^{14}$ (n/cm^{2}sec)	Fast Fluence $\times 10^{25}$ (n/m^2)	Fast Flux $\times 10^{14}$ (n/cm^{2}sec)	Fast Fluence $\times 10^{25}$ (n/m^2)	Fast Flux $\times 10^{14}$ (n/cm^{2}sec)	Fast Fluence $\times 10^{25}$ (n/m^2)
Cell 1	UCO (U-235 14.03 wt%)	16.25	0.44	1.51	0.44	1.70	0.43	1.88	0.43	2.07
Cell 2		15.75	0.48	1.65	0.48	1.86	0.47	2.07	0.47	2.27
Cell 3		15.25	0.51	1.72	0.50	1.94	0.49	2.15	0.48	2.37
Cell 4		14.75	0.50	1.72	0.50	1.94	0.49	2.16	0.49	2.37
Cell 5		14.50	0.54	1.86	0.53	2.09	0.53	2.32	0.52	2.55
Cell 6		14.25	0.56	1.92	0.55	2.16	0.55	2.40	0.54	2.63
Cell 7		13.75	0.58	2.00	0.57	2.25	0.56	2.49	0.56	2.74
Cell 8		13.25	0.59	2.05	0.58	2.31	0.58	2.56	0.57	2.81
Cell 9	UCO (U-235 14.03 wt%)	10.25	0.65	2.23	0.64	2.51	0.63	2.79	0.63	3.07
Cell 10		9.75	0.66	2.27	0.65	2.55	0.64	2.83	0.63	3.11
Cell 11		9.25	0.69	2.39	0.68	2.69	0.67	2.99	0.66	3.28
Cell 12		8.75	0.72	2.48	0.71	2.79	0.70	3.09	0.69	3.40
Cell 13		8.50	0.70	2.43	0.69	2.73	0.68	3.03	0.67	3.32
Cell 14		8.25	0.72	2.48	0.70	2.79	0.69	3.09	0.68	3.39
Cell 15		7.75	0.73	2.52	0.72	2.84	0.71	3.15	0.70	3.45
Cell 16		7.25	0.73	2.57	0.73	2.89	0.72	3.21	0.71	3.52
Cell 17	SA UO_2 (U-235 9.6 wt%)	4.25	*	*	*	*	*	*	*	*
Cell 18		3.75	*	*	*	*	*	*	*	*
Cell 19		3.25	*	*	*	*	*	*	*	*
Cell 20		2.75	*	*	*	*	*	*	*	*
Cell 21		2.50	*	*	*	*	*	*	*	*
Cell 22		2.25	*	*	*	*	*	*	*	*
Cell 23		1.75	*	*	*	*	*	*	*	*
Cell 24		1.25	*	*	*	*	*	*	*	*
Cell 25	B&W UO_2 (U-235 9.6 wt%)	-1.75	0.75	2.63	0.74	2.95	0.74	3.27	0.74	3.59
Cell 26		-2.25	0.74	2.62	0.73	2.95	0.73	3.26	0.73	3.58
Cell 27		-2.75	0.74	2.62	0.74	2.94	0.73	3.25	0.73	3.57
Cell 28		-3.25	0.76	2.66	0.75	2.98	0.75	3.31	0.74	3.63
Cell 29		-3.50	0.75	2.63	0.75	2.96	0.74	3.28	0.74	3.60
Cell 30		-3.75	0.75	2.62	0.74	2.94	0.74	3.26	0.73	3.58
Cell 31		-4.25	0.74	2.61	0.74	2.93	0.73	3.25	0.73	3.56
Cell 32		-4.75	0.74	2.61	0.74	2.93	0.73	3.25	0.73	3.57
Cell 33	UCO (U-235 14.03 wt%)	-7.75	0.74	2.64	0.74	2.96	0.73	3.28	0.73	3.59
Cell 34		-8.25	0.74	2.60	0.73	2.92	0.72	3.23	0.71	3.54
Cell 35		-8.75	0.75	2.60	0.74	2.92	0.72	3.24	0.71	3.55
Cell 36		-9.25	0.74	2.57	0.73	2.89	0.72	3.21	0.71	3.51
Cell 37		-9.50	0.73	2.50	0.72	2.81	0.70	3.12	0.69	3.43
Cell 38		-9.75	0.74	2.56	0.73	2.88	0.72	3.19	0.71	3.50
Cell 39		-10.25	0.70	2.46	0.69	2.76	0.69	3.06	0.68	3.36
Cell 40		-10.75	0.70	2.45	0.69	2.75	0.68	3.05	0.67	3.34
Cell 41	French UO_2 (U-235 19.75 wt%)	-13.75	*	*	*	*	*	*	*	*
Cell 42		-14.25	*	*	*	*	*	*	*	*
Cell 43		-14.75	*	*	*	*	*	*	*	*
Cell 44		-15.25	*	*	*	*	*	*	*	*
Cell 45		-15.50	*	*	*	*	*	*	*	*
Cell 46		-15.75	*	*	*	*	*	*	*	*
Cell 47		-16.25	*	*	*	*	*	*	*	*
Cell 48		-16.75	*	*	*	*	*	*	*	*

Note: 1) All table values have a relative uncertainty band of $1\sigma = 2.5\%$.
2) MCNP-calculated results were scaled to a west lobe source power of 22.33 MW.
3) Data represented by a * can be requested from the project.

Table 17: AGR-2 Fuel Compact Projected Fast Flux and Fast Fluence vs. EFPD (400-550 days, irradiated in ATR B-12 position). (continued)

Stack ID or Cell ID Stack 1	Fuel Type	Cell mid-point distance to core center (in)	400 EFPD		450 EFPD		500 EFPD		550 EFPD	
			Fast Flux $\times 10^{14}$ (n/cm^{2}sec)	Fast Fluence $\times 10^{25}$ (n/m^2)	Fast Flux $\times 10^{14}$ (n/cm^{2}sec)	Fast Fluence $\times 10^{25}$ (n/m^2)	Fast Flux $\times 10^{14}$ (n/cm^{2}sec)	Fast Fluence $\times 10^{25}$ (n/m^2)	Fast Flux $\times 10^{14}$ (n/cm^{2}sec)	Fast Fluence $\times 10^{25}$ (n/m^2)
Cell 49	UCO (U-235 14.03 wt%)	16.25	0.45	1.55	0.45	1.74	0.44	1.93	0.44	2.13
Cell 50		15.75	0.49	1.65	0.49	1.87	0.48	2.08	0.47	2.28
Cell 51		15.25	0.51	1.73	0.51	1.95	0.50	2.17	0.49	2.39
Cell 52		14.75	0.53	1.81	0.53	2.04	0.52	2.27	0.52	2.49
Cell 53		14.50	0.54	1.83	0.53	2.06	0.52	2.29	0.52	2.52
Cell 54		14.25	0.56	1.90	0.55	2.15	0.54	2.38	0.53	2.61
Cell 55		13.75	0.57	1.99	0.57	2.24	0.56	2.49	0.55	2.73
Cell 56		13.25	0.58	2.03	0.58	2.29	0.57	2.54	0.57	2.78
Cell 57	UCO (U-235 14.03 wt%)	10.25	0.65	2.24	0.64	2.52	0.63	2.79	0.63	3.07
Cell 58		9.75	0.68	2.32	0.67	2.62	0.66	2.90	0.65	3.19
Cell 59		9.25	0.69	2.36	0.68	2.66	0.67	2.96	0.66	3.24
Cell 60		8.75	0.71	2.43	0.69	2.73	0.68	3.03	0.67	3.32
Cell 61		8.50	0.71	2.44	0.70	2.75	0.69	3.05	0.68	3.35
Cell 62		8.25	0.72	2.48	0.71	2.80	0.70	3.10	0.69	3.40
Cell 63		7.75	0.71	2.47	0.70	2.78	0.69	3.08	0.69	3.38
Cell 64		7.25	0.72	2.50	0.71	2.81	0.70	3.12	0.70	3.42
Cell 65	SA UO_2 (U-235 9.6 wt%)	4.25	*	*	*	*	*	*	*	*
Cell 66		3.75	*	*	*	*	*	*	*	*
Cell 67		3.25	*	*	*	*	*	*	*	*
Cell 68		2.75	*	*	*	*	*	*	*	*
Cell 69		2.50	*	*	*	*	*	*	*	*
Cell 70		2.25	*	*	*	*	*	*	*	*
Cell 71		1.75	*	*	*	*	*	*	*	*
Cell 72		1.25	*	*	*	*	*	*	*	*
Cell 73	B&W UO_2 (U-235 9.6 wt%)	-1.75	0.73	2.59	0.73	2.91	0.72	3.22	0.72	3.53
Cell 74		-2.25	0.76	2.69	0.76	3.02	0.75	3.34	0.75	3.67
Cell 75		-2.75	0.76	2.66	0.75	2.99	0.74	3.31	0.74	3.63
Cell 76		-3.25	0.75	2.62	0.74	2.94	0.74	3.26	0.73	3.58
Cell 77		-3.50	0.74	2.60	0.73	2.93	0.73	3.24	0.73	3.56
Cell 78		-3.75	0.73	2.56	0.72	2.88	0.72	3.19	0.71	3.50
Cell 79		-4.25	0.73	2.56	0.72	2.88	0.72	3.19	0.72	3.50
Cell 80		-4.75	0.73	2.55	0.73	2.87	0.72	3.18	0.72	3.50
Cell 81	UCO (U-235 14.03 wt%)	-7.75	0.73	2.59	0.72	2.90	0.71	3.21	0.71	3.52
Cell 82		-8.25	0.75	2.63	0.74	2.95	0.73	3.27	0.72	3.58
Cell 83		-8.75	0.77	2.67	0.75	3.00	0.74	3.33	0.73	3.65
Cell 84		-9.25	0.74	2.57	0.73	2.89	0.72	3.21	0.71	3.52
Cell 85		-9.50	0.73	2.53	0.72	2.84	0.71	3.15	0.69	3.46
Cell 86		-9.75	0.73	2.53	0.72	2.84	0.71	3.16	0.70	3.46
Cell 87		-10.25	0.71	2.46	0.70	2.76	0.69	3.06	0.68	3.36
Cell 88		-10.75	0.67	2.34	0.66	2.62	0.65	2.91	0.64	3.19
Cell 89	French UO_2 (U-235 19.75 wt%)	-13.75	*	*	*	*	*	*	*	*
Cell 90		-14.25	*	*	*	*	*	*	*	*
Cell 91		-14.75	*	*	*	*	*	*	*	*
Cell 92		-15.25	*	*	*	*	*	*	*	*
Cell 93		-15.50	*	*	*	*	*	*	*	*
Cell 94		-15.75	*	*	*	*	*	*	*	*
Cell 95		-16.25	*	*	*	*	*	*	*	*
Cell 96		-16.75	*	*	*	*	*	*	*	*

Note: 1) All table values have a relative uncertainty band of $1\sigma = 2.5\%$.
2) MCNP-calculated results were scaled to a west lobe source power of 22.33 MW.
3) Data represented by a * can be requested from the project.

Table 17: AGR-2 Fuel Compact Projected Fast Flux and Fast Fluence vs. EFPD (400-550 days, irradiated in ATR B-12 position). (continued)

Stack ID or Cell ID Stack 3	Fuel Type	Cell mid-point distance to core center (in)	400 EFPD		450 EFPD		500 EFPD		550 EFPD	
			Fast Flux $\times 10^{14}$ (n/cm^{2}sec)	Fast Fluence $\times 10^{25}$ (n/m^2)	Fast Flux $\times 10^{14}$ (n/cm^{2}sec)	Fast Fluence $\times 10^{25}$ (n/m^2)	Fast Flux $\times 10^{14}$ (n/cm^{2}sec)	Fast Fluence $\times 10^{25}$ (n/m^2)	Fast Flux $\times 10^{14}$ (n/cm^{2}sec)	Fast Fluence $\times 10^{25}$ (n/m^2)
Cell 97	UCO (U-235 14.03 wt%)	16.25	0.41	1.37	0.40	1.55	0.40	1.72	0.40	1.89
Cell 98		15.75	0.43	1.43	0.43	1.62	0.42	1.80	0.42	1.99
Cell 99		15.25	0.45	1.49	0.45	1.69	0.44	1.88	0.43	2.07
Cell 100		14.75	0.46	1.54	0.46	1.74	0.45	1.93	0.44	2.13
Cell 101		14.50	0.49	1.64	0.48	1.85	0.48	2.05	0.47	2.26
Cell 102		14.25	0.49	1.66	0.49	1.88	0.48	2.09	0.48	2.30
Cell 103		13.75	0.52	1.76	0.51	1.99	0.51	2.21	0.50	2.43
Cell 104		13.25	0.51	1.76	0.51	1.98	0.50	2.20	0.50	2.42
Cell 105	UCO (U-235 14.03 wt%)	10.25	0.57	1.95	0.56	2.20	0.56	2.44	0.55	2.68
Cell 106		9.75	0.61	2.06	0.60	2.33	0.59	2.58	0.59	2.84
Cell 107		9.25	0.61	2.03	0.60	2.30	0.59	2.55	0.58	2.81
Cell 108		8.75	0.64	2.16	0.63	2.44	0.62	2.71	0.61	2.98
Cell 109		8.50	0.63	2.14	0.62	2.41	0.61	2.68	0.60	2.94
Cell 110		8.25	0.66	2.23	0.64	2.51	0.64	2.79	0.63	3.06
Cell 111		7.75	0.65	2.21	0.64	2.49	0.63	2.77	0.62	3.04
Cell 112		7.25	0.64	2.22	0.63	2.50	0.63	2.77	0.62	3.04
Cell 113	SA UO_2 (U-235 9.6 wt%)	4.25	*	*	*	*	*	*	*	*
Cell 114		3.75	*	*	*	*	*	*	*	*
Cell 115		3.25	*	*	*	*	*	*	*	*
Cell 116		2.75	*	*	*	*	*	*	*	*
Cell 117		2.50	*	*	*	*	*	*	*	*
Cell 118		2.25	*	*	*	*	*	*	*	*
Cell 119		1.75	*	*	*	*	*	*	*	*
Cell 120		1.25	*	*	*	*	*	*	*	*
Cell 121	B&W UO_2 (U-235 9.6 wt%)	-1.75	0.66	2.32	0.66	2.60	0.65	2.89	0.65	3.17
Cell 122		-2.25	0.69	2.40	0.68	2.69	0.67	2.98	0.67	3.27
Cell 123		-2.75	0.68	2.37	0.67	2.66	0.67	2.95	0.66	3.24
Cell 124		-3.25	0.67	2.33	0.66	2.62	0.66	2.90	0.65	3.19
Cell 125		-3.50	0.67	2.34	0.67	2.63	0.66	2.92	0.66	3.21
Cell 126		-3.75	0.66	2.31	0.66	2.59	0.65	2.88	0.65	3.16
Cell 127		-4.25	0.66	2.29	0.65	2.57	0.65	2.86	0.64	3.14
Cell 128		-4.75	0.65	2.28	0.65	2.56	0.64	2.84	0.64	3.12
Cell 129	UCO (U-235 14.03 wt%)	-7.75	0.65	2.27	0.64	2.55	0.63	2.82	0.62	3.09
Cell 130		-8.25	0.67	2.32	0.66	2.60	0.65	2.89	0.64	3.17
Cell 131		-8.75	0.68	2.30	0.66	2.60	0.65	2.88	0.64	3.16
Cell 132		-9.25	0.67	2.27	0.66	2.56	0.65	2.84	0.64	3.12
Cell 133		-9.50	0.67	2.28	0.66	2.57	0.65	2.86	0.64	3.14
Cell 134		-9.75	0.66	2.23	0.65	2.51	0.63	2.79	0.63	3.06
Cell 135		-10.25	0.63	2.16	0.62	2.43	0.61	2.70	0.60	2.97
Cell 136		-10.75	0.61	2.12	0.61	2.39	0.60	2.65	0.59	2.91
Cell 137	French UO_2 (U-235 19.75 wt%)	-13.75	*	*	*	*	*	*	*	*
Cell 138		-14.25	*	*	*	*	*	*	*	*
Cell 139		-14.75	*	*	*	*	*	*	*	*
Cell 140		-15.25	*	*	*	*	*	*	*	*
Cell 141		-15.50	*	*	*	*	*	*	*	*
Cell 142		-15.75	*	*	*	*	*	*	*	*
Cell 143		-16.25	*	*	*	*	*	*	*	*
Cell 144		-16.75	*	*	*	*	*	*	*	*

Note: 1) All table values have a relative uncertainty band of $1\sigma = 2.5\%$.
2) MCNP-calculated results were scaled to a west lobe source power of 22.33 MW.
3) Data represented by a * can be requested from the project.

Table 18: AGR-2 Fuel Compact Projected Fast Flux and Fast Fluence vs. EFPD (600-750 days, irradiated in ATR B-12 position).

Stack ID or Cell ID Stack 2	Fuel Type	Cell mid-point distance to core center (in)	600 EFPD		650 EFPD		700 EFPD		750 EFPD	
			Fast Flux $\times 10^{14}$ (n/cm^{2}sec)	Fast Fluence $\times 10^{25}$ (n/m^2)	Fast Flux $\times 10^{14}$ (n/cm^{2}sec)	Fast Fluence $\times 10^{25}$ (n/m^2)	Fast Flux $\times 10^{14}$ (n/cm^{2}sec)	Fast Fluence $\times 10^{25}$ (n/m^2)	Fast Flux $\times 10^{14}$ (n/cm^{2}sec)	Fast Fluence $\times 10^{25}$ (n/m^2)
Cell 1	UCO (U-235 14.03 wt%)	16.25	0.42	2.26	0.42	2.44	0.42	2.62	0.41	2.80
Cell 2		15.75	0.46	2.47	0.46	2.67	0.45	2.87	0.45	3.06
Cell 3		15.25	0.48	2.57	0.47	2.78	0.47	2.98	0.47	3.18
Cell 4		14.75	0.48	2.58	0.48	2.79	0.47	3.00	0.47	3.20
Cell 5		14.50	0.51	2.78	0.51	3.00	0.50	3.22	0.50	3.44
Cell 6		14.25	0.53	2.87	0.53	3.10	0.53	3.32	0.52	3.55
Cell 7		13.75	0.55	2.98	0.54	3.21	0.54	3.45	0.54	3.68
Cell 8		13.25	0.57	3.06	0.56	3.30	0.56	3.55	0.56	3.79
Cell 9	UCO (U-235 14.03 wt%)	10.25	0.62	3.34	0.62	3.61	0.61	3.87	0.61	4.14
Cell 10		9.75	0.62	3.38	0.62	3.65	0.62	3.92	0.61	4.18
Cell 11		9.25	0.66	3.57	0.65	3.85	0.65	4.13	0.64	4.41
Cell 12		8.75	0.68	3.69	0.67	3.99	0.67	4.28	0.66	4.57
Cell 13		8.50	0.67	3.61	0.66	3.90	0.65	4.18	0.65	4.47
Cell 14		8.25	0.68	3.68	0.67	3.98	0.67	4.27	0.66	4.55
Cell 15		7.75	0.69	3.75	0.69	4.05	0.68	4.35	0.68	4.64
Cell 16		7.25	0.70	3.82	0.70	4.13	0.70	4.43	0.69	4.73
Cell 17	SA UO_2 (U-235 9.6 wt%)	4.25	*	*	*	*	*	*	*	*
Cell 18		3.75	*	*	*	*	*	*	*	*
Cell 19		3.25	*	*	*	*	*	*	*	*
Cell 20		2.75	*	*	*	*	*	*	*	*
Cell 21		2.50	*	*	*	*	*	*	*	*
Cell 22		2.25	*	*	*	*	*	*	*	*
Cell 23		1.75	*	*	*	*	*	*	*	*
Cell 24		1.25	*	*	*	*	*	*	*	*
Cell 25	B&W UO_2 (U-235 9.6 wt%)	-1.75	0.73	3.91	0.73	4.22	0.73	4.54	0.73	4.86
Cell 26		-2.25	0.73	3.89	0.72	4.21	0.72	4.52	0.72	4.83
Cell 27		-2.75	0.73	3.89	0.72	4.20	0.72	4.51	0.72	4.82
Cell 28		-3.25	0.74	3.95	0.73	4.27	0.73	4.59	0.73	4.90
Cell 29		-3.50	0.74	3.92	0.73	4.24	0.73	4.56	0.73	4.87
Cell 30		-3.75	0.73	3.89	0.73	4.21	0.73	4.52	0.72	4.83
Cell 31		-4.25	0.73	3.88	0.72	4.19	0.72	4.50	0.72	4.82
Cell 32		-4.75	0.73	3.89	0.73	4.20	0.72	4.51	0.72	4.83
Cell 33	UCO (U-235 14.03 wt%)	-7.75	0.72	3.91	0.72	4.22	0.71	4.53	0.71	4.84
Cell 34		-8.25	0.71	3.85	0.70	4.16	0.70	4.46	0.69	4.76
Cell 35		-8.75	0.71	3.86	0.70	4.17	0.70	4.47	0.69	4.77
Cell 36		-9.25	0.70	3.82	0.69	4.12	0.69	4.42	0.69	4.72
Cell 37		-9.50	0.69	3.73	0.68	4.02	0.68	4.32	0.67	4.61
Cell 38		-9.75	0.70	3.81	0.70	4.11	0.69	4.41	0.69	4.71
Cell 39		-10.25	0.67	3.65	0.66	3.94	0.66	4.22	0.66	4.51
Cell 40		-10.75	0.67	3.63	0.66	3.92	0.66	4.21	0.66	4.49
Cell 41	French UO_2 (U-235 19.75 wt%)	-13.75	*	*	*	*	*	*	*	*
Cell 42		-14.25	*	*	*	*	*	*	*	*
Cell 43		-14.75	*	*	*	*	*	*	*	*
Cell 44		-15.25	*	*	*	*	*	*	*	*
Cell 45		-15.50	*	*	*	*	*	*	*	*
Cell 46		-15.75	*	*	*	*	*	*	*	*
Cell 47		-16.25	*	*	*	*	*	*	*	*
Cell 48		-16.75	*	*	*	*	*	*	*	*

Note: 1) All table values have a relative uncertainty band of $1\sigma = 2.5\%$.
2) MCNP-calculated results were scaled to a west lobe source power of 22.33 MW.
3) Data represented by a * can be requested from the project.

Table 18: AGR-2 Fuel Compact Projected Fast Flux and Fast Fluence vs. EFPD (600-750 days, irradiated in ATR B-12 position). (continued)

Stack ID or Cell ID Stack 1	Fuel Type	Cell mid-point distance to core center (in)	600 EFPD		650 EFPD		700 EFPD		750 EFPD	
			Fast Flux $\times 10^{14}$ (n/cm^{2}sec)	Fast Fluence $\times 10^{25}$ (n/m^2)	Fast Flux $\times 10^{14}$ (n/cm^{2}sec)	Fast Fluence $\times 10^{25}$ (n/m^2)	Fast Flux $\times 10^{14}$ (n/cm^{2}sec)	Fast Fluence $\times 10^{25}$ (n/m^2)	Fast Flux $\times 10^{14}$ (n/cm^{2}sec)	Fast Fluence $\times 10^{25}$ (n/m^2)
Cell 49	UCO (U-235 14.03 wt%)	16.25	0.44	2.31	0.43	2.50	0.43	2.69	0.43	2.87
Cell 50		15.75	0.47	2.49	0.46	2.69	0.46	2.89	0.45	3.09
Cell 51		15.25	0.49	2.60	0.48	2.81	0.48	3.02	0.48	3.23
Cell 52		14.75	0.51	2.72	0.50	2.94	0.50	3.15	0.50	3.37
Cell 53		14.50	0.51	2.74	0.50	2.96	0.50	3.17	0.49	3.39
Cell 54		14.25	0.52	2.84	0.52	3.07	0.52	3.30	0.52	3.52
Cell 55		13.75	0.55	2.97	0.54	3.20	0.54	3.44	0.54	3.67
Cell 56		13.25	0.56	3.03	0.56	3.27	0.55	3.51	0.55	3.75
Cell 57	UCO (U-235 14.03 wt%)	10.25	0.62	3.34	0.62	3.61	0.62	3.88	0.61	4.14
Cell 58		9.75	0.64	3.47	0.64	3.75	0.63	4.02	0.63	4.29
Cell 59		9.25	0.66	3.53	0.65	3.81	0.64	4.09	0.64	4.37
Cell 60		8.75	0.67	3.61	0.66	3.90	0.66	4.19	0.65	4.47
Cell 61		8.50	0.67	3.64	0.66	3.93	0.66	4.22	0.65	4.50
Cell 62		8.25	0.68	3.70	0.68	3.99	0.67	4.29	0.67	4.58
Cell 63		7.75	0.68	3.68	0.67	3.97	0.67	4.26	0.67	4.55
Cell 64		7.25	0.69	3.72	0.69	4.02	0.68	4.32	0.68	4.61
Cell 65	SA UO_2 (U-235 9.6 wt%)	4.25	*	*	*	*	*	*	*	*
Cell 66		3.75	*	*	*	*	*	*	*	*
Cell 67		3.25	*	*	*	*	*	*	*	*
Cell 68		2.75	*	*	*	*	*	*	*	*
Cell 69		2.50	*	*	*	*	*	*	*	*
Cell 70		2.25	*	*	*	*	*	*	*	*
Cell 71		1.75	*	*	*	*	*	*	*	*
Cell 72		1.25	*	*	*	*	*	*	*	*
Cell 73	B&W UO_2 (U-235 9.6 wt%)	-1.75	0.72	3.85	0.72	4.16	0.72	4.47	0.72	4.78
Cell 74		-2.25	0.74	3.99	0.74	4.31	0.74	4.63	0.74	4.95
Cell 75		-2.75	0.74	3.95	0.73	4.27	0.73	4.59	0.73	4.91
Cell 76		-3.25	0.73	3.90	0.73	4.21	0.73	4.53	0.73	4.84
Cell 77		-3.50	0.72	3.87	0.72	4.18	0.72	4.49	0.72	4.81
Cell 78		-3.75	0.71	3.81	0.71	4.11	0.70	4.42	0.70	4.72
Cell 79		-4.25	0.71	3.81	0.71	4.12	0.71	4.42	0.71	4.73
Cell 80		-4.75	0.72	3.81	0.71	4.12	0.71	4.43	0.71	4.73
Cell 81	UCO (U-235 14.03 wt%)	-7.75	0.70	3.83	0.70	4.13	0.69	4.43	0.69	4.73
Cell 82		-8.25	0.71	3.89	0.71	4.20	0.70	4.51	0.70	4.81
Cell 83		-8.75	0.73	3.96	0.72	4.28	0.71	4.59	0.71	4.90
Cell 84		-9.25	0.70	3.82	0.69	4.12	0.69	4.42	0.68	4.72
Cell 85		-9.50	0.69	3.76	0.68	4.05	0.68	4.35	0.67	4.64
Cell 86		-9.75	0.70	3.77	0.69	4.07	0.69	4.37	0.68	4.66
Cell 87		-10.25	0.67	3.65	0.67	3.94	0.66	4.23	0.66	4.52
Cell 88		-10.75	0.64	3.47	0.64	3.74	0.63	4.02	0.63	4.29
Cell 89	French UO_2 (U-235 19.75 wt%)	-13.75	*	*	*	*	*	*	*	*
Cell 90		-14.25	*	*	*	*	*	*	*	*
Cell 91		-14.75	*	*	*	*	*	*	*	*
Cell 92		-15.25	*	*	*	*	*	*	*	*
Cell 93		-15.50	*	*	*	*	*	*	*	*
Cell 94		-15.75	*	*	*	*	*	*	*	*
Cell 95		-16.25	*	*	*	*	*	*	*	*
Cell 96		-16.75	*	*	*	*	*	*	*	*

Note: 1) All table values have a relative uncertainty band of $1\sigma = 2.5\%$.
2) MCNP-calculated results were scaled to a west lobe source power of 22.33 MW.
3) Data represented by a * can be requested from the project.

Table 18: AGR-2 Fuel Compact Projected Fast Flux and Fast Fluence vs. EFPD (600-750 days, irradiated in ATR B-12 position). (continued)

Stack ID or Cell ID Stack 3	Fuel Type	Cell mid-point distance to core center (in)	600 EFPD		650 EFPD		700 EFPD		750 EFPD	
			Fast Flux $\times 10^{14}$ (n/cm^{2}sec)	Fast Fluence $\times 10^{25}$ (n/m^2)	Fast Flux $\times 10^{14}$ (n/cm^{2}sec)	Fast Fluence $\times 10^{25}$ (n/m^2)	Fast Flux $\times 10^{14}$ (n/cm^{2}sec)	Fast Fluence $\times 10^{25}$ (n/m^2)	Fast Flux $\times 10^{14}$ (n/cm^{2}sec)	Fast Fluence $\times 10^{25}$ (n/m^2)
Cell 97	UCO (U-235 14.03 wt%)	16.25	0.39	2.06	0.39	2.23	0.39	2.40	0.38	2.57
Cell 98		15.75	0.41	2.16	0.41	2.34	0.40	2.52	0.40	2.69
Cell 99		15.25	0.43	2.26	0.43	2.45	0.42	2.63	0.42	2.81
Cell 100		14.75	0.44	2.32	0.43	2.51	0.43	2.69	0.43	2.88
Cell 101		14.50	0.47	2.47	0.46	2.67	0.46	2.87	0.46	3.06
Cell 102		14.25	0.47	2.50	0.47	2.70	0.46	2.91	0.46	3.11
Cell 103		13.75	0.50	2.65	0.49	2.86	0.49	3.07	0.49	3.28
Cell 104		13.25	0.49	2.64	0.49	2.85	0.49	3.06	0.48	3.27
Cell 105	UCO (U-235 14.03 wt%)	10.25	0.55	2.92	0.54	3.16	0.54	3.39	0.54	3.63
Cell 106		9.75	0.58	3.09	0.58	3.35	0.57	3.59	0.57	3.84
Cell 107		9.25	0.58	3.06	0.57	3.31	0.56	3.56	0.56	3.80
Cell 108		8.75	0.61	3.24	0.60	3.50	0.59	3.76	0.59	4.02
Cell 109		8.50	0.60	3.20	0.59	3.46	0.58	3.71	0.58	3.96
Cell 110		8.25	0.62	3.33	0.61	3.60	0.61	3.87	0.60	4.13
Cell 111		7.75	0.61	3.31	0.61	3.57	0.60	3.83	0.60	4.09
Cell 112		7.25	0.61	3.31	0.61	3.58	0.61	3.84	0.60	4.10
Cell 113	SA UO_2 (U-235 9.6 wt%)	4.25	*	*	*	*	*	*	*	*
Cell 114		3.75	*	*	*	*	*	*	*	*
Cell 115		3.25	*	*	*	*	*	*	*	*
Cell 116		2.75	*	*	*	*	*	*	*	*
Cell 117		2.50	*	*	*	*	*	*	*	*
Cell 118		2.25	*	*	*	*	*	*	*	*
Cell 119		1.75	*	*	*	*	*	*	*	*
Cell 120		1.25	*	*	*	*	*	*	*	*
Cell 121	B&W UO_2 (U-235 9.6 wt%)	-1.75	0.65	3.45	0.65	3.73	0.64	4.01	0.64	4.29
Cell 122		-2.25	0.66	3.56	0.66	3.85	0.66	4.14	0.66	4.42
Cell 123		-2.75	0.66	3.53	0.66	3.81	0.66	4.10	0.65	4.38
Cell 124		-3.25	0.65	3.47	0.65	3.75	0.65	4.03	0.65	4.31
Cell 125		-3.50	0.66	3.49	0.65	3.77	0.65	4.05	0.65	4.33
Cell 126		-3.75	0.64	3.44	0.64	3.71	0.64	3.99	0.64	4.27
Cell 127		-4.25	0.64	3.41	0.64	3.69	0.64	3.97	0.63	4.24
Cell 128		-4.75	0.64	3.40	0.64	3.67	0.63	3.95	0.63	4.22
Cell 129	UCO (U-235 14.03 wt%)	-7.75	0.62	3.36	0.61	3.63	0.61	3.89	0.61	4.16
Cell 130		-8.25	0.63	3.45	0.63	3.72	0.62	3.99	0.62	4.26
Cell 131		-8.75	0.64	3.44	0.63	3.71	0.62	3.99	0.62	4.26
Cell 132		-9.25	0.63	3.39	0.62	3.66	0.61	3.93	0.61	4.19
Cell 133		-9.50	0.64	3.42	0.63	3.69	0.62	3.97	0.62	4.23
Cell 134		-9.75	0.62	3.33	0.61	3.60	0.61	3.87	0.60	4.13
Cell 135		-10.25	0.60	3.23	0.59	3.48	0.59	3.74	0.58	3.99
Cell 136		-10.75	0.59	3.16	0.58	3.42	0.58	3.67	0.58	3.92
Cell 137	French UO_2 (U-235 19.75 wt%)	-13.75	*	*	*	*	*	*	*	*
Cell 138		-14.25	*	*	*	*	*	*	*	*
Cell 139		-14.75	*	*	*	*	*	*	*	*
Cell 140		-15.25	*	*	*	*	*	*	*	*
Cell 141		-15.50	*	*	*	*	*	*	*	*
Cell 142		-15.75	*	*	*	*	*	*	*	*
Cell 143		-16.25	*	*	*	*	*	*	*	*
Cell 144		-16.75	*	*	*	*	*	*	*	*

Note: 1) All table values have a relative uncertainty band of $1\sigma = 2.5\%$.
2) MCNP-calculated results were scaled to a west lobe source power of 22.33 MW.
3) Data represented by a * can be requested from the project.

9.0 References

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[12] J. T. Maki, “AGR-1 Irradiation Test Specification,” EDF-4731, Rev. 1, July 30, 2004.

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Attachment A

EAPT Rev. 1

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 12/7/2009 Rev 0

Office Phone ( )6-4489 Cell ( ) E-mail Blaine.Grover@inl.gov MS 3870

Project Information

Project Name AGR-2 Fuel Irradiation Project Number 23747

Project Manager Blaine Grover Office Location EROB

Office Phone ( )Same Cell ( ) E-mail Same MS 0

Experiment Information

Test Name AGR-2 Fuel Irradiatin

Test Information See References Below

Test Location B (Large) Insertion Date 4/1/2009 Discharge Date 10/1/2011 Duration 600 days

Specific ATR Position(s) B-12 ATR Cycle(s): ~ 12 to 13

Is this a fueled test? Yes ☒ No☐ Is an Experiment Safety Analysis (ESA) author needed? Yes ☐ No☒

If yes, complete fueled tests sections. *If yes, request ESA author from ATR Nuclear Safety (Dave McDaniel 533-4281).*

Backup Test Information Same as AGR-1

ESA Author Richard Ambrosek

Experiment References Used to Support Calculation & Analysis

Test Plan SPC-1064

Test Design

TFR TFR-559

Drawings 600902 thru 600904, 600906, 600910 thru 600915, 600930

ESA Will be developed based upon approved analyses ECARs

ECARs Physics analysis - ECAR-363

Analyses

Emails

Letters

As-Built Data

Quality Level 3 Quality Level Database Number RTC-000107

CUI Information

Other Contact Nate Oldham for electronic copies of drawings, TFR & Test Plan are on EDMS

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

Attachment A (continued)

EAPT Rev. 1

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.*

Analysis Deliverable ECAR Other _____

Draft Due Date _____ Final/Approved Due Date_____ Charge Number 100599426

Analysis Title AGR-2 Increased Operating Temperature Physics Analysis

Purpose of Analysis ECAR development and Technical Check of AGR-2 physics analysis performed by Gray Chang.

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

Performer/Author _____

Technical Checker _____

Independent Peer Reviewer _____

Performer's Manager _____

Requester _____

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 Structural materials - see fuel below	☐	☒	☐	☐
Gamma Heating Rates W/g Structural materials - see fuel below	☐	☒	☐	☐
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 _____	☐	☐	☐	☐
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 FIMA	☐	☒	☐	☐
Fission Heating W/gm Fission Density W/cc	☐	☒	☐	☐
Flux _____ (Fast/Thermal) _____	☐	☐	☐	☐
Fluence n/cmE2 (Fast/Thermal) ratio	☐	☒	☐	☐
Fission Products _____	☐	☐	☐	☐
Local- or Point-to-Average Ratios _____	☐	☐	☐	☐
Other _____	☐	☐	☐	☐

Attachment B

John T Maki/MKI/CC01/INEEL/US
05/19/09 07:45 AM

To: James R Parry/PARRJR/CC01/INEEL/US@INEL
cc:
bcc:
Subject: AGR-2 input data

Jim, attached is the AGR-2 fuel parameters used by Gray and Misti:

AGR-2 prelim compact data 031409.xls

Attachment B (continued)

AGR-2 Scoping Data 3/14/09	UCO baseline	UCO variant	SA UO2	B&W UO2	French UO2
U-235 enrichment (wt %)	14.03	14.03	*	9.6	*
C/U atomic ratio	0.39	0.39	*	0	*
O/U atomic ratio	1.43	1.43	*	2	*
Kernel diameter (um)	426.6	426.6	*	507.7	*
Kernel density (Mg/m^3)	11.00	11.00	*	10.86	*
Buffer thickness (um)	90.0	95.6	*	100.0	*
IPyC thickness (um)	41.8	39.9	*	40.0	*
SiC thickness (um)	35.8	35.9	*	35.0	*
OPyC thickness (um)	44.4	42.1	*	40.0	*
Buffer density	1.04	1.04	*	1.05	*
IPyC density	1.900	1.900	*	1.900	*
SiC density (Mg/m^3)	3.191	3.198	*	3.190	*
OPyC density	1.879	1.903	*	1.900	*
Particle diameter (um)	850.6	853.600	*	937.7	*
Mol mass U	237.63	237.63	*	237.76	*
Kernel mass (g)	4.472E-04	4.472E-04	*	7.441E-04	*
Mass U/particle (g/particle)	4.007E-04	4.007E-04	*	6.559E-04	*
Mass O/particle (g/particle)	3.858E-05	3.858E-05	*	8.827E-05	*
Volume SiC/particle (m^3)	5.933E-11	6.073E-11	*	7.447E-11	*
Mass Si/particle (g/particle)	1.326E-04	1.360E-04	*	1.664E-04	*
Mass SiC/particle (g/particle)	1.893E-04	1.942E-04	*	2.375E-04	*
Volume Buffer/particle (m^3)	7.622E-11	8.281E-11	*	1.171E-10	*
Mass Buffer/particle (g/particle)	7.927E-05	8.613E-05	*	1.229E-04	*
Volume IPyC/particle (m^3)	5.529E-11	5.429E-11	*	7.032E-11	*
Mass IPyC/particle (g/particle)	1.050E-04	1.031E-04	*	1.336E-04	*
Volume OPyC/particle (m^3)	9.075E-11	8.718E-11	*	1.013E-10	*
Mass OPyC/particle (g/particle)	1.705E-04	1.659E-04	*	1.925E-04	*
Particle mass (g)	9.913E-04	9.965E-04	*	1.431E-03	*
Compact length (mm)	25.21	25.21	*	25.21	*
Compact diameter (mm)	12.34	12.34	*	12.34	*
Matrix density (Mg/m^3)	1.5	1.5	*	1.5	*
Particle packing fraction (%)	33.7	33.7	*	21.8	*
U loading (g U/compact)	1.265	1.265	*	1	*
Number particles/compact	3157.2	3157.2	*	1524.7	*
			*		*
Volume matrix/compact (m^3)	1.998E-06	1.998E-06	*	2.357E-06	*
Mass compact matrix (g)	2.997	2.997	*	3.535	*
Compact mass (g)	6.126	6.126	*	5.717	*
Effective compact density (Mg/m^3)	2.032	2.032	*	1.896	*
			*		*
Compact weight % U	20.649	20.649	*	17.493	*
Compact weight % O	1.988	1.988	*	2.354	*
Compact weight % Si	6.834	7.011	*	4.438	*
Compact weight % C	70.529	70.352	*	75.715	*
Packing fraction check	33.74	33.74	*	21.83	*

Note: Contact project for data represented by *

Capsule	Fuel	wt% B4C in holder
6	UCO variant	4.25
5	UCO variant	5.70
4	SA UO2	4.25
3	B&W UO2	4.25
2	UCO baseline	5.70
1	French UO2	4.25