Attachment 13

Nuclear Fuel Design Report
(Non-Proprietary Version)

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AREVA

Nuclear Fuel Design Report
Quad Cities Unit 2 Cycle 24
Representative Cycle
ATRIUM 10XM Fuel

ANP-3294NP
Revision 1

August 2015

AREVA Inc.

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Nature of Changes

Item	Page	Description and Justification
1.	Page 2-2	Added proprietary bracket.

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Nomenclature

BOL	beginning of life
BWR	boiling water reactor
EVC	plenum region in a fuel pin modeled as an evacuated section
GE	General Electric
GWd/MTU	gigawatt days per metric ton of initial uranium
kg/MTU	kilograms per metric ton of initial uranium
LAR	license amendment request
LHGR	linear heat generation rate
LPF	local peaking factor
MCPR	minimum critical power ratio
MWd/MTU	megawatt days per metric ton of initial uranium
NRC	Nuclear Regulatory Commission, U. S.
PLFR	part-length fuel rod

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1.0 Introduction

This report provides results of the neutronic design analyses performed by AREVA Inc. (AREVA) for the Quad Cities Unit 2 fabrication batch QCI2-24 ATRIUM™* 10XM boiling water reactor (BWR) fuel assemblies for Cycle 24. The fuel designs presented within will be used for the reference cycle to support the License Amendment Request for the inclusion of AREVA's methodology in the Technical Specifications for both Dresden and Quad Cities to support the introduction of the ATRIUM 10XM fuel design. The mechanical design parameters for the QCI2-24 fuel are summarized in Table 2.1.

Applicable neutronic design criteria are provided in the approved topical report ANF-89-98(P)(A) Revision 1 and Supplement 1 (Reference 2). Neutronic design analysis methodology used to determine conformance to design criteria has been reviewed and approved by the NRC in the topical report EMF-2158(P)(A) (Reference 3).

The fuel design includes AREVA advanced fuel channels. Mechanical design criteria applicable to the design of these channels have been reviewed and approved by the NRC in Reference 1.

The neutronic design for the fabrication batch includes axially-varying enrichment and gadolinia designs with natural UO_2 blankets at the top and bottom of the assembly. The fabrication batch consists of 96 [ ], 64 [ ] and 88 [ ] assemblies. Pertinent fuel and reactor core design information associated with this fabrication batch is given in Section 2.0 and in Appendices A through D.

* ATRIUM is a trademark of AREVA Inc.

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2.0 Neutronic Design

The results of the Quad Cities Unit 2 fabrication batch QCI2-24 ATRIUM 10XM neutronic design analyses are presented in this section. The fuel was designed to meet applicable design criteria, as well as reactivity and control requirements. Reactor core loading patterns and the number of assemblies to be loaded will depend upon final cycle energy requirements as specified by the utility. Applicable neutronic design criteria outlined in Reference 2 are summarized below:

- **Power Distribution.** The local power distribution in the fuel assembly combined with the core power distribution shall result in Linear Heat Generation Rate (LHGR) and Minimum Critical Power Ratio (MCPR) values that are within the limits established for each fuel design.
- **Kinetics Parameters.** The moderator void reactivity coefficient due to boiling in the active channels and the Doppler fuel temperature reactivity coefficient shall be negative. The negative void and Doppler reactivity coefficients ensure a negative power coefficient during reactor operation. Additional calculations were performed to show that the assembly average Doppler and void reactivity coefficients remain negative for the life of the assembly. These results demonstrate that the Reference 2 kinetics criteria are met on a bundle average basis.
- **Control Blade Reactivity.** The design of the fuel assembly and the reactor core loading shall be such that the technical specification shutdown margin requirement is met for all reactor conditions.

2.1 *Neutronic Design Description*

The neutronic design parameters for fabrication batch QCI2-24 are presented in Table 2.1. The key ATRIUM 10XM reload assembly nuclear design characteristics are summarized below:

- The fuel assembly contains [ ]. The water channel also serves the function of the spacer capture rod.
- Each fuel assembly has top and bottom natural uranium blankets.
- The plenum/spring region above the PLFRs will be explicitly modeled.
- The enrichments are designed to yield a local power distribution which results in a balanced design relative to MCPR, LHGR, and other reactor operating requirements, e.g., power peaking.
- Gadolinia (Gd_2O_3 blended with UO_2) rods are designed to control assembly reactivity in order to meet reactivity control requirements in the reactor, e.g. cold shutdown margin.

- The reload batch consists of 3 assembly designs which vary axially in enrichment and/or gadolinia. The axial distributions of the lattices in the assemblies are shown in Figures 2.1, 2.2, and 2.3. The fuel rod distribution and axial descriptions are presented in Figures 2.4 through 2.7. The enrichment and gadolinia distribution maps for each of the reload assembly lattices are displayed in Appendix D.
- The fuel assembly incorporates the AREVA advanced fuel channel which improves uranium utilization. For D-lattice plants, the fuel assembly is offset [ ] toward the control blade.

2.2 *Lattice Control Blade Worths and Kinetics Parameters*

Beginning of life (BOL) lattice reactivities (k_∞) have been calculated for moderator and fuel conditions ranging from cold to hot operating conditions. From these reactivities, BOL control blade worths and kinetics parameters have been determined based on the following control designs:

- GE DuraLife D100(OEM)/D120, D160, D190 and D230
- GE Marathon and Marathon Ultra HD
- Westinghouse CR82M-1/CR82B
- Westinghouse CR99

The DuraLife D-100 (OEM) and DuraLife D-120 control blades were found to have equivalent neutronic performance and due to the prevalence of the D-100 control blades, it will be used to model both blade types. The same conclusion was reached for the CR82B blade which will be modeled as the more prevalent CR82M-1 blade design. Certain zones of the Marathon Ultra HD were determined to have equivalent neutronic performance as the standard Marathon control blade and have been modeled as such. The other axial zones of the Marathon Ultra HD blade are explicitly modeled and are presented in this report as HD2 and HD3.

Due to the 3rd party proprietary nature of the control blade designs, control blade dimensional information has been withheld from this report. Kinetics parameters are calculated for fuel temperature (Doppler), moderator void, and moderator temperature. The Doppler reactivity was calculated over a fuel temperature range from hot standby to hot operating. The moderator void reactivity was evaluated between the 0% and 40% voided hot operating cases, and the moderator temperature reactivity was calculated from the cold to hot standby condition. The calculations neglect the spacer material and assume zero void in the coolant outside the fuel

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assembly channel as well as inside the internal water channel. The results of these calculations are presented in Tables 2.2 through 2.197.

2.3 *Enriched Lattice Uncontrolled Reactivities and Isotopic Data*

The enriched lattice exposure-dependent uncontrolled reactivities calculated at three void fractions are presented graphically in Appendix A, and in tabular format in Appendix B. The enriched lattice exposure-dependent isotopic data calculated at three void fractions are presented in Appendix C.

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Table 2.1 Neutronic Design Parameters

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Table 2.1 Neutronic Design Parameters *(Continued)*

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Table 2.1 Neutronic Design Parameters *(Continued)*

Core Data*	
Number of fuel assemblies in the core	724
Rated thermal power level, MWt	2957
Rated core flow, Mlbm/hr	98.00
Inlet subcooling, Btu/lbm	24.21
Dome pressure, psia	1015.0
Boron concentration, PPM	918.0 (equivalent natural ^{10}B)
Intermediate temperature, °F	200.00
Warm temperature, °F	358.30

* Some values are representative of rated conditions and may vary depending on the core statepoint.

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Table 2.2 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE OEM and D120

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.92163	1.08439	-0.1501
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.90643	1.07403	-0.1560
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.85268	1.04096	-0.1809
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void, No xenon	0.84899	1.03648	-0.1809
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void	0.84906	1.03648	-0.1808
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 40% Void	0.81356	1.02079	-0.2030
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 80% Void	0.77089	1.00157	-0.2303

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Table 2.3 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE D160 and D190 Lower Blade

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.91987	1.08439	-0.1517
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.90473	1.07403	-0.1576
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.85087	1.04096	-0.1826
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void, No xenon	0.84720	1.03648	-0.1826
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void	0.84726	1.03648	-0.1826
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 40% Void	0.81117	1.02079	-0.2054
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 80% Void	0.76757	1.00157	-0.2336

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Table 2.4 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE D190 Blade Tip

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	Blade Worth (Δk/k)
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.91662	1.08439	-0.1547
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.90125	1.07403	-0.1609
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.84574	1.04096	-0.1875
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void, No xenon	0.84211	1.03648	-0.1875
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void	0.84211	1.03648	-0.1875
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 40% Void	0.80456	1.02079	-0.2118
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 80% Void	0.75901	1.00157	-0.2422

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Table 2.5 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE D230 Lower Blade

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.90909	1.08439	-0.1617
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.89357	1.07403	-0.1680
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.83686	1.04096	-0.1961
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void, No xenon	0.83327	1.03648	-0.1961
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void	0.83333	1.03648	-0.1960
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 40% Void	0.79432	1.02079	-0.2219
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 80% Void	0.74689	1.00157	-0.2543

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Table 2.6 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE D230 Blade Tip

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	Blade Worth (Δk/k)
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.91254	1.08439	-0.1585
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.89692	1.07403	-0.1649
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.84024	1.04096	-0.1928
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void, No xenon	0.83663	1.03648	-0.1928
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void	0.83663	1.03648	-0.1928
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 40% Void	0.79840	1.02079	-0.2179
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 80% Void	0.75221	1.00157	-0.2490

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Table 2.7 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE Marathon Blade Bottom Segment

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.92381	1.08439	-0.1481
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.90880	1.07403	-0.1538
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.85477	1.04096	-0.1789
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void, No xenon	0.85109	1.03648	-0.1789
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void	0.85114	1.03648	-0.1788
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 40% Void	0.81524	1.02079	-0.2014
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 80% Void	0.77190	1.00157	-0.2293

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Table 2.8 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE Marathon Blade Main Segment

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.91638	1.08439	-0.1549
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.90115	1.07403	-0.1610
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.84557	1.04096	-0.1877
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void, No xenon	0.84194	1.03648	-0.1877
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void	0.84200	1.03648	-0.1876
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 40% Void	0.80406	1.02079	-0.2123
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 80% Void	0.75803	1.00157	-0.2432

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Table 2.9 Lattice [ ] Control Blade Worths at BOL for Control Blade Type CR82M1 and CR82B Blade Main

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.91744	1.08439	-0.1540
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.90242	1.07403	-0.1598
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.84768	1.04096	-0.1857
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void, No xenon	0.84404	1.03648	-0.1857
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void	0.84411	1.03648	-0.1856
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 40% Void	0.80712	1.02079	-0.2093
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 80% Void	0.76192	1.00157	-0.2393

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Table 2.10 Lattice [ ] Control Blade Worths at BOL for Control Blade Type CR82M1 and CR82B Blade Tip

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	Blade Worth (Δk/k)
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.93855	1.08439	-0.1345
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.92425	1.07403	-0.1395
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.87450	1.04096	-0.1599
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void, No xenon	0.87069	1.03648	-0.1600
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void	0.87069	1.03648	-0.1600
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 40% Void	0.83893	1.02079	-0.1782
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 80% Void	0.80063	1.00157	-0.2006

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Table 2.11 Lattice [ ] Control Blade Worths at BOL for Control Blade Type CR99 Blade Tip

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.91546	1.08439	-0.1558
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.90020	1.07403	-0.1618
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.84454	1.04096	-0.1887
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void, No xenon	0.84090	1.03648	-0.1887
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void	0.84098	1.03648	-0.1886
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 40% Void	0.80292	1.02079	-0.2134
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 80% Void	0.75614	1.00157	-0.2450

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Table 2.12 Lattice [ ] Control Blade Worths at BOL for Control Blade Type CR99 Blade Main

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.91390	1.08439	-0.1572
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.89861	1.07403	-0.1633
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.84256	1.04096	-0.1906
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void, No xenon	0.83894	1.03648	-0.1906
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void	0.83902	1.03648	-0.1905
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 40% Void	0.80050	1.02079	-0.2158
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 80% Void	0.75308	1.00157	-0.2481

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Table 2.13 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE Marathon Ultra HD2

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.93694	1.08439	-0.1360
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.92232	1.07403	-0.1412
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.87056	1.04096	-0.1637
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void, No xenon	0.86679	1.03648	-0.1637
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void	0.86684	1.03648	-0.1637
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 40% Void	0.83298	1.02079	-0.1840
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 80% Void	0.79177	1.00157	-0.2095

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Table 2.14 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE Marathon Ultra HD3

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	Blade Worth (Δk/k)
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.95946	1.08439	-0.1152
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.94554	1.07403	-0.1196
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.89776	1.04096	-0.1376
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void, No xenon	0.89382	1.03648	-0.1376
Hot Operating$_0$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void	0.89387	1.03648	-0.1376
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 40% Void	0.86394	1.02079	-0.1537
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 80% Void	0.82730	1.00157	-0.1740

Table 2.15 Lattice [ ] Kinetics Parameters at BOL

Kinetics Parameter = $\frac{k_\alpha - k_\beta}{k_\beta}$	k_α	k_β	Kinetics Parameter (Δk/k)
Doppler = $\frac{k_{HotOperatingNoXe} - k_{HotStandby}}{k_{HotStandby}}$	1.03648	1.04096	-0.0043
Moderator$_{Void}$ = $\frac{k_{HotOperating40} - k_{HotOperating0}}{k_{HotOperating0}}$	1.02079	1.03648	-0.0151
Moderator$_{Temperature}$ = $\frac{k_{HotStandby} - k_{Cold}}{k_{Cold}}$	1.04096	1.08439	-0.0401

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Table 2.16 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE OEM and D120

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	Blade Worth (Δk/k)
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.91223	1.07416	-0.1507
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.89663	1.06324	-0.1567
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.84066	1.02690	-0.1814
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void, No xenon	0.83698	1.02242	-0.1814
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void	0.83704	1.02242	-0.1813
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 40% Void	0.80062	1.00489	-0.2033
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 80% Void	0.75747	0.98363	-0.2299

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Table 2.17 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE D160 and D190 Lower Blade

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.91050	1.07416	-0.1524
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.89495	1.06324	-0.1583
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.83889	1.02690	-0.1831
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void, No xenon	0.83523	1.02242	-0.1831
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void	0.83528	1.02242	-0.1830
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 40% Void	0.79829	1.00489	-0.2056
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 80% Void	0.75424	0.98363	-0.2332

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Table 2.18 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE D190 Blade Tip

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	Blade Worth (Δk/k)
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.90725	1.07416	-0.1554
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.89150	1.06324	-0.1615
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.83384	1.02690	-0.1880
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void, No xenon	0.83021	1.02242	-0.1880
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void	0.83021	1.02242	-0.1880
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 40% Void	0.79180	1.00489	-0.2120
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 80% Void	0.74592	0.98363	-0.2417

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Table 2.19 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE D230 Lower Blade

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	Blade Worth (Δk/k)
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.89983	1.07416	-0.1623
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.88392	1.06324	-0.1686
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.82510	1.02690	-0.1965
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void, No xenon	0.82152	1.02242	-0.1965
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void	0.82157	1.02242	-0.1965
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 40% Void	0.78177	1.00489	-0.2220
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 80% Void	0.73408	0.98363	-0.2537

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Table 2.20 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE D230 Blade Tip

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.90320	1.07416	-0.1592
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.88721	1.06324	-0.1656
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.82842	1.02690	-0.1933
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void, No xenon	0.82481	1.02242	-0.1933
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void	0.82481	1.02242	-0.1933
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 40% Void	0.78577	1.00489	-0.2180
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 80% Void	0.73931	0.98363	-0.2484

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Table 2.21 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE Marathon Blade Bottom Segment

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.91443	1.07416	-0.1487
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.89902	1.06324	-0.1545
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.84279	1.02690	-0.1793
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void, No xenon	0.83912	1.02242	-0.1793
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void	0.83917	1.02242	-0.1792
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 40% Void	0.80236	1.00489	-0.2015
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 80% Void	0.75859	0.98363	-0.2288

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Table 2.22 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE Marathon Blade Main Segment

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.90706	1.07416	-0.1556
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.89143	1.06324	-0.1616
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.83369	1.02690	-0.1882
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void, No xenon	0.83007	1.02242	-0.1881
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void	0.83012	1.02242	-0.1881
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 40% Void	0.79135	1.00489	-0.2125
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 80% Void	0.74500	0.98363	-0.2426

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Table 2.23 Lattice [ ] Control Blade Worths at BOL for Control Blade Type CR82M1 and CR82B Blade Main

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.90817	1.07416	-0.1545
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.89276	1.06324	-0.1603
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.83589	1.02690	-0.1860
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void, No xenon	0.83225	1.02242	-0.1860
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void	0.83232	1.02242	-0.1859
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 40% Void	0.79449	1.00489	-0.2094
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 80% Void	0.74892	0.98363	-0.2386

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Table 2.24 Lattice [ ] Control Blade Worths at BOL for Control Blade Type CR82M1 and CR82B Blade Tip

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.92901	1.07416	-0.1351
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.91429	1.06324	-0.1401
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.86223	1.02690	-0.1604
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void, No xenon	0.85843	1.02242	-0.1604
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void	0.85843	1.02242	-0.1604
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 40% Void	0.82562	1.00489	-0.1784
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 80% Void	0.78665	0.98363	-0.2003

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Table 2.25 Lattice [ ] Control Blade Worths at BOL for Control Blade Type CR99 Blade Tip

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.90614	1.07416	-0.1564
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.89050	1.06324	-0.1625
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.83270	1.02690	-0.1891
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void, No xenon	0.82907	1.02242	-0.1891
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void	0.82914	1.02242	-0.1890
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 40% Void	0.79024	1.00489	-0.2136
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 80% Void	0.74313	0.98363	-0.2445

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Table 2.26 Lattice [ ] Control Blade Worths at BOL for Control Blade Type CR99 Blade Main

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.90461	1.07416	-0.1578
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.88893	1.06324	-0.1639
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.83075	1.02690	-0.1910
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void, No xenon	0.82714	1.02242	-0.1910
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void	0.82722	1.02242	-0.1909
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 40% Void	0.78787	1.00489	-0.2160
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 80% Void	0.74014	0.98363	-0.2475

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Table 2.27 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE Marathon Ultra HD2

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.92739	1.07416	-0.1366
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.91234	1.06324	-0.1419
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.85826	1.02690	-0.1642
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void, No xenon	0.85449	1.02242	-0.1643
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void	0.85454	1.02242	-0.1642
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 40% Void	0.81965	1.00489	-0.1843
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 80% Void	0.77781	0.98363	-0.2092

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Table 2.28 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE Marathon Ultra HD3

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	Blade Worth (Δk/k)
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.94964	1.07416	-0.1159
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.93528	1.06324	-0.1203
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.88500	1.02690	-0.1382
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void, No xenon	0.88106	1.02242	-0.1383
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void	0.88111	1.02242	-0.1382
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 40% Void	0.84995	1.00489	-0.1542
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 80% Void	0.81238	0.98363	-0.1741

Table 2.29 Lattice [ ] Kinetics Parameters at BOL

Kinetics Parameter = $\frac{k_\alpha - k_\beta}{k_\beta}$	k_α	k_β	Kinetics Parameter (Δk/k)
Doppler = $\frac{k_{HotOperatingNoXe} - k_{HotStandby}}{k_{HotStandby}}$	1.02242	1.02690	-0.0044
Moderator$_{Void}$ = $\frac{k_{HotOperating40} - k_{HotOperating0}}{k_{HotOperating0}}$	1.00489	1.02242	-0.0171
Moderator$_{Temperature}$ = $\frac{k_{HotStandby} - k_{Cold}}{k_{Cold}}$	1.02690	1.07416	-0.0440

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Table 2.30 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE OEM and D120

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	Blade Worth (Δk/k)
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.83558	1.00046	-0.1648
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.82081	0.99033	-0.1712
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.77149	0.95996	-0.1963
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.76793	0.95554	-0.1963
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.76799	0.95554	-0.1963
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.73622	0.94208	-0.2185
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.69768	0.92519	-0.2459

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Table 2.31 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE D160 and D190 Lower Blade

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.83402	1.00046	-0.1664
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.81932	0.99033	-0.1727
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.76994	0.95996	-0.1979
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.76639	0.95554	-0.1979
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.76644	0.95554	-0.1979
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.73412	0.94208	-0.2208
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.69471	0.92519	-0.2491

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Table 2.32 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE D190 Blade Tip

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.83073	1.00046	-0.1696
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.81583	0.99033	-0.1762
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.76502	0.95996	-0.2031
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.76151	0.95554	-0.2031
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.76151	0.95554	-0.2031
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.72783	0.94208	-0.2274
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.68661	0.92519	-0.2579

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Table 2.33 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE D230 Lower Blade

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.82347	1.00046	-0.1769
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.80841	0.99033	-0.1837
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.75642	0.95996	-0.2120
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.75296	0.95554	-0.2120
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.75301	0.95554	-0.2119
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.71795	0.94208	-0.2379
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.67493	0.92519	-0.2705

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Table 2.34 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE D230 Blade Tip

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.82668	1.00046	-0.1737
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.81154	0.99033	-0.1805
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.75961	0.95996	-0.2087
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.75612	0.95554	-0.2087
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.75612	0.95554	-0.2087
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.72180	0.94208	-0.2338
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.67997	0.92519	-0.2651

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Table 2.35 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE Marathon Blade Bottom Segment

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.83759	1.00046	-0.1628
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.82308	0.99033	-0.1689
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.77370	0.95996	-0.1940
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.77014	0.95554	-0.1940
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.77019	0.95554	-0.1940
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.73807	0.94208	-0.2165
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.69893	0.92519	-0.2446

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Table 2.36 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE Marathon Blade Main Segment

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	Blade Worth (Δk/k)
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.83037	1.00046	-0.1700
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.81562	0.99033	-0.1764
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.76481	0.95996	-0.2033
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.76131	0.95554	-0.2033
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.76136	0.95554	-0.2032
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.72733	0.94208	-0.2280
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.68568	0.92519	-0.2589

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Table 2.37 Lattice [ ] Control Blade Worths at BOL for Control Blade Type CR82M1 and CR82B Blade Main

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	Blade Worth (Δk/k)
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.83158	1.00046	-0.1688
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.81704	0.99033	-0.1750
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.76700	0.95996	-0.2010
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.76349	0.95554	-0.2010
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.76356	0.95554	-0.2009
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.73042	0.94208	-0.2247
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.68950	0.92519	-0.2547

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Table 2.38 Lattice [ ] Control Blade Worths at BOL for Control Blade Type CR82M1 and CR82B Blade Tip

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	Blade Worth (Δk/k)
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.85199	1.00046	-0.1484
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.83815	0.99033	-0.1537
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.79282	0.95996	-0.1741
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.78914	0.95554	-0.1741
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.78914	0.95554	-0.1741
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.76090	0.94208	-0.1923
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.72653	0.92519	-0.2147

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Table 2.39 Lattice [ ] Control Blade Worths at BOL for Control Blade Type CR99 Blade Tip

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	Blade Worth (Δk/k)
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.82982	1.00046	-0.1706
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.81503	0.99033	-0.1770
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.76407	0.95996	-0.2041
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.76056	0.95554	-0.2041
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.76063	0.95554	-0.2040
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.72648	0.94208	-0.2289
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.68409	0.92519	-0.2606

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Table 2.40 Lattice [ ] Control Blade Worths at BOL for Control Blade Type CR99 Blade Main

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.82830	1.00046	-0.1721
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.81348	0.99033	-0.1786
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.76217	0.95996	-0.2060
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.75868	0.95554	-0.2060
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.75875	0.95554	-0.2059
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.72416	0.94208	-0.2313
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.68116	0.92519	-0.2638

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Table 2.41 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE Marathon Ultra HD2

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	Blade Worth (Δk/k)
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.85060	1.00046	-0.1498
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.83644	0.99033	-0.1554
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.78913	0.95996	-0.1780
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.78548	0.95554	-0.1780
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.78553	0.95554	-0.1779
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.75531	0.94208	-0.1983
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.71816	0.92519	-0.2238

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Table 2.42 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE Marathon Ultra HD3

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	Blade Worth (Δk/k)
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.87287	1.00046	-0.1275
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.85936	0.99033	-0.1323
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.81576	0.95996	-0.1502
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.81193	0.95554	-0.1503
Hot Operating$_0$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.81197	0.95554	-0.1502
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.78542	0.94208	-0.1663
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.75256	0.92519	-0.1866

Table 2.43 Lattice [ ] Kinetics Parameters at BOL

Kinetics Parameter = $\frac{k_\alpha - k_\beta}{k_\beta}$	k_α	k_β	Kinetics Parameter (Δk/k)
Doppler = $\frac{k_{HotOperatingNoXe} - k_{HotStandby}}{k_{HotStandby}}$	0.95554	0.95996	-0.0046
$Moderator_{Void}$ = $\frac{k_{HotOperating40} - k_{HotOperating0}}{k_{HotOperating0}}$	0.94208	0.95554	-0.0141
$Moderator_{Temperature}$ = $\frac{k_{HotStandby} - k_{Cold}}{k_{Cold}}$	0.95996	1.00046	-0.0405

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Table 2.44 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE OEM and D120

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	Blade Worth ($\Delta k/k$)
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.84699	1.00447	-0.1568
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.83226	0.99467	-0.1633
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.78393	0.96653	-0.1889
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.78047	0.96226	-0.1889
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.78053	0.96226	-0.1889
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.74807	0.94979	-0.2124
Hot Operating$_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.70599	0.93242	-0.2428

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Table 2.45 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE D160 and D190 Lower Blade

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.84552	1.00447	-0.1582
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.83086	0.99467	-0.1647
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.78248	0.96653	-0.1904
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.77903	0.96226	-0.1904
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.77908	0.96226	-0.1904
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.74605	0.94979	-0.2145
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.70307	0.93242	-0.2460

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Table 2.46 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE D190 Blade Tip

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	Blade Worth (Δk/k)
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.84243	1.00447	-0.1613
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.82760	0.99467	-0.1680
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.77787	0.96653	-0.1952
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.77445	0.96226	-0.1952
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.77445	0.96226	-0.1952
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.74002	0.94979	-0.2209
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.69506	0.93242	-0.2546

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Table 2.47 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE D230 Lower Blade

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.83560	1.00447	-0.1681
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.82056	0.99467	-0.1750
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.76957	0.96653	-0.2038
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.76619	0.96226	-0.2038
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.76624	0.96226	-0.2037
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.73033	0.94979	-0.2311
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.68339	0.93242	-0.2671

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Table 2.48 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE D230 Blade Tip

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.83862	1.00447	-0.1651
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.82351	0.99467	-0.1721
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.77262	0.96653	-0.2006
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.76923	0.96226	-0.2006
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.76923	0.96226	-0.2006
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.73408	0.94979	-0.2271
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.68839	0.93242	-0.2617

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Table 2.49 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE Marathon Blade Bottom Segment

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.84900	1.00447	-0.1548
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.83457	0.99467	-0.1610
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.78636	0.96653	-0.1864
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.78290	0.96226	-0.1864
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.78295	0.96226	-0.1863
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.75018	0.94979	-0.2102
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.70745	0.93242	-0.2413

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Table 2.50 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE Marathon Blade Main Segment

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	Blade Worth (Δk/k)
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.84210	1.00447	-0.1616
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.82743	0.99467	-0.1681
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.77771	0.96653	-0.1954
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.77430	0.96226	-0.1953
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.77435	0.96226	-0.1953
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.73957	0.94979	-0.2213
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.69416	0.93242	-0.2555

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Table 2.51 Lattice [ ] Control Blade Worths at BOL for Control Blade Type CR82M1 and CR82B Blade Main

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.84330	1.00447	-0.1605
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.82884	0.99467	-0.1667
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.77998	0.96653	-0.1930
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.77656	0.96226	-0.1930
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.77662	0.96226	-0.1929
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.74280	0.94979	-0.2179
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.69812	0.93242	-0.2513

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Table 2.52 Lattice [ ] Control Blade Worths at BOL for Control Blade Type CR82M1 and CR82B Blade Tip

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.86249	1.00447	-0.1414
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.84876	0.99467	-0.1467
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.80465	0.96653	-0.1675
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.80108	0.96226	-0.1675
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.80108	0.96226	-0.1675
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.77243	0.94979	-0.1867
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.73494	0.93242	-0.2118

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Table 2.53 Lattice [ ] Control Blade Worths at BOL for Control Blade Type CR99 Blade Tip

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	Blade Worth (Δk/k)
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.84161	1.00447	-0.1621
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.82689	0.99467	-0.1687
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.77705	0.96653	-0.1960
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.77364	0.96226	-0.1960
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.77370	0.96226	-0.1960
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.73886	0.94979	-0.2221
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.69270	0.93242	-0.2571

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Table 2.54 Lattice [ ] Control Blade Worths at BOL for Control Blade Type CR99 Blade Main

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	Blade Worth (Δk/k)
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.84019	1.00447	-0.1636
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.82543	0.99467	-0.1701
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.77524	0.96653	-0.1979
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.77184	0.96226	-0.1979
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.77191	0.96226	-0.1978
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.73660	0.94979	-0.2245
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.68978	0.93242	-0.2602

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Table 2.55 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE Marathon Ultra HD2

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.86138	1.00447	-0.1424
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.84730	0.99467	-0.1482
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.80124	0.96653	-0.1710
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.79769	0.96226	-0.1710
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.79774	0.96226	-0.1710
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.76708	0.94979	-0.1924
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.72665	0.93242	-0.2207

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Table 2.56 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE Marathon Ultra HD3

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	Blade Worth (Δk/k)
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.88248	1.00447	-0.1215
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.86911	0.99467	-0.1262
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.82689	0.96653	-0.1445
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.82318	0.96226	-0.1445
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.82322	0.96226	-0.1445
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.79656	0.94979	-0.1613
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.76097	0.93242	-0.1839

Table 2.57 Lattice [ ] Kinetics Parameters at BOL

Kinetics Parameter = $\frac{k_\alpha - k_\beta}{k_\beta}$	k_α	k_β	Kinetics Parameter (Δk/k)
Doppler = $\frac{k_{HotOperatingNoXe} - k_{HotStandby}}{k_{HotStandby}}$	0.96226	0.96653	-0.0044
Moderator$_{Void}$ = $\frac{k_{HotOperating40} - k_{HotOperating0}}{k_{HotOperating0}}$	0.94979	0.96226	-0.0130
Moderator$_{Temperature}$ = $\frac{k_{HotStandby} - k_{Cold}}{k_{Cold}}$	0.96653	1.00447	-0.0378

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Table 2.58 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE OEM and D120

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.89564	1.04805	-0.1454
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.88221	1.03979	-0.1515
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.83156	1.01261	-0.1788
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.82785	1.00810	-0.1788
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.82791	1.00810	-0.1787
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.78978	0.99291	-0.2046
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.73936	0.97092	-0.2385

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Table 2.59 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE D160 and D190 Lower Blade

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.89413	1.04805	-0.1469
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.88076	1.03979	-0.1529
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.83003	1.01261	-0.1803
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.82634	1.00810	-0.1803
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.82638	1.00810	-0.1803
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.78765	0.99291	-0.2067
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.73625	0.97092	-0.2417

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Table 2.60 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE D190 Blade Tip

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.89122	1.04805	-0.1496
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.87766	1.03979	-0.1559
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.82545	1.01261	-0.1848
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.82179	1.00810	-0.1848
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.82179	1.00810	-0.1848
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.78153	0.99291	-0.2129
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.72801	0.97092	-0.2502

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Table 2.61 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE D230 Lower Blade

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.88447	1.04805	-0.1561
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.87072	1.03979	-0.1626
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.81714	1.01261	-0.1930
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.81352	1.00810	-0.1930
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.81357	1.00810	-0.1930
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.77170	0.99291	-0.2228
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.71605	0.97092	-0.2625

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Table 2.62 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE D230 Blade Tip

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.88766	1.04805	-0.1530
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.87382	1.03979	-0.1596
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.82036	1.01261	-0.1899
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.81672	1.00810	-0.1898
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.81672	1.00810	-0.1898
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.77565	0.99291	-0.2188
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.72128	0.97092	-0.2571

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Table 2.63 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE Marathon Blade Bottom Segment

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	Blade Worth (Δk/k)
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.89760	1.04805	-0.1436
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.88443	1.03979	-0.1494
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.83395	1.01261	-0.1764
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.83024	1.00810	-0.1764
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.83029	1.00810	-0.1764
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.79189	0.99291	-0.2025
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.74086	0.97092	-0.2369

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Table 2.64 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE Marathon Blade Main Segment

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.89077	1.04805	-0.1501
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.87738	1.03979	-0.1562
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.82519	1.01261	-0.1851
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.82154	1.00810	-0.1851
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.82159	1.00810	-0.1850
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.78100	0.99291	-0.2134
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.72709	0.97092	-0.2511

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Table 2.65 Lattice [ ] Control Blade Worths at BOL for Control Blade Type CR82M1 and CR82B Blade Main

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.89199	1.04805	-0.1489
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.87879	1.03979	-0.1548
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.82754	1.01261	-0.1828
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.82387	1.00810	-0.1827
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.82394	1.00810	-0.1827
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.78439	0.99291	-0.2100
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.73127	0.97092	-0.2468

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Table 2.66 Lattice [ ] Control Blade Worths at BOL for Control Blade Type CR82M1 and CR82B Blade Tip

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.91097	1.04805	-0.1308
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.89855	1.03979	-0.1358
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.85243	1.01261	-0.1582
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.84861	1.00810	-0.1582
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.84861	1.00810	-0.1582
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.81469	0.99291	-0.1795
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.76931	0.97092	-0.2077

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Table 2.67 Lattice [ ] Control Blade Worths at BOL for Control Blade Type CR99 Blade Tip

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.89046	1.04805	-0.1504
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.87703	1.03979	-0.1565
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.82472	1.01261	-0.1855
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.82106	1.00810	-0.1855
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.82113	1.00810	-0.1855
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.78049	0.99291	-0.2139
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.72582	0.97092	-0.2524

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Table 2.68 Lattice [ ] Control Blade Worths at BOL for Control Blade Type CR99 Blade Main

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	Blade Worth (Δk/k)
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.88904	1.04805	-0.1517
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.87557	1.03979	-0.1579
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.82288	1.01261	-0.1874
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.81923	1.00810	-0.1873
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.81930	1.00810	-0.1873
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.77817	0.99291	-0.2163
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.72278	0.97092	-0.2556

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Table 2.69 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE Marathon Ultra HD2

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.90970	1.04805	-0.1320
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.89690	1.03979	-0.1374
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.84881	1.01261	-0.1618
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.84501	1.00810	-0.1618
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.84505	1.00810	-0.1617
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.80904	0.99291	-0.1852
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.76060	0.97092	-0.2166

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Table 2.70 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE Marathon Ultra HD3

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	Blade Worth (Δk/k)
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.93037	1.04805	-0.1123
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.91834	1.03979	-0.1168
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.87448	1.01261	-0.1364
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.87053	1.00810	-0.1365
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.87056	1.00810	-0.1364
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.83903	0.99291	-0.1550
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.79596	0.97092	-0.1802

Table 2.71 Lattice [ ] Kinetics Parameters at BOL

Kinetics Parameter = $\frac{k_\alpha - k_\beta}{k_\beta}$	k_α	k_β	Kinetics Parameter (Δk/k)
Doppler = $\frac{k_{HotOperatingNoXe} - k_{HotStandby}}{k_{HotStandby}}$	1.00810	1.01261	-0.0044
$Moderator_{Void}$ = $\frac{k_{HotOperating40} - k_{HotOperating0}}{k_{HotOperating0}}$	0.99291	1.00810	-0.0151
$Moderator_{Temperature}$ = $\frac{k_{HotStandby} - k_{Cold}}{k_{Cold}}$	1.01261	1.04805	-0.0338

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Table 2.72 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE OEM and D120

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.92595	1.08128	-0.1436
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.91455	1.07576	-0.1499
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.87375	1.06264	-0.1778
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.87002	1.05813	-0.1778
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.87009	1.05813	-0.1777
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.83526	1.04960	-0.2042
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.78671	1.03566	-0.2404

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Table 2.73 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE D160 and D190 Lower Blade

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.92437	1.08128	-0.1451
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.91303	1.07576	-0.1513
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.87212	1.06264	-0.1793
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.86841	1.05813	-0.1793
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.86846	1.05813	-0.1792
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.83295	1.04960	-0.2064
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.78333	1.03566	-0.2436

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Table 2.74 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE D190 Blade Tip

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	Blade Worth (Δk/k)
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.92138	1.08128	-0.1479
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.90986	1.07576	-0.1542
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.86729	1.06264	-0.1838
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.86362	1.05813	-0.1838
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.86362	1.05813	-0.1838
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.82641	1.04960	-0.2126
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.77428	1.03566	-0.2524

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Table 2.75 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE D230 Lower Blade

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	Blade Worth (Δk/k)
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.91436	1.08128	-0.1544
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.90261	1.07576	-0.1610
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.85846	1.06264	-0.1921
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.85483	1.05813	-0.1921
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.85488	1.05813	-0.1921
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.81586	1.04960	-0.2227
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.76127	1.03566	-0.2649

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Table 2.76 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE D230 Blade Tip

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.91772	1.08128	-0.1513
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.90590	1.07576	-0.1579
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.86190	1.06264	-0.1889
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.85825	1.05813	-0.1889
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.85825	1.05813	-0.1889
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.82009	1.04960	-0.2187
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.76685	1.03566	-0.2596

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Table 2.77 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE Marathon Blade Bottom Segment

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.92783	1.08128	-0.1419
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.91671	1.07576	-0.1479
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.87604	1.06264	-0.1756
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.87233	1.05813	-0.1756
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.87238	1.05813	-0.1756
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.83721	1.04960	-0.2024
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.78795	1.03566	-0.2392

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Table 2.78 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE Marathon Blade Main Segment

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.92083	1.08128	-0.1484
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.90945	1.07576	-0.1546
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.86694	1.06264	-0.1842
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.86328	1.05813	-0.1842
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.86333	1.05813	-0.1841
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.82575	1.04960	-0.2133
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.77318	1.03566	-0.2534

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Table 2.79 Lattice [ ] Control Blade Worths at BOL for Control Blade Type CR82M1 and CR82B Blade Main

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.92189	1.08128	-0.1474
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.91070	1.07576	-0.1534
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.86900	1.06264	-0.1822
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.86533	1.05813	-0.1822
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.86540	1.05813	-0.1821
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.82886	1.04960	-0.2103
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.77722	1.03566	-0.2495

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Table 2.80 Lattice [ ] Control Blade Worths at BOL for Control Blade Type CR82M1 and CR82B Blade Tip

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.94170	1.08128	-0.1291
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.93133	1.07576	-0.1343
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.89550	1.06264	-0.1573
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.89166	1.05813	-0.1573
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.89166	1.05813	-0.1573
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.86150	1.04960	-0.1792
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.81883	1.03566	-0.2094

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Table 2.81 Lattice [ ] Control Blade Worths at BOL for Control Blade Type CR99 Blade Tip

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	Blade Worth (Δk/k)
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.92048	1.08128	-0.1487
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.90905	1.07576	-0.1550
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.86634	1.06264	-0.1847
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.86267	1.05813	-0.1847
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.86275	1.05813	-0.1847
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.82512	1.04960	-0.2139
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.77186	1.03566	-0.2547

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Table 2.82 Lattice [ ] Control Blade Worths at BOL for Control Blade Type CR99 Blade Main

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.91899	1.08128	-0.1501
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.90751	1.07576	-0.1564
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.86437	1.06264	-0.1866
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.86072	1.05813	-0.1866
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.86079	1.05813	-0.1865
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.82261	1.04960	-0.2163
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.76855	1.03566	-0.2579

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Table 2.83 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE Marathon Ultra HD2

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.94052	1.08128	-0.1302
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.92990	1.07576	-0.1356
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.89204	1.06264	-0.1605
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.88823	1.05813	-0.1606
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.88828	1.05813	-0.1605
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.85596	1.04960	-0.1845
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.81002	1.03566	-0.2179

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Table 2.84 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE Marathon Ultra HD3

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.96199	1.08128	-0.1103
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.95214	1.07576	-0.1149
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.91931	1.06264	-0.1349
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.91534	1.05813	-0.1349
Hot Operating$_0$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.91538	1.05813	-0.1349
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.88824	1.04960	-0.1537
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.84889	1.03566	-0.1803

Table 2.85 Lattice [ ] Kinetics Parameters at BOL

Kinetics Parameter = $\frac{k_\alpha - k_\beta}{k_\beta}$	k_α	k_β	Kinetics Parameter (Δk/k)
Doppler = $\frac{k_{HotOperatingNoXe} - k_{HotStandby}}{k_{HotStandby}}$	1.05813	1.06264	-0.0042
$Moderator_{Void}$ = $\frac{k_{HotOperating40} - k_{HotOperating0}}{k_{HotOperating0}}$	1.04960	1.05813	-0.0081
$Moderator_{Temperature}$ = $\frac{k_{HotStandby} - k_{Cold}}{k_{Cold}}$	1.06264	1.08128	-0.0172

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Table 2.86 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE OEM and D120

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	Blade Worth (Δk/k)
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.95930	1.11765	-0.1417
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.94431	1.10727	-0.1472
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.88618	1.07039	-0.1721
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void, No xenon	0.88224	1.06567	-0.1721
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void	0.88231	1.06567	-0.1721
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 40% Void	0.84000	1.04412	-0.1955
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 80% Void	0.78885	1.01855	-0.2255

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Table 2.87 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE D160 and D190 Lower Blade

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.95738	1.11765	-0.1434
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.94245	1.10727	-0.1489
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.88420	1.07039	-0.1739
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void, No xenon	0.88028	1.06567	-0.1740
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void	0.88033	1.06567	-0.1739
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 40% Void	0.83741	1.04412	-0.1980
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 80% Void	0.78533	1.01855	-0.2290

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Table 2.88 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE D190 Blade Tip

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.95421	1.11765	-0.1462
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.93902	1.10727	-0.1520
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.87902	1.07039	-0.1788
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void, No xenon	0.87514	1.06567	-0.1788
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void	0.87514	1.06567	-0.1788
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 40% Void	0.83069	1.04412	-0.2044
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 80% Void	0.77664	1.01855	-0.2375

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Table 2.89 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE D230 Lower Blade

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.94652	1.11765	-0.1531
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.93117	1.10727	-0.1590
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.86996	1.07039	-0.1872
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void, No xenon	0.86613	1.06567	-0.1872
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void	0.86619	1.06567	-0.1872
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 40% Void	0.82026	1.04412	-0.2144
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 80% Void	0.76429	1.01855	-0.2496

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Table 2.90 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE D230 Blade Tip

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.95023	1.11765	-0.1498
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.93477	1.10727	-0.1558
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.87352	1.07039	-0.1839
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void, No xenon	0.86966	1.06567	-0.1839
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void	0.86966	1.06567	-0.1839
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 40% Void	0.82450	1.04412	-0.2103
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 80% Void	0.76974	1.01855	-0.2443

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Table 2.91 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE Marathon Blade Bottom Segment

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.96076	1.11765	-0.1404
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.94591	1.10727	-0.1457
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.88736	1.07039	-0.1710
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void, No xenon	0.88343	1.06567	-0.1710
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void	0.88349	1.06567	-0.1709
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 40% Void	0.84068	1.04412	-0.1948
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 80% Void	0.78887	1.01855	-0.2255

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Table 2.92 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE Marathon Blade Main Segment

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.95378	1.11765	-0.1466
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.93874	1.10727	-0.1522
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.87867	1.07039	-0.1791
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void, No xenon	0.87479	1.06567	-0.1791
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void	0.87485	1.06567	-0.1791
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 40% Void	0.82997	1.04412	-0.2051
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 80% Void	0.77538	1.01855	-0.2387

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Table 2.93 Lattice [ ] Control Blade Worths at BOL for Control Blade Type CR82M1 and CR82B Blade Main

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.95332	1.11765	-0.1470
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.93834	1.10727	-0.1526
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.87880	1.07039	-0.1790
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void, No xenon	0.87492	1.06567	-0.1790
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void	0.87500	1.06567	-0.1789
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 40% Void	0.83098	1.04412	-0.2041
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 80% Void	0.77737	1.01855	-0.2368

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Table 2.94 Lattice [ ] Control Blade Worths at BOL for Control Blade Type CR82M1 and CR82B Blade Tip

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.97503	1.11765	-0.1276
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.96078	1.10727	-0.1323
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.90632	1.07039	-0.1533
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void, No xenon	0.90227	1.06567	-0.1533
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void	0.90227	1.06567	-0.1533
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 40% Void	0.86357	1.04412	-0.1729
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 80% Void	0.81687	1.01855	-0.1980

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Table 2.95 Lattice [ ] Control Blade Worths at BOL for Control Blade Type CR99 Blade Tip

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.95248	1.11765	-0.1478
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.93737	1.10727	-0.1534
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.87709	1.07039	-0.1806
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void, No xenon	0.87322	1.06567	-0.1806
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void	0.87330	1.06567	-0.1805
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 40% Void	0.82828	1.04412	-0.2067
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 80% Void	0.77306	1.01855	-0.2410

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Table 2.96 Lattice [ ] Control Blade Worths at BOL for Control Blade Type CR99 Blade Main

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.95092	1.11765	-0.1492
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.93578	1.10727	-0.1549
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.87510	1.07039	-0.1825
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void, No xenon	0.87124	1.06567	-0.1825
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void	0.87132	1.06567	-0.1824
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 40% Void	0.82584	1.04412	-0.2091
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 80% Void	0.76997	1.01855	-0.2440

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Table 2.97 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE Marathon Ultra HD2

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.97457	1.11765	-0.1280
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.96017	1.10727	-0.1328
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.90403	1.07039	-0.1554
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void, No xenon	0.90000	1.06567	-0.1555
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void	0.90006	1.06567	-0.1554
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 40% Void	0.85943	1.04412	-0.1769
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 80% Void	0.80982	1.01855	-0.2049

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Table 2.98 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE Marathon Ultra HD3

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	Blade Worth (Δk/k)
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.99721	1.11765	-0.1078
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.98350	1.10727	-0.1118
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.93145	1.07039	-0.1298
Hot $Operating_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void, No xenon	0.92726	1.06567	-0.1299
Hot $Operating_{0}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void	0.92730	1.06567	-0.1298
Hot $Operating_{40}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 40% Void	0.89072	1.04412	-0.1469
Hot $Operating_{80}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 80% Void	0.84579	1.01855	-0.1696

Table 2.99 Lattice [ ] Kinetics Parameters at BOL

Kinetics Parameter = $\frac{k_\alpha - k_\beta}{k_\beta}$	k_α	k_β	Kinetics Parameter (Δk/k)
Doppler = $\frac{k_{HotOperatingNoXe} - k_{HotStandby}}{k_{HotStandby}}$	1.06567	1.07039	-0.0044
$Moderator_{Void}$ = $\frac{k_{HotOperating40} - k_{HotOperating0}}{k_{HotOperating0}}$	1.04412	1.06567	-0.0202
$Moderator_{Temperature}$ = $\frac{k_{HotStandby} - k_{Cold}}{k_{Cold}}$	1.07039	1.11765	-0.0423

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Table 2.100 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE OEM and D120

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.89052	1.05078	-0.1525
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.87612	1.04104	-0.1584
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.82362	1.00975	-0.1843
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.81975	1.00503	-0.1844
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.81982	1.00503	-0.1843
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.78126	0.98706	-0.2085
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.73345	0.96512	-0.2400

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Table 2.101 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE D160 and D190 Lower Blade

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.88874	1.05078	-0.1542
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.87440	1.04104	-0.1601
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.82181	1.00975	-0.1861
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.81796	1.00503	-0.1861
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.81801	1.00503	-0.1861
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.77887	0.98706	-0.2109
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.73016	0.96512	-0.2434

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Table 2.102 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE D190 Blade Tip

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.88553	1.05078	-0.1573
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.87096	1.04104	-0.1634
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.81675	1.00975	-0.1911
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.81294	1.00503	-0.1911
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.81294	1.00503	-0.1911
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.77232	0.98706	-0.2176
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.72164	0.96512	-0.2523

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Table 2.103 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE D230 Lower Blade

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.87798	1.05078	-0.1645
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.86323	1.04104	-0.1708
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.80777	1.00975	-0.2000
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.80401	1.00503	-0.2000
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.80406	1.00503	-0.2000
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.76197	0.98706	-0.2280
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.70936	0.96512	-0.2650

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Table 2.104 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE D230 Blade Tip

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	Blade Worth (Δk/k)
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.88156	1.05078	-0.1610
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.86671	1.04104	-0.1675
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.81125	1.00975	-0.1966
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.80746	1.00503	-0.1966
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.80746	1.00503	-0.1966
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.76610	0.98706	-0.2239
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.71466	0.96512	-0.2595

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Table 2.105 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE Marathon Blade Bottom Segment

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.89163	1.05078	-0.1515
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.87742	1.04104	-0.1572
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.82471	1.00975	-0.1832
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.82086	1.00503	-0.1832
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.82091	1.00503	-0.1832
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.78190	0.98706	-0.2079
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.73347	0.96512	-0.2400

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Table 2.106 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE Marathon Blade Main Segment

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	Blade Worth (Δk/k)
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.88489	1.05078	-0.1579
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.87049	1.04104	-0.1638
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.81630	1.00975	-0.1916
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.81250	1.00503	-0.1916
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.81256	1.00503	-0.1915
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.77152	0.98706	-0.2184
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.72032	0.96512	-0.2536

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Table 2.107 Lattice [ ] Control Blade Worths at BOL for Control Blade Type CR82M1 and CR82B Blade Main

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.88422	1.05078	-0.1585
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.86987	1.04104	-0.1644
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.81610	1.00975	-0.1918
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.81229	1.00503	-0.1918
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.81237	1.00503	-0.1917
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.77216	0.98706	-0.2177
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.72195	0.96512	-0.2520

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Table 2.108 Lattice [ ] Control Blade Worths at BOL for Control Blade Type CR82M1 and CR82B Blade Tip

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	Blade Worth (Δk/k)
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.90560	1.05078	-0.1382
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.89197	1.04104	-0.1432
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.84328	1.00975	-0.1649
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.83930	1.00503	-0.1649
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.83930	1.00503	-0.1649
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.80432	0.98706	-0.1851
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.76105	0.96512	-0.2114

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Table 2.109 Lattice [ ] Control Blade Worths at BOL for Control Blade Type CR99 Blade Tip

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.88386	1.05078	-0.1588
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.86937	1.04104	-0.1649
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.81488	1.00975	-0.1930
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.81108	1.00503	-0.1930
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.81115	1.00503	-0.1929
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.77000	0.98706	-0.2199
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.71821	0.96512	-0.2558

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Table 2.110 Lattice [ ] Control Blade Worths at BOL for Control Blade Type CR99 Blade Main

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.88231	1.05078	-0.1603
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.86779	1.04104	-0.1664
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.81292	1.00975	-0.1949
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.80914	1.00503	-0.1949
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.80922	1.00503	-0.1948
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.76760	0.98706	-0.2223
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.71517	0.96512	-0.2590

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Table 2.111 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE Marathon Ultra HD2

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	Blade Worth (Δk/k)
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.90569	1.05078	-0.1381
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.89190	1.04104	-0.1433
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.84159	1.00975	-0.1665
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.83763	1.00503	-0.1666
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.83768	1.00503	-0.1665
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.80089	0.98706	-0.1886
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.75473	0.96512	-0.2180

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Table 2.112 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE Marathon Ultra HD3

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	Blade Worth (Δk/k)
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.92840	1.05078	-0.1165
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.91531	1.04104	-0.1208
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.86904	1.00975	-0.1394
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.86490	1.00503	-0.1394
Hot Operating$_0$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.86495	1.00503	-0.1394
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.83219	0.98706	-0.1569
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.79080	0.96512	-0.1806

Table 2.113 Lattice [ ] Kinetics Parameters at BOL

Kinetics Parameter = $\frac{k_\alpha - k_\beta}{k_\beta}$	k_α	k_β	Kinetics Parameter (Δk/k)
Doppler = $\frac{k_{HotOperatingNoXe} - k_{HotStandby}}{k_{HotStandby}}$	1.00503	1.00975	-0.0047
$Moderator_{Void}$ = $\frac{k_{HotOperating40} - k_{HotOperating0}}{k_{HotOperating0}}$	0.98706	1.00503	-0.0179
$Moderator_{Temperature}$ = $\frac{k_{HotStandby} - k_{Cold}}{k_{Cold}}$	1.00975	1.05078	-0.0391

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Table 2.114 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE OEM and D120

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.90635	1.05942	-0.1445
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.89205	1.05008	-0.1505
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.84055	1.02089	-0.1767
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.83678	1.01633	-0.1767
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.83684	1.01633	-0.1766
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.79676	0.99848	-0.2020
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.74354	0.97433	-0.2369

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Table 2.115 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE D160 and D190 Lower Blade

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.90466	1.05942	-0.1461
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.89044	1.05008	-0.1520
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.83885	1.02089	-0.1783
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.83509	1.01633	-0.1783
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.83515	1.01633	-0.1783
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.79444	0.99848	-0.2044
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.74028	0.97433	-0.2402

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Table 2.116 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE D190 Blade Tip

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.90166	1.05942	-0.1489
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.88725	1.05008	-0.1551
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.83410	1.02089	-0.1830
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.83038	1.01633	-0.1830
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.83038	1.01633	-0.1830
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.78814	0.99848	-0.2107
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.73185	0.97433	-0.2489

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Table 2.117 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE D230 Lower Blade

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.89450	1.05942	-0.1557
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.87989	1.05008	-0.1621
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.82541	1.02089	-0.1915
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.82173	1.01633	-0.1915
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.82178	1.01633	-0.1914
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.77798	0.99848	-0.2208
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.71955	0.97433	-0.2615

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Table 2.118 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE D230 Blade Tip

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.89791	1.05942	-0.1525
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.88320	1.05008	-0.1589
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.82876	1.02089	-0.1882
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.82506	1.01633	-0.1882
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.82506	1.01633	-0.1882
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.78201	0.99848	-0.2168
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.72482	0.97433	-0.2561

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Table 2.119 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE Marathon Blade Bottom Segment

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	Blade Worth (Δk/k)
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.90752	1.05942	-0.1434
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.89345	1.05008	-0.1492
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.84191	1.02089	-0.1753
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.83815	1.01633	-0.1753
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.83820	1.01633	-0.1753
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.79767	0.99848	-0.2011
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.74376	0.97433	-0.2366

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Table 2.120 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE Marathon Blade Main Segment

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.90108	1.05942	-0.1495
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.88681	1.05008	-0.1555
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.83373	1.02089	-0.1833
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.83002	1.01633	-0.1833
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.83007	1.01633	-0.1833
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.78742	0.99848	-0.2114
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.73057	0.97433	-0.2502

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Table 2.121 Lattice [ ] Control Blade Worths at BOL for Control Blade Type CR82M1 and CR82B Blade Main

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	Blade Worth (Δk/k)
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.90050	1.05942	-0.1500
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.88628	1.05008	-0.1560
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.83364	1.02089	-0.1834
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.82992	1.01633	-0.1834
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.82999	1.01633	-0.1834
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.78818	0.99848	-0.2106
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.73228	0.97433	-0.2484

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Table 2.122 Lattice [ ] Control Blade Worths at BOL for Control Blade Type CR82M1 and CR82B Blade Tip

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.92068	1.05942	-0.1310
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.90721	1.05008	-0.1361
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.85970	1.02089	-0.1579
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.85583	1.01633	-0.1579
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.85583	1.01633	-0.1579
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.81954	0.99848	-0.1792
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.77124	0.97433	-0.2084

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Table 2.123 Lattice [ ] Control Blade Worths at BOL for Control Blade Type CR99 Blade Tip

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.90015	1.05942	-0.1503
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.88578	1.05008	-0.1565
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.83239	1.02089	-0.1846
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.82867	1.01633	-0.1846
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.82875	1.01633	-0.1846
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.78601	0.99848	-0.2128
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.72857	0.97433	-0.2522

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Table 2.124 Lattice [ ] Control Blade Worths at BOL for Control Blade Type CR99 Blade Main

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.89869	1.05942	-0.1517
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.88429	1.05008	-0.1579
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.83052	1.02089	-0.1865
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.82682	1.01633	-0.1865
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.82689	1.01633	-0.1864
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.78367	0.99848	-0.2151
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.72553	0.97433	-0.2554

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Table 2.125 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE Marathon Ultra HD2

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.92089	1.05942	-0.1308
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.90727	1.05008	-0.1360
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.85820	1.02089	-0.1594
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.85434	1.01633	-0.1594
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.85439	1.01633	-0.1593
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.81630	0.99848	-0.1825
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.76502	0.97433	-0.2148

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Table 2.126 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE Marathon Ultra HD3

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.94244	1.05942	-0.1104
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.92955	1.05008	-0.1148
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.88466	1.02089	-0.1334
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.88064	1.01633	-0.1335
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.88068	1.01633	-0.1335
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.84698	0.99848	-0.1517
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.80105	0.97433	-0.1779

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Table 2.127 Lattice [ ] Kinetics Parameters at BOL

Kinetics Parameter = $\frac{k_\alpha - k_\beta}{k_\beta}$	k_α	k_β	Kinetics Parameter ($\Delta k/k$)
Doppler = $\frac{k_{HotOperatingNoXe} - k_{HotStandby}}{k_{HotStandby}}$	1.01633	1.02089	-0.0045
$Moderator_{Void}$ = $\frac{k_{HotOperating40} - k_{HotOperating0}}{k_{HotOperating0}}$	0.99848	1.01633	-0.0176
$Moderator_{Temperature}$ = $\frac{k_{HotStandby} - k_{Cold}}{k_{Cold}}$	1.02089	1.05942	-0.0364

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Table 2.128 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE OEM and D120

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.91544	1.06926	-0.1439
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.90164	1.06059	-0.1499
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.85280	1.03526	-0.1762
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.84903	1.03070	-0.1763
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.84910	1.03070	-0.1762
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.81022	1.01507	-0.2018
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.75790	0.99362	-0.2372

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Table 2.129 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE D160 and D190 Lower Blade

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.91374	1.06926	-0.1454
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.90000	1.06059	-0.1514
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.85107	1.03526	-0.1779
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.84732	1.03070	-0.1779
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.84737	1.03070	-0.1779
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.80786	1.01507	-0.2041
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.75455	0.99362	-0.2406

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Table 2.130 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE D190 Blade Tip

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	Blade Worth (Δk/k)
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.91071	1.06926	-0.1483
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.89678	1.06059	-0.1545
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.84625	1.03526	-0.1826
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.84254	1.03070	-0.1826
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.84254	1.03070	-0.1826
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.80143	1.01507	-0.2105
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.74588	0.99362	-0.2493

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Table 2.131 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE D230 Lower Blade

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.90349	1.06926	-0.1550
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.88933	1.06059	-0.1615
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.83742	1.03526	-0.1911
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.83375	1.03070	-0.1911
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.83380	1.03070	-0.1910
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.79106	1.01507	-0.2207
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.73328	0.99362	-0.2620

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Table 2.132 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE D230 Blade Tip

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	Blade Worth (Δk/k)
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.90694	1.06926	-0.1518
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.89270	1.06059	-0.1583
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.84083	1.03526	-0.1878
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.83714	1.03070	-0.1878
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.83714	1.03070	-0.1878
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.79518	1.01507	-0.2166
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.73867	0.99362	-0.2566

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Table 2.133 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE Marathon Blade Bottom Segment

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	Blade Worth (Δk/k)
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.91660	1.06926	-0.1428
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.90303	1.06059	-0.1486
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.85415	1.03526	-0.1749
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.85039	1.03070	-0.1749
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.85045	1.03070	-0.1749
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.81111	1.01507	-0.2009
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.75806	0.99362	-0.2371

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Table 2.134 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE Marathon Blade Main Segment

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.91011	1.06926	-0.1488
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.89632	1.06059	-0.1549
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.84585	1.03526	-0.1830
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.84215	1.03070	-0.1829
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.84220	1.03070	-0.1829
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.80066	1.01507	-0.2112
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.74455	0.99362	-0.2507

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Table 2.135 Lattice [ ] Control Blade Worths at BOL for Control Blade Type CR82M1 and CR82B Blade Main

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.90951	1.06926	-0.1494
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.89578	1.06059	-0.1554
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.84574	1.03526	-0.1831
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.84204	1.03070	-0.1830
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.84211	1.03070	-0.1830
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.80143	1.01507	-0.2105
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.74631	0.99362	-0.2489

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Table 2.136 Lattice [ ] Control Blade Worths at BOL for Control Blade Type CR82M1 and CR82B Blade Tip

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.92991	1.06926	-0.1303
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.91695	1.06059	-0.1354
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.87225	1.03526	-0.1575
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.86837	1.03070	-0.1575
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.86837	1.03070	-0.1575
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.83345	1.01507	-0.1789
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.78630	0.99362	-0.2087

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Table 2.137 Lattice [ ] Control Blade Worths at BOL for Control Blade Type CR99 Blade Tip

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.90918	1.06926	-0.1497
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.89529	1.06059	-0.1559
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.84450	1.03526	-0.1843
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.84079	1.03070	-0.1842
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.84087	1.03070	-0.1842
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.79925	1.01507	-0.2126
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.74256	0.99362	-0.2527

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Table 2.138 Lattice [ ] Control Blade Worths at BOL for Control Blade Type CR99 Blade Main

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.90770	1.06926	-0.1511
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.89377	1.06059	-0.1573
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.84260	1.03526	-0.1861
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.83890	1.03070	-0.1861
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.83898	1.03070	-0.1860
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.79686	1.01507	-0.2150
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.73945	0.99362	-0.2558

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Table 2.139 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE Marathon Ultra HD2

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	Blade Worth (Δk/k)
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.93013	1.06926	-0.1301
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.91701	1.06059	-0.1354
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.87074	1.03526	-0.1589
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.86688	1.03070	-0.1589
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.86693	1.03070	-0.1589
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.83018	1.01507	-0.1822
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.77998	0.99362	-0.2150

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Table 2.140 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE Marathon Ultra HD3

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	Blade Worth (Δk/k)
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.95189	1.06926	-0.1098
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.93955	1.06059	-0.1141
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.89764	1.03526	-0.1329
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.89363	1.03070	-0.1330
Hot Operating$_0$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.89367	1.03070	-0.1330
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.86151	1.01507	-0.1513
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.81705	0.99362	-0.1777

Table 2.141 Lattice [ ] Kinetics Parameters at BOL

Kinetics Parameter = $\frac{k_\alpha - k_\beta}{k_\beta}$	k_α	k_β	Kinetics Parameter (Δk/k)
Doppler = $\frac{k_{HotOperatingNoXe} - k_{HotStandby}}{k_{HotStandby}}$	1.03070	1.03526	-0.0044
$Moderator_{Void}$ = $\frac{k_{HotOperating40} - k_{HotOperating0}}{k_{HotOperating0}}$	1.01507	1.03070	-0.0152
$Moderator_{Temperature}$ = $\frac{k_{HotStandby} - k_{Cold}}{k_{Cold}}$	1.03526	1.06926	-0.0318

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Table 2.142 Lattice [XMLCB-4523L-12G80] Control Blade Worths at BOL for Control Blade Type GE OEM and D120

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.99162	1.14917	-0.1371
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.97775	1.14039	-0.1426
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.91925	1.10578	-0.1687
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void, No xenon	0.91518	1.10092	-0.1687
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void	0.91525	1.10092	-0.1686
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 40% Void	0.87072	1.07923	-0.1932
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 80% Void	0.81619	1.05218	-0.2243

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Table 2.143 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE D160 and D190 Lower Blade

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	Blade Worth (Δk/k)
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.98976	1.14917	-0.1387
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.97589	1.14039	-0.1442
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.91728	1.10578	-0.1705
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void, No xenon	0.91323	1.10092	-0.1705
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void	0.91329	1.10092	-0.1704
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 40% Void	0.86811	1.07923	-0.1956
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 80% Void	0.81259	1.05218	-0.2277

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Table 2.144 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE D190 Blade Tip

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.98669	1.14917	-0.1414
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.97257	1.14039	-0.1472
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.91214	1.10578	-0.1751
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void, No xenon	0.90813	1.10092	-0.1751
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void	0.90813	1.10092	-0.1751
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 40% Void	0.86136	1.07923	-0.2019
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 80% Void	0.80375	1.05218	-0.2361

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Table 2.145 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE D230 Lower Blade

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.97914	1.14917	-0.1480
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.96486	1.14039	-0.1539
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.90312	1.10578	-0.1833
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void, No xenon	0.89915	1.10092	-0.1833
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void	0.89921	1.10092	-0.1832
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 40% Void	0.85085	1.07923	-0.2116
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 80% Void	0.79122	1.05218	-0.2480

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Table 2.146 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE D230 Blade Tip

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.98283	1.14917	-0.1447
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.96845	1.14039	-0.1508
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.90672	1.10578	-0.1800
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void, No xenon	0.90273	1.10092	-0.1800
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void	0.90273	1.10092	-0.1800
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 40% Void	0.85519	1.07923	-0.2076
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 80% Void	0.79680	1.05218	-0.2427

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Table 2.147 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE Marathon Blade Bottom Segment

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	Blade Worth (Δk/k)
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.99372	1.14917	-0.1353
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.98000	1.14039	-0.1406
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.92125	1.10578	-0.1669
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void, No xenon	0.91719	1.10092	-0.1669
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void	0.91724	1.10092	-0.1668
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 40% Void	0.87231	1.07923	-0.1917
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 80% Void	0.81717	1.05218	-0.2234

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Table 2.148 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE Marathon Blade Main Segment

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	Blade Worth ($\Delta k/k$)
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.98638	1.14917	-0.1417
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.97243	1.14039	-0.1473
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.91195	1.10578	-0.1753
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void, No xenon	0.90794	1.10092	-0.1753
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void	0.90800	1.10092	-0.1752
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 40% Void	0.86086	1.07923	-0.2023
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 80% Void	0.80281	1.05218	-0.2370

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Table 2.149 Lattice [ ] Control Blade Worths at BOL for Control Blade Type CR82M1 and CR82B Blade Main

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.98710	1.14917	-0.1410
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.97332	1.14039	-0.1465
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.91369	1.10578	-0.1737
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void, No xenon	0.90967	1.10092	-0.1737
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void	0.90976	1.10092	-0.1736
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 40% Void	0.86362	1.07923	-0.1998
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 80% Void	0.80651	1.05218	-0.2335

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Table 2.150 Lattice [ ] Control Blade Worths at BOL for Control Blade Type CR82M1 and CR82B Blade Tip

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	1.00837	1.14917	-0.1225
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.99534	1.14039	-0.1272
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.94110	1.10578	-0.1489
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void, No xenon	0.93691	1.10092	-0.1490
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void	0.93691	1.10092	-0.1490
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 40% Void	0.89646	1.07923	-0.1694
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 80% Void	0.84672	1.05218	-0.1953

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Table 2.151 Lattice [ ] Control Blade Worths at BOL for Control Blade Type CR99 Blade Tip

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	Blade Worth (Δk/k)
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.98536	1.14917	-0.1426
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.97138	1.14039	-0.1482
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.91076	1.10578	-0.1764
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void, No xenon	0.90675	1.10092	-0.1764
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void	0.90683	1.10092	-0.1763
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 40% Void	0.85958	1.07923	-0.2035
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 80% Void	0.80083	1.05218	-0.2389

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Table 2.152 Lattice [ ] Control Blade Worths at BOL for Control Blade Type CR99 Blade Main

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	Blade Worth (Δk/k)
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.98379	1.14917	-0.1439
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.96976	1.14039	-0.1496
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.90872	1.10578	-0.1782
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void, No xenon	0.90473	1.10092	-0.1782
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void	0.90481	1.10092	-0.1781
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 40% Void	0.85704	1.07923	-0.2059
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 80% Void	0.79760	1.05218	-0.2419

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Table 2.153 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE Marathon Ultra HD2

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	1.00696	1.14917	-0.1237
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.99369	1.14039	-0.1286
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.93742	1.10578	-0.1522
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void, No xenon	0.93326	1.10092	-0.1523
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void	0.93331	1.10092	-0.1522
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 40% Void	0.89069	1.07923	-0.1747
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 80% Void	0.83791	1.05218	-0.2036

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Table 2.154 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE Marathon Ultra HD3

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	Blade Worth (Δk/k)
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	1.02933	1.14917	-0.1043
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	1.01676	1.14039	-0.1084
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.96493	1.10578	-0.1274
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void, No xenon	0.96060	1.10092	-0.1275
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 0% Void	0.96065	1.10092	-0.1274
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 40% Void	0.92240	1.07923	-0.1453
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=930° F 80% Void	0.87465	1.05218	-0.1687

Table 2.155 Lattice [ ] Kinetics Parameters at BOL

Kinetics Parameter = $\frac{k_\alpha - k_\beta}{k_\beta}$	k_α	k_β	Kinetics Parameter (Δk/k)
Doppler = $\frac{k_{HotOperatingNoXe} - k_{HotStandby}}{k_{HotStandby}}$	1.10092	1.10578	-0.0044
$Moderator_{Void}$ = $\frac{k_{HotOperating40} - k_{HotOperating0}}{k_{HotOperating0}}$	1.07923	1.10092	-0.0197
$Moderator_{Temperature}$ = $\frac{k_{HotStandby} - k_{Cold}}{k_{Cold}}$	1.10578	1.14917	-0.0378

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Table 2.156 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE OEM and D120

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	Blade Worth (Δk/k)
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.92547	1.08498	-0.1470
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.91218	1.07695	-0.1530
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.85911	1.04807	-0.1803
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.85509	1.04319	-0.1803
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.85516	1.04319	-0.1802
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.81437	1.02535	-0.2058
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.76290	1.00194	-0.2386

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Table 2.157 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE D160 and D190 Lower Blade

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	Blade Worth (Δk/k)
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.92373	1.08498	-0.1486
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.91050	1.07695	-0.1546
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.85731	1.04807	-0.1820
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.85332	1.04319	-0.1820
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.85337	1.04319	-0.1820
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.81194	1.02535	-0.2081
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.75950	1.00194	-0.2420

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Table 2.158 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE D190 Blade Tip

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.92066	1.08498	-0.1515
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.90721	1.07695	-0.1576
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.85233	1.04807	-0.1868
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.84837	1.04319	-0.1867
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.84837	1.04319	-0.1867
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.80538	1.02535	-0.2145
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.75083	1.00194	-0.2506

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Table 2.159 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE D230 Lower Blade

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	Blade Worth ($\Delta k/k$)
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.91325	1.08498	-0.1583
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.89962	1.07695	-0.1647
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.84337	1.04807	-0.1953
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.83945	1.04319	-0.1953
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.83951	1.04319	-0.1953
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.79493	1.02535	-0.2247
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.73833	1.00194	-0.2631

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Table 2.160 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE D230 Blade Tip

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.91682	1.08498	-0.1550
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.90309	1.07695	-0.1614
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.84689	1.04807	-0.1920
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.84295	1.04319	-0.1920
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.84295	1.04319	-0.1920
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.79917	1.02535	-0.2206
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.74379	1.00194	-0.2576

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Table 2.161 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE Marathon Blade Bottom Segment

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	Blade Worth (Δk/k)
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.92741	1.08498	-0.1452
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.91437	1.07695	-0.1510
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.86120	1.04807	-0.1783
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.85720	1.04319	-0.1783
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.85725	1.04319	-0.1782
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.81609	1.02535	-0.2041
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.76405	1.00194	-0.2374

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Table 2.162 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE Marathon Blade Main Segment

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	Blade Worth (Δk/k)
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.92024	1.08498	-0.1518
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.90695	1.07695	-0.1578
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.85212	1.04807	-0.1870
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.84816	1.04319	-0.1870
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.84822	1.04319	-0.1869
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.80488	1.02535	-0.2150
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.74992	1.00194	-0.2515

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Table 2.163 Lattice [ ] Control Blade Worths at BOL for Control Blade Type CR82M1 and CR82B Blade Main

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.92089	1.08498	-0.1512
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.90777	1.07695	-0.1571
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.85368	1.04807	-0.1855
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.84972	1.04319	-0.1855
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.84979	1.04319	-0.1854
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.80742	1.02535	-0.2125
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.75338	1.00194	-0.2481

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Table 2.164 Lattice [ ] Control Blade Worths at BOL for Control Blade Type CR82M1 and CR82B Blade Tip

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	Blade Worth (Δk/k)
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.94174	1.08498	-0.1320
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.92939	1.07695	-0.1370
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.88072	1.04807	-0.1597
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.87658	1.04319	-0.1597
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.87658	1.04319	-0.1597
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.83987	1.02535	-0.1809
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.79333	1.00194	-0.2082

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Table 2.165 Lattice [ ] Control Blade Worths at BOL for Control Blade Type CR99 Blade Tip

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	Blade Worth (Δk/k)
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.91945	1.08498	-0.1526
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.90611	1.07695	-0.1586
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.85106	1.04807	-0.1880
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.84710	1.04319	-0.1880
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.84718	1.04319	-0.1879
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.80374	1.02535	-0.2161
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.74813	1.00194	-0.2533

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Table 2.166 Lattice [ ] Control Blade Worths at BOL for Control Blade Type CR99 Blade Main

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	Blade Worth (Δk/k)
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.91790	1.08498	-0.1540
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.90452	1.07695	-0.1601
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.84905	1.04807	-0.1899
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.84511	1.04319	-0.1899
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.84519	1.04319	-0.1898
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.80125	1.02535	-0.2186
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.74494	1.00194	-0.2565

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Table 2.167 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE Marathon Ultra HD2

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.94078	1.08498	-0.1329
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.92815	1.07695	-0.1382
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.87752	1.04807	-0.1627
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.87340	1.04319	-0.1628
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.87346	1.04319	-0.1627
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.83466	1.02535	-0.1860
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.78509	1.00194	-0.2164

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Table 2.168 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE Marathon Ultra HD3

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	Blade Worth (Δk/k)
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.96313	1.08498	-0.1123
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.95123	1.07695	-0.1167
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.90502	1.04807	-0.1365
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.90073	1.04319	-0.1366
Hot Operating$_0$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.90077	1.04319	-0.1365
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.86640	1.02535	-0.1550
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.82203	1.00194	-0.1796

Table 2.169 Lattice [ ] Kinetics Parameters at BOL

Kinetics Parameter = $\frac{k_\alpha - k_\beta}{k_\beta}$	k_α	k_β	Kinetics Parameter (Δk/k)
Doppler = $\frac{k_{HotOperatingNoXe} - k_{HotStandby}}{k_{HotStandby}}$	1.04319	1.04807	-0.0047
$Moderator_{Void}$ = $\frac{k_{HotOperating40} - k_{HotOperating0}}{k_{HotOperating0}}$	1.02535	1.04319	-0.0171
$Moderator_{Temperature}$ = $\frac{k_{HotStandby} - k_{Cold}}{k_{Cold}}$	1.04807	1.08498	-0.0340

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Table 2.170 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE OEM and D120

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.94095	1.09259	-0.1388
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.92801	1.08514	-0.1448
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.87659	1.05906	-0.1723
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.87268	1.05435	-0.1723
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.87274	1.05435	-0.1722
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.83059	1.03705	-0.1991
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.77362	1.01170	-0.2353

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Table 2.171 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE D160 and D190 Lower Blade

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	Blade Worth (Δk/k)
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.93931	1.09259	-0.1403
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.92644	1.08514	-0.1462
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.87492	1.05906	-0.1739
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.87102	1.05435	-0.1739
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.87107	1.05435	-0.1738
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.82826	1.03705	-0.2013
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.77025	1.01170	-0.2387

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Table 2.172 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE D190 Blade Tip

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.93646	1.09259	-0.1429
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.92339	1.08514	-0.1491
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.87026	1.05906	-0.1783
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.86639	1.05435	-0.1783
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.86639	1.05435	-0.1783
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.82195	1.03705	-0.2074
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.76166	1.01170	-0.2472

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Table 2.173 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE D230 Lower Blade

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.92948	1.09259	-0.1493
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.91619	1.08514	-0.1557
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.86161	1.05906	-0.1864
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.85779	1.05435	-0.1864
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.85784	1.05435	-0.1864
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.81171	1.03705	-0.2173
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.74915	1.01170	-0.2595

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Table 2.174 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE D230 Blade Tip

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.93284	1.09259	-0.1462
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.91949	1.08514	-0.1527
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.86500	1.05906	-0.1832
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.86116	1.05435	-0.1832
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.86116	1.05435	-0.1832
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.81585	1.03705	-0.2133
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.75460	1.01170	-0.2541

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Table 2.175 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE Marathon Blade Bottom Segment

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.94290	1.09259	-0.1370
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.93024	1.08514	-0.1427
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.87892	1.05906	-0.1701
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.87502	1.05435	-0.1701
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.87506	1.05435	-0.1701
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.83259	1.03705	-0.1972
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.77497	1.01170	-0.2340

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Table 2.176 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE Marathon Blade Main Segment

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	Blade Worth (Δk/k)
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.93609	1.09259	-0.1432
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.92317	1.08514	-0.1493
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.87009	1.05906	-0.1784
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.86624	1.05435	-0.1784
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.86629	1.05435	-0.1784
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.82149	1.03705	-0.2079
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.76079	1.01170	-0.2480

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Table 2.177 Lattice [ ] Control Blade Worths at BOL for Control Blade Type CR82M1 and CR82B Blade Main

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.93672	1.09259	-0.1427
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.92399	1.08514	-0.1485
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.87174	1.05906	-0.1769
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.86787	1.05435	-0.1769
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.86794	1.05435	-0.1768
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.82419	1.03705	-0.2053
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.76439	1.01170	-0.2445

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Table 2.178 Lattice [ ] Control Blade Worths at BOL for Control Blade Type CR82M1 and CR82B Blade Tip

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.95628	1.09259	-0.1248
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.94433	1.08514	-0.1298
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.89756	1.05906	-0.1525
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.89353	1.05435	-0.1525
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.89353	1.05435	-0.1525
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.85577	1.03705	-0.1748
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.80417	1.01170	-0.2051

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Table 2.179 Lattice [ ] Control Blade Worths at BOL for Control Blade Type CR99 Blade Tip

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	Blade Worth (Δk/k)
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.93537	1.09259	-0.1439
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.92238	1.08514	-0.1500
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.86912	1.05906	-0.1794
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.86526	1.05435	-0.1793
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.86533	1.05435	-0.1793
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.82050	1.03705	-0.2088
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.75913	1.01170	-0.2497

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Table 2.180 Lattice [ ] Control Blade Worths at BOL for Control Blade Type CR99 Blade Main

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.93390	1.09259	-0.1452
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.92088	1.08514	-0.1514
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.86721	1.05906	-0.1812
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.86337	1.05435	-0.1811
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.86344	1.05435	-0.1811
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.81808	1.03705	-0.2112
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.75594	1.01170	-0.2528

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Table 2.181 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE Marathon Ultra HD2

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	Blade Worth (Δk/k)
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.95559	1.09259	-0.1254
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.94335	1.08514	-0.1307
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.89463	1.05906	-0.1553
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.89062	1.05435	-0.1553
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.89067	1.05435	-0.1552
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.85079	1.03705	-0.1796
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.79602	1.01170	-0.2132

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Table 2.182 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE Marathon Ultra HD3

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	Blade Worth (Δk/k)
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.97669	1.09259	-0.1061
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.96522	1.08514	-0.1105
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.92106	1.05906	-0.1303
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.91690	1.05435	-0.1304
Hot Operating$_0$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.91694	1.05435	-0.1303
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.88186	1.03705	-0.1497
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.83292	1.01170	-0.1767

Table 2.183 Lattice [ ] Kinetics Parameters at BOL

Kinetics Parameter = $\frac{k_\alpha - k_\beta}{k_\beta}$	k_α	k_β	Kinetics Parameter (Δk/k)
Doppler = $\frac{k_{HotOperatingNoXe} - k_{HotStandby}}{k_{HotStandby}}$	1.05435	1.05906	-0.0044
$Moderator_{Void}$ = $\frac{k_{HotOperating40} - k_{HotOperating0}}{k_{HotOperating0}}$	1.03705	1.05435	-0.0164
$Moderator_{Temperature}$ = $\frac{k_{HotStandby} - k_{Cold}}{k_{Cold}}$	1.05906	1.09259	-0.0307

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Table 2.184 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE OEM and D120

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	Blade Worth (Δk/k)
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.94929	1.10181	-0.1384
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.93680	1.09498	-0.1445
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.88788	1.07252	-0.1722
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.88398	1.06781	-0.1722
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.88404	1.06781	-0.1721
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.84305	1.05261	-0.1991
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.78693	1.02986	-0.2359

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Table 2.185 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE D160 and D190 Lower Blade

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.94763	1.10181	-0.1399
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.93521	1.09498	-0.1459
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.88618	1.07252	-0.1737
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.88228	1.06781	-0.1737
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.88233	1.06781	-0.1737
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.84067	1.05261	-0.2014
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.78348	1.02986	-0.2392

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Table 2.186 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE D190 Blade Tip

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	Blade Worth (Δk/k)
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.94475	1.10181	-0.1426
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.93213	1.09498	-0.1487
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.88145	1.07252	-0.1782
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.87759	1.06781	-0.1781
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.87759	1.06781	-0.1781
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.83424	1.05261	-0.2075
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.77466	1.02986	-0.2478

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Table 2.187 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE D230 Lower Blade

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	Blade Worth (Δk/k)
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.93769	1.10181	-0.1489
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.92484	1.09498	-0.1554
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.87266	1.07252	-0.1863
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.86885	1.06781	-0.1863
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.86890	1.06781	-0.1863
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.82379	1.05261	-0.2174
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.76186	1.02986	-0.2602

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Table 2.188 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE D230 Blade Tip

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	Blade Worth (Δk/k)
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.94110	1.10181	-0.1459
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.92819	1.09498	-0.1523
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.87611	1.07252	-0.1831
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.87228	1.06781	-0.1831
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.87228	1.06781	-0.1831
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.82801	1.05261	-0.2134
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.76739	1.02986	-0.2549

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Table 2.189 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE Marathon Blade Bottom Segment

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	Blade Worth (Δk/k)
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.95120	1.10181	-0.1367
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.93900	1.09498	-0.1424
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.89018	1.07252	-0.1700
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.88628	1.06781	-0.1700
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.88633	1.06781	-0.1700
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.84499	1.05261	-0.1972
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.78819	1.02986	-0.2347

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Table 2.190 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE Marathon Blade Main Segment

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.94434	1.10181	-0.1429
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.93188	1.09498	-0.1489
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.88126	1.07252	-0.1783
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.87741	1.06781	-0.1783
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.87746	1.06781	-0.1783
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.83374	1.05261	-0.2079
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.77372	1.02986	-0.2487

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Table 2.191 Lattice [ ] Control Blade Worths at BOL for Control Blade Type CR82M1 and CR82B Blade Main

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	Blade Worth ($\Delta k/k$)
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.94494	1.10181	-0.1424
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.93265	1.09498	-0.1482
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.88283	1.07252	-0.1769
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.87897	1.06781	-0.1769
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.87904	1.06781	-0.1768
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.83637	1.05261	-0.2054
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.77730	1.02986	-0.2452

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Table 2.192 Lattice [ ] Control Blade Worths at BOL for Control Blade Type CR82M1 and CR82B Blade Tip

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	Blade Worth (Δk/k)
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.96474	1.10181	-0.1244
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.95325	1.09498	-0.1294
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.90910	1.07252	-0.1524
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.90507	1.06781	-0.1524
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.90507	1.06781	-0.1524
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.86861	1.05261	-0.1748
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.81810	1.02986	-0.2056

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Table 2.193 Lattice [ ] Control Blade Worths at BOL for Control Blade Type CR99 Blade Tip

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	**Blade Worth (Δk/k)**
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.94362	1.10181	-0.1436
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.93109	1.09498	-0.1497
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.88025	1.07252	-0.1793
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.87640	1.06781	-0.1792
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.87647	1.06781	-0.1792
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.83273	1.05261	-0.2089
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.77207	1.02986	-0.2503

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Table 2.194 Lattice [ ] Control Blade Worths at BOL for Control Blade Type CR99 Blade Main

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	Blade Worth (Δk/k)
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.94214	1.10181	-0.1449
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.92956	1.09498	-0.1511
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.87831	1.07252	-0.1811
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.87447	1.06781	-0.1811
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.87454	1.06781	-0.1810
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.83025	1.05261	-0.2112
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.76880	1.02986	-0.2535

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Table 2.195 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE Marathon Ultra HD2

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	Blade Worth (Δk/k)
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.96406	1.10181	-0.1250
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.95230	1.09498	-0.1303
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.90620	1.07252	-0.1551
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.90220	1.06781	-0.1551
Hot Operating$_{0}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.90226	1.06781	-0.1550
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.86365	1.05261	-0.1795
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.80990	1.02986	-0.2136

Table 2.196 Lattice [ ] Control Blade Worths at BOL for Control Blade Type GE Marathon Ultra HD3

Blade Worth = $\frac{k_{Controlled} - k_{Uncontrolled}}{k_{Uncontrolled}}$		$k_{Controlled}$	$k_{Uncontrolled}$	Blade Worth (Δk/k)
Cold	$T_{Moderator}$=68° F T_{Fuel}=68° F 0% Void, No xenon	0.98540	1.10181	-0.1056
Intermediate	$T_{Moderator}$=200° F T_{Fuel}=200° F 0% Void, No xenon	0.97444	1.09498	-0.1101
Hot Standby	$T_{Moderator}$=546° F T_{Fuel}=546° F 0% Void, No xenon	0.93309	1.07252	-0.1300
Hot Operating$_{NoXe}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void, No xenon	0.92892	1.06781	-0.1301
Hot Operating$_0$	$T_{Moderator}$=546° F T_{Fuel}=989° F 0% Void	0.92897	1.06781	-0.1300
Hot Operating$_{40}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 40% Void	0.89537	1.05261	-0.1494
Hot Operating $_{80}$	$T_{Moderator}$=546° F T_{Fuel}=989° F 80% Void	0.84782	1.02986	-0.1768

Table 2.197 Lattice [ ] Kinetics Parameters at BOL

Kinetics Parameter = $\frac{k_\alpha - k_\beta}{k_\beta}$	k_α	k_β	Kinetics Parameter (Δk/k)
Doppler = $\frac{k_{HotOperatingNoXe} - k_{HotStandby}}{k_{HotStandby}}$	1.06781	1.07252	-0.0044
Moderator$_{Void}$ = $\frac{k_{HotOperating40} - k_{HotOperating0}}{k_{HotOperating0}}$	1.05261	1.06781	-0.0142
Moderator$_{Temperature}$ = $\frac{k_{HotStandby} - k_{Cold}}{k_{Cold}}$	1.07252	1.10181	-0.0266

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Figure 2.1 Assembly Type [ ]

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Figure 2.2 Assembly Type [ ]

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Figure 2.3 Assembly Type [ ]

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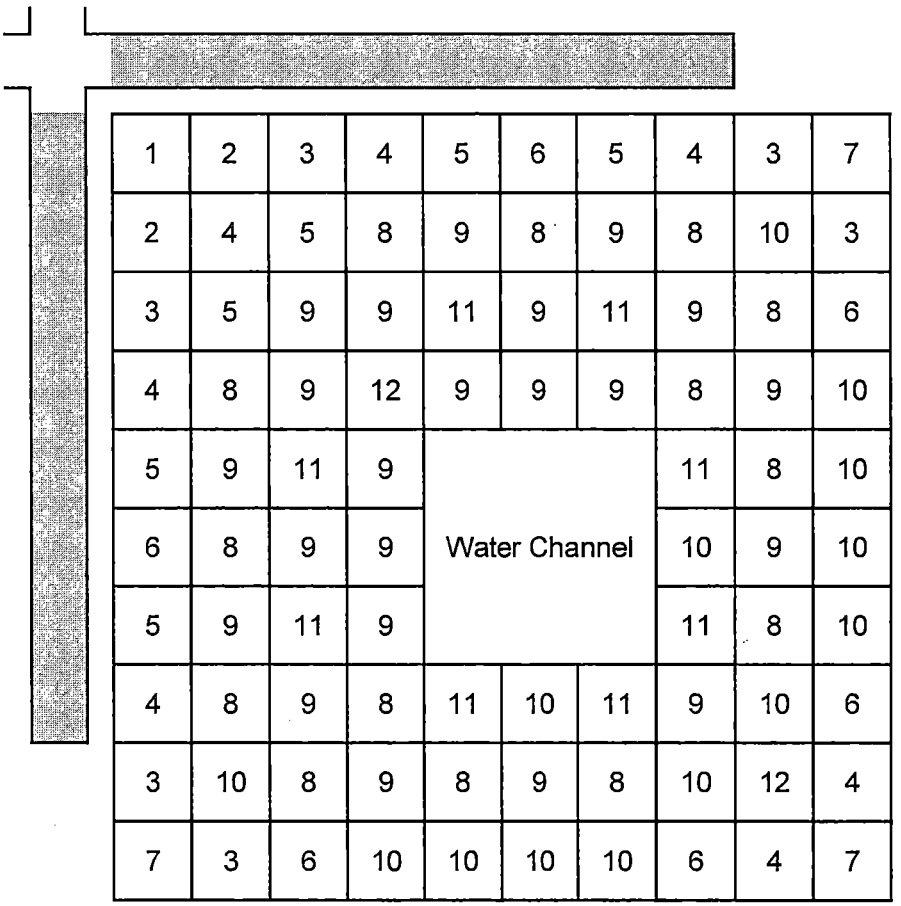

Fuel Rod Type	Quantity	Fuel Rod Type	Quantity
1	1	7	3
2	2	8	14
3	6	9	22
4	7	10	14
5	6	11	8
6	6	12	2

Figure 2.4 [ ] Fuel Rod Distribution

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1	2	3	4	5	5	5	4	3	7
2	4	13	9	9	13	9	13	10	3
3	13	10	9	11	9	11	9	13	5
4	9	9	5	9	9	9	10	9	10
5	9	11	9	Water Channel			11	13	10
5	13	9	9				10	9	10
5	9	11	9				11	13	10
4	13	9	10	11	10	11	9	10	10
3	10	13	9	13	9	13	10	13	4
7	3	5	10	10	10	10	10	4	7

Fuel Rod Type	Quantity	Fuel Rod Type	Quantity
1	1	7	3
2	2	9	23
3	6	10	19
4	7	11	8
5	9	13	13

Figure 2.5 [ ] Fuel Rod Distribution

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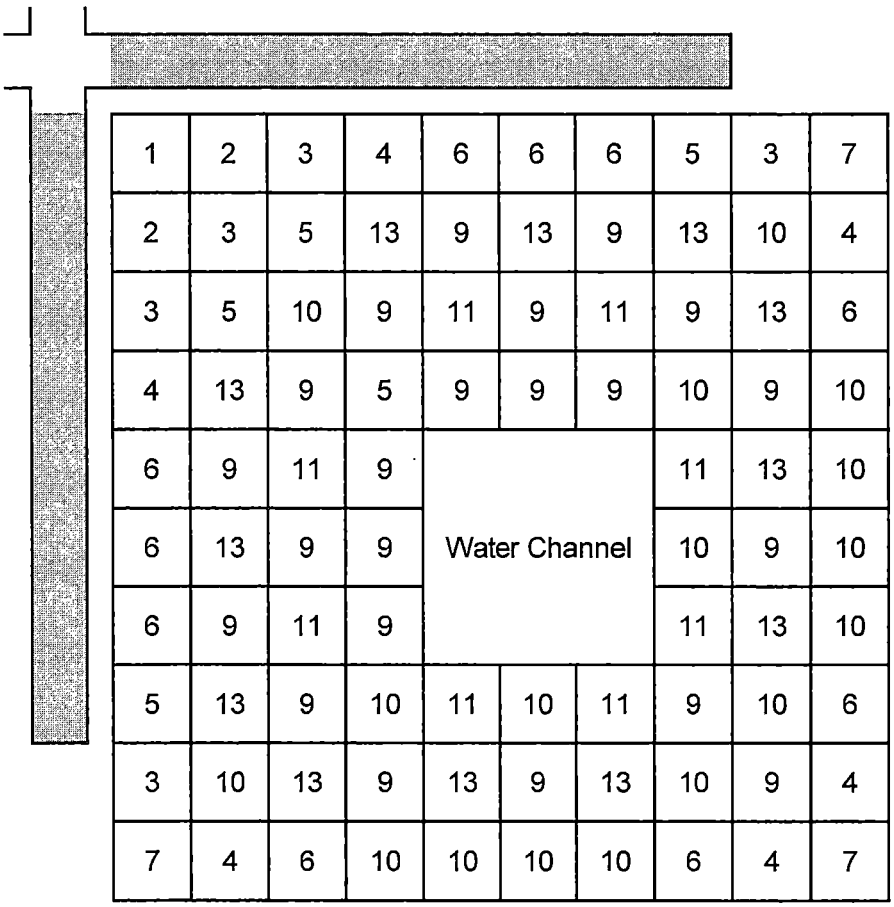

Fuel Rod Type	Quantity
1	1
2	2
3	5
4	6
5	5
6	10

Fuel Rod Type	Quantity
7	3
9	22
10	17
11	8
13	12

Figure 2.6 [ ] Fuel Rod Distribution

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Figure 2.7 Fuel Rod Axial Description

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3.0 References

1. EMF-93-177(P)(A) Revision 1, *Mechanical Design for BWR Fuel Channels,* Framatome ANP, August 2005.

2. ANF-89-98(P)(A) Revision 1 and Supplement 1, *Generic Mechanical Design Criteria for BWR Fuel Designs*, Advanced Nuclear Fuels Corporation, May 1995.

3. EMF-2158(P)(A) Revision 0, *Siemens Power Corporation Methodology for Boiling Water Reactors: Evaluation and Validation of CASMO-4/MICROBURN-B2*, Siemens Power Corporation, October 1999.

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Appendix A Enriched Lattice Hot Uncontrolled Reactivity and LPF Plots

The results in this appendix are based on hot operating and equilibrium xenon conditions.

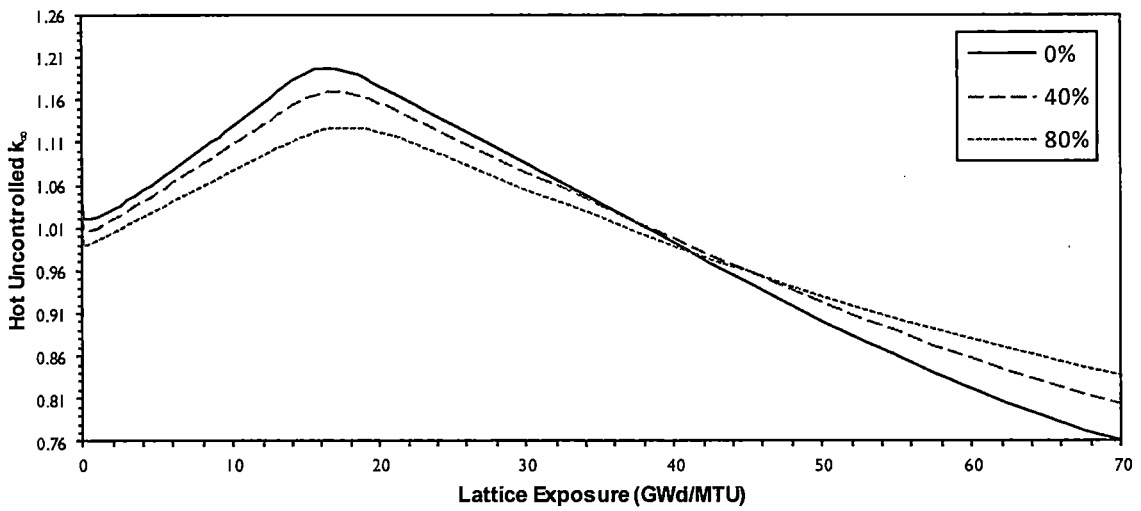

Figure A.1 [ ] Hot Uncontrolled k_∞

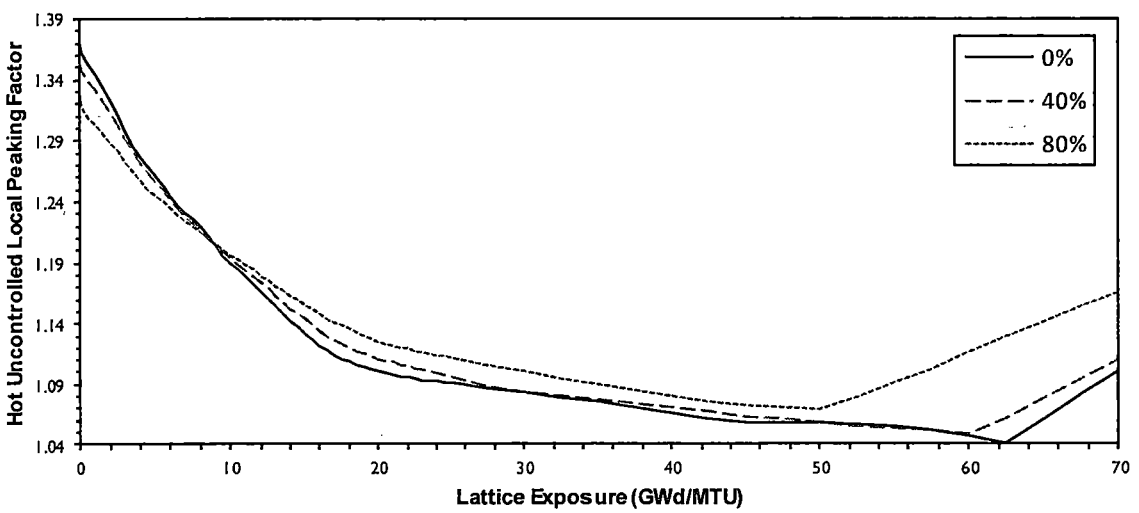

Figure A.2 [ ] Hot Uncontrolled LPF

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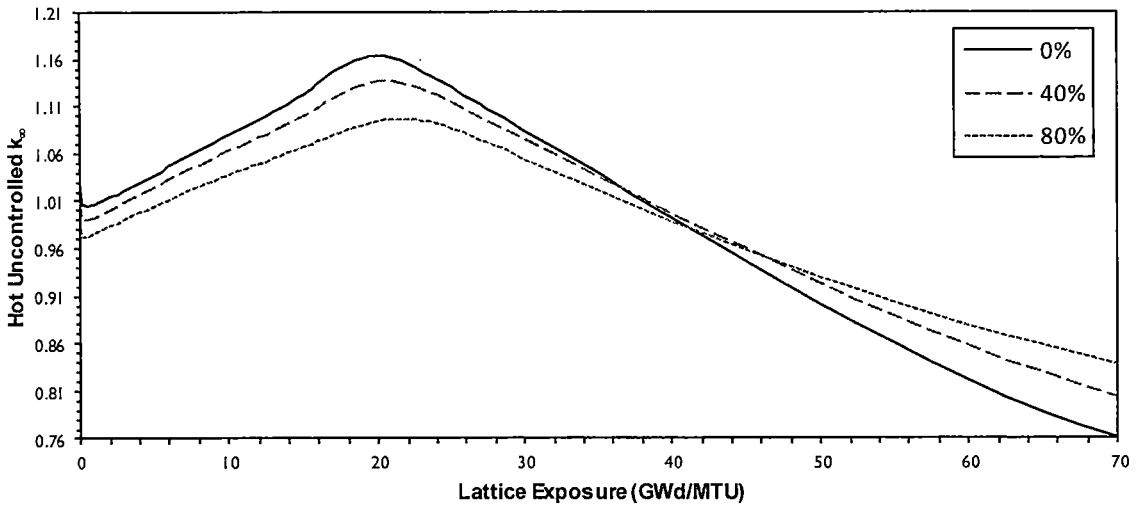

Figure A.3 [ ] Hot Uncontrolled k_∞

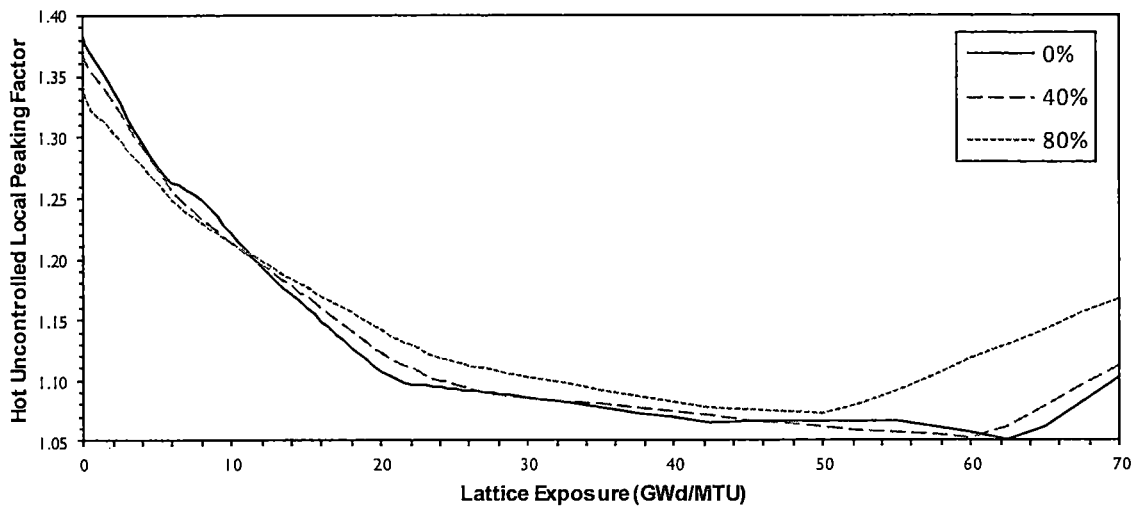

Figure A.4 [ ] Hot Uncontrolled LPF

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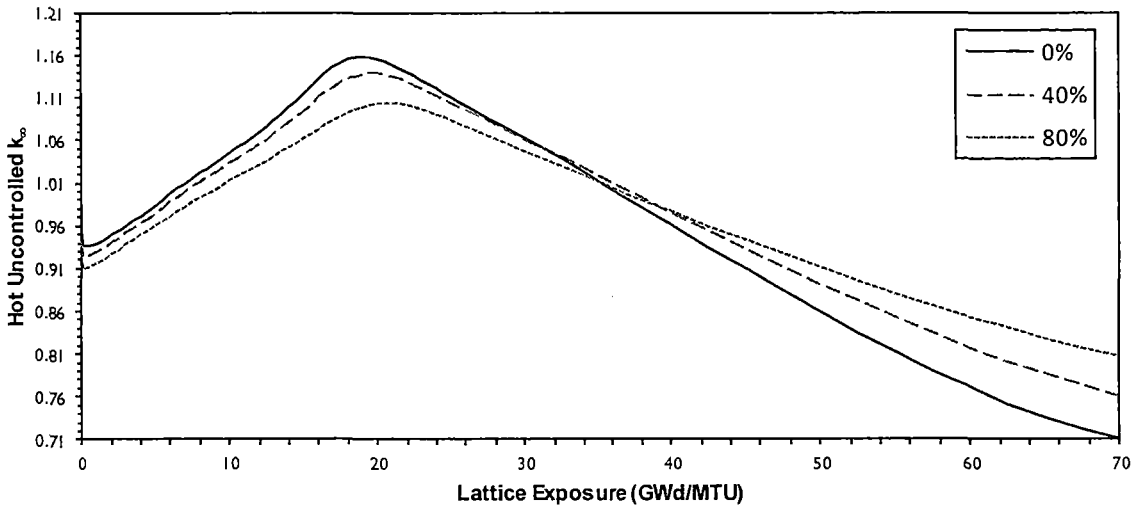

Figure A.5 [ ] Hot Uncontrolled k_∞

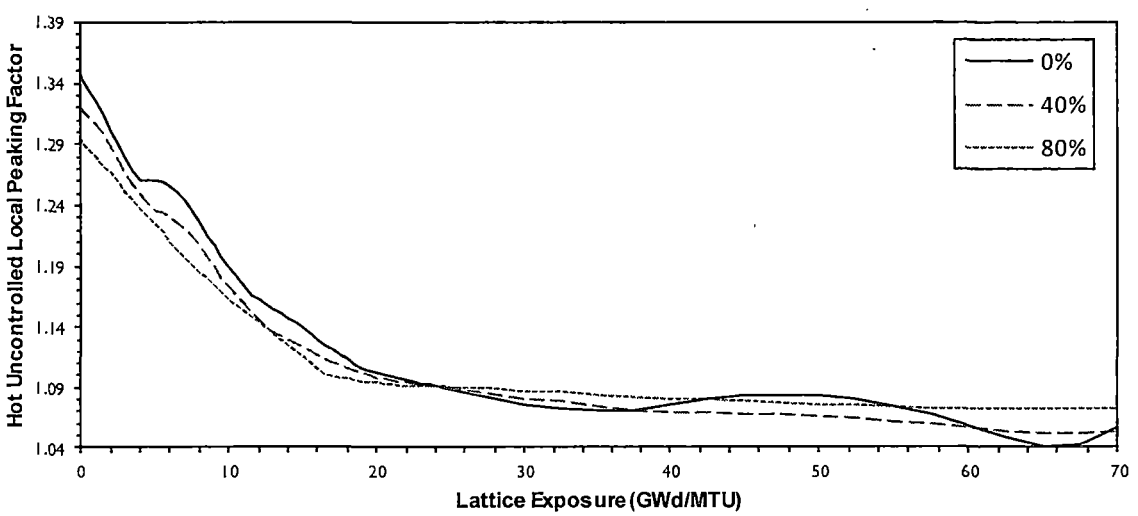

Figure A.6 [ ] Hot Uncontrolled LPF

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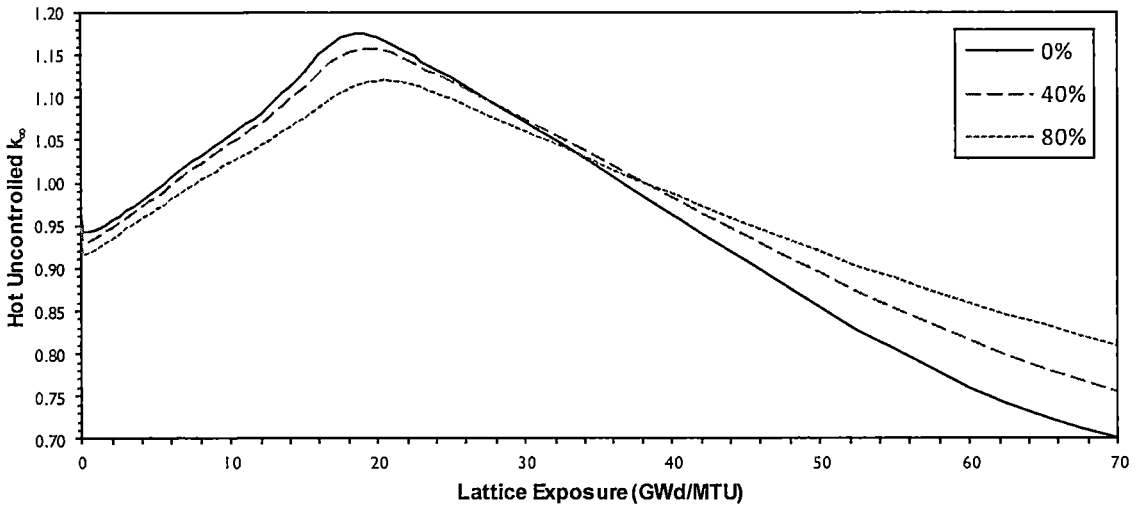

Figure A.7 [ ] Hot Uncontrolled k_∞

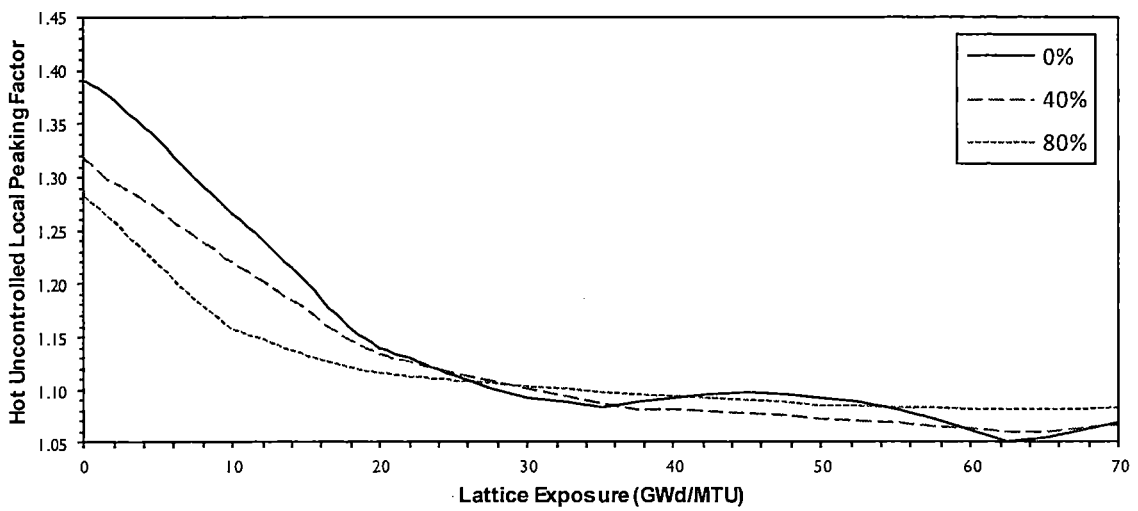

Figure A.8 [ ] Hot Uncontrolled LPF

Controlled Document

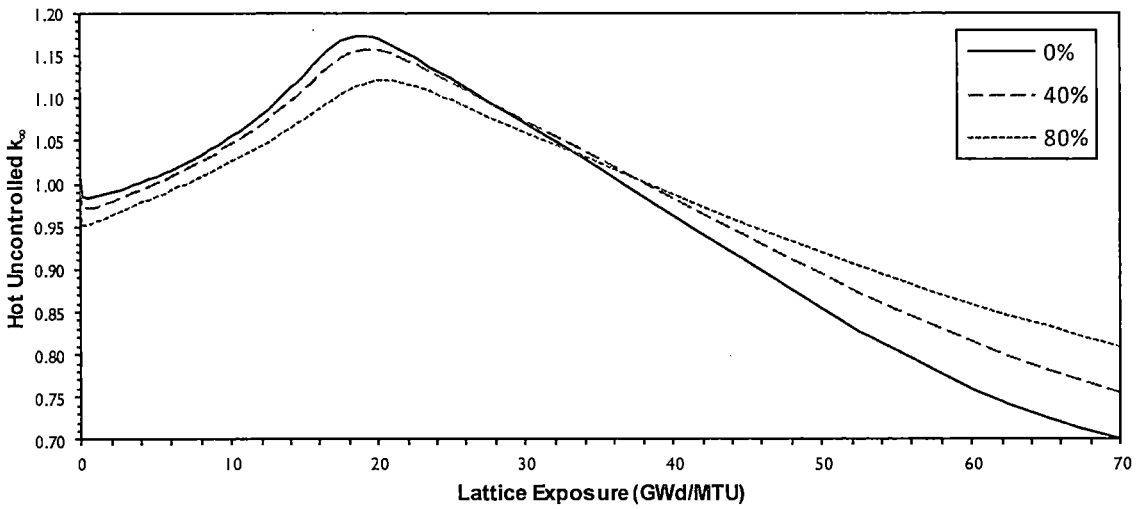

Figure A.9 [ ] Hot Uncontrolled k_∞

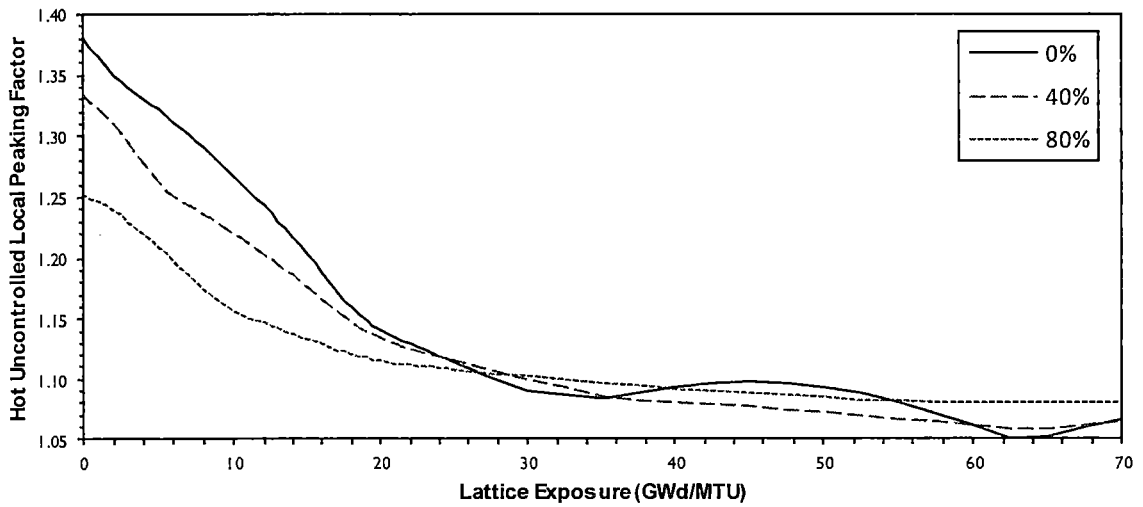

Figure A.10 [ ] Hot Uncontrolled LPF

Controlled Document

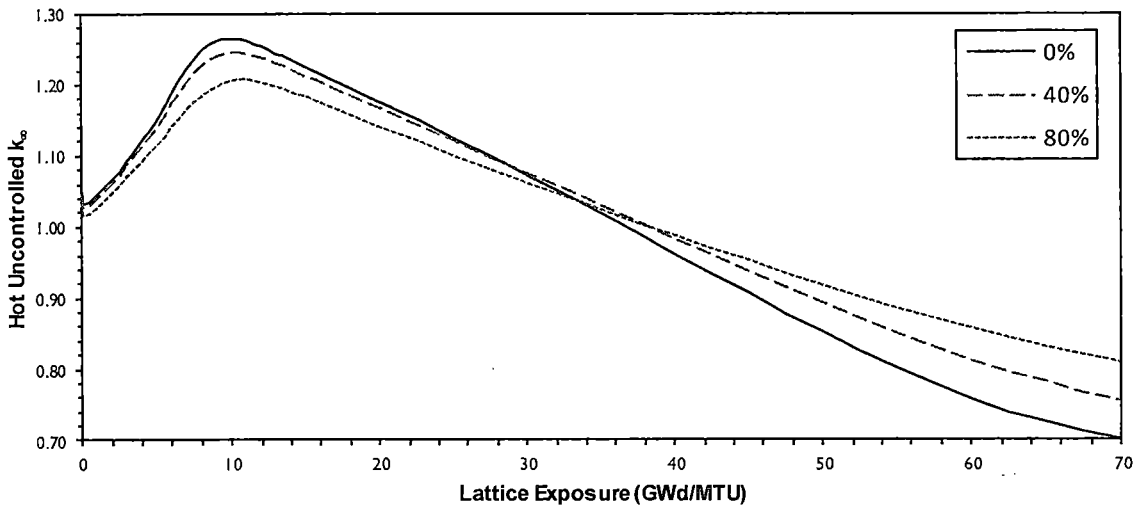

Figure A.11 [ ] Hot Uncontrolled k_∞

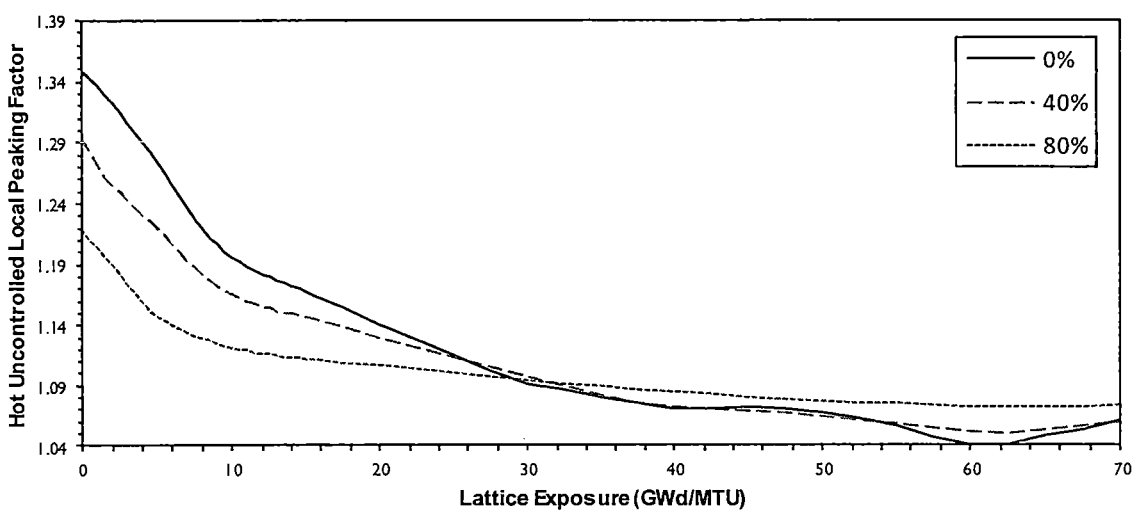

Figure A.12 [ ] Hot Uncontrolled LPF

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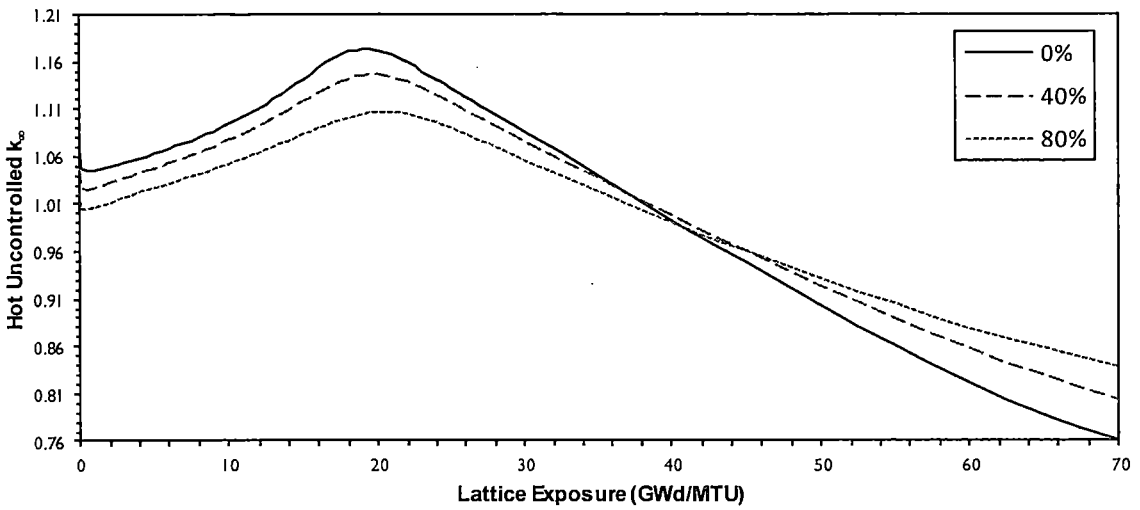

Figure A.13 [ ] Hot Uncontrolled k_∞

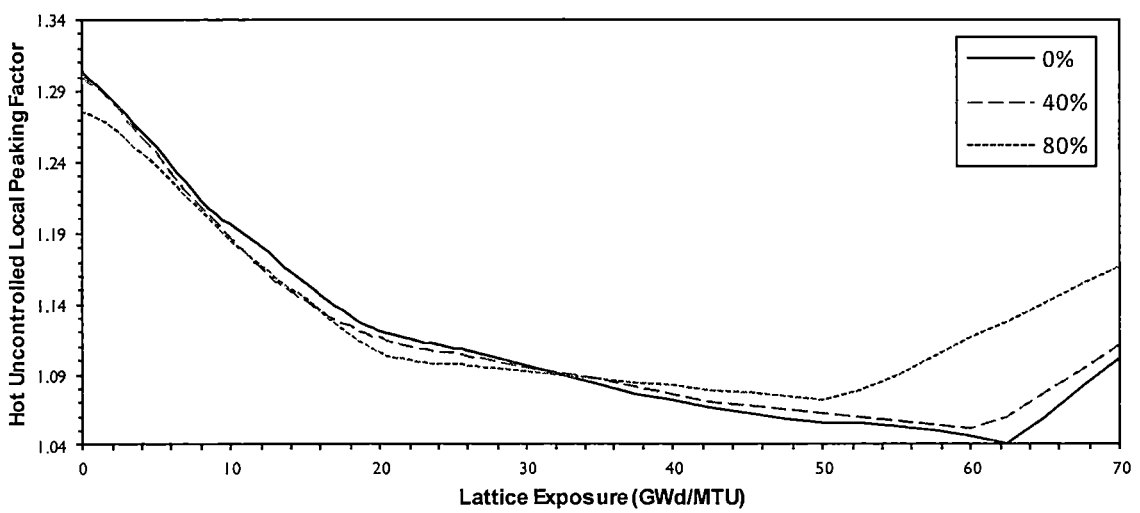

Figure A.14 [ ] Hot Uncontrolled LPF

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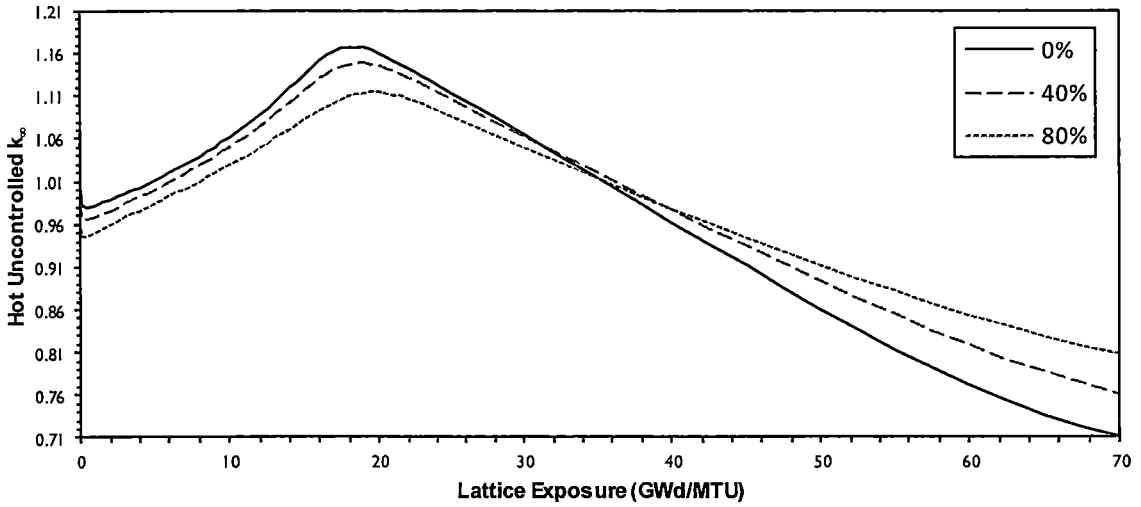

Figure A.15 [ ] Hot Uncontrolled k_∞

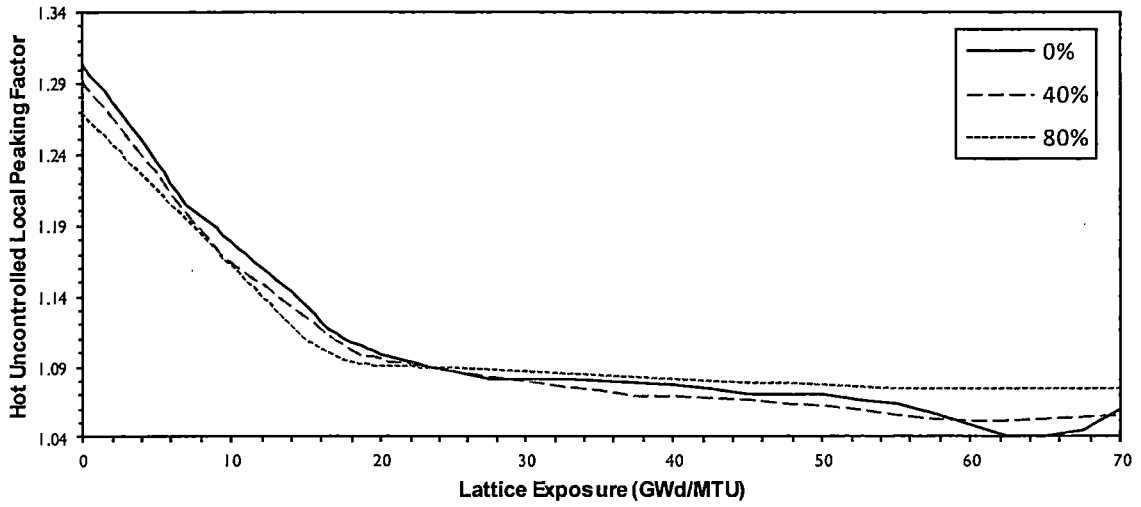

Figure A.16 [ ] Hot Uncontrolled LPF

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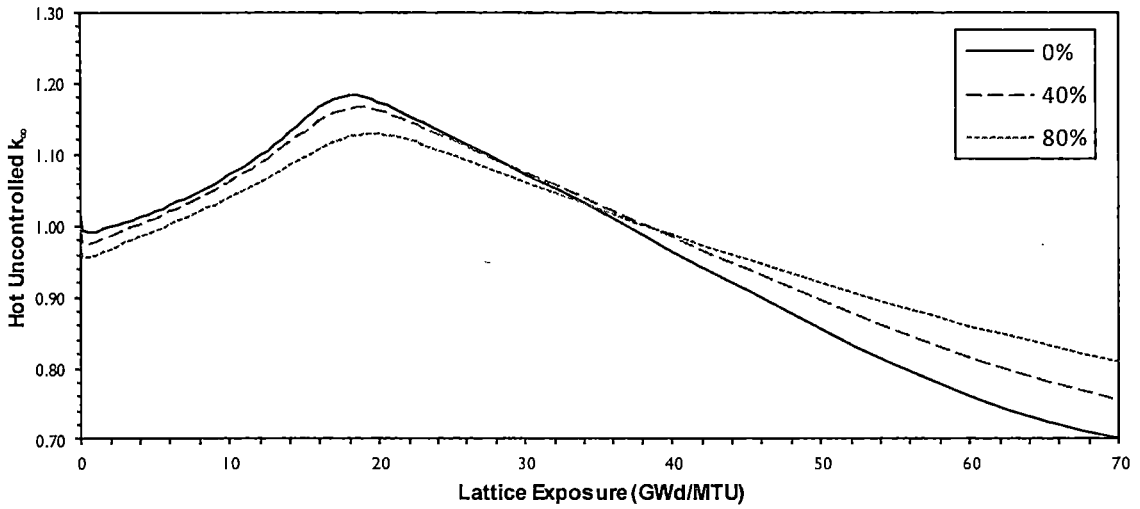

Figure A.17 [ ] Hot Uncontrolled k_∞

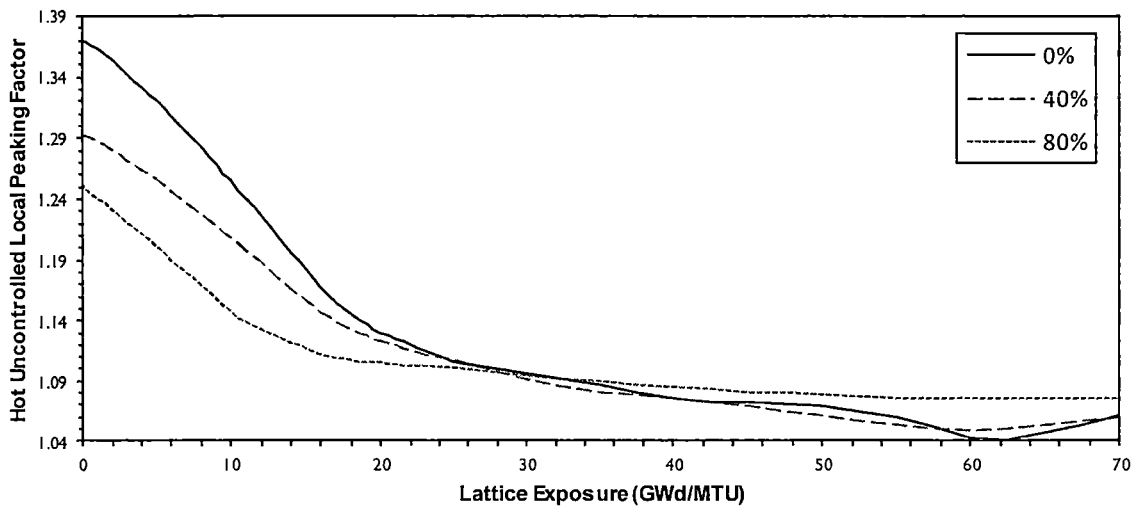

Figure A.18 [ ] Hot Uncontrolled LPF

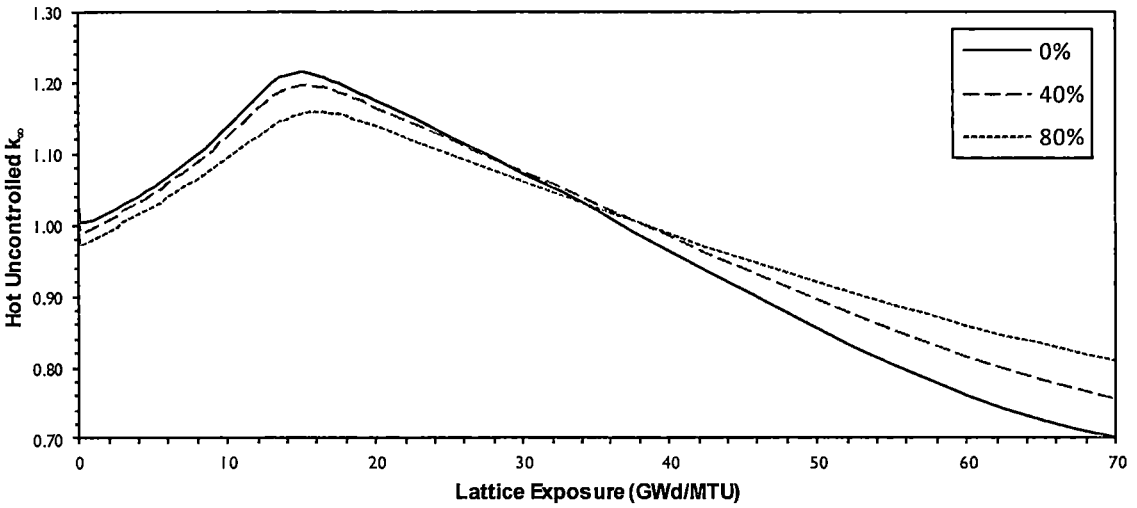

Figure A.19 [ ] Hot Uncontrolled k_∞

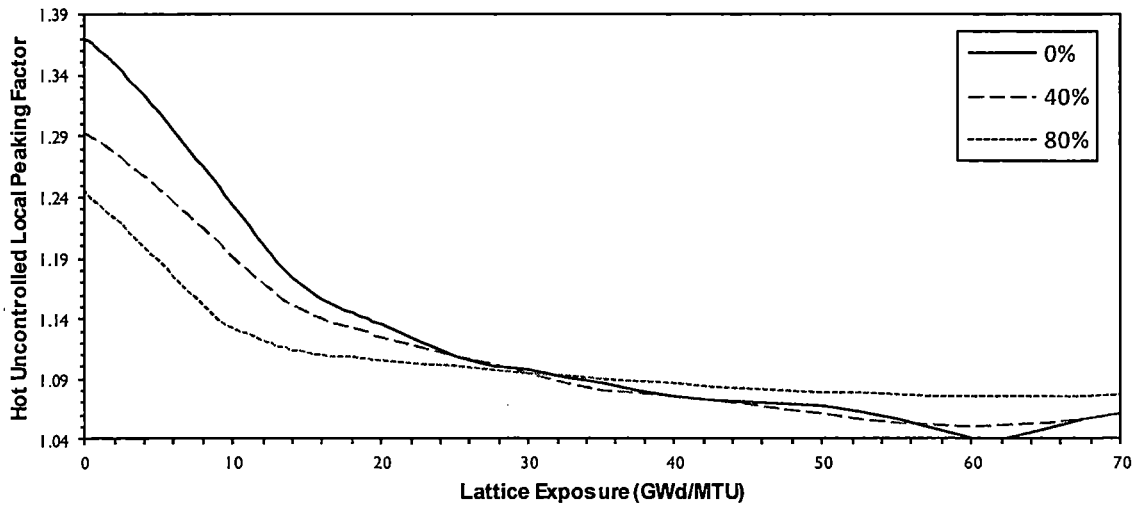

Figure A.20 [ ] Hot Uncontrolled LPF

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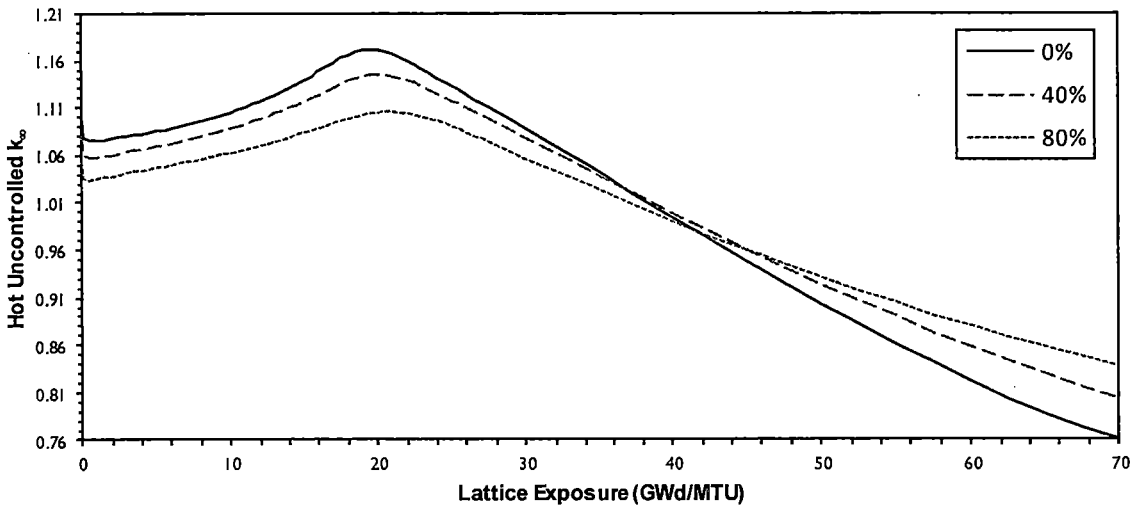

Figure A.21 [ ] Hot Uncontrolled k_∞

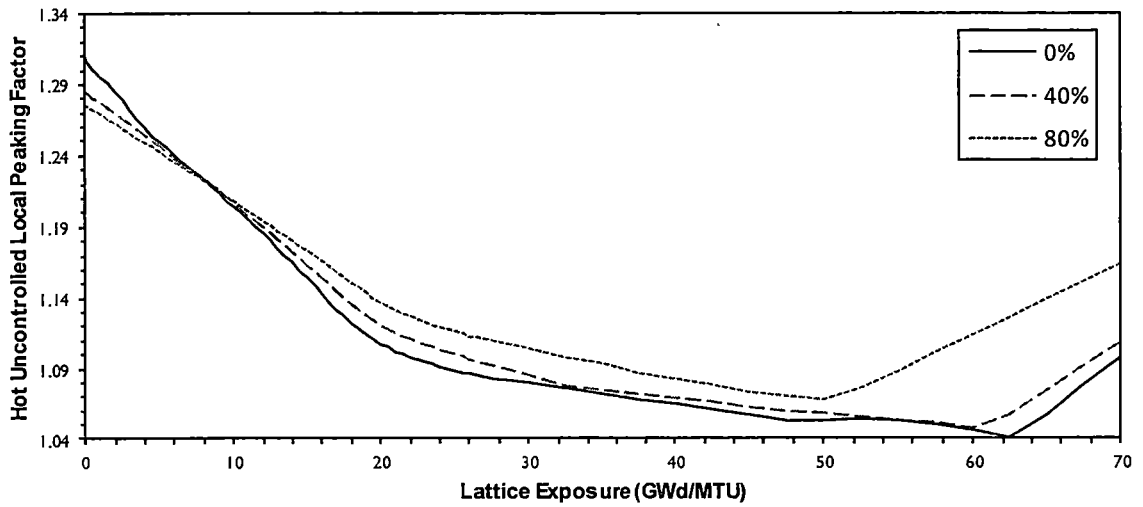

Figure A.22 [ ] Hot Uncontrolled LPF

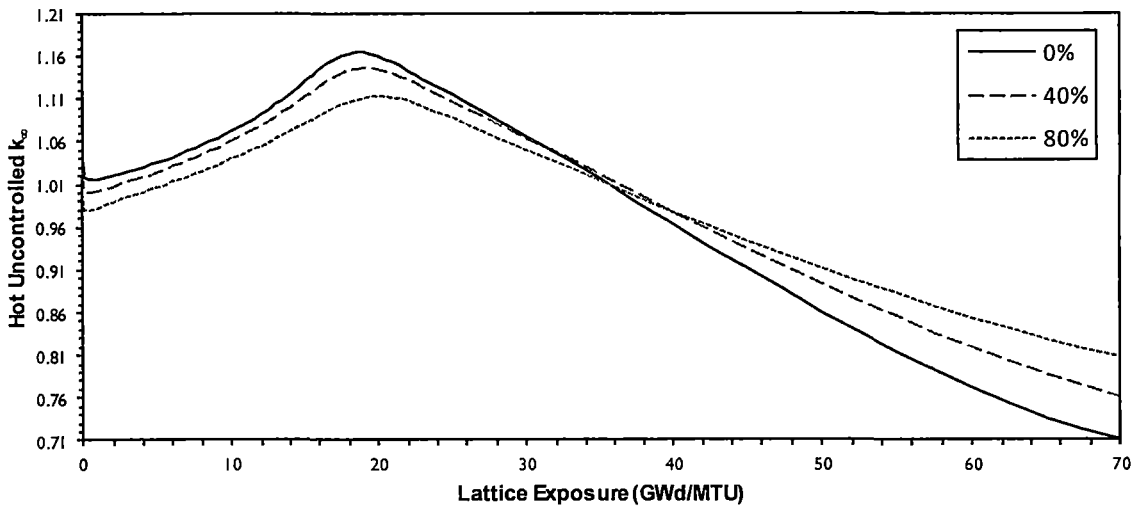

Figure A.23 [ ] Hot Uncontrolled k_∞

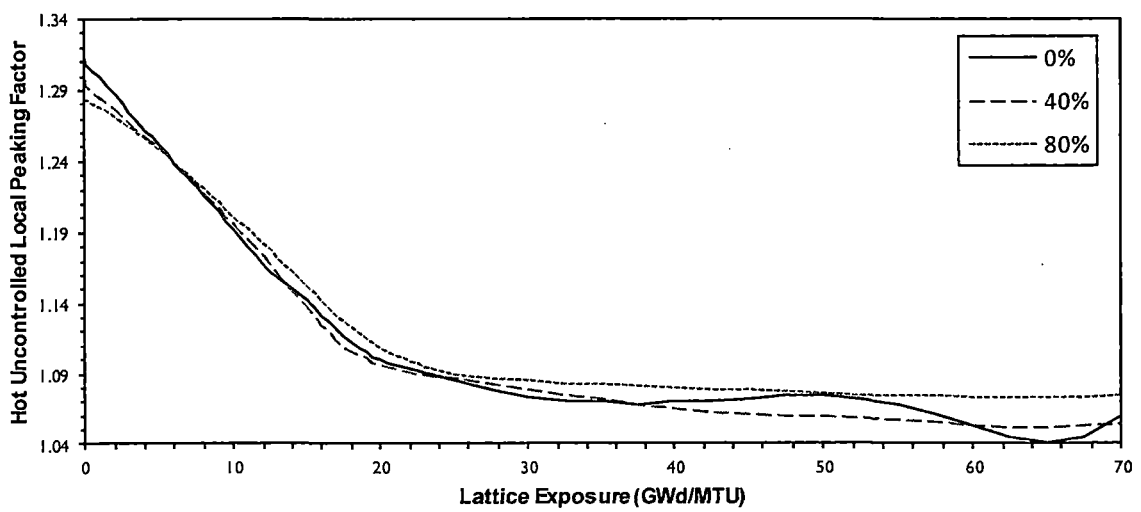

Figure A.24 [ ] Hot Uncontrolled LPF

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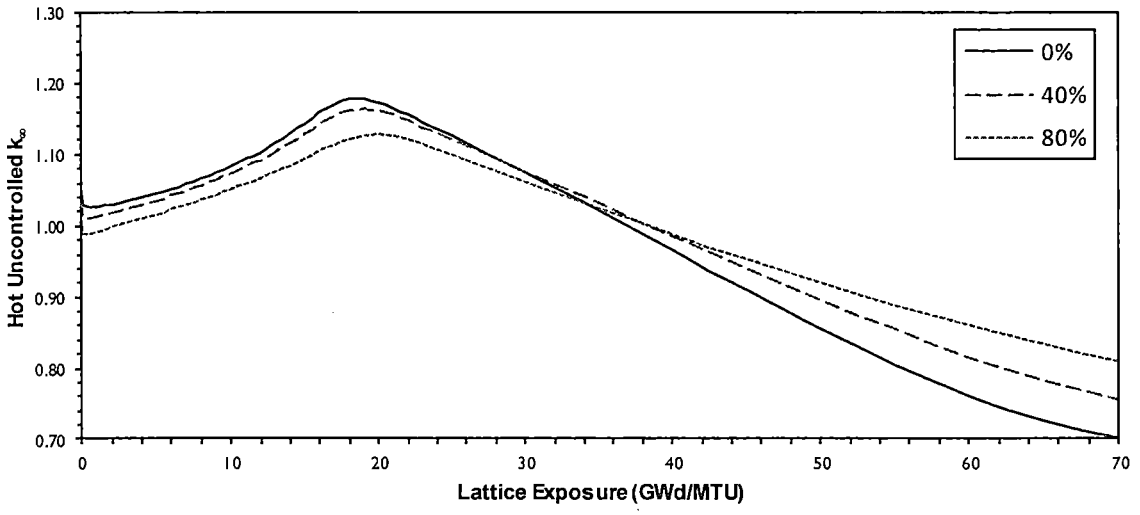

Figure A.25 [ ] Hot Uncontrolled k_∞

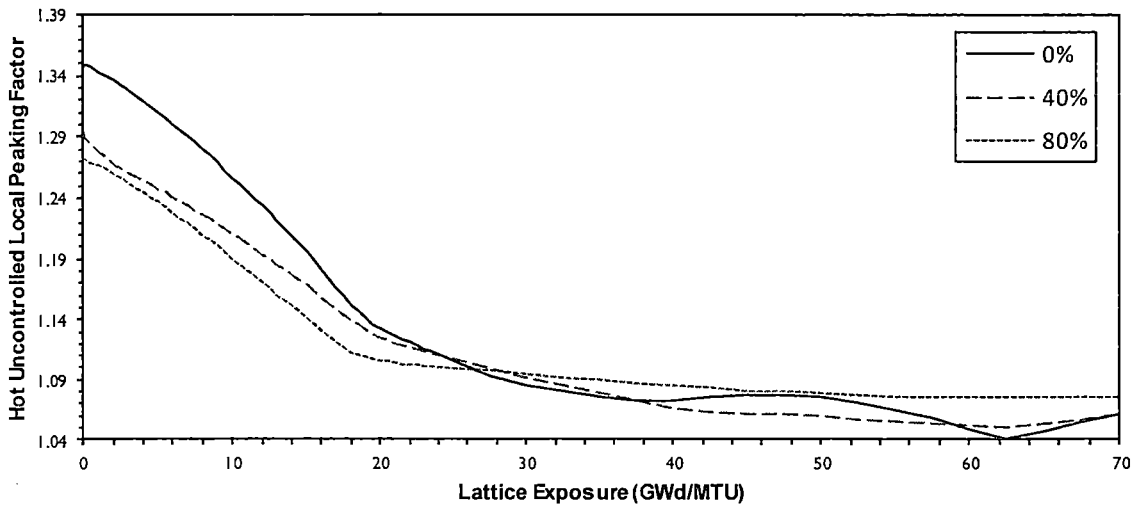

Figure A.26 [ ] Hot Uncontrolled LPF

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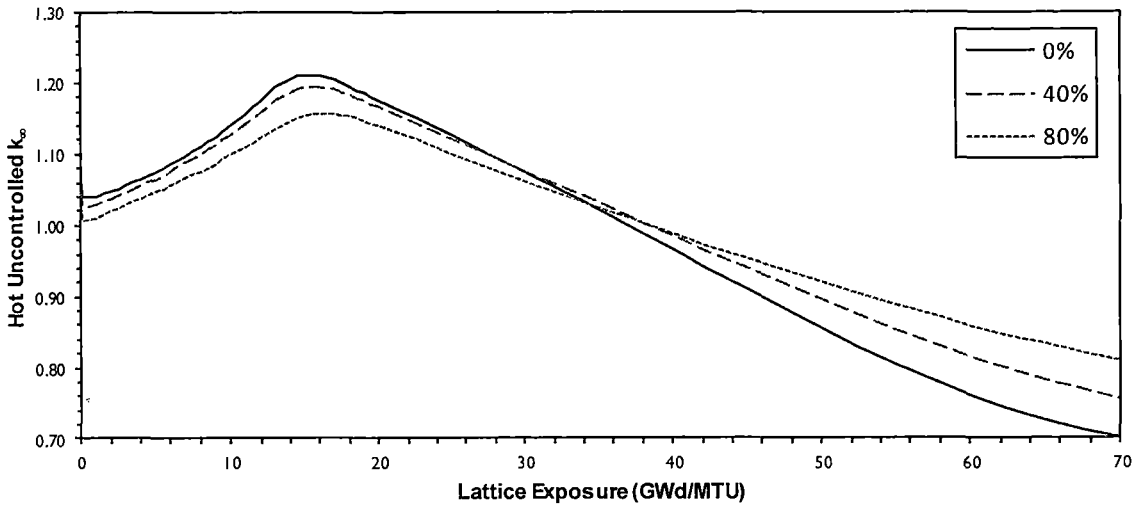

Figure A.27 [ ] Hot Uncontrolled k_∞

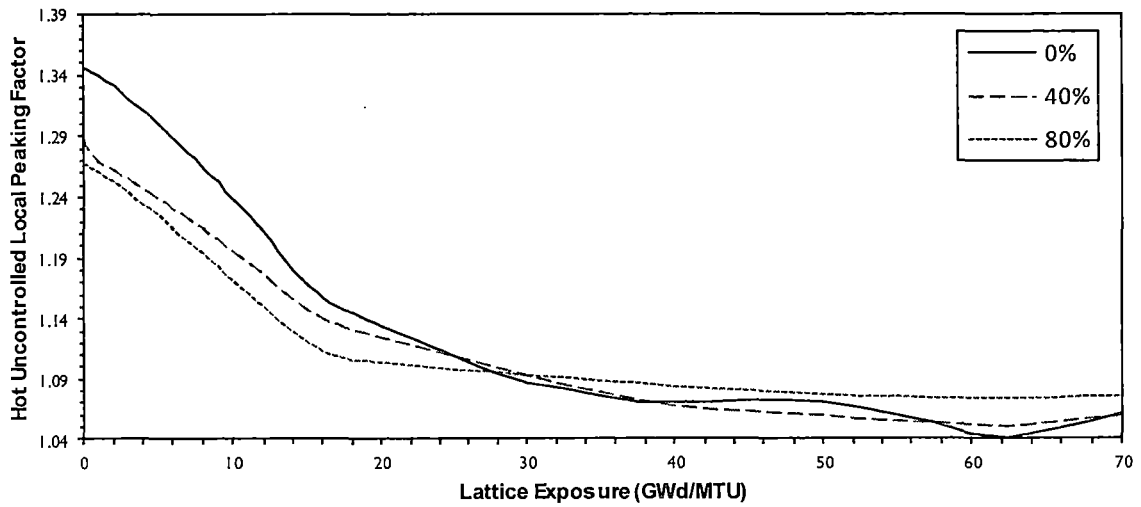

Figure A.28 [ ] Hot Uncontrolled LPF

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Appendix B Enriched Lattice Hot Uncontrolled Reactivity and LPF Tables

The results in this appendix are based on hot operating and equilibrium xenon conditions.

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Table B.1 [ ] Hot Uncontrolled k_∞

Exposure MWd/MTU	0.00 Void History	0.40 Void History	0.80 Void History
0.	1.03648	1.02079	1.00157
100.	1.01611	1.00216	0.98536
500.	1.01579	1.00267	0.98676
1000.	1.01919	1.00660	0.99102
1500.	1.02374	1.01142	0.99580
2000.	1.02865	1.01648	1.00063
2500.	1.03371	1.02158	1.00537
3000.	1.03889	1.02669	1.00999
3500.	1.04422	1.03184	1.01454
4000.	1.04975	1.03706	1.01905
4500.	1.05552	1.04239	1.02355
5000.	1.06153	1.04786	1.02806
5500.	1.06777	1.05346	1.03262
6000.	1.07417	1.05916	1.03721
6500.	1.08063	1.06491	1.04185
7000.	1.08707	1.07064	1.04650
7500.	1.09345	1.07630	1.05113
8000.	1.09978	1.08190	1.05572
8500.	1.10608	1.08747	1.06026
9000.	1.11235	1.09300	1.06474
9500.	1.11864	1.09852	1.06918
10000.	1.12502	1.10405	1.07358
10500.	1.13155	1.10964	1.07795
11000.	1.13829	1.11531	1.08229
11500.	1.14526	1.12109	1.08663
12000.	1.15242	1.12696	1.09096
12500.	1.15968	1.13288	1.09528
13000.	1.16683	1.13873	1.09954
13500.	1.17359	1.14438	1.10370
14000.	1.17974	1.14963	1.10768
14500.	1.18499	1.15434	1.11138
15000.	1.18915	1.15833	1.11474
15500.	1.19205	1.16152	1.11766
16000.	1.19363	1.16379	1.12009
16500.	1.19392	1.16510	1.12196
17000.	1.19304	1.16546	1.12322
17500.	1.19115	1.16494	1.12386
18000.	1.18846	1.16361	1.12389
18500.	1.18515	1.16159	1.12334
19000.	1.18141	1.15901	1.12225
19500.	1.17735	1.15598	1.12069
20000.	1.17309	1.15260	1.11869
20500.	1.16853	1.14897	1.11634
21000.	1.16397	1.14517	1.11368
21500.	1.15940	1.14124	1.11077
22000.	1.15484	1.13724	1.10767
22500.	1.15028	1.13313	1.10441
23000.	1.14571	1.12901	1.10105
23500.	1.14114	1.12489	1.09761
24000.	1.13656	1.12076	1.09411
24500.	1.13199	1.11664	1.09058
25000.	1.12742	1.11252	1.08700
27500.	1.10449	1.09219	1.06921
30000.	1.08149	1.07206	1.05177
32500.	1.05840	1.05211	1.03471
35000.	1.03523	1.03234	1.01802
37500.	1.01201	1.01277	1.00173
40000.	0.98880	0.99343	0.98582
42500.	0.96568	0.97436	0.97034
45000.	0.94274	0.95561	0.95530
47500.	0.92011	0.93724	0.94072
50000.	0.89792	0.91930	0.92665
52500.	0.87636	0.90187	0.91310
55000.	0.85558	0.88502	0.90008
57500.	0.83576	0.86885	0.88763
60000.	0.81708	0.85342	0.87575
62500.	0.79967	0.83879	0.86446
65000.	0.78366	0.82503	0.85377
67500.	0.76914	0.81219	0.84368
70000.	0.75613	0.80029	0.83421

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Table B.2 [ ] Hot Uncontrolled LPF

Exposure MWd/MTU	0.00 Void History	0.40 Void History	0.80 Void History
0.	1.366	1.351	1.325
100.	1.359	1.345	1.315
500.	1.351	1.337	1.306
1000.	1.341	1.329	1.300
1500.	1.330	1.319	1.293
2000.	1.319	1.309	1.285
2500.	1.307	1.299	1.278
3000.	1.295	1.289	1.270
3500.	1.283	1.279	1.262
4000.	1.274	1.269	1.255
4500.	1.266	1.260	1.247
5000.	1.258	1.253	1.242
5500.	1.250	1.246	1.237
6000.	1.242	1.239	1.232
6500.	1.234	1.232	1.226
7000.	1.228	1.225	1.221
7500.	1.223	1.219	1.216
8000.	1.216	1.213	1.211
8500.	1.209	1.207	1.207
9000.	1.201	1.201	1.202
9500.	1.193	1.196	1.198
10000.	1.187	1.191	1.193
10500.	1.181	1.185	1.189
11000.	1.175	1.180	1.185
11500.	1.169	1.175	1.181
12000.	1.163	1.170	1.176
12500.	1.157	1.165	1.172
13000.	1.151	1.160	1.168
13500.	1.145	1.155	1.164
14000.	1.139	1.149	1.160
14500.	1.134	1.145	1.156
15000.	1.128	1.140	1.152
15500.	1.123	1.135	1.149
16000.	1.119	1.131	1.145
16500.	1.115	1.127	1.141
17000.	1.111	1.123	1.138
17500.	1.108	1.120	1.135
18000.	1.106	1.117	1.132
18500.	1.103	1.114	1.129
19000.	1.101	1.112	1.126
19500.	1.099	1.110	1.124
20000.	1.098	1.108	1.122
20500.	1.097	1.106	1.120
21000.	1.095	1.105	1.118
21500.	1.094	1.103	1.117
22000.	1.092	1.102	1.116
22500.	1.091	1.100	1.114
23000.	1.090	1.099	1.113
23500.	1.090	1.097	1.112
24000.	1.089	1.096	1.111
24500.	1.089	1.094	1.110
25000.	1.088	1.093	1.109
27500.	1.084	1.085	1.103
30000.	1.081	1.080	1.098
32500.	1.076	1.077	1.092
35000.	1.072	1.074	1.087
37500.	1.067	1.071	1.082
40000.	1.063	1.068	1.077
42500.	1.059	1.064	1.073
45000.	1.055	1.060	1.069
47500.	1.055	1.058	1.068
50000.	1.055	1.055	1.066
52500.	1.054	1.052	1.076
55000.	1.052	1.050	1.088
57500.	1.049	1.048	1.100
60000.	1.044	1.046	1.113
62500.	1.037	1.058	1.126
65000.	1.058	1.075	1.139
67500.	1.079	1.092	1.151
70000.	1.098	1.108	1.163

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Table B.3 [ ] Hot Uncontrolled k_∞

Exposure MWd/MTU	0.00 Void History	0.40 Void History	0.80 Void History
0.	1.02242	1.00489	0.98363
100.	1.00211	0.98635	0.96753
500.	1.00101	0.98616	0.96831
1000.	1.00325	0.98906	0.97171
1500.	1.00647	0.99271	0.97555
2000.	1.01003	0.99656	0.97941
2500.	1.01373	1.00045	0.98319
3000.	1.01748	1.00430	0.98684
3500.	1.02132	1.00813	0.99038
4000.	1.02529	1.01200	0.99386
4500.	1.02940	1.01591	0.99730
5000.	1.03366	1.01988	1.00071
5500.	1.03806	1.02392	1.00413
6000.	1.04257	1.02802	1.00755
6500.	1.04708	1.03214	1.01098
7000.	1.05153	1.03622	1.01441
7500.	1.05586	1.04021	1.01781
8000.	1.06005	1.04409	1.02116
8500.	1.06409	1.04788	1.02443
9000.	1.06800	1.05156	1.02763
9500.	1.07181	1.05515	1.03075
10000.	1.07559	1.05868	1.03380
10500.	1.07938	1.06217	1.03677
11000.	1.08322	1.06566	1.03969
11500.	1.08712	1.06918	1.04256
12000.	1.09112	1.07273	1.04541
12500.	1.09525	1.07634	1.04825
13000.	1.09955	1.08004	1.05109
13500.	1.10406	1.08384	1.05395
14000.	1.10883	1.08777	1.05684
14500.	1.11389	1.09185	1.05978
15000.	1.11923	1.09609	1.06278
15500.	1.12481	1.10050	1.06583
16000.	1.13056	1.10501	1.06892
16500.	1.13632	1.10955	1.07205
17000.	1.14186	1.11399	1.07515
17500.	1.14694	1.11824	1.07818
18000.	1.15139	1.12215	1.08107
18500.	1.15497	1.12556	1.08376
19000.	1.15752	1.12836	1.08621
19500.	1.15895	1.13045	1.08834
20000.	1.15924	1.13178	1.09008
20500.	1.15847	1.13232	1.09139
21000.	1.15675	1.13206	1.09222
21500.	1.15425	1.13107	1.09257
22000.	1.15114	1.12940	1.09242
22500.	1.14754	1.12717	1.09179
23000.	1.14360	1.12447	1.09069
23500.	1.13943	1.12139	1.08918
24000.	1.13491	1.11802	1.08729
24500.	1.13040	1.11443	1.08507
25000.	1.12588	1.11068	1.08257
25500.	1.12132	1.10682	1.07984
26000.	1.11676	1.10278	1.07691
26500.	1.11219	1.09875	1.07383
27000.	1.10763	1.09471	1.07063
27500.	1.10307	1.09068	1.06736
28000.	1.09850	1.08668	1.06402
28500.	1.09393	1.08268	1.06065
30000.	1.08021	1.07069	1.05032
32500.	1.05727	1.05086	1.03340
35000.	1.03427	1.03123	1.01682
37500.	1.01122	1.01179	1.00062
40000.	0.98818	0.99259	0.98481
42500.	0.96521	0.97365	0.96941
45000.	0.94242	0.95501	0.95446
47500.	0.91991	0.93674	0.93996
50000.	0.89782	0.91890	0.92596
52500.	0.87633	0.90154	0.91246
55000.	0.85559	0.88476	0.89949
57500.	0.83578	0.86862	0.88707
60000.	0.81707	0.85320	0.87521
62500.	0.79960	0.83856	0.86393
65000.	0.78351	0.82478	0.85324
67500.	0.76887	0.81188	0.84314
70000.	0.75573	0.79992	0.83365

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Table B.4 [ ] Hot Uncontrolled LPF

Exposure MWd/MTU	0.00 Void History	0.40 Void History	0.80 Void History
0.	1.378	1.363	1.337
100.	1.371	1.357	1.328
500.	1.363	1.350	1.318
1000.	1.354	1.342	1.312
1500.	1.344	1.333	1.306
2000.	1.334	1.324	1.299
2500.	1.323	1.315	1.292
3000.	1.312	1.306	1.285
3500.	1.301	1.296	1.278
4000.	1.290	1.287	1.271
4500.	1.279	1.278	1.264
5000.	1.270	1.268	1.257
5500.	1.263	1.259	1.250
6000.	1.258	1.251	1.243
6500.	1.256	1.245	1.238
7000.	1.252	1.239	1.233
7500.	1.248	1.234	1.229
8000.	1.243	1.228	1.224
8500.	1.237	1.223	1.220
9000.	1.230	1.218	1.216
9500.	1.223	1.213	1.212
10000.	1.217	1.208	1.208
10500.	1.209	1.204	1.204
11000.	1.202	1.199	1.200
11500.	1.195	1.195	1.197
12000.	1.188	1.190	1.193
12500.	1.182	1.186	1.189
13000.	1.177	1.181	1.186
13500.	1.171	1.177	1.182
14000.	1.166	1.173	1.179
14500.	1.161	1.168	1.175
15000.	1.155	1.164	1.172
15500.	1.150	1.159	1.168
16000.	1.144	1.154	1.165
16500.	1.139	1.150	1.161
17000.	1.133	1.145	1.158
17500.	1.128	1.140	1.154
18000.	1.122	1.136	1.151
18500.	1.117	1.131	1.147
19000.	1.112	1.127	1.144
19500.	1.108	1.122	1.140
20000.	1.103	1.118	1.137
20500.	1.100	1.114	1.133
21000.	1.096	1.111	1.130
21500.	1.093	1.108	1.127
22000.	1.092	1.105	1.124
22500.	1.091	1.102	1.121
23000.	1.091	1.100	1.119
23500.	1.090	1.097	1.116
24000.	1.089	1.095	1.114
24500.	1.089	1.094	1.112
25000.	1.088	1.092	1.111
25500.	1.087	1.090	1.109
26000.	1.087	1.089	1.107
26500.	1.086	1.087	1.106
27000.	1.086	1.086	1.105
27500.	1.085	1.084	1.104
28000.	1.084	1.083	1.102
28500.	1.083	1.083	1.101
30000.	1.081	1.081	1.098
32500.	1.077	1.078	1.093
35000.	1.073	1.075	1.087
37500.	1.068	1.072	1.082
40000.	1.064	1.069	1.078
42500.	1.060	1.066	1.073
45000.	1.061	1.062	1.071
47500.	1.062	1.060	1.070
50000.	1.062	1.057	1.068
52500.	1.062	1.054	1.075
55000.	1.061	1.052	1.087
57500.	1.057	1.050	1.100
60000.	1.052	1.048	1.113
62500.	1.045	1.057	1.125
65000.	1.057	1.074	1.138
67500.	1.078	1.091	1.151
70000.	1.098	1.108	1.163

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Table B.5 [ ] Hot Uncontrolled k_∞

Exposure MWd/MTU	0.00 Void History	0.40 Void History	0.80 Void History
0.	0.95554	0.94208	0.92519
100.	0.93632	0.92444	0.90974
500.	0.93616	0.92526	0.91159
1000.	0.93967	0.92956	0.91650
1500.	0.94433	0.93478	0.92201
2000.	0.94944	0.94032	0.92765
2500.	0.95475	0.94595	0.93325
3000.	0.96021	0.95160	0.93876
3500.	0.96589	0.95735	0.94421
4000.	0.97181	0.96321	0.94965
4500.	0.97797	0.96921	0.95510
5000.	0.98437	0.97533	0.96057
5500.	0.99093	0.98154	0.96607
6000.	0.99750	0.98777	0.97158
6500.	1.00395	0.99391	0.97704
7000.	1.01024	0.99993	0.98243
7500.	1.01634	1.00580	0.98771
8000.	1.02225	1.01152	0.99289
8500.	1.02802	1.01711	0.99797
9000.	1.03372	1.02260	1.00294
9500.	1.03942	1.02805	1.00783
10000.	1.04518	1.03350	1.01265
10500.	1.05102	1.03900	1.01744
11000.	1.05699	1.04457	1.02220
11500.	1.06312	1.05023	1.02698
12000.	1.06949	1.05601	1.03179
12500.	1.07614	1.06196	1.03664
13000.	1.08314	1.06810	1.04156
13500.	1.09054	1.07450	1.04658
14000.	1.09839	1.08118	1.05171
14500.	1.10667	1.08816	1.05698
15000.	1.11520	1.09536	1.06239
15500.	1.12378	1.10267	1.06789
16000.	1.13212	1.10987	1.07343
16500.	1.13984	1.11676	1.07887
17000.	1.14664	1.12309	1.08410
17500.	1.15211	1.12864	1.08900
18000.	1.15600	1.13318	1.09343
18500.	1.15827	1.13650	1.09728
19000.	1.15892	1.13856	1.10039
19500.	1.15809	1.13938	1.10269
20000.	1.15599	1.13903	1.10415
20500.	1.15292	1.13766	1.10478
21000.	1.14917	1.13542	1.10460
21500.	1.14461	1.13252	1.10369
22000.	1.14006	1.12912	1.10213
22500.	1.13550	1.12538	1.10002
23000.	1.13068	1.12114	1.09747
23500.	1.12587	1.11690	1.09456
24000.	1.12105	1.11267	1.09139
24500.	1.11624	1.10843	1.08802
25000.	1.11142	1.10419	1.08453
27500.	1.08705	1.08276	1.06603
30000.	1.06241	1.06129	1.04765
32500.	1.03745	1.03983	1.02950
35000.	1.01218	1.01839	1.01162
37500.	0.98665	0.99698	0.99403
40000.	0.96095	0.97564	0.97673
42500.	0.93520	0.95443	0.95976
45000.	0.90954	0.93344	0.94315
47500.	0.88417	0.91275	0.92696
50000.	0.85935	0.89247	0.91124
52500.	0.83534	0.87274	0.89601
55000.	0.81241	0.85369	0.88133
57500.	0.79084	0.83547	0.86724
60000.	0.77089	0.81820	0.85378
62500.	0.75274	0.80200	0.84100
65000.	0.73652	0.78698	0.82893
67500.	0.72229	0.77320	0.81758
70000.	0.70999	0.76070	0.80700

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Table B.6 [ ] Hot Uncontrolled LPF

Exposure MWd/MTU	0.00 Void History	0.40 Void History	0.80 Void History
0.	1.349	1.323	1.297
100.	1.345	1.320	1.293
500.	1.337	1.315	1.288
1000.	1.328	1.309	1.281
1500.	1.316	1.300	1.274
2000.	1.302	1.290	1.268
2500.	1.291	1.279	1.261
3000.	1.281	1.269	1.253
3500.	1.271	1.260	1.246
4000.	1.263	1.252	1.239
4500.	1.263	1.243	1.232
5000.	1.262	1.237	1.226
5500.	1.261	1.235	1.219
6000.	1.258	1.232	1.212
6500.	1.253	1.228	1.206
7000.	1.246	1.223	1.199
7500.	1.237	1.216	1.193
8000.	1.227	1.208	1.187
8500.	1.217	1.200	1.182
9000.	1.209	1.191	1.176
9500.	1.200	1.182	1.171
10000.	1.192	1.175	1.165
10500.	1.184	1.168	1.160
11000.	1.176	1.161	1.155
11500.	1.168	1.154	1.150
12000.	1.164	1.147	1.145
12500.	1.160	1.140	1.140
13000.	1.156	1.137	1.136
13500.	1.153	1.134	1.131
14000.	1.149	1.131	1.126
14500.	1.145	1.128	1.121
15000.	1.140	1.125	1.117
15500.	1.136	1.122	1.112
16000.	1.132	1.119	1.107
16500.	1.127	1.116	1.103
17000.	1.123	1.113	1.101
17500.	1.118	1.111	1.100
18000.	1.115	1.108	1.099
18500.	1.111	1.106	1.098
19000.	1.108	1.104	1.097
19500.	1.106	1.102	1.096
20000.	1.104	1.100	1.096
20500.	1.102	1.099	1.095
21000.	1.101	1.098	1.095
21500.	1.100	1.097	1.094
22000.	1.098	1.096	1.094
22500.	1.097	1.095	1.094
23000.	1.096	1.094	1.093
23500.	1.094	1.093	1.093
24000.	1.093	1.093	1.093
24500.	1.091	1.092	1.093
25000.	1.090	1.091	1.092
27500.	1.084	1.087	1.091
30000.	1.078	1.083	1.089
32500.	1.074	1.080	1.088
35000.	1.073	1.076	1.086
37500.	1.073	1.072	1.084
40000.	1.078	1.071	1.083
42500.	1.083	1.071	1.082
45000.	1.086	1.070	1.080
47500.	1.086	1.069	1.079
50000.	1.085	1.068	1.078
52500.	1.082	1.066	1.077
55000.	1.076	1.064	1.076
57500.	1.069	1.061	1.075
60000.	1.060	1.058	1.075
62500.	1.050	1.055	1.074
65000.	1.042	1.053	1.074
67500.	1.044	1.054	1.074
70000.	1.059	1.055	1.074

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Table B.7 [ ] Hot Uncontrolled k_∞

Exposure MWd/MTU	0.00 Void History	0.40 Void History	0.80 Void History
0.	0.96226	0.94979	0.93242
100.	0.94267	0.93178	0.91672
500.	0.94237	0.93251	0.91854
1000.	0.94585	0.93683	0.92353
1500.	0.95056	0.94217	0.92917
2000.	0.95578	0.94787	0.93497
2500.	0.96123	0.95370	0.94076
3000.	0.96689	0.95960	0.94647
3500.	0.97281	0.96563	0.95215
4000.	0.97901	0.97181	0.95783
4500.	0.98551	0.97816	0.96353
5000.	0.99228	0.98466	0.96927
5500.	0.99924	0.99127	0.97505
6000.	1.00619	0.99789	0.98083
6500.	1.01302	1.00441	0.98656
7000.	1.01965	1.01079	0.99221
7500.	1.02604	1.01701	0.99774
8000.	1.03220	1.02305	1.00318
8500.	1.03820	1.02895	1.00849
9000.	1.04414	1.03474	1.01371
9500.	1.05009	1.04050	1.01883
10000.	1.05612	1.04629	1.02390
10500.	1.06226	1.05213	1.02893
11000.	1.06856	1.05807	1.03396
11500.	1.07509	1.06413	1.03901
12000.	1.08190	1.07034	1.04411
12500.	1.08907	1.07677	1.04926
13000.	1.09666	1.08344	1.05450
13500.	1.10474	1.09043	1.05985
14000.	1.11331	1.09776	1.06535
14500.	1.12232	1.10542	1.07101
15000.	1.13159	1.11332	1.07682
15500.	1.14088	1.12132	1.08274
16000.	1.14980	1.12914	1.08869
16500.	1.15794	1.13656	1.09451
17000.	1.16482	1.14328	1.10008
17500.	1.17012	1.14899	1.10526
18000.	1.17364	1.15341	1.10989
18500.	1.17527	1.15641	1.11382
19000.	1.17509	1.15800	1.11690
19500.	1.17332	1.15822	1.11909
20000.	1.17037	1.15717	1.12033
20500.	1.16660	1.15507	1.12067
21000.	1.16184	1.15215	1.12018
21500.	1.15707	1.14866	1.11893
22000.	1.15231	1.14454	1.11702
22500.	1.14755	1.14042	1.11458
23000.	1.14255	1.13601	1.11172
23500.	1.13755	1.13160	1.10854
24000.	1.13256	1.12718	1.10514
24500.	1.12756	1.12277	1.10158
25000.	1.12256	1.11836	1.09786
27500.	1.09716	1.09611	1.07884
30000.	1.07132	1.07378	1.06003
32500.	1.04502	1.05137	1.04144
35000.	1.01828	1.02888	1.02309
37500.	0.99113	1.00633	1.00500
40000.	0.96369	0.98376	0.98717
42500.	0.93609	0.96126	0.96965
45000.	0.90854	0.93890	0.95247
47500.	0.88129	0.91682	0.93570
50000.	0.85465	0.89515	0.91937
52500.	0.82896	0.87405	0.90354
55000.	0.80458	0.85371	0.88827
57500.	0.78186	0.83429	0.87359
60000.	0.76111	0.81597	0.85958
62500.	0.74253	0.79891	0.84626
65000.	0.72623	0.78321	0.83369
67500.	0.71222	0.76896	0.82190
70000.	0.70038	0.75619	0.81092

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Table B.8 [ ] Hot Uncontrolled LPF

Exposure MWd/MTU	0.00 Void History	0.40 Void History	0.80 Void History
0.	1.385	1.317	1.286
100.	1.387	1.314	1.279
500.	1.384	1.309	1.274
1000.	1.380	1.302	1.268
1500.	1.375	1.296	1.261
2000.	1.369	1.292	1.255
2500.	1.363	1.288	1.248
3000.	1.357	1.284	1.241
3500.	1.351	1.280	1.235
4000.	1.345	1.275	1.228
4500.	1.338	1.271	1.221
5000.	1.331	1.266	1.214
5500.	1.324	1.261	1.208
6000.	1.317	1.256	1.201
6500.	1.310	1.251	1.195
7000.	1.303	1.246	1.188
7500.	1.296	1.241	1.182
8000.	1.289	1.236	1.176
8500.	1.283	1.232	1.171
9000.	1.276	1.227	1.165
9500.	1.270	1.222	1.160
10000.	1.263	1.218	1.154
10500.	1.257	1.213	1.152
11000.	1.250	1.208	1.149
11500.	1.244	1.204	1.147
12000.	1.238	1.199	1.145
12500.	1.231	1.195	1.142
13000.	1.225	1.191	1.140
13500.	1.218	1.186	1.137
14000.	1.212	1.181	1.135
14500.	1.205	1.177	1.133
15000.	1.198	1.172	1.130
15500.	1.190	1.167	1.128
16000.	1.183	1.162	1.126
16500.	1.175	1.157	1.124
17000.	1.168	1.153	1.122
17500.	1.161	1.148	1.120
18000.	1.155	1.144	1.118
18500.	1.149	1.140	1.117
19000.	1.145	1.137	1.115
19500.	1.141	1.134	1.114
20000.	1.137	1.131	1.113
20500.	1.134	1.129	1.112
21000.	1.132	1.126	1.111
21500.	1.129	1.125	1.111
22000.	1.126	1.123	1.110
22500.	1.124	1.121	1.109
23000.	1.121	1.119	1.109
23500.	1.119	1.118	1.108
24000.	1.116	1.116	1.107
24500.	1.114	1.115	1.107
25000.	1.111	1.113	1.106
27500.	1.099	1.105	1.104
30000.	1.090	1.098	1.101
32500.	1.085	1.091	1.098
35000.	1.081	1.084	1.095
37500.	1.086	1.079	1.093
40000.	1.090	1.078	1.091
42500.	1.093	1.077	1.089
45000.	1.094	1.075	1.087
47500.	1.093	1.073	1.085
50000.	1.090	1.070	1.083
52500.	1.085	1.068	1.082
55000.	1.078	1.065	1.081
57500.	1.069	1.062	1.080
60000.	1.058	1.060	1.079
62500.	1.047	1.057	1.079
65000.	1.051	1.057	1.079
67500.	1.058	1.060	1.079
70000.	1.065	1.064	1.080

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Table B.9 [ ] Hot Uncontrolled k_∞

Exposure MWd/MTU	0.00 Void History	0.40 Void History	0.80 Void History
0.	1.00810	0.99291	0.97092
100.	0.98616	0.97266	0.95317
500.	0.98403	0.97158	0.95334
1000.	0.98530	0.97376	0.95642
1500.	0.98770	0.97690	0.96014
2000.	0.99046	0.98030	0.96400
2500.	0.99330	0.98372	0.96779
3000.	0.99618	0.98711	0.97145
3500.	0.99916	0.99051	0.97502
4000.	1.00228	0.99398	0.97856
4500.	1.00558	0.99754	0.98210
5000.	1.00907	1.00124	0.98567
5500.	1.01279	1.00510	0.98930
6000.	1.01674	1.00913	0.99302
6500.	1.02093	1.01335	0.99683
7000.	1.02533	1.01773	1.00076
7500.	1.02990	1.02226	1.00478
8000.	1.03466	1.02692	1.00890
8500.	1.03959	1.03171	1.01310
9000.	1.04473	1.03663	1.01737
9500.	1.05009	1.04171	1.02173
10000.	1.05567	1.04696	1.02618
10500.	1.06150	1.05239	1.03071
11000.	1.06758	1.05801	1.03534
11500.	1.07396	1.06384	1.04007
12000.	1.08067	1.06988	1.04491
12500.	1.08776	1.07619	1.04986
13000.	1.09527	1.08277	1.05494
13500.	1.10324	1.08968	1.06017
14000.	1.11169	1.09693	1.06557
14500.	1.12054	1.10451	1.07116
15000.	1.12962	1.11233	1.07692
15500.	1.13878	1.12025	1.08281
16000.	1.14770	1.12800	1.08873
16500.	1.15588	1.13542	1.09455
17000.	1.16293	1.14220	1.10013
17500.	1.16853	1.14804	1.10532
18000.	1.17244	1.15264	1.10999
18500.	1.17452	1.15588	1.11399
19000.	1.17477	1.15772	1.11717
19500.	1.17338	1.15819	1.11943
20000.	1.17070	1.15739	1.12076
20500.	1.16711	1.15549	1.12119
21000.	1.16292	1.15272	1.12077
21500.	1.15807	1.14933	1.11960
22000.	1.15321	1.14526	1.11776
22500.	1.14836	1.14118	1.11537
23000.	1.14333	1.13677	1.11254
23500.	1.13830	1.13235	1.10938
24000.	1.13328	1.12794	1.10599
24500.	1.12825	1.12352	1.10244
25000.	1.12322	1.11911	1.09872
27500.	1.09775	1.09682	1.07967
30000.	1.07186	1.07443	1.06081
32500.	1.04551	1.05197	1.04217
35000.	1.01871	1.02942	1.02377
37500.	0.99151	1.00681	1.00562
40000.	0.96401	0.98420	0.98775
42500.	0.93637	0.96164	0.97018
45000.	0.90877	0.93925	0.95297
47500.	0.88149	0.91712	0.93616
50000.	0.85482	0.89542	0.91980
52500.	0.82912	0.87430	0.90394
55000.	0.80474	0.85394	0.88864
57500.	0.78204	0.83451	0.87395
60000.	0.76130	0.81620	0.85992
62500.	0.74275	0.79914	0.84659
65000.	0.72649	0.78345	0.83402
67500.	0.71251	0.76923	0.82223
70000.	0.70071	0.75649	0.81125

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Table B.10 [ ] Hot Uncontrolled LPF

Exposure MWd/MTU	0.00 Void History	0.40 Void History	0.80 Void History
0.	1.379	1.333	1.251
100.	1.376	1.330	1.249
500.	1.370	1.326	1.247
1000.	1.363	1.321	1.244
1500.	1.355	1.314	1.241
2000.	1.347	1.308	1.237
2500.	1.342	1.300	1.233
3000.	1.338	1.293	1.228
3500.	1.333	1.285	1.223
4000.	1.329	1.277	1.218
4500.	1.324	1.269	1.213
5000.	1.320	1.260	1.207
5500.	1.315	1.252	1.202
6000.	1.310	1.249	1.196
6500.	1.305	1.245	1.190
7000.	1.300	1.242	1.184
7500.	1.294	1.238	1.178
8000.	1.289	1.234	1.172
8500.	1.283	1.230	1.168
9000.	1.277	1.226	1.163
9500.	1.271	1.222	1.159
10000.	1.266	1.218	1.154
10500.	1.259	1.214	1.151
11000.	1.253	1.210	1.149
11500.	1.247	1.206	1.147
12000.	1.241	1.201	1.145
12500.	1.235	1.197	1.142
13000.	1.228	1.193	1.140
13500.	1.222	1.188	1.138
14000.	1.215	1.184	1.136
14500.	1.208	1.179	1.133
15000.	1.201	1.174	1.131
15500.	1.194	1.169	1.129
16000.	1.186	1.164	1.127
16500.	1.178	1.159	1.124
17000.	1.171	1.154	1.122
17500.	1.163	1.150	1.121
18000.	1.157	1.145	1.119
18500.	1.151	1.141	1.117
19000.	1.146	1.138	1.116
19500.	1.142	1.135	1.114
20000.	1.139	1.132	1.113
20500.	1.135	1.129	1.112
21000.	1.132	1.127	1.111
21500.	1.130	1.125	1.110
22000.	1.127	1.123	1.110
22500.	1.125	1.122	1.109
23000.	1.122	1.120	1.108
23500.	1.120	1.119	1.108
24000.	1.117	1.117	1.107
24500.	1.115	1.116	1.107
25000.	1.112	1.114	1.106
27500.	1.100	1.106	1.103
30000.	1.089	1.098	1.101
32500.	1.085	1.091	1.098
35000.	1.082	1.084	1.095
37500.	1.087	1.080	1.093
40000.	1.092	1.079	1.090
42500.	1.095	1.077	1.088
45000.	1.096	1.075	1.086
47500.	1.095	1.073	1.085
50000.	1.092	1.071	1.083
52500.	1.087	1.068	1.081
55000.	1.079	1.065	1.080
57500.	1.070	1.063	1.079
60000.	1.059	1.060	1.079
62500.	1.048	1.057	1.079
65000.	1.051	1.057	1.079
67500.	1.058	1.060	1.079
70000.	1.065	1.063	1.079

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Table B.11 [ ] Hot Uncontrolled k_∞

Exposure MWd/MTU	0.00 Void History	0.40 Void History	0.80 Void History
0.	1.05813	1.04960	1.03566
100.	1.03629	1.02933	1.01773
500.	1.03915	1.03298	1.02196
1000.	1.04786	1.04213	1.03091
1500.	1.05848	1.05293	1.04105
2000.	1.06993	1.06437	1.05157
2500.	1.08214	1.07633	1.06227
3000.	1.09513	1.08879	1.07314
3500.	1.10891	1.10179	1.08423
4000.	1.12353	1.11533	1.09555
4500.	1.13907	1.12946	1.10713
5000.	1.15555	1.14421	1.11898
5500.	1.17289	1.15953	1.13106
6000.	1.19077	1.17519	1.14329
6500.	1.20852	1.19074	1.15545
7000.	1.22512	1.20549	1.16720
7500.	1.23956	1.21861	1.17806
8000.	1.25117	1.22955	1.18757
8500.	1.25978	1.23805	1.19544
9000.	1.26544	1.24412	1.20157
9500.	1.26833	1.24787	1.20599
10000.	1.26885	1.24950	1.20879
10500.	1.26750	1.24934	1.21010
11000.	1.26483	1.24773	1.21010
11500.	1.26127	1.24507	1.20901
12000.	1.25715	1.24169	1.20701
12500.	1.25269	1.23781	1.20431
13000.	1.24778	1.23363	1.20111
13500.	1.24288	1.22907	1.19754
14000.	1.23797	1.22451	1.19373
14500.	1.23307	1.21995	1.18975
15000.	1.22816	1.21539	1.18568
15500.	1.22324	1.21081	1.18155
17500.	1.20354	1.19247	1.16473
20000.	1.17873	1.16969	1.14414
22500.	1.15363	1.14698	1.12398
25000.	1.12813	1.12427	1.10419
27500.	1.10220	1.10150	1.08468
30000.	1.07579	1.07865	1.06543
32500.	1.04889	1.05571	1.04640
35000.	1.02154	1.03268	1.02761
37500.	0.99379	1.00960	1.00908
40000.	0.96576	0.98653	0.99084
42500.	0.93763	0.96354	0.97292
45000.	0.90962	0.94075	0.95540
47500.	0.88200	0.91829	0.93831
50000.	0.85511	0.89632	0.92172
52500.	0.82933	0.87502	0.90567
55000.	0.80500	0.85457	0.89022
57500.	0.78249	0.83515	0.87543
60000.	0.76207	0.81694	0.86136
62500.	0.74394	0.80007	0.84805
65000.	0.72815	0.78466	0.83554
67500.	0.71467	0.77076	0.82386
70000.	0.70335	0.75839	0.81303

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Table B.12 [ ] Hot Uncontrolled LPF

Exposure MWd/MTU	0.00 Void History	0.40 Void History	0.80 Void History
0.	1.344	1.293	1.218
100.	1.346	1.289	1.215
500.	1.341	1.281	1.209
1000.	1.335	1.270	1.202
1500.	1.328	1.259	1.195
2000.	1.321	1.253	1.188
2500.	1.313	1.248	1.181
3000.	1.306	1.242	1.173
3500.	1.298	1.236	1.166
4000.	1.289	1.230	1.159
4500.	1.281	1.224	1.151
5000.	1.272	1.218	1.146
5500.	1.263	1.212	1.143
6000.	1.254	1.205	1.140
6500.	1.245	1.199	1.136
7000.	1.236	1.192	1.133
7500.	1.227	1.186	1.130
8000.	1.218	1.181	1.128
8500.	1.211	1.176	1.126
9000.	1.205	1.171	1.123
9500.	1.199	1.167	1.122
10000.	1.195	1.164	1.120
10500.	1.191	1.161	1.119
11000.	1.187	1.159	1.118
11500.	1.184	1.156	1.116
12000.	1.181	1.154	1.116
12500.	1.179	1.153	1.115
13000.	1.176	1.151	1.114
13500.	1.174	1.150	1.113
14000.	1.171	1.148	1.113
14500.	1.169	1.146	1.112
15000.	1.166	1.145	1.111
15500.	1.163	1.143	1.111
17500.	1.153	1.137	1.108
20000.	1.140	1.128	1.106
22500.	1.127	1.120	1.103
25000.	1.114	1.112	1.100
27500.	1.101	1.104	1.097
30000.	1.091	1.096	1.094
32500.	1.085	1.088	1.091
35000.	1.080	1.081	1.089
37500.	1.074	1.074	1.086
40000.	1.070	1.072	1.084
42500.	1.070	1.070	1.082
45000.	1.071	1.068	1.080
47500.	1.070	1.066	1.078
50000.	1.067	1.063	1.076
52500.	1.062	1.060	1.075
55000.	1.055	1.057	1.074
57500.	1.046	1.054	1.073
60000.	1.039	1.051	1.072
62500.	1.040	1.049	1.072
65000.	1.047	1.052	1.072
67500.	1.053	1.055	1.072
70000.	1.060	1.058	1.073

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Table B.13 [ ] Hot Uncontrolled k_∞

Exposure MWd/MTU	0.00 Void History	0.40 Void History	0.80 Void History
0.	1.06567	1.04412	1.01855
100.	1.04363	1.02395	1.00093
500.	1.04128	1.02259	1.00065
1000.	1.04211	1.02420	1.00292
1500.	1.04398	1.02666	1.00575
2000.	1.04615	1.02931	1.00867
2500.	1.04836	1.03194	1.01146
3000.	1.05053	1.03447	1.01409
3500.	1.05273	1.03693	1.01658
4000.	1.05499	1.03940	1.01899
4500.	1.05732	1.04187	1.02135
5000.	1.05974	1.04439	1.02369
5500.	1.06227	1.04696	1.02602
6000.	1.06492	1.04961	1.02836
6500.	1.06771	1.05236	1.03075
7000.	1.07065	1.05521	1.03319
7500.	1.07371	1.05815	1.03572
8000.	1.07689	1.06117	1.03830
8500.	1.08018	1.06428	1.04094
9000.	1.08360	1.06746	1.04362
9500.	1.08715	1.07074	1.04635
10000.	1.09084	1.07412	1.04913
10500.	1.09470	1.07762	1.05196
11000.	1.09872	1.08123	1.05484
11500.	1.10293	1.08497	1.05778
12000.	1.10733	1.08884	1.06078
12500.	1.11193	1.09285	1.06385
13000.	1.11677	1.09702	1.06698
13500.	1.12187	1.10134	1.07018
14000.	1.12726	1.10580	1.07344
14500.	1.13291	1.11039	1.07675
15000.	1.13865	1.11503	1.08005
15500.	1.14442	1.11964	1.08332
16000.	1.15008	1.12415	1.08648
16500.	1.15544	1.12843	1.08953
17000.	1.16025	1.13240	1.09241
17500.	1.16425	1.13590	1.09508
18000.	1.16726	1.13881	1.09746
18500.	1.16920	1.14104	1.09949
19000.	1.17007	1.14252	1.10112
19500.	1.16983	1.14319	1.10232
20000.	1.16852	1.14308	1.10306
20500.	1.16625	1.14221	1.10331
21000.	1.16322	1.14064	1.10306
21500.	1.15962	1.13843	1.10233
22000.	1.15564	1.13569	1.10112
22500.	1.15133	1.13253	1.09949
23000.	1.14679	1.12907	1.09749
23500.	1.14224	1.12538	1.09516
24000.	1.13770	1.12139	1.09255
24500.	1.13315	1.11740	1.08971
25000.	1.12861	1.11341	1.08668
25500.	1.12404	1.10937	1.08351
26000.	1.11947	1.10533	1.08024
26500.	1.11491	1.10129	1.07689
27000.	1.11034	1.09725	1.07348
27500.	1.10577	1.09321	1.07001
30000.	1.08283	1.07313	1.05268
32500.	1.05981	1.05323	1.03566
35000.	1.03671	1.03351	1.01900
37500.	1.01356	1.01399	1.00272
40000.	0.99042	0.99469	0.98684
42500.	0.96734	0.97565	0.97136
45000.	0.94443	0.95692	0.95632
47500.	0.92180	0.93856	0.94175
50000.	0.89960	0.92062	0.92766
52500.	0.87798	0.90317	0.91409
55000.	0.85713	0.88629	0.90105
57500.	0.83721	0.87006	0.88857
60000.	0.81839	0.85456	0.87665
62500.	0.80084	0.83985	0.86531
65000.	0.78466	0.82600	0.85456
67500.	0.76996	0.81305	0.84442
70000.	0.75677	0.80104	0.83488

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Table B.14 [ ] Hot Uncontrolled LPF

Exposure MWd/MTU	0.00 Void History	0.40 Void History	0.80 Void History
0.	1.301	1.296	1.272
100.	1.298	1.295	1.271
500.	1.294	1.292	1.269
1000.	1.290	1.288	1.267
1500.	1.285	1.283	1.264
2000.	1.279	1.278	1.260
2500.	1.274	1.272	1.256
3000.	1.269	1.266	1.252
3500.	1.263	1.260	1.247
4000.	1.257	1.254	1.243
4500.	1.252	1.248	1.238
5000.	1.246	1.242	1.233
5500.	1.240	1.235	1.228
6000.	1.234	1.229	1.223
6500.	1.228	1.222	1.218
7000.	1.222	1.215	1.212
7500.	1.216	1.210	1.207
8000.	1.209	1.204	1.202
8500.	1.203	1.199	1.196
9000.	1.199	1.194	1.191
9500.	1.195	1.188	1.185
10000.	1.192	1.183	1.180
10500.	1.188	1.177	1.176
11000.	1.184	1.172	1.172
11500.	1.180	1.166	1.167
12000.	1.176	1.161	1.163
12500.	1.172	1.156	1.159
13000.	1.168	1.152	1.155
13500.	1.163	1.149	1.151
14000.	1.159	1.145	1.147
14500.	1.155	1.141	1.143
15000.	1.150	1.138	1.139
15500.	1.146	1.134	1.135
16000.	1.142	1.131	1.131
16500.	1.138	1.128	1.126
17000.	1.134	1.125	1.122
17500.	1.131	1.122	1.118
18000.	1.127	1.120	1.114
18500.	1.124	1.117	1.110
19000.	1.121	1.115	1.107
19500.	1.119	1.113	1.104
20000.	1.117	1.112	1.101
20500.	1.115	1.110	1.099
21000.	1.114	1.109	1.097
21500.	1.113	1.107	1.097
22000.	1.111	1.106	1.096
22500.	1.110	1.105	1.095
23000.	1.109	1.104	1.095
23500.	1.108	1.103	1.094
24000.	1.107	1.102	1.094
24500.	1.106	1.102	1.093
25000.	1.105	1.101	1.093
25500.	1.104	1.100	1.093
26000.	1.103	1.099	1.092
26500.	1.101	1.098	1.092
27000.	1.100	1.097	1.091
27500.	1.099	1.096	1.091
30000.	1.092	1.091	1.088
32500.	1.086	1.087	1.086
35000.	1.079	1.082	1.083
37500.	1.072	1.077	1.080
40000.	1.068	1.072	1.078
42500.	1.063	1.067	1.075
45000.	1.058	1.064	1.073
47500.	1.054	1.061	1.070
50000.	1.052	1.058	1.068
52500.	1.051	1.055	1.074
55000.	1.049	1.053	1.086
57500.	1.046	1.050	1.099
60000.	1.042	1.047	1.112
62500.	1.036	1.056	1.124
65000.	1.056	1.073	1.137
67500.	1.077	1.090	1.150
70000.	1.097	1.107	1.162

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Table B.15 [ ] Hot Uncontrolled k_∞

Exposure MWd/MTU	0.00 Void History	0.40 Void History	0.80 Void History
0.	1.00503	0.98706	0.96512
100.	0.98380	0.96752	0.94789
500.	0.98222	0.96700	0.94853
1000.	0.98408	0.96979	0.95212
1500.	0.98711	0.97357	0.95643
2000.	0.99050	0.97762	0.96089
2500.	0.99394	0.98165	0.96525
3000.	0.99742	0.98563	0.96946
3500.	1.00101	0.98963	0.97357
4000.	1.00473	0.99368	0.97764
4500.	1.00860	0.99781	0.98171
5000.	1.01264	1.00205	0.98579
5500.	1.01686	1.00641	0.98991
6000.	1.02127	1.01091	0.99410
6500.	1.02587	1.01556	0.99836
7000.	1.03064	1.02035	1.00273
7500.	1.03559	1.02526	1.00718
8000.	1.04068	1.03028	1.01171
8500.	1.04595	1.03542	1.01630
9000.	1.05139	1.04067	1.02097
9500.	1.05703	1.04606	1.02571
10000.	1.06287	1.05161	1.03053
10500.	1.06894	1.05732	1.03544
11000.	1.07526	1.06322	1.04044
11500.	1.08185	1.06932	1.04554
12000.	1.08873	1.07563	1.05075
12500.	1.09597	1.08216	1.05607
13000.	1.10365	1.08896	1.06152
13500.	1.11177	1.09605	1.06709
14000.	1.12029	1.10338	1.07275
14500.	1.12898	1.11079	1.07845
15000.	1.13765	1.11815	1.08410
15500.	1.14603	1.12529	1.08960
16000.	1.15361	1.13199	1.09488
16500.	1.15999	1.13793	1.09983
17000.	1.16487	1.14286	1.10432
17500.	1.16811	1.14661	1.10821
18000.	1.16970	1.14913	1.11136
18500.	1.16967	1.15041	1.11369
19000.	1.16820	1.15048	1.11518
19500.	1.16558	1.14943	1.11583
20000.	1.16212	1.14740	1.11570
20500.	1.15811	1.14461	1.11484
21000.	1.15342	1.14126	1.11330
21500.	1.14873	1.13754	1.11119
22000.	1.14404	1.13339	1.10859
22500.	1.13935	1.12925	1.10563
23000.	1.13453	1.12494	1.10239
23500.	1.12970	1.12064	1.09896
25000.	1.11523	1.10772	1.08789
27500.	1.09083	1.08619	1.06924
30000.	1.06613	1.06467	1.05076
32500.	1.04111	1.04314	1.03254
35000.	1.01576	1.02162	1.01459
37500.	0.99014	1.00012	0.99690
40000.	0.96433	0.97869	0.97951
42500.	0.93845	0.95738	0.96244
45000.	0.91264	0.93627	0.94573
47500.	0.88712	0.91545	0.92945
50000.	0.86213	0.89505	0.91362
52500.	0.83793	0.87519	0.89829
55000.	0.81482	0.85600	0.88351
57500.	0.79307	0.83765	0.86932
60000.	0.77293	0.82025	0.85577
62500.	0.75462	0.80392	0.84290
65000.	0.73825	0.78878	0.83073
67500.	0.72388	0.77489	0.81931
70000.	0.71147	0.76230	0.80865

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Table B.16 [ ] Hot Uncontrolled LPF

Exposure MWd/MTU	0.00 Void History	0.40 Void History	0.80 Void History
0.	1.302	1.291	1.268
100.	1.299	1.287	1.265
500.	1.294	1.282	1.261
1000.	1.288	1.276	1.256
1500.	1.282	1.270	1.251
2000.	1.275	1.264	1.245
2500.	1.268	1.257	1.240
3000.	1.262	1.251	1.234
3500.	1.255	1.244	1.229
4000.	1.248	1.238	1.224
4500.	1.241	1.231	1.219
5000.	1.233	1.225	1.214
5500.	1.226	1.218	1.208
6000.	1.218	1.211	1.203
6500.	1.211	1.204	1.198
7000.	1.203	1.197	1.193
7500.	1.199	1.191	1.187
8000.	1.194	1.185	1.182
8500.	1.190	1.178	1.176
9000.	1.186	1.172	1.171
9500.	1.181	1.166	1.165
10000.	1.177	1.162	1.160
10500.	1.172	1.158	1.155
11000.	1.167	1.154	1.149
11500.	1.162	1.150	1.144
12000.	1.158	1.147	1.138
12500.	1.154	1.143	1.133
13000.	1.150	1.139	1.128
13500.	1.146	1.135	1.122
14000.	1.141	1.131	1.117
14500.	1.136	1.127	1.112
15000.	1.131	1.123	1.107
15500.	1.126	1.119	1.104
16000.	1.120	1.114	1.101
16500.	1.115	1.110	1.098
17000.	1.112	1.106	1.096
17500.	1.108	1.103	1.093
18000.	1.105	1.099	1.091
18500.	1.103	1.097	1.090
19000.	1.101	1.096	1.090
19500.	1.099	1.095	1.089
20000.	1.097	1.094	1.089
20500.	1.095	1.092	1.089
21000.	1.094	1.092	1.089
21500.	1.092	1.091	1.089
22000.	1.091	1.090	1.089
22500.	1.090	1.089	1.088
23000.	1.089	1.088	1.088
23500.	1.088	1.087	1.088
25000.	1.084	1.085	1.087
27500.	1.079	1.081	1.086
30000.	1.079	1.078	1.085
32500.	1.079	1.074	1.083
35000.	1.078	1.071	1.082
37500.	1.077	1.067	1.080
40000.	1.075	1.067	1.079
42500.	1.072	1.066	1.078
45000.	1.069	1.064	1.077
47500.	1.068	1.062	1.076
50000.	1.068	1.060	1.075
52500.	1.065	1.057	1.074
55000.	1.061	1.054	1.073
57500.	1.055	1.051	1.073
60000.	1.047	1.050	1.072
62500.	1.038	1.050	1.072
65000.	1.039	1.051	1.072
67500.	1.042	1.052	1.072
70000.	1.058	1.053	1.072

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Table B.17 [ ] Hot Uncontrolled k_∞

Exposure MWd/MTU	0.00 Void History	0.40 Void History	0.80 Void History
0.	1.01633	0.99848	0.97433
100.	0.99451	0.97841	0.95676
500.	0.99264	0.97767	0.95730
1000.	0.99428	0.98032	0.96088
1500.	0.99715	0.98404	0.96523
2000.	1.00040	0.98805	0.96976
2500.	1.00372	0.99207	0.97420
3000.	1.00711	0.99606	0.97850
3500.	1.01063	1.00011	0.98272
4000.	1.01431	1.00422	0.98691
4500.	1.01816	1.00844	0.99111
5000.	1.02220	1.01278	0.99534
5500.	1.02645	1.01727	0.99961
6000.	1.03090	1.02192	1.00397
6500.	1.03556	1.02673	1.00841
7000.	1.04041	1.03170	1.01296
7500.	1.04545	1.03680	1.01761
8000.	1.05065	1.04203	1.02233
8500.	1.05604	1.04738	1.02714
9000.	1.06162	1.05287	1.03202
9500.	1.06742	1.05852	1.03698
10000.	1.07345	1.06434	1.04204
10500.	1.07971	1.07035	1.04720
11000.	1.08625	1.07657	1.05245
11500.	1.09308	1.08300	1.05782
12000.	1.10025	1.08967	1.06332
12500.	1.10783	1.09661	1.06893
13000.	1.11589	1.10387	1.07468
13500.	1.12446	1.11147	1.08058
14000.	1.13350	1.11935	1.08658
14500.	1.14280	1.12735	1.09265
15000.	1.15212	1.13531	1.09866
15500.	1.16103	1.14301	1.10453
16000.	1.16902	1.15013	1.11015
16500.	1.17563	1.15636	1.11539
17000.	1.18055	1.16141	1.12009
17500.	1.18362	1.16510	1.12411
18000.	1.18483	1.16741	1.12727
18500.	1.18431	1.16833	1.12953
19000.	1.18233	1.16795	1.13088
19500.	1.17925	1.16639	1.13135
20000.	1.17542	1.16387	1.13099
20500.	1.17061	1.16067	1.12986
21000.	1.16581	1.15697	1.12804
21500.	1.16100	1.15269	1.12565
22000.	1.15620	1.14841	1.12280
22500.	1.15139	1.14413	1.11962
23000.	1.14640	1.13969	1.11620
25000.	1.12642	1.12192	1.10114
27500.	1.10099	1.09961	1.08210
30000.	1.07511	1.07723	1.06321
32500.	1.04876	1.05476	1.04455
35000.	1.02195	1.03219	1.02612
37500.	0.99472	1.00956	1.00793
40000.	0.96717	0.98691	0.99001
42500.	0.93946	0.96430	0.97239
45000.	0.91177	0.94183	0.95511
47500.	0.88436	0.91962	0.93823
50000.	0.85754	0.89782	0.92181
52500.	0.83167	0.87659	0.90587
55000.	0.80709	0.85611	0.89049
57500.	0.78418	0.83655	0.87572
60000.	0.76323	0.81809	0.86160
62500.	0.74447	0.80089	0.84819
65000.	0.72801	0.78507	0.83553
67500.	0.71385	0.77070	0.82366
70000.	0.70189	0.75783	0.81260

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Table B.18 [ ] Hot Uncontrolled LPF

Exposure MWd/MTU	0.00 Void History	0.40 Void History	0.80 Void History
0.	1.370	1.293	1.254
100.	1.372	1.294	1.251
500.	1.369	1.292	1.247
1000.	1.365	1.289	1.242
1500.	1.361	1.286	1.238
2000.	1.356	1.282	1.233
2500.	1.350	1.278	1.228
3000.	1.345	1.274	1.223
3500.	1.339	1.270	1.218
4000.	1.334	1.266	1.213
4500.	1.328	1.262	1.208
5000.	1.322	1.257	1.203
5500.	1.316	1.253	1.198
6000.	1.310	1.248	1.192
6500.	1.303	1.244	1.187
7000.	1.297	1.239	1.182
7500.	1.291	1.234	1.177
8000.	1.284	1.230	1.171
8500.	1.277	1.225	1.166
9000.	1.270	1.220	1.160
9500.	1.263	1.215	1.155
10000.	1.257	1.210	1.150
10500.	1.249	1.205	1.144
11000.	1.242	1.200	1.140
11500.	1.235	1.195	1.137
12000.	1.228	1.190	1.135
12500.	1.220	1.184	1.132
13000.	1.213	1.179	1.129
13500.	1.206	1.174	1.126
14000.	1.198	1.168	1.124
14500.	1.191	1.163	1.121
15000.	1.183	1.158	1.119
15500.	1.176	1.154	1.116
16000.	1.169	1.149	1.114
16500.	1.163	1.145	1.113
17000.	1.157	1.141	1.111
17500.	1.152	1.138	1.110
18000.	1.147	1.135	1.109
18500.	1.143	1.132	1.108
19000.	1.139	1.129	1.108
19500.	1.135	1.127	1.107
20000.	1.132	1.125	1.107
20500.	1.129	1.123	1.106
21000.	1.127	1.121	1.106
21500.	1.124	1.119	1.105
22000.	1.122	1.118	1.105
22500.	1.119	1.116	1.104
23000.	1.117	1.115	1.104
25000.	1.107	1.109	1.102
27500.	1.102	1.101	1.099
30000.	1.098	1.094	1.096
32500.	1.093	1.087	1.094
35000.	1.088	1.083	1.091
37500.	1.083	1.081	1.089
40000.	1.077	1.078	1.087
42500.	1.075	1.075	1.085
45000.	1.074	1.071	1.083
47500.	1.073	1.067	1.082
50000.	1.071	1.063	1.080
52500.	1.067	1.059	1.079
55000.	1.061	1.055	1.078
57500.	1.054	1.052	1.077
60000.	1.045	1.050	1.077
62500.	1.042	1.052	1.077
65000.	1.049	1.055	1.077
67500.	1.056	1.058	1.077
70000.	1.063	1.062	1.078

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Table B.19 [ ] Hot Uncontrolled k_∞

Exposure MWd/MTU	0.00 Void History	0.40 Void History	0.80 Void History
0.	1.03070	1.01507	0.99362
100.	1.00885	0.99494	0.97595
500.	1.00807	0.99524	0.97746
1000.	1.01136	0.99946	0.98244
1500.	1.01607	1.00493	0.98832
2000.	1.02117	1.01070	0.99436
2500.	1.02643	1.01655	1.00031
3000.	1.03187	1.02247	1.00618
3500.	1.03755	1.02851	1.01201
4000.	1.04350	1.03471	1.01787
4500.	1.04974	1.04112	1.02379
5000.	1.05629	1.04775	1.02981
5500.	1.06315	1.05460	1.03595
6000.	1.07029	1.06166	1.04221
6500.	1.07772	1.06893	1.04858
7000.	1.08547	1.07641	1.05508
7500.	1.09355	1.08413	1.06170
8000.	1.10199	1.09213	1.06848
8500.	1.11083	1.10041	1.07544
9000.	1.12009	1.10899	1.08256
9500.	1.12984	1.11791	1.08986
10000.	1.14010	1.12717	1.09733
10500.	1.15088	1.13678	1.10494
11000.	1.16208	1.14662	1.11262
11500.	1.17343	1.15648	1.12027
12000.	1.18442	1.16608	1.12775
12500.	1.19450	1.17505	1.13491
13000.	1.20311	1.18298	1.14153
13500.	1.20985	1.18952	1.14745
14000.	1.21450	1.19446	1.15242
14500.	1.21705	1.19775	1.15632
15000.	1.21760	1.19945	1.15908
15500.	1.21645	1.19963	1.16075
16000.	1.21398	1.19850	1.16137
16500.	1.21057	1.19629	1.16105
17000.	1.20656	1.19328	1.15987
17500.	1.20207	1.18973	1.15796
18000.	1.19719	1.18580	1.15545
18500.	1.19232	1.18140	1.15249
19000.	1.18744	1.17700	1.14919
19500.	1.18257	1.17260	1.14565
20000.	1.17769	1.16820	1.14196
22500.	1.15295	1.14584	1.12236
25000.	1.12781	1.12345	1.10287
27500.	1.10224	1.10101	1.08362
30000.	1.07621	1.07849	1.06461
32500.	1.04969	1.05586	1.04583
35000.	1.02271	1.03315	1.02728
37500.	0.99531	1.01036	1.00897
40000.	0.96760	0.98756	0.99093
42500.	0.93973	0.96482	0.97319
45000.	0.91191	0.94222	0.95581
47500.	0.88441	0.91991	0.93884
50000.	0.85753	0.89802	0.92234
52500.	0.83164	0.87674	0.90635
55000.	0.80710	0.85623	0.89092
57500.	0.78427	0.83669	0.87612
60000.	0.76344	0.81827	0.86199
62500.	0.74484	0.80115	0.84858
65000.	0.72854	0.78542	0.83595
67500.	0.71457	0.77118	0.82412
70000.	0.70278	0.75844	0.81313

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Table B.20 [ ] Hot Uncontrolled LPF

Exposure MWd/MTU	0.00 Void History	0.40 Void History	0.80 Void History
0.	1.366	1.289	1.245
100.	1.368	1.291	1.242
500.	1.365	1.288	1.238
1000.	1.359	1.284	1.233
1500.	1.354	1.280	1.227
2000.	1.348	1.275	1.222
2500.	1.342	1.271	1.216
3000.	1.335	1.266	1.210
3500.	1.329	1.261	1.204
4000.	1.322	1.256	1.198
4500.	1.315	1.251	1.192
5000.	1.308	1.246	1.186
5500.	1.301	1.241	1.180
6000.	1.294	1.235	1.174
6500.	1.287	1.230	1.168
7000.	1.279	1.224	1.162
7500.	1.271	1.219	1.156
8000.	1.264	1.213	1.150
8500.	1.256	1.207	1.144
9000.	1.248	1.202	1.138
9500.	1.240	1.196	1.135
10000.	1.232	1.190	1.132
10500.	1.224	1.184	1.129
11000.	1.216	1.179	1.126
11500.	1.208	1.173	1.123
12000.	1.200	1.168	1.121
12500.	1.192	1.163	1.118
13000.	1.185	1.158	1.116
13500.	1.179	1.154	1.115
14000.	1.173	1.150	1.113
14500.	1.168	1.147	1.112
15000.	1.163	1.144	1.111
15500.	1.159	1.141	1.110
16000.	1.155	1.139	1.109
16500.	1.152	1.136	1.108
17000.	1.149	1.134	1.108
17500.	1.146	1.133	1.107
18000.	1.144	1.131	1.107
18500.	1.141	1.129	1.106
19000.	1.139	1.128	1.106
19500.	1.136	1.126	1.105
20000.	1.134	1.124	1.105
22500.	1.121	1.116	1.102
25000.	1.108	1.108	1.100
27500.	1.100	1.101	1.097
30000.	1.096	1.093	1.094
32500.	1.091	1.086	1.092
35000.	1.086	1.080	1.089
37500.	1.080	1.078	1.087
40000.	1.074	1.075	1.085
42500.	1.071	1.072	1.083
45000.	1.069	1.068	1.081
47500.	1.068	1.064	1.079
50000.	1.066	1.060	1.078
52500.	1.062	1.056	1.077
55000.	1.056	1.053	1.076
57500.	1.048	1.051	1.075
60000.	1.039	1.049	1.075
62500.	1.040	1.050	1.074
65000.	1.047	1.053	1.075
67500.	1.055	1.056	1.075
70000.	1.061	1.060	1.076

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Table B.21 [ ] Hot Uncontrolled k_∞

Exposure MWd/MTU	0.00 Void History	0.40 Void History	0.80 Void History
0.	1.10092	1.07923	1.05218
100.	1.07733	1.05753	1.03312
500.	1.07412	1.05522	1.03184
1000.	1.07401	1.05579	1.03300
1500.	1.07493	1.05720	1.03476
2000.	1.07612	1.05881	1.03659
2500.	1.07737	1.06040	1.03833
3000.	1.07857	1.06189	1.03992
3500.	1.07976	1.06331	1.04139
4000.	1.08098	1.06470	1.04277
4500.	1.08226	1.06610	1.04411
5000.	1.08362	1.06754	1.04542
5500.	1.08509	1.06904	1.04675
6000.	1.08669	1.07063	1.04811
6500.	1.08842	1.07232	1.04952
7000.	1.09029	1.07411	1.05100
7500.	1.09228	1.07599	1.05255
8000.	1.09437	1.07795	1.05418
8500.	1.09656	1.07998	1.05585
9000.	1.09883	1.08207	1.05758
9500.	1.10121	1.08425	1.05934
10000.	1.10370	1.08650	1.06115
10500.	1.10633	1.08885	1.06300
11000.	1.10910	1.09129	1.06489
11500.	1.11200	1.09383	1.06682
12000.	1.11504	1.09648	1.06880
12500.	1.11823	1.09922	1.07083
13000.	1.12158	1.10207	1.07291
13500.	1.12512	1.10503	1.07504
14000.	1.12889	1.10812	1.07724
14500.	1.13294	1.11136	1.07949
15000.	1.13727	1.11478	1.08182
15500.	1.14188	1.11837	1.08421
16000.	1.14669	1.12210	1.08668
16500.	1.15159	1.12592	1.08920
17000.	1.15639	1.12969	1.09173
17500.	1.16080	1.13331	1.09422
18000.	1.16455	1.13658	1.09658
18500.	1.16740	1.13935	1.09875
19000.	1.16918	1.14146	1.10065
19500.	1.16982	1.14280	1.10218
20000.	1.16929	1.14332	1.10328
20500.	1.16767	1.14303	1.10389
21000.	1.16511	1.14193	1.10397
21500.	1.16185	1.14010	1.10353
22000.	1.15809	1.13765	1.10260
22500.	1.15392	1.13470	1.10120
23000.	1.14942	1.13138	1.09938
23500.	1.14492	1.12779	1.09719
24000.	1.14041	1.12402	1.09468
24500.	1.13591	1.12001	1.09191
25000.	1.13141	1.11601	1.08893
25500.	1.12685	1.11196	1.08579
26000.	1.12228	1.10791	1.08253
26500.	1.11772	1.10387	1.07919
27000.	1.11315	1.09982	1.07579
27500.	1.10859	1.09577	1.07232
30000.	1.08567	1.07568	1.05496
32500.	1.06266	1.05576	1.03790
35000.	1.03956	1.03602	1.02119
37500.	1.01640	1.01647	1.00486
40000.	0.99324	0.99714	0.98893
42500.	0.97014	0.97806	0.97340
45000.	0.94719	0.95928	0.95831
47500.	0.92451	0.94086	0.94368
50000.	0.90224	0.92286	0.92954
52500.	0.88054	0.90535	0.91590
55000.	0.85959	0.88840	0.90280
57500.	0.83956	0.87209	0.89025
60000.	0.82062	0.85650	0.87826
62500.	0.80292	0.84170	0.86685
65000.	0.78660	0.82776	0.85604
67500.	0.77174	0.81471	0.84583
70000.	0.75840	0.80259	0.83622

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Table B.22 [ ] Hot Uncontrolled LPF

Exposure MWd/MTU	0.00 Void History	0.40 Void History	0.80 Void History
0.	1.306	1.281	1.272
100.	1.302	1.280	1.271
500.	1.297	1.277	1.268
1000.	1.292	1.274	1.265
1500.	1.287	1.270	1.262
2000.	1.281	1.266	1.259
2500.	1.275	1.262	1.255
3000.	1.268	1.259	1.252
3500.	1.262	1.255	1.248
4000.	1.256	1.251	1.245
4500.	1.249	1.247	1.242
5000.	1.245	1.243	1.239
5500.	1.241	1.239	1.235
6000.	1.237	1.235	1.232
6500.	1.232	1.231	1.229
7000.	1.228	1.227	1.225
7500.	1.223	1.223	1.222
8000.	1.219	1.219	1.218
8500.	1.214	1.215	1.215
9000.	1.210	1.211	1.212
9500.	1.205	1.207	1.208
10000.	1.200	1.203	1.204
10500.	1.196	1.198	1.201
11000.	1.191	1.194	1.197
11500.	1.186	1.190	1.194
12000.	1.181	1.186	1.190
12500.	1.176	1.181	1.187
13000.	1.171	1.177	1.183
13500.	1.166	1.173	1.180
14000.	1.161	1.168	1.176
14500.	1.155	1.164	1.172
15000.	1.150	1.159	1.169
15500.	1.145	1.155	1.165
16000.	1.139	1.150	1.162
16500.	1.133	1.146	1.158
17000.	1.128	1.141	1.155
17500.	1.123	1.136	1.151
18000.	1.118	1.132	1.147
18500.	1.114	1.128	1.144
19000.	1.110	1.124	1.140
19500.	1.107	1.120	1.136
20000.	1.103	1.117	1.133
20500.	1.101	1.114	1.130
21000.	1.098	1.111	1.128
21500.	1.096	1.109	1.125
22000.	1.094	1.107	1.123
22500.	1.092	1.105	1.121
23000.	1.090	1.103	1.119
23500.	1.089	1.101	1.117
24000.	1.087	1.099	1.115
24500.	1.086	1.097	1.114
25000.	1.084	1.096	1.112
25500.	1.083	1.094	1.111
26000.	1.082	1.093	1.109
26500.	1.081	1.091	1.108
27000.	1.080	1.090	1.107
27500.	1.079	1.088	1.106
30000.	1.076	1.081	1.100
32500.	1.072	1.073	1.094
35000.	1.068	1.071	1.089
37500.	1.064	1.068	1.083
40000.	1.061	1.065	1.078
42500.	1.057	1.062	1.074
45000.	1.053	1.058	1.069
47500.	1.049	1.056	1.066
50000.	1.049	1.054	1.064
52500.	1.050	1.051	1.072
55000.	1.049	1.049	1.084
57500.	1.046	1.047	1.097
60000.	1.042	1.044	1.110
62500.	1.036	1.053	1.122
65000.	1.053	1.071	1.135
67500.	1.075	1.088	1.148
70000.	1.094	1.104	1.160

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Table B.23 [ ] Hot Uncontrolled k_∞

Exposure MWd/MTU	0.00 Void History	0.40 Void History	0.80 Void History
0.	1.04319	1.02535	1.00194
100.	1.02026	1.00412	0.98313
500.	1.01776	1.00259	0.98271
1000.	1.01860	1.00425	0.98512
1500.	1.02057	1.00687	0.98824
2000.	1.02288	1.00973	0.99150
2500.	1.02523	1.01260	0.99468
3000.	1.02758	1.01538	0.99770
3500.	1.03000	1.01815	1.00062
4000.	1.03251	1.02096	1.00349
4500.	1.03515	1.02383	1.00635
5000.	1.03795	1.02680	1.00923
5500.	1.04093	1.02990	1.01216
6000.	1.04409	1.03314	1.01517
6500.	1.04745	1.03653	1.01827
7000.	1.05096	1.04005	1.02146
7500.	1.05462	1.04368	1.02473
8000.	1.05840	1.04740	1.02809
8500.	1.06231	1.05121	1.03150
9000.	1.06636	1.05511	1.03496
9500.	1.07057	1.05913	1.03849
10000.	1.07496	1.06327	1.04208
10500.	1.07953	1.06756	1.04575
11000.	1.08427	1.07198	1.04949
11500.	1.08921	1.07655	1.05330
12000.	1.09439	1.08127	1.05719
12500.	1.09983	1.08615	1.06116
13000.	1.10558	1.09124	1.06522
13500.	1.11171	1.09657	1.06939
14000.	1.11821	1.10217	1.07367
14500.	1.12511	1.10806	1.07811
15000.	1.13228	1.11418	1.08269
15500.	1.13957	1.12045	1.08740
16000.	1.14668	1.12665	1.09217
16500.	1.15319	1.13257	1.09686
17000.	1.15975	1.13788	1.10135
17500.	1.16306	1.14236	1.10545
18000.	1.16589	1.14578	1.10900
18500.	1.16716	1.14800	1.11186
19000.	1.16690	1.14897	1.11393
19500.	1.16528	1.14872	1.11514
20000.	1.16256	1.14738	1.11551
20500.	1.15906	1.14512	1.11507
21000.	1.15503	1.14217	1.11388
21500.	1.15037	1.13871	1.11204
22000.	1.14570	1.13492	1.10965
22500.	1.14104	1.13082	1.10684
23000.	1.13620	1.12651	1.10371
23500.	1.13136	1.12221	1.10035
25000.	1.11685	1.10929	1.08936
27500.	1.09241	1.08772	1.07071
30000.	1.06768	1.06615	1.05218
32500.	1.04261	1.04457	1.03390
35000.	1.01722	1.02300	1.01589
37500.	0.99156	1.00146	0.99815
40000.	0.96571	0.97997	0.98070
42500.	0.93978	0.95861	0.96359
45000.	0.91393	0.93745	0.94684
47500.	0.88837	0.91659	0.93050
50000.	0.86333	0.89614	0.91463
52500.	0.83909	0.87624	0.89925
55000.	0.81593	0.85702	0.88443
57500.	0.79413	0.83862	0.87021
60000.	0.77395	0.82118	0.85662
62500.	0.75559	0.80482	0.84372
65000.	0.73917	0.78965	0.83153
67500.	0.72476	0.77573	0.82008
70000.	0.71230	0.76311	0.80940

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Table B.24 [ ] Hot Uncontrolled LPF

Exposure MWd/MTU	0.00 Void History	0.40 Void History	0.80 Void History
0.	1.310	1.296	1.280
100.	1.305	1.289	1.280
500.	1.301	1.285	1.278
1000.	1.296	1.281	1.275
1500.	1.290	1.277	1.272
2000.	1.284	1.273	1.268
2500.	1.277	1.268	1.264
3000.	1.270	1.264	1.261
3500.	1.265	1.259	1.257
4000.	1.259	1.255	1.253
4500.	1.254	1.250	1.249
5000.	1.248	1.246	1.245
5500.	1.242	1.241	1.241
6000.	1.236	1.236	1.236
6500.	1.231	1.230	1.232
7000.	1.225	1.225	1.227
7500.	1.219	1.220	1.222
8000.	1.213	1.214	1.218
8500.	1.207	1.209	1.213
9000.	1.201	1.204	1.208
9500.	1.195	1.198	1.203
10000.	1.189	1.193	1.198
10500.	1.182	1.187	1.194
11000.	1.176	1.181	1.189
11500.	1.170	1.176	1.184
12000.	1.163	1.170	1.179
12500.	1.158	1.164	1.174
13000.	1.155	1.158	1.169
13500.	1.151	1.152	1.164
14000.	1.147	1.146	1.159
14500.	1.143	1.140	1.154
15000.	1.139	1.134	1.149
15500.	1.134	1.128	1.144
16000.	1.129	1.122	1.139
16500.	1.124	1.117	1.134
17000.	1.119	1.111	1.129
17500.	1.114	1.106	1.125
18000.	1.110	1.103	1.120
18500.	1.106	1.100	1.116
19000.	1.102	1.098	1.112
19500.	1.099	1.095	1.109
20000.	1.097	1.093	1.106
20500.	1.094	1.092	1.103
21000.	1.093	1.090	1.100
21500.	1.092	1.089	1.098
22000.	1.090	1.088	1.096
22500.	1.089	1.087	1.094
23000.	1.088	1.086	1.092
23500.	1.086	1.085	1.090
25000.	1.082	1.083	1.086
27500.	1.076	1.079	1.083
30000.	1.070	1.076	1.082
32500.	1.068	1.072	1.080
35000.	1.067	1.069	1.079
37500.	1.065	1.065	1.078
40000.	1.067	1.062	1.077
42500.	1.067	1.059	1.075
45000.	1.069	1.058	1.075
47500.	1.071	1.057	1.074
50000.	1.071	1.057	1.073
52500.	1.069	1.055	1.072
55000.	1.065	1.054	1.071
57500.	1.058	1.052	1.071
60000.	1.050	1.050	1.070
62500.	1.041	1.049	1.070
65000.	1.037	1.049	1.070
67500.	1.041	1.050	1.070
70000.	1.056	1.051	1.071

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Table B.25 [ ] Hot Uncontrolled k_∞

Exposure MWd/MTU	0.00 Void History	0.40 Void History	0.80 Void History
0.	1.05435	1.03705	1.01170
100.	1.03084	1.01528	0.99251
500.	1.02809	1.01355	0.99200
1000.	1.02874	1.01508	0.99439
1500.	1.03059	1.01765	0.99754
2000.	1.03279	1.02051	1.00086
2500.	1.03507	1.02337	1.00410
3000.	1.03736	1.02618	1.00721
3500.	1.03974	1.02899	1.01022
4000.	1.04224	1.03186	1.01319
4500.	1.04490	1.03482	1.01616
5000.	1.04773	1.03790	1.01917
5500.	1.05076	1.04112	1.02224
6000.	1.05399	1.04451	1.02540
6500.	1.05743	1.04806	1.02865
7000.	1.06104	1.05175	1.03200
7500.	1.06480	1.05556	1.03545
8000.	1.06870	1.05948	1.03897
8500.	1.07275	1.06349	1.04256
9000.	1.07695	1.06762	1.04621
9500.	1.08133	1.07187	1.04994
10000.	1.08591	1.07627	1.05374
10500.	1.09068	1.08082	1.05761
11000.	1.09565	1.08553	1.06158
11500.	1.10085	1.09040	1.06562
12000.	1.10632	1.09544	1.06975
12500.	1.11209	1.10068	1.07397
13000.	1.11822	1.10617	1.07828
13500.	1.12475	1.11194	1.08272
14000.	1.13170	1.11802	1.08730
14500.	1.13904	1.12439	1.09205
15000.	1.14660	1.13102	1.09697
15500.	1.15423	1.13777	1.10202
16000.	1.16165	1.14439	1.10712
16500.	1.16833	1.15058	1.11213
17000.	1.17389	1.15606	1.11685
17500.	1.17808	1.16057	1.12110
18000.	1.18072	1.16385	1.12473
18500.	1.18171	1.16581	1.12758
19000.	1.18109	1.16643	1.12956
19500.	1.17908	1.16577	1.13062
20000.	1.17600	1.16399	1.13077
20500.	1.17216	1.16132	1.13009
21000.	1.16739	1.15800	1.12863
21500.	1.16262	1.15423	1.12652
22000.	1.15785	1.14999	1.12389
22500.	1.15308	1.14574	1.12086
23000.	1.14808	1.14129	1.11754
23500.	1.14307	1.13684	1.11402
25000.	1.12806	1.12348	1.10266
27500.	1.10259	1.10114	1.08355
30000.	1.07668	1.07871	1.06461
32500.	1.05029	1.05620	1.04589
35000.	1.02344	1.03358	1.02741
37500.	0.99617	1.01091	1.00917
40000.	0.96859	0.98820	0.99120
42500.	0.94083	0.96555	0.97353
45000.	0.91310	0.94304	0.95621
47500.	0.88565	0.92078	0.93928
50000.	0.85879	0.89894	0.92281
52500.	0.83286	0.87766	0.90683
55000.	0.80824	0.85714	0.89141
57500.	0.78527	0.83754	0.87660
60000.	0.76426	0.81904	0.86245
62500.	0.74544	0.80180	0.84901
65000.	0.72892	0.78594	0.83632
67500.	0.71471	0.77154	0.82443
70000.	0.70270	0.75864	0.81335

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Table B.26 [ ] Hot Uncontrolled LPF

Exposure MWd/MTU	0.00 Void History	0.40 Void History	0.80 Void History
0.	1.346	1.296	1.271
100.	1.349	1.289	1.271
500.	1.347	1.284	1.269
1000.	1.343	1.278	1.266
1500.	1.340	1.273	1.263
2000.	1.336	1.267	1.259
2500.	1.332	1.263	1.256
3000.	1.328	1.260	1.252
3500.	1.323	1.257	1.248
4000.	1.319	1.254	1.244
4500.	1.314	1.251	1.240
5000.	1.310	1.247	1.236
5500.	1.305	1.244	1.232
6000.	1.300	1.240	1.228
6500.	1.295	1.237	1.223
7000.	1.290	1.233	1.219
7500.	1.285	1.229	1.214
8000.	1.279	1.226	1.209
8500.	1.274	1.222	1.205
9000.	1.268	1.218	1.200
9500.	1.262	1.214	1.195
10000.	1.256	1.210	1.190
10500.	1.251	1.206	1.185
11000.	1.245	1.202	1.180
11500.	1.239	1.198	1.175
12000.	1.233	1.193	1.170
12500.	1.227	1.189	1.165
13000.	1.221	1.185	1.160
13500.	1.215	1.181	1.156
14000.	1.209	1.176	1.151
14500.	1.202	1.172	1.146
15000.	1.195	1.168	1.141
15500.	1.188	1.163	1.136
16000.	1.181	1.158	1.131
16500.	1.173	1.153	1.126
17000.	1.166	1.148	1.121
17500.	1.159	1.144	1.117
18000.	1.152	1.139	1.112
18500.	1.146	1.135	1.110
19000.	1.141	1.131	1.109
19500.	1.136	1.128	1.107
20000.	1.132	1.125	1.106
20500.	1.129	1.123	1.105
21000.	1.126	1.120	1.104
21500.	1.123	1.118	1.103
22000.	1.121	1.117	1.102
22500.	1.118	1.115	1.102
23000.	1.116	1.113	1.101
23500.	1.113	1.112	1.101
25000.	1.106	1.107	1.099
27500.	1.093	1.099	1.097
30000.	1.085	1.092	1.094
32500.	1.080	1.085	1.091
35000.	1.075	1.078	1.089
37500.	1.072	1.072	1.087
40000.	1.072	1.066	1.085
42500.	1.075	1.063	1.083
45000.	1.077	1.062	1.081
47500.	1.077	1.061	1.080
50000.	1.075	1.059	1.078
52500.	1.071	1.057	1.077
55000.	1.065	1.055	1.076
57500.	1.058	1.053	1.075
60000.	1.048	1.051	1.075
62500.	1.040	1.050	1.075
65000.	1.047	1.053	1.075
67500.	1.055	1.057	1.076
70000.	1.062	1.061	1.076

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Table B.27 [ ] Hot Uncontrolled k_∞

Exposure MWd/MTU	0.00 Void History	0.40 Void History	0.80 Void History
0.	1.06781	1.05261	1.02986
100.	1.04424	1.03075	1.01055
500.	1.04242	1.02990	1.01085
1000.	1.04450	1.03278	1.01442
1500.	1.04793	1.03685	1.01887
2000.	1.05174	1.04121	1.02348
2500.	1.05565	1.04561	1.02800
3000.	1.05970	1.05005	1.03242
3500.	1.06395	1.05458	1.03681
4000.	1.06844	1.05927	1.04120
4500.	1.07321	1.06414	1.04567
5000.	1.07827	1.06924	1.05025
5500.	1.08359	1.07453	1.05493
6000.	1.08915	1.08000	1.05972
6500.	1.09494	1.08562	1.06460
7000.	1.10099	1.09141	1.06959
7500.	1.10732	1.09741	1.07468
8000.	1.11396	1.10363	1.07989
8500.	1.12090	1.11008	1.08525
9000.	1.12818	1.11677	1.09074
9500.	1.13582	1.12371	1.09639
10000.	1.14389	1.13093	1.10218
10500.	1.15240	1.13847	1.10811
11000.	1.16134	1.14634	1.11420
11500.	1.17060	1.15446	1.12041
12000.	1.17996	1.16270	1.12673
12500.	1.18902	1.17078	1.13304
13000.	1.19729	1.17830	1.13917
13500.	1.20428	1.18495	1.14486
14000.	1.20967	1.19040	1.14989
14500.	1.21331	1.19447	1.15408
15000.	1.21512	1.19706	1.15729
15500.	1.21518	1.19817	1.15949
16000.	1.21370	1.19787	1.16065
16500.	1.21102	1.19635	1.16082
17000.	1.20750	1.19387	1.16007
17500.	1.20342	1.19068	1.15851
18000.	1.19860	1.18700	1.15627
18500.	1.19378	1.18300	1.15351
19000.	1.18897	1.17860	1.15036
19500.	1.18415	1.17419	1.14692
20000.	1.17933	1.16979	1.14329
22500.	1.15459	1.14736	1.12379
25000.	1.12942	1.12494	1.10427
27500.	1.10382	1.10246	1.08497
30000.	1.07776	1.07990	1.06591
32500.	1.05122	1.05724	1.04709
35000.	1.02420	1.03449	1.02849
37500.	0.99677	1.01167	1.01014
40000.	0.96902	0.98883	0.99205
42500.	0.94111	0.96604	0.97428
45000.	0.91324	0.94340	0.95685
47500.	0.88569	0.92104	0.93985
50000.	0.85876	0.89911	0.92330
52500.	0.83281	0.87778	0.90727
55000.	0.80820	0.85723	0.89180
57500.	0.78530	0.83763	0.87696
60000.	0.76440	0.81917	0.86280
62500.	0.74572	0.80200	0.84936
65000.	0.72936	0.78623	0.83670
67500.	0.71532	0.77194	0.82484
70000.	0.70347	0.75917	0.81381

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Table B.28 [ ] Hot Uncontrolled LPF

Exposure MWd/MTU	0.00 Void History	0.40 Void History	0.80 Void History
0.	1.343	1.288	1.266
100.	1.345	1.281	1.265
500.	1.342	1.275	1.263
1000.	1.339	1.268	1.259
1500.	1.334	1.264	1.255
2000.	1.330	1.261	1.251
2500.	1.325	1.257	1.247
3000.	1.320	1.254	1.243
3500.	1.315	1.250	1.238
4000.	1.310	1.246	1.233
4500.	1.305	1.242	1.229
5000.	1.299	1.238	1.224
5500.	1.293	1.234	1.219
6000.	1.288	1.230	1.214
6500.	1.282	1.226	1.208
7000.	1.276	1.222	1.203
7500.	1.270	1.217	1.198
8000.	1.263	1.213	1.193
8500.	1.257	1.208	1.187
9000.	1.251	1.204	1.182
9500.	1.244	1.199	1.176
10000.	1.238	1.194	1.171
10500.	1.231	1.190	1.165
11000.	1.224	1.185	1.160
11500.	1.217	1.180	1.154
12000.	1.210	1.175	1.148
12500.	1.202	1.170	1.143
13000.	1.194	1.165	1.138
13500.	1.187	1.160	1.133
14000.	1.179	1.155	1.128
14500.	1.172	1.151	1.123
15000.	1.166	1.146	1.119
15500.	1.161	1.143	1.115
16000.	1.156	1.139	1.112
16500.	1.152	1.136	1.109
17000.	1.149	1.134	1.107
17500.	1.146	1.132	1.106
18000.	1.143	1.130	1.105
18500.	1.141	1.128	1.104
19000.	1.138	1.126	1.104
19500.	1.136	1.125	1.103
20000.	1.133	1.123	1.103
22500.	1.120	1.115	1.100
25000.	1.107	1.107	1.097
27500.	1.095	1.099	1.095
30000.	1.086	1.092	1.092
32500.	1.081	1.084	1.090
35000.	1.075	1.078	1.087
37500.	1.070	1.071	1.085
40000.	1.069	1.066	1.083
42500.	1.069	1.063	1.081
45000.	1.071	1.062	1.079
47500.	1.071	1.060	1.078
50000.	1.069	1.058	1.076
52500.	1.065	1.056	1.075
55000.	1.059	1.054	1.074
57500.	1.052	1.052	1.073
60000.	1.043	1.050	1.073
62500.	1.039	1.049	1.073
65000.	1.046	1.052	1.073
67500.	1.053	1.055	1.074
70000.	1.060	1.059	1.074

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Appendix C Enriched Lattice Isotopic Data Tables

The results in this appendix are based on hot operating and equilibrium xenon conditions.

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Table C.1 [ ] Exposure-Dependent 0% Void Isotopics (kg/MTU Initial)

Exposure MWd/MTU	U-234	U-235	U-236	U-238	NP-237	PU-238	PU-239	PU-240	PU-241	PU-242
0.0	0.358	44.780	0.000	954.862	0.000	0.000	0.000	0.000	0.000	0.000
100.0	0.358	44.659	0.023	954.809	0.000	0.000	0.021	0.000	0.000	0.000
500.0	0.356	44.182	0.113	954.595	0.002	0.000	0.197	0.002	0.000	0.000
1000.0	0.354	43.593	0.225	954.328	0.004	0.000	0.419	0.007	0.000	0.000
1500.0	0.352	43.013	0.334	954.060	0.006	0.000	0.629	0.015	0.001	0.000
2000.0	0.350	42.441	0.442	953.793	0.008	0.000	0.830	0.026	0.002	0.000
2500.0	0.348	41.876	0.548	953.527	0.011	0.000	1.021	0.040	0.005	0.000
3000.0	0.346	41.319	0.652	953.261	0.013	0.000	1.203	0.056	0.008	0.000
3500.0	0.344	40.768	0.755	952.995	0.016	0.001	1.377	0.074	0.011	0.000
4000.0	0.342	40.224	0.856	952.730	0.020	0.001	1.542	0.093	0.016	0.000
4500.0	0.340	39.686	0.956	952.465	0.023	0.001	1.699	0.114	0.022	0.001
5000.0	0.338	39.155	1.054	952.200	0.026	0.001	1.849	0.137	0.029	0.001
5500.0	0.336	38.629	1.151	951.936	0.030	0.001	1.991	0.160	0.036	0.001
6000.0	0.335	38.108	1.246	951.673	0.034	0.002	2.127	0.184	0.045	0.002
6500.0	0.333	37.594	1.340	951.410	0.038	0.002	2.256	0.210	0.054	0.002
7000.0	0.331	37.084	1.433	951.148	0.042	0.002	2.379	0.236	0.064	0.003
7500.0	0.329	36.579	1.525	950.886	0.046	0.003	2.496	0.263	0.075	0.004
8000.0	0.327	36.080	1.615	950.625	0.050	0.003	2.607	0.290	0.087	0.005
8500.0	0.325	35.585	1.704	950.364	0.054	0.004	2.712	0.318	0.099	0.006
9000.0	0.323	35.095	1.792	950.103	0.059	0.004	2.813	0.347	0.111	0.007
9500.0	0.322	34.609	1.879	949.843	0.063	0.005	2.908	0.376	0.125	0.009
10000.0	0.320	34.127	1.965	949.584	0.068	0.006	2.998	0.405	0.138	0.010
10500.0	0.318	33.650	2.050	949.324	0.073	0.006	3.084	0.435	0.152	0.012
11000.0	0.316	33.177	2.134	949.066	0.077	0.007	3.165	0.465	0.167	0.014
11500.0	0.314	32.708	2.216	948.808	0.082	0.008	3.242	0.495	0.182	0.016
12000.0	0.313	32.243	2.298	948.550	0.087	0.008	3.314	0.526	0.197	0.018
12500.0	0.311	31.781	2.378	948.293	0.092	0.009	3.383	0.557	0.213	0.020
13000.0	0.309	31.323	2.458	948.036	0.098	0.010	3.448	0.588	0.228	0.023
13500.0	0.307	30.869	2.537	947.779	0.103	0.011	3.509	0.619	0.244	0.025
14000.0	0.306	30.418	2.615	947.523	0.108	0.012	3.566	0.651	0.260	0.028
14500.0	0.304	29.971	2.691	947.267	0.113	0.013	3.620	0.682	0.276	0.031
15000.0	0.302	29.527	2.767	947.012	0.119	0.014	3.671	0.714	0.292	0.034
15500.0	0.301	29.087	2.843	946.756	0.124	0.015	3.720	0.745	0.308	0.038
16000.0	0.299	28.649	2.917	946.500	0.130	0.016	3.765	0.777	0.325	0.041
16500.0	0.297	28.216	2.990	946.243	0.135	0.018	3.808	0.809	0.341	0.045
17000.0	0.296	27.785	3.063	945.986	0.141	0.019	3.849	0.840	0.358	0.049
17500.0	0.294	27.358	3.135	945.728	0.147	0.020	3.887	0.872	0.374	0.053
18000.0	0.292	26.935	3.206	945.469	0.153	0.022	3.924	0.903	0.391	0.058
18500.0	0.291	26.514	3.276	945.209	0.158	0.023	3.959	0.935	0.408	0.062
19000.0	0.289	26.098	3.345	944.948	0.164	0.025	3.991	0.966	0.424	0.067
19500.0	0.287	25.684	3.414	944.685	0.170	0.026	4.022	0.998	0.441	0.072
20000.0	0.286	25.274	3.481	944.422	0.176	0.028	4.052	1.029	0.458	0.077
22500.0	0.277	23.276	3.808	943.083	0.207	0.037	4.176	1.183	0.543	0.106
25000.0	0.269	21.363	4.115	941.709	0.240	0.048	4.266	1.334	0.626	0.140
27500.0	0.261	19.536	4.402	940.299	0.274	0.060	4.326	1.480	0.705	0.180
30000.0	0.253	17.793	4.669	938.849	0.308	0.075	4.359	1.622	0.780	0.226
32500.0	0.244	16.135	4.917	937.358	0.344	0.091	4.371	1.757	0.849	0.277
35000.0	0.236	14.563	5.146	935.823	0.380	0.110	4.364	1.886	0.913	0.333
37500.0	0.228	13.077	5.355	934.242	0.416	0.130	4.341	2.009	0.969	0.395
40000.0	0.220	11.679	5.544	932.612	0.452	0.151	4.306	2.123	1.020	0.462
42500.0	0.212	10.369	5.714	930.931	0.487	0.175	4.260	2.229	1.064	0.534
45000.0	0.204	9.147	5.865	929.195	0.522	0.199	4.206	2.327	1.101	0.611
47500.0	0.196	8.016	5.995	927.403	0.556	0.225	4.146	2.416	1.132	0.693
50000.0	0.188	6.976	6.107	925.553	0.589	0.251	4.083	2.496	1.156	0.778
52500.0	0.180	6.026	6.199	923.642	0.621	0.278	4.018	2.568	1.176	0.868
55000.0	0.173	5.165	6.272	921.670	0.651	0.305	3.952	2.630	1.190	0.960
57500.0	0.165	4.394	6.326	919.636	0.680	0.332	3.888	2.683	1.199	1.056
60000.0	0.158	3.708	6.363	917.540	0.706	0.358	3.827	2.728	1.205	1.153
62500.0	0.151	3.106	6.382	915.385	0.730	0.384	3.769	2.765	1.207	1.253
65000.0	0.144	2.582	6.386	913.171	0.752	0.408	3.715	2.795	1.207	1.354
67500.0	0.137	2.131	6.375	910.903	0.772	0.430	3.665	2.818	1.204	1.455
70000.0	0.130	1.748	6.351	908.584	0.789	0.451	3.620	2.835	1.200	1.556

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Table C.2 [ ] Exposure-Dependent 40% Void Isotopics (kg/MTU Initial)

Exposure MWd/MTU	U-234	U-235	U-236	U-238	NP-237	PU-238	PU-239	PU-240	PU-241	PU-242
0.0	0.358	44.780	0.000	954.862	0.000	0.000	0.000	0.000	0.000	0.000
100.0	0.358	44.660	0.024	954.802	0.000	0.000	0.024	0.000	0.000	0.000
500.0	0.356	44.184	0.118	954.559	0.002	0.000	0.222	0.002	0.000	0.000
1000.0	0.354	43.599	0.233	954.255	0.004	0.000	0.472	0.008	0.000	0.000
1500.0	0.351	43.023	0.346	953.952	0.007	0.000	0.710	0.017	0.001	0.000
2000.0	0.349	42.456	0.458	953.649	0.010	0.000	0.936	0.030	0.003	0.000
2500.0	0.347	41.897	0.567	953.347	0.013	0.000	1.152	0.045	0.006	0.000
3000.0	0.345	41.346	0.674	953.045	0.016	0.000	1.357	0.062	0.010	0.000
3500.0	0.342	40.803	0.780	952.744	0.019	0.001	1.553	0.082	0.015	0.000
4000.0	0.340	40.267	0.884	952.444	0.023	0.001	1.739	0.103	0.021	0.001
4500.0	0.338	39.738	0.986	952.144	0.027	0.001	1.917	0.125	0.028	0.001
5000.0	0.336	39.216	1.086	951.844	0.031	0.001	2.086	0.149	0.036	0.001
5500.0	0.334	38.700	1.185	951.546	0.035	0.002	2.248	0.174	0.046	0.002
6000.0	0.332	38.191	1.283	951.248	0.040	0.002	2.402	0.200	0.056	0.002
6500.0	0.330	37.687	1.378	950.950	0.044	0.003	2.549	0.227	0.067	0.003
7000.0	0.328	37.189	1.473	950.653	0.049	0.003	2.689	0.255	0.079	0.004
7500.0	0.326	36.696	1.566	950.357	0.054	0.004	2.822	0.284	0.092	0.005
8000.0	0.323	36.209	1.658	950.062	0.059	0.004	2.949	0.313	0.106	0.006
8500.0	0.321	35.727	1.748	949.766	0.064	0.005	3.070	0.343	0.121	0.007
9000.0	0.319	35.250	1.837	949.472	0.070	0.006	3.186	0.373	0.136	0.009
9500.0	0.317	34.777	1.924	949.178	0.075	0.006	3.296	0.403	0.151	0.010
10000.0	0.315	34.310	2.011	948.885	0.081	0.007	3.400	0.435	0.168	0.012
10500.0	0.314	33.847	2.096	948.592	0.086	0.008	3.500	0.466	0.184	0.014
11000.0	0.312	33.388	2.180	948.300	0.092	0.009	3.594	0.498	0.201	0.016
11500.0	0.310	32.934	2.263	948.008	0.098	0.010	3.684	0.530	0.219	0.018
12000.0	0.308	32.484	2.345	947.717	0.104	0.011	3.769	0.562	0.236	0.021
12500.0	0.306	32.039	2.426	947.426	0.110	0.012	3.850	0.595	0.254	0.023
13000.0	0.304	31.597	2.505	947.136	0.116	0.013	3.927	0.628	0.273	0.026
13500.0	0.302	31.159	2.584	946.846	0.122	0.014	4.000	0.661	0.291	0.029
14000.0	0.300	30.724	2.661	946.557	0.128	0.016	4.069	0.694	0.310	0.032
14500.0	0.298	30.294	2.738	946.268	0.134	0.017	4.134	0.727	0.328	0.036
15000.0	0.297	29.867	2.814	945.979	0.141	0.018	4.196	0.761	0.347	0.039
15500.0	0.295	29.444	2.888	945.691	0.147	0.020	4.254	0.794	0.366	0.043
16000.0	0.293	29.024	2.962	945.402	0.153	0.021	4.310	0.827	0.385	0.047
16500.0	0.291	28.607	3.035	945.114	0.160	0.023	4.363	0.861	0.404	0.051
17000.0	0.289	28.194	3.107	944.825	0.166	0.025	4.413	0.894	0.422	0.055
17500.0	0.287	27.785	3.178	944.535	0.173	0.026	4.461	0.928	0.441	0.060
18000.0	0.286	27.379	3.248	944.245	0.179	0.028	4.506	0.961	0.461	0.064
18500.0	0.284	26.977	3.318	943.953	0.186	0.030	4.549	0.994	0.480	0.069
19000.0	0.282	26.578	3.386	943.661	0.193	0.032	4.591	1.027	0.499	0.074
19500.0	0.280	26.182	3.454	943.369	0.200	0.034	4.630	1.060	0.518	0.080
20000.0	0.279	25.790	3.520	943.074	0.207	0.036	4.667	1.093	0.537	0.085
20500.0	0.277	25.402	3.586	942.779	0.214	0.038	4.703	1.126	0.556	0.091
21000.0	0.275	25.017	3.651	942.483	0.221	0.040	4.737	1.159	0.575	0.097
21500.0	0.273	24.635	3.716	942.185	0.228	0.043	4.769	1.192	0.594	0.103
22000.0	0.272	24.257	3.779	941.887	0.235	0.045	4.800	1.224	0.613	0.109
22500.0	0.270	23.883	3.842	941.586	0.242	0.048	4.829	1.257	0.632	0.116
25000.0	0.261	22.060	4.142	940.065	0.279	0.061	4.955	1.416	0.726	0.151
27500.0	0.253	20.322	4.422	938.510	0.317	0.077	5.048	1.570	0.817	0.192
30000.0	0.244	18.668	4.682	936.919	0.356	0.095	5.113	1.720	0.904	0.238
32500.0	0.236	17.097	4.922	935.293	0.395	0.115	5.155	1.863	0.985	0.289
35000.0	0.228	15.606	5.143	933.628	0.434	0.137	5.175	2.000	1.060	0.344
37500.0	0.220	14.197	5.345	931.924	0.473	0.161	5.177	2.131	1.129	0.405
40000.0	0.212	12.868	5.529	930.180	0.512	0.188	5.164	2.254	1.191	0.469
42500.0	0.204	11.619	5.693	928.394	0.550	0.216	5.139	2.370	1.247	0.538
45000.0	0.196	10.449	5.840	926.566	0.587	0.245	5.103	2.477	1.296	0.610
47500.0	0.189	9.357	5.968	924.693	0.624	0.276	5.059	2.577	1.339	0.686
50000.0	0.181	8.343	6.079	922.776	0.659	0.308	5.009	2.668	1.375	0.765
52500.0	0.174	7.405	6.172	920.814	0.692	0.340	4.954	2.751	1.406	0.847
55000.0	0.167	6.542	6.249	918.806	0.724	0.373	4.896	2.826	1.432	0.931
57500.0	0.160	5.753	6.309	916.752	0.755	0.406	4.836	2.893	1.452	1.018
60000.0	0.154	5.035	6.354	914.653	0.783	0.439	4.776	2.951	1.468	1.106
62500.0	0.148	4.386	6.383	912.509	0.810	0.471	4.717	3.003	1.479	1.196
65000.0	0.141	3.804	6.399	910.322	0.835	0.502	4.659	3.047	1.488	1.287
67500.0	0.135	3.283	6.400	908.093	0.857	0.532	4.604	3.084	1.492	1.378
70000.0	0.130	2.822	6.390	905.824	0.878	0.561	4.551	3.115	1.495	1.470

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Table C.3 [ ] Exposure-Dependent 80% Void Isotopics (kg/MTU Initial)

Exposure MWd/MTU	U-234	U-235	U-236	U-238	NP-237	PU-238	PU-239	PU-240	PU-241	PU-242
0.0	0.358	44.780	0.000	954.862	0.000	0.000	0.000	0.000	0.000	0.000
100.0	0.358	44.660	0.025	954.792	0.000	0.000	0.027	0.000	0.000	0.000
500.0	0.356	44.188	0.123	954.511	0.002	0.000	0.254	0.002	0.000	0.000
1000.0	0.353	43.608	0.244	954.161	0.005	0.000	0.540	0.009	0.001	0.000
1500.0	0.350	43.039	0.362	953.811	0.008	0.000	0.812	0.019	0.002	0.000
2000.0	0.348	42.479	0.478	953.461	0.012	0.000	1.071	0.033	0.004	0.000
2500.0	0.345	41.928	0.592	953.113	0.015	0.000	1.318	0.049	0.008	0.000
3000.0	0.343	41.387	0.703	952.765	0.019	0.001	1.554	0.068	0.013	0.000
3500.0	0.340	40.853	0.813	952.418	0.024	0.001	1.779	0.089	0.019	0.000
4000.0	0.338	40.328	0.920	952.072	0.028	0.001	1.994	0.111	0.027	0.001
4500.0	0.335	39.810	1.026	951.726	0.033	0.002	2.200	0.135	0.035	0.001
5000.0	0.333	39.299	1.130	951.381	0.038	0.002	2.397	0.161	0.046	0.001
5500.0	0.330	38.795	1.232	951.036	0.043	0.003	2.585	0.187	0.057	0.002
6000.0	0.328	38.298	1.332	950.693	0.049	0.003	2.765	0.215	0.070	0.003
6500.0	0.325	37.807	1.430	950.349	0.054	0.004	2.938	0.243	0.083	0.004
7000.0	0.323	37.323	1.527	950.007	0.060	0.004	3.103	0.272	0.098	0.004
7500.0	0.321	36.844	1.622	949.665	0.066	0.005	3.261	0.302	0.113	0.006
8000.0	0.319	36.371	1.716	949.324	0.072	0.006	3.412	0.333	0.129	0.007
8500.0	0.316	35.904	1.808	948.984	0.079	0.007	3.557	0.364	0.146	0.008
9000.0	0.314	35.442	1.899	948.644	0.085	0.008	3.695	0.396	0.164	0.010
9500.0	0.312	34.985	1.989	948.304	0.092	0.009	3.828	0.429	0.182	0.012
10000.0	0.310	34.534	2.077	947.966	0.098	0.010	3.955	0.462	0.201	0.013
10500.0	0.307	34.087	2.164	947.628	0.105	0.011	4.076	0.495	0.220	0.016
11000.0	0.305	33.645	2.249	947.290	0.112	0.013	4.192	0.529	0.240	0.018
11500.0	0.303	33.208	2.333	946.954	0.119	0.014	4.303	0.563	0.260	0.020
12000.0	0.301	32.775	2.416	946.617	0.126	0.015	4.410	0.597	0.280	0.023
12500.0	0.299	32.347	2.498	946.282	0.133	0.017	4.511	0.632	0.301	0.026
13000.0	0.297	31.923	2.578	945.946	0.141	0.019	4.608	0.667	0.322	0.029
13500.0	0.295	31.503	2.658	945.611	0.148	0.020	4.701	0.702	0.343	0.032
14000.0	0.293	31.087	2.736	945.277	0.155	0.022	4.789	0.737	0.364	0.035
14500.0	0.290	30.675	2.813	944.944	0.163	0.024	4.874	0.773	0.385	0.039
15000.0	0.288	30.268	2.889	944.610	0.170	0.026	4.955	0.809	0.406	0.042
15500.0	0.286	29.864	2.964	944.277	0.178	0.028	5.032	0.844	0.428	0.046
16000.0	0.284	29.463	3.038	943.944	0.185	0.030	5.105	0.880	0.449	0.050
16500.0	0.282	29.067	3.111	943.611	0.193	0.032	5.176	0.916	0.471	0.055
17000.0	0.281	28.674	3.183	943.278	0.201	0.034	5.243	0.952	0.492	0.059
17500.0	0.279	28.284	3.254	942.945	0.209	0.037	5.308	0.989	0.514	0.064
18000.0	0.277	27.899	3.324	942.611	0.217	0.039	5.370	1.025	0.535	0.069
18500.0	0.275	27.517	3.393	942.277	0.224	0.042	5.429	1.061	0.557	0.073
19000.0	0.273	27.138	3.461	941.943	0.232	0.044	5.486	1.097	0.578	0.079
19500.0	0.271	26.763	3.528	941.607	0.240	0.047	5.541	1.133	0.600	0.084
20000.0	0.269	26.391	3.595	941.271	0.248	0.050	5.593	1.169	0.621	0.090
20500.0	0.267	26.023	3.660	940.934	0.256	0.053	5.644	1.205	0.643	0.095
21000.0	0.265	25.659	3.725	940.596	0.264	0.056	5.692	1.240	0.664	0.101
21500.0	0.263	25.297	3.788	940.258	0.272	0.059	5.739	1.276	0.686	0.107
22000.0	0.262	24.940	3.851	939.918	0.281	0.062	5.784	1.312	0.707	0.113
22500.0	0.260	24.585	3.913	939.577	0.289	0.065	5.827	1.347	0.728	0.120
23000.0	0.258	24.235	3.974	939.234	0.297	0.069	5.869	1.383	0.750	0.126
23500.0	0.256	23.887	4.034	938.891	0.305	0.072	5.909	1.418	0.771	0.133
24000.0	0.254	23.543	4.093	938.547	0.313	0.076	5.948	1.453	0.792	0.140
24500.0	0.252	23.202	4.152	938.201	0.322	0.079	5.985	1.488	0.813	0.147
25000.0	0.251	22.865	4.210	937.854	0.330	0.083	6.020	1.523	0.834	0.155
27500.0	0.242	21.229	4.485	936.100	0.372	0.104	6.179	1.694	0.938	0.194
30000.0	0.233	19.673	4.740	934.314	0.415	0.127	6.308	1.861	1.039	0.237
32500.0	0.224	18.198	4.976	932.496	0.457	0.152	6.409	2.022	1.134	0.284
35000.0	0.216	16.799	5.192	930.646	0.500	0.181	6.487	2.178	1.225	0.336
37500.0	0.208	15.477	5.388	928.764	0.542	0.211	6.544	2.328	1.311	0.390
40000.0	0.200	14.229	5.567	926.848	0.584	0.244	6.582	2.471	1.390	0.448
42500.0	0.193	13.053	5.727	924.899	0.625	0.279	6.606	2.608	1.464	0.510
45000.0	0.185	11.948	5.869	922.917	0.665	0.316	6.615	2.738	1.533	0.574
47500.0	0.178	10.912	5.995	920.902	0.704	0.354	6.613	2.861	1.595	0.641
50000.0	0.171	9.943	6.104	918.854	0.741	0.394	6.602	2.976	1.653	0.710
52500.0	0.165	9.040	6.197	916.773	0.777	0.435	6.582	3.084	1.704	0.782
55000.0	0.158	8.199	6.275	914.660	0.811	0.476	6.556	3.185	1.751	0.856
57500.0	0.152	7.420	6.338	912.514	0.844	0.519	6.524	3.279	1.792	0.931
60000.0	0.147	6.699	6.388	910.338	0.875	0.561	6.489	3.365	1.829	1.009
62500.0	0.141	6.035	6.424	908.132	0.903	0.604	6.450	3.444	1.861	1.088
65000.0	0.136	5.424	6.448	905.897	0.930	0.646	6.410	3.516	1.889	1.168
67500.0	0.131	4.865	6.460	903.633	0.955	0.687	6.368	3.582	1.913	1.250
70000.0	0.126	4.354	6.461	901.343	0.978	0.728	6.326	3.641	1.934	1.332

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Table C.4 [ ] Exposure-Dependent 0% Void Isotopics (kg/MTU Initial)

Exposure MWd/MTU	U-234	U-235	U-236	U-238	NP-237	PU-238	PU-239	PU-240	PU-241	PU-242
0.0	0.358	44.783	0.000	954.859	0.000	0.000	0.000	0.000	0.000	0.000
100.0	0.358	44.662	0.023	954.806	0.000	0.000	0.021	0.000	0.000	0.000
500.0	0.356	44.185	0.113	954.590	0.002	0.000	0.198	0.002	0.000	0.000
1000.0	0.354	43.597	0.225	954.321	0.004	0.000	0.421	0.007	0.000	0.000
1500.0	0.352	43.017	0.334	954.052	0.006	0.000	0.634	0.015	0.001	0.000
2000.0	0.350	42.445	0.442	953.783	0.008	0.000	0.836	0.026	0.002	0.000
2500.0	0.348	41.880	0.548	953.514	0.011	0.000	1.029	0.040	0.005	0.000
3000.0	0.346	41.323	0.653	953.245	0.014	0.000	1.213	0.056	0.008	0.000
3500.0	0.344	40.773	0.755	952.976	0.017	0.001	1.389	0.074	0.012	0.000
4000.0	0.342	40.229	0.857	952.708	0.020	0.001	1.557	0.094	0.016	0.000
4500.0	0.340	39.692	0.956	952.439	0.023	0.001	1.716	0.115	0.022	0.001
5000.0	0.338	39.161	1.055	952.171	0.027	0.001	1.869	0.137	0.029	0.001
5500.0	0.336	38.636	1.152	951.903	0.030	0.001	2.014	0.160	0.037	0.001
6000.0	0.334	38.117	1.247	951.636	0.034	0.002	2.153	0.185	0.045	0.002
6500.0	0.332	37.603	1.342	951.368	0.038	0.002	2.285	0.210	0.055	0.003
7000.0	0.331	37.095	1.435	951.101	0.042	0.002	2.411	0.236	0.065	0.003
7500.0	0.329	36.591	1.526	950.834	0.046	0.003	2.531	0.263	0.076	0.004
8000.0	0.327	36.093	1.617	950.568	0.051	0.003	2.645	0.291	0.088	0.005
8500.0	0.325	35.600	1.706	950.301	0.055	0.004	2.754	0.319	0.100	0.006
9000.0	0.323	35.111	1.794	950.035	0.060	0.004	2.858	0.347	0.113	0.007
9500.0	0.321	34.627	1.881	949.768	0.064	0.005	2.957	0.377	0.127	0.009
10000.0	0.319	34.148	1.967	949.502	0.069	0.006	3.051	0.406	0.141	0.010
10500.0	0.318	33.673	2.052	949.236	0.074	0.006	3.141	0.436	0.156	0.012
11000.0	0.316	33.203	2.136	948.970	0.079	0.007	3.226	0.466	0.171	0.014
11500.0	0.314	32.736	2.218	948.704	0.084	0.008	3.306	0.497	0.186	0.016
12000.0	0.312	32.274	2.300	948.438	0.090	0.009	3.383	0.528	0.202	0.018
12500.0	0.310	31.816	2.381	948.172	0.095	0.010	3.456	0.559	0.218	0.021
13000.0	0.309	31.362	2.460	947.906	0.100	0.011	3.524	0.590	0.235	0.023
13500.0	0.307	30.912	2.539	947.640	0.106	0.011	3.589	0.622	0.251	0.026
14000.0	0.305	30.466	2.616	947.375	0.111	0.013	3.651	0.653	0.268	0.029
14500.0	0.303	30.023	2.693	947.109	0.117	0.014	3.709	0.685	0.285	0.032
15000.0	0.302	29.584	2.769	946.844	0.123	0.015	3.763	0.717	0.302	0.036
15500.0	0.300	29.148	2.844	946.579	0.128	0.016	3.814	0.749	0.319	0.039
16000.0	0.298	28.716	2.918	946.315	0.134	0.017	3.862	0.782	0.336	0.043
16500.0	0.296	28.287	2.991	946.050	0.140	0.018	3.906	0.814	0.353	0.047
17000.0	0.295	27.862	3.063	945.786	0.146	0.020	3.948	0.846	0.370	0.051
17500.0	0.293	27.439	3.134	945.522	0.151	0.021	3.987	0.878	0.387	0.055
18000.0	0.291	27.020	3.205	945.259	0.157	0.023	4.023	0.911	0.404	0.060
18500.0	0.290	26.604	3.274	944.995	0.163	0.024	4.057	0.943	0.421	0.065
19000.0	0.288	26.191	3.343	944.731	0.169	0.026	4.088	0.975	0.438	0.069
19500.0	0.286	25.782	3.412	944.466	0.175	0.027	4.117	1.007	0.455	0.075
20000.0	0.285	25.375	3.479	944.201	0.181	0.029	4.144	1.039	0.471	0.080
20500.0	0.283	24.972	3.546	943.936	0.187	0.031	4.169	1.071	0.488	0.085
21000.0	0.281	24.571	3.611	943.669	0.193	0.033	4.193	1.103	0.505	0.091
21500.0	0.280	24.174	3.676	943.402	0.199	0.034	4.215	1.134	0.521	0.097
22000.0	0.278	23.780	3.741	943.133	0.206	0.036	4.235	1.166	0.538	0.103
22500.0	0.276	23.390	3.804	942.864	0.212	0.038	4.254	1.197	0.554	0.109
23000.0	0.275	23.002	3.867	942.593	0.218	0.040	4.272	1.228	0.571	0.116
23500.0	0.273	22.618	3.929	942.320	0.225	0.042	4.288	1.259	0.587	0.123
25000.0	0.268	21.486	4.110	941.494	0.244	0.049	4.331	1.350	0.635	0.144
27500.0	0.260	19.664	4.396	940.088	0.278	0.062	4.380	1.498	0.714	0.184
30000.0	0.252	17.925	4.663	938.643	0.312	0.077	4.405	1.640	0.789	0.230
32500.0	0.244	16.270	4.911	937.157	0.347	0.093	4.410	1.775	0.858	0.281
35000.0	0.236	14.699	5.140	935.627	0.383	0.111	4.397	1.904	0.922	0.338
37500.0	0.228	13.213	5.350	934.052	0.418	0.131	4.369	2.025	0.978	0.400
40000.0	0.219	11.812	5.540	932.428	0.454	0.153	4.330	2.138	1.029	0.467
42500.0	0.212	10.499	5.711	930.753	0.489	0.176	4.281	2.243	1.072	0.539
45000.0	0.204	9.273	5.862	929.025	0.524	0.201	4.225	2.340	1.109	0.616
47500.0	0.196	8.137	5.994	927.241	0.558	0.226	4.163	2.428	1.139	0.697
50000.0	0.188	7.090	6.107	925.399	0.591	0.253	4.098	2.507	1.164	0.783
52500.0	0.180	6.133	6.201	923.497	0.622	0.280	4.032	2.577	1.183	0.872
55000.0	0.173	5.265	6.275	921.534	0.652	0.307	3.965	2.638	1.196	0.964
57500.0	0.165	4.485	6.332	919.509	0.681	0.333	3.900	2.690	1.206	1.060
60000.0	0.158	3.790	6.370	917.423	0.707	0.359	3.837	2.734	1.211	1.157
62500.0	0.151	3.179	6.392	915.277	0.731	0.385	3.778	2.771	1.213	1.257
65000.0	0.144	2.646	6.397	913.073	0.753	0.408	3.723	2.800	1.212	1.357
67500.0	0.137	2.187	6.388	910.813	0.773	0.431	3.673	2.822	1.209	1.458
70000.0	0.130	1.796	6.366	908.503	0.790	0.452	3.627	2.839	1.204	1.559

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Table C.5 [ ] Exposure-Dependent 40% Void Isotopics (kg/MTU Initial)

Exposure MWd/MTU	U-234	U-235	U-236	U-238	NP-237	PU-238	PU-239	PU-240	PU-241	PU-242
0.0	0.358	44.783	0.000	954.859	0.000	0.000	0.000	0.000	0.000	0.000
100.0	0.358	44.663	0.024	954.798	0.000	0.000	0.024	0.000	0.000	0.000
500.0	0.356	44.188	0.118	954.553	0.002	0.000	0.224	0.002	0.000	0.000
1000.0	0.354	43.602	0.233	954.247	0.004	0.000	0.476	0.008	0.000	0.000
1500.0	0.351	43.027	0.347	953.941	0.007	0.000	0.716	0.017	0.001	0.000
2000.0	0.349	42.460	0.458	953.635	0.010	0.000	0.945	0.030	0.003	0.000
2500.0	0.347	41.901	0.568	953.330	0.013	0.000	1.163	0.045	0.006	0.000
3000.0	0.345	41.351	0.675	953.025	0.016	0.000	1.371	0.062	0.010	0.000
3500.0	0.342	40.808	0.781	952.721	0.020	0.001	1.569	0.082	0.015	0.000
4000.0	0.340	40.273	0.885	952.416	0.023	0.001	1.759	0.103	0.021	0.001
4500.0	0.338	39.745	0.987	952.112	0.027	0.001	1.939	0.126	0.028	0.001
5000.0	0.336	39.223	1.088	951.809	0.032	0.002	2.112	0.150	0.037	0.001
5500.0	0.334	38.708	1.187	951.505	0.036	0.002	2.277	0.175	0.046	0.002
6000.0	0.332	38.199	1.284	951.202	0.040	0.002	2.435	0.201	0.057	0.002
6500.0	0.329	37.696	1.380	950.900	0.045	0.003	2.585	0.228	0.068	0.003
7000.0	0.327	37.199	1.475	950.597	0.050	0.003	2.729	0.256	0.080	0.004
7500.0	0.325	36.708	1.568	950.295	0.055	0.004	2.866	0.284	0.094	0.005
8000.0	0.323	36.222	1.660	949.994	0.060	0.004	2.998	0.313	0.108	0.006
8500.0	0.321	35.742	1.750	949.692	0.065	0.005	3.123	0.343	0.123	0.007
9000.0	0.319	35.266	1.840	949.391	0.071	0.006	3.242	0.373	0.138	0.009
9500.0	0.317	34.796	1.927	949.090	0.076	0.007	3.357	0.404	0.154	0.010
10000.0	0.315	34.331	2.014	948.790	0.082	0.007	3.466	0.435	0.171	0.012
10500.0	0.313	33.870	2.099	948.489	0.088	0.008	3.569	0.467	0.188	0.014
11000.0	0.311	33.414	2.183	948.189	0.094	0.009	3.668	0.499	0.206	0.016
11500.0	0.309	32.963	2.266	947.889	0.100	0.010	3.763	0.531	0.224	0.019
12000.0	0.307	32.516	2.348	947.589	0.106	0.011	3.853	0.563	0.242	0.021
12500.0	0.305	32.073	2.429	947.289	0.112	0.013	3.938	0.596	0.261	0.024
13000.0	0.303	31.635	2.509	946.990	0.119	0.014	4.020	0.629	0.280	0.027
13500.0	0.301	31.201	2.587	946.690	0.125	0.015	4.097	0.662	0.299	0.030
14000.0	0.299	30.771	2.665	946.391	0.132	0.016	4.170	0.696	0.318	0.033
14500.0	0.297	30.344	2.741	946.093	0.138	0.018	4.240	0.729	0.338	0.037
15000.0	0.296	29.922	2.817	945.794	0.145	0.019	4.306	0.763	0.357	0.040
15500.0	0.294	29.503	2.891	945.496	0.151	0.021	4.368	0.797	0.377	0.044
16000.0	0.292	29.088	2.965	945.198	0.158	0.022	4.427	0.831	0.397	0.048
16500.0	0.290	28.677	3.037	944.900	0.164	0.024	4.482	0.865	0.417	0.052
17000.0	0.288	28.269	3.109	944.603	0.171	0.026	4.534	0.899	0.436	0.057
17500.0	0.286	27.865	3.180	944.306	0.178	0.028	4.583	0.933	0.456	0.062
18000.0	0.285	27.464	3.249	944.009	0.185	0.029	4.629	0.967	0.475	0.066
18500.0	0.283	27.066	3.318	943.712	0.192	0.031	4.672	1.001	0.495	0.072
19000.0	0.281	26.671	3.386	943.416	0.198	0.033	4.713	1.035	0.514	0.077
19500.0	0.279	26.280	3.454	943.119	0.205	0.035	4.751	1.069	0.534	0.082
20000.0	0.277	25.892	3.520	942.822	0.212	0.038	4.787	1.102	0.553	0.088
20500.0	0.276	25.507	3.585	942.525	0.219	0.040	4.821	1.136	0.572	0.094
21000.0	0.274	25.125	3.650	942.227	0.226	0.042	4.852	1.170	0.591	0.100
21500.0	0.272	24.747	3.714	941.929	0.233	0.044	4.882	1.203	0.610	0.106
22000.0	0.270	24.372	3.777	941.629	0.241	0.047	4.910	1.236	0.629	0.112
22500.0	0.269	24.000	3.839	941.329	0.248	0.049	4.936	1.270	0.647	0.119
23000.0	0.267	23.631	3.901	941.028	0.255	0.052	4.961	1.302	0.666	0.126
23500.0	0.265	23.265	3.961	940.726	0.262	0.055	4.984	1.335	0.685	0.133
24000.0	0.264	22.903	4.021	940.423	0.270	0.057	5.006	1.368	0.703	0.140
24500.0	0.262	22.544	4.080	940.118	0.277	0.060	5.027	1.400	0.721	0.148
25000.0	0.260	22.188	4.138	939.812	0.284	0.063	5.046	1.432	0.740	0.155
25500.0	0.258	21.836	4.196	939.505	0.292	0.066	5.064	1.464	0.758	0.163
27500.0	0.252	20.458	4.417	938.262	0.322	0.079	5.126	1.589	0.829	0.196
30000.0	0.243	18.809	4.677	936.677	0.360	0.097	5.181	1.739	0.915	0.242
32500.0	0.235	17.241	4.917	935.055	0.399	0.117	5.213	1.883	0.996	0.293
35000.0	0.227	15.753	5.138	933.396	0.438	0.140	5.226	2.020	1.071	0.349
37500.0	0.219	14.344	5.341	931.699	0.476	0.164	5.222	2.150	1.140	0.409
40000.0	0.211	13.014	5.525	929.961	0.515	0.190	5.204	2.273	1.202	0.474
42500.0	0.203	11.763	5.690	928.182	0.553	0.218	5.174	2.387	1.258	0.542
45000.0	0.196	10.590	5.838	926.360	0.590	0.247	5.135	2.494	1.307	0.615
47500.0	0.188	9.494	5.967	924.496	0.626	0.278	5.087	2.592	1.349	0.690
50000.0	0.181	8.474	6.079	922.586	0.661	0.310	5.034	2.683	1.386	0.769
52500.0	0.174	7.530	6.174	920.632	0.694	0.342	4.977	2.764	1.416	0.851
55000.0	0.167	6.661	6.253	918.633	0.726	0.375	4.917	2.838	1.442	0.935
57500.0	0.160	5.865	6.315	916.588	0.756	0.408	4.856	2.904	1.461	1.022
60000.0	0.154	5.139	6.361	914.497	0.785	0.440	4.795	2.962	1.477	1.110
62500.0	0.147	4.482	6.392	912.363	0.812	0.472	4.734	3.012	1.488	1.200
65000.0	0.141	3.891	6.409	910.185	0.836	0.504	4.675	3.055	1.496	1.291
67500.0	0.135	3.363	6.413	907.965	0.859	0.534	4.618	3.091	1.500	1.382
70000.0	0.130	2.894	6.404	905.705	0.879	0.562	4.564	3.122	1.502	1.474

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Table C.6 [ ] Exposure-Dependent 80% Void Isotopics (kg/MTU Initial)

Exposure MWd/MTU	U-234	U-235	U-236	U-238	NP-237	PU-238	PU-239	PU-240	PU-241	PU-242
0.0	0.358	44.783	0.000	954.859	0.000	0.000	0.000	0.000	0.000	0.000
100.0	0.358	44.664	0.025	954.789	0.000	0.000	0.027	0.000	0.000	0.000
500.0	0.356	44.192	0.123	954.505	0.002	0.000	0.256	0.002	0.000	0.000
1000.0	0.353	43.612	0.244	954.151	0.005	0.000	0.545	0.009	0.001	0.000
1500.0	0.350	43.042	0.363	953.798	0.008	0.000	0.820	0.019	0.002	0.000
2000.0	0.348	42.483	0.479	953.445	0.012	0.000	1.082	0.033	0.004	0.000
2500.0	0.345	41.933	0.593	953.092	0.016	0.000	1.333	0.049	0.008	0.000
3000.0	0.342	41.392	0.705	952.740	0.020	0.001	1.572	0.068	0.013	0.000
3500.0	0.340	40.858	0.814	952.389	0.024	0.001	1.801	0.089	0.019	0.000
4000.0	0.337	40.333	0.922	952.038	0.029	0.001	2.020	0.111	0.027	0.001
4500.0	0.335	39.816	1.028	951.687	0.033	0.002	2.230	0.135	0.036	0.001
5000.0	0.332	39.306	1.132	951.337	0.038	0.002	2.430	0.161	0.046	0.001
5500.0	0.330	38.803	1.234	950.987	0.044	0.003	2.623	0.187	0.058	0.002
6000.0	0.328	38.306	1.334	950.638	0.049	0.003	2.807	0.215	0.070	0.003
6500.0	0.325	37.817	1.433	950.289	0.055	0.004	2.984	0.243	0.084	0.004
7000.0	0.323	37.333	1.530	949.940	0.061	0.005	3.154	0.272	0.099	0.005
7500.0	0.320	36.856	1.626	949.592	0.067	0.005	3.317	0.302	0.114	0.006
8000.0	0.318	36.384	1.720	949.244	0.074	0.006	3.473	0.333	0.131	0.007
8500.0	0.316	35.918	1.812	948.897	0.080	0.007	3.622	0.364	0.148	0.008
9000.0	0.314	35.458	1.903	948.550	0.087	0.008	3.766	0.396	0.166	0.010
9500.0	0.311	35.003	1.993	948.203	0.093	0.009	3.903	0.428	0.185	0.012
10000.0	0.309	34.553	2.081	947.857	0.100	0.010	4.035	0.461	0.204	0.014
10500.0	0.307	34.108	2.168	947.511	0.107	0.012	4.162	0.495	0.224	0.016
11000.0	0.305	33.668	2.254	947.165	0.114	0.013	4.283	0.528	0.244	0.018
11500.0	0.302	33.233	2.338	946.820	0.122	0.014	4.399	0.562	0.265	0.021
12000.0	0.300	32.803	2.421	946.475	0.129	0.016	4.511	0.597	0.286	0.023
12500.0	0.298	32.378	2.503	946.130	0.136	0.017	4.618	0.632	0.307	0.026
13000.0	0.296	31.957	2.584	945.785	0.144	0.019	4.720	0.667	0.328	0.029
13500.0	0.294	31.540	2.663	945.441	0.151	0.021	4.818	0.702	0.350	0.032
14000.0	0.292	31.128	2.741	945.097	0.159	0.023	4.912	0.737	0.372	0.036
14500.0	0.290	30.719	2.819	944.753	0.167	0.025	5.001	0.773	0.394	0.040
15000.0	0.288	30.315	2.895	944.409	0.174	0.027	5.087	0.809	0.416	0.043
15500.0	0.285	29.915	2.970	944.066	0.182	0.029	5.169	0.845	0.439	0.047
16000.0	0.283	29.519	3.043	943.723	0.190	0.031	5.247	0.882	0.461	0.052
16500.0	0.281	29.127	3.116	943.380	0.198	0.033	5.321	0.918	0.483	0.056
17000.0	0.279	28.739	3.188	943.038	0.206	0.036	5.392	0.954	0.506	0.060
17500.0	0.277	28.354	3.259	942.696	0.214	0.038	5.460	0.991	0.528	0.065
18000.0	0.275	27.973	3.328	942.354	0.222	0.041	5.524	1.028	0.550	0.070
18500.0	0.274	27.595	3.397	942.012	0.230	0.043	5.585	1.064	0.572	0.075
19000.0	0.272	27.221	3.465	941.671	0.238	0.046	5.643	1.101	0.595	0.081
19500.0	0.270	26.850	3.532	941.330	0.246	0.049	5.698	1.138	0.617	0.086
20000.0	0.268	26.483	3.598	940.988	0.255	0.052	5.751	1.175	0.638	0.092
20500.0	0.266	26.119	3.663	940.647	0.263	0.055	5.801	1.211	0.660	0.097
21000.0	0.264	25.758	3.727	940.305	0.271	0.058	5.848	1.248	0.682	0.103
21500.0	0.262	25.401	3.790	939.964	0.279	0.061	5.894	1.285	0.703	0.110
22000.0	0.260	25.047	3.852	939.621	0.287	0.064	5.937	1.321	0.725	0.116
22500.0	0.258	24.696	3.914	939.279	0.295	0.068	5.978	1.357	0.746	0.123
23000.0	0.257	24.348	3.975	938.935	0.303	0.071	6.017	1.394	0.767	0.129
23500.0	0.255	24.003	4.034	938.591	0.312	0.075	6.055	1.430	0.789	0.136
24000.0	0.253	23.662	4.093	938.247	0.320	0.078	6.090	1.466	0.810	0.143
24500.0	0.251	23.324	4.152	937.901	0.328	0.082	6.125	1.501	0.831	0.150
25000.0	0.249	22.989	4.209	937.554	0.336	0.086	6.157	1.537	0.851	0.158
25500.0	0.248	22.657	4.265	937.206	0.345	0.090	6.188	1.572	0.872	0.165
26000.0	0.246	22.329	4.321	936.858	0.353	0.094	6.218	1.607	0.893	0.173
26500.0	0.244	22.004	4.376	936.508	0.361	0.098	6.247	1.642	0.913	0.181
27000.0	0.242	21.681	4.430	936.157	0.370	0.102	6.274	1.677	0.933	0.189
27500.0	0.240	21.362	4.483	935.805	0.378	0.107	6.300	1.712	0.954	0.197
28000.0	0.239	21.047	4.536	935.451	0.386	0.111	6.325	1.746	0.974	0.206
28500.0	0.237	20.734	4.587	935.097	0.395	0.116	6.349	1.780	0.994	0.214
30000.0	0.232	19.814	4.738	934.025	0.420	0.130	6.415	1.881	1.053	0.241
32500.0	0.223	18.344	4.973	932.213	0.462	0.156	6.504	2.044	1.148	0.288
35000.0	0.215	16.949	5.188	930.369	0.504	0.184	6.572	2.201	1.239	0.339
37500.0	0.207	15.628	5.386	928.493	0.546	0.214	6.620	2.351	1.325	0.394
40000.0	0.200	14.381	5.564	926.584	0.588	0.247	6.651	2.494	1.405	0.452
42500.0	0.192	13.204	5.725	924.642	0.628	0.282	6.668	2.631	1.479	0.514
45000.0	0.185	12.097	5.869	922.668	0.668	0.319	6.672	2.760	1.547	0.578
47500.0	0.178	11.059	5.995	920.660	0.707	0.357	6.665	2.882	1.610	0.645
50000.0	0.171	10.086	6.105	918.619	0.744	0.397	6.649	2.997	1.667	0.714
52500.0	0.164	9.179	6.200	916.546	0.780	0.438	6.626	3.104	1.718	0.786
55000.0	0.158	8.333	6.279	914.441	0.814	0.479	6.596	3.203	1.765	0.860
57500.0	0.152	7.548	6.344	912.304	0.846	0.522	6.562	3.296	1.806	0.935
60000.0	0.146	6.821	6.396	910.136	0.877	0.564	6.524	3.381	1.842	1.013
62500.0	0.141	6.151	6.433	907.938	0.906	0.606	6.483	3.459	1.874	1.092
65000.0	0.136	5.534	6.459	905.711	0.932	0.649	6.441	3.531	1.902	1.172
67500.0	0.131	4.968	6.473	903.456	0.957	0.690	6.397	3.596	1.926	1.253
70000.0	0.126	4.450	6.475	901.174	0.980	0.731	6.353	3.654	1.946	1.336

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Table C.7 [ ] Exposure-Dependent 0% Void Isotopics (kg/MTU Initial)

Exposure MWd/MTU	U-234	U-235	U-236	U-238	NP-237	PU-238	PU-239	PU-240	PU-241	PU-242
0.0	0.352	43.987	0.000	955.661	0.000	0.000	0.000	0.000	0.000	0.000
100.0	0.352	43.867	0.022	955.609	0.000	0.000	0.019	0.000	0.000	0.000
500.0	0.350	43.389	0.112	955.400	0.002	0.000	0.188	0.001	0.000	0.000
1000.0	0.348	42.800	0.222	955.138	0.003	0.000	0.405	0.006	0.000	0.000
1500.0	0.346	42.219	0.330	954.877	0.006	0.000	0.612	0.015	0.001	0.000
2000.0	0.344	41.646	0.437	954.616	0.008	0.000	0.809	0.026	0.002	0.000
2500.0	0.342	41.081	0.542	954.356	0.010	0.000	0.996	0.039	0.004	0.000
3000.0	0.340	40.522	0.645	954.096	0.013	0.000	1.174	0.055	0.007	0.000
3500.0	0.338	39.971	0.747	953.837	0.016	0.000	1.343	0.073	0.011	0.000
4000.0	0.336	39.426	0.847	953.578	0.019	0.001	1.505	0.092	0.016	0.000
4500.0	0.335	38.887	0.946	953.319	0.022	0.001	1.658	0.113	0.021	0.001
5000.0	0.333	38.354	1.043	953.062	0.025	0.001	1.804	0.135	0.027	0.001
5500.0	0.331	37.827	1.139	952.804	0.029	0.001	1.943	0.158	0.035	0.001
6000.0	0.329	37.305	1.233	952.548	0.032	0.002	2.074	0.182	0.043	0.002
6500.0	0.327	36.789	1.327	952.292	0.036	0.002	2.200	0.207	0.052	0.002
7000.0	0.325	36.278	1.419	952.036	0.040	0.002	2.318	0.233	0.062	0.003
7500.0	0.324	35.772	1.509	951.781	0.044	0.003	2.431	0.260	0.072	0.004
8000.0	0.322	35.271	1.599	951.526	0.048	0.003	2.539	0.287	0.083	0.005
8500.0	0.320	34.775	1.687	951.272	0.052	0.004	2.640	0.315	0.095	0.006
9000.0	0.318	34.283	1.775	951.018	0.056	0.004	2.737	0.343	0.108	0.007
9500.0	0.316	33.796	1.861	950.764	0.061	0.005	2.829	0.372	0.120	0.008
10000.0	0.315	33.313	1.946	950.511	0.065	0.005	2.915	0.402	0.134	0.010
10500.0	0.313	32.834	2.030	950.258	0.070	0.006	2.997	0.431	0.148	0.012
11000.0	0.311	32.360	2.113	950.005	0.074	0.006	3.075	0.461	0.162	0.013
11500.0	0.310	31.889	2.195	949.753	0.079	0.007	3.148	0.492	0.177	0.015
12000.0	0.308	31.423	2.276	949.501	0.084	0.008	3.217	0.523	0.192	0.018
12500.0	0.306	30.961	2.356	949.250	0.089	0.009	3.282	0.553	0.207	0.020
13000.0	0.304	30.502	2.435	948.998	0.094	0.010	3.343	0.585	0.222	0.022
13500.0	0.303	30.047	2.513	948.748	0.099	0.010	3.401	0.616	0.238	0.025
14000.0	0.301	29.595	2.590	948.498	0.104	0.011	3.454	0.648	0.253	0.028
14500.0	0.299	29.147	2.666	948.248	0.109	0.012	3.504	0.679	0.269	0.031
15000.0	0.298	28.702	2.741	947.999	0.114	0.013	3.551	0.711	0.285	0.034
15500.0	0.296	28.260	2.816	947.750	0.119	0.014	3.594	0.743	0.301	0.038
16000.0	0.295	27.822	2.890	947.502	0.125	0.015	3.634	0.775	0.317	0.041
16500.0	0.293	27.386	2.962	947.255	0.130	0.017	3.671	0.807	0.332	0.045
17000.0	0.291	26.954	3.034	947.008	0.135	0.018	3.705	0.839	0.348	0.049
17500.0	0.290	26.525	3.106	946.760	0.140	0.019	3.737	0.871	0.364	0.053
18000.0	0.288	26.098	3.176	946.513	0.146	0.020	3.766	0.903	0.380	0.057
18500.0	0.287	25.675	3.246	946.266	0.151	0.021	3.793	0.935	0.395	0.062
19000.0	0.285	25.255	3.315	946.018	0.157	0.023	3.818	0.966	0.411	0.067
19500.0	0.283	24.838	3.383	945.769	0.162	0.024	3.841	0.998	0.426	0.072
20000.0	0.282	24.424	3.450	945.520	0.168	0.026	3.862	1.030	0.442	0.077
20500.0	0.280	24.013	3.517	945.269	0.173	0.027	3.882	1.061	0.457	0.082
21000.0	0.279	23.606	3.583	945.017	0.179	0.029	3.900	1.092	0.473	0.088
22500.0	0.274	22.403	3.776	944.253	0.196	0.034	3.948	1.185	0.520	0.106
25000.0	0.266	20.464	4.083	942.950	0.226	0.044	4.004	1.336	0.596	0.140
27500.0	0.258	18.608	4.370	941.608	0.257	0.055	4.034	1.481	0.670	0.180
30000.0	0.250	16.837	4.639	940.224	0.289	0.068	4.041	1.620	0.739	0.226
32500.0	0.242	15.153	4.888	938.795	0.322	0.082	4.030	1.753	0.802	0.278
35000.0	0.234	13.555	5.117	937.318	0.355	0.098	4.003	1.879	0.859	0.335
37500.0	0.226	12.048	5.327	935.788	0.389	0.116	3.963	1.998	0.910	0.399
40000.0	0.218	10.632	5.517	934.204	0.423	0.135	3.913	2.108	0.954	0.468
42500.0	0.210	9.311	5.687	932.561	0.456	0.156	3.855	2.209	0.991	0.543
45000.0	0.202	8.087	5.835	930.854	0.489	0.178	3.792	2.302	1.021	0.623
47500.0	0.194	6.961	5.963	929.081	0.521	0.201	3.726	2.385	1.045	0.709
50000.0	0.185	5.936	6.070	927.239	0.552	0.224	3.659	2.458	1.064	0.799
52500.0	0.177	5.013	6.157	925.324	0.582	0.248	3.592	2.522	1.077	0.894
55000.0	0.169	4.190	6.222	923.336	0.610	0.271	3.527	2.576	1.085	0.992
57500.0	0.161	3.466	6.268	921.274	0.636	0.294	3.466	2.621	1.089	1.094
60000.0	0.154	2.839	6.294	919.139	0.660	0.317	3.409	2.658	1.090	1.198
62500.0	0.146	2.302	6.303	916.935	0.682	0.338	3.357	2.687	1.089	1.304
65000.0	0.138	1.849	6.295	914.665	0.701	0.358	3.310	2.708	1.085	1.411
67500.0	0.131	1.474	6.272	912.335	0.718	0.376	3.269	2.724	1.081	1.518
70000.0	0.124	1.166	6.236	909.952	0.733	0.393	3.233	2.734	1.075	1.625

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Table C.8 [ ] Exposure-Dependent 40% Void Isotopics (kg/MTU Initial)

Exposure MWd/MTU	U-234	U-235	U-236	U-238	NP-237	PU-238	PU-239	PU-240	PU-241	PU-242
0.0	0.352	43.987	0.000	955.661	0.000	0.000	0.000	0.000	0.000	0.000
100.0	0.351	43.867	0.023	955.602	0.000	0.000	0.021	0.000	0.000	0.000
500.0	0.350	43.391	0.116	955.363	0.002	0.000	0.213	0.002	0.000	0.000
1000.0	0.347	42.805	0.231	955.065	0.004	0.000	0.459	0.007	0.000	0.000
1500.0	0.345	42.228	0.343	954.768	0.007	0.000	0.693	0.017	0.001	0.000
2000.0	0.343	41.660	0.453	954.471	0.009	0.000	0.916	0.029	0.003	0.000
2500.0	0.341	41.100	0.561	954.175	0.012	0.000	1.128	0.044	0.006	0.000
3000.0	0.339	40.548	0.667	953.880	0.015	0.000	1.329	0.061	0.009	0.000
3500.0	0.337	40.004	0.772	953.586	0.019	0.001	1.521	0.080	0.014	0.000
4000.0	0.335	39.467	0.875	953.292	0.022	0.001	1.704	0.101	0.020	0.001
4500.0	0.332	38.937	0.976	952.999	0.026	0.001	1.878	0.124	0.027	0.001
5000.0	0.330	38.413	1.075	952.706	0.030	0.001	2.043	0.148	0.035	0.001
5500.0	0.328	37.896	1.173	952.415	0.034	0.002	2.200	0.173	0.044	0.002
6000.0	0.326	37.385	1.269	952.124	0.038	0.002	2.350	0.199	0.054	0.002
6500.0	0.324	36.879	1.364	951.833	0.043	0.003	2.493	0.225	0.065	0.003
7000.0	0.322	36.380	1.458	951.544	0.047	0.003	2.628	0.253	0.077	0.004
7500.0	0.320	35.886	1.550	951.255	0.052	0.004	2.757	0.281	0.090	0.005
8000.0	0.318	35.397	1.640	950.967	0.057	0.004	2.880	0.311	0.103	0.006
8500.0	0.316	34.913	1.730	950.680	0.062	0.005	2.996	0.340	0.117	0.007
9000.0	0.314	34.435	1.818	950.393	0.067	0.005	3.107	0.370	0.132	0.008
9500.0	0.313	33.961	1.905	950.106	0.072	0.006	3.212	0.401	0.148	0.010
10000.0	0.311	33.492	1.990	949.821	0.077	0.007	3.312	0.432	0.164	0.012
10500.0	0.309	33.028	2.075	949.535	0.083	0.008	3.407	0.463	0.180	0.014
11000.0	0.307	32.568	2.158	949.250	0.088	0.008	3.497	0.495	0.197	0.016
11500.0	0.305	32.112	2.240	948.966	0.094	0.009	3.582	0.527	0.214	0.018
12000.0	0.303	31.661	2.321	948.682	0.100	0.010	3.663	0.560	0.232	0.020
12500.0	0.301	31.214	2.401	948.399	0.105	0.011	3.739	0.592	0.250	0.023
13000.0	0.299	30.771	2.480	948.116	0.111	0.012	3.811	0.625	0.268	0.026
13500.0	0.298	30.331	2.557	947.834	0.117	0.014	3.878	0.658	0.286	0.029
14000.0	0.296	29.896	2.634	947.552	0.123	0.015	3.942	0.692	0.304	0.032
14500.0	0.294	29.465	2.710	947.271	0.129	0.016	4.001	0.725	0.323	0.035
15000.0	0.292	29.036	2.785	946.991	0.135	0.017	4.057	0.759	0.341	0.039
15500.0	0.290	28.612	2.859	946.712	0.141	0.019	4.110	0.792	0.359	0.043
16000.0	0.289	28.191	2.932	946.433	0.147	0.020	4.158	0.826	0.378	0.047
16500.0	0.287	27.773	3.004	946.154	0.153	0.022	4.204	0.860	0.396	0.051
17000.0	0.285	27.358	3.075	945.877	0.159	0.023	4.246	0.893	0.415	0.055
17500.0	0.284	26.947	3.146	945.599	0.165	0.025	4.285	0.927	0.433	0.060
18000.0	0.282	26.538	3.215	945.322	0.172	0.026	4.322	0.961	0.451	0.065
18500.0	0.280	26.133	3.284	945.045	0.178	0.028	4.356	0.995	0.469	0.070
19000.0	0.278	25.731	3.352	944.768	0.184	0.030	4.387	1.028	0.487	0.075
19500.0	0.277	25.332	3.419	944.490	0.190	0.032	4.417	1.062	0.505	0.080
20000.0	0.275	24.936	3.485	944.212	0.197	0.033	4.444	1.095	0.523	0.086
20500.0	0.273	24.544	3.551	943.933	0.203	0.035	4.470	1.128	0.540	0.091
21000.0	0.272	24.155	3.615	943.654	0.210	0.037	4.494	1.161	0.558	0.097
21500.0	0.270	23.768	3.679	943.373	0.216	0.039	4.516	1.194	0.576	0.104
22000.0	0.268	23.386	3.742	943.091	0.223	0.041	4.537	1.226	0.594	0.110
22500.0	0.267	23.006	3.804	942.808	0.229	0.044	4.557	1.259	0.611	0.116
25000.0	0.259	21.157	4.104	941.371	0.263	0.056	4.637	1.417	0.698	0.152
27500.0	0.250	19.391	4.384	939.899	0.298	0.070	4.689	1.570	0.783	0.194
30000.0	0.242	17.707	4.644	938.389	0.334	0.086	4.717	1.717	0.862	0.241
32500.0	0.234	16.106	4.885	936.841	0.371	0.103	4.724	1.857	0.936	0.293
35000.0	0.226	14.588	5.106	935.251	0.407	0.123	4.714	1.989	1.003	0.350
37500.0	0.218	13.153	5.309	933.618	0.444	0.144	4.689	2.115	1.064	0.412
40000.0	0.210	11.801	5.492	931.939	0.480	0.168	4.652	2.232	1.118	0.479
42500.0	0.202	10.533	5.657	930.213	0.516	0.192	4.604	2.340	1.165	0.551
45000.0	0.195	9.350	5.803	928.438	0.551	0.218	4.549	2.441	1.205	0.627
47500.0	0.187	8.251	5.929	926.611	0.585	0.246	4.489	2.532	1.239	0.707
50000.0	0.180	7.237	6.037	924.731	0.618	0.273	4.425	2.614	1.266	0.791
52500.0	0.172	6.307	6.127	922.797	0.650	0.302	4.359	2.687	1.287	0.878
55000.0	0.165	5.461	6.199	920.807	0.680	0.330	4.292	2.751	1.304	0.968
57500.0	0.158	4.697	6.253	918.762	0.708	0.359	4.226	2.807	1.315	1.061
60000.0	0.151	4.013	6.290	916.662	0.735	0.387	4.162	2.854	1.322	1.155
62500.0	0.144	3.406	6.311	914.507	0.759	0.414	4.101	2.894	1.326	1.252
65000.0	0.137	2.872	6.316	912.301	0.781	0.440	4.044	2.926	1.326	1.349
67500.0	0.131	2.407	6.308	910.044	0.801	0.464	3.991	2.951	1.325	1.447
70000.0	0.125	2.006	6.287	907.741	0.819	0.487	3.942	2.970	1.321	1.544

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Table C.9 [ ] Exposure-Dependent 80% Void Isotopics (kg/MTU Initial)

Exposure MWd/MTU	U-234	U-235	U-236	U-238	NP-237	PU-238	PU-239	PU-240	PU-241	PU-242
0.0	0.352	43.987	0.000	955.661	0.000	0.000	0.000	0.000	0.000	0.000
100.0	0.351	43.868	0.025	955.592	0.000	0.000	0.024	0.000	0.000	0.000
500.0	0.349	43.395	0.122	955.315	0.002	0.000	0.245	0.002	0.000	0.000
1000.0	0.347	42.813	0.242	954.969	0.005	0.000	0.528	0.008	0.001	0.000
1500.0	0.344	42.242	0.359	954.625	0.008	0.000	0.797	0.019	0.002	0.000
2000.0	0.342	41.681	0.474	954.281	0.011	0.000	1.054	0.032	0.004	0.000
2500.0	0.339	41.129	0.587	953.938	0.015	0.000	1.298	0.049	0.007	0.000
3000.0	0.337	40.586	0.698	953.596	0.019	0.001	1.530	0.067	0.012	0.000
3500.0	0.334	40.051	0.806	953.255	0.023	0.001	1.752	0.088	0.018	0.000
4000.0	0.332	39.524	0.913	952.916	0.027	0.001	1.963	0.111	0.026	0.001
4500.0	0.329	39.005	1.017	952.576	0.032	0.002	2.165	0.135	0.035	0.001
5000.0	0.327	38.492	1.120	952.238	0.037	0.002	2.358	0.160	0.045	0.001
5500.0	0.325	37.987	1.221	951.901	0.042	0.002	2.541	0.186	0.056	0.002
6000.0	0.322	37.488	1.320	951.565	0.047	0.003	2.717	0.214	0.069	0.003
6500.0	0.320	36.996	1.418	951.230	0.052	0.004	2.884	0.242	0.082	0.003
7000.0	0.318	36.510	1.514	950.895	0.058	0.004	3.044	0.271	0.097	0.004
7500.0	0.316	36.030	1.608	950.561	0.064	0.005	3.197	0.301	0.112	0.005
8000.0	0.313	35.556	1.701	950.229	0.070	0.006	3.342	0.332	0.128	0.007
8500.0	0.311	35.087	1.792	949.897	0.076	0.007	3.481	0.363	0.145	0.008
9000.0	0.309	34.623	1.882	949.565	0.082	0.008	3.614	0.395	0.163	0.010
9500.0	0.307	34.165	1.970	949.235	0.089	0.009	3.741	0.428	0.181	0.011
10000.0	0.305	33.712	2.058	948.905	0.095	0.010	3.861	0.460	0.200	0.013
10500.0	0.303	33.264	2.143	948.576	0.102	0.011	3.977	0.494	0.219	0.016
11000.0	0.300	32.821	2.228	948.247	0.108	0.012	4.086	0.527	0.239	0.018
11500.0	0.298	32.382	2.311	947.919	0.115	0.013	4.191	0.561	0.259	0.020
12000.0	0.296	31.948	2.393	947.592	0.122	0.015	4.291	0.596	0.279	0.023
12500.0	0.294	31.519	2.474	947.265	0.129	0.016	4.385	0.631	0.300	0.026
13000.0	0.292	31.094	2.554	946.939	0.136	0.018	4.475	0.666	0.321	0.029
13500.0	0.290	30.673	2.632	946.614	0.143	0.019	4.561	0.701	0.342	0.032
14000.0	0.288	30.256	2.710	946.289	0.150	0.021	4.642	0.736	0.363	0.036
14500.0	0.286	29.843	2.786	945.965	0.157	0.023	4.719	0.772	0.384	0.039
15000.0	0.284	29.434	2.861	945.642	0.164	0.024	4.791	0.808	0.405	0.043
15500.0	0.282	29.030	2.935	945.319	0.172	0.026	4.860	0.844	0.427	0.047
16000.0	0.280	28.628	3.008	944.997	0.179	0.028	4.925	0.880	0.448	0.051
16500.0	0.278	28.231	3.080	944.676	0.186	0.030	4.986	0.916	0.469	0.056
17000.0	0.277	27.836	3.151	944.356	0.194	0.032	5.044	0.953	0.491	0.060
17500.0	0.275	27.446	3.221	944.036	0.201	0.034	5.098	0.989	0.512	0.065
18000.0	0.273	27.058	3.290	943.716	0.208	0.037	5.149	1.025	0.533	0.070
18500.0	0.271	26.674	3.358	943.397	0.216	0.039	5.197	1.062	0.554	0.075
19000.0	0.269	26.294	3.426	943.078	0.223	0.041	5.242	1.098	0.574	0.080
19500.0	0.267	25.916	3.492	942.760	0.231	0.044	5.285	1.135	0.595	0.086
20000.0	0.266	25.542	3.557	942.441	0.238	0.047	5.325	1.171	0.616	0.091
20500.0	0.264	25.171	3.622	942.122	0.246	0.049	5.362	1.207	0.636	0.097
21000.0	0.262	24.803	3.686	941.802	0.253	0.052	5.398	1.243	0.656	0.103
21500.0	0.260	24.439	3.749	941.482	0.261	0.055	5.432	1.279	0.677	0.110
22000.0	0.258	24.077	3.811	941.161	0.268	0.058	5.464	1.315	0.697	0.116
22500.0	0.257	23.719	3.872	940.840	0.276	0.061	5.494	1.350	0.717	0.123
23000.0	0.255	23.365	3.932	940.517	0.284	0.064	5.523	1.385	0.737	0.129
23500.0	0.253	23.013	3.992	940.194	0.291	0.067	5.550	1.421	0.757	0.136
24000.0	0.251	22.664	4.051	939.869	0.299	0.070	5.576	1.456	0.777	0.144
24500.0	0.250	22.319	4.109	939.543	0.307	0.073	5.601	1.490	0.797	0.151
25000.0	0.248	21.978	4.166	939.216	0.315	0.077	5.624	1.525	0.816	0.159
27500.0	0.239	20.316	4.440	937.561	0.354	0.095	5.723	1.694	0.913	0.199
30000.0	0.231	18.736	4.693	935.872	0.393	0.116	5.796	1.857	1.007	0.244
32500.0	0.223	17.233	4.928	934.150	0.433	0.139	5.845	2.013	1.095	0.293
35000.0	0.215	15.809	5.143	932.394	0.473	0.164	5.874	2.163	1.178	0.347
37500.0	0.207	14.462	5.339	930.602	0.513	0.191	5.886	2.305	1.255	0.404
40000.0	0.199	13.191	5.517	928.773	0.553	0.220	5.883	2.440	1.325	0.466
42500.0	0.191	11.995	5.676	926.908	0.591	0.251	5.866	2.568	1.389	0.531
45000.0	0.184	10.873	5.817	925.005	0.629	0.284	5.839	2.687	1.447	0.599
47500.0	0.177	9.823	5.941	923.064	0.666	0.318	5.803	2.798	1.499	0.671
50000.0	0.170	8.845	6.048	921.085	0.702	0.354	5.761	2.901	1.544	0.745
52500.0	0.163	7.937	6.139	919.067	0.736	0.390	5.712	2.996	1.584	0.822
55000.0	0.157	7.098	6.213	917.011	0.768	0.426	5.660	3.082	1.618	0.902
57500.0	0.150	6.325	6.272	914.916	0.799	0.463	5.605	3.161	1.647	0.983
60000.0	0.144	5.616	6.316	912.784	0.827	0.500	5.549	3.231	1.671	1.067
62500.0	0.138	4.969	6.347	910.615	0.854	0.537	5.492	3.294	1.690	1.152
65000.0	0.133	4.381	6.364	908.410	0.879	0.573	5.436	3.349	1.706	1.238
67500.0	0.127	3.850	6.368	906.171	0.902	0.607	5.381	3.398	1.718	1.326
70000.0	0.122	3.373	6.361	903.898	0.922	0.641	5.327	3.440	1.726	1.415

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Table C.10 [ ] Exposure-Dependent 0% Void Isotopics (kg/MTU Initial)

Exposure MWd/MTU	U-234	U-235	U-236	U-238	NP-237	PU-238	PU-239	PU-240	PU-241	PU-242
0.0	0.352	43.987	0.000	955.661	0.000	0.000	0.000	0.000	0.000	0.000
100.0	0.352	43.867	0.022	955.611	0.000	0.000	0.018	0.000	0.000	0.000
500.0	0.350	43.390	0.111	955.411	0.002	0.000	0.180	0.001	0.000	0.000
1000.0	0.348	42.800	0.220	955.160	0.003	0.000	0.388	0.006	0.000	0.000
1500.0	0.346	42.218	0.327	954.910	0.005	0.000	0.586	0.014	0.001	0.000
2000.0	0.344	41.645	0.433	954.659	0.008	0.000	0.775	0.025	0.002	0.000
2500.0	0.342	41.078	0.537	954.410	0.010	0.000	0.954	0.038	0.004	0.000
3000.0	0.341	40.518	0.639	954.160	0.013	0.000	1.125	0.053	0.007	0.000
3500.0	0.339	39.964	0.740	953.912	0.015	0.000	1.287	0.070	0.010	0.000
4000.0	0.337	39.417	0.840	953.663	0.018	0.001	1.442	0.088	0.014	0.000
4500.0	0.335	38.876	0.938	953.415	0.021	0.001	1.589	0.108	0.019	0.001
5000.0	0.333	38.340	1.034	953.168	0.024	0.001	1.728	0.130	0.025	0.001
5500.0	0.332	37.810	1.130	952.921	0.028	0.001	1.861	0.152	0.032	0.001
6000.0	0.330	37.286	1.224	952.675	0.031	0.002	1.987	0.176	0.040	0.002
6500.0	0.328	36.766	1.317	952.429	0.035	0.002	2.107	0.200	0.048	0.002
7000.0	0.326	36.252	1.408	952.184	0.038	0.002	2.221	0.225	0.057	0.003
7500.0	0.324	35.742	1.499	951.940	0.042	0.003	2.329	0.251	0.067	0.004
8000.0	0.323	35.237	1.588	951.695	0.046	0.003	2.431	0.278	0.077	0.004
8500.0	0.321	34.737	1.676	951.451	0.050	0.003	2.528	0.305	0.088	0.005
9000.0	0.319	34.241	1.764	951.208	0.054	0.004	2.620	0.333	0.100	0.007
9500.0	0.318	33.750	1.850	950.964	0.058	0.004	2.708	0.361	0.112	0.008
10000.0	0.316	33.263	1.935	950.721	0.062	0.005	2.790	0.390	0.125	0.009
10500.0	0.314	32.779	2.019	950.479	0.067	0.005	2.869	0.419	0.138	0.011
11000.0	0.313	32.300	2.102	950.236	0.071	0.006	2.942	0.448	0.151	0.013
11500.0	0.311	31.825	2.184	949.994	0.076	0.007	3.012	0.478	0.165	0.014
12000.0	0.309	31.354	2.265	949.752	0.080	0.007	3.078	0.508	0.179	0.016
12500.0	0.308	30.886	2.345	949.511	0.085	0.008	3.139	0.538	0.193	0.019
13000.0	0.306	30.422	2.424	949.270	0.090	0.009	3.197	0.569	0.207	0.021
13500.0	0.304	29.962	2.502	949.029	0.094	0.010	3.251	0.600	0.222	0.024
14000.0	0.303	29.505	2.579	948.789	0.099	0.011	3.302	0.631	0.237	0.026
14500.0	0.301	29.051	2.656	948.549	0.104	0.011	3.349	0.662	0.252	0.029
15000.0	0.299	28.601	2.731	948.310	0.109	0.012	3.392	0.693	0.267	0.032
15500.0	0.298	28.153	2.806	948.072	0.114	0.013	3.433	0.724	0.282	0.035
16000.0	0.296	27.709	2.880	947.834	0.119	0.014	3.470	0.756	0.296	0.039
16500.0	0.295	27.268	2.953	947.596	0.124	0.015	3.505	0.787	0.311	0.042
17000.0	0.293	26.829	3.026	947.359	0.129	0.016	3.536	0.819	0.326	0.046
17500.0	0.291	26.394	3.098	947.122	0.134	0.018	3.566	0.850	0.341	0.050
18000.0	0.290	25.962	3.168	946.884	0.139	0.019	3.593	0.881	0.356	0.054
18500.0	0.288	25.532	3.239	946.646	0.144	0.020	3.618	0.913	0.371	0.059
19000.0	0.287	25.106	3.308	946.408	0.149	0.021	3.641	0.944	0.385	0.063
19500.0	0.285	24.682	3.377	946.168	0.155	0.023	3.662	0.975	0.400	0.068
20000.0	0.284	24.262	3.445	945.928	0.160	0.024	3.682	1.006	0.415	0.073
20500.0	0.282	23.845	3.512	945.686	0.165	0.025	3.700	1.037	0.430	0.078
22500.0	0.276	22.210	3.773	944.705	0.187	0.031	3.761	1.159	0.489	0.101
25000.0	0.268	20.239	4.083	943.445	0.216	0.040	3.811	1.307	0.562	0.134
27500.0	0.260	18.353	4.374	942.144	0.246	0.051	3.835	1.451	0.632	0.173
30000.0	0.252	16.551	4.646	940.801	0.277	0.063	3.837	1.589	0.697	0.218
32500.0	0.244	14.836	4.899	939.410	0.309	0.077	3.822	1.722	0.757	0.269
35000.0	0.236	13.210	5.132	937.969	0.341	0.092	3.791	1.847	0.811	0.326
37500.0	0.228	11.677	5.345	936.473	0.373	0.109	3.748	1.964	0.858	0.389
40000.0	0.220	10.238	5.537	934.918	0.406	0.127	3.695	2.074	0.899	0.458
42500.0	0.212	8.899	5.709	933.300	0.438	0.146	3.635	2.175	0.933	0.533
45000.0	0.203	7.661	5.860	931.612	0.470	0.167	3.571	2.266	0.961	0.614
47500.0	0.195	6.528	5.988	929.853	0.501	0.189	3.504	2.348	0.983	0.701
50000.0	0.187	5.502	6.095	928.017	0.531	0.211	3.437	2.421	0.999	0.793
52500.0	0.178	4.584	6.180	926.101	0.560	0.233	3.371	2.483	1.010	0.890
55000.0	0.170	3.775	6.243	924.105	0.587	0.255	3.308	2.536	1.017	0.991
57500.0	0.162	3.072	6.285	922.028	0.612	0.277	3.249	2.579	1.020	1.095
60000.0	0.154	2.471	6.307	919.871	0.635	0.298	3.196	2.613	1.020	1.203
62500.0	0.146	1.965	6.311	917.640	0.656	0.317	3.148	2.640	1.018	1.312
65000.0	0.138	1.548	6.298	915.339	0.674	0.335	3.106	2.659	1.014	1.423
67500.0	0.130	1.208	6.270	912.976	0.690	0.351	3.069	2.673	1.009	1.533
70000.0	0.123	0.936	6.229	910.560	0.704	0.366	3.038	2.682	1.004	1.643

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Table C.11 [ ] Exposure-Dependent 40% Void Isotopics (kg/MTU Initial)

Exposure MWd/MTU	U-234	U-235	U-236	U-238	NP-237	PU-238	PU-239	PU-240	PU-241	PU-242
0.0	0.352	43.987	0.000	955.661	0.000	0.000	0.000	0.000	0.000	0.000
100.0	0.351	43.867	0.023	955.604	0.000	0.000	0.020	0.000	0.000	0.000
500.0	0.350	43.391	0.115	955.373	0.002	0.000	0.206	0.002	0.000	0.000
1000.0	0.348	42.805	0.228	955.085	0.004	0.000	0.444	0.007	0.000	0.000
1500.0	0.345	42.228	0.340	954.797	0.006	0.000	0.670	0.016	0.001	0.000
2000.0	0.343	41.659	0.449	954.510	0.009	0.000	0.885	0.028	0.003	0.000
2500.0	0.341	41.098	0.556	954.223	0.012	0.000	1.090	0.042	0.005	0.000
3000.0	0.339	40.545	0.662	953.938	0.015	0.000	1.285	0.059	0.009	0.000
3500.0	0.337	39.999	0.765	953.652	0.018	0.001	1.470	0.078	0.013	0.000
4000.0	0.335	39.460	0.867	953.368	0.022	0.001	1.646	0.098	0.019	0.000
4500.0	0.333	38.928	0.968	953.084	0.025	0.001	1.814	0.120	0.025	0.001
5000.0	0.331	38.402	1.067	952.802	0.029	0.001	1.974	0.144	0.033	0.001
5500.0	0.329	37.883	1.164	952.520	0.033	0.002	2.125	0.168	0.041	0.002
6000.0	0.327	37.369	1.260	952.239	0.037	0.002	2.270	0.193	0.051	0.002
6500.0	0.325	36.861	1.355	951.958	0.042	0.002	2.407	0.220	0.061	0.003
7000.0	0.323	36.359	1.448	951.678	0.046	0.003	2.537	0.247	0.073	0.003
7500.0	0.321	35.862	1.539	951.399	0.050	0.003	2.661	0.275	0.085	0.004
8000.0	0.319	35.370	1.630	951.121	0.055	0.004	2.779	0.303	0.098	0.005
8500.0	0.317	34.883	1.719	950.843	0.060	0.004	2.891	0.332	0.111	0.007
9000.0	0.315	34.401	1.807	950.565	0.065	0.005	2.997	0.362	0.125	0.008
9500.0	0.313	33.924	1.893	950.288	0.070	0.006	3.098	0.392	0.140	0.009
10000.0	0.312	33.451	1.979	950.012	0.075	0.006	3.194	0.422	0.155	0.011
10500.0	0.310	32.983	2.063	949.736	0.080	0.007	3.284	0.453	0.171	0.013
11000.0	0.308	32.519	2.146	949.461	0.085	0.008	3.370	0.485	0.187	0.015
11500.0	0.306	32.060	2.228	949.186	0.091	0.009	3.451	0.516	0.203	0.017
12000.0	0.304	31.604	2.309	948.912	0.096	0.010	3.528	0.548	0.220	0.019
12500.0	0.302	31.153	2.389	948.638	0.102	0.011	3.601	0.580	0.237	0.022
13000.0	0.301	30.706	2.468	948.365	0.108	0.012	3.669	0.612	0.254	0.025
13500.0	0.299	30.262	2.546	948.092	0.113	0.013	3.733	0.645	0.272	0.028
14000.0	0.297	29.822	2.623	947.820	0.119	0.014	3.793	0.678	0.289	0.031
14500.0	0.295	29.386	2.699	947.549	0.125	0.015	3.849	0.711	0.307	0.034
15000.0	0.294	28.953	2.774	947.278	0.130	0.016	3.902	0.744	0.324	0.037
15500.0	0.292	28.524	2.848	947.008	0.136	0.018	3.951	0.777	0.342	0.041
16000.0	0.290	28.098	2.921	946.738	0.142	0.019	3.996	0.810	0.360	0.045
16500.0	0.288	27.675	2.994	946.470	0.148	0.020	4.038	0.843	0.377	0.049
17000.0	0.287	27.255	3.065	946.202	0.154	0.022	4.078	0.876	0.395	0.053
17500.0	0.285	26.839	3.136	945.934	0.160	0.023	4.114	0.910	0.412	0.058
18000.0	0.283	26.425	3.206	945.666	0.166	0.025	4.148	0.943	0.429	0.062
18500.0	0.282	26.014	3.275	945.398	0.172	0.026	4.179	0.976	0.447	0.067
19000.0	0.280	25.607	3.343	945.130	0.178	0.028	4.208	1.009	0.464	0.072
19500.0	0.278	25.203	3.410	944.862	0.184	0.030	4.236	1.042	0.481	0.077
20000.0	0.277	24.802	3.477	944.593	0.190	0.031	4.261	1.075	0.498	0.083
20500.0	0.275	24.404	3.543	944.322	0.196	0.033	4.284	1.107	0.515	0.088
21000.0	0.274	24.009	3.608	944.051	0.202	0.035	4.306	1.140	0.532	0.094
21500.0	0.272	23.617	3.672	943.779	0.209	0.037	4.327	1.172	0.549	0.100
22500.0	0.269	22.844	3.798	943.231	0.221	0.041	4.364	1.236	0.583	0.113
25000.0	0.260	20.968	4.100	941.836	0.254	0.053	4.436	1.392	0.667	0.148
27500.0	0.252	19.175	4.383	940.404	0.288	0.066	4.480	1.542	0.747	0.189
30000.0	0.244	17.465	4.646	938.934	0.323	0.081	4.500	1.687	0.823	0.235
32500.0	0.236	15.838	4.889	937.423	0.359	0.098	4.501	1.825	0.893	0.287
35000.0	0.228	14.295	5.114	935.870	0.394	0.116	4.484	1.956	0.957	0.344
37500.0	0.220	12.836	5.319	934.271	0.430	0.137	4.453	2.079	1.015	0.406
40000.0	0.212	11.463	5.505	932.625	0.466	0.159	4.410	2.194	1.065	0.473
42500.0	0.204	10.177	5.671	930.928	0.501	0.183	4.358	2.301	1.109	0.545
45000.0	0.197	8.978	5.819	929.179	0.535	0.207	4.299	2.399	1.145	0.622
47500.0	0.189	7.867	5.946	927.374	0.568	0.233	4.235	2.488	1.176	0.703
50000.0	0.181	6.845	6.055	925.512	0.601	0.260	4.168	2.568	1.200	0.789
52500.0	0.174	5.912	6.145	923.590	0.632	0.287	4.100	2.638	1.218	0.878
55000.0	0.166	5.068	6.215	921.609	0.661	0.314	4.032	2.700	1.231	0.970
57500.0	0.159	4.311	6.268	919.566	0.688	0.341	3.966	2.752	1.240	1.065
60000.0	0.152	3.638	6.302	917.464	0.714	0.367	3.902	2.796	1.244	1.162
62500.0	0.144	3.047	6.320	915.302	0.737	0.392	3.842	2.832	1.246	1.260
65000.0	0.138	2.534	6.322	913.083	0.759	0.416	3.787	2.861	1.244	1.360
67500.0	0.131	2.092	6.310	910.811	0.778	0.439	3.736	2.883	1.241	1.461
70000.0	0.124	1.716	6.285	908.490	0.794	0.459	3.690	2.899	1.236	1.561

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Table C.12 [ ] Exposure-Dependent 80% Void Isotopics (kg/MTU Initial)

Exposure MWd/MTU	U-234	U-235	U-236	U-238	NP-237	PU-238	PU-239	PU-240	PU-241	PU-242
0.0	0.352	43.987	0.000	955.661	0.000	0.000	0.000	0.000	0.000	0.000
100.0	0.351	43.868	0.024	955.593	0.000	0.000	0.024	0.000	0.000	0.000
500.0	0.349	43.395	0.122	955.320	0.002	0.000	0.241	0.002	0.000	0.000
1000.0	0.347	42.814	0.241	954.980	0.005	0.000	0.519	0.008	0.000	0.000
1500.0	0.344	42.243	0.357	954.641	0.008	0.000	0.783	0.018	0.002	0.000
2000.0	0.342	41.682	0.472	954.302	0.011	0.000	1.035	0.032	0.004	0.000
2500.0	0.339	41.130	0.584	953.965	0.015	0.000	1.275	0.048	0.007	0.000
3000.0	0.337	40.587	0.694	953.629	0.019	0.001	1.503	0.066	0.012	0.000
3500.0	0.334	40.051	0.802	953.293	0.023	0.001	1.721	0.087	0.018	0.000
4000.0	0.332	39.524	0.908	952.959	0.027	0.001	1.928	0.109	0.025	0.001
4500.0	0.330	39.004	1.012	952.625	0.032	0.002	2.126	0.133	0.034	0.001
5000.0	0.327	38.491	1.114	952.293	0.036	0.002	2.315	0.158	0.044	0.001
5500.0	0.325	37.985	1.215	951.961	0.041	0.002	2.495	0.184	0.055	0.002
6000.0	0.323	37.485	1.314	951.630	0.047	0.003	2.666	0.211	0.067	0.003
6500.0	0.321	36.992	1.411	951.301	0.052	0.004	2.830	0.239	0.080	0.003
7000.0	0.318	36.505	1.506	950.972	0.058	0.004	2.986	0.268	0.094	0.004
7500.0	0.316	36.023	1.600	950.644	0.063	0.005	3.136	0.298	0.109	0.005
8000.0	0.314	35.548	1.693	950.317	0.069	0.006	3.278	0.328	0.125	0.007
8500.0	0.312	35.078	1.784	949.990	0.075	0.006	3.413	0.359	0.141	0.008
9000.0	0.310	34.613	1.873	949.665	0.081	0.007	3.543	0.391	0.159	0.010
9500.0	0.307	34.153	1.962	949.340	0.088	0.008	3.666	0.423	0.177	0.011
10000.0	0.305	33.699	2.049	949.016	0.094	0.009	3.784	0.456	0.195	0.013
10500.0	0.303	33.249	2.134	948.692	0.100	0.011	3.896	0.489	0.214	0.015
11000.0	0.301	32.804	2.219	948.369	0.107	0.012	4.003	0.522	0.233	0.017
11500.0	0.299	32.364	2.302	948.047	0.114	0.013	4.104	0.556	0.253	0.020
12000.0	0.297	31.928	2.384	947.726	0.120	0.014	4.201	0.590	0.273	0.023
12500.0	0.295	31.497	2.465	947.405	0.127	0.016	4.293	0.624	0.293	0.025
13000.0	0.293	31.069	2.544	947.085	0.134	0.017	4.380	0.659	0.313	0.028
13500.0	0.291	30.647	2.623	946.765	0.141	0.019	4.462	0.694	0.334	0.032
14000.0	0.289	30.228	2.700	946.447	0.148	0.020	4.541	0.729	0.355	0.035
14500.0	0.287	29.813	2.776	946.128	0.155	0.022	4.615	0.764	0.376	0.038
15000.0	0.285	29.402	2.851	945.811	0.162	0.024	4.684	0.800	0.397	0.042
15500.0	0.283	28.995	2.925	945.495	0.169	0.026	4.750	0.835	0.417	0.046
16000.0	0.281	28.591	2.998	945.179	0.176	0.027	4.813	0.871	0.438	0.050
16500.0	0.279	28.191	3.070	944.864	0.184	0.029	4.871	0.907	0.459	0.055
17000.0	0.278	27.794	3.141	944.549	0.191	0.031	4.926	0.943	0.480	0.059
17500.0	0.276	27.401	3.212	944.235	0.198	0.034	4.978	0.979	0.500	0.064
18000.0	0.274	27.011	3.281	943.922	0.205	0.036	5.026	1.015	0.521	0.069
18500.0	0.272	26.625	3.349	943.609	0.213	0.038	5.072	1.051	0.541	0.074
19000.0	0.270	26.241	3.416	943.296	0.220	0.040	5.115	1.087	0.562	0.079
19500.0	0.268	25.861	3.483	942.984	0.227	0.043	5.155	1.123	0.582	0.085
20000.0	0.267	25.484	3.548	942.671	0.235	0.045	5.193	1.159	0.602	0.090
20500.0	0.265	25.110	3.613	942.357	0.242	0.048	5.228	1.195	0.622	0.096
21000.0	0.263	24.740	3.677	942.044	0.250	0.050	5.262	1.230	0.642	0.102
21500.0	0.261	24.373	3.740	941.730	0.257	0.053	5.294	1.266	0.662	0.108
22000.0	0.260	24.008	3.802	941.414	0.264	0.056	5.324	1.301	0.682	0.115
22500.0	0.258	23.648	3.863	941.098	0.272	0.059	5.353	1.336	0.701	0.121
23000.0	0.256	23.290	3.924	940.781	0.280	0.062	5.380	1.371	0.721	0.128
23500.0	0.254	22.936	3.984	940.463	0.287	0.065	5.405	1.406	0.740	0.135
24000.0	0.253	22.584	4.043	940.144	0.295	0.068	5.429	1.440	0.760	0.142
24500.0	0.251	22.236	4.101	939.823	0.302	0.071	5.452	1.474	0.779	0.149
25000.0	0.249	21.892	4.158	939.501	0.310	0.074	5.474	1.509	0.798	0.157
27500.0	0.241	20.217	4.433	937.872	0.349	0.092	5.565	1.675	0.894	0.197
30000.0	0.232	18.622	4.688	936.210	0.388	0.112	5.630	1.836	0.985	0.242
32500.0	0.224	17.106	4.923	934.513	0.428	0.135	5.673	1.990	1.071	0.292
35000.0	0.216	15.669	5.140	932.781	0.467	0.159	5.695	2.137	1.151	0.345
37500.0	0.208	14.309	5.337	931.013	0.507	0.186	5.700	2.277	1.226	0.403
40000.0	0.200	13.026	5.516	929.208	0.546	0.214	5.691	2.410	1.294	0.465
42500.0	0.193	11.819	5.676	927.365	0.584	0.245	5.668	2.535	1.356	0.531
45000.0	0.185	10.687	5.818	925.483	0.622	0.277	5.636	2.652	1.411	0.600
47500.0	0.178	9.629	5.943	923.561	0.658	0.310	5.595	2.760	1.460	0.672
50000.0	0.171	8.644	6.050	921.600	0.694	0.344	5.548	2.860	1.502	0.747
52500.0	0.164	7.730	6.141	919.599	0.727	0.380	5.495	2.952	1.539	0.825
55000.0	0.158	6.886	6.215	917.557	0.760	0.415	5.439	3.035	1.570	0.906
57500.0	0.151	6.111	6.274	915.475	0.790	0.451	5.381	3.111	1.596	0.988
60000.0	0.145	5.402	6.318	913.354	0.818	0.487	5.322	3.178	1.617	1.073
62500.0	0.139	4.756	6.348	911.194	0.845	0.522	5.262	3.237	1.634	1.159
65000.0	0.133	4.172	6.364	908.996	0.869	0.557	5.204	3.289	1.647	1.247
67500.0	0.128	3.645	6.367	906.761	0.892	0.590	5.147	3.334	1.656	1.336
70000.0	0.122	3.174	6.358	904.492	0.912	0.622	5.092	3.372	1.663	1.426

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Table C.13 [ ] Exposure-Dependent 0% Void Isotopics (kg/MTU Initial)

Exposure MWd/MTU	U-234	U-235	U-236	U-238	NP-237	PU-238	PU-239	PU-240	PU-241	PU-242
0.0	0.352	43.987	0.000	955.661	0.000	0.000	0.000	0.000	0.000	0.000
100.0	0.352	43.867	0.022	955.613	0.000	0.000	0.017	0.000	0.000	0.000
500.0	0.350	43.389	0.110	955.418	0.002	0.000	0.175	0.001	0.000	0.000
1000.0	0.348	42.799	0.218	955.174	0.003	0.000	0.378	0.006	0.000	0.000
1500.0	0.346	42.217	0.325	954.929	0.005	0.000	0.571	0.014	0.001	0.000
2000.0	0.344	41.642	0.430	954.685	0.007	0.000	0.756	0.024	0.002	0.000
2500.0	0.343	41.074	0.534	954.441	0.010	0.000	0.931	0.036	0.004	0.000
3000.0	0.341	40.513	0.636	954.196	0.012	0.000	1.099	0.051	0.006	0.000
3500.0	0.339	39.958	0.737	953.952	0.015	0.000	1.259	0.068	0.009	0.000
4000.0	0.337	39.409	0.836	953.707	0.018	0.001	1.412	0.086	0.014	0.000
4500.0	0.335	38.866	0.934	953.463	0.021	0.001	1.558	0.106	0.018	0.001
5000.0	0.334	38.329	1.031	953.218	0.024	0.001	1.697	0.126	0.024	0.001
5500.0	0.332	37.798	1.126	952.974	0.027	0.001	1.829	0.149	0.031	0.001
6000.0	0.330	37.272	1.220	952.729	0.030	0.001	1.956	0.172	0.038	0.002
6500.0	0.328	36.751	1.313	952.485	0.034	0.002	2.076	0.196	0.046	0.002
7000.0	0.327	36.236	1.405	952.241	0.038	0.002	2.190	0.221	0.055	0.003
7500.0	0.325	35.725	1.496	951.996	0.041	0.002	2.299	0.247	0.065	0.003
8000.0	0.323	35.219	1.585	951.752	0.045	0.003	2.402	0.273	0.075	0.004
8500.0	0.321	34.718	1.674	951.509	0.049	0.003	2.501	0.300	0.086	0.005
9000.0	0.320	34.221	1.761	951.265	0.053	0.004	2.594	0.328	0.098	0.006
9500.0	0.318	33.729	1.847	951.021	0.057	0.004	2.682	0.356	0.110	0.008
10000.0	0.316	33.241	1.932	950.778	0.062	0.005	2.766	0.384	0.122	0.009
10500.0	0.314	32.757	2.016	950.535	0.066	0.005	2.845	0.413	0.135	0.010
11000.0	0.313	32.277	2.099	950.292	0.070	0.006	2.920	0.442	0.148	0.012
11500.0	0.311	31.801	2.181	950.050	0.075	0.007	2.991	0.472	0.162	0.014
12000.0	0.309	31.329	2.263	949.808	0.080	0.007	3.058	0.502	0.176	0.016
12500.0	0.308	30.861	2.343	949.566	0.084	0.008	3.120	0.532	0.190	0.018
13000.0	0.306	30.397	2.422	949.324	0.089	0.009	3.179	0.563	0.205	0.021
13500.0	0.305	29.936	2.500	949.083	0.094	0.010	3.234	0.594	0.219	0.023
14000.0	0.303	29.478	2.578	948.843	0.099	0.010	3.285	0.625	0.234	0.026
14500.0	0.301	29.024	2.654	948.603	0.103	0.011	3.333	0.656	0.249	0.029
15000.0	0.300	28.573	2.730	948.363	0.108	0.012	3.378	0.687	0.264	0.032
15500.0	0.298	28.126	2.805	948.124	0.113	0.013	3.419	0.718	0.279	0.035
16000.0	0.296	27.681	2.879	947.886	0.118	0.014	3.457	0.750	0.294	0.038
16500.0	0.295	27.239	2.952	947.647	0.123	0.015	3.492	0.781	0.308	0.042
17000.0	0.293	26.801	3.025	947.409	0.128	0.016	3.525	0.812	0.323	0.046
17500.0	0.292	26.365	3.096	947.172	0.133	0.017	3.554	0.844	0.338	0.050
18000.0	0.290	25.933	3.167	946.934	0.139	0.019	3.582	0.875	0.353	0.054
18500.0	0.289	25.503	3.237	946.696	0.144	0.020	3.608	0.907	0.368	0.058
19000.0	0.287	25.076	3.307	946.457	0.149	0.021	3.631	0.938	0.383	0.062
19500.0	0.285	24.653	3.376	946.217	0.154	0.022	3.653	0.969	0.397	0.067
20000.0	0.284	24.233	3.444	945.976	0.159	0.024	3.673	1.000	0.412	0.072
20500.0	0.282	23.815	3.511	945.734	0.165	0.025	3.692	1.031	0.427	0.077
21000.0	0.281	23.401	3.577	945.491	0.170	0.027	3.709	1.062	0.442	0.083
22500.0	0.276	22.179	3.772	944.753	0.187	0.031	3.753	1.154	0.486	0.100
25000.0	0.268	20.208	4.082	943.492	0.215	0.040	3.804	1.303	0.559	0.133
27500.0	0.260	18.320	4.373	942.191	0.245	0.051	3.829	1.447	0.629	0.172
30000.0	0.252	16.518	4.645	940.846	0.276	0.063	3.833	1.585	0.695	0.217
32500.0	0.244	14.803	4.898	939.455	0.308	0.076	3.817	1.718	0.755	0.267
35000.0	0.236	13.178	5.131	938.012	0.340	0.092	3.787	1.843	0.809	0.324
37500.0	0.228	11.645	5.344	936.515	0.373	0.108	3.744	1.962	0.856	0.388
40000.0	0.220	10.208	5.536	934.959	0.406	0.127	3.692	2.071	0.897	0.457
42500.0	0.212	8.870	5.708	933.338	0.438	0.146	3.632	2.172	0.932	0.532
45000.0	0.203	7.634	5.858	931.649	0.470	0.167	3.568	2.264	0.960	0.613
47500.0	0.195	6.502	5.986	929.887	0.501	0.188	3.501	2.347	0.982	0.700
50000.0	0.187	5.478	6.092	928.049	0.531	0.211	3.434	2.419	0.998	0.792
52500.0	0.178	4.563	6.177	926.132	0.560	0.233	3.369	2.482	1.009	0.889
55000.0	0.170	3.756	6.239	924.133	0.587	0.255	3.306	2.534	1.016	0.990
57500.0	0.162	3.055	6.281	922.053	0.612	0.277	3.248	2.578	1.019	1.095
60000.0	0.154	2.456	6.303	919.895	0.635	0.297	3.194	2.612	1.019	1.202
62500.0	0.146	1.953	6.306	917.661	0.656	0.317	3.146	2.639	1.017	1.312
65000.0	0.138	1.537	6.292	915.359	0.674	0.335	3.105	2.659	1.013	1.422
67500.0	0.130	1.200	6.264	912.994	0.690	0.351	3.068	2.672	1.009	1.533
70000.0	0.123	0.929	6.223	910.575	0.704	0.366	3.037	2.681	1.004	1.643

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Table C.14 [ ] Exposure-Dependent 40% Void Isotopics (kg/MTU Initial)

Exposure MWd/MTU	U-234	U-235	U-236	U-238	NP-237	PU-238	PU-239	PU-240	PU-241	PU-242
0.0	0.352	43.987	0.000	955.661	0.000	0.000	0.000	0.000	0.000	0.000
100.0	0.351	43.867	0.023	955.605	0.000	0.000	0.020	0.000	0.000	0.000
500.0	0.350	43.391	0.114	955.381	0.002	0.000	0.200	0.002	0.000	0.000
1000.0	0.348	42.804	0.227	955.100	0.004	0.000	0.432	0.007	0.000	0.000
1500.0	0.346	42.226	0.337	954.819	0.006	0.000	0.653	0.015	0.001	0.000
2000.0	0.343	41.656	0.446	954.539	0.009	0.000	0.863	0.027	0.003	0.000
2500.0	0.341	41.094	0.553	954.259	0.012	0.000	1.064	0.041	0.005	0.000
3000.0	0.339	40.540	0.658	953.978	0.015	0.000	1.255	0.058	0.008	0.000
3500.0	0.337	39.992	0.762	953.698	0.018	0.001	1.438	0.076	0.012	0.000
4000.0	0.335	39.452	0.864	953.418	0.021	0.001	1.612	0.096	0.018	0.000
4500.0	0.333	38.918	0.964	953.139	0.025	0.001	1.778	0.117	0.024	0.001
5000.0	0.331	38.391	1.063	952.859	0.028	0.001	1.937	0.140	0.031	0.001
5500.0	0.329	37.870	1.160	952.580	0.032	0.002	2.088	0.164	0.040	0.001
6000.0	0.327	37.355	1.256	952.301	0.036	0.002	2.232	0.189	0.049	0.002
6500.0	0.325	36.845	1.350	952.022	0.041	0.002	2.370	0.215	0.059	0.003
7000.0	0.323	36.341	1.444	951.743	0.045	0.003	2.501	0.242	0.070	0.003
7500.0	0.321	35.843	1.536	951.465	0.049	0.003	2.626	0.270	0.082	0.004
8000.0	0.320	35.350	1.626	951.187	0.054	0.004	2.744	0.298	0.095	0.005
8500.0	0.318	34.862	1.715	950.910	0.059	0.004	2.857	0.327	0.108	0.006
9000.0	0.316	34.379	1.803	950.632	0.064	0.005	2.965	0.356	0.122	0.008
9500.0	0.314	33.901	1.890	950.355	0.069	0.006	3.067	0.386	0.137	0.009
10000.0	0.312	33.427	1.976	950.079	0.074	0.006	3.164	0.416	0.152	0.011
10500.0	0.310	32.958	2.060	949.803	0.079	0.007	3.255	0.447	0.168	0.013
11000.0	0.308	32.493	2.143	949.527	0.085	0.008	3.342	0.478	0.184	0.015
11500.0	0.306	32.033	2.226	949.252	0.090	0.009	3.425	0.510	0.200	0.017
12000.0	0.305	31.577	2.307	948.977	0.095	0.010	3.503	0.542	0.217	0.019
12500.0	0.303	31.125	2.387	948.703	0.101	0.011	3.576	0.574	0.234	0.021
13000.0	0.301	30.677	2.466	948.429	0.107	0.012	3.645	0.606	0.251	0.024
13500.0	0.299	30.233	2.544	948.157	0.112	0.013	3.710	0.638	0.268	0.027
14000.0	0.297	29.792	2.621	947.884	0.118	0.014	3.771	0.671	0.286	0.030
14500.0	0.296	29.355	2.697	947.612	0.124	0.015	3.828	0.704	0.303	0.033
15000.0	0.294	28.922	2.772	947.341	0.130	0.016	3.882	0.737	0.321	0.037
15500.0	0.292	28.492	2.846	947.071	0.135	0.017	3.932	0.770	0.338	0.040
16000.0	0.291	28.066	2.920	946.801	0.141	0.019	3.978	0.803	0.356	0.044
16500.0	0.289	27.642	2.992	946.532	0.147	0.020	4.021	0.836	0.374	0.048
17000.0	0.287	27.222	3.064	946.263	0.153	0.022	4.061	0.870	0.391	0.052
17500.0	0.285	26.805	3.134	945.995	0.159	0.023	4.098	0.903	0.408	0.057
18000.0	0.284	26.391	3.204	945.727	0.165	0.025	4.133	0.936	0.426	0.061
18500.0	0.282	25.981	3.273	945.459	0.171	0.026	4.165	0.969	0.443	0.066
19000.0	0.280	25.573	3.342	945.190	0.177	0.028	4.195	1.002	0.460	0.071
19500.0	0.279	25.168	3.409	944.921	0.183	0.029	4.222	1.035	0.477	0.076
20000.0	0.277	24.767	3.476	944.652	0.189	0.031	4.248	1.068	0.494	0.082
20500.0	0.275	24.369	3.542	944.382	0.195	0.033	4.272	1.101	0.512	0.087
21000.0	0.274	23.974	3.607	944.110	0.202	0.035	4.294	1.133	0.529	0.093
21500.0	0.272	23.582	3.671	943.838	0.208	0.037	4.315	1.166	0.546	0.099
22500.0	0.269	22.808	3.797	943.289	0.221	0.041	4.353	1.230	0.579	0.112
25000.0	0.261	20.932	4.099	941.893	0.254	0.052	4.426	1.386	0.663	0.147
27500.0	0.253	19.138	4.382	940.461	0.288	0.065	4.471	1.537	0.744	0.187
30000.0	0.244	17.427	4.645	938.989	0.323	0.081	4.493	1.682	0.820	0.234
32500.0	0.236	15.800	4.888	937.478	0.358	0.097	4.494	1.820	0.890	0.285
35000.0	0.228	14.257	5.112	935.923	0.394	0.116	4.478	1.952	0.955	0.342
37500.0	0.220	12.799	5.317	934.324	0.430	0.137	4.447	2.075	1.012	0.404
40000.0	0.212	11.427	5.503	932.676	0.465	0.159	4.405	2.191	1.063	0.472
42500.0	0.204	10.142	5.669	930.977	0.500	0.182	4.353	2.298	1.106	0.544
45000.0	0.197	8.944	5.816	929.226	0.535	0.207	4.294	2.396	1.143	0.621
47500.0	0.189	7.835	5.944	927.419	0.568	0.233	4.231	2.486	1.174	0.702
50000.0	0.181	6.815	6.052	925.555	0.600	0.260	4.164	2.566	1.198	0.787
52500.0	0.174	5.884	6.141	923.632	0.631	0.287	4.096	2.636	1.216	0.876
55000.0	0.166	5.042	6.211	921.648	0.661	0.314	4.028	2.698	1.230	0.969
57500.0	0.159	4.287	6.263	919.603	0.688	0.341	3.962	2.750	1.238	1.064
60000.0	0.152	3.617	6.297	917.498	0.714	0.367	3.899	2.795	1.243	1.161
62500.0	0.144	3.028	6.315	915.334	0.737	0.392	3.839	2.831	1.244	1.260
65000.0	0.138	2.516	6.317	913.113	0.758	0.416	3.784	2.859	1.243	1.360
67500.0	0.131	2.077	6.304	910.839	0.777	0.438	3.733	2.881	1.240	1.460
70000.0	0.124	1.703	6.278	908.515	0.794	0.459	3.688	2.897	1.235	1.561

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Table C.15 [ ] Exposure-Dependent 80% Void Isotopics (kg/MTU Initial)

Exposure MWd/MTU	U-234	U-235	U-236	U-238	NP-237	PU-238	PU-239	PU-240	PU-241	PU-242
0.0	0.352	43.987	0.000	955.661	0.000	0.000	0.000	0.000	0.000	0.000
100.0	0.351	43.868	0.024	955.595	0.000	0.000	0.023	0.000	0.000	0.000
500.0	0.349	43.395	0.121	955.329	0.002	0.000	0.234	0.002	0.000	0.000
1000.0	0.347	42.813	0.239	954.997	0.005	0.000	0.506	0.008	0.000	0.000
1500.0	0.344	42.242	0.355	954.666	0.008	0.000	0.764	0.018	0.002	0.000
2000.0	0.342	41.680	0.468	954.335	0.011	0.000	1.010	0.031	0.004	0.000
2500.0	0.340	41.126	0.580	954.004	0.014	0.000	1.245	0.047	0.007	0.000
3000.0	0.337	40.581	0.690	953.674	0.018	0.001	1.470	0.065	0.011	0.000
3500.0	0.335	40.045	0.797	953.344	0.022	0.001	1.684	0.085	0.017	0.000
4000.0	0.332	39.516	0.903	953.015	0.026	0.001	1.889	0.107	0.024	0.001
4500.0	0.330	38.994	1.007	952.686	0.031	0.001	2.085	0.130	0.032	0.001
5000.0	0.328	38.479	1.109	952.357	0.036	0.002	2.272	0.155	0.042	0.001
5500.0	0.326	37.972	1.210	952.029	0.041	0.002	2.451	0.180	0.053	0.002
6000.0	0.323	37.470	1.308	951.701	0.046	0.003	2.622	0.207	0.064	0.002
6500.0	0.321	36.976	1.406	951.374	0.051	0.003	2.786	0.235	0.077	0.003
7000.0	0.319	36.487	1.501	951.047	0.057	0.004	2.942	0.264	0.091	0.004
7500.0	0.317	36.004	1.595	950.720	0.062	0.005	3.091	0.293	0.106	0.005
8000.0	0.314	35.527	1.688	950.394	0.068	0.005	3.234	0.323	0.122	0.006
8500.0	0.312	35.055	1.779	950.069	0.074	0.006	3.371	0.354	0.138	0.008
9000.0	0.310	34.589	1.869	949.744	0.080	0.007	3.501	0.385	0.155	0.009
9500.0	0.308	34.128	1.957	949.419	0.087	0.008	3.626	0.417	0.173	0.011
10000.0	0.306	33.673	2.045	949.095	0.093	0.009	3.744	0.450	0.191	0.013
10500.0	0.304	33.222	2.130	948.772	0.099	0.010	3.857	0.482	0.210	0.015
11000.0	0.302	32.776	2.215	948.449	0.106	0.011	3.965	0.516	0.229	0.017
11500.0	0.299	32.335	2.298	948.127	0.112	0.013	4.068	0.549	0.249	0.019
12000.0	0.297	31.898	2.380	947.806	0.119	0.014	4.166	0.583	0.268	0.022
12500.0	0.295	31.466	2.461	947.485	0.126	0.015	4.259	0.617	0.289	0.025
13000.0	0.293	31.038	2.541	947.164	0.133	0.017	4.347	0.652	0.309	0.028
13500.0	0.291	30.614	2.620	946.844	0.140	0.018	4.430	0.687	0.330	0.031
14000.0	0.289	30.195	2.697	946.525	0.147	0.020	4.510	0.722	0.350	0.034
14500.0	0.287	29.779	2.773	946.207	0.154	0.022	4.585	0.757	0.371	0.038
15000.0	0.286	29.368	2.849	945.889	0.161	0.023	4.656	0.793	0.392	0.042
15500.0	0.284	28.960	2.923	945.572	0.168	0.025	4.723	0.828	0.413	0.045
16000.0	0.282	28.556	2.996	945.256	0.175	0.027	4.786	0.864	0.434	0.050
16500.0	0.280	28.155	3.068	944.941	0.183	0.029	4.845	0.900	0.455	0.054
17000.0	0.278	27.758	3.139	944.626	0.190	0.031	4.901	0.936	0.475	0.058
17500.0	0.276	27.364	3.209	944.312	0.197	0.033	4.953	0.972	0.496	0.063
18000.0	0.274	26.974	3.278	943.998	0.204	0.035	5.002	1.008	0.516	0.068
18500.0	0.272	26.587	3.347	943.685	0.212	0.038	5.049	1.044	0.537	0.073
19000.0	0.271	26.203	3.414	943.372	0.219	0.040	5.092	1.080	0.557	0.078
19500.0	0.269	25.822	3.481	943.059	0.226	0.042	5.133	1.116	0.577	0.084
20000.0	0.267	25.445	3.546	942.746	0.234	0.045	5.172	1.152	0.598	0.089
20500.0	0.265	25.071	3.611	942.432	0.241	0.047	5.208	1.187	0.618	0.095
21000.0	0.263	24.700	3.675	942.118	0.249	0.050	5.242	1.223	0.638	0.101
21500.0	0.262	24.332	3.738	941.804	0.256	0.053	5.274	1.258	0.657	0.107
22000.0	0.260	23.968	3.800	941.488	0.264	0.055	5.305	1.294	0.677	0.114
22500.0	0.258	23.607	3.862	941.172	0.271	0.058	5.334	1.329	0.697	0.120
23000.0	0.256	23.249	3.922	940.855	0.279	0.061	5.361	1.364	0.716	0.127
23500.0	0.255	22.894	3.982	940.536	0.286	0.064	5.387	1.399	0.736	0.134
24000.0	0.253	22.543	4.041	940.217	0.294	0.067	5.412	1.433	0.755	0.141
24500.0	0.251	22.195	4.099	939.896	0.302	0.071	5.435	1.468	0.775	0.148
25000.0	0.249	21.850	4.157	939.574	0.309	0.074	5.457	1.502	0.794	0.156
27500.0	0.241	20.174	4.431	937.944	0.348	0.092	5.550	1.669	0.889	0.196
30000.0	0.233	18.578	4.687	936.280	0.387	0.112	5.617	1.829	0.981	0.241
32500.0	0.224	17.063	4.922	934.582	0.427	0.134	5.660	1.984	1.067	0.290
35000.0	0.216	15.625	5.138	932.849	0.467	0.159	5.684	2.132	1.148	0.344
37500.0	0.208	14.266	5.335	931.080	0.506	0.185	5.689	2.272	1.222	0.402
40000.0	0.200	12.983	5.514	929.273	0.545	0.214	5.680	2.405	1.290	0.464
42500.0	0.193	11.777	5.674	927.428	0.584	0.244	5.659	2.530	1.352	0.529
45000.0	0.185	10.646	5.816	925.545	0.621	0.276	5.627	2.648	1.407	0.598
47500.0	0.178	9.589	5.940	923.622	0.658	0.309	5.586	2.756	1.456	0.670
50000.0	0.171	8.605	6.047	921.658	0.693	0.344	5.539	2.857	1.499	0.746
52500.0	0.164	7.693	6.137	919.655	0.727	0.379	5.487	2.949	1.536	0.824
55000.0	0.158	6.851	6.211	917.611	0.759	0.415	5.431	3.033	1.567	0.904
57500.0	0.151	6.078	6.270	915.528	0.790	0.451	5.373	3.108	1.593	0.987
60000.0	0.145	5.371	6.313	913.404	0.818	0.486	5.314	3.175	1.615	1.072
62500.0	0.139	4.727	6.342	911.242	0.845	0.522	5.255	3.235	1.632	1.158
65000.0	0.133	4.145	6.358	909.042	0.869	0.556	5.197	3.287	1.645	1.246
67500.0	0.128	3.621	6.360	906.805	0.892	0.590	5.141	3.332	1.654	1.335
70000.0	0.122	3.152	6.351	904.533	0.912	0.622	5.086	3.370	1.660	1.425

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Table C.16 [ ] Exposure-Dependent 0% Void Isotopics (kg/MTU Initial)

Exposure MWd/MTU	U-234	U-235	U-236	U-238	NP-237	PU-238	PU-239	PU-240	PU-241	PU-242
0.0	0.352	43.987	0.000	955.661	0.000	0.000	0.000	0.000	0.000	0.000
100.0	0.352	43.867	0.022	955.613	0.000	0.000	0.017	0.000	0.000	0.000
500.0	0.350	43.389	0.110	955.423	0.001	0.000	0.171	0.001	0.000	0.000
1000.0	0.348	42.798	0.218	955.186	0.003	0.000	0.368	0.006	0.000	0.000
1500.0	0.346	42.215	0.324	954.950	0.005	0.000	0.555	0.013	0.001	0.000
2000.0	0.345	41.639	0.429	954.714	0.007	0.000	0.733	0.024	0.002	0.000
2500.0	0.343	41.069	0.532	954.480	0.009	0.000	0.901	0.036	0.004	0.000
3000.0	0.341	40.506	0.634	954.248	0.012	0.000	1.060	0.050	0.006	0.000
3500.0	0.339	39.949	0.734	954.016	0.014	0.000	1.211	0.067	0.009	0.000
4000.0	0.338	39.398	0.833	953.786	0.017	0.001	1.354	0.084	0.013	0.000
4500.0	0.336	38.852	0.930	953.557	0.019	0.001	1.489	0.103	0.017	0.000
5000.0	0.334	38.311	1.026	953.330	0.022	0.001	1.616	0.124	0.022	0.001
5500.0	0.333	37.775	1.121	953.104	0.025	0.001	1.737	0.145	0.028	0.001
6000.0	0.331	37.244	1.214	952.880	0.028	0.001	1.851	0.168	0.035	0.001
6500.0	0.329	36.717	1.307	952.657	0.031	0.002	1.958	0.191	0.042	0.002
7000.0	0.328	36.194	1.398	952.436	0.034	0.002	2.060	0.215	0.050	0.002
7500.0	0.326	35.676	1.488	952.216	0.038	0.002	2.156	0.239	0.058	0.003
8000.0	0.324	35.161	1.577	951.997	0.041	0.002	2.247	0.264	0.067	0.004
8500.0	0.323	34.651	1.665	951.778	0.044	0.003	2.333	0.290	0.076	0.004
9000.0	0.321	34.144	1.752	951.559	0.048	0.003	2.415	0.316	0.086	0.005
9500.0	0.320	33.641	1.838	951.341	0.051	0.004	2.493	0.342	0.096	0.006
10000.0	0.318	33.142	1.923	951.122	0.055	0.004	2.567	0.369	0.107	0.008
10500.0	0.317	32.647	2.007	950.902	0.059	0.004	2.638	0.397	0.118	0.009
11000.0	0.315	32.156	2.091	950.682	0.063	0.005	2.705	0.424	0.129	0.010
11500.0	0.313	31.668	2.173	950.460	0.067	0.006	2.770	0.452	0.141	0.012
12000.0	0.312	31.184	2.255	950.238	0.071	0.006	2.832	0.480	0.154	0.013
12500.0	0.310	30.704	2.336	950.015	0.075	0.007	2.891	0.509	0.166	0.015
15000.0	0.302	28.360	2.728	948.880	0.098	0.010	3.149	0.654	0.234	0.027
17500.0	0.294	26.106	3.099	947.715	0.122	0.015	3.351	0.803	0.308	0.043
20000.0	0.286	23.942	3.450	946.517	0.149	0.021	3.504	0.953	0.384	0.064
22500.0	0.278	21.867	3.782	945.283	0.177	0.028	3.616	1.103	0.459	0.090
25000.0	0.270	19.880	4.093	944.012	0.207	0.037	3.692	1.251	0.533	0.122
27500.0	0.262	17.982	4.385	942.699	0.237	0.047	3.737	1.396	0.604	0.160
30000.0	0.254	16.174	4.658	941.342	0.269	0.059	3.757	1.537	0.670	0.204
32500.0	0.246	14.457	4.910	939.937	0.301	0.073	3.754	1.672	0.732	0.255
35000.0	0.238	12.834	5.141	938.480	0.334	0.088	3.734	1.802	0.787	0.311
37500.0	0.229	11.307	5.352	936.966	0.368	0.105	3.699	1.924	0.836	0.374
40000.0	0.221	9.879	5.542	935.391	0.401	0.123	3.652	2.037	0.878	0.443
42500.0	0.213	8.554	5.710	933.751	0.434	0.143	3.597	2.143	0.913	0.518
45000.0	0.204	7.334	5.857	932.040	0.467	0.164	3.537	2.238	0.943	0.600
47500.0	0.196	6.222	5.981	930.255	0.498	0.186	3.473	2.324	0.966	0.687
50000.0	0.187	5.219	6.083	928.391	0.528	0.208	3.408	2.400	0.983	0.780
52500.0	0.179	4.328	6.162	926.447	0.557	0.231	3.345	2.465	0.996	0.877
55000.0	0.170	3.546	6.220	924.422	0.585	0.253	3.285	2.520	1.004	0.979
57500.0	0.162	2.872	6.257	922.315	0.610	0.275	3.229	2.566	1.008	1.085
60000.0	0.153	2.299	6.273	920.129	0.633	0.296	3.178	2.602	1.009	1.193
62500.0	0.145	1.820	6.272	917.870	0.653	0.315	3.132	2.630	1.008	1.304
65000.0	0.137	1.428	6.254	915.543	0.672	0.333	3.093	2.651	1.006	1.415
67500.0	0.130	1.110	6.222	913.157	0.687	0.350	3.059	2.666	1.002	1.526
70000.0	0.122	0.858	6.178	910.720	0.701	0.364	3.030	2.676	0.998	1.636

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Table C.17 [ ] Exposure-Dependent 40% Void Isotopics (kg/MTU Initial)

Exposure MWd/MTU	U-234	U-235	U-236	U-238	NP-237	PU-238	PU-239	PU-240	PU-241	PU-242
0.0	0.352	43.987	0.000	955.661	0.000	0.000	0.000	0.000	0.000	0.000
100.0	0.351	43.867	0.023	955.607	0.000	0.000	0.020	0.000	0.000	0.000
500.0	0.350	43.391	0.114	955.389	0.002	0.000	0.195	0.001	0.000	0.000
1000.0	0.348	42.803	0.226	955.117	0.004	0.000	0.419	0.007	0.000	0.000
1500.0	0.346	42.224	0.336	954.847	0.006	0.000	0.631	0.015	0.001	0.000
2000.0	0.344	41.652	0.444	954.578	0.008	0.000	0.832	0.027	0.002	0.000
2500.0	0.342	41.089	0.550	954.311	0.011	0.000	1.023	0.041	0.005	0.000
3000.0	0.340	40.532	0.655	954.045	0.014	0.000	1.203	0.057	0.008	0.000
3500.0	0.338	39.983	0.757	953.781	0.017	0.001	1.374	0.075	0.012	0.000
4000.0	0.336	39.439	0.858	953.518	0.020	0.001	1.536	0.094	0.017	0.000
4500.0	0.334	38.902	0.958	953.257	0.023	0.001	1.689	0.116	0.022	0.001
5000.0	0.332	38.371	1.056	952.998	0.027	0.001	1.833	0.138	0.029	0.001
5500.0	0.330	37.845	1.152	952.741	0.030	0.001	1.970	0.161	0.037	0.001
6000.0	0.328	37.324	1.247	952.485	0.034	0.002	2.100	0.185	0.045	0.002
6500.0	0.327	36.809	1.341	952.231	0.037	0.002	2.222	0.211	0.054	0.002
7000.0	0.325	36.298	1.433	951.979	0.041	0.002	2.337	0.236	0.064	0.003
7500.0	0.323	35.791	1.524	951.728	0.045	0.003	2.447	0.263	0.074	0.004
8000.0	0.321	35.289	1.614	951.478	0.049	0.003	2.550	0.290	0.085	0.005
8500.0	0.319	34.792	1.703	951.228	0.053	0.004	2.649	0.318	0.096	0.006
9000.0	0.318	34.298	1.790	950.980	0.058	0.004	2.742	0.346	0.108	0.007
9500.0	0.316	33.809	1.877	950.731	0.062	0.005	2.831	0.374	0.121	0.008
10000.0	0.314	33.324	1.962	950.483	0.066	0.005	2.916	0.403	0.134	0.009
10500.0	0.312	32.843	2.047	950.234	0.071	0.006	2.997	0.432	0.147	0.011
11000.0	0.311	32.366	2.130	949.984	0.076	0.007	3.075	0.461	0.161	0.012
11500.0	0.309	31.893	2.213	949.733	0.080	0.007	3.149	0.491	0.175	0.014
12000.0	0.307	31.424	2.294	949.482	0.085	0.008	3.220	0.521	0.190	0.016
12500.0	0.306	30.959	2.375	949.229	0.090	0.009	3.289	0.551	0.205	0.018
13000.0	0.304	30.498	2.455	948.976	0.096	0.010	3.354	0.581	0.221	0.021
15000.0	0.297	28.694	2.764	947.951	0.117	0.014	3.589	0.705	0.285	0.032
17500.0	0.289	26.525	3.132	946.642	0.146	0.020	3.828	0.861	0.371	0.050
20000.0	0.280	24.448	3.478	945.301	0.177	0.027	4.016	1.018	0.458	0.073
22500.0	0.272	22.463	3.803	943.928	0.209	0.037	4.159	1.174	0.545	0.102
25000.0	0.263	20.567	4.108	942.519	0.243	0.048	4.263	1.328	0.631	0.136
27500.0	0.255	18.759	4.391	941.074	0.278	0.061	4.334	1.479	0.712	0.175
30000.0	0.247	17.040	4.655	939.589	0.314	0.076	4.377	1.625	0.789	0.221
32500.0	0.238	15.409	4.898	938.062	0.350	0.092	4.395	1.766	0.860	0.272
35000.0	0.230	13.866	5.121	936.491	0.387	0.111	4.392	1.900	0.925	0.328
37500.0	0.222	12.413	5.324	934.874	0.423	0.132	4.373	2.028	0.983	0.390
40000.0	0.214	11.048	5.507	933.207	0.459	0.154	4.339	2.147	1.035	0.457
42500.0	0.206	9.773	5.670	931.489	0.495	0.178	4.294	2.258	1.080	0.529
45000.0	0.198	8.590	5.814	929.715	0.530	0.203	4.241	2.360	1.118	0.607
47500.0	0.190	7.498	5.937	927.886	0.564	0.229	4.183	2.453	1.150	0.688
50000.0	0.182	6.497	6.041	925.997	0.596	0.256	4.120	2.537	1.175	0.774
52500.0	0.174	5.588	6.125	924.048	0.627	0.283	4.055	2.611	1.195	0.863
55000.0	0.166	4.769	6.191	922.038	0.657	0.310	3.991	2.675	1.210	0.956
57500.0	0.159	4.039	6.238	919.966	0.684	0.337	3.928	2.730	1.220	1.052
60000.0	0.152	3.393	6.267	917.834	0.710	0.364	3.868	2.777	1.226	1.150
62500.0	0.144	2.830	6.279	915.643	0.733	0.389	3.811	2.815	1.229	1.249
65000.0	0.137	2.343	6.276	913.396	0.755	0.413	3.759	2.845	1.229	1.350
67500.0	0.131	1.926	6.259	911.096	0.773	0.435	3.711	2.869	1.227	1.451
70000.0	0.124	1.574	6.229	908.749	0.790	0.456	3.668	2.886	1.223	1.552

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Table C.18 [ ] Exposure-Dependent 80% Void Isotopics (kg/MTU Initial)

Exposure MWd/MTU	U-234	U-235	U-236	U-238	NP-237	PU-238	PU-239	PU-240	PU-241	PU-242
0.0	0.352	43.987	0.000	955.661	0.000	0.000	0.000	0.000	0.000	0.000
100.0	0.351	43.868	0.024	955.597	0.000	0.000	0.023	0.000	0.000	0.000
500.0	0.349	43.394	0.120	955.340	0.002	0.000	0.227	0.002	0.000	0.000
1000.0	0.347	42.812	0.237	955.021	0.005	0.000	0.487	0.008	0.000	0.000
1500.0	0.345	42.239	0.352	954.704	0.007	0.000	0.734	0.018	0.002	0.000
2000.0	0.342	41.676	0.465	954.388	0.010	0.000	0.968	0.031	0.004	0.000
2500.0	0.340	41.121	0.576	954.074	0.014	0.000	1.189	0.046	0.007	0.000
3000.0	0.338	40.574	0.684	953.762	0.017	0.001	1.399	0.064	0.011	0.000
3500.0	0.335	40.035	0.791	953.451	0.021	0.001	1.598	0.084	0.016	0.000
4000.0	0.333	39.503	0.895	953.143	0.025	0.001	1.787	0.106	0.023	0.001
4500.0	0.331	38.978	0.998	952.836	0.029	0.001	1.967	0.129	0.030	0.001
5000.0	0.329	38.459	1.099	952.531	0.033	0.002	2.137	0.153	0.039	0.001
5500.0	0.327	37.947	1.198	952.228	0.038	0.002	2.298	0.179	0.049	0.002
6000.0	0.324	37.441	1.296	951.926	0.042	0.003	2.451	0.205	0.060	0.002
6500.0	0.322	36.940	1.392	951.627	0.047	0.003	2.596	0.232	0.071	0.003
7000.0	0.320	36.445	1.486	951.329	0.052	0.004	2.734	0.260	0.084	0.004
7500.0	0.318	35.954	1.579	951.033	0.057	0.004	2.865	0.289	0.097	0.005
8000.0	0.316	35.469	1.671	950.738	0.062	0.005	2.989	0.318	0.110	0.006
8500.0	0.314	34.988	1.761	950.444	0.068	0.006	3.108	0.348	0.125	0.007
9000.0	0.312	34.512	1.850	950.151	0.073	0.006	3.221	0.378	0.140	0.008
9500.0	0.310	34.041	1.938	949.859	0.079	0.007	3.329	0.409	0.155	0.010
10000.0	0.308	33.574	2.025	949.566	0.084	0.008	3.432	0.440	0.171	0.011
10500.0	0.306	33.112	2.110	949.274	0.090	0.009	3.531	0.471	0.187	0.013
11000.0	0.304	32.653	2.194	948.981	0.096	0.010	3.625	0.503	0.204	0.015
11500.0	0.303	32.200	2.278	948.688	0.102	0.011	3.716	0.535	0.221	0.017
12000.0	0.301	31.750	2.360	948.394	0.108	0.012	3.804	0.567	0.239	0.020
12500.0	0.299	31.305	2.441	948.099	0.114	0.013	3.888	0.599	0.257	0.022
13000.0	0.297	30.864	2.521	947.803	0.120	0.014	3.969	0.632	0.275	0.025
13500.0	0.295	30.427	2.600	947.507	0.126	0.016	4.046	0.665	0.293	0.027
14000.0	0.293	29.994	2.678	947.209	0.133	0.017	4.121	0.698	0.312	0.030
14500.0	0.291	29.566	2.755	946.910	0.139	0.018	4.193	0.731	0.331	0.034
15000.0	0.289	29.141	2.831	946.610	0.146	0.020	4.263	0.765	0.351	0.037
15500.0	0.287	28.721	2.907	946.309	0.153	0.022	4.330	0.798	0.370	0.041
17500.0	0.280	27.078	3.197	945.093	0.181	0.029	4.573	0.933	0.450	0.057
20000.0	0.271	25.112	3.540	943.544	0.218	0.039	4.827	1.102	0.552	0.081
22500.0	0.262	23.239	3.860	941.965	0.256	0.052	5.032	1.271	0.653	0.111
25000.0	0.253	21.457	4.158	940.353	0.295	0.068	5.196	1.438	0.752	0.145
27500.0	0.244	19.763	4.434	938.707	0.335	0.085	5.323	1.602	0.848	0.185
30000.0	0.235	18.155	4.690	937.028	0.375	0.105	5.418	1.762	0.940	0.229
32500.0	0.227	16.632	4.926	935.314	0.416	0.127	5.485	1.917	1.027	0.278
35000.0	0.218	15.191	5.141	933.563	0.456	0.151	5.528	2.067	1.108	0.331
37500.0	0.210	13.832	5.337	931.776	0.497	0.178	5.551	2.210	1.183	0.388
40000.0	0.202	12.554	5.513	929.949	0.537	0.206	5.556	2.346	1.251	0.450
42500.0	0.194	11.355	5.671	928.084	0.576	0.237	5.546	2.474	1.314	0.516
45000.0	0.187	10.234	5.809	926.180	0.614	0.269	5.524	2.595	1.370	0.585
47500.0	0.179	9.190	5.930	924.234	0.651	0.302	5.492	2.707	1.420	0.657
50000.0	0.172	8.222	6.032	922.248	0.687	0.337	5.452	2.811	1.464	0.732
52500.0	0.165	7.327	6.118	920.221	0.721	0.373	5.406	2.906	1.502	0.811
55000.0	0.158	6.504	6.188	918.153	0.754	0.408	5.356	2.993	1.534	0.892
57500.0	0.152	5.751	6.241	916.044	0.784	0.445	5.303	3.071	1.562	0.975
60000.0	0.145	5.065	6.280	913.895	0.813	0.480	5.249	3.141	1.584	1.060
62500.0	0.139	4.443	6.304	911.707	0.839	0.516	5.194	3.203	1.602	1.147
65000.0	0.133	3.883	6.314	909.482	0.864	0.551	5.140	3.258	1.617	1.235
67500.0	0.128	3.381	6.312	907.220	0.886	0.584	5.088	3.305	1.627	1.324
70000.0	0.122	2.934	6.298	904.924	0.906	0.616	5.038	3.345	1.635	1.415

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Table C.19 [ ] Exposure-Dependent 0% Void Isotopics (kg/MTU Initial)

Exposure MWd/MTU	U-234	U-235	U-236	U-238	NP-237	PU-238	PU-239	PU-240	PU-241	PU-242
0.0	0.360	44.948	0.000	954.692	0.000	0.000	0.000	0.000	0.000	0.000
100.0	0.359	44.828	0.023	954.640	0.000	0.000	0.021	0.000	0.000	0.000
500.0	0.358	44.351	0.113	954.430	0.002	0.000	0.193	0.001	0.000	0.000
1000.0	0.356	43.762	0.224	954.168	0.003	0.000	0.411	0.006	0.000	0.000
1500.0	0.354	43.181	0.333	953.905	0.006	0.000	0.618	0.015	0.001	0.000
2000.0	0.352	42.607	0.440	953.642	0.008	0.000	0.817	0.025	0.002	0.000
2500.0	0.350	42.041	0.546	953.379	0.010	0.000	1.006	0.039	0.004	0.000
3000.0	0.348	41.483	0.650	953.116	0.013	0.000	1.187	0.054	0.007	0.000
3500.0	0.346	40.930	0.753	952.853	0.016	0.000	1.360	0.072	0.011	0.000
4000.0	0.344	40.385	0.854	952.589	0.019	0.001	1.525	0.091	0.015	0.000
4500.0	0.342	39.846	0.954	952.326	0.023	0.001	1.683	0.111	0.021	0.001
5000.0	0.340	39.312	1.053	952.062	0.026	0.001	1.833	0.133	0.028	0.001
5500.0	0.338	38.785	1.150	951.799	0.030	0.001	1.977	0.156	0.035	0.001
6000.0	0.336	38.263	1.245	951.535	0.033	0.002	2.115	0.180	0.043	0.002
6500.0	0.334	37.747	1.340	951.271	0.037	0.002	2.247	0.205	0.053	0.002
7000.0	0.332	37.236	1.433	951.008	0.041	0.002	2.372	0.231	0.063	0.003
7500.0	0.330	36.731	1.525	950.744	0.045	0.003	2.492	0.257	0.073	0.004
8000.0	0.328	36.230	1.616	950.480	0.050	0.003	2.606	0.284	0.085	0.005
8500.0	0.327	35.735	1.705	950.216	0.054	0.004	2.715	0.312	0.097	0.006
9000.0	0.325	35.244	1.794	949.952	0.059	0.004	2.819	0.340	0.110	0.007
9500.0	0.323	34.758	1.881	949.688	0.063	0.005	2.918	0.369	0.123	0.008
10000.0	0.321	34.276	1.967	949.425	0.068	0.005	3.012	0.398	0.137	0.010
10500.0	0.319	33.799	2.052	949.161	0.073	0.006	3.102	0.428	0.151	0.011
11000.0	0.317	33.326	2.136	948.897	0.078	0.007	3.187	0.458	0.166	0.013
11500.0	0.316	32.858	2.219	948.634	0.083	0.008	3.268	0.488	0.182	0.015
12000.0	0.314	32.393	2.301	948.370	0.088	0.008	3.344	0.519	0.197	0.017
12500.0	0.312	31.933	2.382	948.107	0.093	0.009	3.417	0.550	0.213	0.020
13000.0	0.310	31.476	2.462	947.844	0.099	0.010	3.486	0.581	0.229	0.022
13500.0	0.308	31.024	2.541	947.581	0.104	0.011	3.551	0.612	0.246	0.025
14000.0	0.307	30.575	2.619	947.318	0.110	0.012	3.612	0.644	0.262	0.028
14500.0	0.305	30.130	2.696	947.056	0.115	0.013	3.670	0.676	0.279	0.031
15000.0	0.303	29.688	2.772	946.793	0.121	0.014	3.724	0.707	0.296	0.034
15500.0	0.302	29.250	2.847	946.532	0.126	0.015	3.775	0.739	0.312	0.038
16000.0	0.300	28.815	2.921	946.270	0.132	0.017	3.822	0.771	0.329	0.041
16500.0	0.298	28.384	2.995	946.008	0.138	0.018	3.867	0.803	0.346	0.045
17000.0	0.296	27.956	3.067	945.747	0.144	0.019	3.909	0.836	0.363	0.049
17500.0	0.295	27.531	3.139	945.486	0.149	0.021	3.948	0.868	0.380	0.053
18000.0	0.293	27.109	3.210	945.224	0.155	0.022	3.984	0.900	0.397	0.058
18500.0	0.291	26.690	3.280	944.962	0.161	0.023	4.018	0.932	0.413	0.062
19000.0	0.290	26.275	3.349	944.700	0.167	0.025	4.050	0.964	0.430	0.067
19500.0	0.288	25.863	3.418	944.437	0.173	0.027	4.080	0.996	0.447	0.072
20000.0	0.286	25.454	3.485	944.174	0.179	0.028	4.108	1.027	0.464	0.077
20500.0	0.285	25.048	3.552	943.910	0.185	0.030	4.134	1.059	0.480	0.082
21000.0	0.283	24.646	3.618	943.644	0.191	0.032	4.159	1.091	0.497	0.088
21500.0	0.281	24.247	3.684	943.377	0.197	0.034	4.182	1.122	0.514	0.094
22000.0	0.280	23.851	3.748	943.110	0.204	0.035	4.204	1.153	0.530	0.100
22500.0	0.278	23.458	3.812	942.840	0.210	0.037	4.224	1.185	0.547	0.106
25000.0	0.270	21.546	4.119	941.473	0.242	0.048	4.307	1.337	0.629	0.140
27500.0	0.262	19.716	4.407	940.068	0.276	0.061	4.361	1.484	0.708	0.180
30000.0	0.253	17.971	4.675	938.624	0.311	0.076	4.390	1.626	0.783	0.225
32500.0	0.245	16.309	4.924	937.140	0.346	0.092	4.398	1.762	0.853	0.276
35000.0	0.237	14.732	5.154	935.612	0.382	0.110	4.388	1.891	0.916	0.333
37500.0	0.229	13.240	5.364	934.039	0.418	0.130	4.363	2.013	0.973	0.394
40000.0	0.221	11.835	5.555	932.417	0.453	0.152	4.325	2.127	1.024	0.461
42500.0	0.213	10.517	5.727	930.743	0.489	0.175	4.277	2.233	1.068	0.533
45000.0	0.205	9.287	5.879	929.017	0.524	0.200	4.222	2.330	1.105	0.610
47500.0	0.197	8.147	6.012	927.234	0.558	0.225	4.161	2.419	1.136	0.691
50000.0	0.189	7.096	6.125	925.393	0.591	0.252	4.097	2.499	1.161	0.776
52500.0	0.181	6.136	6.219	923.492	0.623	0.279	4.031	2.570	1.180	0.865
55000.0	0.174	5.266	6.294	921.530	0.653	0.306	3.965	2.632	1.194	0.957
57500.0	0.166	4.484	6.350	919.505	0.681	0.333	3.900	2.685	1.203	1.053
60000.0	0.159	3.788	6.389	917.420	0.708	0.359	3.837	2.730	1.209	1.150
62500.0	0.152	3.176	6.410	915.273	0.732	0.384	3.778	2.767	1.211	1.250
65000.0	0.145	2.643	6.416	913.069	0.754	0.408	3.723	2.796	1.210	1.350
67500.0	0.138	2.183	6.406	910.809	0.774	0.431	3.673	2.819	1.208	1.451
70000.0	0.131	1.792	6.384	908.498	0.792	0.452	3.627	2.837	1.203	1.553

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Table C.20 [ ] Exposure-Dependent 40% Void Isotopics (kg/MTU Initial)

Exposure MWd/MTU	U-234	U-235	U-236	U-238	NP-237	PU-238	PU-239	PU-240	PU-241	PU-242
0.0	0.360	44.948	0.000	954.692	0.000	0.000	0.000	0.000	0.000	0.000
100.0	0.359	44.829	0.024	954.633	0.000	0.000	0.023	0.000	0.000	0.000
500.0	0.357	44.353	0.117	954.394	0.002	0.000	0.218	0.002	0.000	0.000
1000.0	0.355	43.767	0.232	954.095	0.004	0.000	0.465	0.007	0.000	0.000
1500.0	0.353	43.190	0.345	953.796	0.007	0.000	0.699	0.016	0.001	0.000
2000.0	0.351	42.622	0.456	953.497	0.009	0.000	0.923	0.029	0.003	0.000
2500.0	0.348	42.062	0.565	953.198	0.012	0.000	1.137	0.043	0.006	0.000
3000.0	0.346	41.510	0.673	952.899	0.016	0.000	1.342	0.060	0.009	0.000
3500.0	0.344	40.966	0.778	952.600	0.019	0.001	1.537	0.079	0.014	0.000
4000.0	0.342	40.429	0.882	952.302	0.023	0.001	1.724	0.100	0.020	0.001
4500.0	0.340	39.898	0.984	952.003	0.027	0.001	1.902	0.122	0.027	0.001
5000.0	0.337	39.374	1.085	951.704	0.031	0.001	2.073	0.146	0.035	0.001
5500.0	0.335	38.857	1.184	951.405	0.035	0.002	2.236	0.170	0.044	0.002
6000.0	0.333	38.346	1.282	951.107	0.040	0.002	2.392	0.196	0.054	0.002
6500.0	0.331	37.841	1.378	950.808	0.044	0.003	2.542	0.223	0.065	0.003
7000.0	0.329	37.342	1.473	950.510	0.049	0.003	2.684	0.250	0.078	0.004
7500.0	0.327	36.848	1.566	950.211	0.054	0.004	2.821	0.278	0.090	0.005
8000.0	0.325	36.360	1.658	949.913	0.059	0.004	2.952	0.307	0.104	0.006
8500.0	0.323	35.877	1.749	949.615	0.064	0.005	3.077	0.337	0.119	0.007
9000.0	0.321	35.399	1.838	949.317	0.070	0.006	3.196	0.367	0.134	0.008
9500.0	0.319	34.927	1.927	949.019	0.075	0.006	3.310	0.397	0.150	0.010
10000.0	0.317	34.459	2.013	948.721	0.081	0.007	3.418	0.428	0.166	0.012
10500.0	0.315	33.996	2.099	948.423	0.087	0.008	3.522	0.459	0.183	0.013
11000.0	0.313	33.538	2.183	948.126	0.092	0.009	3.621	0.491	0.201	0.015
11500.0	0.311	33.084	2.267	947.829	0.098	0.010	3.715	0.523	0.218	0.018
12000.0	0.309	32.635	2.349	947.532	0.105	0.011	3.805	0.555	0.237	0.020
12500.0	0.307	32.190	2.430	947.235	0.111	0.012	3.890	0.588	0.255	0.023
13000.0	0.305	31.749	2.510	946.939	0.117	0.013	3.971	0.621	0.274	0.026
13500.0	0.303	31.312	2.589	946.642	0.123	0.015	4.048	0.654	0.293	0.029
14000.0	0.301	30.879	2.666	946.347	0.130	0.016	4.121	0.687	0.312	0.032
14500.0	0.299	30.451	2.743	946.051	0.136	0.017	4.190	0.720	0.331	0.035
15000.0	0.297	30.026	2.819	945.756	0.143	0.019	4.256	0.754	0.350	0.039
15500.0	0.296	29.604	2.894	945.461	0.149	0.020	4.317	0.787	0.370	0.042
16000.0	0.294	29.187	2.968	945.166	0.156	0.022	4.376	0.821	0.389	0.046
16500.0	0.292	28.773	3.041	944.872	0.162	0.023	4.431	0.855	0.409	0.051
17000.0	0.290	28.362	3.113	944.578	0.169	0.025	4.483	0.889	0.428	0.055
17500.0	0.288	27.955	3.184	944.284	0.176	0.027	4.532	0.923	0.447	0.060
18000.0	0.286	27.551	3.254	943.990	0.182	0.029	4.578	0.956	0.467	0.064
18500.0	0.285	27.151	3.323	943.696	0.189	0.031	4.621	0.990	0.486	0.069
19000.0	0.283	26.754	3.392	943.402	0.196	0.033	4.662	1.024	0.505	0.074
19500.0	0.281	26.360	3.459	943.107	0.203	0.035	4.701	1.058	0.524	0.080
20000.0	0.279	25.969	3.526	942.812	0.210	0.037	4.737	1.091	0.544	0.085
20500.0	0.278	25.582	3.592	942.516	0.217	0.039	4.772	1.125	0.563	0.091
21000.0	0.276	25.198	3.657	942.220	0.224	0.041	4.804	1.158	0.582	0.097
21500.0	0.274	24.817	3.721	941.923	0.231	0.043	4.835	1.191	0.601	0.103
22000.0	0.272	24.440	3.784	941.624	0.238	0.046	4.864	1.224	0.619	0.109
22500.0	0.271	24.066	3.847	941.325	0.245	0.048	4.892	1.257	0.638	0.116
23000.0	0.269	23.695	3.909	941.025	0.253	0.051	4.918	1.290	0.657	0.123
23500.0	0.267	23.327	3.970	940.723	0.260	0.054	4.943	1.322	0.676	0.130
25000.0	0.262	22.245	4.147	939.810	0.282	0.062	5.009	1.419	0.731	0.152
27500.0	0.253	20.506	4.428	938.261	0.320	0.078	5.095	1.575	0.822	0.192
30000.0	0.245	18.850	4.689	936.677	0.358	0.096	5.155	1.725	0.908	0.238
32500.0	0.237	17.275	4.930	935.057	0.397	0.116	5.192	1.869	0.989	0.289
35000.0	0.229	15.781	5.152	933.399	0.436	0.138	5.208	2.006	1.064	0.344
37500.0	0.220	14.367	5.356	931.702	0.475	0.162	5.207	2.137	1.133	0.404
40000.0	0.213	13.032	5.540	929.965	0.514	0.189	5.192	2.260	1.196	0.468
42500.0	0.205	11.776	5.706	928.187	0.552	0.216	5.164	2.375	1.252	0.536
45000.0	0.197	10.599	5.854	926.366	0.589	0.246	5.127	2.482	1.301	0.608
47500.0	0.190	9.499	5.984	924.502	0.625	0.277	5.081	2.582	1.344	0.684
50000.0	0.182	8.476	6.097	922.593	0.660	0.308	5.029	2.673	1.381	0.763
52500.0	0.175	7.530	6.192	920.640	0.694	0.341	4.973	2.755	1.412	0.845
55000.0	0.168	6.659	6.271	918.640	0.726	0.374	4.914	2.830	1.437	0.929
57500.0	0.161	5.860	6.333	916.595	0.757	0.407	4.853	2.896	1.457	1.015
60000.0	0.155	5.134	6.379	914.505	0.786	0.440	4.792	2.955	1.473	1.103
62500.0	0.148	4.476	6.410	912.369	0.812	0.472	4.732	3.006	1.485	1.193
65000.0	0.142	3.884	6.427	910.191	0.837	0.503	4.673	3.050	1.493	1.284
67500.0	0.136	3.355	6.431	907.970	0.860	0.533	4.616	3.087	1.497	1.375
70000.0	0.130	2.886	6.422	905.709	0.880	0.562	4.563	3.118	1.499	1.467

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Table C.21 [ ] Exposure-Dependent 80% Void Isotopics (kg/MTU Initial)

Exposure MWd/MTU	U-234	U-235	U-236	U-238	NP-237	PU-238	PU-239	PU-240	PU-241	PU-242
0.0	0.360	44.948	0.000	954.692	0.000	0.000	0.000	0.000	0.000	0.000
100.0	0.359	44.829	0.025	954.623	0.000	0.000	0.027	0.000	0.000	0.000
500.0	0.357	44.357	0.123	954.346	0.002	0.000	0.251	0.002	0.000	0.000
1000.0	0.354	43.776	0.243	954.000	0.005	0.000	0.533	0.008	0.001	0.000
1500.0	0.352	43.206	0.361	953.654	0.008	0.000	0.802	0.018	0.002	0.000
2000.0	0.349	42.646	0.477	953.308	0.011	0.000	1.059	0.032	0.004	0.000
2500.0	0.347	42.094	0.590	952.962	0.015	0.000	1.305	0.048	0.007	0.000
3000.0	0.344	41.551	0.702	952.617	0.019	0.001	1.540	0.066	0.012	0.000
3500.0	0.342	41.017	0.811	952.271	0.023	0.001	1.765	0.087	0.018	0.000
4000.0	0.339	40.490	0.919	951.926	0.028	0.001	1.981	0.109	0.026	0.001
4500.0	0.337	39.970	1.025	951.581	0.033	0.002	2.188	0.133	0.034	0.001
5000.0	0.334	39.458	1.129	951.237	0.038	0.002	2.386	0.157	0.044	0.001
5500.0	0.332	38.953	1.231	950.892	0.043	0.003	2.576	0.184	0.056	0.002
6000.0	0.329	38.455	1.331	950.547	0.048	0.003	2.758	0.211	0.068	0.003
6500.0	0.327	37.963	1.430	950.203	0.054	0.004	2.933	0.239	0.081	0.003
7000.0	0.325	37.477	1.527	949.859	0.060	0.004	3.101	0.268	0.096	0.004
7500.0	0.322	36.997	1.623	949.515	0.066	0.005	3.263	0.297	0.111	0.005
8000.0	0.320	36.523	1.717	949.171	0.072	0.006	3.418	0.328	0.127	0.007
8500.0	0.318	36.055	1.810	948.828	0.079	0.007	3.566	0.359	0.144	0.008
9000.0	0.315	35.592	1.901	948.484	0.085	0.008	3.709	0.390	0.162	0.009
9500.0	0.313	35.135	1.991	948.141	0.092	0.009	3.846	0.422	0.180	0.011
10000.0	0.311	34.683	2.080	947.798	0.099	0.010	3.977	0.455	0.199	0.013
10500.0	0.309	34.236	2.167	947.455	0.106	0.011	4.103	0.488	0.219	0.015
11000.0	0.306	33.794	2.253	947.113	0.113	0.013	4.223	0.521	0.239	0.017
11500.0	0.304	33.357	2.337	946.771	0.120	0.014	4.339	0.555	0.259	0.020
12000.0	0.302	32.924	2.421	946.429	0.127	0.015	4.450	0.590	0.280	0.022
12500.0	0.300	32.496	2.503	946.087	0.134	0.017	4.556	0.624	0.301	0.025
13000.0	0.298	32.073	2.584	945.746	0.142	0.019	4.658	0.659	0.322	0.028
13500.0	0.296	31.654	2.664	945.405	0.149	0.020	4.755	0.694	0.344	0.031
14000.0	0.293	31.239	2.742	945.064	0.157	0.022	4.848	0.729	0.365	0.035
14500.0	0.291	30.829	2.820	944.724	0.165	0.024	4.937	0.765	0.387	0.038
15000.0	0.289	30.422	2.896	944.384	0.172	0.026	5.022	0.801	0.409	0.042
15500.0	0.287	30.020	2.971	944.044	0.180	0.028	5.103	0.837	0.431	0.046
16000.0	0.285	29.621	3.045	943.705	0.188	0.030	5.180	0.873	0.453	0.050
16500.0	0.283	29.226	3.118	943.366	0.196	0.032	5.254	0.909	0.475	0.054
17000.0	0.281	28.835	3.190	943.027	0.204	0.035	5.324	0.945	0.497	0.059
17500.0	0.279	28.448	3.262	942.688	0.212	0.037	5.391	0.982	0.519	0.063
18000.0	0.277	28.064	3.332	942.350	0.220	0.040	5.455	1.018	0.541	0.068
18500.0	0.275	27.683	3.401	942.011	0.228	0.042	5.516	1.055	0.563	0.073
19000.0	0.273	27.307	3.469	941.673	0.236	0.045	5.574	1.091	0.585	0.078
19500.0	0.271	26.933	3.536	941.335	0.244	0.048	5.629	1.128	0.607	0.084
20000.0	0.270	26.563	3.602	940.996	0.252	0.051	5.682	1.164	0.628	0.089
20500.0	0.268	26.197	3.668	940.657	0.260	0.054	5.732	1.201	0.650	0.095
21000.0	0.266	25.834	3.732	940.318	0.268	0.057	5.780	1.237	0.671	0.101
21500.0	0.264	25.474	3.796	939.978	0.276	0.060	5.826	1.274	0.693	0.107
22000.0	0.262	25.117	3.859	939.637	0.284	0.063	5.870	1.310	0.714	0.113
22500.0	0.260	24.764	3.920	939.296	0.292	0.066	5.912	1.346	0.736	0.120
23000.0	0.258	24.414	3.981	938.954	0.301	0.070	5.952	1.382	0.757	0.126
23500.0	0.257	24.067	4.042	938.611	0.309	0.073	5.991	1.418	0.778	0.133
24000.0	0.255	23.724	4.101	938.267	0.317	0.077	6.028	1.453	0.799	0.140
24500.0	0.253	23.384	4.159	937.922	0.325	0.081	6.063	1.489	0.820	0.147
25000.0	0.251	23.047	4.217	937.576	0.334	0.084	6.097	1.524	0.841	0.155
25500.0	0.249	22.713	4.274	937.229	0.342	0.088	6.130	1.559	0.861	0.162
26000.0	0.248	22.383	4.330	936.880	0.350	0.092	6.161	1.594	0.882	0.170
26500.0	0.246	22.056	4.385	936.531	0.359	0.096	6.191	1.629	0.903	0.178
27000.0	0.244	21.732	4.440	936.180	0.367	0.101	6.220	1.663	0.923	0.186
27500.0	0.242	21.411	4.493	935.828	0.375	0.105	6.248	1.698	0.943	0.194
30000.0	0.233	19.855	4.749	934.049	0.418	0.128	6.369	1.866	1.043	0.237
32500.0	0.225	18.377	4.985	932.237	0.460	0.154	6.464	2.028	1.139	0.284
35000.0	0.217	16.976	5.202	930.394	0.502	0.182	6.536	2.185	1.230	0.335
37500.0	0.209	15.650	5.400	928.519	0.545	0.212	6.589	2.335	1.316	0.390
40000.0	0.201	14.397	5.580	926.610	0.586	0.245	6.624	2.479	1.396	0.448
42500.0	0.193	13.216	5.741	924.669	0.627	0.280	6.644	2.616	1.470	0.509
45000.0	0.186	12.105	5.885	922.694	0.667	0.317	6.650	2.746	1.539	0.573
47500.0	0.179	11.063	6.012	920.686	0.706	0.355	6.646	2.868	1.602	0.639
50000.0	0.172	10.087	6.123	918.646	0.743	0.395	6.632	2.984	1.659	0.709
52500.0	0.166	9.177	6.218	916.572	0.779	0.436	6.610	3.091	1.710	0.780
55000.0	0.159	8.329	6.298	914.467	0.814	0.478	6.582	3.192	1.757	0.854
57500.0	0.153	7.542	6.363	912.329	0.847	0.520	6.549	3.285	1.798	0.929
60000.0	0.147	6.814	6.414	910.161	0.877	0.563	6.512	3.371	1.835	1.007
62500.0	0.142	6.142	6.452	907.962	0.906	0.605	6.472	3.450	1.867	1.086
65000.0	0.136	5.523	6.477	905.734	0.933	0.647	6.430	3.522	1.895	1.166
67500.0	0.131	4.957	6.491	903.478	0.958	0.689	6.388	3.588	1.920	1.247
70000.0	0.127	4.439	6.493	901.195	0.981	0.729	6.344	3.647	1.940	1.330

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Table C.22 [ ] Exposure-Dependent 0% Void Isotopics (kg/MTU Initial)

Exposure MWd/MTU	U-234	U-235	U-236	U-238	NP-237	PU-238	PU-239	PU-240	PU-241	PU-242
0.0	0.354	44.251	0.000	955.395	0.000	0.000	0.000	0.000	0.000	0.000
100.0	0.354	44.131	0.022	955.345	0.000	0.000	0.018	0.000	0.000	0.000
500.0	0.352	43.653	0.111	955.142	0.002	0.000	0.182	0.001	0.000	0.000
1000.0	0.350	43.063	0.221	954.889	0.003	0.000	0.393	0.006	0.000	0.000
1500.0	0.348	42.481	0.329	954.636	0.005	0.000	0.594	0.014	0.001	0.000
2000.0	0.346	41.906	0.435	954.382	0.008	0.000	0.785	0.025	0.002	0.000
2500.0	0.344	41.339	0.540	954.129	0.010	0.000	0.968	0.037	0.004	0.000
3000.0	0.343	40.778	0.643	953.876	0.013	0.000	1.142	0.053	0.007	0.000
3500.0	0.341	40.224	0.745	953.623	0.015	0.000	1.309	0.070	0.010	0.000
4000.0	0.339	39.677	0.845	953.370	0.018	0.001	1.467	0.088	0.014	0.000
4500.0	0.337	39.135	0.944	953.117	0.021	0.001	1.618	0.108	0.020	0.001
5000.0	0.335	38.600	1.041	952.865	0.025	0.001	1.763	0.130	0.026	0.001
5500.0	0.333	38.070	1.137	952.612	0.028	0.001	1.900	0.152	0.033	0.001
6000.0	0.331	37.545	1.232	952.360	0.032	0.002	2.031	0.176	0.041	0.002
6500.0	0.330	37.026	1.325	952.108	0.035	0.002	2.156	0.200	0.049	0.002
7000.0	0.328	36.512	1.418	951.856	0.039	0.002	2.274	0.226	0.059	0.003
7500.0	0.326	36.004	1.509	951.604	0.043	0.003	2.387	0.252	0.069	0.004
8000.0	0.324	35.500	1.599	951.353	0.047	0.003	2.495	0.279	0.080	0.004
8500.0	0.322	35.000	1.688	951.101	0.051	0.003	2.596	0.306	0.091	0.005
9000.0	0.321	34.506	1.775	950.850	0.055	0.004	2.693	0.334	0.103	0.007
9500.0	0.319	34.016	1.862	950.600	0.059	0.004	2.785	0.363	0.116	0.008
10000.0	0.317	33.530	1.947	950.350	0.064	0.005	2.872	0.392	0.129	0.009
10500.0	0.315	33.049	2.032	950.100	0.068	0.006	2.955	0.421	0.143	0.011
11000.0	0.314	32.571	2.115	949.850	0.073	0.006	3.032	0.451	0.157	0.012
11500.0	0.312	32.098	2.197	949.601	0.078	0.007	3.106	0.481	0.171	0.014
12000.0	0.310	31.628	2.279	949.352	0.082	0.008	3.175	0.511	0.185	0.016
12500.0	0.309	31.163	2.359	949.103	0.087	0.008	3.240	0.542	0.200	0.019
13000.0	0.307	30.701	2.439	948.856	0.092	0.009	3.302	0.573	0.215	0.021
13500.0	0.305	30.243	2.517	948.608	0.097	0.010	3.359	0.604	0.231	0.024
14000.0	0.304	29.788	2.595	948.361	0.102	0.011	3.413	0.635	0.246	0.026
14500.0	0.302	29.336	2.671	948.115	0.107	0.012	3.463	0.666	0.262	0.029
15000.0	0.300	28.888	2.747	947.869	0.112	0.013	3.510	0.698	0.277	0.032
15500.0	0.299	28.443	2.822	947.624	0.117	0.014	3.553	0.730	0.293	0.036
16000.0	0.297	28.001	2.896	947.379	0.123	0.015	3.593	0.761	0.308	0.039
16500.0	0.295	27.563	2.969	947.135	0.128	0.016	3.631	0.793	0.324	0.043
17000.0	0.294	27.127	3.042	946.890	0.133	0.017	3.666	0.825	0.340	0.047
17500.0	0.292	26.695	3.114	946.646	0.138	0.018	3.698	0.856	0.355	0.051
18000.0	0.291	26.265	3.184	946.400	0.144	0.020	3.728	0.888	0.371	0.055
18500.0	0.289	25.839	3.255	946.155	0.149	0.021	3.756	0.920	0.386	0.059
19000.0	0.287	25.416	3.324	945.908	0.155	0.022	3.782	0.951	0.402	0.064
19500.0	0.286	24.997	3.393	945.661	0.160	0.024	3.807	0.983	0.417	0.069
20000.0	0.284	24.580	3.460	945.412	0.166	0.025	3.830	1.014	0.433	0.074
20500.0	0.283	24.167	3.527	945.163	0.171	0.026	3.851	1.045	0.449	0.079
22500.0	0.276	22.547	3.788	944.150	0.194	0.033	3.923	1.168	0.511	0.102
25000.0	0.268	20.596	4.097	942.850	0.224	0.043	3.985	1.318	0.589	0.135
27500.0	0.260	18.730	4.386	941.512	0.256	0.054	4.020	1.463	0.663	0.175
30000.0	0.252	16.949	4.656	940.132	0.288	0.066	4.032	1.603	0.732	0.220
32500.0	0.244	15.255	4.907	938.707	0.321	0.081	4.024	1.737	0.796	0.271
35000.0	0.236	13.648	5.138	937.234	0.355	0.097	4.000	1.864	0.853	0.328
37500.0	0.228	12.132	5.350	935.710	0.388	0.115	3.962	1.983	0.904	0.391
40000.0	0.220	10.707	5.541	934.130	0.422	0.134	3.914	2.094	0.949	0.460
42500.0	0.212	9.378	5.712	932.491	0.456	0.155	3.857	2.197	0.986	0.534
45000.0	0.204	8.145	5.862	930.789	0.489	0.177	3.795	2.290	1.017	0.614
47500.0	0.195	7.012	5.991	929.021	0.521	0.200	3.729	2.375	1.042	0.699
50000.0	0.187	5.980	6.099	927.183	0.552	0.223	3.662	2.449	1.061	0.789
52500.0	0.179	5.050	6.186	925.272	0.582	0.247	3.595	2.514	1.074	0.883
55000.0	0.171	4.221	6.253	923.288	0.610	0.271	3.530	2.570	1.083	0.982
57500.0	0.163	3.491	6.299	921.230	0.637	0.294	3.469	2.616	1.088	1.083
60000.0	0.155	2.859	6.326	919.099	0.661	0.317	3.411	2.653	1.089	1.187
62500.0	0.147	2.318	6.335	916.897	0.683	0.338	3.359	2.683	1.088	1.293
65000.0	0.140	1.862	6.327	914.630	0.703	0.358	3.312	2.705	1.085	1.401
67500.0	0.132	1.483	6.305	912.302	0.720	0.377	3.271	2.721	1.080	1.508
70000.0	0.125	1.173	6.269	909.920	0.735	0.393	3.235	2.732	1.075	1.615

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Table C.23 [ ] Exposure-Dependent 40% Void Isotopics (kg/MTU Initial)

Exposure MWd/MTU	U-234	U-235	U-236	U-238	NP-237	PU-238	PU-239	PU-240	PU-241	PU-242
0.0	0.354	44.251	0.000	955.395	0.000	0.000	0.000	0.000	0.000	0.000
100.0	0.354	44.131	0.023	955.337	0.000	0.000	0.021	0.000	0.000	0.000
500.0	0.352	43.655	0.116	955.106	0.002	0.000	0.207	0.002	0.000	0.000
1000.0	0.350	43.068	0.229	954.817	0.004	0.000	0.446	0.007	0.000	0.000
1500.0	0.347	42.490	0.341	954.528	0.006	0.000	0.674	0.016	0.001	0.000
2000.0	0.345	41.920	0.451	954.239	0.009	0.000	0.891	0.028	0.003	0.000
2500.0	0.343	41.358	0.559	953.951	0.012	0.000	1.098	0.042	0.005	0.000
3000.0	0.341	40.804	0.665	953.663	0.015	0.000	1.295	0.059	0.009	0.000
3500.0	0.339	40.257	0.769	953.375	0.018	0.001	1.483	0.077	0.013	0.000
4000.0	0.337	39.718	0.872	953.088	0.022	0.001	1.662	0.098	0.019	0.000
4500.0	0.335	39.185	0.973	952.801	0.025	0.001	1.834	0.120	0.025	0.001
5000.0	0.333	38.659	1.073	952.514	0.029	0.001	1.997	0.143	0.033	0.001
5500.0	0.331	38.139	1.171	952.228	0.033	0.002	2.153	0.167	0.042	0.001
6000.0	0.329	37.625	1.267	951.942	0.037	0.002	2.301	0.193	0.051	0.002
6500.0	0.327	37.117	1.363	951.656	0.042	0.002	2.443	0.219	0.062	0.003
7000.0	0.325	36.614	1.456	951.371	0.046	0.003	2.578	0.246	0.074	0.003
7500.0	0.323	36.117	1.549	951.086	0.051	0.003	2.706	0.274	0.086	0.004
8000.0	0.321	35.625	1.640	950.802	0.055	0.004	2.828	0.303	0.099	0.005
8500.0	0.319	35.139	1.729	950.518	0.060	0.005	2.945	0.332	0.113	0.006
9000.0	0.317	34.657	1.818	950.235	0.065	0.005	3.055	0.362	0.127	0.008
9500.0	0.315	34.181	1.905	949.952	0.071	0.006	3.161	0.392	0.143	0.009
10000.0	0.313	33.708	1.991	949.669	0.076	0.007	3.261	0.422	0.158	0.011
10500.0	0.311	33.241	2.076	949.387	0.081	0.007	3.355	0.454	0.174	0.013
11000.0	0.309	32.778	2.160	949.106	0.087	0.008	3.445	0.485	0.191	0.015
11500.0	0.307	32.320	2.242	948.825	0.092	0.009	3.530	0.517	0.208	0.017
12000.0	0.306	31.865	2.323	948.545	0.098	0.010	3.611	0.549	0.225	0.019
12500.0	0.304	31.415	2.404	948.265	0.104	0.011	3.687	0.581	0.242	0.022
13000.0	0.302	30.969	2.483	947.986	0.109	0.012	3.758	0.614	0.260	0.024
13500.0	0.300	30.526	2.561	947.707	0.115	0.013	3.826	0.647	0.278	0.027
14000.0	0.298	30.088	2.639	947.430	0.121	0.014	3.889	0.680	0.296	0.030
14500.0	0.297	29.653	2.715	947.153	0.127	0.016	3.949	0.713	0.314	0.034
15000.0	0.295	29.221	2.790	946.876	0.133	0.017	4.004	0.746	0.332	0.037
15500.0	0.293	28.793	2.865	946.601	0.139	0.018	4.057	0.779	0.350	0.041
16000.0	0.291	28.368	2.938	946.325	0.145	0.019	4.105	0.813	0.368	0.045
16500.0	0.290	27.947	3.011	946.050	0.151	0.021	4.151	0.846	0.387	0.049
17000.0	0.288	27.529	3.082	945.776	0.157	0.022	4.194	0.880	0.405	0.053
17500.0	0.286	27.114	3.153	945.502	0.163	0.024	4.233	0.913	0.423	0.057
18000.0	0.284	26.702	3.223	945.227	0.169	0.025	4.271	0.947	0.441	0.062
18500.0	0.283	26.294	3.292	944.953	0.175	0.027	4.306	0.980	0.458	0.067
19000.0	0.281	25.889	3.361	944.678	0.182	0.029	4.339	1.013	0.476	0.072
19500.0	0.279	25.487	3.428	944.402	0.188	0.031	4.369	1.046	0.494	0.077
20000.0	0.278	25.088	3.495	944.125	0.194	0.032	4.398	1.079	0.512	0.082
20500.0	0.276	24.693	3.561	943.847	0.201	0.034	4.425	1.112	0.530	0.088
21000.0	0.274	24.300	3.626	943.569	0.207	0.036	4.451	1.145	0.548	0.094
21500.0	0.273	23.912	3.690	943.289	0.214	0.038	4.475	1.177	0.565	0.100
22500.0	0.269	23.144	3.817	942.725	0.227	0.043	4.519	1.242	0.601	0.112
25000.0	0.261	21.283	4.118	941.292	0.261	0.055	4.607	1.400	0.689	0.148
27500.0	0.253	19.506	4.400	939.822	0.297	0.068	4.666	1.552	0.773	0.189
30000.0	0.245	17.812	4.662	938.316	0.333	0.084	4.699	1.698	0.853	0.235
32500.0	0.236	16.201	4.905	936.770	0.369	0.102	4.711	1.839	0.927	0.286
35000.0	0.228	14.674	5.128	935.184	0.406	0.122	4.705	1.972	0.995	0.343
37500.0	0.220	13.230	5.332	933.554	0.443	0.143	4.683	2.098	1.057	0.405
40000.0	0.212	11.870	5.517	931.879	0.480	0.166	4.648	2.216	1.111	0.471
42500.0	0.204	10.594	5.682	930.156	0.516	0.191	4.602	2.326	1.159	0.542
45000.0	0.197	9.403	5.829	928.384	0.551	0.217	4.549	2.427	1.199	0.618
47500.0	0.189	8.298	5.957	926.560	0.586	0.244	4.490	2.520	1.234	0.698
50000.0	0.181	7.277	6.066	924.684	0.619	0.272	4.426	2.603	1.262	0.781
52500.0	0.174	6.342	6.157	922.752	0.651	0.301	4.361	2.678	1.284	0.868
55000.0	0.167	5.490	6.229	920.765	0.681	0.330	4.294	2.743	1.300	0.958
57500.0	0.159	4.722	6.284	918.723	0.709	0.358	4.229	2.800	1.312	1.051
60000.0	0.152	4.033	6.321	916.625	0.736	0.386	4.165	2.848	1.320	1.145
62500.0	0.145	3.422	6.343	914.473	0.761	0.414	4.104	2.888	1.324	1.241
65000.0	0.139	2.885	6.349	912.267	0.783	0.440	4.046	2.921	1.325	1.339
67500.0	0.132	2.417	6.340	910.012	0.803	0.465	3.993	2.947	1.323	1.437
70000.0	0.126	2.014	6.319	907.710	0.821	0.488	3.944	2.967	1.320	1.535

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Table C.24 [ ] Exposure-Dependent 80% Void Isotopics (kg/MTU Initial)

Exposure MWd/MTU	U-234	U-235	U-236	U-238	NP-237	PU-238	PU-239	PU-240	PU-241	PU-242
0.0	0.354	44.251	0.000	955.395	0.000	0.000	0.000	0.000	0.000	0.000
100.0	0.353	44.132	0.024	955.328	0.000	0.000	0.024	0.000	0.000	0.000
500.0	0.351	43.658	0.122	955.059	0.002	0.000	0.238	0.002	0.000	0.000
1000.0	0.349	43.076	0.241	954.722	0.005	0.000	0.514	0.008	0.000	0.000
1500.0	0.346	42.504	0.358	954.386	0.008	0.000	0.776	0.018	0.002	0.000
2000.0	0.344	41.941	0.472	954.051	0.011	0.000	1.026	0.031	0.004	0.000
2500.0	0.341	41.387	0.584	953.716	0.014	0.000	1.265	0.047	0.007	0.000
3000.0	0.339	40.842	0.695	953.382	0.018	0.001	1.492	0.065	0.012	0.000
3500.0	0.337	40.305	0.803	953.049	0.022	0.001	1.710	0.085	0.017	0.000
4000.0	0.334	39.776	0.910	952.716	0.027	0.001	1.917	0.107	0.025	0.001
4500.0	0.332	39.254	1.014	952.384	0.031	0.001	2.116	0.131	0.033	0.001
5000.0	0.330	38.739	1.117	952.052	0.036	0.002	2.306	0.156	0.043	0.001
5500.0	0.327	38.231	1.218	951.721	0.041	0.002	2.487	0.182	0.054	0.002
6000.0	0.325	37.729	1.318	951.390	0.046	0.003	2.660	0.209	0.066	0.002
6500.0	0.323	37.234	1.415	951.060	0.051	0.003	2.826	0.236	0.079	0.003
7000.0	0.320	36.745	1.511	950.730	0.057	0.004	2.985	0.265	0.093	0.004
7500.0	0.318	36.262	1.606	950.401	0.063	0.005	3.136	0.295	0.108	0.005
8000.0	0.316	35.785	1.699	950.072	0.068	0.006	3.281	0.325	0.124	0.006
8500.0	0.314	35.313	1.791	949.745	0.075	0.006	3.419	0.356	0.140	0.008
9000.0	0.311	34.847	1.881	949.418	0.081	0.007	3.551	0.387	0.158	0.009
9500.0	0.309	34.386	1.970	949.091	0.087	0.008	3.677	0.419	0.175	0.011
10000.0	0.307	33.930	2.058	948.765	0.093	0.009	3.797	0.452	0.194	0.013
10500.0	0.305	33.479	2.144	948.440	0.100	0.010	3.912	0.485	0.213	0.015
11000.0	0.303	33.033	2.229	948.115	0.106	0.012	4.021	0.518	0.232	0.017
11500.0	0.301	32.591	2.313	947.791	0.113	0.013	4.125	0.552	0.252	0.019
12000.0	0.299	32.154	2.395	947.468	0.120	0.014	4.224	0.586	0.272	0.022
12500.0	0.297	31.722	2.476	947.145	0.127	0.016	4.318	0.620	0.292	0.025
13000.0	0.295	31.293	2.556	946.823	0.134	0.017	4.408	0.655	0.313	0.028
13500.0	0.293	30.869	2.635	946.502	0.141	0.019	4.492	0.690	0.333	0.031
14000.0	0.291	30.449	2.713	946.182	0.148	0.020	4.573	0.725	0.354	0.034
14500.0	0.289	30.033	2.790	945.862	0.155	0.022	4.649	0.761	0.375	0.038
15000.0	0.287	29.621	2.865	945.543	0.162	0.024	4.721	0.796	0.396	0.041
15500.0	0.285	29.213	2.940	945.225	0.169	0.025	4.789	0.832	0.417	0.045
16000.0	0.283	28.808	3.013	944.908	0.176	0.027	4.854	0.868	0.438	0.049
16500.0	0.281	28.407	3.086	944.591	0.184	0.029	4.915	0.904	0.459	0.053
17000.0	0.279	28.009	3.157	944.274	0.191	0.031	4.972	0.940	0.480	0.058
17500.0	0.277	27.615	3.228	943.958	0.198	0.033	5.026	0.976	0.500	0.063
18000.0	0.275	27.224	3.298	943.642	0.206	0.036	5.078	1.012	0.521	0.067
18500.0	0.274	26.836	3.366	943.326	0.213	0.038	5.126	1.048	0.542	0.072
19000.0	0.272	26.452	3.434	943.011	0.220	0.040	5.172	1.084	0.562	0.078
19500.0	0.270	26.071	3.501	942.695	0.228	0.043	5.215	1.120	0.583	0.083
20000.0	0.268	25.694	3.567	942.378	0.235	0.045	5.257	1.156	0.603	0.088
20500.0	0.266	25.320	3.632	942.061	0.243	0.048	5.296	1.192	0.624	0.094
21000.0	0.264	24.949	3.696	941.743	0.250	0.051	5.333	1.227	0.644	0.100
21500.0	0.263	24.581	3.760	941.424	0.258	0.053	5.368	1.263	0.664	0.106
22000.0	0.261	24.217	3.822	941.105	0.266	0.056	5.402	1.298	0.684	0.113
22500.0	0.259	23.856	3.884	940.784	0.273	0.059	5.434	1.333	0.705	0.119
23000.0	0.257	23.498	3.945	940.463	0.281	0.062	5.464	1.369	0.725	0.126
23500.0	0.256	23.144	4.005	940.140	0.289	0.065	5.493	1.403	0.745	0.133
25000.0	0.250	22.101	4.180	939.164	0.312	0.075	5.573	1.507	0.804	0.154
27500.0	0.242	20.428	4.456	937.511	0.351	0.093	5.680	1.675	0.902	0.194
30000.0	0.233	18.837	4.712	935.825	0.391	0.114	5.760	1.837	0.996	0.239
32500.0	0.225	17.324	4.948	934.105	0.432	0.137	5.815	1.993	1.084	0.288
35000.0	0.217	15.891	5.165	932.351	0.472	0.162	5.850	2.143	1.168	0.341
37500.0	0.209	14.535	5.363	930.561	0.512	0.189	5.866	2.286	1.245	0.398
40000.0	0.201	13.256	5.542	928.735	0.552	0.218	5.866	2.422	1.316	0.459
42500.0	0.193	12.052	5.702	926.872	0.591	0.249	5.853	2.550	1.380	0.524
45000.0	0.186	10.923	5.845	924.971	0.629	0.282	5.828	2.671	1.439	0.592
47500.0	0.179	9.867	5.969	923.032	0.666	0.316	5.795	2.783	1.491	0.663
50000.0	0.172	8.883	6.077	921.055	0.702	0.352	5.754	2.887	1.537	0.737
52500.0	0.165	7.970	6.168	919.039	0.736	0.388	5.707	2.983	1.577	0.814
55000.0	0.158	7.125	6.243	916.984	0.769	0.425	5.656	3.070	1.611	0.893
57500.0	0.152	6.348	6.303	914.891	0.800	0.462	5.602	3.150	1.641	0.974
60000.0	0.146	5.635	6.348	912.760	0.829	0.499	5.546	3.221	1.665	1.058
62500.0	0.140	4.984	6.378	910.592	0.856	0.536	5.490	3.285	1.685	1.143
65000.0	0.134	4.394	6.395	908.388	0.881	0.572	5.434	3.342	1.701	1.229
67500.0	0.128	3.860	6.400	906.149	0.904	0.607	5.379	3.391	1.713	1.317
70000.0	0.123	3.380	6.393	903.877	0.924	0.641	5.326	3.434	1.723	1.405

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Table C.25 [ ] Exposure-Dependent 0% Void Isotopics (kg/MTU Initial)

Exposure MWd/MTU	U-234	U-235	U-236	U-238	NP-237	PU-238	PU-239	PU-240	PU-241	PU-242
0.0	0.354	44.251	0.000	955.395	0.000	0.000	0.000	0.000	0.000	0.000
100.0	0.354	44.131	0.022	955.347	0.000	0.000	0.017	0.000	0.000	0.000
500.0	0.352	43.653	0.110	955.153	0.001	0.000	0.174	0.001	0.000	0.000
1000.0	0.350	43.063	0.219	954.911	0.003	0.000	0.375	0.006	0.000	0.000
1500.0	0.348	42.480	0.326	954.668	0.005	0.000	0.567	0.013	0.001	0.000
2000.0	0.347	41.904	0.431	954.426	0.007	0.000	0.751	0.023	0.002	0.000
2500.0	0.345	41.335	0.535	954.184	0.010	0.000	0.926	0.036	0.004	0.000
3000.0	0.343	40.773	0.637	953.941	0.012	0.000	1.093	0.050	0.006	0.000
3500.0	0.341	40.217	0.738	953.699	0.015	0.000	1.252	0.067	0.009	0.000
4000.0	0.339	39.667	0.837	953.457	0.018	0.001	1.404	0.085	0.013	0.000
4500.0	0.338	39.124	0.935	953.214	0.021	0.001	1.548	0.104	0.018	0.001
5000.0	0.336	38.585	1.032	952.972	0.024	0.001	1.686	0.125	0.024	0.001
5500.0	0.334	38.053	1.128	952.730	0.027	0.001	1.818	0.146	0.030	0.001
6000.0	0.332	37.525	1.222	952.488	0.030	0.001	1.943	0.169	0.037	0.001
6500.0	0.330	37.003	1.315	952.246	0.034	0.002	2.063	0.193	0.045	0.002
7000.0	0.329	36.486	1.407	952.005	0.037	0.002	2.176	0.218	0.054	0.003
7500.0	0.327	35.973	1.498	951.763	0.041	0.002	2.284	0.243	0.064	0.003
8000.0	0.325	35.466	1.588	951.522	0.045	0.003	2.387	0.269	0.074	0.004
8500.0	0.323	34.962	1.676	951.281	0.049	0.003	2.485	0.296	0.084	0.005
9000.0	0.322	34.464	1.764	951.040	0.053	0.004	2.577	0.323	0.096	0.006
9500.0	0.320	33.970	1.850	950.800	0.057	0.004	2.665	0.351	0.107	0.007
10000.0	0.318	33.479	1.936	950.560	0.061	0.005	2.748	0.379	0.120	0.009
10500.0	0.317	32.993	2.020	950.320	0.065	0.005	2.826	0.408	0.133	0.010
11000.0	0.315	32.511	2.104	950.080	0.070	0.006	2.901	0.437	0.146	0.012
11500.0	0.313	32.033	2.186	949.841	0.074	0.006	2.971	0.467	0.159	0.013
12000.0	0.312	31.559	2.267	949.602	0.079	0.007	3.037	0.496	0.173	0.015
12500.0	0.310	31.089	2.348	949.363	0.083	0.008	3.099	0.526	0.187	0.017
13000.0	0.308	30.622	2.427	949.125	0.088	0.009	3.157	0.557	0.201	0.020
13500.0	0.307	30.158	2.506	948.887	0.093	0.009	3.212	0.587	0.215	0.022
14000.0	0.305	29.698	2.584	948.650	0.098	0.010	3.262	0.618	0.230	0.025
14500.0	0.303	29.241	2.661	948.413	0.102	0.011	3.310	0.649	0.245	0.027
15000.0	0.302	28.788	2.737	948.177	0.107	0.012	3.354	0.679	0.259	0.030
15500.0	0.300	28.337	2.812	947.941	0.112	0.013	3.395	0.711	0.274	0.034
16000.0	0.299	27.890	2.887	947.706	0.117	0.014	3.433	0.742	0.289	0.037
16500.0	0.297	27.446	2.960	947.471	0.122	0.015	3.468	0.773	0.303	0.040
17000.0	0.296	27.004	3.033	947.236	0.127	0.016	3.501	0.804	0.318	0.044
17500.0	0.294	26.566	3.105	947.000	0.132	0.017	3.531	0.835	0.333	0.048
18000.0	0.292	26.131	3.176	946.765	0.137	0.018	3.559	0.866	0.347	0.052
18500.0	0.291	25.699	3.247	946.528	0.142	0.019	3.585	0.897	0.362	0.056
19000.0	0.289	25.270	3.317	946.291	0.148	0.021	3.610	0.928	0.377	0.060
19500.0	0.288	24.844	3.386	946.052	0.153	0.022	3.632	0.959	0.392	0.065
20000.0	0.286	24.422	3.454	945.813	0.158	0.023	3.654	0.990	0.407	0.070
22500.0	0.278	22.358	3.785	944.593	0.185	0.031	3.740	1.142	0.481	0.097
25000.0	0.270	20.377	4.096	943.337	0.214	0.040	3.795	1.290	0.555	0.130
27500.0	0.262	18.480	4.389	942.040	0.244	0.050	3.824	1.434	0.625	0.168
30000.0	0.254	16.668	4.663	940.701	0.276	0.062	3.830	1.573	0.690	0.212
32500.0	0.246	14.944	4.917	939.314	0.308	0.076	3.818	1.705	0.751	0.262
35000.0	0.238	13.309	5.152	937.878	0.340	0.091	3.789	1.831	0.805	0.319
37500.0	0.230	11.767	5.366	936.387	0.373	0.108	3.748	1.950	0.853	0.381
40000.0	0.222	10.320	5.560	934.837	0.406	0.126	3.697	2.061	0.895	0.450
42500.0	0.214	8.971	5.734	933.223	0.438	0.145	3.638	2.163	0.929	0.525
45000.0	0.205	7.725	5.885	931.540	0.470	0.166	3.574	2.255	0.958	0.605
47500.0	0.197	6.584	6.015	929.786	0.502	0.188	3.508	2.339	0.980	0.691
50000.0	0.189	5.551	6.123	927.955	0.532	0.210	3.440	2.412	0.997	0.783
52500.0	0.180	4.626	6.209	926.044	0.561	0.232	3.375	2.476	1.008	0.879
55000.0	0.172	3.810	6.273	924.052	0.588	0.255	3.312	2.529	1.015	0.980
57500.0	0.163	3.101	6.316	921.979	0.613	0.277	3.253	2.574	1.019	1.085
60000.0	0.155	2.494	6.339	919.827	0.636	0.297	3.199	2.609	1.019	1.192
62500.0	0.147	1.984	6.343	917.599	0.657	0.317	3.151	2.637	1.017	1.302
65000.0	0.139	1.563	6.330	915.301	0.676	0.335	3.108	2.657	1.014	1.412
67500.0	0.132	1.220	6.302	912.941	0.692	0.352	3.072	2.671	1.009	1.523
70000.0	0.124	0.945	6.262	910.526	0.706	0.367	3.040	2.680	1.004	1.633

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Table C.26 [ ] Exposure-Dependent 40% Void Isotopics (kg/MTU Initial)

Exposure MWd/MTU	U-234	U-235	U-236	U-238	NP-237	PU-238	PU-239	PU-240	PU-241	PU-242
0.0	0.354	44.251	0.000	955.395	0.000	0.000	0.000	0.000	0.000	0.000
100.0	0.354	44.131	0.023	955.339	0.000	0.000	0.020	0.000	0.000	0.000
500.0	0.352	43.655	0.115	955.116	0.002	0.000	0.199	0.001	0.000	0.000
1000.0	0.350	43.068	0.227	954.837	0.004	0.000	0.430	0.007	0.000	0.000
1500.0	0.348	42.489	0.338	954.558	0.006	0.000	0.650	0.015	0.001	0.000
2000.0	0.346	41.918	0.447	954.279	0.009	0.000	0.859	0.027	0.003	0.000
2500.0	0.344	41.356	0.554	954.000	0.012	0.000	1.059	0.041	0.005	0.000
3000.0	0.341	40.800	0.659	953.722	0.015	0.000	1.249	0.057	0.008	0.000
3500.0	0.339	40.252	0.763	953.444	0.018	0.001	1.431	0.075	0.012	0.000
4000.0	0.337	39.711	0.865	953.166	0.021	0.001	1.604	0.095	0.017	0.000
4500.0	0.335	39.176	0.965	952.889	0.025	0.001	1.769	0.116	0.024	0.001
5000.0	0.333	38.647	1.064	952.612	0.028	0.001	1.927	0.139	0.031	0.001
5500.0	0.331	38.125	1.162	952.335	0.032	0.002	2.077	0.162	0.039	0.001
6000.0	0.329	37.608	1.258	952.059	0.036	0.002	2.220	0.187	0.048	0.002
6500.0	0.327	37.098	1.353	951.782	0.040	0.002	2.356	0.213	0.058	0.002
7000.0	0.326	36.592	1.446	951.507	0.045	0.003	2.486	0.240	0.069	0.003
7500.0	0.324	36.092	1.538	951.231	0.049	0.003	2.610	0.267	0.081	0.004
8000.0	0.322	35.597	1.629	950.956	0.054	0.004	2.727	0.295	0.093	0.005
8500.0	0.320	35.108	1.718	950.682	0.058	0.004	2.839	0.324	0.107	0.006
9000.0	0.318	34.623	1.807	950.408	0.063	0.005	2.946	0.353	0.120	0.007
9500.0	0.316	34.143	1.894	950.134	0.068	0.005	3.047	0.382	0.135	0.009
10000.0	0.314	33.667	1.980	949.861	0.073	0.006	3.142	0.412	0.150	0.010
10500.0	0.312	33.196	2.064	949.589	0.078	0.007	3.233	0.443	0.165	0.012
11000.0	0.310	32.729	2.148	949.317	0.084	0.008	3.319	0.474	0.181	0.014
11500.0	0.309	32.267	2.230	949.045	0.089	0.009	3.400	0.505	0.197	0.016
12000.0	0.307	31.808	2.312	948.774	0.095	0.009	3.477	0.537	0.213	0.018
12500.0	0.305	31.354	2.392	948.504	0.100	0.010	3.550	0.569	0.230	0.021
13000.0	0.303	30.903	2.471	948.234	0.106	0.011	3.618	0.601	0.247	0.023
13500.0	0.301	30.456	2.550	947.965	0.111	0.012	3.682	0.633	0.264	0.026
14000.0	0.300	30.013	2.627	947.696	0.117	0.013	3.742	0.665	0.281	0.029
14500.0	0.298	29.574	2.703	947.428	0.123	0.015	3.799	0.698	0.299	0.032
15000.0	0.296	29.138	2.779	947.161	0.128	0.016	3.851	0.731	0.316	0.036
15500.0	0.294	28.705	2.854	946.894	0.134	0.017	3.900	0.763	0.333	0.039
16000.0	0.293	28.275	2.927	946.629	0.140	0.018	3.946	0.796	0.350	0.043
16500.0	0.291	27.849	3.000	946.363	0.146	0.020	3.989	0.829	0.368	0.047
17000.0	0.289	27.426	3.072	946.098	0.151	0.021	4.029	0.862	0.385	0.051
17500.0	0.288	27.006	3.143	945.832	0.157	0.022	4.066	0.895	0.402	0.055
18000.0	0.286	26.589	3.213	945.567	0.163	0.024	4.101	0.928	0.419	0.060
18500.0	0.284	26.176	3.283	945.301	0.169	0.026	4.133	0.961	0.437	0.064
19000.0	0.283	25.765	3.352	945.035	0.175	0.027	4.164	0.993	0.454	0.069
19500.0	0.281	25.358	3.420	944.768	0.181	0.029	4.193	1.026	0.471	0.074
20000.0	0.279	24.954	3.487	944.499	0.188	0.031	4.219	1.059	0.488	0.079
20500.0	0.278	24.554	3.553	944.230	0.194	0.032	4.244	1.091	0.505	0.085
21000.0	0.276	24.156	3.619	943.960	0.200	0.034	4.268	1.123	0.522	0.091
22500.0	0.271	22.984	3.810	943.141	0.219	0.040	4.331	1.219	0.573	0.109
25000.0	0.263	21.097	4.114	941.749	0.252	0.051	4.409	1.374	0.658	0.144
27500.0	0.255	19.294	4.398	940.320	0.287	0.065	4.460	1.524	0.739	0.184
30000.0	0.247	17.573	4.663	938.854	0.322	0.080	4.485	1.669	0.815	0.229
32500.0	0.238	15.937	4.908	937.346	0.358	0.096	4.490	1.807	0.886	0.280
35000.0	0.230	14.384	5.134	935.797	0.393	0.115	4.477	1.939	0.950	0.337
37500.0	0.222	12.917	5.341	934.201	0.429	0.136	4.448	2.063	1.008	0.399
40000.0	0.214	11.536	5.528	932.559	0.465	0.158	4.408	2.179	1.059	0.465
42500.0	0.206	10.242	5.696	930.865	0.500	0.181	4.358	2.287	1.103	0.537
45000.0	0.198	9.035	5.845	929.119	0.535	0.206	4.300	2.387	1.140	0.613
47500.0	0.191	7.918	5.974	927.318	0.569	0.232	4.237	2.477	1.171	0.694
50000.0	0.183	6.889	6.083	925.459	0.601	0.259	4.170	2.558	1.196	0.779
52500.0	0.175	5.951	6.174	923.541	0.632	0.286	4.103	2.629	1.215	0.868
55000.0	0.168	5.101	6.245	921.563	0.662	0.313	4.035	2.692	1.228	0.960
57500.0	0.160	4.338	6.298	919.523	0.689	0.340	3.969	2.745	1.238	1.054
60000.0	0.153	3.661	6.333	917.423	0.715	0.367	3.905	2.790	1.243	1.151
62500.0	0.146	3.066	6.352	915.264	0.739	0.392	3.845	2.827	1.244	1.250
65000.0	0.139	2.549	6.354	913.047	0.760	0.416	3.790	2.857	1.243	1.350
67500.0	0.132	2.104	6.342	910.777	0.780	0.439	3.738	2.879	1.240	1.451
70000.0	0.126	1.725	6.317	908.457	0.796	0.460	3.692	2.896	1.236	1.551

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Table C.27 [ ] Exposure-Dependent 80% Void Isotopics (kg/MTU Initial)

Exposure MWd/MTU	U-234	U-235	U-236	U-238	NP-237	PU-238	PU-239	PU-240	PU-241	PU-242
0.0	0.354	44.251	0.000	955.395	0.000	0.000	0.000	0.000	0.000	0.000
100.0	0.354	44.132	0.024	955.329	0.000	0.000	0.023	0.000	0.000	0.000
500.0	0.351	43.659	0.121	955.064	0.002	0.000	0.234	0.002	0.000	0.000
1000.0	0.349	43.077	0.239	954.733	0.005	0.000	0.504	0.008	0.000	0.000
1500.0	0.347	42.505	0.355	954.403	0.008	0.000	0.762	0.018	0.002	0.000
2000.0	0.344	41.942	0.469	954.074	0.011	0.000	1.007	0.031	0.004	0.000
2500.0	0.342	41.388	0.581	953.745	0.014	0.000	1.241	0.046	0.007	0.000
3000.0	0.339	40.842	0.691	953.416	0.018	0.001	1.464	0.064	0.011	0.000
3500.0	0.337	40.305	0.799	953.088	0.022	0.001	1.678	0.084	0.017	0.000
4000.0	0.335	39.775	0.905	952.761	0.026	0.001	1.881	0.106	0.024	0.001
4500.0	0.332	39.252	1.009	952.434	0.031	0.001	2.076	0.129	0.032	0.001
5000.0	0.330	38.737	1.111	952.108	0.035	0.002	2.262	0.154	0.041	0.001
5500.0	0.328	38.228	1.212	951.782	0.040	0.002	2.439	0.179	0.052	0.002
6000.0	0.325	37.726	1.311	951.457	0.045	0.003	2.609	0.206	0.064	0.002
6500.0	0.323	37.229	1.408	951.132	0.051	0.003	2.771	0.234	0.077	0.003
7000.0	0.321	36.739	1.504	950.808	0.056	0.004	2.926	0.262	0.090	0.004
7500.0	0.319	36.255	1.598	950.485	0.062	0.005	3.074	0.291	0.105	0.005
8000.0	0.316	35.777	1.691	950.162	0.068	0.005	3.216	0.321	0.120	0.006
8500.0	0.314	35.304	1.783	949.840	0.074	0.006	3.351	0.352	0.137	0.007
9000.0	0.312	34.836	1.873	949.519	0.080	0.007	3.479	0.383	0.153	0.009
9500.0	0.310	34.373	1.961	949.198	0.086	0.008	3.602	0.415	0.171	0.011
10000.0	0.308	33.916	2.049	948.877	0.092	0.009	3.719	0.447	0.189	0.012
10500.0	0.306	33.463	2.135	948.558	0.099	0.010	3.831	0.479	0.207	0.014
11000.0	0.304	33.015	2.220	948.239	0.105	0.011	3.937	0.512	0.226	0.017
11500.0	0.302	32.572	2.303	947.921	0.112	0.012	4.038	0.546	0.246	0.019
12000.0	0.300	32.133	2.386	947.603	0.118	0.014	4.135	0.580	0.265	0.021
12500.0	0.298	31.698	2.467	947.286	0.125	0.015	4.226	0.614	0.285	0.024
13000.0	0.296	31.268	2.547	946.970	0.132	0.017	4.312	0.648	0.305	0.027
13500.0	0.294	30.842	2.626	946.655	0.139	0.018	4.395	0.683	0.326	0.030
14000.0	0.292	30.420	2.703	946.340	0.146	0.020	4.472	0.718	0.346	0.033
14500.0	0.290	30.001	2.780	946.026	0.153	0.021	4.546	0.753	0.366	0.037
15000.0	0.288	29.587	2.855	945.713	0.160	0.023	4.615	0.788	0.387	0.041
15500.0	0.286	29.176	2.930	945.401	0.167	0.025	4.681	0.823	0.407	0.044
16000.0	0.284	28.769	3.004	945.089	0.174	0.027	4.743	0.859	0.428	0.048
16500.0	0.282	28.366	3.076	944.778	0.181	0.028	4.801	0.894	0.448	0.053
17000.0	0.280	27.965	3.148	944.468	0.188	0.030	4.856	0.930	0.469	0.057
17500.0	0.278	27.569	3.218	944.157	0.195	0.033	4.908	0.966	0.489	0.062
18000.0	0.276	27.175	3.288	943.848	0.203	0.035	4.957	1.001	0.509	0.066
18500.0	0.275	26.785	3.356	943.538	0.210	0.037	5.003	1.037	0.530	0.071
19000.0	0.273	26.398	3.424	943.228	0.217	0.039	5.047	1.073	0.550	0.076
19500.0	0.271	26.015	3.491	942.917	0.224	0.042	5.088	1.108	0.570	0.082
20000.0	0.269	25.635	3.557	942.606	0.232	0.044	5.127	1.144	0.590	0.087
20500.0	0.267	25.258	3.623	942.295	0.239	0.046	5.164	1.179	0.610	0.093
21000.0	0.266	24.885	3.687	941.982	0.247	0.049	5.200	1.214	0.630	0.099
21500.0	0.264	24.514	3.750	941.669	0.254	0.052	5.233	1.249	0.649	0.105
22000.0	0.262	24.147	3.813	941.355	0.262	0.055	5.265	1.284	0.669	0.111
22500.0	0.260	23.784	3.875	941.040	0.269	0.057	5.295	1.319	0.689	0.118
23000.0	0.259	23.424	3.936	940.724	0.277	0.060	5.324	1.354	0.709	0.124
25000.0	0.252	22.015	4.172	939.446	0.307	0.073	5.426	1.490	0.787	0.153
27500.0	0.243	20.329	4.449	937.819	0.347	0.091	5.525	1.656	0.883	0.193
30000.0	0.235	18.724	4.706	936.159	0.386	0.111	5.597	1.816	0.974	0.237
32500.0	0.226	17.198	4.943	934.464	0.426	0.133	5.645	1.970	1.061	0.286
35000.0	0.218	15.751	5.161	932.735	0.466	0.157	5.673	2.118	1.141	0.339
37500.0	0.210	14.383	5.360	930.969	0.506	0.184	5.682	2.258	1.216	0.397
40000.0	0.202	13.092	5.540	929.166	0.545	0.212	5.676	2.392	1.285	0.458
42500.0	0.195	11.877	5.702	927.326	0.584	0.243	5.657	2.518	1.347	0.523
45000.0	0.187	10.738	5.845	925.446	0.622	0.275	5.627	2.635	1.402	0.592
47500.0	0.180	9.674	5.970	923.526	0.658	0.308	5.588	2.745	1.452	0.664
50000.0	0.173	8.683	6.079	921.567	0.694	0.343	5.542	2.846	1.495	0.739
52500.0	0.166	7.764	6.170	919.568	0.728	0.378	5.491	2.939	1.532	0.817
55000.0	0.159	6.915	6.245	917.528	0.761	0.414	5.436	3.024	1.564	0.897
57500.0	0.153	6.135	6.305	915.448	0.791	0.450	5.378	3.100	1.590	0.979
60000.0	0.146	5.422	6.349	913.328	0.820	0.486	5.320	3.168	1.612	1.064
62500.0	0.140	4.773	6.379	911.169	0.847	0.521	5.261	3.229	1.629	1.150
65000.0	0.134	4.185	6.395	908.972	0.871	0.556	5.203	3.282	1.643	1.237
67500.0	0.129	3.656	6.398	906.738	0.894	0.590	5.146	3.327	1.653	1.326
70000.0	0.123	3.183	6.389	904.469	0.914	0.622	5.092	3.367	1.659	1.416

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Table C.28 [ ] Exposure-Dependent 0% Void Isotopics (kg/MTU Initial)

Exposure MWd/MTU	U-234	U-235	U-236	U-238	NP-237	PU-238	PU-239	PU-240	PU-241	PU-242
0.0	0.354	44.250	0.000	955.396	0.000	0.000	0.000	0.000	0.000	0.000
100.0	0.354	44.130	0.022	955.348	0.000	0.000	0.017	0.000	0.000	0.000
500.0	0.352	43.652	0.110	955.156	0.001	0.000	0.173	0.001	0.000	0.000
1000.0	0.350	43.061	0.219	954.915	0.003	0.000	0.373	0.006	0.000	0.000
1500.0	0.348	42.478	0.325	954.675	0.005	0.000	0.563	0.013	0.001	0.000
2000.0	0.347	41.902	0.431	954.435	0.007	0.000	0.745	0.023	0.002	0.000
2500.0	0.345	41.333	0.534	954.195	0.009	0.000	0.918	0.036	0.004	0.000
3000.0	0.343	40.771	0.636	953.955	0.012	0.000	1.083	0.050	0.006	0.000
3500.0	0.341	40.214	0.737	953.716	0.015	0.000	1.239	0.067	0.009	0.000
4000.0	0.339	39.664	0.836	953.477	0.017	0.001	1.389	0.084	0.013	0.000
4500.0	0.338	39.119	0.934	953.238	0.020	0.001	1.531	0.104	0.018	0.001
5000.0	0.336	38.580	1.031	953.000	0.023	0.001	1.666	0.124	0.023	0.001
5500.0	0.334	38.047	1.127	952.763	0.026	0.001	1.794	0.146	0.030	0.001
6000.0	0.332	37.518	1.221	952.525	0.030	0.001	1.917	0.169	0.037	0.001
6500.0	0.331	36.995	1.314	952.289	0.033	0.002	2.033	0.193	0.044	0.002
7000.0	0.329	36.476	1.406	952.053	0.037	0.002	2.143	0.217	0.053	0.002
7500.0	0.327	35.962	1.496	951.817	0.040	0.002	2.247	0.242	0.062	0.003
8000.0	0.326	35.453	1.586	951.582	0.044	0.003	2.346	0.268	0.072	0.004
8500.0	0.324	34.948	1.674	951.347	0.048	0.003	2.440	0.295	0.082	0.005
9000.0	0.322	34.447	1.762	951.114	0.051	0.004	2.529	0.322	0.093	0.006
9500.0	0.320	33.950	1.848	950.880	0.055	0.004	2.613	0.350	0.104	0.007
10000.0	0.319	33.457	1.934	950.648	0.059	0.004	2.692	0.378	0.116	0.008
10500.0	0.317	32.968	2.018	950.416	0.063	0.005	2.766	0.406	0.128	0.010
11000.0	0.316	32.483	2.101	950.185	0.068	0.006	2.836	0.435	0.141	0.011
11500.0	0.314	32.001	2.184	949.955	0.072	0.006	2.902	0.464	0.153	0.013
12000.0	0.312	31.523	2.265	949.726	0.076	0.007	2.964	0.493	0.166	0.015
12500.0	0.311	31.048	2.346	949.497	0.080	0.007	3.022	0.523	0.180	0.017
13000.0	0.309	30.576	2.425	949.269	0.085	0.008	3.076	0.552	0.193	0.019
13500.0	0.308	30.108	2.504	949.040	0.089	0.009	3.128	0.582	0.207	0.021
14000.0	0.306	29.643	2.582	948.812	0.094	0.010	3.176	0.612	0.220	0.024
14500.0	0.304	29.181	2.659	948.584	0.099	0.010	3.221	0.643	0.234	0.026
15000.0	0.303	28.723	2.736	948.355	0.103	0.011	3.264	0.673	0.248	0.029
15500.0	0.301	28.267	2.811	948.126	0.108	0.012	3.305	0.703	0.262	0.032
16000.0	0.300	27.815	2.886	947.895	0.113	0.013	3.343	0.733	0.277	0.035
16500.0	0.298	27.367	2.960	947.664	0.118	0.014	3.379	0.764	0.291	0.038
17000.0	0.297	26.922	3.033	947.431	0.123	0.015	3.414	0.794	0.306	0.042
17500.0	0.295	26.480	3.106	947.198	0.128	0.016	3.446	0.824	0.320	0.046
20000.0	0.287	24.323	3.457	946.009	0.154	0.022	3.583	0.976	0.396	0.067
22500.0	0.279	22.250	3.789	944.786	0.182	0.030	3.682	1.125	0.471	0.094
25000.0	0.271	20.263	4.101	943.525	0.211	0.038	3.748	1.273	0.545	0.126
27500.0	0.263	18.361	4.394	942.224	0.241	0.049	3.786	1.416	0.616	0.164
30000.0	0.255	16.547	4.668	940.879	0.273	0.061	3.799	1.555	0.682	0.208
32500.0	0.247	14.822	4.922	939.488	0.305	0.074	3.792	1.689	0.742	0.258
35000.0	0.239	13.188	5.156	938.046	0.337	0.089	3.768	1.816	0.797	0.314
37500.0	0.231	11.647	5.370	936.548	0.371	0.106	3.730	1.936	0.845	0.377
40000.0	0.222	10.203	5.563	934.991	0.404	0.124	3.681	2.048	0.887	0.445
42500.0	0.214	8.860	5.735	933.370	0.436	0.144	3.624	2.151	0.923	0.520
45000.0	0.206	7.619	5.886	931.680	0.469	0.165	3.562	2.245	0.951	0.601
47500.0	0.197	6.485	6.014	929.916	0.500	0.187	3.497	2.330	0.974	0.687
50000.0	0.189	5.459	6.121	928.076	0.531	0.209	3.431	2.405	0.991	0.779
52500.0	0.180	4.543	6.205	926.156	0.560	0.231	3.366	2.469	1.003	0.876
55000.0	0.172	3.736	6.267	924.154	0.587	0.254	3.304	2.524	1.011	0.977
57500.0	0.163	3.036	6.308	922.072	0.612	0.276	3.246	2.569	1.014	1.081
60000.0	0.155	2.438	6.329	919.910	0.636	0.297	3.193	2.605	1.015	1.189
62500.0	0.147	1.937	6.332	917.673	0.656	0.317	3.146	2.633	1.014	1.299
65000.0	0.139	1.524	6.317	915.366	0.675	0.335	3.104	2.654	1.011	1.409
67500.0	0.131	1.188	6.288	912.998	0.691	0.351	3.068	2.669	1.007	1.520
70000.0	0.124	0.920	6.247	910.577	0.705	0.366	3.037	2.678	1.002	1.630

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Table C.29 [ ] Exposure-Dependent 40% Void Isotopics (kg/MTU Initial)

Exposure MWd/MTU	U-234	U-235	U-236	U-238	NP-237	PU-238	PU-239	PU-240	PU-241	PU-242
0.0	0.354	44.250	0.000	955.396	0.000	0.000	0.000	0.000	0.000	0.000
100.0	0.354	44.130	0.023	955.341	0.000	0.000	0.020	0.000	0.000	0.000
500.0	0.352	43.654	0.114	955.119	0.002	0.000	0.198	0.001	0.000	0.000
1000.0	0.350	43.066	0.227	954.842	0.004	0.000	0.426	0.007	0.000	0.000
1500.0	0.348	42.487	0.338	954.566	0.006	0.000	0.644	0.015	0.001	0.000
2000.0	0.346	41.916	0.446	954.290	0.009	0.000	0.851	0.027	0.003	0.000
2500.0	0.344	41.353	0.553	954.015	0.011	0.000	1.048	0.041	0.005	0.000
3000.0	0.342	40.798	0.658	953.741	0.014	0.000	1.235	0.057	0.008	0.000
3500.0	0.340	40.249	0.762	953.467	0.017	0.001	1.414	0.075	0.012	0.000
4000.0	0.338	39.707	0.864	953.193	0.021	0.001	1.583	0.095	0.017	0.000
4500.0	0.336	39.171	0.964	952.921	0.024	0.001	1.745	0.116	0.023	0.001
5000.0	0.334	38.642	1.063	952.649	0.028	0.001	1.899	0.138	0.030	0.001
5500.0	0.332	38.118	1.160	952.377	0.032	0.002	2.045	0.162	0.038	0.001
6000.0	0.330	37.601	1.256	952.106	0.036	0.002	2.184	0.187	0.047	0.002
6500.0	0.328	37.089	1.350	951.837	0.040	0.002	2.316	0.212	0.057	0.002
7000.0	0.326	36.582	1.444	951.567	0.044	0.003	2.442	0.239	0.068	0.003
7500.0	0.324	36.080	1.535	951.299	0.048	0.003	2.561	0.266	0.079	0.004
8000.0	0.322	35.583	1.626	951.031	0.052	0.004	2.674	0.294	0.091	0.005
8500.0	0.320	35.091	1.715	950.764	0.057	0.004	2.782	0.322	0.104	0.006
9000.0	0.318	34.604	1.803	950.498	0.062	0.005	2.883	0.351	0.117	0.007
9500.0	0.317	34.121	1.890	950.233	0.066	0.005	2.979	0.381	0.131	0.009
10000.0	0.315	33.643	1.976	949.969	0.071	0.006	3.070	0.411	0.145	0.010
10500.0	0.313	33.169	2.061	949.706	0.076	0.007	3.156	0.441	0.160	0.012
11000.0	0.311	32.698	2.144	949.444	0.081	0.007	3.237	0.472	0.175	0.014
11500.0	0.309	32.232	2.227	949.182	0.086	0.008	3.314	0.503	0.190	0.016
12000.0	0.308	31.770	2.308	948.922	0.092	0.009	3.386	0.534	0.206	0.018
12500.0	0.306	31.311	2.388	948.662	0.097	0.010	3.454	0.565	0.222	0.020
13000.0	0.304	30.855	2.468	948.403	0.102	0.011	3.517	0.597	0.238	0.022
13500.0	0.302	30.404	2.546	948.144	0.107	0.012	3.577	0.629	0.254	0.025
14000.0	0.301	29.955	2.624	947.886	0.113	0.013	3.634	0.661	0.270	0.028
14500.0	0.299	29.510	2.700	947.628	0.118	0.014	3.688	0.692	0.286	0.031
15000.0	0.297	29.069	2.776	947.369	0.124	0.015	3.739	0.724	0.303	0.034
15500.0	0.296	28.631	2.851	947.110	0.129	0.016	3.787	0.757	0.319	0.038
16000.0	0.294	28.197	2.925	946.851	0.135	0.017	3.832	0.789	0.336	0.041
16500.0	0.292	27.766	2.998	946.590	0.141	0.019	3.876	0.821	0.353	0.045
17000.0	0.291	27.338	3.071	946.329	0.146	0.020	3.917	0.853	0.370	0.049
17500.0	0.289	26.914	3.142	946.067	0.152	0.021	3.956	0.885	0.387	0.053
18000.0	0.287	26.494	3.213	945.803	0.158	0.023	3.993	0.917	0.404	0.057
20000.0	0.280	24.846	3.488	944.737	0.182	0.029	4.124	1.044	0.474	0.077
22500.0	0.272	22.866	3.813	943.374	0.214	0.039	4.251	1.201	0.561	0.105
25000.0	0.264	20.971	4.118	941.976	0.248	0.050	4.343	1.354	0.646	0.140
27500.0	0.256	19.161	4.403	940.543	0.283	0.063	4.404	1.504	0.727	0.180
30000.0	0.247	17.438	4.667	939.070	0.318	0.078	4.438	1.649	0.804	0.225
32500.0	0.239	15.799	4.913	937.558	0.354	0.095	4.450	1.788	0.874	0.276
35000.0	0.231	14.247	5.138	936.001	0.390	0.113	4.442	1.920	0.939	0.332
37500.0	0.223	12.781	5.344	934.400	0.427	0.134	4.419	2.046	0.997	0.394
40000.0	0.215	11.402	5.531	932.750	0.463	0.156	4.382	2.163	1.049	0.461
42500.0	0.207	10.111	5.697	931.049	0.498	0.179	4.335	2.272	1.093	0.532
45000.0	0.199	8.910	5.845	929.295	0.533	0.204	4.279	2.373	1.131	0.609
47500.0	0.191	7.798	5.972	927.486	0.567	0.230	4.218	2.464	1.162	0.690
50000.0	0.183	6.777	6.080	925.618	0.599	0.257	4.154	2.546	1.187	0.775
52500.0	0.175	5.846	6.169	923.690	0.631	0.284	4.087	2.619	1.207	0.863
55000.0	0.168	5.004	6.239	921.702	0.660	0.312	4.021	2.683	1.221	0.955
57500.0	0.160	4.250	6.290	919.653	0.688	0.339	3.956	2.738	1.231	1.050
60000.0	0.153	3.582	6.323	917.543	0.714	0.365	3.894	2.783	1.236	1.148
62500.0	0.146	2.996	6.340	915.374	0.737	0.391	3.835	2.821	1.238	1.247
65000.0	0.139	2.487	6.341	913.148	0.759	0.415	3.780	2.851	1.238	1.347
67500.0	0.132	2.050	6.327	910.869	0.778	0.438	3.730	2.875	1.235	1.448
70000.0	0.126	1.680	6.300	908.540	0.795	0.459	3.685	2.892	1.231	1.548

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Table C.30 [ ] Exposure-Dependent 80% Void Isotopics (kg/MTU Initial)

Exposure MWd/MTU	U-234	U-235	U-236	U-238	NP-237	PU-238	PU-239	PU-240	PU-241	PU-242
0.0	0.354	44.250	0.000	955.396	0.000	0.000	0.000	0.000	0.000	0.000
100.0	0.354	44.131	0.024	955.331	0.000	0.000	0.023	0.000	0.000	0.000
500.0	0.351	43.658	0.121	955.069	0.002	0.000	0.232	0.002	0.000	0.000
1000.0	0.349	43.075	0.239	954.741	0.005	0.000	0.499	0.008	0.000	0.000
1500.0	0.347	42.503	0.355	954.415	0.008	0.000	0.753	0.018	0.002	0.000
2000.0	0.344	41.940	0.468	954.090	0.011	0.000	0.995	0.031	0.004	0.000
2500.0	0.342	41.385	0.580	953.765	0.014	0.000	1.225	0.046	0.007	0.000
3000.0	0.339	40.839	0.689	953.442	0.018	0.001	1.445	0.064	0.011	0.000
3500.0	0.337	40.301	0.797	953.119	0.022	0.001	1.654	0.084	0.017	0.000
4000.0	0.335	39.771	0.903	952.797	0.026	0.001	1.853	0.106	0.024	0.001
4500.0	0.332	39.247	1.006	952.476	0.030	0.001	2.043	0.129	0.032	0.001
5000.0	0.330	38.731	1.108	952.156	0.035	0.002	2.224	0.153	0.041	0.001
5500.0	0.328	38.221	1.209	951.837	0.040	0.002	2.396	0.179	0.051	0.002
6000.0	0.326	37.718	1.308	951.519	0.045	0.003	2.561	0.206	0.063	0.002
6500.0	0.323	37.220	1.405	951.201	0.050	0.003	2.718	0.233	0.075	0.003
7000.0	0.321	36.729	1.500	950.885	0.055	0.004	2.868	0.262	0.089	0.004
7500.0	0.319	36.243	1.594	950.570	0.061	0.005	3.010	0.291	0.103	0.005
8000.0	0.317	35.763	1.687	950.255	0.066	0.005	3.146	0.321	0.118	0.006
8500.0	0.315	35.287	1.778	949.942	0.072	0.006	3.275	0.351	0.134	0.007
9000.0	0.313	34.818	1.868	949.629	0.078	0.007	3.398	0.382	0.150	0.009
9500.0	0.311	34.353	1.956	949.318	0.084	0.008	3.515	0.414	0.167	0.010
10000.0	0.309	33.892	2.043	949.007	0.090	0.009	3.626	0.446	0.184	0.012
10500.0	0.306	33.437	2.129	948.698	0.096	0.010	3.732	0.479	0.202	0.014
11000.0	0.304	32.985	2.214	948.390	0.102	0.011	3.832	0.512	0.220	0.016
11500.0	0.302	32.539	2.297	948.083	0.108	0.012	3.927	0.545	0.238	0.018
12000.0	0.300	32.096	2.379	947.776	0.115	0.013	4.018	0.578	0.257	0.021
12500.0	0.298	31.657	2.460	947.471	0.121	0.014	4.103	0.612	0.276	0.024
13000.0	0.297	31.223	2.540	947.167	0.128	0.016	4.184	0.646	0.295	0.026
13500.0	0.295	30.792	2.619	946.863	0.134	0.017	4.261	0.680	0.314	0.029
14000.0	0.293	30.365	2.697	946.560	0.141	0.019	4.335	0.715	0.334	0.032
14500.0	0.291	29.942	2.774	946.257	0.148	0.020	4.404	0.749	0.353	0.036
15000.0	0.289	29.522	2.850	945.954	0.154	0.022	4.470	0.784	0.373	0.039
15500.0	0.287	29.106	2.924	945.651	0.161	0.023	4.533	0.818	0.392	0.043
16000.0	0.285	28.694	2.998	945.348	0.168	0.025	4.593	0.853	0.412	0.047
16500.0	0.283	28.285	3.071	945.045	0.175	0.027	4.650	0.888	0.432	0.051
17000.0	0.281	27.880	3.143	944.741	0.182	0.029	4.705	0.923	0.452	0.055
17500.0	0.280	27.478	3.214	944.436	0.189	0.031	4.757	0.957	0.471	0.060
18000.0	0.278	27.080	3.284	944.130	0.196	0.033	4.807	0.992	0.491	0.064
18500.0	0.276	26.686	3.353	943.824	0.203	0.035	4.855	1.027	0.511	0.069
19000.0	0.274	26.295	3.421	943.516	0.211	0.037	4.901	1.061	0.531	0.074
19500.0	0.272	25.908	3.489	943.207	0.218	0.040	4.945	1.096	0.552	0.079
20000.0	0.271	25.524	3.555	942.898	0.225	0.042	4.987	1.131	0.572	0.085
22500.0	0.262	23.659	3.875	941.329	0.263	0.055	5.173	1.301	0.673	0.115
25000.0	0.253	21.880	4.173	939.729	0.302	0.070	5.320	1.469	0.772	0.149
27500.0	0.244	20.187	4.451	938.097	0.341	0.088	5.433	1.633	0.868	0.189
30000.0	0.236	18.576	4.708	936.430	0.381	0.108	5.517	1.792	0.960	0.233
32500.0	0.227	17.047	4.946	934.730	0.421	0.130	5.575	1.946	1.046	0.282
35000.0	0.219	15.598	5.163	932.994	0.462	0.155	5.611	2.094	1.127	0.335
37500.0	0.211	14.230	5.362	931.222	0.502	0.181	5.627	2.235	1.202	0.392
40000.0	0.203	12.940	5.541	929.412	0.541	0.210	5.627	2.369	1.270	0.454
42500.0	0.195	11.727	5.702	927.563	0.581	0.240	5.612	2.496	1.333	0.519
45000.0	0.188	10.592	5.844	925.676	0.619	0.272	5.586	2.615	1.388	0.587
47500.0	0.180	9.532	5.968	923.748	0.656	0.305	5.551	2.726	1.438	0.659
50000.0	0.173	8.546	6.075	921.781	0.692	0.340	5.508	2.828	1.482	0.734
52500.0	0.166	7.633	6.165	919.772	0.726	0.375	5.460	2.923	1.519	0.812
55000.0	0.159	6.791	6.238	917.724	0.758	0.411	5.407	3.008	1.552	0.892
57500.0	0.153	6.018	6.296	915.634	0.789	0.448	5.352	3.086	1.579	0.975
60000.0	0.146	5.312	6.338	913.505	0.818	0.484	5.295	3.155	1.601	1.059
62500.0	0.140	4.671	6.366	911.337	0.845	0.519	5.238	3.216	1.618	1.146
65000.0	0.134	4.091	6.381	909.131	0.869	0.554	5.182	3.270	1.632	1.234
67500.0	0.129	3.570	6.382	906.888	0.892	0.588	5.127	3.317	1.643	1.323
70000.0	0.123	3.104	6.372	904.610	0.912	0.620	5.074	3.357	1.650	1.412

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Table C.31 [ ] Exposure-Dependent 0% Void Isotopics (kg/MTU Initial)

Exposure MWd/MTU	U-234	U-235	U-236	U-238	NP-237	PU-238	PU-239	PU-240	PU-241	PU-242
0.0	0.362	45.231	0.000	954.407	0.000	0.000	0.000	0.000	0.000	0.000
100.0	0.361	45.111	0.023	954.356	0.000	0.000	0.020	0.000	0.000	0.000
500.0	0.360	44.633	0.112	954.151	0.002	0.000	0.189	0.001	0.000	0.000
1000.0	0.358	44.044	0.223	953.894	0.003	0.000	0.402	0.006	0.000	0.000
1500.0	0.356	43.462	0.332	953.636	0.005	0.000	0.606	0.014	0.001	0.000
2000.0	0.354	42.888	0.439	953.379	0.008	0.000	0.800	0.025	0.002	0.000
2500.0	0.352	42.320	0.545	953.121	0.010	0.000	0.986	0.038	0.004	0.000
3000.0	0.350	41.760	0.649	952.863	0.013	0.000	1.164	0.053	0.007	0.000
3500.0	0.348	41.207	0.752	952.604	0.016	0.000	1.334	0.070	0.010	0.000
4000.0	0.346	40.660	0.853	952.345	0.019	0.001	1.497	0.088	0.015	0.000
4500.0	0.344	40.119	0.953	952.086	0.022	0.001	1.653	0.109	0.020	0.001
5000.0	0.342	39.583	1.051	951.827	0.025	0.001	1.802	0.130	0.026	0.001
5500.0	0.340	39.054	1.148	951.568	0.029	0.001	1.944	0.152	0.034	0.001
6000.0	0.338	38.531	1.244	951.308	0.033	0.002	2.081	0.176	0.042	0.002
6500.0	0.337	38.013	1.339	951.048	0.036	0.002	2.211	0.200	0.050	0.002
7000.0	0.335	37.500	1.432	950.787	0.040	0.002	2.336	0.226	0.060	0.003
7500.0	0.333	36.992	1.524	950.527	0.045	0.003	2.455	0.252	0.071	0.004
8000.0	0.331	36.489	1.615	950.266	0.049	0.003	2.569	0.279	0.082	0.004
8500.0	0.329	35.991	1.705	950.005	0.053	0.004	2.678	0.306	0.094	0.006
9000.0	0.327	35.498	1.794	949.744	0.058	0.004	2.781	0.334	0.106	0.007
9500.0	0.325	35.010	1.882	949.483	0.062	0.005	2.881	0.362	0.119	0.008
10000.0	0.324	34.526	1.968	949.222	0.067	0.005	2.975	0.391	0.133	0.009
10500.0	0.322	34.046	2.053	948.960	0.072	0.006	3.065	0.420	0.147	0.011
11000.0	0.320	33.571	2.138	948.698	0.077	0.007	3.151	0.450	0.162	0.013
11500.0	0.318	33.100	2.221	948.437	0.082	0.007	3.233	0.480	0.177	0.015
12000.0	0.316	32.633	2.303	948.175	0.087	0.008	3.310	0.510	0.192	0.017
12500.0	0.315	32.171	2.385	947.913	0.092	0.009	3.384	0.541	0.208	0.019
13000.0	0.313	31.712	2.465	947.651	0.098	0.010	3.454	0.572	0.224	0.021
13500.0	0.311	31.257	2.544	947.389	0.103	0.011	3.520	0.603	0.240	0.024
14000.0	0.309	30.806	2.623	947.127	0.108	0.012	3.583	0.634	0.256	0.027
14500.0	0.307	30.359	2.700	946.865	0.114	0.013	3.642	0.665	0.273	0.030
15000.0	0.306	29.916	2.776	946.603	0.120	0.014	3.698	0.697	0.290	0.033
15500.0	0.304	29.476	2.852	946.341	0.125	0.015	3.751	0.728	0.306	0.036
16000.0	0.302	29.039	2.927	946.079	0.131	0.016	3.800	0.760	0.323	0.040
16500.0	0.301	28.606	3.000	945.818	0.137	0.018	3.846	0.792	0.340	0.044
17000.0	0.299	28.176	3.073	945.556	0.143	0.019	3.890	0.824	0.357	0.048
17500.0	0.297	27.750	3.145	945.295	0.148	0.020	3.931	0.856	0.374	0.052
18000.0	0.295	27.326	3.217	945.033	0.154	0.022	3.968	0.888	0.391	0.056
18500.0	0.294	26.906	3.287	944.771	0.160	0.023	4.004	0.920	0.408	0.061
19000.0	0.292	26.489	3.357	944.509	0.166	0.025	4.037	0.951	0.424	0.065
19500.0	0.290	26.076	3.426	944.247	0.172	0.026	4.068	0.983	0.441	0.070
20000.0	0.289	25.665	3.494	943.984	0.178	0.028	4.097	1.015	0.458	0.075
20500.0	0.287	25.258	3.561	943.720	0.184	0.030	4.124	1.047	0.474	0.081
21000.0	0.285	24.854	3.627	943.455	0.190	0.031	4.150	1.078	0.491	0.086
21500.0	0.284	24.453	3.693	943.189	0.197	0.033	4.174	1.109	0.508	0.092
22000.0	0.282	24.055	3.758	942.922	0.203	0.035	4.196	1.141	0.524	0.098
22500.0	0.280	23.661	3.822	942.653	0.209	0.037	4.217	1.172	0.541	0.104
25000.0	0.272	21.740	4.131	941.290	0.242	0.048	4.303	1.324	0.623	0.138
27500.0	0.264	19.902	4.420	939.890	0.275	0.060	4.360	1.471	0.703	0.177
30000.0	0.256	18.148	4.690	938.451	0.310	0.075	4.391	1.614	0.778	0.222
32500.0	0.247	16.477	4.941	936.971	0.346	0.091	4.401	1.750	0.848	0.272
35000.0	0.239	14.891	5.172	935.449	0.381	0.109	4.393	1.879	0.912	0.328
37500.0	0.231	13.390	5.384	933.881	0.417	0.129	4.369	2.002	0.969	0.389
40000.0	0.223	11.976	5.577	932.265	0.453	0.151	4.332	2.117	1.020	0.455
42500.0	0.215	10.648	5.750	930.598	0.489	0.174	4.286	2.223	1.065	0.526
45000.0	0.207	9.409	5.904	928.877	0.524	0.199	4.231	2.322	1.102	0.602
47500.0	0.199	8.260	6.038	927.101	0.558	0.225	4.170	2.411	1.134	0.683
50000.0	0.191	7.200	6.153	925.267	0.592	0.251	4.106	2.492	1.159	0.768
52500.0	0.183	6.231	6.249	923.372	0.623	0.278	4.040	2.564	1.179	0.856
55000.0	0.175	5.351	6.325	921.417	0.654	0.305	3.974	2.627	1.193	0.948
57500.0	0.168	4.560	6.383	919.400	0.682	0.332	3.908	2.681	1.203	1.043
60000.0	0.160	3.856	6.423	917.321	0.709	0.359	3.845	2.726	1.209	1.141
62500.0	0.153	3.235	6.446	915.181	0.734	0.384	3.786	2.764	1.211	1.240
65000.0	0.146	2.694	6.453	912.983	0.756	0.409	3.730	2.794	1.211	1.340
67500.0	0.139	2.227	6.444	910.729	0.776	0.431	3.679	2.818	1.209	1.442
70000.0	0.132	1.829	6.422	908.424	0.794	0.452	3.633	2.836	1.204	1.543

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Table C.32 [ ] Exposure-Dependent 40% Void Isotopics (kg/MTU Initial)

Exposure MWd/MTU	U-234	U-235	U-236	U-238	NP-237	PU-238	PU-239	PU-240	PU-241	PU-242
0.0	0.362	45.231	0.000	954.407	0.000	0.000	0.000	0.000	0.000	0.000
100.0	0.361	45.112	0.023	954.349	0.000	0.000	0.023	0.000	0.000	0.000
500.0	0.360	44.636	0.117	954.115	0.002	0.000	0.214	0.002	0.000	0.000
1000.0	0.357	44.049	0.231	953.823	0.004	0.000	0.454	0.007	0.000	0.000
1500.0	0.355	43.471	0.344	953.530	0.006	0.000	0.684	0.016	0.001	0.000
2000.0	0.353	42.902	0.455	953.237	0.009	0.000	0.904	0.028	0.003	0.000
2500.0	0.351	42.341	0.564	952.944	0.012	0.000	1.114	0.042	0.005	0.000
3000.0	0.349	41.787	0.671	952.651	0.015	0.000	1.315	0.059	0.009	0.000
3500.0	0.346	41.241	0.776	952.358	0.019	0.001	1.507	0.077	0.013	0.000
4000.0	0.344	40.702	0.880	952.065	0.022	0.001	1.691	0.098	0.019	0.000
4500.0	0.342	40.170	0.982	951.771	0.026	0.001	1.867	0.119	0.026	0.001
5000.0	0.340	39.644	1.083	951.477	0.030	0.001	2.035	0.142	0.033	0.001
5500.0	0.338	39.125	1.182	951.183	0.034	0.002	2.197	0.167	0.042	0.002
6000.0	0.336	38.611	1.280	950.889	0.039	0.002	2.351	0.192	0.052	0.002
6500.0	0.334	38.104	1.377	950.594	0.043	0.003	2.500	0.218	0.063	0.003
7000.0	0.332	37.602	1.472	950.300	0.048	0.003	2.642	0.245	0.075	0.003
7500.0	0.329	37.106	1.565	950.005	0.053	0.004	2.777	0.273	0.087	0.004
8000.0	0.327	36.616	1.658	949.710	0.058	0.004	2.908	0.301	0.101	0.005
8500.0	0.325	36.130	1.749	949.416	0.063	0.005	3.032	0.330	0.115	0.007
9000.0	0.323	35.650	1.838	949.121	0.068	0.005	3.151	0.360	0.130	0.008
9500.0	0.321	35.175	1.927	948.825	0.074	0.006	3.265	0.390	0.145	0.009
10000.0	0.319	34.705	2.014	948.530	0.079	0.007	3.374	0.420	0.161	0.011
10500.0	0.317	34.239	2.100	948.235	0.085	0.008	3.478	0.451	0.178	0.013
11000.0	0.315	33.778	2.185	947.940	0.091	0.009	3.578	0.482	0.195	0.015
11500.0	0.313	33.322	2.268	947.645	0.097	0.010	3.673	0.514	0.212	0.017
12000.0	0.311	32.870	2.351	947.350	0.103	0.011	3.764	0.546	0.230	0.019
12500.0	0.309	32.423	2.432	947.054	0.109	0.012	3.850	0.578	0.249	0.022
13000.0	0.308	31.980	2.513	946.759	0.116	0.013	3.932	0.611	0.267	0.025
13500.0	0.306	31.541	2.592	946.464	0.122	0.014	4.011	0.643	0.286	0.028
14000.0	0.304	31.106	2.670	946.169	0.128	0.016	4.085	0.676	0.305	0.031
14500.0	0.302	30.675	2.748	945.874	0.135	0.017	4.156	0.709	0.324	0.034
15000.0	0.300	30.247	2.824	945.579	0.141	0.018	4.223	0.742	0.343	0.038
15500.0	0.298	29.824	2.899	945.284	0.148	0.020	4.287	0.776	0.363	0.041
16000.0	0.296	29.404	2.973	944.990	0.154	0.021	4.347	0.809	0.382	0.045
16500.0	0.294	28.989	3.047	944.695	0.161	0.023	4.404	0.843	0.402	0.049
17000.0	0.292	28.576	3.119	944.401	0.168	0.025	4.458	0.876	0.421	0.054
17500.0	0.291	28.167	3.191	944.107	0.174	0.026	4.509	0.910	0.440	0.058
18000.0	0.289	27.762	3.261	943.813	0.181	0.028	4.557	0.943	0.460	0.063
18500.0	0.287	27.359	3.331	943.519	0.188	0.030	4.602	0.977	0.479	0.068
19000.0	0.285	26.961	3.400	943.224	0.195	0.032	4.644	1.011	0.498	0.073
19500.0	0.283	26.565	3.468	942.930	0.202	0.034	4.684	1.044	0.518	0.078
20000.0	0.282	26.173	3.535	942.635	0.209	0.036	4.722	1.078	0.537	0.083
20500.0	0.280	25.784	3.601	942.340	0.216	0.038	4.757	1.111	0.556	0.089
21000.0	0.278	25.398	3.666	942.044	0.223	0.041	4.791	1.144	0.575	0.095
21500.0	0.276	25.015	3.731	941.748	0.230	0.043	4.823	1.178	0.594	0.101
22000.0	0.275	24.636	3.795	941.450	0.237	0.045	4.853	1.211	0.613	0.107
22500.0	0.273	24.260	3.858	941.151	0.244	0.048	4.881	1.243	0.631	0.113
23000.0	0.271	23.888	3.920	940.852	0.252	0.050	4.908	1.276	0.650	0.120
23500.0	0.269	23.518	3.981	940.551	0.259	0.053	4.934	1.309	0.669	0.127
24000.0	0.268	23.152	4.041	940.248	0.266	0.056	4.958	1.341	0.687	0.134
25000.0	0.264	22.431	4.160	939.640	0.281	0.061	5.002	1.405	0.724	0.149
27500.0	0.256	20.683	4.442	938.095	0.319	0.077	5.092	1.561	0.815	0.189
30000.0	0.247	19.018	4.705	936.516	0.358	0.095	5.154	1.711	0.901	0.234
32500.0	0.239	17.435	4.948	934.900	0.397	0.115	5.193	1.856	0.983	0.284
35000.0	0.230	15.932	5.172	933.246	0.436	0.137	5.212	1.994	1.059	0.339
37500.0	0.222	14.509	5.377	931.554	0.475	0.161	5.212	2.125	1.128	0.398
40000.0	0.214	13.166	5.563	929.822	0.514	0.188	5.198	2.249	1.191	0.462
42500.0	0.207	11.902	5.731	928.049	0.552	0.216	5.172	2.365	1.248	0.530
45000.0	0.199	10.716	5.880	926.234	0.589	0.245	5.135	2.473	1.297	0.602
47500.0	0.191	9.608	6.012	924.375	0.626	0.276	5.090	2.573	1.341	0.677
50000.0	0.184	8.577	6.126	922.471	0.661	0.308	5.038	2.665	1.378	0.755
52500.0	0.177	7.623	6.222	920.522	0.695	0.340	4.982	2.748	1.410	0.837
55000.0	0.170	6.744	6.302	918.528	0.727	0.373	4.923	2.824	1.436	0.921
57500.0	0.163	5.938	6.365	916.488	0.758	0.406	4.863	2.891	1.457	1.007
60000.0	0.156	5.204	6.413	914.403	0.787	0.439	4.801	2.950	1.473	1.095
62500.0	0.150	4.539	6.445	912.273	0.814	0.472	4.741	3.002	1.485	1.184
65000.0	0.144	3.941	6.463	910.099	0.839	0.503	4.682	3.047	1.493	1.275
67500.0	0.137	3.406	6.468	907.883	0.862	0.533	4.625	3.084	1.498	1.367
70000.0	0.132	2.931	6.459	905.627	0.883	0.562	4.571	3.116	1.500	1.459

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Table C.33 [ ] Exposure-Dependent 80% Void Isotopics (kg/MTU Initial)

Exposure MWd/MTU	U-234	U-235	U-236	U-238	NP-237	PU-238	PU-239	PU-240	PU-241	PU-242
0.0	0.362	45.231	0.000	954.407	0.000	0.000	0.000	0.000	0.000	0.000
100.0	0.361	45.112	0.025	954.340	0.000	0.000	0.026	0.000	0.000	0.000
500.0	0.359	44.640	0.122	954.069	0.002	0.000	0.245	0.002	0.000	0.000
1000.0	0.357	44.058	0.242	953.730	0.005	0.000	0.521	0.008	0.000	0.000
1500.0	0.354	43.487	0.360	953.391	0.008	0.000	0.784	0.018	0.002	0.000
2000.0	0.352	42.925	0.475	953.052	0.011	0.000	1.037	0.031	0.004	0.000
2500.0	0.349	42.372	0.588	952.713	0.015	0.000	1.278	0.047	0.007	0.000
3000.0	0.347	41.828	0.699	952.374	0.019	0.001	1.509	0.065	0.012	0.000
3500.0	0.344	41.292	0.809	952.035	0.023	0.001	1.730	0.085	0.017	0.000
4000.0	0.342	40.763	0.916	951.696	0.027	0.001	1.942	0.107	0.025	0.001
4500.0	0.339	40.241	1.022	951.357	0.032	0.002	2.146	0.130	0.033	0.001
5000.0	0.337	39.727	1.126	951.018	0.037	0.002	2.342	0.154	0.043	0.001
5500.0	0.334	39.220	1.228	950.679	0.042	0.002	2.530	0.180	0.053	0.002
6000.0	0.332	38.719	1.329	950.339	0.047	0.003	2.710	0.206	0.065	0.002
6500.0	0.330	38.224	1.428	950.000	0.053	0.004	2.884	0.234	0.078	0.003
7000.0	0.327	37.736	1.525	949.660	0.059	0.004	3.051	0.262	0.092	0.004
7500.0	0.325	37.254	1.621	949.320	0.065	0.005	3.211	0.292	0.107	0.005
8000.0	0.323	36.777	1.716	948.980	0.071	0.006	3.365	0.322	0.123	0.006
8500.0	0.320	36.306	1.809	948.641	0.077	0.007	3.513	0.352	0.140	0.008
9000.0	0.318	35.841	1.900	948.301	0.084	0.008	3.655	0.383	0.157	0.009
9500.0	0.316	35.381	1.991	947.961	0.091	0.009	3.792	0.415	0.175	0.011
10000.0	0.313	34.926	2.080	947.621	0.097	0.010	3.923	0.447	0.194	0.013
10500.0	0.311	34.476	2.167	947.281	0.104	0.011	4.049	0.480	0.213	0.015
11000.0	0.309	34.032	2.254	946.941	0.111	0.012	4.170	0.513	0.232	0.017
11500.0	0.307	33.592	2.339	946.602	0.118	0.014	4.287	0.546	0.252	0.019
12000.0	0.305	33.157	2.422	946.262	0.125	0.015	4.398	0.580	0.273	0.022
12500.0	0.302	32.726	2.505	945.922	0.133	0.017	4.506	0.614	0.293	0.024
13000.0	0.300	32.300	2.587	945.583	0.140	0.018	4.608	0.649	0.315	0.027
13500.0	0.298	31.878	2.667	945.243	0.148	0.020	4.707	0.683	0.336	0.030
14000.0	0.296	31.461	2.746	944.904	0.155	0.022	4.801	0.718	0.357	0.034
14500.0	0.294	31.048	2.824	944.564	0.163	0.024	4.892	0.754	0.379	0.037
15000.0	0.292	30.639	2.901	944.225	0.171	0.025	4.978	0.789	0.401	0.041
15500.0	0.290	30.234	2.976	943.886	0.178	0.028	5.061	0.825	0.423	0.045
16000.0	0.288	29.833	3.051	943.547	0.186	0.030	5.140	0.860	0.445	0.049
16500.0	0.286	29.436	3.124	943.208	0.194	0.032	5.216	0.896	0.467	0.053
17000.0	0.284	29.043	3.197	942.869	0.202	0.034	5.288	0.932	0.489	0.057
17500.0	0.282	28.654	3.269	942.531	0.210	0.037	5.357	0.969	0.511	0.062
18000.0	0.280	28.268	3.339	942.193	0.218	0.039	5.423	1.005	0.533	0.067
18500.0	0.278	27.886	3.409	941.854	0.226	0.042	5.485	1.041	0.555	0.071
19000.0	0.276	27.507	3.477	941.516	0.234	0.044	5.545	1.077	0.577	0.077
19500.0	0.274	27.132	3.545	941.178	0.242	0.047	5.602	1.114	0.598	0.082
20000.0	0.272	26.760	3.612	940.839	0.251	0.050	5.656	1.150	0.620	0.087
20500.0	0.270	26.391	3.677	940.500	0.259	0.053	5.708	1.186	0.642	0.093
21000.0	0.268	26.026	3.742	940.161	0.267	0.056	5.757	1.223	0.663	0.099
21500.0	0.266	25.664	3.806	939.822	0.275	0.059	5.804	1.259	0.685	0.105
22000.0	0.264	25.306	3.869	939.482	0.283	0.062	5.849	1.295	0.706	0.111
22500.0	0.262	24.951	3.932	939.141	0.291	0.065	5.893	1.331	0.727	0.117
23000.0	0.261	24.599	3.993	938.800	0.300	0.069	5.934	1.367	0.749	0.124
23500.0	0.259	24.250	4.054	938.457	0.308	0.072	5.974	1.402	0.770	0.131
24000.0	0.257	23.905	4.113	938.114	0.316	0.076	6.011	1.438	0.791	0.138
24500.0	0.255	23.563	4.172	937.770	0.324	0.080	6.048	1.474	0.812	0.145
25000.0	0.253	23.224	4.230	937.424	0.333	0.083	6.083	1.509	0.833	0.152
25500.0	0.251	22.889	4.288	937.078	0.341	0.087	6.116	1.544	0.853	0.159
26000.0	0.250	22.557	4.344	936.730	0.349	0.091	6.148	1.579	0.874	0.167
26500.0	0.248	22.228	4.400	936.382	0.358	0.095	6.179	1.614	0.895	0.174
27000.0	0.246	21.902	4.454	936.032	0.366	0.100	6.208	1.648	0.915	0.182
27500.0	0.244	21.579	4.508	935.680	0.375	0.104	6.237	1.683	0.935	0.190
30000.0	0.236	20.014	4.766	933.905	0.417	0.127	6.361	1.851	1.035	0.233
32500.0	0.227	18.528	5.004	932.098	0.460	0.153	6.459	2.014	1.132	0.280
35000.0	0.219	17.118	5.223	930.258	0.502	0.181	6.534	2.171	1.223	0.330
37500.0	0.211	15.784	5.422	928.387	0.545	0.211	6.589	2.322	1.309	0.385
40000.0	0.203	14.523	5.603	926.482	0.587	0.244	6.626	2.466	1.389	0.442
42500.0	0.195	13.334	5.766	924.545	0.628	0.279	6.647	2.604	1.464	0.503
45000.0	0.188	12.215	5.912	922.574	0.668	0.316	6.656	2.734	1.533	0.567
47500.0	0.181	11.166	6.040	920.570	0.707	0.354	6.652	2.858	1.596	0.633
50000.0	0.174	10.183	6.152	918.534	0.745	0.394	6.639	2.974	1.654	0.702
52500.0	0.167	9.265	6.248	916.464	0.781	0.435	6.618	3.082	1.706	0.773
55000.0	0.161	8.411	6.329	914.362	0.816	0.477	6.591	3.184	1.753	0.847
57500.0	0.154	7.618	6.395	912.229	0.849	0.519	6.558	3.278	1.795	0.922
60000.0	0.149	6.883	6.447	910.064	0.880	0.562	6.521	3.365	1.833	0.999
62500.0	0.143	6.206	6.485	907.869	0.909	0.605	6.482	3.444	1.865	1.078
65000.0	0.138	5.582	6.512	905.644	0.936	0.647	6.440	3.517	1.894	1.158
67500.0	0.133	5.010	6.526	903.392	0.961	0.689	6.397	3.583	1.918	1.240
70000.0	0.128	4.487	6.529	901.112	0.984	0.730	6.354	3.643	1.940	1.322

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Table C.34 [ ] Exposure-Dependent 0% Void Isotopics (kg/MTU Initial)

Exposure MWd/MTU	U-234	U-235	U-236	U-238	NP-237	PU-238	PU-239	PU-240	PU-241	PU-242
0.0	0.355	44.360	0.000	955.285	0.000	0.000	0.000	0.000	0.000	0.000
100.0	0.355	44.240	0.022	955.236	0.000	0.000	0.018	0.000	0.000	0.000
500.0	0.353	43.762	0.111	955.038	0.001	0.000	0.178	0.001	0.000	0.000
1000.0	0.351	43.171	0.220	954.791	0.003	0.000	0.384	0.006	0.000	0.000
1500.0	0.349	42.588	0.328	954.543	0.005	0.000	0.580	0.014	0.001	0.000
2000.0	0.347	42.013	0.433	954.295	0.007	0.000	0.768	0.024	0.002	0.000
2500.0	0.345	41.444	0.538	954.047	0.010	0.000	0.947	0.037	0.004	0.000
3000.0	0.344	40.883	0.641	953.799	0.012	0.000	1.119	0.051	0.006	0.000
3500.0	0.342	40.327	0.742	953.551	0.015	0.000	1.282	0.068	0.010	0.000
4000.0	0.340	39.778	0.842	953.302	0.018	0.001	1.438	0.086	0.014	0.000
4500.0	0.338	39.235	0.941	953.054	0.021	0.001	1.587	0.106	0.019	0.001
5000.0	0.336	38.698	1.038	952.805	0.024	0.001	1.730	0.127	0.025	0.001
5500.0	0.334	38.167	1.134	952.557	0.027	0.001	1.866	0.149	0.031	0.001
6000.0	0.333	37.640	1.229	952.308	0.031	0.001	1.995	0.172	0.039	0.002
6500.0	0.331	37.119	1.323	952.059	0.034	0.002	2.119	0.196	0.047	0.002
7000.0	0.329	36.604	1.415	951.811	0.038	0.002	2.237	0.221	0.056	0.003
7500.0	0.327	36.093	1.506	951.562	0.042	0.002	2.349	0.247	0.066	0.003
8000.0	0.325	35.587	1.596	951.313	0.046	0.003	2.456	0.274	0.077	0.004
8500.0	0.324	35.086	1.685	951.065	0.050	0.003	2.558	0.301	0.088	0.005
9000.0	0.322	34.590	1.773	950.816	0.054	0.004	2.655	0.328	0.100	0.006
9500.0	0.320	34.098	1.860	950.568	0.058	0.004	2.747	0.356	0.112	0.007
10000.0	0.318	33.610	1.946	950.319	0.063	0.005	2.835	0.385	0.125	0.009
10500.0	0.317	33.127	2.030	950.071	0.067	0.005	2.917	0.414	0.138	0.010
11000.0	0.315	32.648	2.114	949.823	0.072	0.006	2.996	0.443	0.152	0.012
11500.0	0.313	32.172	2.196	949.575	0.076	0.007	3.071	0.473	0.166	0.014
12000.0	0.312	31.701	2.278	949.326	0.081	0.007	3.141	0.503	0.181	0.016
12500.0	0.310	31.234	2.359	949.079	0.086	0.008	3.207	0.534	0.196	0.018
13000.0	0.308	30.771	2.438	948.831	0.091	0.009	3.270	0.564	0.211	0.020
13500.0	0.307	30.311	2.517	948.584	0.096	0.010	3.329	0.595	0.226	0.023
14000.0	0.305	29.855	2.595	948.337	0.101	0.011	3.384	0.626	0.241	0.026
14500.0	0.303	29.402	2.672	948.090	0.106	0.012	3.436	0.657	0.257	0.028
15000.0	0.302	28.953	2.748	947.843	0.111	0.013	3.484	0.689	0.272	0.032
15500.0	0.300	28.507	2.823	947.597	0.116	0.014	3.530	0.720	0.288	0.035
16000.0	0.298	28.064	2.897	947.351	0.122	0.015	3.572	0.752	0.304	0.038
16500.0	0.297	27.625	2.971	947.106	0.127	0.016	3.611	0.783	0.319	0.042
17000.0	0.295	27.189	3.043	946.860	0.132	0.017	3.647	0.815	0.335	0.046
17500.0	0.293	26.755	3.115	946.615	0.137	0.018	3.681	0.846	0.350	0.049
18000.0	0.292	26.325	3.186	946.369	0.143	0.019	3.712	0.878	0.366	0.054
18500.0	0.290	25.898	3.257	946.123	0.148	0.021	3.741	0.910	0.382	0.058
19000.0	0.289	25.475	3.326	945.877	0.154	0.022	3.768	0.941	0.397	0.063
19500.0	0.287	25.054	3.395	945.629	0.159	0.023	3.794	0.972	0.413	0.067
20000.0	0.285	24.636	3.463	945.381	0.165	0.025	3.817	1.004	0.428	0.072
20500.0	0.284	24.222	3.530	945.131	0.170	0.026	3.839	1.035	0.444	0.077
21000.0	0.282	23.812	3.597	944.880	0.176	0.028	3.860	1.066	0.460	0.083
22500.0	0.277	22.599	3.791	944.119	0.193	0.033	3.913	1.158	0.506	0.100
25000.0	0.269	20.645	4.101	942.821	0.224	0.042	3.978	1.309	0.584	0.134
27500.0	0.261	18.775	4.391	941.483	0.255	0.053	4.015	1.454	0.658	0.173
30000.0	0.253	16.990	4.662	940.104	0.287	0.066	4.028	1.594	0.727	0.217
32500.0	0.245	15.292	4.913	938.680	0.321	0.081	4.022	1.729	0.791	0.268
35000.0	0.237	13.682	5.145	937.208	0.354	0.097	3.999	1.856	0.849	0.325
37500.0	0.229	12.163	5.357	935.685	0.388	0.114	3.962	1.976	0.901	0.388
40000.0	0.221	10.736	5.548	934.106	0.422	0.134	3.914	2.088	0.946	0.456
42500.0	0.213	9.403	5.720	932.469	0.456	0.154	3.858	2.191	0.984	0.530
45000.0	0.204	8.168	5.870	930.768	0.489	0.176	3.796	2.285	1.015	0.610
47500.0	0.196	7.033	6.000	929.001	0.521	0.199	3.730	2.370	1.040	0.695
50000.0	0.188	5.998	6.108	927.164	0.553	0.223	3.663	2.445	1.059	0.785
52500.0	0.180	5.066	6.195	925.255	0.583	0.247	3.596	2.511	1.073	0.879
55000.0	0.172	4.235	6.262	923.272	0.611	0.270	3.531	2.567	1.082	0.977
57500.0	0.164	3.504	6.308	921.215	0.637	0.294	3.470	2.613	1.087	1.079
60000.0	0.156	2.869	6.336	919.084	0.662	0.317	3.412	2.651	1.088	1.183
62500.0	0.148	2.327	6.345	916.884	0.684	0.338	3.360	2.681	1.087	1.289
65000.0	0.140	1.869	6.337	914.618	0.704	0.358	3.313	2.704	1.084	1.396
67500.0	0.133	1.489	6.314	912.291	0.721	0.377	3.272	2.720	1.080	1.504
70000.0	0.126	1.178	6.279	909.910	0.736	0.393	3.236	2.731	1.075	1.611

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Table C.35 [ ] Exposure-Dependent 40% Void Isotopics (kg/MTU Initial)

Exposure MWd/MTU	U-234	U-235	U-236	U-238	NP-237	PU-238	PU-239	PU-240	PU-241	PU-242
0.0	0.355	44.360	0.000	955.285	0.000	0.000	0.000	0.000	0.000	0.000
100.0	0.354	44.240	0.023	955.229	0.000	0.000	0.020	0.000	0.000	0.000
500.0	0.353	43.764	0.115	955.003	0.002	0.000	0.202	0.001	0.000	0.000
1000.0	0.351	43.176	0.228	954.721	0.004	0.000	0.435	0.007	0.000	0.000
1500.0	0.348	42.597	0.339	954.439	0.006	0.000	0.658	0.015	0.001	0.000
2000.0	0.346	42.026	0.449	954.156	0.009	0.000	0.870	0.027	0.003	0.000
2500.0	0.344	41.463	0.556	953.874	0.011	0.000	1.073	0.041	0.005	0.000
3000.0	0.342	40.908	0.662	953.592	0.014	0.000	1.266	0.057	0.008	0.000
3500.0	0.340	40.360	0.766	953.310	0.018	0.001	1.451	0.076	0.012	0.000
4000.0	0.338	39.819	0.869	953.028	0.021	0.001	1.628	0.096	0.018	0.000
4500.0	0.336	39.284	0.970	952.746	0.025	0.001	1.797	0.117	0.024	0.001
5000.0	0.334	38.756	1.069	952.464	0.028	0.001	1.958	0.140	0.032	0.001
5500.0	0.332	38.234	1.167	952.182	0.032	0.002	2.112	0.164	0.040	0.001
6000.0	0.330	37.718	1.264	951.901	0.036	0.002	2.259	0.189	0.049	0.002
6500.0	0.328	37.208	1.359	951.619	0.041	0.002	2.399	0.215	0.060	0.003
7000.0	0.326	36.703	1.453	951.337	0.045	0.003	2.533	0.241	0.071	0.003
7500.0	0.324	36.204	1.545	951.056	0.050	0.003	2.661	0.269	0.083	0.004
8000.0	0.322	35.710	1.637	950.775	0.054	0.004	2.783	0.297	0.096	0.005
8500.0	0.320	35.222	1.726	950.494	0.059	0.004	2.899	0.326	0.109	0.006
9000.0	0.318	34.738	1.815	950.213	0.064	0.005	3.009	0.355	0.123	0.008
9500.0	0.316	34.259	1.903	949.933	0.069	0.006	3.115	0.385	0.138	0.009
10000.0	0.314	33.785	1.989	949.652	0.074	0.006	3.215	0.415	0.153	0.011
10500.0	0.313	33.316	2.074	949.372	0.080	0.007	3.311	0.446	0.169	0.012
11000.0	0.311	32.851	2.158	949.092	0.085	0.008	3.401	0.477	0.186	0.014
11500.0	0.309	32.390	2.240	948.812	0.091	0.009	3.487	0.509	0.202	0.016
12000.0	0.307	31.934	2.322	948.533	0.096	0.010	3.569	0.540	0.219	0.019
12500.0	0.305	31.482	2.403	948.254	0.102	0.011	3.646	0.572	0.237	0.021
13000.0	0.303	31.034	2.482	947.976	0.108	0.012	3.719	0.605	0.254	0.024
13500.0	0.301	30.590	2.561	947.697	0.114	0.013	3.789	0.637	0.272	0.027
14000.0	0.300	30.149	2.638	947.419	0.120	0.014	3.854	0.670	0.290	0.030
14500.0	0.298	29.713	2.715	947.142	0.126	0.015	3.915	0.703	0.308	0.033
15000.0	0.296	29.280	2.790	946.865	0.132	0.016	3.973	0.736	0.326	0.036
15500.0	0.294	28.851	2.865	946.588	0.138	0.018	4.027	0.769	0.344	0.040
16000.0	0.292	28.425	2.939	946.312	0.144	0.019	4.078	0.802	0.362	0.044
16500.0	0.291	28.003	3.012	946.036	0.150	0.021	4.125	0.835	0.381	0.048
17000.0	0.289	27.584	3.084	945.761	0.156	0.022	4.169	0.869	0.399	0.052
17500.0	0.287	27.168	3.155	945.486	0.162	0.024	4.211	0.902	0.417	0.056
18000.0	0.286	26.756	3.225	945.211	0.168	0.025	4.250	0.935	0.435	0.061
18500.0	0.284	26.346	3.294	944.936	0.174	0.027	4.286	0.969	0.453	0.065
19000.0	0.282	25.940	3.363	944.660	0.181	0.028	4.320	1.002	0.471	0.070
19500.0	0.280	25.537	3.431	944.384	0.187	0.030	4.352	1.035	0.489	0.076
20000.0	0.279	25.138	3.498	944.107	0.193	0.032	4.382	1.068	0.507	0.081
20500.0	0.277	24.741	3.564	943.829	0.200	0.034	4.410	1.101	0.524	0.086
21000.0	0.275	24.348	3.629	943.551	0.206	0.036	4.436	1.134	0.542	0.092
21500.0	0.274	23.958	3.693	943.271	0.213	0.038	4.461	1.166	0.560	0.098
22000.0	0.272	23.572	3.757	942.990	0.219	0.040	4.484	1.199	0.578	0.104
22500.0	0.270	23.189	3.820	942.707	0.226	0.042	4.506	1.231	0.595	0.111
25000.0	0.262	21.324	4.122	941.275	0.260	0.054	4.597	1.389	0.683	0.146
27500.0	0.254	19.543	4.405	939.806	0.296	0.068	4.658	1.542	0.768	0.186
30000.0	0.245	17.845	4.667	938.301	0.332	0.084	4.693	1.689	0.848	0.232
32500.0	0.237	16.231	4.910	936.756	0.369	0.101	4.706	1.830	0.922	0.283
35000.0	0.229	14.700	5.134	935.170	0.406	0.121	4.701	1.964	0.991	0.340
37500.0	0.221	13.253	5.339	933.541	0.443	0.142	4.680	2.090	1.052	0.401
40000.0	0.213	11.891	5.524	931.867	0.480	0.166	4.646	2.209	1.107	0.468
42500.0	0.205	10.613	5.690	930.145	0.516	0.190	4.601	2.319	1.155	0.539
45000.0	0.197	9.420	5.837	928.373	0.551	0.216	4.549	2.421	1.196	0.614
47500.0	0.190	8.312	5.965	926.550	0.586	0.244	4.490	2.514	1.231	0.694
50000.0	0.182	7.290	6.075	924.674	0.619	0.272	4.426	2.598	1.259	0.777
52500.0	0.175	6.352	6.165	922.743	0.651	0.300	4.361	2.673	1.282	0.864
55000.0	0.167	5.500	6.238	920.757	0.681	0.329	4.295	2.739	1.299	0.954
57500.0	0.160	4.729	6.292	918.715	0.710	0.358	4.229	2.796	1.311	1.046
60000.0	0.153	4.040	6.330	916.617	0.737	0.386	4.165	2.845	1.319	1.141
62500.0	0.146	3.428	6.351	914.465	0.761	0.413	4.104	2.886	1.323	1.237
65000.0	0.139	2.890	6.357	912.260	0.784	0.440	4.047	2.919	1.324	1.334
67500.0	0.133	2.421	6.349	910.005	0.804	0.465	3.994	2.946	1.323	1.432
70000.0	0.126	2.017	6.328	907.704	0.822	0.488	3.944	2.966	1.320	1.531

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Table C.36 [ ] Exposure-Dependent 80% Void Isotopics (kg/MTU Initial)

Exposure MWd/MTU	U-234	U-235	U-236	U-238	NP-237	PU-238	PU-239	PU-240	PU-241	PU-242
0.0	0.355	44.360	0.000	955.285	0.000	0.000	0.000	0.000	0.000	0.000
100.0	0.354	44.241	0.024	955.220	0.000	0.000	0.023	0.000	0.000	0.000
500.0	0.352	43.767	0.121	954.957	0.002	0.000	0.232	0.002	0.000	0.000
1000.0	0.350	43.184	0.239	954.629	0.005	0.000	0.501	0.008	0.000	0.000
1500.0	0.347	42.611	0.355	954.301	0.007	0.000	0.757	0.017	0.002	0.000
2000.0	0.345	42.047	0.469	953.973	0.011	0.000	1.002	0.030	0.004	0.000
2500.0	0.343	41.492	0.581	953.645	0.014	0.000	1.236	0.046	0.007	0.000
3000.0	0.340	40.946	0.691	953.318	0.018	0.001	1.459	0.064	0.011	0.000
3500.0	0.338	40.407	0.799	952.991	0.022	0.001	1.672	0.084	0.017	0.000
4000.0	0.335	39.876	0.906	952.664	0.026	0.001	1.877	0.105	0.024	0.001
4500.0	0.333	39.352	1.010	952.338	0.030	0.001	2.072	0.128	0.032	0.001
5000.0	0.331	38.835	1.113	952.012	0.035	0.002	2.259	0.152	0.041	0.001
5500.0	0.328	38.325	1.214	951.685	0.040	0.002	2.438	0.178	0.052	0.002
6000.0	0.326	37.821	1.313	951.360	0.045	0.003	2.610	0.204	0.063	0.002
6500.0	0.324	37.324	1.411	951.034	0.050	0.003	2.774	0.232	0.076	0.003
7000.0	0.322	36.833	1.507	950.709	0.056	0.004	2.931	0.260	0.090	0.004
7500.0	0.319	36.348	1.602	950.384	0.061	0.005	3.081	0.289	0.104	0.005
8000.0	0.317	35.868	1.695	950.059	0.067	0.005	3.225	0.319	0.120	0.006
8500.0	0.315	35.394	1.787	949.734	0.073	0.006	3.363	0.350	0.136	0.007
9000.0	0.313	34.926	1.877	949.410	0.079	0.007	3.495	0.381	0.153	0.009
9500.0	0.311	34.462	1.967	949.087	0.085	0.008	3.621	0.412	0.170	0.010
10000.0	0.309	34.004	2.054	948.763	0.092	0.009	3.741	0.445	0.188	0.012
10500.0	0.306	33.551	2.141	948.440	0.098	0.010	3.856	0.477	0.207	0.014
11000.0	0.304	33.103	2.226	948.117	0.105	0.011	3.966	0.510	0.226	0.016
11500.0	0.302	32.659	2.310	947.795	0.111	0.012	4.071	0.543	0.245	0.019
12000.0	0.300	32.220	2.393	947.473	0.118	0.014	4.171	0.577	0.265	0.021
12500.0	0.298	31.785	2.475	947.152	0.125	0.015	4.267	0.611	0.285	0.024
13000.0	0.296	31.355	2.555	946.831	0.132	0.017	4.357	0.646	0.306	0.027
13500.0	0.294	30.929	2.634	946.510	0.139	0.018	4.444	0.680	0.326	0.030
14000.0	0.292	30.507	2.712	946.190	0.146	0.020	4.526	0.715	0.347	0.033
14500.0	0.290	30.089	2.789	945.870	0.153	0.021	4.604	0.750	0.368	0.037
15000.0	0.288	29.675	2.865	945.551	0.160	0.023	4.678	0.786	0.389	0.040
15500.0	0.286	29.265	2.940	945.232	0.167	0.025	4.748	0.821	0.410	0.044
16000.0	0.284	28.859	3.014	944.914	0.175	0.027	4.815	0.857	0.431	0.048
16500.0	0.282	28.457	3.087	944.596	0.182	0.029	4.878	0.892	0.452	0.052
17000.0	0.280	28.058	3.158	944.279	0.189	0.031	4.937	0.928	0.473	0.057
17500.0	0.279	27.662	3.229	943.962	0.197	0.033	4.993	0.964	0.493	0.061
18000.0	0.277	27.270	3.299	943.645	0.204	0.035	5.046	1.000	0.514	0.066
18500.0	0.275	26.882	3.368	943.329	0.212	0.037	5.096	1.036	0.535	0.071
19000.0	0.273	26.497	3.436	943.013	0.219	0.040	5.143	1.072	0.555	0.076
19500.0	0.271	26.115	3.503	942.696	0.227	0.042	5.188	1.108	0.576	0.081
20000.0	0.269	25.736	3.569	942.379	0.234	0.045	5.231	1.144	0.596	0.087
20500.0	0.267	25.361	3.634	942.062	0.242	0.047	5.271	1.179	0.617	0.093
21000.0	0.266	24.989	3.699	941.744	0.249	0.050	5.309	1.215	0.637	0.099
21500.0	0.264	24.621	3.762	941.426	0.257	0.053	5.345	1.250	0.657	0.105
22000.0	0.262	24.255	3.825	941.106	0.264	0.056	5.380	1.286	0.678	0.111
22500.0	0.260	23.893	3.887	940.785	0.272	0.058	5.413	1.321	0.698	0.117
23000.0	0.258	23.535	3.948	940.464	0.280	0.061	5.444	1.356	0.718	0.124
23500.0	0.257	23.180	4.008	940.141	0.288	0.065	5.474	1.391	0.738	0.131
25000.0	0.251	22.134	4.184	939.165	0.311	0.074	5.555	1.495	0.798	0.152
27500.0	0.243	20.457	4.461	937.513	0.351	0.093	5.666	1.663	0.895	0.192
30000.0	0.234	18.861	4.717	935.827	0.391	0.113	5.748	1.825	0.989	0.236
32500.0	0.226	17.345	4.954	934.108	0.431	0.136	5.805	1.982	1.078	0.285
35000.0	0.218	15.908	5.172	932.354	0.472	0.161	5.841	2.133	1.162	0.338
37500.0	0.210	14.549	5.370	930.565	0.512	0.188	5.859	2.276	1.239	0.395
40000.0	0.202	13.267	5.549	928.739	0.552	0.218	5.860	2.413	1.310	0.456
42500.0	0.194	12.062	5.710	926.876	0.591	0.249	5.848	2.542	1.375	0.520
45000.0	0.187	10.930	5.852	924.976	0.629	0.282	5.825	2.663	1.434	0.588
47500.0	0.179	9.873	5.977	923.037	0.666	0.316	5.792	2.776	1.486	0.659
50000.0	0.172	8.887	6.085	921.060	0.702	0.351	5.751	2.880	1.533	0.733
52500.0	0.165	7.973	6.176	919.043	0.737	0.388	5.705	2.977	1.573	0.810
55000.0	0.159	7.127	6.251	916.989	0.770	0.424	5.654	3.065	1.608	0.889
57500.0	0.152	6.349	6.311	914.895	0.801	0.462	5.600	3.145	1.638	0.970
60000.0	0.146	5.635	6.356	912.764	0.830	0.499	5.545	3.217	1.662	1.054
62500.0	0.140	4.984	6.386	910.596	0.857	0.536	5.489	3.281	1.683	1.139
65000.0	0.134	4.393	6.403	908.391	0.882	0.572	5.433	3.338	1.699	1.225
67500.0	0.129	3.859	6.407	906.152	0.905	0.607	5.379	3.388	1.711	1.313
70000.0	0.123	3.379	6.400	903.880	0.926	0.641	5.326	3.431	1.721	1.402

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Table C.37 [ ] Exposure-Dependent 0% Void Isotopics (kg/MTU Initial)

Exposure MWd/MTU	U-234	U-235	U-236	U-238	NP-237	PU-238	PU-239	PU-240	PU-241	PU-242
0.0	0.355	44.360	0.000	955.285	0.000	0.000	0.000	0.000	0.000	0.000
100.0	0.355	44.240	0.022	955.238	0.000	0.000	0.017	0.000	0.000	0.000
500.0	0.353	43.762	0.110	955.049	0.001	0.000	0.170	0.001	0.000	0.000
1000.0	0.351	43.171	0.218	954.812	0.003	0.000	0.367	0.006	0.000	0.000
1500.0	0.349	42.587	0.324	954.575	0.005	0.000	0.555	0.013	0.001	0.000
2000.0	0.348	42.011	0.429	954.337	0.007	0.000	0.735	0.023	0.002	0.000
2500.0	0.346	41.441	0.533	954.100	0.009	0.000	0.907	0.035	0.003	0.000
3000.0	0.344	40.878	0.635	953.862	0.012	0.000	1.070	0.049	0.006	0.000
3500.0	0.342	40.320	0.735	953.624	0.014	0.000	1.227	0.065	0.009	0.000
4000.0	0.340	39.769	0.835	953.386	0.017	0.001	1.377	0.083	0.013	0.000
4500.0	0.339	39.224	0.933	953.148	0.020	0.001	1.519	0.102	0.017	0.000
5000.0	0.337	38.684	1.030	952.910	0.023	0.001	1.656	0.122	0.023	0.001
5500.0	0.335	38.150	1.125	952.672	0.026	0.001	1.786	0.143	0.029	0.001
6000.0	0.333	37.621	1.220	952.433	0.029	0.001	1.910	0.166	0.036	0.001
6500.0	0.332	37.097	1.313	952.195	0.033	0.002	2.029	0.189	0.044	0.002
7000.0	0.330	36.578	1.405	951.956	0.036	0.002	2.141	0.214	0.052	0.002
7500.0	0.328	36.063	1.496	951.718	0.040	0.002	2.249	0.239	0.061	0.003
8000.0	0.326	35.554	1.586	951.479	0.044	0.003	2.351	0.264	0.071	0.004
8500.0	0.325	35.049	1.674	951.241	0.048	0.003	2.449	0.291	0.082	0.005
9000.0	0.323	34.548	1.762	951.002	0.052	0.004	2.541	0.318	0.093	0.006
9500.0	0.321	34.052	1.849	950.764	0.056	0.004	2.629	0.345	0.104	0.007
10000.0	0.320	33.560	1.934	950.525	0.060	0.004	2.713	0.373	0.116	0.008
10500.0	0.318	33.073	2.019	950.287	0.064	0.005	2.792	0.402	0.129	0.010
11000.0	0.316	32.589	2.103	950.048	0.068	0.006	2.867	0.430	0.142	0.011
11500.0	0.315	32.109	2.185	949.810	0.073	0.006	2.938	0.459	0.155	0.013
12000.0	0.313	31.633	2.267	949.572	0.077	0.007	3.005	0.489	0.168	0.015
12500.0	0.311	31.161	2.348	949.334	0.082	0.008	3.068	0.519	0.182	0.017
13000.0	0.310	30.693	2.427	949.096	0.087	0.008	3.127	0.548	0.196	0.019
13500.0	0.308	30.228	2.506	948.859	0.092	0.009	3.183	0.579	0.211	0.021
14000.0	0.306	29.767	2.584	948.621	0.096	0.010	3.236	0.609	0.225	0.024
14500.0	0.305	29.309	2.661	948.384	0.101	0.011	3.285	0.640	0.240	0.027
15000.0	0.303	28.854	2.738	948.147	0.106	0.012	3.330	0.670	0.255	0.030
15500.0	0.301	28.403	2.813	947.911	0.111	0.013	3.373	0.701	0.269	0.033
16000.0	0.300	27.954	2.888	947.675	0.116	0.014	3.412	0.732	0.284	0.036
16500.0	0.298	27.509	2.962	947.439	0.121	0.015	3.449	0.763	0.299	0.039
17000.0	0.297	27.067	3.035	947.203	0.126	0.016	3.483	0.794	0.314	0.043
17500.0	0.295	26.628	3.107	946.966	0.131	0.017	3.515	0.825	0.328	0.047
18000.0	0.293	26.192	3.178	946.730	0.136	0.018	3.544	0.856	0.343	0.051
18500.0	0.292	25.759	3.249	946.493	0.141	0.019	3.572	0.887	0.358	0.055
19000.0	0.290	25.330	3.319	946.255	0.147	0.020	3.597	0.918	0.373	0.059
19500.0	0.289	24.903	3.388	946.017	0.152	0.022	3.620	0.949	0.387	0.064
20000.0	0.287	24.480	3.457	945.777	0.157	0.023	3.642	0.980	0.402	0.069
20500.0	0.286	24.060	3.525	945.537	0.163	0.024	3.663	1.011	0.417	0.074
22500.0	0.279	22.412	3.788	944.559	0.185	0.030	3.731	1.132	0.477	0.095
25000.0	0.271	20.427	4.101	943.304	0.214	0.039	3.789	1.281	0.550	0.128
27500.0	0.263	18.526	4.394	942.008	0.244	0.050	3.819	1.425	0.620	0.166
30000.0	0.255	16.711	4.668	940.670	0.275	0.062	3.827	1.564	0.686	0.210
32500.0	0.247	14.983	4.923	939.285	0.307	0.075	3.816	1.698	0.747	0.260
35000.0	0.239	13.345	5.158	937.849	0.340	0.090	3.788	1.824	0.802	0.316
37500.0	0.231	11.799	5.373	936.359	0.372	0.107	3.748	1.943	0.850	0.378
40000.0	0.223	10.350	5.568	934.810	0.405	0.125	3.697	2.055	0.892	0.447
42500.0	0.214	8.998	5.741	933.198	0.438	0.145	3.638	2.157	0.927	0.521
45000.0	0.206	7.750	5.894	931.517	0.470	0.166	3.575	2.251	0.956	0.601
47500.0	0.198	6.606	6.024	929.764	0.502	0.187	3.509	2.334	0.978	0.687
50000.0	0.189	5.570	6.132	927.934	0.532	0.210	3.442	2.408	0.995	0.779
52500.0	0.181	4.642	6.218	926.025	0.561	0.232	3.376	2.472	1.007	0.875
55000.0	0.172	3.824	6.283	924.035	0.588	0.254	3.313	2.527	1.014	0.976
57500.0	0.164	3.113	6.326	921.963	0.614	0.276	3.254	2.571	1.018	1.080
60000.0	0.156	2.504	6.349	919.812	0.637	0.297	3.200	2.607	1.018	1.188
62500.0	0.148	1.993	6.353	917.585	0.658	0.317	3.151	2.635	1.017	1.297
65000.0	0.140	1.569	6.340	915.289	0.677	0.335	3.109	2.656	1.013	1.408
67500.0	0.132	1.225	6.313	912.929	0.693	0.352	3.072	2.670	1.009	1.518
70000.0	0.125	0.949	6.272	910.516	0.707	0.367	3.041	2.679	1.004	1.629

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Table C.38 [ ] Exposure-Dependent 40% Void Isotopics (kg/MTU Initial)

Exposure MWd/MTU	U-234	U-235	U-236	U-238	NP-237	PU-238	PU-239	PU-240	PU-241	PU-242
0.0	0.355	44.360	0.000	955.285	0.000	0.000	0.000	0.000	0.000	0.000
100.0	0.354	44.240	0.023	955.231	0.000	0.000	0.019	0.000	0.000	0.000
500.0	0.353	43.764	0.114	955.013	0.002	0.000	0.194	0.001	0.000	0.000
1000.0	0.351	43.176	0.226	954.740	0.004	0.000	0.420	0.006	0.000	0.000
1500.0	0.349	42.596	0.336	954.468	0.006	0.000	0.635	0.015	0.001	0.000
2000.0	0.347	42.025	0.445	954.195	0.008	0.000	0.840	0.026	0.002	0.000
2500.0	0.345	41.461	0.551	953.922	0.011	0.000	1.035	0.040	0.005	0.000
3000.0	0.343	40.904	0.656	953.650	0.014	0.000	1.222	0.055	0.008	0.000
3500.0	0.341	40.354	0.760	953.377	0.017	0.001	1.401	0.073	0.012	0.000
4000.0	0.339	39.812	0.862	953.104	0.020	0.001	1.571	0.093	0.017	0.000
4500.0	0.337	39.275	0.962	952.832	0.024	0.001	1.734	0.113	0.023	0.001
5000.0	0.335	38.745	1.061	952.559	0.028	0.001	1.889	0.136	0.030	0.001
5500.0	0.333	38.220	1.159	952.287	0.031	0.002	2.038	0.159	0.037	0.001
6000.0	0.331	37.702	1.255	952.015	0.035	0.002	2.179	0.183	0.046	0.002
6500.0	0.329	37.189	1.350	951.742	0.039	0.002	2.315	0.209	0.056	0.002
7000.0	0.327	36.682	1.443	951.470	0.044	0.003	2.444	0.235	0.067	0.003
7500.0	0.325	36.180	1.535	951.198	0.048	0.003	2.567	0.262	0.078	0.004
8000.0	0.323	35.683	1.626	950.927	0.053	0.004	2.684	0.289	0.090	0.005
8500.0	0.321	35.191	1.716	950.655	0.057	0.004	2.796	0.318	0.103	0.006
9000.0	0.319	34.704	1.804	950.383	0.062	0.005	2.902	0.346	0.117	0.007
9500.0	0.317	34.222	1.891	950.112	0.067	0.005	3.003	0.376	0.131	0.008
10000.0	0.315	33.744	1.977	949.841	0.072	0.006	3.099	0.406	0.145	0.010
10500.0	0.314	33.271	2.062	949.570	0.077	0.007	3.191	0.436	0.160	0.012
11000.0	0.312	32.802	2.146	949.300	0.082	0.007	3.278	0.466	0.176	0.014
11500.0	0.310	32.338	2.229	949.029	0.088	0.008	3.360	0.497	0.192	0.016
12000.0	0.308	31.878	2.310	948.759	0.093	0.009	3.438	0.528	0.208	0.018
12500.0	0.306	31.421	2.391	948.490	0.099	0.010	3.512	0.560	0.225	0.020
13000.0	0.304	30.969	2.471	948.220	0.104	0.011	3.581	0.592	0.241	0.023
13500.0	0.303	30.521	2.549	947.951	0.110	0.012	3.647	0.624	0.258	0.025
14000.0	0.301	30.076	2.627	947.682	0.116	0.013	3.709	0.656	0.275	0.028
14500.0	0.299	29.635	2.704	947.414	0.121	0.014	3.767	0.688	0.293	0.031
15000.0	0.297	29.198	2.779	947.146	0.127	0.015	3.821	0.721	0.310	0.035
15500.0	0.296	28.764	2.854	946.879	0.133	0.017	3.873	0.753	0.327	0.038
16000.0	0.294	28.333	2.928	946.612	0.139	0.018	3.920	0.786	0.345	0.042
16500.0	0.292	27.906	3.001	946.345	0.144	0.019	3.965	0.819	0.362	0.046
17000.0	0.291	27.482	3.073	946.079	0.150	0.021	4.006	0.852	0.379	0.050
17500.0	0.289	27.061	3.145	945.813	0.156	0.022	4.045	0.884	0.397	0.054
18000.0	0.287	26.644	3.215	945.547	0.162	0.024	4.081	0.917	0.414	0.058
18500.0	0.285	26.229	3.285	945.281	0.168	0.025	4.115	0.950	0.431	0.063
19000.0	0.284	25.818	3.354	945.014	0.174	0.027	4.147	0.983	0.448	0.068
19500.0	0.282	25.410	3.422	944.747	0.180	0.028	4.176	1.015	0.465	0.073
20000.0	0.280	25.005	3.489	944.478	0.187	0.030	4.204	1.048	0.483	0.078
20500.0	0.279	24.604	3.556	944.209	0.193	0.032	4.230	1.080	0.500	0.083
21000.0	0.277	24.206	3.621	943.939	0.199	0.034	4.254	1.112	0.517	0.089
21500.0	0.275	23.811	3.686	943.668	0.205	0.036	4.277	1.144	0.534	0.095
22500.0	0.272	23.031	3.814	943.121	0.218	0.040	4.319	1.208	0.568	0.107
25000.0	0.264	21.139	4.118	941.729	0.252	0.051	4.400	1.364	0.652	0.142
27500.0	0.256	19.332	4.403	940.302	0.286	0.064	4.452	1.514	0.733	0.181
30000.0	0.247	17.608	4.669	938.836	0.321	0.079	4.480	1.659	0.810	0.227
32500.0	0.239	15.968	4.914	937.329	0.357	0.096	4.486	1.798	0.881	0.278
35000.0	0.231	14.412	5.141	935.780	0.393	0.115	4.474	1.931	0.946	0.334
37500.0	0.223	12.942	5.348	934.186	0.429	0.135	4.447	2.056	1.004	0.395
40000.0	0.215	11.558	5.536	932.544	0.465	0.157	4.407	2.172	1.055	0.462
42500.0	0.207	10.262	5.704	930.852	0.500	0.181	4.357	2.281	1.100	0.533
45000.0	0.199	9.053	5.853	929.106	0.535	0.206	4.300	2.381	1.137	0.610
47500.0	0.191	7.933	5.982	927.306	0.569	0.232	4.237	2.472	1.169	0.690
50000.0	0.184	6.903	6.092	925.447	0.601	0.258	4.171	2.553	1.194	0.775
52500.0	0.176	5.962	6.182	923.530	0.632	0.285	4.103	2.625	1.213	0.863
55000.0	0.168	5.111	6.254	921.552	0.662	0.313	4.036	2.688	1.227	0.955
57500.0	0.161	4.347	6.307	919.513	0.690	0.340	3.969	2.743	1.236	1.050
60000.0	0.154	3.669	6.342	917.414	0.716	0.366	3.906	2.788	1.242	1.147
62500.0	0.146	3.073	6.361	915.255	0.739	0.392	3.846	2.825	1.243	1.246
65000.0	0.139	2.554	6.363	913.039	0.761	0.416	3.790	2.855	1.243	1.346
67500.0	0.133	2.108	6.351	910.769	0.780	0.439	3.739	2.878	1.240	1.447
70000.0	0.126	1.729	6.326	908.449	0.797	0.460	3.693	2.895	1.235	1.547

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Table C.39 [ ] Exposure-Dependent 80% Void Isotopics (kg/MTU Initial)

Exposure MWd/MTU	U-234	U-235	U-236	U-238	NP-237	PU-238	PU-239	PU-240	PU-241	PU-242
0.0	0.355	44.360	0.000	955.285	0.000	0.000	0.000	0.000	0.000	0.000
100.0	0.354	44.241	0.024	955.221	0.000	0.000	0.023	0.000	0.000	0.000
500.0	0.352	43.768	0.120	954.963	0.002	0.000	0.228	0.002	0.000	0.000
1000.0	0.350	43.185	0.238	954.640	0.005	0.000	0.492	0.008	0.000	0.000
1500.0	0.348	42.612	0.353	954.317	0.007	0.000	0.743	0.017	0.001	0.000
2000.0	0.345	42.048	0.467	953.995	0.011	0.000	0.983	0.030	0.003	0.000
2500.0	0.343	41.493	0.578	953.673	0.014	0.000	1.213	0.045	0.006	0.000
3000.0	0.340	40.946	0.687	953.351	0.018	0.001	1.432	0.063	0.011	0.000
3500.0	0.338	40.407	0.795	953.030	0.022	0.001	1.641	0.082	0.016	0.000
4000.0	0.336	39.875	0.901	952.709	0.026	0.001	1.841	0.104	0.023	0.001
4500.0	0.333	39.350	1.005	952.388	0.030	0.001	2.033	0.126	0.031	0.001
5000.0	0.331	38.833	1.107	952.067	0.035	0.002	2.216	0.150	0.040	0.001
5500.0	0.329	38.322	1.208	951.746	0.039	0.002	2.391	0.176	0.050	0.002
6000.0	0.327	37.817	1.307	951.426	0.044	0.003	2.559	0.202	0.061	0.002
6500.0	0.324	37.319	1.404	951.106	0.050	0.003	2.720	0.229	0.074	0.003
7000.0	0.322	36.827	1.500	950.786	0.055	0.004	2.874	0.257	0.087	0.004
7500.0	0.320	36.340	1.594	950.467	0.061	0.004	3.021	0.286	0.101	0.005
8000.0	0.318	35.859	1.687	950.147	0.066	0.005	3.161	0.315	0.116	0.006
8500.0	0.316	35.384	1.779	949.829	0.072	0.006	3.296	0.346	0.132	0.007
9000.0	0.313	34.914	1.869	949.510	0.078	0.007	3.425	0.376	0.149	0.009
9500.0	0.311	34.449	1.958	949.192	0.084	0.008	3.547	0.408	0.166	0.010
10000.0	0.309	33.989	2.046	948.874	0.091	0.009	3.665	0.440	0.183	0.012
10500.0	0.307	33.535	2.132	948.557	0.097	0.010	3.777	0.472	0.202	0.014
11000.0	0.305	33.084	2.217	948.240	0.103	0.011	3.884	0.504	0.220	0.016
11500.0	0.303	32.639	2.301	947.923	0.110	0.012	3.986	0.538	0.239	0.018
12000.0	0.301	32.198	2.384	947.607	0.117	0.013	4.083	0.571	0.259	0.021
12500.0	0.299	31.761	2.465	947.291	0.123	0.015	4.176	0.605	0.278	0.023
13000.0	0.297	31.329	2.545	946.976	0.130	0.016	4.264	0.639	0.298	0.026
13500.0	0.295	30.901	2.624	946.661	0.137	0.018	4.347	0.673	0.319	0.029
14000.0	0.293	30.477	2.703	946.347	0.144	0.019	4.427	0.708	0.339	0.033
14500.0	0.291	30.057	2.779	946.033	0.151	0.021	4.502	0.742	0.359	0.036
15000.0	0.289	29.641	2.855	945.719	0.158	0.022	4.574	0.777	0.380	0.040
15500.0	0.287	29.229	2.930	945.406	0.165	0.024	4.641	0.812	0.400	0.043
16000.0	0.285	28.821	3.004	945.094	0.172	0.026	4.705	0.848	0.421	0.047
16500.0	0.283	28.416	3.077	944.782	0.179	0.028	4.766	0.883	0.441	0.051
17000.0	0.281	28.014	3.149	944.471	0.187	0.030	4.822	0.918	0.462	0.056
17500.0	0.280	27.617	3.219	944.160	0.194	0.032	4.876	0.954	0.482	0.060
18000.0	0.278	27.222	3.289	943.849	0.201	0.034	4.927	0.990	0.503	0.065
18500.0	0.276	26.831	3.358	943.538	0.209	0.036	4.975	1.025	0.523	0.070
19000.0	0.274	26.443	3.426	943.228	0.216	0.039	5.020	1.061	0.543	0.075
19500.0	0.272	26.059	3.493	942.917	0.223	0.041	5.062	1.096	0.563	0.080
20000.0	0.270	25.678	3.560	942.606	0.231	0.043	5.103	1.131	0.583	0.086
20500.0	0.269	25.300	3.625	942.294	0.238	0.046	5.141	1.167	0.603	0.091
21000.0	0.267	24.925	3.690	941.982	0.246	0.048	5.177	1.202	0.623	0.097
21500.0	0.265	24.554	3.753	941.669	0.253	0.051	5.211	1.237	0.643	0.103
22000.0	0.263	24.186	3.816	941.355	0.261	0.054	5.244	1.272	0.663	0.109
22500.0	0.261	23.821	3.878	941.040	0.268	0.057	5.275	1.307	0.682	0.116
23000.0	0.260	23.460	3.940	940.723	0.276	0.060	5.305	1.341	0.702	0.122
23500.0	0.258	23.102	4.000	940.406	0.283	0.063	5.333	1.376	0.722	0.129
25000.0	0.253	22.048	4.176	939.446	0.307	0.072	5.409	1.478	0.780	0.151
27500.0	0.244	20.357	4.454	937.820	0.346	0.090	5.511	1.644	0.876	0.190
30000.0	0.236	18.748	4.712	936.160	0.385	0.110	5.586	1.805	0.968	0.234
32500.0	0.227	17.219	4.950	934.466	0.425	0.132	5.636	1.959	1.054	0.283
35000.0	0.219	15.769	5.168	932.737	0.465	0.157	5.665	2.108	1.136	0.336
37500.0	0.211	14.398	5.367	930.972	0.505	0.183	5.676	2.249	1.211	0.393
40000.0	0.203	13.104	5.548	929.169	0.545	0.212	5.671	2.383	1.279	0.455
42500.0	0.195	11.887	5.709	927.328	0.584	0.242	5.653	2.509	1.342	0.520
45000.0	0.188	10.746	5.853	925.449	0.622	0.274	5.623	2.628	1.398	0.588
47500.0	0.181	9.680	5.979	923.530	0.659	0.308	5.585	2.738	1.448	0.660
50000.0	0.173	8.687	6.087	921.570	0.694	0.342	5.540	2.840	1.491	0.735
52500.0	0.166	7.767	6.178	919.571	0.729	0.377	5.489	2.934	1.529	0.813
55000.0	0.160	6.917	6.254	917.531	0.761	0.413	5.434	3.019	1.561	0.893
57500.0	0.153	6.136	6.313	915.451	0.792	0.450	5.377	3.096	1.588	0.975
60000.0	0.147	5.422	6.357	913.330	0.821	0.486	5.319	3.164	1.610	1.060
62500.0	0.141	4.773	6.387	911.171	0.848	0.521	5.260	3.225	1.627	1.146
65000.0	0.135	4.185	6.403	908.974	0.872	0.556	5.202	3.279	1.641	1.234
67500.0	0.129	3.656	6.406	906.740	0.895	0.590	5.146	3.325	1.651	1.323
70000.0	0.124	3.182	6.397	904.471	0.915	0.622	5.091	3.364	1.658	1.413

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Table C.40 [ ] Exposure-Dependent 0% Void Isotopics (kg/MTU Initial)

Exposure MWd/MTU	U-234	U-235	U-236	U-238	NP-237	PU-238	PU-239	PU-240	PU-241	PU-242
0.0	0.355	44.359	0.000	955.286	0.000	0.000	0.000	0.000	0.000	0.000
100.0	0.355	44.239	0.022	955.240	0.000	0.000	0.017	0.000	0.000	0.000
500.0	0.353	43.760	0.110	955.052	0.001	0.000	0.169	0.001	0.000	0.000
1000.0	0.351	43.169	0.218	954.816	0.003	0.000	0.365	0.006	0.000	0.000
1500.0	0.349	42.585	0.324	954.581	0.005	0.000	0.552	0.013	0.001	0.000
2000.0	0.348	42.009	0.429	954.345	0.007	0.000	0.730	0.023	0.002	0.000
2500.0	0.346	41.439	0.532	954.110	0.009	0.000	0.900	0.035	0.003	0.000
3000.0	0.344	40.875	0.634	953.874	0.012	0.000	1.062	0.049	0.006	0.000
3500.0	0.342	40.317	0.735	953.639	0.014	0.000	1.217	0.065	0.009	0.000
4000.0	0.340	39.766	0.834	953.404	0.017	0.001	1.364	0.082	0.012	0.000
4500.0	0.339	39.220	0.932	953.169	0.020	0.001	1.505	0.101	0.017	0.000
5000.0	0.337	38.679	1.029	952.934	0.023	0.001	1.638	0.122	0.022	0.001
5500.0	0.335	38.144	1.124	952.700	0.026	0.001	1.766	0.143	0.028	0.001
6000.0	0.333	37.614	1.219	952.465	0.029	0.001	1.887	0.165	0.035	0.001
6500.0	0.332	37.089	1.312	952.231	0.032	0.002	2.003	0.189	0.043	0.002
7000.0	0.330	36.569	1.404	951.997	0.036	0.002	2.113	0.213	0.051	0.002
7500.0	0.328	36.054	1.494	951.763	0.039	0.002	2.217	0.238	0.060	0.003
8000.0	0.327	35.542	1.584	951.530	0.043	0.003	2.317	0.264	0.070	0.004
8500.0	0.325	35.036	1.673	951.297	0.047	0.003	2.411	0.290	0.080	0.005
9000.0	0.323	34.534	1.760	951.065	0.051	0.003	2.500	0.317	0.090	0.006
9500.0	0.322	34.035	1.847	950.832	0.054	0.004	2.584	0.344	0.102	0.007
10000.0	0.320	33.541	1.933	950.601	0.058	0.004	2.664	0.372	0.113	0.008
10500.0	0.318	33.051	2.017	950.369	0.063	0.005	2.740	0.400	0.125	0.009
11000.0	0.317	32.564	2.101	950.138	0.067	0.005	2.811	0.428	0.138	0.011
11500.0	0.315	32.081	2.183	949.908	0.071	0.006	2.879	0.457	0.150	0.013
12000.0	0.313	31.602	2.265	949.678	0.075	0.007	2.942	0.486	0.163	0.014
12500.0	0.312	31.126	2.346	949.449	0.080	0.007	3.001	0.516	0.176	0.016
13000.0	0.310	30.654	2.426	949.220	0.084	0.008	3.057	0.545	0.190	0.018
13500.0	0.309	30.185	2.505	948.991	0.089	0.009	3.110	0.575	0.203	0.021
14000.0	0.307	29.719	2.583	948.763	0.093	0.009	3.159	0.605	0.217	0.023
14500.0	0.305	29.256	2.660	948.534	0.098	0.010	3.206	0.635	0.231	0.026
15000.0	0.304	28.797	2.737	948.305	0.103	0.011	3.250	0.665	0.245	0.028
15500.0	0.302	28.341	2.813	948.075	0.107	0.012	3.291	0.695	0.259	0.031
16000.0	0.301	27.888	2.888	947.845	0.112	0.013	3.330	0.726	0.273	0.034
16500.0	0.299	27.439	2.962	947.614	0.117	0.014	3.367	0.756	0.288	0.038
17000.0	0.298	26.993	3.035	947.381	0.122	0.015	3.402	0.786	0.302	0.041
17500.0	0.296	26.550	3.108	947.148	0.127	0.016	3.435	0.817	0.317	0.045
20000.0	0.288	24.389	3.460	945.960	0.153	0.022	3.575	0.968	0.392	0.066
22500.0	0.280	22.312	3.792	944.738	0.181	0.029	3.676	1.118	0.468	0.092
25000.0	0.272	20.321	4.105	943.479	0.210	0.038	3.744	1.265	0.542	0.124
27500.0	0.264	18.415	4.399	942.180	0.241	0.048	3.783	1.409	0.612	0.162
30000.0	0.256	16.597	4.673	940.837	0.272	0.060	3.797	1.548	0.678	0.206
32500.0	0.248	14.868	4.928	939.447	0.304	0.074	3.791	1.682	0.739	0.256
35000.0	0.240	13.231	5.163	938.007	0.337	0.089	3.768	1.810	0.794	0.312
37500.0	0.231	11.687	5.377	936.511	0.370	0.106	3.730	1.930	0.843	0.374
40000.0	0.223	10.240	5.571	934.956	0.403	0.124	3.682	2.043	0.885	0.442
42500.0	0.215	8.893	5.744	933.337	0.436	0.144	3.626	2.146	0.921	0.517
45000.0	0.206	7.649	5.895	931.649	0.469	0.165	3.564	2.241	0.950	0.597
47500.0	0.198	6.511	6.024	929.887	0.500	0.186	3.499	2.326	0.973	0.683
50000.0	0.189	5.482	6.130	928.049	0.531	0.209	3.433	2.401	0.990	0.775
52500.0	0.181	4.563	6.215	926.131	0.560	0.231	3.368	2.466	1.002	0.871
55000.0	0.172	3.753	6.278	924.132	0.587	0.254	3.305	2.522	1.010	0.972
57500.0	0.164	3.050	6.319	922.051	0.613	0.276	3.247	2.567	1.014	1.077
60000.0	0.156	2.450	6.340	919.891	0.636	0.297	3.194	2.604	1.015	1.185
62500.0	0.148	1.947	6.343	917.655	0.657	0.317	3.147	2.632	1.014	1.294
65000.0	0.140	1.532	6.329	915.351	0.676	0.335	3.105	2.653	1.011	1.405
67500.0	0.132	1.194	6.300	912.984	0.692	0.352	3.069	2.668	1.007	1.516
70000.0	0.124	0.924	6.258	910.564	0.706	0.366	3.038	2.678	1.002	1.626

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Table C.41 [ ] Exposure-Dependent 40% Void Isotopics (kg/MTU Initial)

Exposure MWd/MTU	U-234	U-235	U-236	U-238	NP-237	PU-238	PU-239	PU-240	PU-241	PU-242
0.0	0.355	44.359	0.000	955.286	0.000	0.000	0.000	0.000	0.000	0.000
100.0	0.354	44.239	0.023	955.233	0.000	0.000	0.019	0.000	0.000	0.000
500.0	0.353	43.762	0.114	955.016	0.002	0.000	0.193	0.001	0.000	0.000
1000.0	0.351	43.174	0.226	954.746	0.004	0.000	0.417	0.006	0.000	0.000
1500.0	0.349	42.594	0.336	954.475	0.006	0.000	0.630	0.015	0.001	0.000
2000.0	0.347	42.022	0.444	954.205	0.008	0.000	0.833	0.026	0.002	0.000
2500.0	0.345	41.458	0.551	953.935	0.011	0.000	1.026	0.040	0.005	0.000
3000.0	0.343	40.901	0.656	953.666	0.014	0.000	1.210	0.055	0.008	0.000
3500.0	0.341	40.351	0.759	953.397	0.017	0.001	1.386	0.073	0.012	0.000
4000.0	0.339	39.808	0.861	953.128	0.020	0.001	1.554	0.092	0.016	0.000
4500.0	0.337	39.271	0.961	952.859	0.024	0.001	1.713	0.113	0.022	0.001
5000.0	0.335	38.740	1.060	952.591	0.027	0.001	1.866	0.135	0.029	0.001
5500.0	0.333	38.214	1.157	952.323	0.031	0.001	2.011	0.159	0.037	0.001
6000.0	0.331	37.695	1.253	952.056	0.035	0.002	2.149	0.183	0.046	0.002
6500.0	0.329	37.181	1.348	951.788	0.039	0.002	2.281	0.208	0.055	0.002
7000.0	0.327	36.672	1.441	951.522	0.043	0.003	2.406	0.234	0.066	0.003
7500.0	0.325	36.169	1.533	951.256	0.047	0.003	2.525	0.261	0.077	0.004
8000.0	0.323	35.671	1.624	950.990	0.051	0.003	2.639	0.289	0.088	0.005
8500.0	0.321	35.177	1.713	950.725	0.056	0.004	2.746	0.317	0.101	0.006
9000.0	0.320	34.688	1.802	950.460	0.061	0.005	2.849	0.345	0.114	0.007
9500.0	0.318	34.203	1.889	950.196	0.065	0.005	2.946	0.375	0.128	0.008
10000.0	0.316	33.723	1.975	949.933	0.070	0.006	3.038	0.404	0.142	0.010
10500.0	0.314	33.248	2.059	949.670	0.075	0.006	3.125	0.434	0.156	0.011
11000.0	0.312	32.776	2.143	949.408	0.080	0.007	3.207	0.465	0.171	0.013
11500.0	0.311	32.308	2.226	949.146	0.085	0.008	3.285	0.495	0.186	0.015
12000.0	0.309	31.845	2.307	948.885	0.091	0.009	3.359	0.526	0.202	0.017
12500.0	0.307	31.385	2.388	948.625	0.096	0.010	3.428	0.558	0.218	0.019
13000.0	0.305	30.928	2.468	948.365	0.101	0.011	3.494	0.589	0.233	0.022
13500.0	0.304	30.476	2.546	948.106	0.107	0.012	3.555	0.621	0.250	0.025
14000.0	0.302	30.026	2.624	947.847	0.112	0.013	3.613	0.652	0.266	0.027
14500.0	0.300	29.580	2.701	947.588	0.117	0.014	3.668	0.684	0.282	0.030
15000.0	0.298	29.138	2.777	947.330	0.123	0.015	3.720	0.716	0.299	0.033
15500.0	0.297	28.699	2.852	947.070	0.128	0.016	3.769	0.748	0.315	0.037
16000.0	0.295	28.264	2.926	946.811	0.134	0.017	3.816	0.780	0.332	0.040
16500.0	0.293	27.832	3.000	946.550	0.140	0.018	3.860	0.812	0.349	0.044
17000.0	0.292	27.404	3.072	946.289	0.146	0.020	3.902	0.844	0.366	0.048
17500.0	0.290	26.979	3.144	946.027	0.151	0.021	3.942	0.876	0.383	0.052
18000.0	0.288	26.557	3.215	945.764	0.157	0.023	3.980	0.908	0.400	0.056
18500.0	0.287	26.139	3.285	945.499	0.163	0.024	4.016	0.940	0.417	0.061
20000.0	0.281	24.906	3.491	944.698	0.182	0.029	4.113	1.035	0.469	0.075
22500.0	0.273	22.921	3.816	943.337	0.214	0.038	4.243	1.192	0.556	0.104
25000.0	0.265	21.022	4.122	941.940	0.247	0.049	4.336	1.346	0.641	0.138
27500.0	0.256	19.209	4.407	940.508	0.282	0.062	4.399	1.496	0.723	0.178
30000.0	0.248	17.481	4.673	939.037	0.318	0.077	4.435	1.641	0.799	0.223
32500.0	0.240	15.839	4.919	937.526	0.354	0.094	4.448	1.780	0.871	0.273
35000.0	0.232	14.283	5.145	935.971	0.390	0.113	4.441	1.913	0.936	0.329
37500.0	0.224	12.814	5.352	934.371	0.427	0.133	4.419	2.039	0.994	0.391
40000.0	0.216	11.432	5.538	932.722	0.463	0.155	4.382	2.157	1.046	0.457
42500.0	0.208	10.139	5.706	931.023	0.498	0.179	4.335	2.267	1.091	0.529
45000.0	0.200	8.935	5.853	929.271	0.533	0.204	4.281	2.368	1.129	0.605
47500.0	0.192	7.820	5.981	927.462	0.567	0.230	4.220	2.460	1.160	0.686
50000.0	0.184	6.796	6.090	925.596	0.600	0.257	4.155	2.543	1.186	0.771
52500.0	0.176	5.863	6.179	923.670	0.631	0.284	4.089	2.616	1.206	0.859
55000.0	0.168	5.019	6.249	921.683	0.661	0.311	4.023	2.680	1.220	0.951
57500.0	0.161	4.263	6.300	919.635	0.688	0.339	3.958	2.735	1.230	1.046
60000.0	0.154	3.593	6.334	917.526	0.714	0.365	3.895	2.781	1.236	1.143
62500.0	0.146	3.005	6.350	915.359	0.738	0.391	3.836	2.819	1.238	1.243
65000.0	0.139	2.495	6.351	913.134	0.760	0.415	3.782	2.850	1.238	1.343
67500.0	0.132	2.057	6.338	910.855	0.779	0.438	3.732	2.873	1.235	1.444
70000.0	0.126	1.685	6.311	908.527	0.796	0.459	3.686	2.891	1.231	1.544

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Table C.42 [ ] Exposure-Dependent 80% Void Isotopics (kg/MTU Initial)

Exposure MWd/MTU	U-234	U-235	U-236	U-238	NP-237	PU-238	PU-239	PU-240	PU-241	PU-242
0.0	0.355	44.359	0.000	955.286	0.000	0.000	0.000	0.000	0.000	0.000
100.0	0.354	44.240	0.024	955.223	0.000	0.000	0.023	0.000	0.000	0.000
500.0	0.352	43.766	0.120	954.967	0.002	0.000	0.226	0.002	0.000	0.000
1000.0	0.350	43.183	0.237	954.647	0.005	0.000	0.487	0.008	0.000	0.000
1500.0	0.348	42.610	0.353	954.328	0.007	0.000	0.736	0.017	0.001	0.000
2000.0	0.345	42.046	0.466	954.009	0.010	0.000	0.973	0.030	0.003	0.000
2500.0	0.343	41.490	0.577	953.691	0.014	0.000	1.199	0.045	0.006	0.000
3000.0	0.340	40.943	0.686	953.373	0.017	0.001	1.414	0.063	0.011	0.000
3500.0	0.338	40.403	0.794	953.056	0.021	0.001	1.620	0.082	0.016	0.000
4000.0	0.336	39.871	0.899	952.740	0.025	0.001	1.817	0.104	0.023	0.001
4500.0	0.334	39.346	1.003	952.424	0.030	0.001	2.004	0.126	0.030	0.001
5000.0	0.331	38.827	1.105	952.108	0.034	0.002	2.183	0.150	0.039	0.001
5500.0	0.329	38.316	1.205	951.793	0.039	0.002	2.355	0.176	0.049	0.002
6000.0	0.327	37.810	1.304	951.479	0.044	0.003	2.518	0.202	0.061	0.002
6500.0	0.325	37.311	1.401	951.165	0.049	0.003	2.674	0.229	0.073	0.003
7000.0	0.322	36.817	1.497	950.852	0.054	0.004	2.823	0.257	0.086	0.004
7500.0	0.320	36.330	1.591	950.539	0.059	0.004	2.966	0.286	0.100	0.005
8000.0	0.318	35.847	1.684	950.227	0.065	0.005	3.101	0.315	0.114	0.006
8500.0	0.316	35.370	1.775	949.916	0.071	0.006	3.231	0.345	0.130	0.007
9000.0	0.314	34.898	1.865	949.605	0.077	0.007	3.355	0.376	0.146	0.008
9500.0	0.312	34.431	1.954	949.295	0.083	0.008	3.472	0.407	0.162	0.010
10000.0	0.310	33.969	2.041	948.986	0.089	0.009	3.585	0.439	0.180	0.012
10500.0	0.308	33.512	2.127	948.677	0.095	0.010	3.691	0.471	0.197	0.014
11000.0	0.306	33.059	2.212	948.369	0.101	0.011	3.793	0.504	0.215	0.016
11500.0	0.304	32.611	2.296	948.062	0.107	0.012	3.890	0.537	0.233	0.018
12000.0	0.302	32.167	2.378	947.756	0.114	0.013	3.982	0.570	0.252	0.020
12500.0	0.300	31.727	2.460	947.450	0.120	0.014	4.069	0.604	0.271	0.023
13000.0	0.298	31.291	2.540	947.145	0.127	0.016	4.152	0.637	0.290	0.026
13500.0	0.296	30.859	2.619	946.841	0.133	0.017	4.231	0.671	0.309	0.029
14000.0	0.294	30.430	2.697	946.537	0.140	0.018	4.305	0.706	0.329	0.032
14500.0	0.292	30.006	2.774	946.234	0.147	0.020	4.376	0.740	0.348	0.035
15000.0	0.290	29.585	2.850	945.931	0.153	0.021	4.444	0.774	0.367	0.038
15500.0	0.288	29.168	2.925	945.628	0.160	0.023	4.508	0.809	0.387	0.042
16000.0	0.286	28.755	2.999	945.324	0.167	0.025	4.569	0.844	0.407	0.046
16500.0	0.284	28.345	3.072	945.021	0.174	0.027	4.628	0.878	0.427	0.050
17000.0	0.283	27.939	3.144	944.717	0.181	0.029	4.683	0.913	0.446	0.054
17500.0	0.281	27.536	3.216	944.412	0.188	0.031	4.737	0.948	0.466	0.059
18000.0	0.279	27.137	3.286	944.106	0.195	0.033	4.788	0.982	0.486	0.063
18500.0	0.277	26.742	3.355	943.800	0.203	0.035	4.836	1.017	0.506	0.068
19000.0	0.275	26.350	3.424	943.492	0.210	0.037	4.883	1.052	0.526	0.073
19500.0	0.273	25.962	3.491	943.184	0.217	0.039	4.928	1.086	0.546	0.078
20000.0	0.272	25.577	3.558	942.874	0.225	0.042	4.971	1.121	0.566	0.083
22500.0	0.263	23.707	3.878	941.307	0.263	0.055	5.160	1.291	0.667	0.113
25000.0	0.254	21.924	4.177	939.708	0.301	0.070	5.309	1.459	0.767	0.147
27500.0	0.245	20.226	4.456	938.076	0.341	0.088	5.425	1.623	0.863	0.187
30000.0	0.236	18.612	4.714	936.411	0.381	0.107	5.510	1.783	0.955	0.231
32500.0	0.228	17.079	4.952	934.712	0.421	0.130	5.570	1.937	1.041	0.279
35000.0	0.220	15.628	5.170	932.977	0.462	0.154	5.607	2.086	1.122	0.332
37500.0	0.212	14.256	5.369	931.205	0.502	0.181	5.624	2.227	1.198	0.389
40000.0	0.204	12.963	5.549	929.396	0.541	0.209	5.625	2.362	1.266	0.451
42500.0	0.196	11.748	5.710	927.549	0.581	0.239	5.611	2.490	1.329	0.515
45000.0	0.188	10.610	5.852	925.662	0.619	0.272	5.586	2.609	1.385	0.584
47500.0	0.181	9.548	5.977	923.735	0.656	0.305	5.551	2.720	1.435	0.656
50000.0	0.174	8.560	6.084	921.768	0.692	0.340	5.508	2.823	1.479	0.731
52500.0	0.167	7.645	6.174	919.760	0.726	0.375	5.460	2.918	1.517	0.808
55000.0	0.160	6.801	6.247	917.712	0.759	0.411	5.408	3.004	1.549	0.889
57500.0	0.153	6.027	6.305	915.624	0.790	0.447	5.352	3.082	1.577	0.971
60000.0	0.147	5.320	6.348	913.495	0.819	0.483	5.296	3.152	1.599	1.056
62500.0	0.141	4.677	6.376	911.327	0.846	0.519	5.239	3.214	1.617	1.142
65000.0	0.135	4.097	6.390	909.121	0.871	0.554	5.182	3.268	1.631	1.230
67500.0	0.129	3.575	6.392	906.879	0.893	0.588	5.128	3.315	1.642	1.319
70000.0	0.124	3.108	6.381	904.601	0.913	0.620	5.075	3.355	1.649	1.409

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Appendix D Lattice Enrichment Distribution Maps

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Figure D.1 [ ] Enrichment Distribution

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Figure D.2 [ ] Enrichment Distribution

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Figure D.3 [ ] Enrichment Distribution

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Figure D.4 [ ] Enrichment Distribution

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Figure D.5 [ ] Enrichment Distribution

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Figure D.6 [ ] Enrichment Distribution

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Figure D.7 [ ] Enrichment Distribution

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Figure D.8 [ ] Enrichment Distribution

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Figure D.9 [ ] Enrichment Distribution

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Figure D.10 [ ] Enrichment Distribution

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Figure D.11 [ ] Enrichment Distribution

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Figure D.12 [ ] Enrichment Distribution

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Figure D.13 [ ] Enrichment Distribution

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Figure D.14 [ ] Enrichment Distribution

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Figure D.15 [ ] Enrichment Distribution

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Figure D.16 [ ] Enrichment Distribution

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Figure D.17 [ ] Enrichment Distribution

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Figure D.18 [ ] Enrichment Distribution

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Figure D.19 [ ] Enrichment Distribution

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Figure D.20 [ ] Enrichment Distribution

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Figure D.21 [ ] Enrichment Distribution

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Figure D.22 [ ] Enrichment Distribution

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Figure D.23 [ ] Enrichment Distribution

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Figure D.24 [ ] Enrichment Distribution

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Figure D.25 [ ] Enrichment Distribution

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Figure D.26 [ ] Enrichment Distribution

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Figure D.27 [ ] Enrichment Distribution