

**Table 1-1a
PWR Fuel Specifications for Fuel to be Stored in the
Standardized NUHOMS®-24P DSC**

PHYSICAL PARAMETERS	
Fuel	Only intact, unconsolidated PWR fuel assemblies (with or without BPRAs) with the following requirements:
Physical Parameters (without BPRAs)	
Maximum Assembly Weight	1682 lbs
Number of Assemblies per DSC	≤ 24 intact assemblies
Fuel Cladding	Zircaloy-clad fuel with no known or suspected gross cladding breaches
Physical Parameters (with BPRAs)	
Maximum Assembly + BPRA Weight	1682 lbs
Number of Assemblies per DSC	≤ 24 intact assemblies
Number of BPRAs per DSC	≤ 24 BPRAs
Fuel Cladding	Zircaloy-clad fuel with no known or suspected gross cladding breaches
NUCLEAR PARAMETERS	
Maximum Planar Average Initial Fuel Enrichment	≤ 4.0 wt. % U-235 Soluble boron requirements per Figure 1-1
BPRA Cooling Time (Minimum)	5 years for B&W Designs 10 years for Westinghouse Designs
Minimum Cooling Time	Per Table 1-2a (without BPRAs) or per Table 1-2c (with BPRAs)
Maximum Burnup	45 GWd/MTU
Minimum Assembly Average Initial Enrichment	2.0 wt.% U-235
Decay Heat (Fuel + BPRA)	≤ 24.0 kW/DSC and ≤ 1.0 kW/FA
ALTERNATE NUCLEAR PARAMETERS	
Maximum Planar Average Initial Fuel Enrichment	≤ 4.0 wt. % U-235 Soluble boron requirements per Figure 1-1
Assembly Average Burnup	≤ 40,000 MWd/MTU
Decay Heat (Fuel + BPRA)	≤ 1.0 kW per assembly
Neutron Fuel Source	≤ 2.23 x 10 ⁸ n/sec per assy with spectrum bounded by that in Chapter 7 of UFSAR
Gamma (Fuel + BPRA) Source	≤ 7.45 x 10 ¹⁵ g/sec per assy with spectrum bounded by that in Chapter 7 of UFSAR

**Table 1-1b
BWR Fuel Specifications for Fuel to be Stored in the
Standardized NUHOMS®-52B DSC**

PHYSICAL PARAMETERS	
Fuel	Only intact, unconsolidated BWR fuel assemblies with the following requirements:
Physical Parameters	
Maximum Assembly Weight	725 lbs
Number of Assemblies per DSC	≤ 52 intact channeled assemblies
Fuel Cladding	Zircaloy-clad fuel with no known or suspected gross cladding breaches
NUCLEAR PARAMETERS	
Maximum Lattice Average Initial Enrichment	≤ 4.0 wt. % U-235
Minimum Cooling Time	Per Table 1-2b
Maximum Burnup	45 GWd/MTU
Minimum Assembly Average Initial Enrichment	2.0 wt.% U-235
Decay Heat	≤ 19.2 kW/DSC and ≤ 0.37 kW/FA
ALTERNATE NUCLEAR PARAMETERS	
Maximum Lattice Average Initial Enrichment	≤ 4.0 wt. % U-235
Assembly Average Burnup	≤ 35,000 MWd/MTU
Decay Heat	≤ 0.37 kW per assembly
Neutron Source	≤ 1.01 x 10 ⁸ n/sec per assy with spectrum bounded by that in Chapter 7 of UFSAR
Gamma Source	≤ 2.63 x 10 ¹⁵ g/sec per assy with spectrum bounded by that in Chapter 7 of UFSAR

Table 1-1c
BWR Fuel Specifications for Fuel to be Stored in the
Standardized NUHOMS®-61BT DSC

PHYSICAL PARAMETERS	
Fuel Design	7x7, 8x8, 9x9, or 10x10 BWR fuel assemblies
Cladding Material	Zircaloy
Fuel Damage	Cladding damage in excess of pinhole leaks or hairline cracks is not authorized to be stored as "Intact BWR Fuel."
Channels	Fuel may be stored with or without fuel channels.
Maximum Assembly Weight	705 lbs
RADIOLOGICAL PARAMETERS: ⁽³⁾ No interpolation of Radiological Parameters is permitted between Groups.	
Group 1	
Maximum Burnup	27,000 MWd/MTU
Minimum Cooling Time	5-years ⁽²⁾
Maximum Lattice Average Initial Enrichment	See Minimum Boron Loading below.
Minimum Initial Assembly Average Enrichment	2.0 wt. % U-235
Maximum Initial Uranium Content	198 kg/assembly
Maximum Decay Heat	300 W/assembly ⁽¹⁾
Group 2	
Maximum Burnup	35,000 MWd/MTU
Minimum Cooling Time	8-years ⁽²⁾
Maximum Lattice Average Initial Enrichment	See Minimum Boron Loading below.
Minimum Initial Assembly Average Enrichment	2.65 wt. % U-235
Maximum Initial Uranium Content	198 kg/assembly
Maximum Decay Heat	300 W/assembly ⁽¹⁾
Group 3	
Maximum Burnup	37,200 MWd/MTU
Minimum Cooling Time	6.5-years ⁽²⁾
Maximum Lattice Average Initial Enrichment	See Minimum Boron Loading below.
Minimum Initial Assembly Average Enrichment	3.38 wt. % U-235
Maximum Initial Uranium Content	198 kg/assembly
Maximum Decay Heat	300 W/assembly ⁽¹⁾
Group 4	
Maximum Burnup	40,000 MWd/MTU
Minimum Cooling Time	10-years ⁽²⁾
Maximum Lattice Average Initial Enrichment	See Minimum Boron Loading below.
Minimum Initial Assembly Average Enrichment	3.4 wt. % U-235
Maximum Initial Uranium Content	198 kg/assembly
Maximum Decay Heat	300 W/assembly ⁽¹⁾
MINIMUM BORON LOADING	
Maximum Lattice Average Enrichment (wt. % U-235)	Minimum B10 Content in Poison Plates (Basket Types ⁽⁴⁾)
4.4	Type C Basket
4.1	Type B Basket
3.7	Type A Basket
ALTERNATE RADIOLOGICAL PARAMETERS:	
Maximum Initial Enrichment:	See Minimum Boron Loading above
Maximum Decay Heat (excluding transfer in OS197L):	300 W/assembly ⁽¹⁾
Maximum Decay Heat for Transfer in OS197L	See Figure 1-29
Minimum Cooling Time	Per Table 1-2q. For transfer of a 61BT DSC in an OS197L TC, per Table 1-6a and Table 1-6b.
Maximum Burnup	40 GWd/MTU
Minimum Assembly Average Initial Enrichment	1.4 wt.% U-235

(1) For FANP9 9x9-2 fuel assemblies, the maximum decay heat is limited to 0.21 kW/assembly.

(2) For fuel assemblies containing BLEU fuel pellets, add 3.0 years additional cooling time to the minimum values shown in this table.

(3) When the OS197L TC is employed, apply the requirements of Table 1-6a, Table 1-6b and Figure 1-29.

(4) Basket Type is specified in Table 1-1k.

**Table 1-1d
(Not Used)**

**Table 1-1e
PWR Fuel Specifications for Fuel to be Stored in the NUHOMS®-32PT DSC**

<p>PHYSICAL PARAMETERS:</p> <p>Fuel Assembly Class</p>	<p>Intact (including reconstituted) or damaged or failed B&W 15x15, WE 17x17, CE 15x15, WE 15x15, CE 14x14 and WE 14x14 class PWR assemblies. Damaged and/or failed fuel assemblies beyond the definitions contained below are not authorized for storage.</p>
<p>Reconstituted Fuel Assemblies</p>	<p>≤ 32 assemblies per DSC with up to 56 irradiated stainless steel rods per assembly or unlimited number of lower enrichment UO₂ rods per assembly.</p>
<p>Fuel Damage</p>	<p>Damaged PWR fuel assemblies are assemblies containing missing or partial fuel rods, fuel rods with known or suspected cladding defects greater than hairline cracks or pinhole leaks. The extent of damage in the fuel assembly, including non-cladding damage, is to be limited in such a way that a fuel assembly is able to be handled by normal means. Missing fuel rods are allowed. The extent of damage in the fuel rods is to be limited such that a fuel pellet is not able to pass through the damaged cladding during handling and retrievability is ensured following normal and off-normal conditions. Damaged fuel assemblies shall also contain top and bottom end fittings or nozzles or tie plates depending on the fuel type.</p>
<p>Failed Fuel</p>	<p>Failed fuel is defined as ruptured fuel rods, severed fuel rods, loose fuel pellets, or fuel assemblies that cannot be handled by normal means. Fuel assemblies may contain breached rods, grossly breached rods, and other defects such as missing or partial rods, missing grid spacers, or damaged spacers to the extent that the assembly cannot be handled by normal means.</p> <p>Fuel debris and fuel rods that have been removed from a fuel assembly and placed in a rod storage basket are also considered as failed fuel. Loose fuel debris, not contained in a rod storage basket must be placed in a failed fuel can for storage, provided the size of the debris is larger than the failed fuel can screen mesh opening and it is located at a position of at least 4" above the top of the bottom shield plug of the DSC.</p> <p>Fuel debris may be associated with any type of UO₂ fuel provided that the maximum uranium content and initial enrichment limits are met. The total weight of each failed fuel can plus all its contents shall be less than 1682 lb.</p>

(continued)

Table 1-1e
PWR Fuel Specifications for Fuel to be Stored in the NUHOMS®-32PT DSC

Control Components (CCs)	<ul style="list-style-type: none"> Up to 32 CCs are authorized for storage in the 32PT DSC. Authorized CCs include Burnable Poison Rod Assemblies (BPRAs), Thimble Plug Assemblies (TPAs), Control Rod Assemblies (CRAs), Rod Cluster Control Assemblies (RCCAs), Axial Power Shaping Rod Assembly (APSRAs), Orifice Rod Assemblies (ORAs), Vibration Suppression Inserts (VSIs), Neutron Source Assemblies (NSAs) and Neutron Sources. Non-fuel hardware that are positioned within the fuel assembly after the fuel assembly is discharged from the core such as Guide Tube or Instrument Tube Tie Rods or Anchors, Guide Tube Inserts, BPRA Spacer Plates or devices that are positioned and operated within the fuel assembly during reactor operation such as those listed above are also considered as CCs. Design basis radiological characteristics for the CCs are listed in Table 1-1ee.
Maximum Assembly plus CC Weight	-1365 lbs for 32PT-S100 & 32PT-L100 System -1682 lbs for 32PT-S125 & 32PT-L125 System
Maximum Initial Uranium Content	475 kg/assembly
Number of Intact Assemblies	≤ 32
Number and Location of Damaged Assemblies	Maximum of 28 damaged fuel assemblies as shown in Figure 1-4b. Balance may be intact assemblies, empty slots, or dummy assemblies as specified in Figure 1-2, Figure 1-3, Figure 1-4, and Figure 1-4a. The DSC basket cells that store damaged fuel assemblies are provided with top and bottom end caps to ensure retrievability.
Number and Location of Failed Assemblies	Maximum of 8 failed fuel assemblies as shown in Figure 1-4b. Balance may be intact and/or damaged fuel assemblies, empty slots, or dummy assemblies as specified in Figure 1-3. Failed fuel assembly/fuel debris is loaded in an individual failed fuel can (FFC).
Fuel Cladding	Zirconium alloy clad fuel
Minimum Cooling Time (excluding transfer in OS197L)	All fuel per Table 1-3n and the 32PT columns of Table 1-3p. A complete set of fuel qualification tables is provided in the UFSAR, Tables M.2-5 through M.2-14f. Only heat loads ≤ 2.2 kW/FA are applicable. These fuel qualification tables are not incorporated by reference into the Technical Specifications. They are listed here for convenience.
Maximum Burnup (excluding transfer in OS197L)	62 GWd/MTU
Minimum Assembly Average Initial Enrichment (excluding transfer in OS197L)	0.2 wt.% U-235
Decay Heat (excluding transfer in OS197L)	DSC and fuel assembly decay heat limits as specified in Figure 1-2, Figure 1-3, Figure 1-4, and Figure 1-4a
Minimum Cooling Time for transfer in OS197L	Per Table 1-6d for 0.4 kW and Table 1-6c for 0.6 kW.
Maximum Burnup for transfer in OS197L	45 GWd/MTU
Minimum Assembly Average Initial Enrichment for transfer in OS197L	1.1 wt.% U-235
Decay Heat for transfer in OS197L	See Figure 1-30
Maximum Planar Average Initial Fuel Enrichment	Per Table 1-1g, Table 1-1g1, Table 1-1g2 and Table 1-1g3, as applicable.

**Table 1-1f
(Not Used)**

Table 1-1g
Maximum Planar Average Initial Enrichment and Required Number of PRAs and
Minimum Soluble Boron Loading (NUHOMS®-32PT DSC) – Intact Fuel

Assembly Class	Soluble Boron Loading (ppm)	No PRAs (Type A)		4 PRAs (Type B)	8 PRAs (Type C)	16 PRAs (Type D)
		Poison Plate Configuration		Poison Plate Configuration	Poison Plate Configuration	Poison Plate Configuration
		16	24	24	24	24
WE 17x17 Fuel Assembly (with and without CC)	2500	3.40	3.40	4.00	4.50	5.00
B&W 15x15 Mark B Fuel Assembly (with and without CC)	2500	3.30	3.30	3.90	NE	5.00
WE 15x15 Fuel Assembly (without CC)	2500	3.40	3.40	4.00	4.60	5.00
WE 15x15 Fuel Assembly (with CC)	2500	3.40	3.40	4.00	4.55	5.00
CE 14x14 Fuel Assembly (without CC)	1800	3.35	3.50	4.00	4.35	NE
	2000	3.50	3.70	4.20	4.55	NE
	2100	3.60	3.80	4.30	4.70	NE
	2200	3.70	3.90	4.40	4.80	NE
	2300	3.75	4.00	4.50	4.90	NE
	2400	3.80	4.05	4.60	5.00	NE
	2500	3.90	4.15	4.70	5.00	NE
CE 14x14 Fuel Assembly (with CC)	1800	3.30	3.45	3.90	4.25	NE
	2000	3.45	3.65	4.10	4.50	NE
	2100	3.55	3.75	4.20	4.60	NE
	2200	3.60	3.80	4.30	4.70	NE
	2300	3.65	3.90	4.40	4.80	NE
	2400	3.80	4.00	4.50	4.90	NE
	2500	3.90	4.05	4.60	5.00	NE
WE 14x14 Fuel Assembly (with and without CC)	1800	3.55	3.75	4.40	NE	NE
	2000	3.75	3.90	4.60	NE	NE
	2100	3.80	4.00	4.75	NE	NE
	2200	3.90	4.10	4.85	NE	NE
	2300	4.00	4.20	5.00	NE	NE
	2400	4.10	4.30	5.00	NE	NE
	2500	4.15	4.40	5.00	NE	NE
CE 15x15 Fuel Assembly (CC not allowed)	1800	3.00	3.15	NE	NE	NE
	2000	3.15	3.30	NE	NE	NE
	2100	3.20	3.40	NE	NE	NE
	2200	3.30	3.50	NE	NE	NE
	2300	3.35	3.55	NE	NE	NE
	2400	3.40	3.60	NE	NE	NE
	2500	3.50	3.70	NE	NE	NE

NOTES:

PRAs = Poison Rod Assemblies. Figure 1-5, Figure 1-6 and Figure 1-7 provide the required PRA configurations.

PRAs are B₄C PRAs as specified in Table 1-1h.

CC = Control Components. CCs and PRAs cannot be loaded in the same fuel assembly

Type = Basket Types are specified in Table 1-1h.

NE = Not Evaluated

Table 1-1g1
Maximum Planar Average Initial Enrichment for Type A1 and A2 Basket and Minimum Soluble Boron Loading (NUHOMS®-32PT DSC) – Intact Fuel

Assembly Class and Type	Soluble Boron Loading (ppm)	No PRAs (Type A1 and A2)	
		24 Poison Plate Configuration	
		Type A1 (0.015 g B10/cm ²)	Type A2 (0.020 g B10/cm ²)
WE 17x17 fuel assembly (without CC)	2500	4.05	4.20
	2800	4.30	4.50
WE 17x17 fuel assembly (with CC)	2500	4.00	4.15
	2800	4.25	4.45
B&W 15x15 Mark B fuel assembly (without CC)	2500	4.00	4.10
B&W 15x15 Mark B fuel assembly (with CC)	2500	3.90	4.10
WE 15x15 fuel assembly (without CC)	2500	4.10	4.20
WE 15x15 fuel assembly (with CC)	2500	4.10	4.20
CE 14x14 fuel assembly (without CC)	1800	3.95	4.10
	2100	4.30	4.45
	2300	4.50	4.70
	2500	4.70	4.90
CE 14x14 fuel assembly (with CC)	1800	3.80	3.95
	2100	4.10	4.25
	2300	4.30	4.50
	2500	4.50	4.70
WE 14x14 fuel assembly (without CC)	1800	4.20	4.20
	2100	4.55	4.60
	2300	4.80	5.00
	2500	5.00	5.00
WE 14x14 fuel assembly (with CC)	1800	4.20	4.35
	2100	4.60	4.75
	2300	4.80	5.00
	2500	5.00	5.00
CE 15x15 fuel assembly (CC not allowed)	1800	3.50	3.60
	2100	3.75	3.90
	2300	3.95	4.10
	2500	4.10	4.30
	2800	4.45	4.55
Assembly Class and Type	Soluble Boron Loading (ppm)	No PRA	
		32 Poison Plate Configuration	
		Type A1-32	Type A2-32
WE 17x17 fuel assembly (without CC)	2500	4.45	4.65
	2800	4.75	5.00
WE 17x17 fuel assembly (with CC)	2500	4.40	4.60
	2800	4.70	4.90
CE 15x15 fuel assembly (CC not allowed)	2500	4.55	4.75
	2800	4.85	5.00

(continued)

**Table 1-1g1
Maximum Planar Average Initial Enrichment for Type A1 and A2 Basket and Minimum Soluble Boron Loading (NUHOMS®-32PT DSC) – Intact Fuel**

Assembly Class and Type	Soluble Boron Loading (ppm)	4 B₄C PRAs	
		24 Poison Plate Configuration	
		Type B1	Type B2
WE 17x17 fuel assembly (with or without CC)	2800	4.85	4.95
Assembly Class and Type	Soluble Boron Loading (ppm)	4 AIC PRAs	
		24 Poison Plate Configuration	
		Type B1-r	Type B2-r
WE 17x17 fuel assembly (with or without CC)	2800	4.60	4.75
Assembly Class and Type	Soluble Boron Loading (ppm)	8 B₄C PRAs	
		24 Poison Plate Configuration	
		Type C1	
WE 17x17 fuel assembly (with or without CC)	2800	5.00	NE
Assembly Class and Type	Soluble Boron Loading (ppm)	8 AIC PRAs	
		24 Poison Plate Configuration	
		Type C1-r	Type C2-r
WE 17x17 fuel assembly (with or without CC)	2800	4.85	5.00

Notes:

PRAs can be B₄C PRAs or AIC PRAs as specified in Table 1-1h

CC = Control Components

Type = Basket Types are Specified in Table 1-1h

NE = Not Evaluated

Table 1-1g2
Maximum Planar Average Initial Enrichment for Type A1 and A2 Basket and Minimum Soluble Boron Loading (NUHOMS®-32PT DSC) – Damaged Fuel

Assembly Class and Type	Soluble Boron Loading (ppm)	28 Damaged Fuels	
		32 Poison Plate Configuration	
		Type A1	Type A2
WE 17x17 fuel assembly (with or without CC)	2500	4.40	4.60
CE 15x15 fuel assembly (CC not allowed)	2800	4.70	4.90
Assembly Class and Type	Soluble Boron Loading (ppm)	28 Damaged Fuels	
		24 Poison Plate Configuration	
		Type A1	Type A2
WE 17x17 fuel assembly (with or without CC)	2500	4.00	4.20
CE 15x15 fuel assembly (CC not allowed)	2800	4.30	4.45
WE 14x14 fuel assembly (with or without CC)	1800	3.80	3.95
	2100	4.10	4.25
	2300	4.30	4.45
	2500	4.50	4.65
CE 14x14 fuel assembly (with or without CC)	1800	3.70	3.85
	2100	4.00	4.15
	2300	4.20	4.35
	2500	4.40	4.50
Assembly Class and Type	Soluble Boron Loading (ppm)	16 Damaged Fuels	
		24 Poison Plate Configuration	
		Type A1	Type A2
CE 14x14 fuel assembly (with or without CC) WE 14x14 fuel assembly (with or without CC)	1800	3.80	3.95
	2100	4.10	4.25
	2300	4.30	4.45
	2500	4.50	4.70
	2600	4.60	4.80

Notes:

CC = Control Components

Type = Basket Types are Specified in Table 1-1h, Figure 1-5, Figure 1-6 and Figure 1-7 provide the required PRA configurations.

Damaged Fuel locations are shown in Figure 1-4b.

Maximum Planar Average Initial Enrichments are applicable to Intact or Damaged fuels.

**Table 1-1g3
Maximum Planar Average Initial Enrichment for Type A1 and A2 Basket and Minimum Soluble Boron Loading (NUHOMS®-32PT DSC) –Failed Fuel**

Assembly Class and Type	Soluble Boron Loading (ppm)	8 Failed Fuels	
		24 Poison Plate Configuration	
		Type A1	Type A2
CE 15x15 fuel assembly (CC not allowed)	2500	4.10	4.25
	2800	4.40	4.55
WE 17x17 fuel assembly (with or without CC)	2500	4.00	4.15
	2800	4.30	4.45
WE 14x14 fuel assembly (with or without CC)	1800	4.15	4.30
	2100	4.50	4.70
	2300	4.75	4.95
2500	4.95	5.00	
CE 14x14 fuel assembly (with or without CC)	2600	4.70	4.90
Assembly Class and Type	Soluble Boron Loading (ppm)	8 Failed Fuels	
		32 Poison Plate Configuration	
		Type A1-32	Type A2-32
CE 15x15 fuel assembly (CC not allowed)	2500	4.50	4.70
	2800	4.80	5.00
WE 17x17 fuel assembly (with or without CC)	2500	4.40	4.60
	2800	4.65	4.90

Notes:

CC = Control Components

Type = Basket Types are Specified in Table 1-1h

Damaged Fuel locations are shown in Figure 1-4b

Maximum Planar Average Initial Enrichments are applicable to Intact or Damaged or Failed fuels.

When Intact, Damaged, or Failed fuel are loaded as specified in Figure 1-4b, the lowest enrichment shown in Table 1-1g1, Table 1-1g2 and Table 1-1g3, considering the same poison plate configuration and soluble boron loading, is applicable to all loaded fuel.

Table 1-1h
Specification for the NUHOMS®-32PT Poison Plates and PRAs

NUHOMS®-32PT DSC Basket Type	Number of B₄C PRAs ⁽¹⁾⁽²⁾	Minimum B-10 Areal Density, gm/cm²
A	0	0.0070
A1, A1-32	0	0.0150
A2, A2-32	0	0.0200
B	4	0.0070
B1	4	0.0150
B2	4	0.0200
C	8	0.0070
C1	8	0.0150
D	16	0.0070
NUHOMS®-32PT DSC Basket Type	Number of AIC PRAs ⁽¹⁾⁽³⁾	Minimum B-10 Areal Density, gm/cm²
B1-r	4	0.0150
B2-r	4	0.0200
C1-r	8	0.0150
C2-r	8	0.0200

Notes:

- (1) Figure 1-5, Figure 1-6 and Figure 1-7 provide the required PRA configurations
- (2) PRAs with Boron Carbide absorber are specified as B₄C PRAs. Minimum B₄C content per absorber rod is 0.79 grams/cm
- (3) PRAs with Silver-Indium-Cadmium absorber are specified as AIC PRAs. Minimum Silver content per absorber rod is 2.60 g/cm

**Table 1-1i
PWR Fuel Specifications for Fuel to be Stored in the
Standardized NUHOMS®-24PHB DSC**

PHYSICAL PARAMETERS	
<p>Fuel Class</p> <p>Maximum Number of Irradiated Stainless Steel Rods in Reconstituted Assemblies per DSC</p> <p>Maximum Number of Irradiated Stainless Steel Rods per Reconstituted Assembly</p> <p>Maximum Number of Reconstituted Assemblies per DSC with Low Enriched Uranium Oxide Rods</p>	<p>Intact or damaged, unconsolidated B&W 15x15 (with or without CCs), intact WE 17x17, intact WE 15x15, intact CE 14x14 and intact WE 14x14 Class PWR fuel assemblies (all without CCs) or equivalent reload fuel manufactured by other vendor, with the following requirements: Damaged fuel assemblies beyond the definition contained below are not authorized for storage.</p> <p>40</p> <p>10</p> <p>24</p>
<p>Fuel Damage</p>	<p>Damaged PWR fuel assemblies are assemblies containing missing or partial fuel rods, fuel rods with known or suspected cladding defects greater than hairline cracks or pinhole leaks. The extent of damage in the fuel assembly, including non-cladding damage, is to be limited such that a fuel assembly is able to be handled by normal means. Missing fuel rods are allowed. The extent of damage in the fuel rods is to be limited such that a fuel pellet is not able to pass through the damaged cladding during handling and retrievability is ensured following normal and off-normal conditions. Damaged fuel assemblies shall also contain top and bottom end fittings or nozzles or tie plates depending on the fuel type.</p>
<p>Control Components</p>	<ul style="list-style-type: none"> • Up to 24 CCs are authorized for storage in 24PHBL DSCs only. • Authorized CCs include Burnable Poison Rod Assemblies (BPRAs), Thimble Plug Assemblies (TPAs), Control Rod Assemblies (CRAs), Rod Cluster Control Assemblies (RCCAs), Axial Power Shaping Rod Assemblies (APSRAs), Orifice Rod Assemblies (ORAs), Vibration Suppression Inserts (VSIs), Neutron Source Assemblies (NSAs), and Neutron Sources. Non-fuel hardware that are positioned within the fuel assembly after the fuel assembly is discharged from the core such as Guide Tube or Instrument Tube Tie Rods or Anchors, Guide Tube Inserts, BPRA Spacer Plates or devices that are positioned and operated within the fuel assembly during reactor operation such as those listed above are also considered as CCs. • Design basis radiological characteristics for the CCs are listed in Table 1-1n⁽¹⁾.

(continued)

Table 1-1i
PWR Fuel Specifications for Fuel to be Stored in the
Standardized NUHOMS®-24PHB DSC

Fuel Cladding	Zirconium alloy clad fuel
Number of Intact Assemblies	≤ 24
Number and Location of Damaged Assemblies	<p>Up to 4 damaged fuel assemblies. Balance may be intact fuel assemblies or empty slots depending on the specific heat load zone configuration.</p> <p>Damaged fuel assemblies are to be placed in locations as shown in Figure 1-8 or Figure 1-9. The basket cells which store damaged fuel assemblies are provided with top and bottom end caps.</p>
Maximum Assembly plus CC Weight	1682 lbs.
Nuclear Parameters	
Maximum Planar Average Initial Enrichment	Per Figure 1-10 or Figure 1-10a
Minimum Boron Loading	Per Figure 1-10 or Figure 1-10a
Maximum Initial Uranium loading per assembly	0.490 MTU
Allowable loading configurations for each 24PHB DSC	As specified in Figure 1-8 or Figure 1-9
Minimum Cooling Time for CCs	5 years
Total Decay Heat per DSC	24 kW
Decay Heat Limits for Zone 1, 2 and 3 Fuel	As specified in Figure 1-8 and Figure 1-9
Minimum Cooling Time	All fuel per Table 1-2p.
	Additional fuel qualification tables are included in UFSAR, Tables N.2-3 and N.2-4. These fuel qualification tables are not included in the Technical Specifications by reference and are listed here for convenience.
Maximum Burnup	55 GWd/MTU
Minimum Assembly Average Initial Enrichment	2.0 wt.% U-235

(1) Radiological characteristics for CCs listed in this table for 24PTH DSC are also applicable to 24PHB DSC.

Table 1-1j
BWR Fuel Specification of Damaged Fuel to be Stored in the Standardized
NUHOMS®-61BT DSC

PHYSICAL PARAMETERS:	
Fuel Design	7x7, 8x8 BWR damaged fuel assemblies. Damaged fuel assemblies beyond the definition contained below are not authorized for storage.
Cladding Material	Zircaloy
Fuel Damage	Damaged BWR fuel assemblies are fuel assemblies containing fuel rods with known or suspected cladding defects greater than hairline cracks or pinhole leaks. The extent of damage in the fuel assembly, including non-cladding damage, is to be limited such that the fuel assembly is able to be handled by normal means. The extent of damage in the fuel rods is to be limited such that a fuel pellet is not able to pass through the damaged cladding opening during handling and retrievability is ensured following normal and off-normal conditions. Damaged fuel shall be stored with Top and Bottom Caps. Damaged fuel may only be stored in the 2x2 compartments of the "Type C" NUHOMS®-61BT Canister described in Table 1-1k.
Channels	Fuel may be stored with or without fuel channels.
Maximum Assembly Weight	705 lbs
RADIOLOGICAL PARAMETERS:⁽²⁾	No interpolation of Radiological Parameters is permitted between groups.
Group 1	
Maximum Burnup	27,000 MWd/MTU
Minimum Cooling Time	5-years ⁽¹⁾
Maximum Initial Lattice Average Enrichment	4.0 wt. % U-235
Maximum Pellet Enrichment	4.4 wt. % U-235
Minimum Initial Assembly Average Enrichment	2.0 wt. % U-235
Maximum Initial Uranium Content	198 kg/assembly
Maximum Decay Heat	300 W/assembly
Group 2	
Maximum Burnup	35,000 MWd/MTU
Minimum Cooling Time	8-years ⁽¹⁾
Maximum Initial Lattice Average Enrichment	4.0 wt. % U-235
Maximum Pellet Enrichment	4.4 wt. % U-235
Minimum Initial Assembly Average Enrichment	2.65 wt. % U-235
Maximum Initial Uranium Content	198 kg/assembly
Maximum Decay Heat	300 W/assembly
Group 3	
Maximum Burnup	37,200 MWd/MTU
Minimum Cooling Time	6.5-years ⁽¹⁾
Maximum Initial Lattice Average Enrichment	4.0 wt. % U-235
Maximum Pellet Enrichment	4.4 wt. % U-235
Minimum Initial Assembly Average Enrichment	3.38 wt. % U-235
Maximum Initial Uranium Content	198 kg/assembly
Maximum Decay Heat	300 W/assembly

(continued)

Table 1-1j
BWR Fuel Specification of Damaged Fuel to be Stored in the Standardized
NUHOMS®-61BT DSC

RADIOLOGICAL PARAMETERS:⁽²⁾	
Group 4	
Maximum Burnup	40,000 MWd/MTU
Minimum Cooling Time	10-years ⁽¹⁾
Maximum Initial Lattice Average Enrichment	4.0 wt. % U-235
Maximum Pellet Enrichment	4.4 wt. % U-235
Minimum Initial Assembly Average Enrichment	3.4 wt. % U-235
Maximum Initial Uranium Content	198 kg/assembly
Maximum Decay Heat	300 W/assembly
ALTERNATE RADIOLOGICAL PARAMETERS:	
Maximum Initial Lattice Average Enrichment	4.0 wt. % U-235
Maximum Pellet Enrichment	4.4 wt. % U-235
Maximum Initial Uranium Content	198 kg/assembly
Maximum Decay Heat (excluding transfer in OS197L)	300 W/assembly
Maximum Decay Heat for Transfer in OS197L	See Figure 1-29
Minimum Cooling Time	Per Table 1-2q. For transfer of a 61BT DSC in an OS197L TC, per Tables 1-6a and 1-6b.
Maximum Burnup	40 GWd/MTU
Minimum Assembly Average Initial Enrichment	1.4 wt.% U-235

⁽¹⁾ For fuel assemblies containing BLEU fuel pellets, add 3.0 years additional cooling time to the minimum values shown in this table.

⁽²⁾ When the OS197L TC is employed, apply the requirements of Table 1-6a, Table 1-6b and Figure 1-29.

Table 1-1k
B10 Specification for the NUHOMS®-61BT Poison Plates

NUHOMS®-61BT DSC Basket Type	Minimum B10 Areal Density (grams/cm ²)	
	Borated Aluminum or MMC	Boral®
A	0.021	0.025
B	0.032	0.038
C	0.040	0.048

**Table 1-1
PWR Fuel Specification for the Fuel to be Stored in the NUHOMS®-24PTH DSC**

PHYSICAL PARAMETERS:	
Fuel Class	Intact or damaged or failed unconsolidated B&W 15x15, WE 17x17, CE 15x15, WE 15x15, CE 14x14 and WE 14x14 class PWR assemblies (with or without control components). Damaged and/or failed fuel assemblies beyond the definitions contained below are not authorized for storage.
Fuel Damage	Damaged PWR fuel assemblies are assemblies containing missing or partial fuel rods, fuel rods with known or suspected cladding defects greater than hairline cracks or pinhole leaks. The extent of damage in the fuel assembly, including non-cladding damage, is to be limited such that the fuel assembly is able to be handled by normal means. Missing fuel rods are allowed. The extent of damage in the fuel rods is to be limited such that a fuel pellet is not able to pass through the damaged cladding during handling and retrievability is ensured following normal and off-normal conditions. Damaged fuel assemblies shall also contain top and bottom end fittings or nozzles or tie plates depending on the fuel type.
Failed Fuel	Failed fuel is defined as ruptured fuel rods, severed fuel rods, loose fuel pellets, or fuel assemblies that cannot be handled by normal means. Fuel assemblies may contain breached rods, grossly breached rods, and other defects such as missing or partial rods, missing grid spacers, or damaged spacers to the extent that the assembly cannot be handled by normal means. Fuel debris and fuel rods that have been removed from a fuel assembly and placed in a rod storage basket are also considered as failed fuel. Loose fuel debris, not contained in a rod storage basket must be placed in a failed fuel can for storage, provided the size of the debris is larger than the failed fuel can screen mesh opening and it is located at a position of at least 10" above the top of the bottom shield plug of the DSC. Fuel debris may be associated with any type of UO ₂ fuel provided that the maximum uranium content and initial enrichment limits are met. The total weight of each failed fuel can plus all its contents shall be less than 1682 lb.
Partial Length Shield Assemblies (PLSAs)	WE 15x15 class PLSAs which have only ever been irradiated in peripheral core locations with following characteristics are authorized: <ul style="list-style-type: none"> • Maximum burnup, 40 GWd/MTU • Minimum cooling time, 6.5 years • Maximum decay heat, 900 watts

(continued)

**Table 1-11
PWR Fuel Specification for the Fuel to be Stored in the NUHOMS®-24PTH DSC**

<p>Reconstituted Fuel Assemblies:</p> <ul style="list-style-type: none"> • Maximum Number of Irradiated Stainless Steel Rods in Reconstituted Assemblies per DSC • Maximum Number of Irradiated Stainless Steel Rods per Reconstituted Fuel Assembly • Maximum Number of Reconstituted Assemblies per DSC with unlimited number of low enriched UO₂ rods and/or Unirradiated Stainless Steel Rods and/or Zr Rods or Zr Pellets 	<p align="center">40</p> <p align="center">10</p> <p align="center">24</p>
<p align="center">Control Components (CCs)</p>	<ul style="list-style-type: none"> • Up to 24 CCs are authorized for storage in 24PTH-L, 24PTH-S, and 24PTH-S-LC DSCs only. • Authorized CCs include Burnable Poison Rod Assemblies (BPRAs), Thimble Plug Assemblies (TPAs), Control Rod Assemblies (CRAs), Rod Cluster Control Assemblies (RCCAs), Axial Power Shaping Assembly Rods (APSRAs), Orifice Rod Assemblies (ORAs), Vibration Suppression Inserts (VSIs), Neutron Source Assemblies (NSAs), and Neutron Sources. Non-fuel hardware that are positioned within the fuel assembly after the fuel assembly is discharged from the core such as Guide Tube or Instrument Tube Tie Rods or Anchors, Guide Tube Inserts, BPRA Spacer Plates or devices that are positioned and operated within the fuel assembly during reactor operation such as those listed above are also considered as CCs. • Design basis radiological characteristics for the CCs are listed in Table 1-1n.
<p>Number of Intact Assemblies</p>	<p align="center">≤ 24</p>
<p>Number and Location of Damaged Assemblies</p>	<p>Maximum of 12 damaged fuel assemblies. Balance may be intact fuel assemblies, empty slots, or dummy assemblies depending on the specific heat load zoning configuration.</p> <p>Damaged fuel assemblies are to be placed in Location A and/or B as shown in Figure 1-16. The DSC basket cells which store damaged fuel assemblies are provided with top and bottom end caps to assure retrievability.</p>
<p>Number and Location of Failed Assemblies</p>	<p>Up to 8 failed fuel assemblies. Balance may be intact and/or damaged fuel assemblies, empty slots, or dummy assemblies depending on the specific heat load zoning configuration.</p> <p>Failed fuel assemblies are to be placed in Location A as shown in Figure 1-16. Failed fuel assembly/fuel debris is to be encapsulated in an individual failed fuel can (FFC) provided with a welded bottom closure and a removable top closure.</p>
<p>Maximum Assembly plus CC Weight</p>	<p align="center">1682 lbs</p>
<p>Maximum Initial Uranium Content</p>	<p align="center">492 kg/assembly</p>
<p>Fuel Cladding</p>	<p align="center">Zirconium alloy clad fuel</p>

(continued)

Table 1-11
PWR Fuel Specification for the Fuel to be Stored in the NUHOMS®-24PTH DSC

THERMAL/RADIOLOGICAL PARAMETERS:	
Maximum Planar Average Initial Fuel Enrichment	Per Table 1-1p or Table 1-1q or Table 1-1q1
Decay Heat	Type 1 Basket: ≤ 40.8 kW for 24PTH-S and 24PTH-L DSCs with decay heat limits for Zones 1, 2, 3, 4, and 6 as specified in Figure 1-11 or Figure 1-12 or Figure 1-13 or Figure 1-14 or Figure 1-15a.
	Type 2 Basket: Same as Type 1 Basket except ≤ 31.2 kW/DSC and ≤ 1.3 kW/fuel assembly for 24PTH-S and 24PTH-L DSCs. ≤ 24.0 kW for 24PTH-S-LC DSC with decay heat limits as specified in Figure 1-15.
Minimum Boron Loading	Per Table 1-1p or Table 1-1q or Table 1-1q1
Minimum Cooling Time	<p>All fuel in the 24PTH-S/-L DSC per Table 1-3o and Table 1-3p (24PTH-S/-L DSC columns for 2.5 kW/FA). In addition, the peripheral region of HLZC 2 and 3 (Figure 1-12 and Figure 1-13) per Table 1-3m and Table 1-3p (24PTH-S/-L DSC columns for 2.0 kW/FA). The peripheral region is illustrated in Figure 1-16a.</p> <p>All fuel in the 24PTH-S-LC per Table 1-3k and Table 1-3p (24PTH-S-LC DSC columns).</p> <p>A complete set of fuel qualification tables is provided in the UFSAR, Tables M.2-5 through M.2-14f. Only heat loads ≤ 1.5 kW/FA are applicable to the 24PTH-S-LC DSC. These fuel qualification tables are not incorporated by reference into the Technical Specifications. They are listed here for convenience.</p>
Maximum Burnup	62 GWd/MTU
Minimum Assembly Average Initial Enrichment	0.2 wt.% U-235

**Table 1-1m
(Not Used)**

Table 1-1n
Radiological Characteristics for Control Components Stored in the NUHOMS® -24PTH
DSC and 24PHB DSC

Parameter	BPRAs, NSAs, CRAs, RCCAs, VSIs, Neutron Sources and APSRAs	TPAs and ORAs
Maximum Gamma Source (γ /sec/DSC)	9.3E+14	9.8E+13

Note: NSAs and Neutron Sources shall only be stored in the interior compartments of the basket. Interior compartments are those compartments that are completely surrounded by other compartments, including the corners. There are four interior compartments in the 24PTH DSC.

**Table 1-1o
(Not Used)**

Table 1-1p
Maximum Planar Average Initial Enrichment v/s Neutron Poison Requirements for the
NUHOMS® -24PTH DSC (Intact Fuel)

Fuel Assembly Class	Maximum Planar Average Initial Enrichment (wt. % U-235) as a Function of Soluble Boron Concentration and Basket Type (Fixed Poison Loading)			
	Minimum Soluble Boron (ppm)	Basket Type ⁽³⁾		
		1A or 2A	1B or 2B	1C or 2C
CE 14x14 ⁽¹⁾	2100	4.50	4.90	5.00
	2200	4.60	5.00	5.00
	2300	4.70	5.00	5.00
	2400	4.80	5.00	5.00
	2500	4.90	5.00	5.00
	2600	5.00	5.00	5.00
WE 14x14 ⁽²⁾	2100	4.80	5.00	5.00
	2200	4.90	5.00	5.00
	2300	5.00	5.00	5.00
CE 15x15 ⁽²⁾	2100	3.90	4.20	4.60
	2200	4.00	4.40	4.70
	2300	4.10	4.50	4.80
	2400	4.20	4.60	4.90
	2500	4.30	4.70	5.00
	2600	4.40	4.80	5.00
	2700	4.50	4.90	5.00
	2800	4.50	5.00	5.00
	2900	4.60	5.00	5.00
	3000	4.70	5.00	5.00
WE 15x15 ⁽²⁾	2100	3.80	4.20	4.60
	2200	3.90	4.30	4.70
	2300	4.00	4.40	4.80
	2400	4.10	4.50	4.90
	2500	4.20	4.60	5.00
	2600	4.30	4.70	5.00
	2700	4.30	4.80	5.00
	2800	4.40	4.90	5.00
	2900	4.50	5.00	5.00
	3000	4.60	5.00	5.00

(continued)

Table 1-1p
Maximum Planar Average Initial Enrichment v/s Neutron Poison Requirements for the
NUHOMS® -24PTH DSC (Intact Fuel)

Fuel Assembly Class	Maximum Planar Average Initial Enrichment (wt. % U-235) as a Function of Soluble Boron Concentration and Basket Type (Fixed Poison Loading)			
	Minimum Soluble Boron (ppm)	Basket Type ⁽³⁾		
		1A or 2A	1B or 2B	1C or 2C
WE 17x17⁽²⁾	2100	3.80	4.10	4.50
	2200	3.90	4.20	4.60
	2300	4.00	4.30	4.70
	2400	4.00	4.40	4.80
	2500	4.10	4.50	4.90
	2600	4.20	4.60	5.00
	2700	4.30	4.70	5.00
	2800	4.40	4.80	5.00
	2900	4.50	4.90	5.00
	3000	4.60	5.00	5.00
B&W 15x15⁽²⁾	2100	3.60	4.00	4.30
	2200	3.70	4.10	4.50
	2300	3.80	4.20	4.60
	2400	3.90	4.30	4.70
	2500	4.00	4.40	4.80
	2600	4.10	4.50	4.90
	2700	4.20	4.60	5.00
	2800	4.20	4.70	5.00
	2900	4.30	4.80	5.00
	3000	4.40	4.90	5.00

Notes:

- (1) When CCs that extend into the active fuel region are stored, the maximum planar average initial enrichment shall be reduced by 0.2 wt. %.
- (2) When CCs that extend into the active fuel region are stored, the maximum planar average initial enrichment shall be reduced by 0.05 wt. % or the soluble boron concentration shall be increased by 50 ppm.
- (3) The fixed poison loading requirements as a function of Basket Type are specified in Table 1-1r.

Table 1-1q
Maximum Planar Average Initial Enrichment v/s Neutron Poison Requirements for the
NUHOMS®-24PTH DSC (Damaged Fuel)

Assembly Class	Maximum Number of Damaged Fuel Assemblies per DSC	Maximum Planar Average Initial Enrichment (wt. % U-235) for Damaged Fuel Assemblies ⁽³⁾ as a Function of Soluble Boron Concentration and Basket Type (Fixed Poison Loading)			
		Minimum Soluble Boron (ppm)	Basket Type ⁽⁴⁾		
			1A or 2A	1B or 2B	1C or 2C
CE 14x14 ⁽¹⁾	12	2150	NE	4.70	NE
	12	2450	4.50	5.00	5.00
WE 14x14 ⁽²⁾	12	2150	4.50	5.00	5.00
CE 15x15 ⁽²⁾	12	2150	NE	NE	4.50
	12	2550	NE	NE	5.00
WE 15x15 ⁽²⁾	12	2250	NE	NE	4.50
	12	2650	NE	NE	5.00
B&W 15x15 ⁽²⁾	12	2350	NE	NE	4.50
	12	2800	NE	NE	5.00
WE 17x17 ⁽²⁾	12	2250	NE	NE	4.50
	12	2650	NE	NE	5.00

Notes:

- (1) When CCs that extend into the active fuel region are stored, the maximum planar average initial enrichment shall be reduced by 0.2 wt. %.
- (2) When CCs that extend into the active fuel region are stored, the maximum planar average initial enrichment shall be reduced by 0.05 wt. % or the soluble boron concentration shall be increased by 50 ppm.
- (3) Enrichment limits are applicable when more than 8 damaged fuel assemblies are loaded.
- (4) The fixed poison loading requirements as a function of Basket Type are specified in Table 1-1r.

NE = Not Evaluated.

Table 1-1q1
Maximum Planar Average Initial Enrichment v/s Neutron Poison Requirements for the
NUHOMS®-24PTH DSC (up to 8 Damaged/Failed Fuel)

Fuel Assembly Class	Maximum Planar Average Initial Enrichment (wt. % U-235) for Loading up to Eight Damaged and/or Failed Fuel Assemblies ⁽³⁾ as a Function of Soluble Boron Concentration and Basket Type (Fixed Poison Loading)			
	Minimum Soluble Boron (ppm)	Basket Type ⁽⁴⁾		
		1A or 2A	1B or 2B	1C or 2C
CE 14x14 ⁽²⁾	2100	4.40	4.90	5.00
	2200	4.55	5.00	5.00
	2300	4.60	5.00	5.00
	2400	4.60	5.00	5.00
	2500	4.90	5.00	5.00
	2600	5.00	5.00	5.00
WE 14x14 ⁽¹⁾	2100	4.75	5.00	5.00
	2200	4.90	5.00	5.00
	2300	4.90	5.00	5.00
	2400	5.00	5.00	5.00
CE 15x15 ⁽¹⁾	2100	3.90	4.20	4.60
	2200	4.00	4.40	4.70
	2300	4.10	4.50	4.80
	2400	4.20	4.60	4.90
	2500	4.30	4.70	5.00
	2600	4.40	4.80	5.00
	2700	4.50	4.90	5.00
	2800	4.50	5.00	5.00
	2900	4.60	5.00	5.00
	3000	4.70	5.00	5.00
WE 15x15 ⁽¹⁾	2100	3.80	4.20	4.60
	2200	3.90	4.25	4.70
	2300	4.00	4.40	4.80
	2400	4.10	4.50	4.90
	2500	4.20	4.60	5.00
	2600	4.30	4.70	5.00
	2700	4.30	4.80	5.00
	2800	4.40	4.90	5.00
	2900	4.50	5.00	5.00
	3000	4.60	5.00	5.00

(continued)

Table 1-1q1
Maximum Planar Average Initial Enrichment v/s Neutron Poison Requirements for the
NUHOMS®-24PTH DSC (up to 8 Damaged/Failed Fuel)

Fuel Assembly Class	Maximum Planar Average Initial Enrichment (wt. % U-235) damaged fuel assemblies ⁽³⁾ as a Function of Soluble Boron Concentration and Basket Type (Fixed Poison Loading)			
	Minimum Soluble Boron (ppm)	Basket Type ⁽⁴⁾		
		1A or 2A	1B or 2B	1C or 2C
WE 17x17 ⁽¹⁾	2100	3.80	4.10	4.50
	2200	3.90	4.20	4.60
	2300	4.00	4.30	4.70
	2400	4.00	4.40	4.80
	2500	4.10	4.50	4.90
	2600	4.20	4.60	5.00
	2700	4.30	4.70	5.00
	2800	4.40	4.80	5.00
	2900	4.50	4.90	5.00
	3000	4.60	5.00	5.00
B&W 15x15 ⁽¹⁾	2100	3.60	4.00	4.20
	2200	3.70	4.10	4.20
	2300	3.80	4.20	4.50
	2400	3.90	4.30	4.70
	2500	4.00	4.40	4.70
	2600	4.10	4.40	4.90
	2700	4.20	4.50	5.00
	2800	4.20	4.70	5.00
	2900	4.30	4.70	5.00
	3000	4.40	4.70	5.00

- (1) When CCs that extend into the active fuel region are stored, the maximum planar average initial enrichment shall be reduced by 0.05 wt. % or the soluble boron concentration shall increased by 50 ppm.
- (2) When CCs that extend into the active fuel region are stored, the maximum planar average initial enrichment shall be reduced by 0.2 wt. %.
- (3) Enrichment limits are applicable when up to 8 damaged and/or failed fuel assemblies are loaded.
- (4) The fixed poison loading requirements as a function of basket type are specified in Table 1-1r.

Table 1-1r
B10 Specification for the NUHOMS®-24PTH Poison Plates

NUHOMS®-24PTH DSC Basket Type	Minimum B10 Areal Density, (grams/cm ²)	
	Borated Aluminum or MMC	Boral®
1A or 2A	0.007	0.009
1B or 2B	0.015	0.019
1C or 2C	0.032	0.040

**Table 1-1s
(Deleted)**

**Table 1-1t
BWR Fuel Specification for the Fuel to be Stored in the NUHOMS®-61BTH DSC**

<p>PHYSICAL PARAMETERS: Fuel Class</p>	<p>Intact or damaged or failed 7x7, 8x8, 9x9, 10x10 or 11x11 BWR assemblies. Damaged and/or failed fuel assemblies beyond the definitions contained below are not authorized for storage.</p>
<p>Fuel Damage</p>	<p>Damaged BWR fuel assemblies are assemblies containing fuel rods with known or suspected cladding defects greater than hairline cracks or pinhole leaks. The extent of cladding damage in the fuel assembly, including non-cladding damage, is to be limited such that a fuel assembly needs to be handled by normal means. Missing fuel rods are allowed. The extent of damage in the fuel rods is to be limited such that a fuel pellet is not able to pass through the damaged cladding during handling and retrievability is ensured following normal and off-normal conditions. Damaged fuel assemblies shall also contain top and bottom end fittings or nozzles or tie plates depending on the fuel type.</p>
<p>Failed Fuel</p>	<p>Failed fuel is defined as ruptured fuel rods, severed fuel rods, loose fuel pellets, or fuel assemblies that cannot be handled by normal means. Failed fuel assemblies may contain breached rods, grossly breached rods, and other defects such as missing or partial rods, missing grid spacers, or damaged spacers to the extent that the assembly cannot be handled by normal means.</p> <p>Fuel debris and fuel rods that have been removed from a fuel assembly and placed in a rod storage basket are also considered as failed fuel. Loose fuel debris, not contained in a rod storage basket must be placed in a failed fuel can for storage, provided the size of the debris is larger than the failed fuel can screen mesh opening and it is located at a position of at least 10" above the top of the bottom shield plug of the DSC.</p> <p>Fuel debris may be associated with any type of UO₂ fuel provided that the maximum uranium content and initial enrichment limits are met. The total weight of each failed fuel can plus all its content shall be less than 705 lb.</p>
<p>RECONSTITUTED FUEL ASSEMBLIES:</p> <ul style="list-style-type: none"> • Maximum Number of Irradiated Stainless Steel Rods in Reconstituted Assemblies per DSC • Maximum Number of Irradiated Stainless Steel Rods per Reconstituted Fuel Assembly • Maximum Number of Reconstituted Assemblies per DSC with unlimited number of low enriched UO₂ rods or Zr Rods or Zr Pellets or Unirradiated Stainless Steel Rods 	<p>40</p> <p>10</p> <p>61</p>
<p>Number of Intact Assemblies</p>	<p>≤ 61</p>

(continued)

Table 1-1t
BWR Fuel Specification for the Fuel to be Stored in the NUHOMS®-61BTH DSC

Number and Location of Damaged Assemblies	Up to 61 damaged fuel assemblies, are authorized for storage in 61BTH DSC. If less than 61 damaged fuel assemblies are stored, balance may be intact or dummy assemblies. Damaged fuel assemblies are to be stored in accordance with Figure 1-25. The DSC basket cells that store damaged fuel assemblies are provided with top and bottom end caps to assure retrievability.
Number and Location of Failed Assemblies	Up to four failed fuel assemblies. Balance may be intact and/or damaged fuel assemblies, empty slots, or dummy assemblies depending on the specific heat load zoning configuration. Failed fuel assemblies are to be placed in Location A as shown in Figure 1-25. Failed fuel assembly/fuel debris is to be encapsulated in an individual FFC provided with a welded bottom closure and a removable top closure.
Channels	Fuel may be stored with or without channels, channel fasteners, or finger springs.
Maximum Initial Uranium Content	198 kg/assembly
Fuel Cladding	Zirconium alloy clad fuel
Maximum Assembly Weight with Channels	705 lbs
THERMAL/RADIOLOGICAL PARAMETERS:	
Allowable Heat Load Zoning Configurations for each Type 1 61BTH DSC	Per Figure 1-17 or Figure 1-18 or Figure 1-19 or Figure 1-20 or Figure 1-25a.
Allowable Heat Load Zoning Configurations for each Type 2 61BTH DSC:	Per Figure 1-17 or Figure 1-18 or Figure 1-19 or Figure 1-20 or Figure 1-21 or Figure 1-22 or Figure 1-23 or Figure 1-24 or Figure 1-25a or Figure 1-25b or Figure 1-25d or Figure 1-25e or Figure 1-25f.
Minimum Cooling Time	<i>Standardized HSM: All fuel per Table 1-4e</i> <i>HSM-H: All fuel per Table 1-4f</i>
Maximum Burnup	62 GWd/MTU
Minimum Assembly Average Initial Enrichment	0.5 wt.% U-235
Maximum Lattice Average Initial Enrichment	Per Table 1-1v or Table 1-1w or Table 1-1w1 or Table 1-1x
Maximum Pellet Enrichment	5.0 wt. % U-235
Maximum Decay Heat Limits for Zones 1, 2, 3, 4, 5 and 6 Fuel	Per Figure 1-17 or Figure 1-18 or Figure 1-19 or Figure 1-20 or Figure 1-21 or Figure 1-22 or Figure 1-23 or Figure 1-24 or Figure 1-25a or Figure 1-25b or <i>Figure 1-25d, or Figure 1-25e or Figure 1-25f. Failed fuel as stored per Figure 1-25 is limited to 0.54kW</i>
Decay Heat per DSC	≤ 22.0 kW for Type 1 DSC ≤ 31.2 kW for Type 2 DSC
Minimum B-10 Concentration in Poison Plates	Per Table 1-1v or Table 1-1w or Table 1-1w1 or Table 1-1x
Number and location of UNANALYZED FUEL (UF)	≤ 4 UF in the peripheral locations for both the Type 1 and Type 2 DSC. A minimum of five non-UF shall circumferentially separate UF within the peripheral locations. No limitation for UF in the inner locations. The peripheral and inner locations are defined in Figure 1-25c.

**Table 1-1u
(Not Used)**

Table 1-1v
Maximum Fuel Assembly Lattice Average Initial Enrichment v/s Minimum B-10
Requirements for the NUHOMS®-61BTH DSC Poison Plates (Intact Fuel)

61BTH DSC Type	Basket Type	Maximum Lattice Average Enrichment (wt. % U-235) ⁽¹⁾	Minimum B-10 Areal Density, (grams/cm ²)	
			Borated Aluminum/MMC	Boral®
1	A	3.7	0.021	0.025
	B	4.1	0.032	0.038
	C	4.4	0.040	0.048
	D	4.6	0.048	0.058
	E	4.8	0.055	0.066
	F	5.0	0.062	0.075
2	A	3.7	0.022	0.027
	B	4.1	0.032	0.038
	C	4.4	0.042	0.050
	D	4.6	0.048	0.058
	E	4.8	0.055	0.066
	F	5.0 ⁽¹⁾	0.062	0.075

Note:

- 1) For ATRIUM 11 fuel assemblies, the U-235 wt. % enrichment is reduced by 0.55%. The ATRIUM 11 fuel assemblies are authorized for storage in the Type 2F DSC only.

Table 1-1w
Maximum Fuel Assembly Lattice Average Initial Enrichment v/s Minimum B-10
Requirements for the NUHOMS®-61BTH DSC Poison Plates (Damaged Fuel)

61BTH DSC Type	Basket Type	Maximum Lattice Average Enrichment (wt. % U-235)		Minimum B-10 Areal Density, (grams/cm ²)	
		Up to 4 Damaged Assemblies ⁽¹⁾	Five or More Damaged Assemblies ⁽¹⁾ (16 Maximum)	Borated Aluminum/MMC	Boral®
1	A	3.7	2.80	0.021	0.025
	B	4.1	3.10	0.032	0.038
	C	4.4	3.20	0.040	0.048
	D	4.6	3.40	0.048	0.058
	E	4.8	3.50	0.055	0.066
	F	5.0	3.60	0.062	0.075
2	A	3.7	2.80	0.022	0.027
	B	4.1	3.10	0.032	0.038
	C	4.4	3.20	0.042	0.050
	D	4.6	3.40	0.048	0.058
	E	4.8	3.50	0.055	0.066
	F	5.0 ^(2, 3)	3.60	0.062	0.075

Notes:

- 1) See Figure 1-25 for the location of damaged fuel assemblies within the 61BTH DSC.
- 2) ATRIUM 11 fuel assemblies are authorized for storage only in the Type 2F basket with a maximum of 4 damaged fuel assemblies.
- 3) For ATRIUM 11 fuel assemblies, the U-235 wt. % enrichment is reduced by 0.55%.

Table 1-1w1
BWR Fuel Assembly Initial Lattice Average Initial Enrichment v/s Minimum B-10
Requirements for the NUHOMS®-61BTH DSC Poison Plates (Failed and Damaged Fuel)

61BTH DSC Type	Basket Type	Maximum Lattice Average Enrichment (wt. % U-235)		Minimum B-10 Areal Density (grams/cm ²)	
		Up to 4 Failed Assemblies (Corner Locations) ^(1, 2)	Up to 4 Failed Assemblies (Corner Locations) and up to 12 Damaged Assemblies (Interior Locations) ^(1, 2)	Borated Aluminum/MMC	Boral®
2	A	3.7	2.8	0.022	0.027
	B	4.0	3.1	0.032	0.038
	C	4.4	3.2	0.042	0.050
	D	4.6	3.4	0.048	0.058
	E	4.8	3.4	0.055	0.066
	F	5.0	3.5	0.062	0.075

Notes:

- 1) See Figure 1-25 for the locations of the failed and damaged assemblies within the 61BTH DSC.
- 2) Failed ATRIUM 11 fuel assemblies are not authorized for storage in the 61BTH DSC.

Table 1-1x
BWR Fuel Assembly Initial Lattice Average Enrichments v/s Minimum B-10 Requirements
for the NUHOMS® -61BTH DSC Poison Plates for > 16 Damaged Fuel Assemblies

61BTH DSC Type	Poison ID	Up to 57 Damaged Fuel at 3.30 wt. % U-235		Minimum B-10 Content (grams/cm ²)		
		Remaining Four Intact Assemblies (1)	Remaining Four Damaged Assemblies (1)	Utilized in this Analysis	Specified for 90% Credit	Specified for 75% Credit
2	A	-	-	-	-	-
	B	-	-	-	-	-
	C	-	-	-	-	-
	D	5.00	4.20	0.043	0.048	0.058
	E	5.00	4.20	0.050	0.055	0.066
	F	5.00	4.20	0.056	0.062	0.075

Note 1: See Figure 1-25 for the locations of the damaged assemblies within the 61BTH DSC.

**Table 1-1y
(Not Used)**

**Table 1-1z
(Not Used)**

Table 1-1aa
PWR Fuel Specification for the Fuel to be Stored in the NUHOMS®-32PTH1 DSC

PHYSICAL PARAMETERS: Fuel Class	Intact or damaged or failed unconsolidated B&W 15x15, WE 17x17, CE 15x15, WE 15x15, CE 14x14, WE 14x14 and CE 16x16 class PWR assemblies (with or without CCs). Damaged and/or failed fuel assemblies beyond the definitions contained below are not authorized for storage.
Fuel Damage	Damaged PWR fuel assemblies are assemblies containing missing or partial fuel rods, fuel rods with known or suspected cladding defects greater than hairline cracks or pinhole leaks. The extent of damage in the fuel assembly, including non-cladding damage, is to be limited such that the fuel assembly will still be able to be handled by normal means. Missing fuel rods are allowed. The extent of damage is to be limited such that a fuel pellet is not able to pass through the damaged cladding during handling and retrievability is ensured following normal and off-normal conditions. Damaged fuel assemblies shall also contain top and bottom end fittings or nozzles or tie plates depending on the fuel type.
Failed Fuel	Failed fuel is defined as fuel rods that have been removed from a fuel assembly, breached rods, grossly breached rods, and other defective rods. Fuel rods that have been removed from a fuel assembly may be placed in a secondary container, such as a rod storage basket. Individual fuel rods that are not failed can be stored in a failed fuel canister (FFC) without a secondary container such as a rod storage basket. The maximum number of fuel rods that may be stored in the FFC is 100 with a total uranium loading limited to 2.50 kg initial uranium per rod.
Reconstituted Fuel Assemblies: <ul style="list-style-type: none"> • Maximum Number of Irradiated Stainless Steel Rods in Reconstituted Assemblies per DSC • Maximum Number of Irradiated Stainless Steel Rods per Reconstituted Fuel Assembly • Maximum Number of Reconstituted Assemblies per DSC with unlimited number of low enriched UO₂ rods, or Zr Rods or Zr Pellets or Unirradiated Stainless Steel Rods 	<p>40</p> <p>10</p> <p>32</p>
Control Components (CCs)	<ul style="list-style-type: none"> • Up to 32 CCs are authorized for storage in 32PTH1-S, 32PTH1-M and 32PTH1-L DSCs. • Authorized CCs include burnable poison rod assemblies (BPRAs), thimble plug assemblies (TPAs), control rod assemblies (CRAs), rod cluster control assemblies (RCCAs), axial power shaping rod assemblies (APSRAs), orifice rod assemblies (ORAs), vibration suppression inserts (VSIs), neutron source assemblies (NSAs) and neutron sources. Non-fuel hardware that are positioned within the fuel assembly after the fuel assembly is discharged from the core such as guide tube or instrument tube tie rods or anchors, guide tube inserts, BPRA spacer plates or devices that are positioned and operated within the fuel assembly during reactor operation such as those listed above are also considered as CCs. • Design basis radiological characteristics for the CCs are listed in Table 1-1ee.

(continued)

Table 1-1aa
PWR Fuel Specification for the Fuel to be Stored in the NUHOMS®-32PTH1 DSC

Number of Intact Assemblies	≤ 32
Number and Location of Damaged Assemblies	Up to 16 damaged fuel assemblies with balance intact fuel assemblies, or dummy assemblies are authorized for storage in 32PTH1 DSC. Damaged fuel assemblies are to be placed as shown in Figures 1-26 through 1-28 and Figure 1-28a. The DSC basket cells which store damaged fuel assemblies are provided with top and bottom end caps.
Number and Location of Failed Assemblies	Up to 16 failed fuel assemblies. Balance to be intact and/or damaged fuel assemblies, empty slots, or dummy assemblies depending on the specific head load zoning configurations. Failed fuel assemblies are to be placed in Location 5a as shown in Figure 1-28a or in locations denoted by ** as shown in Figure 1-28. Failed fuel rods are to be encapsulated in an individual FFC provided with a welded bottom closure and a removable top closure. The maximum number of failed fuel rods per FFC that may be stored is 100 with a total uranium loading limited to 2.50 kg initial uranium per rod.
Maximum Assembly plus CC Weight	1715 lbs
Maximum Initial Uranium Content	492 kg/assembly
Fuel Cladding	Zirconium alloy clad fuel
THERMAL/RADIOLOGICAL PARAMETERS: Allowable heat load zoning configurations	Figure 1-26, Figure 1-27, Figure 1-28, Figure 1-28a, Figure 1-28b, or Figure 1-28c
Maximum Planar Average Initial Fuel Enrichment	Per Table 1-1cc or Table 1-1dd or Table 1-1dd1.
Decay Heat per DSC	≤ 40.8 kW for 32PTH1-S, 32PTH1-M and 32PTH1-L DSCs (Type 1 Basket).
	≤ 31.2 kW for 32PTH1-S, 32PTH1-M and 32PTH1-L DSCs (Type 2 Basket).
Minimum Boron Loading	Per Table 1-1cc or Table 1-1dd or Table 1-1dd1.
Minimum Cooling Time	All fuel per Table 1-3k and Table 1-3p (32PTH1 DSC column). A complete set of fuel qualification tables is provided in the UFSAR, Tables M.2-5 through M.2-14f. Only heat loads ≤ 1.5 kW/FA are applicable. These fuel qualification tables are not included in the Technical Specifications by reference and are listed here for convenience.
Maximum Burnup	62 GWd/MTU
Minimum Assembly Average Initial Enrichment	0.2 wt.% U-235

**Table 1-1bb
(Not Used)**

Table 1-1cc
Maximum Planar Average Initial Enrichment v/s Neutron Poison Requirements for
32PTH1 DSC (Intact Fuel)

Fuel Assembly Class	Maximum Planar Average Initial Enrichment (wt. % U-235) as a Function of Soluble Boron Concentration and Basket Type (Fixed Poison Loading)					
	Minimum Soluble Boron (ppm)	Basket Type ⁽¹⁾				
		1A or 2A	1B or 2B	1C or 2C	1D or 2D	1E or 2E
WE 17x17 Assembly Class ⁽⁴⁾	2000	3.40	3.80	3.90	4.10	4.30
	2300	3.70	4.00	4.20	4.40	4.70
	2400	3.70	4.10	4.30	4.50	4.80
	2500	3.80	4.20	4.40	4.60	4.90
	2800	4.00	4.50	4.70	5.00	5.00
	3000	4.20	4.60	4.80	5.00	5.00
CE 16x16 Assembly Class ⁽⁵⁾	2000	3.90	4.30	4.50	4.80	5.00
	2300	4.10	4.60	4.80	5.00	5.00
	2400	4.20	4.70	4.90	5.00	5.00
	2500	4.30	4.80	5.00	5.00	5.00
	2800	4.60	5.00	5.00	5.00	5.00
	3000	4.70	5.00	5.00	5.00	5.00
BW 15x15 Assembly Class ⁽⁵⁾	2000	3.30	3.60	3.80	4.00	4.20
	2300	3.50	3.90	4.10	4.30	4.60
	2400	3.60	4.00	4.20	4.40	4.70
	2500	3.70	4.10	4.30	4.50	4.80
	2800	3.90	4.30	4.50	4.80	5.00
	3000	4.10	4.50	4.70	5.00	5.00
CE 15x15 Assembly Class ⁽⁵⁾	2000	3.50	3.90	4.00	4.20	4.40
	2300	3.80	4.10	4.30	4.60	4.80
	2400	3.90	4.30	4.40	4.70	4.90
	2500	3.90	4.35	4.50	4.80	5.00
	2800	4.20	4.60	4.80	5.00	5.00
	3000	4.30	4.80	5.00	5.00	5.00

(continued)

Table 1-1cc
Maximum Planar Average Initial Enrichment v/s Neutron Poison Requirements for
32PTH1 DSC (Intact Fuel)

Fuel Assembly Class	Maximum Planar Average Initial Enrichment (wt. % U-235) as a Function of Soluble Boron Concentration and Basket Type (Fixed Poison Loading)					
	Minimum Soluble Boron (ppm)	Basket Type ⁽¹⁾				
		1A or 2A	1B or 2B	1C or 2C	1D or 2D	1E or 2E
WE 15x15 Assembly Class⁽⁵⁾	2000	3.50	3.80	3.90	4.20	4.40
	2300	3.70	4.10	4.20	4.50	4.80
	2400	3.80	4.20	4.40	4.60	4.90
	2500	3.90	4.30	4.50	4.70	5.00
	2800	4.10	4.50	4.70	5.00	5.00
	3000	4.20	4.70	4.90	5.00	5.00
CE 14x14 Assembly Class⁽⁶⁾	2000	3.90	4.40	4.60	4.90	5.00
	2300	4.20	4.70	5.00	5.00	5.00
	2400	4.30	4.80	5.00	5.00	5.00
	2500	4.40	5.00	5.00	5.00	5.00
	2800	4.60	5.00	5.00	5.00	5.00
	3000	4.80	5.00	5.00	5.00	5.00
WE 14x14 Assembly Class⁽⁷⁾	2000	4.20	4.70	4.90	5.00	5.00
	2300	4.50	5.00	5.00	5.00	5.00
	2400	4.60	5.00	5.00	5.00	5.00
	2500	4.70	5.00	5.00	5.00	5.00
	2800	5.00	5.00	5.00	5.00	5.00
	3000	5.00	5.00	5.00	5.00	5.00

Notes:

- (1) The fixed poison loading requirements as a function of Basket Type are specified in Table 1-1ff.
- (2) Not used.
- (3) Not used.
- (4) Reduce Maximum Planar Average Initial Enrichment by 0.05 wt. % U-235 for assemblies with CCs that extend into the active fuel region.
- (5) Reduce Maximum Planar Average Initial Enrichment by 0.10 wt. % U-235 for assemblies with CCs that extend into the active fuel region.
- (6) Reduce Maximum Planar Average Initial Enrichment by 0.25 wt. % U-235 for assemblies with CCs that extend into the active fuel region.
- (7) No reduction in Maximum Planar Average Initial Enrichment required for assemblies with CCs that extend into the active fuel region.

Table 1-1dd
Maximum Planar Average Initial Enrichment v/s Neutron Poison Requirements for
32PTH1 DSC (Damaged and Failed ⁽³⁾ Fuel)

Fuel Assembly Class	Maximum Planar Average Initial Enrichment (wt. % U-235) as a Function of Soluble Boron Concentration and Basket Type (Fixed Poison Loading)					
	Minimum Soluble Boron (ppm)	Basket Type ⁽¹⁾				
		1A or 2A	1B or 2B	1C or 2C	1D or 2D	1E or 2E
WE 17x17 Assembly Class (without CCs) ⁽²⁾	2000	3.40	3.70	3.80	4.05	4.25
	2300	3.60	3.95	4.10	4.35	4.65
	2400	3.70	4.05	4.20	4.45	4.75
	2500	3.75	4.15	4.30	4.55	4.85
	2800	4.00	4.40	4.60	4.85	5.00
	3000	4.15	4.55	4.75	5.00	5.00
WE 17x17 Assembly Class (with CCs) ⁽²⁾	2000	3.35	3.65	3.75	4.00	4.20
	2300	3.55	3.90	4.05	4.30	4.55
	2400	3.65	4.00	4.15	4.40	4.70
	2500	3.70	4.10	4.25	4.50	4.75
	2800	3.95	4.35	4.55	4.80	5.00
	3000	4.10	4.50	4.70	5.00	5.00
CE 16x16 Assembly Class (without CCs)	2000	3.65	4.05	4.20	4.50	4.75
	2300	3.90	4.30	4.50	4.80	5.00
	2400	4.00	4.40	4.60	4.90	5.00
	2500	4.05	4.50	4.70	5.00	5.00
	2800	4.30	4.80	5.00	5.00	5.00
	3000	4.50	4.95	5.00	5.00	5.00
CE 16x16 Assembly Class (with CCs)	2000	3.60	3.95	4.10	4.40	4.65
	2300	3.80	4.20	4.40	4.70	4.90
	2400	3.90	4.30	4.50	4.80	5.00
	2500	4.00	4.40	4.60	4.80	5.00
	2800	4.20	4.70	4.90	5.00	5.00
	3000	4.40	4.85	5.00	5.00	5.00
BW 15x15 Assembly Class (without CCs)	2000	3.30	3.60	3.75	3.95	4.20
	2300	3.50	3.90	4.05	4.30	4.50
	2400	3.60	4.00	4.15	4.40	4.65
	2500	3.65	4.05	4.20	4.50	4.75
	2800	3.90	4.30	4.50	4.75	5.00
	3000	4.05	4.45	4.65	5.00	5.00

(continued)

Table 1-1dd
Maximum Planar Average Initial Enrichment v/s Neutron Poison Requirements for
32PTH1 DSC (Damaged and Failed ⁽³⁾ Fuel)

Fuel Assembly Class	Maximum Planar Average Initial Enrichment (wt. % U-235) as a Function of Soluble Boron Concentration and Basket Type (Fixed Poison Loading)					
	Minimum Soluble Boron (ppm)	Basket Type ⁽¹⁾				
		1A or 2A	1B or 2B	1C or 2C	1D or 2D	1E or 2E
BW 15x15 Assembly Class (with CCs) ⁽²⁾	2000	3.20	3.50	3.65	3.90	4.10
	2300	3.40	3.80	3.95	4.20	4.40
	2400	3.50	3.90	4.05	4.30	4.55
	2500	3.60	4.00	4.15	4.40	4.65
	2800	3.80	4.20	4.40	4.65	4.90
	3000	3.95	4.40	4.55	4.90	5.00
CE 15x15 Assembly Class (without CCs) ⁽²⁾	2000	3.35	3.70	3.80	4.05	4.25
	2300	3.60	3.95	4.10	4.30	4.60
	2400	3.65	4.05	4.20	4.45	4.70
	2500	3.75	4.15	4.30	4.55	4.80
	2800	4.00	4.40	4.60	4.85	5.00
	3000	4.15	4.55	4.75	5.00	5.00
CE 15x15 Assembly Class (with CCs) ⁽²⁾	2000	3.30	3.65	3.80	4.00	4.20
	2300	3.55	3.90	4.05	4.30	4.55
	2400	3.65	4.00	4.15	4.45	4.65
	2500	3.70	4.10	4.25	4.50	4.80
	2800	3.95	4.35	4.55	4.80	5.00
	3000	4.10	4.55	4.70	5.00	5.00
WE 15x15 Assembly Class (without CCs)	2000	3.40	3.75	3.90	4.15	4.30
	2300	3.65	4.00	4.20	4.45	4.70
	2400	3.75	4.10	4.30	4.55	4.80
	2500	3.80	4.20	4.40	4.65	4.90
	2800	4.05	4.45	4.60	4.90	5.00
	3000	4.20	4.60	4.80	5.00	5.00

(continued)

Table 1-1dd
Maximum Planar Average Initial Enrichment v/s Neutron Poison Requirements for
32PTH1 DSC (Damaged and Failed ⁽³⁾ Fuel)

Fuel Assembly Class	Maximum Planar Average Initial Enrichment (wt. % U-235) as a Function of Soluble Boron Concentration and Basket Type (Fixed Poison Loading)					
	Minimum Soluble Boron (ppm)	Basket Type ⁽¹⁾				
		1A or 2A	1B or 2B	1C or 2C	1D or 2D	1E or 2E
WE 15x15 Assembly Class (with CCs)	2000	3.35	3.65	3.80	4.00	4.20
	2300	3.55	3.90	4.10	4.35	4.60
	2400	3.65	4.00	4.20	4.45	4.70
	2500	3.70	4.10	4.30	4.55	4.80
	2800	3.95	4.35	4.50	4.80	5.00
	3000	4.10	4.50	4.70	5.00	5.00
CE 14x14 Assembly Class (without CCs) ⁽²⁾	2000	3.70	4.10	4.30	4.60	4.85
	2300	3.95	4.40	4.60	4.95	5.00
	2400	4.05	4.50	4.70	5.00	5.00
	2500	4.15	4.60	4.80	5.00	5.00
	2800	4.40	4.90	5.00	5.00	5.00
	3000	4.55	5.00	5.00	5.00	5.00
CE 14x14 Assembly Class (with CCs) ⁽²⁾	2000	3.55	3.95	4.10	4.35	4.60
	2300	3.80	4.20	4.40	4.70	4.90
	2400	3.9	4.30	4.50	4.80	5.00
	2500	4.00	4.40	4.60	4.90	5.00
	2800	4.20	4.65	4.90	5.00	5.00
	3000	4.35	4.85	5.00	5.00	5.00
WE 14x14 Assembly Class (without CCs) ⁽²⁾	2000	3.75	4.15	4.30	4.60	4.85
	2300	3.95	4.45	4.65	5.00	5.00
	2400	4.05	4.55	4.75	5.00	5.00
	2500	4.15	4.65	4.85	5.00	5.00
	2800	4.40	4.90	5.00	5.00	5.00
	3000	4.60	5.00	5.00	5.00	5.00
WE 14x14 Assembly Class (with CCs) ⁽²⁾	2000	3.70	4.10	4.20	4.50	4.75
	2300	3.90	4.40	4.60	4.90	5.00
	2400	4.00	4.50	4.65	5.00	5.00
	2500	4.10	4.55	4.80	5.00	5.00
	2800	4.30	4.80	5.00	5.00	5.00
	3000	4.50	5.00	5.00	5.00	5.00

Note:

- (1) The fixed poison loading requirements as a function of Basket Type are specified in Table 1-1ff.
- (2) The fixed poison requirements for this assembly class are also applicable to storage of failed fuel in rod storage baskets (RSBs).
- (3) Up to four failed fuel cans are authorized using these requirements. The requirements for greater than four and up to sixteen failed fuel cans are specified in Table 1-1dd1.

**Table 1-1dd1
Maximum Planar Average Initial Enrichment for 32PTH1 DSC (Up to 16 FFCs – 16 empty slots)**

Fuel Assembly Class	Maximum Planar Average Initial Enrichment (wt. % U-235) as a Function of Soluble Boron Concentration and Basket Type (Fixed Poison Loading)					
	Minimum Soluble Boron (ppm)	Basket Type ⁽¹⁾				
		1A or 2A	1B or 2B	1C or 2C	1D or 2D	1E or 2E
CE 14x14 Assembly Class	2400	NE	NE	5.00	5.00	5.00
WE 14x14 Assembly Class		NE	NE	5.00	5.00	5.00
BW 15x15 Assembly Class	2500	NE	NE	5.00	5.00	5.00
WE 15x15 Assembly Class		NE	NE	5.00	5.00	5.00
CE 15x15 Assembly Class	2800	NE	NE	5.00	5.00	5.00
CE 16x16 Assembly Class		NE	NE	5.00	5.00	5.00
WE 17x17 Assembly Class	3000	NE	NE	5.00	5.00	5.00

NE = Not Evaluated

Notes:

- (1) NE = Not Evaluated
- (2) The fixed poison loading requirements as a function of Basket Type are specified in Table 1-1ff.
- (3) Up to sixteen failed fuel cans are authorized.

Table 1-1ee
Radiological Characteristics for Control Components Stored in the NUHOMS®-32PT and NUHOMS®-32PTH1 DSCs

Parameter	BPRAs, NSAs, CRAs, RCCAs, VSIs, Neutron Sources, and APSRAs	TPAs and ORAs
Maximum Gamma Source (γ /sec/DSC)	1.25E+15	1.31E+14

Note: NSAs and Neutron Sources shall only be stored in the interior compartments of the basket. Interior compartments are those that are completely surrounded by other compartments, including the corners. There are twelve interior compartments in the 32PT and 32PTH1 DSCs.

Table 1-1ff
B10 Specification for the NUHOMS®-32PTH1 Poison Plates

NUHOMS®-32PTH1 DSC Basket Type	Minimum B10 Areal Density, (grams/cm ²)	
	Borated Aluminum or MMC	Boral®
1A or 2A	0.007	0.009
1B or 2B	0.015	0.019
1C or 2C	0.020	0.025
1D or 2D	0.032	N/A
1E or 2E	0.050	N/A

Table 1-1gg
BWR Fuel Specification for the Fuel to be Stored in the NUHOMS®-69BTH DSC

PHYSICAL PARAMETERS:	
Fuel class	Intact or damaged 7x7, 8x8, 9x9 or 10x10 BWR assemblies. Damaged fuel assemblies beyond the definition contained below are not authorized for storage.
Fuel damage	Damaged BWR fuel assemblies are assemblies containing fuel rods with known, suspected cladding defects greater than hairline cracks or pinhole leaks. The extent of damage in the fuel assembly, including non-cladding damage, is to be limited such that the fuel assembly will still be able to be handled by normal means. Missing fuel rods are allowed. The extent of damage in the fuel rods is to be limited such that a fuel pellet is not able to pass through the damaged cladding during handling and retrievability is ensured following normal and off-normal conditions. Damaged fuel assemblies shall also contain top and bottom end fittings or nozzles or tie plates depending on the fuel type.
RECONSTITUTED FUEL ASSEMBLIES:	
• Maximum Number of Irradiated Stainless Steel Rods in Reconstituted Assemblies per DSC	40
• Maximum Number of Irradiated Stainless Steel Rods per Reconstituted Fuel Assembly	10
• Maximum Number of Reconstituted Assemblies per DSC with unlimited number of low enriched UO ₂ rods or Zr rods or Zr pellets or Unirradiated Stainless Steel Rods	69
Number of intact assemblies	≤ 69
Number and location of damaged assemblies	Up to 24 damaged fuel assemblies, with balance intact or dummy assemblies, are authorized for storage in 69BTH DSC. Damaged fuel assemblies may only be stored in the locations shown in Figure 1-37. The DSC basket cells which store damaged fuel assemblies are provided with top and bottom end caps.
Channels	Fuel may be stored with or without channels, channel fasteners or finger springs.
Maximum Initial Uranium Content	198 kg/assembly
Maximum assembly weight including channels	705 lb
Fuel Cladding	Zirconium alloy clad fuel

(continued)

Table 1-1gg
BWR Fuel Specification for the Fuel to be Stored in the NUHOMS®-69BTH DSC

THERMAL/RADIOLOGICAL PARAMETERS:	
Allowable Heat Load Zoning Configurations for each 69BTH DSC	Per Figure 1-31 or Figure 1-32 or Figure 1-33 or Figure 1-34 or Figure 1-35 or Figure 1-36 or Figure 1-38.
Maximum Lattice Average Initial Enrichment	Per Table 1-1jj or Table 1-1kk
Maximum Pellet Enrichment	5.0 wt. % U-235
Maximum decay heat limits for HLZCs 1, 2, 3, 4, 5, 6 and 7	Per Figure 1-31 or Figure 1-32 or Figure 1-33 or Figure 1-34 or Figure 1-35 or Figure 1-36 or Figure 1-38.
Decay heat per DSC	≤ 35.0 kW
Minimum B-10 Concentration in Poison Plates	Per Table 1-1jj or Table 1-1kk
Minimum Cooling Time	All fuel per Table 1-7m. For HLZC 4, the peripheral region per Table 1-7k. The peripheral region corresponds to zone 5 in Figure 1-34. A complete set of fuel qualification tables is provided in the UFSAR, Tables Y.2-5 through Y.2-16, Table Y.2-17a, Table Y.2-17b. These fuel qualification tables are not included in the Technical Specifications by reference and are listed here for convenience.
Maximum Burnup	62 GWd/MTU
Minimum Assembly Average Initial Enrichment	0.5 wt.% U-235

**Table 1-1hh
Not Used**

**Table 1-1ii
(Not Used)**

Table 1-1jj
BWR Fuel Assembly Lattice Average Initial Enrichment vs Minimum B10 Requirements
for the NUHOMS®-69BTH DSC Poison Plates (Intact Fuel)

Basket Type	Maximum Lattice Average Enrichment ⁽¹⁾ (wt. % U-235)	Minimum B10 Areal Density (grams/cm ²)	
		Borated Aluminum/MMC	Boral®
A	3.70	0.021	0.025
B	4.10	0.031	0.037
C	4.40	0.039	0.047
D	4.60	0.046	0.055
E	4.80	0.053	0.064
F	5.00	0.061	0.073

(1) For LaCrosse fuel assemblies, the enrichment shall be reduced by 0.1 wt. % U-235.

**Table 1-1kk
BWR Fuel Assembly Lattice Average Initial Enrichment vs Minimum B10 Requirements for
the NUHOMS®-69BTH DSC Poison Plates (Damaged Fuel)**

Basket ID	Maximum Lattice Average Initial Enrichment ⁽¹⁾ (wt. % U-235)			Minimum B10 Areal Density (grams/cm ²)		
	Intact Assemblies	Up to 4 Damaged Assemblies ⁽²⁾	5 to 8 Damaged Assemblies ⁽²⁾	9 to 24 Damaged Assemblies ⁽²⁾	Borated Aluminum/MMC	Boral®
A	3.70	3.70	3.30	2.80	0.021	0.025
B	4.10	4.10	3.60	3.00	0.031	0.037
C	4.40	4.20	3.60	3.10	0.039	0.047
D	4.60	4.40	3.70	3.20	0.046	0.055
E	4.80	4.40	3.70	3.20	0.053	0.064
F	5.00	4.80	3.90	3.40	0.061	0.073

⁽¹⁾ For LaCrosse fuel assemblies, the enrichment shall be reduced by 0.1 wt. % U-235.

⁽²⁾ Allowable locations for damaged assemblies within the 69BTH basket are per Figure 1-37.

**Table 1-III
PWR Fuel Specification for the Fuel to be Stored in the NUHOMS®-37PTH DSC**

<p>PHYSICAL PARAMETERS:</p> <p>Fuel Class</p>	<p>Intact or damaged unconsolidated WE 17x17, CE 16X16, CE 15x15, WE 15x15, CE 14x14, and WE 14x14 class PWR assemblies (with or without control components).</p> <p>Damaged fuel assemblies beyond the definition contained below are not authorized for storage.</p>
<p>Fuel Damage</p>	<p>Damaged PWR fuel assemblies are assemblies containing missing or partial fuel rods, fuel rods with known or suspected cladding defects greater than hairline cracks or pinhole leaks. The extent of damage in the fuel assembly, including non-cladding damage, is to be limited such that a fuel assembly is able to be handled by normal means. Missing fuel rods are allowed. The extent of damage in the fuel rods is to be limited such that a fuel pellet is not able to pass through the damaged cladding during handling and retrievability is ensured following normal and off-normal conditions.</p> <p>Damaged fuel assemblies shall also contain top and bottom end fittings or nozzles or tie plates depending on the fuel type.</p>
<p>Reconstituted Fuel Assemblies:</p> <ul style="list-style-type: none"> • Maximum Number of Irradiated Stainless Steel Rods in Reconstituted Assemblies per DSC • Maximum Number of Irradiated Stainless Steel Rods per Reconstituted Fuel Assembly • Maximum Number of Reconstituted Assemblies per DSC with Unlimited Number of Low Enriched UO₂ Rods, or Zr Rods or Zr Pellets or Unirradiated Stainless Steel Rods 	<p>40</p> <p>10</p> <p>37</p>
<p>Control Components (CCs)</p>	<ul style="list-style-type: none"> • Up to 37 CCs are authorized for storage in 37PTH-S, and 37PTH-M DSCs. • Authorized CCs include burnable poison rod assemblies (BPRAs), thimble plug assemblies (TPAs), control rod assemblies (CRAs), rod cluster control assemblies (RCCAs), axial power shaping rod assemblies (APSRAs), orifice rod assemblies (ORAs), neutron source assemblies (NSAs), vibration suppression inserts (VSIs) and neutron sources. Non-fuel hardware that are positioned within the fuel assembly after the fuel assembly is discharged from the core such as guide tube or instrument tube tie rods or anchors, guide tube inserts, BPRA spacer plates or devices that are positioned and operated within the fuel assembly during reactor operation such as those listed above are also considered as CCs. • Design basis radiological characteristics for the CCs are listed in Table 1-1qq.

(continued)

Table 1-111
PWR Fuel Specification for the Fuel to be Stored in the NUHOMS®-37PTH DSC

Number of Intact Assemblies	≤ 37
Number and Location of Damaged Assemblies	Up to four damaged fuel assemblies. Balance may be intact fuel assemblies, or dummy assemblies that are authorized for storage in 37PTH DSC. Damaged fuel assemblies are to be placed in the outer 4 locations as shown in Figure 1-39 and Figure 1-40. The DSC basket cells which store damaged fuel assemblies are provided with top and bottom end caps.
Maximum Assembly plus CC Weight	1665 lbs
Maximum Initial Uranium Content	492 kg/assembly
Fuel Cladding	Zirconium alloy clad fuel
Thermal/Radiological Parameters: Allowable heat load zoning configurations	Figure 1-39 or Figure 1-40.
Maximum Planar Average Initial Fuel Enrichment	Per Table 1-100 and Table 1-1pp, Figure 1-41 and Figure 1-42
Decay Heat per DSC	≤ 30.0 kW
Minimum Boron Loading	Per Table 1-100 and Table 1-1pp
Minimum Cooling Time	All fuel per Table 1-3i and Table 1-3p (37PTH DSC column). A complete set of fuel qualification tables is provided in the UFSAR, Tables M.2-5 through M.2-14f. Only heat loads ≤ 1.2 kW/FA are applicable. These fuel qualification tables are not included in the Technical Specifications by reference and are listed here for convenience
Maximum Burnup	62 GWd/MTU
Minimum Assembly Average Initial Enrichment	0.2 wt.% U-235

**Table 1-1mm
Not Used**

**Table 1-1nn
(Not Used)**

Table 1-100
Maximum Planar Average Initial Enrichment vs. Minimum Soluble Boron Concentration
for 37PTH DSC (Intact and Damaged Fuel)

Fuel Assembly Class	Maximum Planar Average Enrichment ⁽²⁾⁽³⁾ (wt. % U-235)		
	Minimum Soluble Boron Concentration (PPM)	Without CCs	With CCs
CE 14x14	2000	4.50	4.35 ⁽¹⁾
	2300	4.90	4.65
	2400	5.00	4.75
	2500	5.00	4.85
	2800	5.00	5.00
	3000	5.00	5.00
CE 15x15	2000	4.05	4.00 ⁽¹⁾
	2300	4.35	4.30 ⁽¹⁾
	2400	4.45	4.40
	2500	4.55	4.50
	2800	4.85 ⁽¹⁾	4.75
	3000	5.00	4.95
CE 16x16	2000	4.40	4.30
	2300	4.75	4.60
	2400	4.90 ⁽¹⁾	4.75
	2500	5.00 ⁽¹⁾	4.85
	2800	5.00	5.00
	3000	5.00	5.00
WE 14x14	2000	4.75	4.75
	2300	5.00	5.00
	2400	5.00	5.00
	2500	5.00	5.00
	2800	5.00	5.00
	3000	5.00	5.00
WE 15x15	2000	3.90	3.85
	2300	4.20	4.15
	2400	4.30	4.20
	2500	4.40	4.30
	2800	4.70	4.60
	3000	4.85	4.75
WE 17x17	2000	3.90	3.85
	2300	4.20	4.15
	2400	4.30	4.25
	2500	4.40	4.35
	2800	4.65	4.60
	3000	4.85	4.80

⁽¹⁾ For damaged fuel assemblies, the maximum planar average initial enrichment is reduced by 0.05 wt. % U-235.

⁽²⁾ There is only one basket type. The fixed poison loading is per Table 1-1rr.

⁽³⁾ Linear interpolation is allowed between adjacent maximum planar average initial enrichments and soluble boron concentration levels.

Table 1-1pp
Maximum Planar Average Initial Enrichment versus Minimum Soluble Boron
Concentration for 37PTH DSC and Poison Rod Assemblies
(Intact and Damaged Fuel)

Fuel Assembly Class	Maximum Planar Average Enrichment ⁽²⁾ wt% U-235		
	Minimum Soluble Boron Concentration (PPM)	Without CCs	With CCs
WE 17x17 (Nine PRAs)	2000	4.30	4.25
	2300	4.65	4.60
	2400	4.75	4.70
	2500	4.85	4.80
	2600	5.00 ⁽¹⁾	4.90
WE 17x17 (Five PRAs)	2600	4.80 ⁽¹⁾	4.75 ⁽¹⁾

Notes:

1. For damaged fuel assemblies, the maximum allowed initial U-235 enrichment is reduced by 0.05 wt%.
2. Linear interpolation is allowed between adjacent maximum planar average initial enrichments and soluble boron concentration levels.

Table 1-1qq
Radiological Characteristics for Control Components Stored in the NUHOMS®-37PTH DSC

Parameter	BPRAs, NSAs, CRAs, RCCAs, VSIs, APSRAs and Neutron Sources	TPAs and ORAs
Maximum gamma source (γ/sec/DSC)	1.45E+15	1.52E+14

Note: NSAs and neutron sources shall only be stored in the interior compartments of the basket. Interior compartments are those compartments that are completely surrounded by other compartments, including the corners. There are thirteen interior compartments in the 37PTH DSC.

**Table 1-1rr
B10 Specification for the NUHOMS®-37PTH Poison Plates**

37PTH DSC Type	Number of PRAs	Minimum B10 Areal Density for Boral® (grams/cm²)	Minimum B10 Areal Density for Borated Aluminum or MMC (grams/cm²)
37PTH-M or 37PTH-S	0	0.024	0.020
	5		
	9		

**Table 1-1ss
B-10 Specification for the NUHOMS® - 37PTH PRAs**

37PTH DSC Type	Number of PRAs	Minimum B-10 Content per Rod (g/cm)
37PTH-M or 37PTH-S	5	0.088
	9	

Table 1-2a
PWR Fuel Qualification Table for the Standardized NUHOMS®-24P DSC (Fuel Without BPRAs)
 (Minimum required years of cooling time after reactor core discharge)

BU (GWd/ MTU)	Assembly Average Initial Enrichment (wt. % U-235)																				
	2.0	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	3.0	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.8	3.9	4.0
10	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a
15	5	5	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a
20	5	5	5	5	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a
25	5	5	5	5	5	5	5	5	5	a	a	a	a	a	a	a	a	a	a	a	a
28			5	5	5	5	5	5	5	5	5	5	5	5	a	a	a	a	a	a	a
30					5	5	5	5	5	5	5	5	5	5	a	a	a	a	a	a	a
32					5	5	5	5	5	5	5	5	5	5	a	a	a	a	a	a	a
34						6	5	5	5	5	5	5	5	5	5	5	5	a	a	a	a
36							6	6	6	6	6	6	6	6	6	6	6	6	5	5	a
38										7	6	6	6	6	6	6	6	6	6	5	5
40												8	8	8	7	6	6	6	6	6	6
41												9	9	9	8	8	8	8	8	8	8
42													10	9	9	9	9	9	9	8	8
43													10	10	10	10	10	10	9	9	9
44														11	11	11	11	11	10	10	10
45															12	12	11	11	11	11	11

a) Minimum Cooling Time 5 years, and Minimum 2350 ppm soluble boron required in the DSC cavity water during loading or unloading.

Notes:

- BU = Assembly average burnup
- Use burnup and enrichment to look up minimum cooling time in years. Licensee is responsible for ensuring that uncertainties in fuel enrichment and burnup are correctly accounted for during fuel qualification.
- Round burnup UP to next higher entry, round enrichments DOWN to next lower entry.
- Fuel with an initial enrichment less than 2.0 wt. % U-235 must be qualified for storage using the alternate nuclear parameters specified in Table 1-1a.
- Fuel with an initial enrichment greater than 4.0 wt. % U-235 is unacceptable for storage.
- Fuel with a burnup greater than 45 GWd/MTU is unacceptable for storage.
- Example: An assembly with an initial enrichment of 3.65 wt. % U-235 and a burnup of 42.5 GWd/MTU is acceptable for storage after a ten-year cooling time as defined at the intersection of 3.6 wt. % U-235 (rounding down) and 43 GWd/MTU (rounding up) on the qualification table.

Table 1-2b
BWR Fuel Qualification Table for the Standardized NUHOMS®-52B DSC
 (Minimum required years of cooling time after reactor core discharge)

BU (GWd/ MTU)	Assembly Average Initial Enrichment (wt. % U-235)																				
	2.0	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	3.0	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.8	3.9	4.0
15	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
20	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
25	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
30				5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
32					6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
34						8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
35							10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
36							11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
37								13	13	13	13	13	13	13	13	13	13	13	13	13	13
38								15	15	15	15	15	15	15	15	15	15	15	15	15	15
39								18	18	18	18	18	18	18	18	18	18	18	18	18	18
40										21	21	21	21	21	21	21	21	21	21	21	21
42											22	22	22	22	22	22	22	22	22	22	22
44											24	24	24	24	24	24	24	24	24	24	24
45												25	25	25	25	25	25	25	25	25	25

Notes:

- BU = Assembly average burnup
- Use burnup and enrichment to look up minimum cooling time in years. Licensee is responsible for ensuring that uncertainties in fuel enrichment and burnup are correctly accounted for during fuel qualification.
- Round burnup UP to next higher entry, round enrichments DOWN to next lower entry.
- Fuel with an initial enrichment less than 2.0 wt. % U-235 must be qualified for storage using the alternate nuclear parameters specified in Table 1-1b.
- Fuel with an initial enrichment greater than 4.0 wt. % U-235 is unacceptable for storage.
- Fuel with a burnup greater than 45 GWd/MTU is unacceptable for storage. Fuel with a burnup less than 15 GWd/MTU is acceptable after three years cooling time provided the physical parameters from Table 1-1b have been met.
- Example: An assembly with an initial enrichment of 3.05 wt. % U-235 and a burnup of 34.5 GWd/MTU is acceptable for storage after a nine-year cooling time as defined at the intersection of 3.0 wt. % U-235 (rounding down) and 35 GWd/MTU (rounding up) on the qualification table.

Table 1-2c
PWR Fuel Qualification Table for the Standardized NUHOMS®-24P DSC (Fuel with BPRAs)
 (Minimum required years of cooling time after reactor core discharge)

BU (GWd/ MTU)	Assembly Average Initial Enrichment (wt. % U-235)																				
	2.0	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	3.0	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.8	3.9	4.0
10	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a
15	5	5	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a
20	5	5	5	5	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a
25	5	5	5	5	5	5	5	5	5	a	a	a	a	a	a	a	a	a	a	a	a
28				5	5	5	5	5	5	5	5	5	5	a	a	a	a	a	a	a	a
30					6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
32						6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
34							7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
36								8	8	8	8	8	8	8	8	8	8	8	8	8	8
38										8	8	8	8	8	8	8	8	8	8	8	8
40													9	9	9	9	9	9	9	9	9
41													10	10	10	10	10	10	10	10	10
42																					
43																					
44																					
45																					

a) Minimum Cooling Time 5 years, and Minimum 2350 ppm soluble boron required in the DSC cavity water during loading or unloading.

Notes:

- BU = Assembly average burnup
- BPRAs shall not exceed that of a BPRAs irradiated in fuel assemblies with a total burnup of 36,000 MWd/MTU.
- Minimum cooling time for a BPRAs is 5 years for B&W designs and 10 years for Westinghouse designs, regardless of the required assembly cooling time.
- Use burnup and enrichment to look up minimum cooling time in years. Licensee is responsible for ensuring that uncertainties in fuel enrichment and burnup are correctly accounted for during fuel qualification.
- Round burnup UP to next higher entry, round enrichments DOWN to next lower entry.
- Fuel with an initial enrichment less than 2.0 wt. % U-235 must be qualified for storage using the alternate nuclear parameters specified in Table 1-1a.
- Fuel with an initial enrichment greater than 4.0 wt. % U-235 is unacceptable for storage.
- Fuel with a burnup greater than 45 GWd/MTU is unacceptable for storage.
- Example: An assembly with an initial enrichment of 3.65 wt. % U-235 and a burnup of 42.5 GWd/MTU is acceptable for storage after a ten-year cooling time as defined at the intersection of 3.6 wt. % U-235 (rounding down) and 43 GWd/MTU (rounding up) on the qualification table.

Tables 1-2d through 1-2o are deleted.

**Table 1-2p
PWR Fuel Qualification Table for Zone 3 with 1.3 kW per Assembly, Fuel with or without CCs, for the
NUHOMS®-24PHB DSC**

(Minimum required years of cooling time after reactor core discharge)

BU (GWd/MTU)	Assembly Average Initial Enrichment (wt. % U-235)																									
	2.0	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	3.0	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.8	3.9	4.0	4.1	4.2	4.3	4.4	4.5
10	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
15	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
20	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
25	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
28	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
30					5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
32					5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
34							5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
36								5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
38									5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
39										5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
40											5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
41												5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
42													6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
43														6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
44															6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
45																6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
46																	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1
47																		6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2
48																			6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
49																				6.5	6.5	6.5	6.5	6.5	6.5	6.5
50																					6.5	6.5	6.5	6.5	6.5	6.5
51																						6.7	6.6	6.6	6.6	6.6
52																							7.0	6.9	6.8	6.8
53																								7.3	7.2	7.1
54																									7.7	7.6
55																										8.0

- BU = Assembly average burnup.
- Use burnup and enrichment to look up minimum cooling time in years. For fuel assemblies reconstituted with up to 10 stainless steel rods only, if the look up cooling time is less than 9.0 years then a minimum cooling time of 9.0 years shall be used. Licensee is responsible for ensuring that uncertainties in fuel enrichment and burnup are correctly accounted for during fuel qualification.
- Round burnup UP to next higher entry, round enrichments DOWN to next lower entry.
- Fuel with an initial enrichment greater than 4.5 wt.% U-235 is unacceptable for storage.
- Fuel with a burnup less than 10 GWd/MTU is acceptable for storage after 5-years cooling.
- Example: An assembly with an initial enrichment of 3.75 wt. % U-235 and a burnup of 46.5 GWd/MTU is acceptable for storage after a 6.2 years cooling time as defined by 3.7 wt. % U-235 (rounding down) and 47 GWd/MTU (rounding up) on the qualification table.
- See Figure 1-8 and 1-9 for a description of zones.
- For fuel assemblies reconstituted with Zirconium-alloy clad uranium-oxide rods use the assembly average enrichment to determine the minimum cooling time.
- The cooling times for damaged and intact assemblies are identical.
- For fuel assemblies containing BLEU fuel pellets, add 3 years of additional cooling time to the values shown in this table.

Table 1-2q
BWR Fuel Qualification Table for NUHOMS®-61BT DSC

(Minimum required years of cooling time after reactor core discharge)

BU (Gwd/ MTU)	Assembly Average Initial Enrichment (wt. % U-235)																															
	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	3.0	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.8	3.9	4.0	4.1	4.2	4.3	4.4	
10	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
15	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
20	5	5	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
25	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
28	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
30	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
32	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
34	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
36	11	11	10	10	10	10	10	10	10	10	10	10	9	9	9	9	9	9	9	9	9	9	8	8	8	8	8	8	8	8	8	8
38	14	13	13	12	12	12	12	11	11	11	11	11	11	11	11	11	10	10	10	10	10	10	10	9	9	9	9	9	9	9	9	9
39	15	14	14	14	13	13	13	12	12	12	12	12	12	12	12	12	11	11	11	11	11	10	10	10	10	10	10	10	10	10	10	10
40	16	16	15	15	15	15	14	14	14	14	14	14	13	13	13	13	12	12	12	12	12	11	11	11	11	11	11	10	10	10	10	10

This table provides an alternate methodology as cross referenced in Tables 1-1c and 1-1j for determination of fuel assemblies qualified for storage in NUHOMS®-61BT DSC.

- BU = Assembly average burnup
- Use burnup and enrichment to look up minimum cooling time in years. Licensee is responsible for ensuring that uncertainties in fuel enrichment and burnup are conservatively applied in determination of actual values for these two parameters.
- Round burnup UP to next higher entry, round enrichments DOWN to next lower entry.
- Fuel with an initial enrichment less than 1.4 and greater than 4.4 wt.% U-235 is unacceptable for storage.
- Fuel with a burnup greater than 40 Gwd/MTU is unacceptable for storage.
- Fuel with a burnup less than 10 Gwd/MTU is acceptable for storage after 4 years cooling.
- Example: An assembly with an initial enrichment of 3.75 wt. % U-235 and a burnup of 39.5 Gwd/MTU is acceptable for storage after a eleven-year cooling time as defined by 3.7 wt. % U-235 (rounding down) and 40 Gwd/MTU (rounding up) on the qualification table.
- For fuel assemblies containing BLEU fuel pellets, add 3 years of additional cooling time to the values shown in this table.

Tables 1-3a through 1-3h are deleted.

Table 1-3j is deleted.

Table 1-3k PWR Fuel Qualification Table for 1.5 kW per Fuel Assembly for the NUHOMS® 24PTH-S-LC and 32PTH1 DSCs

(Minimum required years of cooling time after reactor core discharge for fuel with 492 kgU per Fuel Assembly)

Table with columns: BU GWD/MTU, Maximum Assembly Average Initial U-235 Enrichment, wt. %, and 62 columns of cooling time values (0.7 to 5.1 years).

Note: The pages that follow Table 1-3p provide the explanatory notes and limitations regarding the use of this table.

Table 1-3I is deleted.

Table 1-3p
PWR Fuel Qualification Table for 0.2 to 0.6 wt.% U-235 for the NUHOMS® 24PTH, 32PT, 32PTH1, and 37PTH DSCs
 (Minimum required years of cooling time after reactor core discharge)

Dec. Heat Burn-up, GWD/MTU	380 kgU												475 kgU												
	1.2 kWIFA (37PTH)				1.5 kWIFA (24PTH-S-LC, 32PTH1)				2.0 kWIFA (24PTH-S-L)				2.2 kWIFA (32PT)				2.5 kWIFA (24PTH-S-L)								
	Enrichment, wt.%				Enrichment, wt.%				Enrichment, wt.%				Enrichment, wt.%				Enrichment, wt.%								
10	0.2	0.3	0.4	0.5	0.6	0.2	0.3	0.4	0.5	0.6	0.2	0.3	0.4	0.5	0.6	0.2	0.3	0.4	0.5	0.6	0.2	0.3	0.4	0.5	0.6
11	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
12	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
13	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
14	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
15	2.2	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
16	2.3	2.2	2.2	2.2	2.2	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
17	2.3	2.3	2.3	2.3	2.3	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
18	2.4	2.4	2.4	2.4	2.3	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
19	2.5	2.5	2.5	2.4	2.4	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
20	2.6	2.6	2.5	2.5	2.5	2.2	2.2	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0

Dec. Heat Burn-up, GWD/MTU	492 kgU																								
	1.2 kWIFA (37PTH)				1.5 kWIFA (24PTH-S-LC, 32PTH1)				2.0 kWIFA (24PTH-S-L)				2.2 kWIFA (32PT)				2.5 kWIFA (24PTH-S-L)								
	Enrichment, wt.%				Enrichment, wt.%				Enrichment, wt.%				Enrichment, wt.%				Enrichment, wt.%								
10	0.2	0.3	0.4	0.5	0.6	0.2	0.3	0.4	0.5	0.6	0.2	0.3	0.4	0.5	0.6	0.2	0.3	0.4	0.5	0.6	0.2	0.3	0.4	0.5	0.6
11	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
12	2.2	2.2	2.2	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
13	2.3	2.3	2.3	2.3	2.2	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
14	2.4	2.4	2.4	2.4	2.3	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
15	2.5	2.5	2.5	2.5	2.4	2.2	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
16	2.6	2.6	2.6	2.6	2.6	2.2	2.2	2.2	2.2	2.2	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
17	2.8	2.7	2.7	2.7	2.7	2.3	2.3	2.3	2.3	2.2	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
18	2.8	2.8	2.8	2.8	2.8	2.4	2.4	2.4	2.4	2.3	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
19	2.9	2.9	2.9	2.9	2.8	2.5	2.5	2.5	2.4	2.4	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
20	3.0	3.0	3.0	3.0	2.9	2.6	2.6	2.5	2.5	2.5	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0

Notes: Tables 1-3i, 1-3k, and 1-3m through 1-3p:Note A: General Notes

- These tables apply to the 24PTH, 32PT, 32PTH1, and 37PTH DSCs, as indicated in the table headings. Refer to the heat load zoning configuration figures for each DSC for a description of allowable heat loads (see Note B).
- BU = Assembly Average burnup.
- Use burnup and enrichment to look up minimum cooling time in years. Licensee is responsible for ensuring that uncertainties in fuel enrichment and burnup are correctly accounted for during fuel qualification.
- Round burnup UP to next higher entry, round enrichments DOWN to next lower entry.
- Fuel with an assembly average initial enrichment less than 0.2 wt. % U-235 or greater than 5.0 wt. % U-235 is unacceptable for storage.
- Fuel with a burnup greater than 62 GWd/MTU is unacceptable for storage.
- Fuel with a burnup less than 10 GWd/MTU is acceptable for storage after 2.0 years cooling.
- These tables are applicable to fuel assemblies with or without control components.
- The cooling times for failed, damaged, and intact assemblies are identical.
- For fuel assemblies containing BLEU fuel pellets, add 3.0 years of additional cooling time.
- For each fuel assembly heat load, tables are provided for uranium loadings of 380 kgU, 475 kgU, and 492 kgU. Use an FQT table with a uranium loading that exceeds the fuel assembly uranium loading. (Note that the 492 kgU tables are not applicable to the 32PT DSC.) Optionally, cooling times may be interpolated between tables based on the fuel assembly uranium loading, as described in Note C below.
- The gray shaded areas of the tables represent unanalyzed regions. Limited interpolation of cooling times into the unanalyzed regions may be performed, as described in Note D below.
- Requirements for reconstituted fuel assemblies are described in Note E below.

Note B: DSC Specific Notes

- 24PTH DSC heat load zoning configurations are defined in Figures 1-11 through 1-15a.
- 32PT DSC heat load zoning configurations are defined in Figures 1-2 through 1-4a.
- 32PTH1 DSC heat load zoning configurations are defined in Figures 1-26 through 1-28c.
- 37PTH DSC heat load zoning configurations are defined in Figures 1-39 and 1-40.
- 24PTH DSC: WE 15x15 PLSAs shall be limited to a minimum assembly average enrichment of 1.2 wt. % U-235.
- 32PT DSC: The maximum basket assembly average burnup is limited to 55 GWd/MTU (individual fuel assemblies are limited to 62 GWd/MTU).
- 32PTH1 DSC: Failed fuel is limited to 250 kgU.

Note C: Interpolation of Cooling Times based on Uranium Loading

If the fuel assembly uranium loading kgU_{new} falls within the range $\text{kgU}_{\text{low}} < \text{kgU}_{\text{new}} < \text{kgU}_{\text{high}}$, where kgU_{low} and kgU_{high} represent the uranium loadings of the fuel qualification tables, cooling times may be interpolated between fuel qualification tables using the following equation:

$$CT_{new} = \frac{CT_{high} * \ln(kgU_{new}/kgU_{low}) + CT_{low} * [\ln(kgU_{high}/kgU_{low}) - \ln(kgU_{new}/kgU_{low})]}{\ln(kgU_{high}/kgU_{low})}$$

In this equation, CT_{low} and CT_{high} correspond to the cooling times in the fuel qualification tables for the low and high uranium loadings. Because fuel qualification tables are available for 380 kgU, 475 kgU, and 492 kgU, interpolation may be performed either between the 380 kgU and 475 kgU tables or between the 475 kgU and 492 kgU tables. The fitting equation solution shall be rounded up to the nearest 0.1 years. The above equation may be simplified for the two interpolation regions.

For 380 kgU < kgU_{new} < 475 kgU, $CT_{new} = 4.4814 * [CT_{high} * \ln(kgU_{new}/380) - CT_{low} * \ln(kgU_{new}/475)]$

For 475 kgU < kgU_{new} < 492 kgU, $CT_{new} = 28.4382 * [CT_{high} * \ln(kgU_{new}/475) - CT_{low} * \ln(kgU_{new}/492)]$

Note that the 475 kgU < kgU_{new} < 492 kgU equation does not apply to the 32PT DSC, which is limited to 475 kgU.

Examples of cooling time interpolation are provided in the UFSAR, Section 7.2.3.2.

Note D: Extrapolation into Unanalyzed Region

Limited extrapolation of FQT cooling times into the unanalyzed regions is allowed. The extrapolation may be performed for a maximum difference of 4 GWd/MTU in burnup or 0.4 wt.% in enrichment. The extrapolation may be performed for either fixed enrichment (variable burnup, fixed FQT column) or fixed burnup (variable enrichment, fixed FQT row). The methodology is:

- Perform a regression analysis on the FQT cooling times and associated variable (either burnup or enrichment). Note: All FQT cooling times in either the row or column of data being extrapolated shall be used, even if many of the cooling times are the same.
- Develop a fitting equation for the data. A fourth-order polynomial with parameters having at least six significant digits to avoid rounding errors is recommended.
- Use the fitting equation to compute the extrapolated cooling time at the desired enrichment or burnup.
- Add 0.2 years as additional margin.

An example application of the extrapolation methodology is provided in the UFSAR, Section M.5.2.6.

Alternately, the required cooling time in the unanalyzed region may be explicitly determined using the fuel qualification methodology documented in the UFSAR.

Note E: Requirements for Reconstituted Fuel Assemblies

- For reconstituted fuel assemblies with UO₂ rods and/or Zr rods or Zr pellets and/or stainless steel rods, use the assembly average equivalent enrichment to determine the minimum cooling time.
- For irradiated stainless steel rods, the following extra cooling times are required:
 - 24PTH/32PTH1/37PTH DSCs: For ≤ 10 reconstituted rods, add an additional 1 year of cooling time if the FQT cooling time is < 10 years. Alternately, the licensee can qualify fuel assemblies with fewer than the maximum number of irradiated stainless steel rods and reduce cooling time requirements.
 - 32PT DSC: For ≤ 10 reconstituted rods, add an additional 1.5 years of cooling time; for 11 to 56 reconstituted rods, add an additional 6 years of cooling time. Alternately, the licensee can qualify fuel assemblies with fewer than the maximum number of irradiated stainless steel rods and reduce cooling time requirements.

Tables 1-4a through 1-4d are deleted.

Table 1-4e
BWR Fuel Qualification Table for the NUHOMS®-61BTH Type 1 DSC in the Standardized HSM
 (Minimum required years of cooling time after reactor core discharge for fuel with 198 kgU per FA)

BU GWD/MTU	Assembly Average Initial Enrichment (wt. % U-235)																																					
	0.9	1.2	1.5	2.0	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	3.0	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.8	3.9	4.0	4.1	4.2	4.3	4.4	4.5	4.6	4.7	4.8	4.9	5.0				
10	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		
15	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
20	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
23	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
25	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
28	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
30	4.0	4.0	4.0	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	
32	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
34	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
36	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
38	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
39	5.0	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
40	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
41	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
42	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
43	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
44	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
45	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
46	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
47	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
48	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
49	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
50	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
51	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5
53	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5
54	8.0	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5
55	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
56	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5
57	9.0	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5
58	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
59	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
60	10.0	10.0	10.0	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
61	10.5	10.5	10.5	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
62	11.0	11.0	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5

(continued)

Note: For burnups ≤ 20 GWd/MTU and enrichments between 0.5 and 0.9 wt. % U-235, the minimum cooling time is 3 years.

Notes: Table 1-4e:

- BU = Assembly Average burnup.
- Use burnup and enrichment to look up minimum cooling time in years.
- To determine the minimum required cooling time for fuel with 198 kgU/FA, use the sections of the Fuel Qualification Tables labelled “Minimum required years of cooling time after reactor core discharge for Fuel with 198 kgU per FA.”
- To determine the minimum required cooling time for fuel with up to 170 kgU/FA, use the sections of the Fuel Qualification Tables labelled “Minimum required years of cooling time after reactor core discharge for fuel with 170 kgU per FA.”
- To determine the minimum required cooling time for fuel with greater than 170 kgU/FA up to 198 kgU/FA, two options are available. Either use the sections of the Fuel Qualification Tables labelled “Minimum required years of cooling time after reactor core discharge for fuel with 198 kgU per FA,” or use the following fitting equation: $CT_{new} = 6.56 * [\ln(\text{kgU}_{new}) - 5.13] * CT_{high} - (\ln(\text{kgU}_{new}) - 5.28) * CT_{low}$, where kgU_{new} is the mass of the FA in question between 170 and 198 kgU, CT_{high} is the cooling time looked up from the 198 kgU per FA FQTs, and CT_{low} is the cooling time looked up from the 170 kgU per FA FQTs. To use the fitting equation, the Burnup, wt. % U235, and the decay heat zone value must be identical for the 170 kgU FA, the 198 kgU FA, and the FA in question between 170 and 198 kgU/FA, and the fitting equation solution shall be rounded up to the next higher single decimal place.
- Round burnup UP to next higher entry, round enrichments DOWN to next lower entry.
- Fuel with a lattice average initial enrichment greater than 5.0 wt. % U-235 is unacceptable for storage.
- Fuel with a burnup greater than 62 GWD/MTU is unacceptable for storage.
- For reconstituted fuel assemblies with UO₂ rods and/or Zr rods or Zr pellets and/or stainless steel rods, use the lattice average equivalent enrichment to determine the minimum cooling time.
- The cooling times for failed, damaged, and intact assemblies are identical.
- For fuel assemblies containing BLEU fuel pellets, add 3.0 years of additional cooling time to the values shown in Tables 1-4e.
- If 10 irradiated stainless steel rods are present in the reconstituted fuel assembly, add an additional 5.0 years of cooling time to the value shown in the table. Alternately, the licensee can qualify fuel assemblies with fewer than the 10 irradiated stainless steel rods and reduce the cooling time requirement.

Extrapolation into Unanalyzed Region

The gray-shaded areas of the tables represent unanalyzed regions. Limitations for loading UF in the unanalyzed regions are specified in Table 1-1t. Limited extrapolation of FQT cooling times into the unanalyzed regions is allowed. The extrapolation may be performed for a maximum difference of 4 GWD/MTU in burnup or 0.4 wt.% in enrichment. The extrapolation may be performed for either fixed enrichment (variable burnup, fixed FQT column) or fixed burnup (variable enrichment, fixed FQT row). The methodology is:

1. Perform a regression analysis on the FQT cooling times and associated variable (either burnup or enrichment). Note: All FQT cooling times in either the row or column of data being extrapolated shall be used, even if many of the cooling times are the same.
2. Develop a fitting equation for the data. A fourth-order polynomial with parameters having at least six significant digits to avoid rounding errors is recommended.
3. Use the fitting equation to compute the extrapolated cooling time at the desired enrichment or burnup.
4. Add 0.2 years as additional margin.

An example application of the extrapolation methodology is provided in the UFSAR, Section T.5.2. Alternately, the required cooling time in the unanalyzed region may be explicitly determined using the fuel qualification methodology documented in the UFSAR.

Table 1-4f
BWR Fuel Qualification Table for the NUHOMS®-61BTH DSC in the HSM-H
 (Minimum required years of cooling time after reactor core discharge)

Burn-Up, GWD/MTU	Assembly Averaged Initial U-235 Enrichment, wt. %																						
	0.7	0.9	1.5	1.7	2.5	2.8	2.9	3.0	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.8	5.0						
6	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00						
7		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00						
19		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00						
30			1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00						
35				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00						
40					1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00						
45						1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00						
46							1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00						
47								1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00						
48									1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05						
49										1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05						
50											1.10	1.10	1.10	1.10	1.10	1.10	1.10						
51												1.10	1.10	1.10	1.10	1.10	1.10						
52													1.15	1.15	1.15	1.15	1.15						
53														1.15	1.15	1.15	1.15						
54															1.20	1.20	1.20						
55																1.20	1.20						
56																	1.25						
57																		1.25					
58																			1.25				
59																				1.30			
60																					1.30		
61																						1.30	
62																							1.30
Enr. wt. %	0.7	0.9	1.5	1.7	2.5	2.8	2.9	3.0	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.8	5.0						

Notes on Table 1-4f:

1. Use assembly average burnup (BU_{avg}) to look up minimum cooling time in years. Round burnup up to the next whole number. For example, 47.1 GWd/MTU rounds up to 48 GWd/MTU.
2. Fuel in the gray shaded region is UF. An additional cooling time penalty of 0.2 years is applied for UF. Alternately, the required cooling time in the unanalyzed region may be explicitly determined using the fuel qualification methodology documented in the UFSAR. Restrictions on the number and location of UF are provided in Table 1-1t. The lower enrichment boundary for a burnup not shown on the table may be computed as $BU/20$ in the range $20 \text{ GWd/MTU} \leq BU \leq 35 \text{ GWd/MTU}$ and as $BU/16$ in the range $36 \text{ GWd/MTU} \leq BU \leq 62 \text{ GWd/MTU}$. Round enrichment down to the nearest 0.1%. (Example: $62/16 = 3.875\%$, round down to 3.8%).
3. Fuel with an assembly average burnup greater than 62 GWd/MTU or an assembly average initial enrichment greater than 5.0% is unacceptable for storage.
4. The cooling times for intact, damaged, and failed assemblies are identical.
5. For fuel assemblies containing BLEU fuel pellets, add 3.0 years of additional cooling time.
6. If 10 irradiated stainless steel rods are present in the reconstituted fuel assembly, add an additional 5.0 years of cooling time to the value shown in the table. Alternately, the Licensee can qualify fuel assemblies with fewer than 10 irradiated stainless steel rods and reduce the cooling time requirement. For reconstituted fuel assemblies with UO₂ rods and/or Zr rods or Zr pellets, no cooling time penalty is required.
7. This table applies to both the Type 1 and Type 2 DSC.

Tables 1-4g through 1-4h are deleted.

**Table 1-4i
Deleted**

Tables 1-5a through 1-5g are deleted.

Table 1-6a
Fuel Qualification Table for 0.3 kW BWR FAs in Zone 1 of a NUHOMS®-61BT DSC Contained in an OS197L TC
 (Minimum required years of cooling time after reactor core discharge)

BU GWd/MTU	Assembly Average Initial Enrichment (wt. % U-235)																															
	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	3.0	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.8	3.9	4.0	4.1	4.2	4.3	4.4	
10	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	
15	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	
20	5	5	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	
25	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
28					6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
30					7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
32					8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
34					9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
36					11	11	11	10	10	10	10	10	9	9	9	9	9	9	9	9	9	8	8	8	8	8	8	8	8	8	8	8
38					14	13	13	12	12	12	12	11	11	11	11	11	11	10	10	10	10	10	10	9	9	9	9	9	9	9	9	9
39					15	14	14	13	13	13	12	12	12	12	12	11	11	11	11	11	11	10	10	10	10	10	10	10	10	10	10	10
40					16	16	15	15	15	14	14	14	13	13	13	12	12	12	12	12	12	11	11	11	11	11	10	10	10	10	10	10

Notes for Tables 1-6a and 1-6b:

- BU = Assembly average burnup
- Use burnup and enrichment to look up minimum cooling time in years. Licensee is responsible for ensuring that uncertainties in fuel enrichment and burnup are conservatively applied in determination of actual values for these two parameters.
- Round burnup UP to next higher entry, round enrichments DOWN to next lower entry.
- Fuel with an initial enrichment less than 1.4 and greater than 4.4 wt. % U-235 is unacceptable for storage.
- Fuel with a burnup greater than 40 GWd/MTU is unacceptable for storage.
- Fuel with a burnup less than 10 GWd/MTU is acceptable for storage after four-years cooling.
- For fuel assemblies containing BLEU fuel pellets, add 3.0 years of additional cooling time to the values shown in these tables.
- Example: An assembly with an initial enrichment of 3.75 wt. % U-235 and a burnup of 39.5 GWd/MTU is acceptable for storage in Zone 1 locations after a cooling time of 11 years (per Table 1-6a) and in Zone 2 locations after a cooling time of 37.5 years (per Table 1-6b) as defined by 3.7 wt. % U-235 (rounding down) and 40 GWd/MTU (rounding up) on these fuel qualification tables.

Table 1-6b
Fuel Qualification Table for 0.17 kW BWR FAs in Zone 2 of a NUHOMS®-61BT DSC Contained in an OS197L TC
 (Minimum required years of cooling time after reactor core discharge)

BU GWD/MTU	Assembly Average Initial Enrichment (wt. % U-235)																																
	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	3.0	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.8	3.9	4.0	4.1	4.2	4.3	4.4		
10	21.5	20.5	20.5	20.5	20.5	19.5	19.5	19.5	19.5	19.5	19.5	18.5	18.5	18.5	18.5	18.5	18.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	
11	22.0	22.0	22.0	22.0	21.0	21.0	21.0	21.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	
12	23.0	23.0	23.0	23.0	22.0	22.0	22.0	22.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	
13	24.0	24.0	24.0	23.0	23.0	23.0	23.0	23.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	
14	25.0	25.0	24.0	24.0	24.0	24.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	
15	26.0	26.0	25.0	25.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	
16	27.0	26.0	26.0	26.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	
17	27.0	27.0	27.0	27.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0	26.0	
18	28.0	28.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	
19	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0
20	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0
21	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
22	30.0	30.0	30.0	30.0	30.5	30.5	30.5	30.5	29.5	29.5	29.5	29.5	29.5	29.5	29.5	29.5	29.5	29.5	29.5	29.5	29.5	29.5	29.5	29.5	29.5	29.5	29.5	29.5	29.5	29.5	29.5	29.5	29.5
23	30.5	30.5	30.5	30.5	30.5	30.5	30.5	30.5	30.5	30.5	30.5	30.5	30.5	30.5	30.5	30.5	30.5	30.5	30.5	30.5	30.5	30.5	30.5	30.5	30.5	30.5	30.5	30.5	30.5	30.5	30.5	30.5	30.5
24	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5
25	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5
26	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5
27	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5
28	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.5
29	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5
30	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5	33.5
31	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5
32	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5
33	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5
34	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5
35	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5
36	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5
37	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5
38	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5
39	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5
40	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5

Note: The explanatory notes and limitations provided for Table 1-6a are also applicable for this table.

Table 1-6c
Fuel Qualification Table for 0.6 kW PWR FAs in Zone 1 of a NUHOMS®-32PT DSC Contained in an OS197L TC
(Fuel with or without CCs)

(Minimum required years of cooling time after reactor core discharge)

BU	Assembly Average Initial Enrichment (wt. % U-235)																																					
	1.1	1.2	1.4	1.6	1.8	1.9	2.0	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	3.0	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.8	3.9	4.0	4.1	4.2	4.3	4.4	4.5	4.6	4.7	4.8	4.9	5.0	
6	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
8	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
10	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
15	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
20	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
25	6.5	6.5	6.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
28	8.0	8.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	
30	9.0	9.0	9.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	
32	10.5	10.5	9.5	9.5	9.5	9.5	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	
34	12.0	12.0	12.0	11.5	11.0	11.0	11.0	11.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
36	14.5	14.5	14.0	14.0	13.5	13.5	13.0	13.0	13.0	13.0	13.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
38	17.5	17.5	16.5	16.5	16.5	16.0	16.0	15.5	15.5	15.0	15.0	15.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
39	19.5	19.0	18.5	18.0	17.0	16.5	16.5	16.5	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0
40	20.5	20.0	19.0	19.0	18.5	18.5	18.5	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0
41	22.5	21.5	21.0	21.0	20.0	20.0	19.5	19.5	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0
42	24.0	22.5	22.5	21.5	21.5	21.0	21.0	21.0	21.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
43	25.0	24.5	24.5	23.5	23.5	23.0	22.0	22.0	21.5	21.5	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0
44	26.5	26.5	25.0	25.0	24.0	24.0	24.0	23.5	23.5	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0
45	27.5	27.5	27.0	26.0	26.0	25.0	25.0	25.0	24.5	24.5	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0

Note: The page that follows Table 1-6d provides the explanatory notes and limitations regarding the use of this table.

Notes for Tables 1-6c and 1-6d:

- BU = Assembly average burnup
 - Use burnup and enrichment to look up minimum cooling time in years. Licensee is responsible for ensuring that uncertainties in fuel enrichment and burnup are correctly accounted for during fuel qualification.
 - For fuel assemblies with CCs, increase the indicated cooling time by 1.5 years. This applies to 0.6 kW FAs only.
 - For fuel assemblies reconstituted with up to 10 stainless steel rods, increase the indicated cooling time by 1.5 years. If more than 10 stainless steel rods are present, increase the indicated cooling time by 6 years.
 - Round burnup UP to next higher entry, round enrichments DOWN to next lower entry.
 - Fuel with an initial enrichment less than 1.1 and greater than 5.0 wt. % U-235 is unacceptable for storage.
 - Fuel with a burnup greater than 45 GWd/MTU is unacceptable for storage.
 - Fuel with a burnup less than 10 GWd/MTU is acceptable for storage after 5-years cooling.
 - For fuel assemblies containing BLEU fuel pellets, add 3.0 years of additional cooling time to the values shown in Table 1-6c and Table 1-6d.
- Example: An assembly with an initial enrichment of 3.75 wt. % U-235 and a burnup of 41.5 GWd/MTU is acceptable for storage in Zone 1 locations after a cooling time of 19 years (per Table 1-6c) and in Zone 2 locations after a cooling time of 41.5 years (per Table 1-6d) as defined by 3.7 wt. % U-235 (rounding down) and 42 GWd/MTU (rounding up) on these fuel qualification tables.

Tables 1-7a through 1-7j are deleted.

Table 1-7I is deleted.

Notes for Tables 1-7k and 1-7m:

- Burnup = assembly average burnup.
- Shaded regions in Tables 1-7k and 1-7m above are not analyzed.
- Use burnup and enrichment to look up minimum cooling time in years. Licensee is responsible for ensuring that uncertainties in fuel enrichment and burnup are correctly accounted for during fuel qualification.
- To determine the minimum required cooling time for fuel with 198 kgU/FA, use the sections of the Fuel Qualification Tables labelled "Minimum required years of cooling time after reactor core discharge for Fuel with 198 kgU per FA."
- To determine the minimum required cooling time for fuel with up to 170 kgU/FA, use the sections of the Fuel Qualification Tables labelled "Minimum required years of cooling time after reactor core discharge for fuel with 170 kgU per FA."
- To determine the minimum required cooling time for fuel with greater than 170 kgU/FA up to 198 kgU/FA, two options are available. Either use the sections of the Fuel Qualification Tables labelled "Minimum required years of cooling time after reactor core discharge for fuel with 198 kgU per FA," or use the following fitting equation: $CT_{new} = 6.56 * [(ln(kgU_{new}) - 5.13) * CT_{high} - (ln(kgU_{new}) - 5.28) * CT_{low}]$, where kgU_{new} is the mass of the FA in question between 170 and 198 kgU, CT_{high} is the cooling time looked up from the 198 kgU per FA FQTs, and CT_{low} is the cooling time looked up from the 170 kgU per FA FQTs. To use the fitting equation, the Burnup, wt. % U235, and the decay heat zone value must be identical for the 170 kgU FA, the 198 kgU FA, and the FA in question between 170 and 198 kgU/FA, and the fitting equation solution shall be rounded up to the next higher single decimal place.
- For fuel assemblies containing blankets, use the bundle average enrichment.
- Round burnup UP to next higher entry, round enrichments DOWN to next lower entry.
- Fuel with an assembly average initial enrichment less than 0.5 (or less than the minimum provided above for each burnup) or greater than 5.0 wt. % U-235 is unacceptable for storage.
- Fuel with a burnup greater than 62 GWd/MTU is unacceptable for storage.
- Fuel with a burnup less than 10 GWd/MTU is acceptable for storage after three-years cooling.
- See Figure 1-31 through Figure 1-36 and Figure 1-38 for a description of the heat load zone configurations.
- For reconstituted fuel assemblies with UO_2 and/or Zr rods or Zr pellets and/or stainless steel rods, use the assembly average equivalent enrichment to determine the minimum cooling time.
- If irradiated stainless steel rods are present in the reconstituted fuel assembly, add an additional 5.0 years of cooling time.
- The cooling times for damaged and intact assemblies are identical.
- For fuel assemblies containing BLEU fuel pellets, add 3.0 years of additional cooling time to the values shown in Table 1-7k and 1-7m. The following are examples of an intact fuel assembly to be loaded into a decay heat zone with a limit of 0.22 kWt/FA. The FA has an initial enrichment of 3.65 wt. % U-235 and a burnup of 41.5 GWd/MTU: