RENEWED AMENDMENT NUMBER 11 TO COC 1004

REVISION 1

# TECHNICAL SPECIFICATIONS FOR THE STANDARDIZED NUHOMS® HORIZONTAL MODULAR STORAGE SYSTEM

DOCKET NO. 72-1004

1.0 Use and Application ....1-1
1.1 Definitions....1-1
1.2 Logical Connectors....1-3
1.3 Completion Times ....1-5
1.4 Frequency ....1-8
2.0 Functional and Operating Limits ....2-1
2.1 Fuel to be Stored in the Standardized NUHOMS® System ....2-1
2.2 Functional and Operating Limits Violations ....2-2
3.0 Limiting Condition for Operation (LCO) and Surveillance Requirement (SR) Applicability ....3-1
3.1 Fuel Integrity....3-3
3.1.1 DSC Bulkwater Removal Medium and Vacuum Drying Pressure ....3-3
3.1.2 DSC Helium Backfill Pressure ....3-5
3.1.3 Time Limit for Completion of DSC Transfer (24PTH, 61BTH Type 2 or 32PTH1 DSC Only) ....3-7
3.1.4 HSM Maximum Air Exit Temperature with a Loaded DSC ....3-9
3.2 Cask Criticality Control....3-11
4.0 Design Features....4-1
4.1 Canister Criticality Control....4-2
4.2 Codes and Standards....4-4
4.2.1 Horizontal Storage Module (HSM)....4-4
4.2.2 Dry Shielded Canister (DSC)....4-4
4.2.3 Transfer Cask (TC)....4-5
4.2.4 ASME Code Alternatives ....4-6
4.3 Storage Location Design Features....4-31
4.3.1 Storage Configuration....4-31
4.3.2 Concrete Storage Pad Properties to Limit DSC Gravitational Loadings Due to Postulated Drops....4-31
4.3.3 Site Specific Parameters and Analyses....4-32
4.4 TC Design Features ....4-34
5.0 Administrative Controls ....5-1
5.1 Procedures ....5-1
5.1.1 DSC Loading, Unloading and Preparation Program....5-2
5.1.2 ISFSI Operations Program ....5-2
5.1.3 Aging Management Program Procedures and Reporting. ....5-2
5.2 Programs....5-3
5.2.1 10 CFR 72.48 Evaluation Program....5-3
5.2.2 Training Program....5-4
5.2.3 Radiological Environmental Monitoring Program....5-4
5.2.4 Radiation Protection Program....5-5
5.2.5 HSM or HSM-H Thermal Monitoring Program....5-9
5.2.6 Hydrogen Gas Monitoring for 24P, 52B, 24PHB, 61BT, 32PT, 24PTH, 61BTH and 32PTH1 DSCs....5-10
5.3 Cask Transfer Controls ....5-11
5.3.1 TC/DSC Lifting/Handling Height Limits....5-11
5.3.2 Cask Drop....5-12
5.3.3 TC Alignment with HSM or HSM-H....5-12
5.3.4 Trailer Shielding Drop onto OS197L TC....5-12
5.4 HSM or HSM-H Dose Rate Evaluation Program....5-13
5.5 Concrete Testing for HSM-H....5-15
5.6 HSM-H Configuration Changes....5-16

## List of Tables


| | | |
|---|---|---|
| Table 1-1a | PWR Fuel Specifications for Fuel to be Stored in the Standardized NUHOMS®-24P DSC | T-1 |
| Table 1-1b | BWR Fuel Specifications for Fuel to be Stored in the Standardized NUHOMS®-52B DSC | T-2 |
| Table 1-1c | BWR Fuel Specifications for Fuel to be Stored in the Standardized NUHOMS®-61BT DSC | T-3 |
| Table 1-1d | BWR Fuel Assembly Design Characteristics(1)(2) for the NUHOMS®-61BT DSC | T-4 |
| Table 1-1e | PWR Fuel Specifications for Fuel to be Stored in the NUHOMS®-32PT DSC | T-5 |
| Table 1-1f | PWR Fuel Assembly Design Characteristics for the NUHOMS®-32PT DSC | T-6 |
| Table 1-1g | Maximum Planar Average Initial Enrichment and Required Number of PRAs and Minimum Soluble Boron Loading (NUHOMS®-32PT DSC) | T-7 |
| Table 1-1h | B10 Specification for the NUHOMS®-32PT Poison Plates | T-8 |
| Table 1-1i | PWR Fuel Specification for Fuel to be Stored in the Standardized NUHOMS®-24PHB DSC | T-9 |
| Table 1-1j | BWR Fuel Specification of Damaged Fuel to be Stored in the Standardized NUHOMS®-61BT DSC | T-10 |
| Table 1-1k | B10 Specification for the NUHOMS®-61BT Poison Plates | T-12 |
| Table 1-1l | PWR Fuel Specification for the Fuel to be Stored in the NUHOMS®-24PTH DSC | T-13 |
| Table 1-1m | PWR Fuel Assembly Design Characteristics for the NUHOMS®-24PTH DSC | T-15 |
| Table 1-1n | Thermal and Radiological Characteristics for Control Components Stored in the NUHOMS®-24PTH DSC | T-16 |
| Table 1-1o | Not Used | T-16 |
| Table 1-1p | Maximum Planar Average Initial Enrichment v/s Neutron Poison Requirements for the NUHOMS®-24PTH DSC (Intact Fuel) | T-17 |
| Table 1-1q | Maximum Assembly Average Initial Enrichment v/s Neutron Poison Requirements for the NUHOMS®-24PTH DSC (Damaged Fuel) | T-19 |
| Table 1-1r | B10 Specification for the NUHOMS®-24PTH Poison Plates | T-20 |
| Table 1-1s | (deleted) | T-20 |
| Table 1-1t | BWR Fuel Specification for the Fuel to be Stored in the NUHOMS®-61BTH DSC | T-21 |
| Table 1-1u | BWR Fuel Assembly Design Characteristics(1) for the NUHOMS®-61BTH DSC | T-23 |
| Table 1-1v | Maximum Fuel Assembly Lattice Average Initial Enrichment v/s Minimum B10 Requirements for the NUHOMS®-61BTH DSC Poison Plates (Intact Fuel) | T-24 |

| | | |
|---|---|---|
| Table 1-1w | Maximum Fuel Assembly Lattice Average Initial Enrichment v/s Minimum B10 Requirements for the NUHOMS®-61BTH DSC Poison Plates (Damaged Fuel) | T-25 |
| Table 1-1x | Not Used | T-25 |
| Table 1-1y | Not Used | T-25 |
| Table 1-1z | Not Used | T-25 |
| Table 1-1aa | PWR Fuel Specification for the Fuel to be Stored in the NUHOMS®-32PTH1 DSC | T-26 |
| Table 1-1bb | PWR Fuel Assembly Design Characteristics for the NUHOMS®-32PTH1 DSC | T-28 |
| Table 1-1cc | Maximum Planar Average Initial Enrichment v/s Neutron Poison Requirements for 32PTH1 DSC (Intact Fuel) | T-29 |
| Table 1-1dd | Maximum Planar Average Initial Enrichment v/s Neutron Poison Requirements for 32PTH1 DSC (Damaged Fuel) | T-31 |
| Table 1-1ee | Thermal and Radiological Characteristics for Control Components Stored in the NUHOMS®-32PT and NUHOMS®-32PTH1 DSCs | T-34 |
| Table 1-1ff | B10 Specification for the NUHOMS®-32PTH1 Poison Plates | T-35 |
| Table 1-2a | PWR Fuel Qualification Table for the Standardized NUHOMS®-24P DSC (Fuel Without BPRAs) | T-36 |
| Table 1-2b | BWR Fuel Qualification Table for the Standardized NUHOMS®-52B DSC | T-37 |
| Table 1-2c | PWR Fuel Qualification Table for the Standardized NUHOMS®-24P DSC (Fuel with BPRAs) | T-38 |
| Table 1-2d | PWR Fuel Qualification Table for 1.2 kW per Assembly Fuel without CCs for the NUHOMS®-32PT DSC | T-39 |
| Table 1-2e | PWR Fuel Qualification Table for 0.87 kW per Assembly Fuel without CCs for the NUHOMS®-32PT DSC | T-40 |
| Table 1-2f | PWR Fuel Qualification Table for 0.7 kW Fuel without CCs per Assembly for the NUHOMS®-32PT DSC | T-41 |
| Table 1-2g | PWR Fuel Qualification Table for 0.63 kW per Assembly Fuel without CCs for the NUHOMS®-32PT DSC | T-42 |
| Table 1-2h | PWR Fuel Qualification Table for 0.6 kW per Assembly Fuel without CCs for the NUHOMS®-32PT DSC | T-43 |
| Table 1-2i | PWR Fuel Qualification Table for 1.2 kW per Assembly Fuel with CCs for the NUHOMS®-32PT DSC | T-44 |
| Table 1-2j | PWR Fuel Qualification Table for 0.87 kW per Assembly Fuel with CCs for the NUHOMS®-32PT DSC | T-45 |
| Table 1-2k | PWR Fuel Qualification Table for 0.7 kW per Assembly Fuel with CCs for the NUHOMS®-32PT DSC | T-46 |
| Table 1-2l | PWR Fuel Qualification Table for 0.63 kW per Assembly Fuel with CCs for the NUHOMS®-32PT DSC | T-47 |
| Table 1-2m | PWR Fuel Qualification Table for 0.6 kW per Assembly Fuel with CCs for the NUHOMS®-32PT DSC | T-48 |

Table 1-2n PWR Fuel Qualification Table for Zone 1 with 0.7 kW per Assembly, Fuel with or without BPRAs, for the NUHOMS®-24PHB DSC ..... T-49
Table 1-2o PWR Fuel Qualification Table for Zone 2 with 1.0 kW per Assembly, Fuel with or without BPRAs, for the NUHOMS®-24PHB DSC ..... T-50
Table 1-2p PWR Fuel Qualification Table for Zone 3 with 1.3 kW per Assembly, Fuel with or without BPRAs, for the NUHOMS®-24PHB DSC ..... T-51
Table 1-2q BWR Fuel Qualification Table for NUHOMS®-61BT DSC ..... T-52
Table 1-3a PWR Fuel Qualification Table for Zone 1 Fuel with 1.7 kW per Assembly for the NUHOMS®-24PTH DSC (Fuel without CCs) ..... T-53
Table 1-3b PWR Fuel Qualification Table for Zone 2 Fuel with 2.0 kW per Assembly for the NUHOMS®-24PTH DSC (Fuel without CCs) ..... T-54
Table 1-3c PWR Fuel Qualification Table for Zone 3 Fuel with 1.5 kW per Assembly for the NUHOMS®-24PTH DSC (Fuel without CCs) ..... T-55
Table 1-3d PWR Fuel Qualification Table for Zone 4 Fuel with 1.3 kW per Assembly for the NUHOMS®-24PTH DSC (Fuel without CCs) ..... T-56
Table 1-3e PWR Fuel Qualification Table for Zone 1 Fuel with 1.7 kW per Assembly for the NUHOMS®-24PTH DSC (Fuel with CCs) ..... T-57
Table 1-3f PWR Fuel Qualification Table for Zone 2 Fuel with 2.0 kW per Assembly for the NUHOMS®-24PTH DSC (Fuel with CCs) ..... T-58
Table 1-3g PWR Fuel Qualification Table for Zone 3 Fuel with 1.5 kW per Assembly for NUHOMS®-24PTH DSC (Fuel with CCs) ..... T-59
Table 1-3h PWR Fuel Qualification Table for Zone 4 Fuel with 1.3 kW per Assembly for the NUHOMS®-24PTH DSC (Fuel with CCs) ..... T-60
Table 1-4a BWR Fuel Qualification Table for Zone 1 Fuel with 0.22 kW per Assembly for the NUHOMS®-61BTH DSC ..... T-62
Table 1-4b BWR Fuel Qualification Table for Zone 2 Fuel with 0.35 kW per Assembly for the NUHOMS®-61BTH DSC ..... T-63
Table 1-4c BWR Fuel Qualification Table for Zone 3 Fuel with 0.393 kW per Assembly for the NUHOMS®-61BTH DSC ..... T-64
Table 1-4d BWR Fuel Qualification Table for Zone 4 Fuel with 0.48 kW per Assembly for the NUHOMS®-61BTH DSC ..... T-65
Table 1-4e BWR Fuel Qualification Table for Zone 5 Fuel with 0.54 kW per Assembly for the NUHOMS®-61BTH DSC ..... T-66
Table 1-4f BWR Fuel Qualification Table for Zone 6 Fuel with 0.7 kW per Assembly for the NUHOMS®-61BTH DSC ..... T-67
Table 1-5a PWR Fuel Qualification Table for Zone 1 Fuel with 0.6 kW per Assembly for the NUHOMS®-32PTH1 DSC (Fuel without CCs) ..... T-69
Table 1-5b PWR Fuel Qualification Table for Zone 2 Fuel with 0.8 kW per Assembly for the NUHOMS®-32PTH1 DSC (Fuel without CCs) ..... T-70
Table 1-5c PWR Fuel Qualification Table for Zone 3 or Zone 4 Fuel with 1.0 kW per Assembly for the NUHOMS®-32PTH1 DSC (Fuel without CCs) ..... T-71

Table 1-5d PWR Fuel Qualification Table for Zone 5 Fuel with 1.3 kW per Assembly for the NUHOMS®-32PTH1 DSC (Fuel without CCs) ..... T-72
Table 1-5e PWR Fuel Qualification Table for Zone 5 with Damaged Fuel with 1.2 kW per Assembly for the NUHOMS®-32PTH1 DSC (Fuel without CCs) ..... T-73
Table 1-5f PWR Fuel Qualification Table for Zone 6 Fuel with 1.5 kW per Assembly for the NUHOMS®-32PTH1 DSC (Fuel without CCs) ..... T-74
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 ..... T-76
Table 1-6b Fuel Qualification Table for BWR FAs in Zone 2 of a NUHOMS®-61BT DSC Contained in an OS197L TC ..... T-77
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) ..... T-78
Table 1-6d Fuel Qualification Table for PWR FAs in Zone 2 of a NUHOMS®-32PT DSC Contained in an OS197L TC (Fuel with or without CCs)..... T-79

## List of Figures

Figure 1-1 PWR Fuel Criticality Acceptance Curve .....F-1
Figure 1-2 Heat Load Zoning Configuration 1 for the NUHOMS®-32PT DSC .....F-2
Figure 1-3 Heat Load Zoning Configuration 2 for the NUHOMS®-32PT DSC .....F-3
Figure 1-4 Heat Load Zoning Configuration 3 for the NUHOMS®-32PT DSC .....F-4
Figure 1-5 Required PRA Locations for the NUHOMS®-32PT DSC Configuration with Four PRAs .....F-5
Figure 1-6 Required PRA Locations for the NUHOMS®-32PT DSC Configuration with Eight PRAs.....F-6
Figure 1-7 Required PRA Locations for the NUHOMS®-32PT DSC Configuration with Sixteen PRAs.....F-7
Figure 1-8 Heat Load Zoning Configuration for Fuel Assemblies (with or without BPRAs) Stored in NUHOMS®-24PHB DSC – Configuration 1 .....F-8
Figure 1-9 Heat Load Zoning Configuration for Fuel Assemblies (with or without BPRAs) Stored in NUHOMS®-24PHB DSC – Configuration 2 .....F-9
Figure 1-10 Soluble Boron Concentration vs. Fuel Initial U-235 Enrichment for the 24PHB System .....F-10
Figure 1-11 Heat Load Zoning Configuration Number 1 for 24PTH-S and 24PTH-L DSCs (with or without Control Components).....F-11
Figure 1-12 Heat Load Zoning Configuration Number 2 for 24PTH-S and 24PTH-L DSCs (with or without Control Components).....F-12
Figure 1-13 Heat Load Zoning Configuration Number 3 for 24PTH-S and 24PTH-L DSCs (with or without Control Components).....F-13

Figure 1-14 Heat Load Zoning Configuration Number 4 for 24PTH-S and 24PTH-L DSCs (with or without Control Components)....F-14
Figure 1-15 Heat Load Zoning Configuration Number 5 for 24PTH-S-LC DSC (with or without Control Components)....F-15
Figure 1-16 Location of Damaged Fuel Inside 24PTH DSC....F-16
Figure 1-17 Heat Load Zoning Configuration Number 1 for Type 1 or Type 2 61BTH DSCs....F-17
Figure 1-18 Heat Load Zoning Configuration Number 2 for Type 1 or Type 2 61BTH DSCs....F-18
Figure 1-19 Heat Load Zoning Configuration Number 3 for Type 1 or Type 2 61BTH DSCs....F-19
Figure 1-20 Heat Load Zoning Configuration Number 4 for Type 1 or Type 2 61BTH DSCs....F-20
Figure 1-21 Heat Load Zoning Configuration Number 5 for Type 2 61BTH DSCs....F-21
Figure 1-22 Heat Load Zoning Configuration Number 6 for Type 2 61BTH DSCs....F-22
Figure 1-23 Heat Load Zoning Configuration Number 7 for Type 2 61BTH DSCs....F-23
Figure 1-24 Heat Load Zoning Configuration Number 8 for Type 2 61BTH DSCs....F-24
Figure 1-25 Location of Damaged Fuel Inside 61BTH DSC....F-25
Figure 1-26 Heat Load Zoning Configuration Number 1 for 32PTH1-S, 32PTH1-M and 32PTH1-L DSCs (Type 1 Baskets)....F-26
Figure 1-27 Heat Load Zoning Configuration Number 2 for 32PTH1-S, 32PTH1-M and 32PTH1-L DSCs (Type 1 or Type 2 Baskets)....F-27
Figure 1-28 Heat Load Zoning Configuration Number 3 for 32PTH1-S, 32PTH1-M and 32PTH1-L DSCs (Type 1 or Type 2 Baskets)....F-28
Figure 1-29 Heat Load Zone Configuration for the 61BT DSC Contained in an OS197L TC....F-29
Figure 1-30 Heat Load Zone Configuration for the 32PT DSC Contained in an OS197L TC....F-30

## 1.0 USE AND APPLICATION

### 1.1 Definitions

----------NOTE----------

*The defined terms of this section appear in capitalized type and are applicable throughout these Technical Specifications and Bases.*

---

| Term | Definition |
|---|---|
| ACTIONS | ACTIONS shall be that part of a Specification that prescribes Required Actions to be taken under designated Conditions within specified Completion Times. |
| HORIZONTAL STORAGE MODULE (HSM) | The HSM (Standardized HSM, HSM-H, high seismic option for HSM-H or other models enveloped by these designs) is a reinforced concrete structure for storage of a loaded DSC at a spent fuel storage installation. e.g., Standardized HSM includes HSM Model 80, Model 102, Model 152 or Model 202 as described in the Updated Final Safety Analysis Report (UFSAR). The generic term “HSM-H” refers to HSM-H or high seismic option for HSM-H except where a specific HSM-H configuration is called out. |
| DRY SHIELDED CANISTER (DSC) | A DSC (Model 24P, 52B, 61BT, 32PT, 24PHB, 24PTH, 61BTH, 32PTH1 or other models enveloped by these designs) is a welded vessel that provides confinement of fuel assemblies in an inert atmosphere. |
| INDEPENDENT SPENT FUEL STORAGE INSTALLATION (ISFSI) | A complex designed and constructed for the interim storage of spent nuclear fuel, solid reactor-related GTCC waste, and other radioactive materials associated with spent fuel and reactor-related GTCC waste storage. |
| INTACT FUEL ASSEMBLY, DAMAGED FUEL ASSEMBLY | The definitions for intact or damaged fuel assemblies are in the fuel specification tables for each DSC referred to in Technical Specification 2.1. |
| LOADING OPERATIONS | LOADING OPERATIONS include all licensed activities on a DSC in a TC while it is being loaded with fuel assemblies. LOADING OPERATIONS begin when the first fuel assembly is placed in the DSC and end when the TC is ready for TRANSFER OPERATIONS (i.e., when the cask is in a horizontal position on the trailer). The placement of the Outer Top Trailer Shielding onto the OS197L TC is considered part of the LOADING OPERATIONS. LOADING OPERATIONS do not include DSC transfer between the TC and the HSM |

(continued)

1.1 Definitions

| | |
|---|---|
| STORAGE OPERATIONS | STORAGE OPERATIONS include all licensed activities that are performed at the ISFSI while a DSC containing fuel assemblies is located in an HSM on the storage pad within the ISFSI perimeter. STORAGE OPERATIONS do not include DSC transfer between the TC and the HSM. |
| TRANSFER CASK (TC) | The TC (Standardized TC, OS197, OS197H, OS197L, OS197FC, OS197FC-B, OS197HFC, OS197HFC-B, OS200, OS200FC TC) consists of a licensed NUHOMS® onsite transfer cask. |
| TRANSFER OPERATIONS | TRANSFER OPERATIONS include all licensed activities involving the movement of a TC loaded with a DSC containing fuel assemblies. TRANSFER OPERATIONS begin after the TC has been placed horizontal on the transfer trailer (and for the OS197L, the supplemental trailer shielding has been put in place) ready for TRANSFER OPERATIONS and end when the DSC is at its destination and no longer horizontal on the transfer trailer. TRANSFER OPERATIONS include transfer of a DSC between the TC and the HSM. |
| UNLOADING OPERATIONS | UNLOADING OPERATIONS include all licensed activities on a DSC to unload fuel assemblies. UNLOADING OPERATIONS begin when the TC is no longer horizontal on the transfer trailer and end when the last fuel assembly has been removed from the DSC. UNLOADING OPERATIONS do not include DSC transfer between the TC and the HSM. |
| FUEL BUILDING | The FUEL BUILDING is the site-specific area or a facility where the LOADING OPERATIONS take place. |

## 1.2 Logical Connectors

PURPOSE

The purpose of this section is to explain the meaning of logical connectors.

Logical connectors are used in Technical Specifications (TS) to discriminate between, and yet connect, discrete Conditions, Required Actions, Completion Times, Surveillances, and Frequencies. The only logical connectors that appear in TS are AND and OR. The physical arrangement of these connectors constitutes logical conventions with specific meanings.

BACKGROUND

Several levels of logic may be used to state Required Actions. These levels are identified by the placement (or nesting) of the logical connectors and by the number assigned to each Required Action. The first level of logic is identified by the first digit of the number assigned to a Required Action and the placement of the logical connector in the first level of nesting (i.e., left justified with the number of the Required Action). The successive levels of logic are identified by additional digits of the Required Action number and by successive indentations of the logical connectors.

When logical connectors are used to state a Condition, Completion Time, Surveillance, or Frequency, only the first level of logic is used, and the logical connector is left justified with the statement of the Condition, Completion Time, Surveillance, or Frequency.

EXAMPLES

The following examples illustrate the use of logical connectors.

EXAMPLE 1.2-1

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. LCO (Limiting Condition for Operation) not met. | A.1 Verify . . .<br><br>AND<br><br>A.2 Restore . . . | |

In this example the logical connector AND is used to indicate that when in Condition A, both Required Actions A.1 and A.2 must be completed.

EXAMPLES
(continued)

EXAMPLE 1.2-2

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. LCO not met. | A.1 Stop . . .<br><br>OR<br>A.2<br>A.2.1 Verify . . .<br><br>AND<br>A.2.2<br>A.2.2.1 Reduce . . .<br><br>OR<br><br>A.2.2.2 Perform . . .<br>OR<br>A.3 Remove . . . | |

This example represents a more complicated use of logical connectors. Required Actions A.1, A.2, and A.3 are alternative choices, only one of which must be performed as indicated by the use of the logical connector OR and the left justified placement. Any one of these three Actions may be chosen. If A.2 is chosen, then both A.2.1 and A.2.2 must be performed as indicated by the logical connector AND. Required Action A.2.2 is met by performing A.2.2.1 or A.2.2.2. The indented position of the logical connector OR indicates that A.2.2.1 and A.2.2.2 are alternative choices, only one of which must be performed.

## 1.3 Completion Times

| | |
|---|---|
| PURPOSE | The purpose of this section is to establish the Completion Time convention and to provide guidance for its use. |
| BACKGROUND | Limiting Conditions for Operation (LCOs) specify minimum requirements for ensuring safe operation of the unit. The ACTIONS associated with an LCO state Conditions that typically describe the ways in which the requirements of the LCO can fail to be met. Specified with each stated Condition are Required Action(s) and Completion Time(s). |
| DESCRIPTION | The Completion Time is the amount of time allowed for completing a Required Action. It is referenced to the time of discovery of a situation (e.g., equipment or variable not within limits) that requires entering an ACTIONS Condition unless otherwise specified, providing the Cask System is in a specified condition stated in the Applicability of the LCO. Required Actions must be completed prior to the expiration of the specified Completion Time. An ACTIONS Condition remains in effect and the Required Actions apply until the Condition no longer exists or the Cask System is not within the LCO Applicability.<br><br>Once a Condition has been entered, subsequent subsystems, components, or variables expressed in the Condition, discovered to be not within limits, will not result in separate entry into the Condition, unless specifically stated. The Required Actions of the Condition continue to apply to each additional failure, with Completion Times based on initial entry into the Condition. |

(continued)

1.3 Completion Times

EXAMPLES The following examples illustrate the use of Completion Times with different types of Conditions and changing Conditions.

EXAMPLE 1.3-1

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| B. Required Action and associated Completion Time not met. | B.1 Complete Action B.1<br><br>AND<br><br>B.2 Complete Action B.2 | 12 hours<br><br>36 hours |

Condition B has two Required Actions. Each Required Action has its own separate Completion Time. Each Completion Time is referenced to the time that Condition B is entered.

The Required Actions of Condition B are to complete action B.1 within 12 hours AND complete action B.2 within 36 hours. A total of 12 hours is allowed for completing action B.1 and a total of 36 hours (not 48 hours) is allowed for completing action B.2 from the time that Condition B was entered. If action B.1 is completed within 6 hours, the time allowed for completing action B.2 is the next 30 hours because the total time allowed for completing action B.2 is 36 hours.

EXAMPLES EXAMPLE 1.3-2

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. One system not within limit. | A.1 Restore system to within limit. | 7 days |
| B. Required Action and associated Completion Time not met. | B.1 Complete Action B.1.<br><br>AND<br><br>B.2 Complete Action B.2. | 12 hours<br><br>36 hours |

When a system is determined to not meet the LCO, Condition A is entered. If the system is not restored within 7 days, Condition B is also entered and the Completion Time clocks for Required Actions B.1 and B.2 start. If the system is restored after Condition B is entered, Conditions A and B are exited, and therefore, the Required Actions of Condition B may be terminated.

1.3 Completion Times

EXAMPLES (continued)

EXAMPLE 1.3-3

ACTIONS

---------- NOTE ----------
*Separate Condition entry is allowed for each component.*
---

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. LCO not met. | A.1 Restore compliance with LCO. | 4 hours |
| B. Required Action and associated Completion Time not met. | B.1 Complete Action B.1.<br><br>AND<br><br>B.2 Complete Action B.2. | 6 hours<br><br>12 hours |

The Note above the ACTIONS Table is a method of modifying how the Completion Time is tracked. If this method of modifying how the Completion Time is tracked was applicable only to a specific Condition, the Note would appear in that Condition rather than at the top of the ACTIONS Table.

The Note allows Condition A to be entered separately for each component, and Completion Times tracked on a per component basis. When a component is determined to not meet the LCO, Condition A is entered and its Completion Time starts. If subsequent components are determined to not meet the LCO, Condition A is entered for each component and separate Completion Times start and are tracked for each component.

IMMEDIATE COMPLETION TIME

When "immediately" is used as a Completion Time, the Required Action should be pursued without delay and in a controlled manner.

## 1.4 Frequency

| | |
|---|---|
| PURPOSE | The purpose of this section is to define the proper use and application of Frequency requirements. |
| DESCRIPTION | Each Surveillance Requirement (SR) has a specified Frequency in which the Surveillance must be met in order to meet the associated Limiting Condition for Operation (LCO). An understanding of the correct application of the specified Frequency is necessary for compliance with the SR.<br><br>The "Specified Frequency" is referred to throughout this section and each of the Specifications of Section 3.0, Limiting Condition for Operation (LCO) and Surveillance Requirement (SR) Applicability. The "Specified Frequency" consists of the requirements of the Frequency column of each SR as well as certain Notes in the Surveillance column that modify performance requirements.<br><br>Situations where a Surveillance could be required (i.e., its Frequency could expire), but where it is not possible or not desired that it be performed until sometime after the associated LCO is within its Applicability, represent potential SR 3.0.4 conflicts. To avoid these conflicts, the SR (i.e., the Surveillance or the Frequency) is stated such that it is only "required" when it can be and should be performed. With an SR satisfied, SR 3.0.4 imposes no restriction. |

(continued)

1.4 Frequency

EXAMPLES

The following examples illustrate the various ways that Frequencies are specified.

EXAMPLE 1.4-1

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|---|---|
| Verify pressure within limit. | 12 hours |

Example 1.4-1 contains the type of SR most often encountered in the Technical Specifications (TS). The Frequency specifies an interval (12 hours) during which the associated Surveillance must be performed at least one time. Performance of the Surveillance initiates the subsequent interval. Although the Frequency is stated as 12 hours, an extension of the time interval to 1.25 times the stated Frequency is allowed by SR 3.0.2 for operational flexibility. The measurement of this interval continues at all times, even when the SR is not required to be met per SR 3.0.1 (such as when the equipment is determined to not meet the LCO, a variable is outside specified limits, or the unit is outside the Applicability of the LCO). If the interval specified by SR 3.0.2 is exceeded while the facility is in a condition specified in the Applicability of the LCO, the LCO is not met in accordance with SR 3.0.1.

If the interval as specified by SR 3.0.2 is exceeded while the unit is not in a condition specified in the Applicability of the LCO for which performance of the SR is required, the Surveillance must be performed within the Frequency requirements of SR 3.0.2 prior to entry into the specified condition. Failure to do so would result in a violation of SR 3.0.4

(continued)

1.4 Frequency

EXAMPLES
(continued)

EXAMPLE 1.4-2

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|---|---|
| Verify flow is within limits. | Once within 12 hours prior to starting activity<br><br>AND<br><br>24 hours thereafter |

Example 1.4-2 has two Frequencies. The first is a one time performance Frequency, and the second is of the type shown in Example 1.4-1. The logical connector "AND" indicates that both Frequency requirements must be met. Each time the example activity is to be performed, the Surveillance must be performed prior to starting the activity.

The use of "once" indicates a single performance will satisfy the specified Frequency (assuming no other Frequencies are connected by "AND"). This type of Frequency does not qualify for the 25% extension allowed by SR 3.0.2.

"Thereafter" indicates future performances must be established per SR 3.0.2, but only after a specified condition is first met (i.e., the "once" performance in this example). If the specified activity is canceled or not performed, the measurement of both intervals stops. New intervals start upon preparing to restart the specified activity.

## 2.0 FUNCTIONAL AND OPERATING LIMITS

### 2.1 Fuel to be Stored in the Standardized NUHOMS® System

The spent nuclear fuel to be stored in the Standardized NUHOMS® System is specific to each DSC model as listed below and shall meet all the requirements of the applicable Fuel Specification Tables, including the cross-referenced figures and tables listed in their applicable Fuel Specification Tables.

| DSC MODEL | Applicable Fuel Specification |
|---|---|
| 24P | Table 1-1a |
| 52B | Table 1-1b |
| 61BT | Table 1-1c and Table 1-1j |
| 32PT | Table 1-1e |
| 24PHB | Table 1-1i |
| 24PTH | Table 1-1l |
| 61BTH | Table 1-1t |
| 32PTH1 | Table 1-1aa |

DSC models are listed in the CoC. If the model number has a variant which specifically has certain limitations, then those are specifically called out in the TS. Information concerning the fuel types, dose rate limits, or other technical specifications applies to all variants if they are not explicitly mentioned in the CoC or technical specifications. An example is the 24PTH DSC. In this case, 24PTH is the model number. The 24PTH-S, -L and –S-LC are variants with specific limitations, which are called out in the TS.

2.1.1 Each of the DSC models listed above may be stored inside an HSM model in accordance with LCO 3.1.4.

## 2.2 Functional and Operating Limits Violations

If any Functional and Operating Limit of 2.1 is violated, the following actions shall be completed:

2.2.1 The affected fuel assemblies shall be placed in a safe condition

2.2.2 Notify the NRC Operations Center per the requirements of 10 CFR 72.75.

2.2.3 Within 30 days, submit a separate report which describes the cause of the violation and the actions taken to restore compliance and prevent recurrence.

## 3.0 LIMITING CONDITION FOR OPERATION (LCO) AND SURVEILLANCE REQUIREMENT (SR) APPLICABILITY

| | |
|---|---|
| LCO 3.0.1 | LCOs shall be met during specified conditions in the Applicability, except as provided in LCO 3.0.2. |
| LCO 3.0.2 | Upon discovery of a failure to meet an LCO, the Required Actions of the associated Conditions shall be met.<br><br>If the LCO is met or is no longer applicable prior to expiration of the specified Completion Time(s), completion of the Required Action(s) is not required unless otherwise stated. |
| LCO 3.0.3 | Not applicable to a spent fuel storage cask. |
| LCO 3.0.4 | When an LCO is not met, entry into a specified condition in the Applicability shall not be made except when the associated ACTIONS to be entered permit continued operation in the specified condition in the Applicability for an unlimited period of time. This Specification shall not prevent changes in specified conditions in the Applicability that are required to comply with ACTIONS, or that are related to the unloading of a DSC.<br><br>Exceptions to this Specification are stated in the individual Specifications. These exceptions allow entry into specified conditions in the Applicability when the associated ACTIONS to be entered allow operation in the specified condition in the Applicability only for a limited period of time. |
| LCO 3.0.5 | Not applicable to a spent fuel storage cask. |

(continued)

## 3.0 Limiting Condition for Operation (LCO) and Surveillance Requirement (SR) Applicability

| | |
|---|---|
| SR 3.0.1 | SRs shall be met during the specified conditions in the Applicability for individual LCOs, unless otherwise stated in the SR. Failure to meet a Surveillance, whether such failure is experienced during the performance of the Surveillance or between performances of the Surveillance, shall be failure to meet the LCO. Failure to perform a Surveillance within the specified Frequency shall be failure to meet the LCO except as provided in SR 3.0.3. Surveillances do not have to be performed on equipment or variables outside specified limits. |
| SR 3.0.2 | The specified Frequency for each SR is met if the Surveillance is performed within 1.25 times the interval specified in the Frequency, as measured from the previous performance or as measured from the time a specified condition of the Frequency is met.<br><br>For Frequencies specified as "once," the above interval extension does not apply. If a Completion Time requires periodic performance on a "once per . . ." basis, the above Frequency extension applies to each performance after the initial performance.<br><br>Exceptions to this Specification are stated in the individual Specifications. |
| SR 3.0.3 | If it is discovered that a Surveillance was not performed within its specified Frequency, then compliance with the requirement to declare the LCO not met may be delayed, from the time of discovery, up to 24 hours or up to the limit of the specified Frequency, whichever is greater. This delay period is permitted to allow performance of the Surveillance.<br><br>If the Surveillance is not performed within the delay period, the LCO must immediately be declared not met, and the applicable Condition(s) must be entered.<br><br>When the Surveillance is performed within the delay period and the Surveillance is not met, the LCO must immediately be declared not met, and the applicable Condition(s) must be entered. |
| SR 3.0.4 | Entry into a MODE or other specified condition in the Applicability of an LCO shall only be made when the LCO's Surveillances have been met within their specified Frequency. This provision shall not prevent entry into specified conditions in the Applicability that are required to comply with ACTIONS of that are related to the unloading of a DSC. |

## 3.1 Fuel Integrity

### 3.1.1 DSC Bulkwater Removal Medium and Vacuum Drying Pressure

LCO 3.1.1 Medium:

Helium shall be used for all drainage of liquid water from the DSC.

Pressure:

The DSC vacuum drying pressure shall be sustained at or below 3 Torr (3 mm Hg) absolute for a period of at least 30 minutes following evacuation.

APPLICABILITY: During LOADING OPERATIONS but before TRANSFER OPERATIONS.

(continued)

3.1 Fuel Integrity

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| *Note: Not applicable until SR 3.1.1 is performed*<br><br>A. If the required vacuum pressure cannot be obtained. | A.1<br><br>A.1.1 Confirm that the vacuum drying system is properly installed. Check and repair the vacuum drying system as necessary.<br><br><u>OR</u><br><br>A.1.2 Check and repair the seal weld between the inner top cover plate/ top shield plug assembly and the DSC shell.<br><br><u>OR</u><br><br>A.2 Establish helium pressure of at least 1.0 atm and no greater than 15 psig in the DSC.<br><br><u>OR</u><br><br>A.3 Flood the DSC with spent fuel pool water or water meeting the requirements of LCO 3.2.1 if applicable submerging all fuel assemblies. | 30 days<br><br>30 days<br><br>30 days |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.1.1.1 | Verify that the DSC vacuum pressure is less than, or equal to, 3 Torr (3 mm Hg) absolute for at least 30 minutes following evacuation. | Once per DSC, after an acceptable NDE of the inner top cover plate/top shield plug assembly. |

3.1 Fuel Integrity
3.1.2 DSC Helium Backfill Pressure

LCO 3.1.2 (a) 24P or 52B DSC helium backfill pressure shall be 2.5 psig ± 2.5 psig (stable for 30 minutes after filling) after completion of vacuum drying.

(b) 61BT, 32PT, 24PHB, 24PTH, 61BTH or 32PTH1 DSC helium backfill pressure shall be 2.5 psig ± 1.0 psig (stable for 30 minutes after filling) after completion of vacuum drying.

APPLICABILITY: During LOADING OPERATIONS but before TRANSFER OPERATIONS.

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| *Note: Not applicable until SR 3.1.2 is performed.*<br><br>A. The required backfill pressure cannot be obtained or stabilized. | A.1<br><br>A.1.1 Maintain helium atmosphere in the DSC cavity.<br><br><u>AND</u><br><br>A.1.2 Confirm, check and repair or replace as necessary the vacuum drying system, helium source and pressure gauge.<br><br><u>AND</u><br><br>A.1.3 Check and repair as necessary the seal weld between the inner top cover plate/top shield plug assembly and the DSC shell.<br><br><u>OR</u><br><br>A.2 Establish the DSC helium backfill pressure to within the limit. If pressure exceeds the criterion, release a sufficient quantity of helium to lower the DSC cavity pressure. | 14 days<br><br>14 days |

(continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| | OR<br><br>A.3 Flood the DSC with spent fuel pool water or water meeting the requirements of LCO 3.2.1, if applicable, submerging all fuel assemblies | 14 days |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.1.2 | (a) Verify that the 24P or 52B DSC helium backfill pressure is 2.5 psig ± 2.5 psig stable for 30 minutes after filling.<br>(b) Verify that the 61BT, 32PT, 24PHB, 24PTH, 61BTH or 32PTH1 DSC helium backfill pressure is 2.5 psig ± 1 psig stable for 30 minutes after filling. | Once per DSC, after the completion of LCO 3.1.1 actions. |

3.1 Fuel Integrity

3.1.3 Time Limit for Completion of DSC Transfer (24PTH, 61BTH Type 2 or 32PTH1 DSC Only).

LCO 3.1.3

| DSC Model | Basket Type | Heat Load Zoning Configuration Number (HLZC) | Time Limit (hours) |
|---|---|---|---|
| 24PTH-S or 24PTH-L DSC | 1A, 1B or 1C (with Aluminum Inserts)<br>1A, 1B or 1C<br>2A, 2B or 2C (without Aluminum Inserts) | 4<br><br>1,2 or 3<br>1, 2, 3 or 4 | No limit<br><br>9.5<br>25 |
| 61 BTH, Type 2 DSC Only | NA | 1, 2, 3, or 4<br><br>5, 6 or 8<br><br>7 | No limit<br><br>26<br><br>13 |
| 32PTH1 DSC | NA | 3<br><br>1<br><br>2 | No limit<br><br>13<br><br>14 (Intact Fuel)<br>10 (Damaged Fuel) |

*NOTE*

*The time limit for completion of a DSC transfer is defined as the time elapsed in hours after the initiation of draining of TC/DSC annulus water until the completion of insertion of the DSC into the HSM-H.*

APPLICABILITY: During LOADING OPERATIONS AND TRANSFER OPERATIONS.

(continued)

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| Note: Not applicable until SR 3.1.3 is performed.<br><br>A. The required time limit for completion of a DSC transfer not met. | A.1 If the TC is in the cask handling area in a vertical orientation, remove the TC top cover plate and fill the TC/DSC annulus with clean water.<br><br>OR<br><br>A.2 If the TC is in a horizontal orientation on transfer skid, initiate air circulation in the TC/DSC annulus by starting one of the blowers provided on the transfer skid.<br><br>OR<br><br>A.3 Return the TC to the cask handling area and follow action A.1 above. | 2 hours<br><br>2 hours*<br><br>2 hours |

**After the blowers are turned off, the time limit for completion of DSC transfer is as indicated in the LCO 3.1.3 table.*

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.1.3 | Verify that the time limit for completion of DSC transfer is met. | Once per DSC, after the completion of LCO 3.1.2 actions or after the initiation of draining of TC/DSC annulus water. |

(continued)

3.1 Fuel Integrity

3.1.4 HSM Maximum Air Exit Temperature with a Loaded DSC

LCO 3.1.4 The maximum air temperature rise through the HSM allowed is a function of the decay heat load of the DSC and the HSM model as listed below:

| HSM | DSC Model | Maximum Decay Heat Load, kW | Maximum Air Temperature Rise Allowed, °F |
|---|---|---|---|
| Standardized HSM | 24P, 52B, 61BT, 32PT, 24PHB, 24PTH-S-LC or 61BTH, Type 1 | 24.0 | 100 |
| HSM-H | 24PTH-S or 24PTH-L | 40.8 | 100 |
| | 24 PTH-S-LC | 24.0 | 70 |
| | 61BTH, Type 2 | 31.2 | 90 |
| | 61BTH, Type 1 | 22.0 | 70 |
| | 32PTH1 | 40.8 | 110 |

APPLICABILITY: During STORAGE OPERATIONS.

*NOTE*

*If a DSC placed within a HSM has a heat load less than the maximum heat load listed above, the maximum air temperature rise allowed shall be determined by a calculation using the same methodology and input documents in the UFSAR. Air temperatures must be measured in such a manner as to obtain representative values of inlet and outlet air temperatures.*

(continued)

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| *Note: Not applicable until SR 3.1.4 is performed.*<br><br>A. The air temperature rise is greater than the above specification. | A.1 Check the inlets and outlets for any blockage and remove blockage if found.<br><br>AND<br><br>A.2 If the inlets or outlets were not blocked, determine if environmental factors are causing the temperature rise to exceed limits. If environmental factors are the cause then take additional measurements and perform analysis to assess the actual performance of the system. | 24 hours<br><br>Determined by the analysis. The analysis completion time is 30 days. |
| B. Excessive temperatures cause the system to perform in an unacceptable manner and/or the temperatures cannot be controlled to acceptable limits. | B.1 Unload the DSC from the HSM into the TC for a certain amount of time. Verify that condition of HSM interior cavity is not the cause of excessive temperatures and correct if necessary.<br><br>OR<br><br>B.2 Return the TC/ DSC to the FUEL BUILDING. | Determined by the analysis. The analysis completion time is 30 days.<br><br>Determined by the analysis. The analysis completion time is 30 days. |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|---|---|
| SR 3.1.4 The temperature rise between the ambient temperature and the vent outlet temperature will be measured and recorded verifying that HSM maximum air temperature rise limit is satisfied. | 24 hours after DSC insertion into the HSM. These measurements are repeated on a daily basis after insertion into the HSM or every 24 hours following the occurrence of an accident event, until an equilibrium condition is achieved. |

## 3.2 Cask Criticality Control

LCO 3.2.1 The boron concentration of the spent fuel pool water and the water added to the cavity of a loaded DSC (24P, 32PT, 24PHB, 24PTH, or 32PTH1) shall be greater than or equal to the boron concentration below:

| DSC Model | Minimum Boron Concentration |
|---|---|
| 24P | a. 2000 ppm for fuel with an equivalent unirradiated maximum planar average enrichment of less than or equal to 1.45 wt. % U-235 per Figure 1-1.<br>b. 2350 ppm for fuel with an equivalent unirradiated maximum planar average enrichment of greater than 1.45 wt. % U-235 per Figure 1-1. |
| 32PT | Per Table 1-1g |
| 24PHB | a. 2350 ppm for fuel with the maximum planar average enrichment of less than or equal to 4.0 wt. % U-235 based on the spent fuel assembly with the highest maximum planar average initial enrichment in the DSC.<br>b. Per Figure 1-10 for fuel with the maximum planar average initial enrichment of greater than 4.0 wt. % U-235 based on the spent fuel assembly with the highest maximum planar average initial enrichment in the DSC. |
| 24PTH | Per Table 1-1p or Table 1-1q. |
| 32PTH1 | Per Table 1-1cc or Table 1-1dd. |

APPLICABILITY: During LOADING OPERATIONS and UNLOADING OPERATIONS with fuel and liquid water in the DSC Cavity.

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. Dissolved boron concentration limit not met. | A.1 Suspend loading of fuel assemblies into DSC.<br><br>AND<br><br>A.2 | Immediately |
| | A.2.1 Add boron and resample, and test the concentration until the boron concentration is shown to be greater than that required.<br><br>OR | Immediately |
| | A.2.2 Remove all fuel assemblies from DSC. | Immediately |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.2.1 | Verify dissolved boron concentration limit in spent fuel pool water and water to be added to the DSC cavity is met using two independent measurements (two samples analyzed by different individuals) for LOADING OPERATIONS. | Within 4 hours before insertion of the first fuel assembly into the DSC.<br><br>AND<br><br>Every 48 hours thereafter while the DSC is in the spent fuel pool or until the fuel has been removed from the DSC. |
| SR 3.2.2 | Verify dissolved boron concentration limit in spent fuel pool water and water to be added to the DSC cavity is met using two independent measurements (two samples analyzed by different individuals) for UNLOADING OPERATIONS. | Once within 4 hours prior to flooding DSC during UNLOADING OPERATIONS.<br><br>AND<br><br>Every 48 hours thereafter while the DSC is in the spent fuel pool or until the fuel has been removed from the DSC. |

## 4.0 DESIGN FEATURES

The specifications in this section include the design characteristics of special importance to each of the physical barriers and to maintenance of safety margins in the Standardized NUHOMS® System design. The principal objective of this section is to describe the design envelope that may constrain any physical changes to essential equipment. Included in this section are the site environmental parameters that provide the bases for design, but are not inherently suited for description as LCOs.

## 4.1 Canister Criticality Control

The Standardized NUHOMS® DSC models listed below are designed to take credit of the boron content in the neutron absorber plates provided in the DSC basket and/or soluble boron in the spent fuel pool per LCO 3.2. The DSCs have multiple basket configurations, based on the absorber material type (Borated Aluminum alloy, Metal Matrix Composite (MMC) or Boral®), number of Poison Rod Assemblies or PRAs (for 32PT DSC only) and boron content in the absorber plates, as listed below.

| DSC Model | Basket Type | Minimum B10 Areal Density for Absorber Plates |
|---|---|---|
| 61BT(1) | A, B or C | Per Table 1-1k |
| 32PT(2) | A, B, C or D | Per Table 1-1h |
| 24PTH(3) | 1A, 1B, or 1C<br>2A, 2B or 2C | Per Table 1-1r |
| 61BTH(4) | A, B, C, D, E or F | Per Table 1-1v and Table 1-1w |
| 32PTH1(5) | 1A, 1B, 1C, 1D or 1E<br>2A, 2B, 2C, 2D, or 2E | Per Table 1-1ff |

Notes:

(1) For the 61BT DSC, Borated Aluminum, MMC, or Boral® shall be supplied in accordance with UFSAR Sections K.9.1.7.1, K.9.1.7.2, K.9.1.7.3, K.9.1.7.4, K.9.1.7.7 (portions of), K.9.1.7.8.3.1, K.9.1.7.8.4, K.9.1.7.8.5, K.9.1.7.9.1 and K.9.1.7.9.2, with the minimum B10 areal density specified in Table 1-1k. These sections of the UFSAR are hereby incorporated into the NUHOMS® 1004 CoC.

(2) For the 32PT DSC, Borated Aluminum or MMC shall be supplied in accordance with UFSAR Sections M.9.1.7.1, M.9.1.7.2, M.9.1.7.4, M.9.1.7.7 (portions of), M.9.1.7.8.3.1, M.9.1.7.8.4, M.9.1.7.8.5, M.9.1.7.9.1, and M.9.1.7.9.2, with the minimum B10 areal density specified in Table 1-1h. These sections of the UFSAR are hereby incorporated into the NUHOMS® 1004 CoC.

(3) For the 24PTH DSC, Borated Aluminum, MMC, or Boral® shall be supplied in accordance with UFSAR Sections P.9.1.7.1, P.9.1.7.2, P.9.1.7.3, P.9.1.7.4, P.9.1.7.7 (portions of), P.9.1.7.8.3.1, P.9.1.7.8.4, P.9.1.7.8.5, P.9.1.7.9.1 and P.9.1.7.9.2, with the minimum B10 areal density specified in Table 1-1r. These sections of the UFSAR are hereby incorporated into the NUHOMS® 1004 CoC.

(4) For the 61BTH DSC, Borated Aluminum, MMCs, or Boral® shall be supplied in accordance with UFSAR Sections T.9.1.7.1, T.9.1.7.2, T.9.1.7.3, T.9.1.7.4, T.9.1.7.7 (portions of), T.9.1.7.8.3.1, T.9.1.7.8.4, T.9.1.7.8.5, T.9.1.7.9.1 and T.9.1.7.9.2, with the minimum B10 areal density specified in Table 1-1v or Table 1-1w. These sections of the UFSAR are hereby incorporated into the NUHOMS® 1004 CoC.

(5) For the 32PTH1 DSC, Borated Aluminum, MMCs, or Boral® shall be supplied in accordance with UFSAR Sections U.9.1.7.1, U.9.1.7.2, U.9.1.7.3, U.9.1.7.4, U.9.1.7.7 (portions of), U.9.1.7.8.3.1, U.9.1.7.8.4, U.9.1.7.8.5, U.9.1.7.9.1 and U.9.1.7.9.2, with the minimum B10 areal density in Table 1-1ff. These sections of the UFSAR are hereby incorporated into the NUHOMS® 1004 CoC.

(continued)

The sections of the UFSAR incorporated by reference contain specification, qualification and acceptance testing requirements for the neutron absorber materials. Proposed alternatives to these requirements listed in these UFSAR sections other than those aforementioned requirements may be used when authorized by the Director of the Office of Nuclear Material Safety and Safeguards, or designee. The applicant should demonstrate that:

1. The proposed exceptions involve an acceptable level of quality and safety, or
2. Compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

However, any changes to the minimum B10 areal density requirements listed in these technical specifications shall not be the subject of these exceptions.

Requests for exceptions in accordance with this section should be submitted in accordance with 10 CFR 72.4.

---

## 4.2 Codes and Standards

### 4.2.1 Horizontal Storage Module (Hsm)

The Standardized HSM and HSM-H reinforced concrete are designed to meet the requirements of ACI 349-85 and ACI 349-97 Editions respectively.

Load combinations specified in ANSI 57.9-1984, Section 6.17.3.1 are used for combining normal operating, off-normal, and accident loads for the HSM.

If an ISFSI site is located in a coastal salt water marine atmosphere, then any load-bearing carbon steel DSC support structure rail components of any associated HSM shall be procured with a minimum of 0.20 percent copper content or stainless steel material shall be used for corrosion resistance. For weld filler material used with carbon steel, 1% or more nickel bearing weld material would also be acceptable in lieu of 0.20% copper content.

### 4.2.2 Dry Shielded Canister (DSC)

The DSCs are designed, fabricated and inspected to the maximum practical extent in accordance with ASME Boiler and Pressure Vessel Code Section III, Division 1, Subsections NB, NF, and NG for Class 1 components and supports. The ASME code edition years and any addenda for the various DSC types are provided in the table below. The Code alternatives are discussed in Section 4.2.4.

ASME code requirements for basket assemblies apply only to important to safety category A components.

| DSC Type | Applicable Code | Edition/Year |
|---|---|---|
| 24P/ 52B/ 24PHB | ASME B&PV Code, Section III, Division 1, Subsections NB and NF | 1983 Edition with Winter 1985 Addenda |
| 61BT | ASME B&PV Code, Section III, Division 1, Subsections NB, NG and NF, including Code Case N-595-1 | 1998 Edition with 1999 Addenda |
| 32PT, 24PTH | ASME B&PV Code, Section III, Division 1, Subsections NB, NG and NF, including Code Case N-595-2 | 1998 Edition with Addenda through 2000 |
| 61BTH, 32PTH1 | ASME B&PV Code, Section III, Division 1, Subsections NB, NG and NF | 1998 Edition with Addenda through 2000 |

(continued)

4.2.3 Transfer Cask (TC)

The TC is designed, to the maximum practical extent in accordance with ASME Boiler and Pressure Vessel Code Section III, Subsection NC for Class 2 vessels.

The ASME Code edition year and any addenda are provided in the table below. The Code alternatives are discussed in Section 4.2.4.

| TC | Applicable Code | Edition/Year |
|---|---|---|
| OS197/OS197H<br>OS197FC/OS197HFC<br>OS197L/OS197FC-B<br>OS197HFC-B | ASME B&PV Code, Section III, Division 1, Subsections NC | 1983 Edition with Winter 1985 Addenda |
| OS200<br>OS200FC | ASME B&PV Code, Section III, Division 1, Subsections NC | 1998 Edition with Addenda through 2000 |

For the OS197L TC, the supplementary trailer shield is designed to resist the normal operating dead weight and handling loads in accordance with “Manual of Steel Construction Allowable Stress Design”, 9th Edition, American Institute of Steel Construction, Inc.

For the OS197L TC, the decontamination area shielding is designed to resist the normal operation dead weight, lifting loads, and seismic load in accordance with “Manual of Steel Construction Allowable Stress Design”, 9th Edition, American Institute of Steel Construction, Inc.

(continued)

### 4.2.4 ASME Code Alternatives

**ASME Code Alternatives for NUHOMS® -24P, 24PHB and 52B DSC Pressure Boundary Components**

| Reference ASME Code Section/Article | Code Requirement | Alternatives, Justification and Compensatory Measures |
|---|---|---|
| NCA | All | Not compliant with NCA. Quality Assurance is provided according to 10 CFR 72 Subpart G in lieu of NCA-4000 |
| NCA-1140 | Use of Code editions and addenda | Code edition and addenda other than those specified in Section 4.2.2 may be used for construction but in no case earlier than 3 years before that specified in the Section 4.2.2 table.<br><br>Materials produced and certified in accordance with ASME Section II material specification from Code Editions and Addenda other than those specified in Section 4.2.2 may be used, so long as the materials meet all the requirements of Article 2000 of the applicable Subsection of the Section III Edition and Addenda used for construction. |
| NB-1100 | Requirements for Code Stamping of Components, Code reports and certificates, etc. | Code Stamping is not required. As Code Stamping is not required, the fabricator is not required to hold an ASME "N" or "NPT" stamp, or to be ASME Certified. |
| NB-1132 | Attachments with a pressure retaining function, including stiffeners, shall be considered part of the component. | Bottom shield plug and outer bottom cover plate are outside code jurisdiction; these components together are much larger than required to provide stiffening for the inner bottom cover plate; the weld that retains the outer bottom cover plate and with it the bottom shield plug is subject to root and final PT examination. |
| NB-2130 | Material must be supplied by ASME approved material suppliers | Material is certified to meet all ASME Code criteria but is not eligible for certification or Code Stamping if a non-ASME fabricator is used. As the fabricator is not required to be ASME certified, material certification to NB-2130 is not possible. Material traceability and certification are maintained in accordance with TN's NRC approved QA program. |
| NB-4121 | Material Certification by Certificate Holder | |
| NB-4240<br><br><br><br>NB-5230 | Full penetration welds are required for pressure boundary closure joints<br><br>Weld examination shall be UT or RT with surface PT | <u>DSC Pressure Boundary Welds</u><br>The joint details at the top and bottom end of the DSCs are not full penetration welds and thus do not comply with the requirements of figure NB-4243-1 for Category C flat head closure pressure and containment boundary welds. Volumetric weld inspection (RT or UT) is not practical due to the DSC geometry at the top and bottom closures due to high radiation at the top closure after fuel loading (ALARA consideration).<br>The inner and outer cover plate closure welds provide redundant closure welds, which are required by the 10 CFR 72 license. These welds are partial penetration welds that have been designed using a conservative "weld efficiency" factor of 0.6<br><br>Breach of the DSC confinement barriers due to an undetected flaw of any single weld layer is implausible due to the requirement for multi-layer welds. The top and bottom outer cover plate to shell welds and the inner bottom cover plate to shell weld received a root and final PT. The top cover plate to shell weld, which is leak tested, has a final PT only. |

(continued)

## ASME Code Alternatives for NUHOMS® -24P, 24PHB and 52B DSC Pressure Boundary Components

| Reference ASME Code Section/Article | Code Requirement | Alternatives, Justification and Compensatory Measures |
|---|---|---|
| NB-6111 | All completed pressure retaining systems shall be pressure tested | The pressure retaining system of the DSC consists of the following components: shell, bottom inner cover plate, siphon and vent block siphon and vent port covers, and top inner cover plates. The bottom cover plates are welded to the shell at the fabricator shop, whereas the top cover plates are field-welded to the shell at the nuclear power plant, following the loading of irradiated nuclear fuel. All other welds made to the pressure boundary, such as the support ring to shell weld, are not part of the pressure boundary and, thus, are not pressure tested.<br><br>DSC Shell and Bottom Cover Plate Welds<br><br>The DSC Shell and inner bottom cover plate are pressure tested during fabrication to the requirements of NB-6000. A helium leak test is performed to demonstrate leakage integrity of this boundary. Since the outer bottom cover plate is installed after the inner bottom cover plate is installed, it cannot be pressure tested.<br><br>DSC Top Cover Plates Closure Welds:<br><br>The top closure welds are not completed until the DSC is loaded with irradiated nuclear fuel; therefore, a pressure test is nor performed. Multi-layer welds are used for these joints to eliminate potential leakage paths. The inner and outer top closure welds are tested as follows:<br><br>Inner Top Confinement Boundary Welds:<br><br>The inner top confinement boundary welds include the following: (1) field weld of inner cover plate to shell weld (including inner top cover plate to vent and siphon block), (2) top of siphon and vent block to shell weld, and (3) field weld of siphon and vent port cover plates to vent and siphon block ports. Weld (1) is helium leak tested in the field. Weld (2) is made in the fabricator shop under controlled conditions and receives a final PT. A pressure test and helium leak test are not practical because of its location. A field leak test of weld (2) is not performed because the current 10 CFR 72 license does not require it. Weld (3) is performed in the field with a final PT and without a leak test. A helium leak test cannot be performed on these welds because the vent and siphon ports are covered by the plates. Pressurization would require cutting a hole in the DSC creating a potential leakage point for the long-term storage canister.<br><br>Outer Top Cover Plate Weld:<br><br>The outer top cover plate to shell weld receives a root and final PT. It is not leak tested because it is installed following the inner top cover plate. |

(continued)

## ASME Code Alternatives for NUHOMS® -24P, 24PHB and 52B DSC Pressure Boundary Components

| Reference ASME Code Section/Article | Code Requirement | Alternatives, Justification and Compensatory Measures |
|---|---|---|
| NB-7000 | Overpressure Protection | No overpressure protection is provided for the NUHOMS® DSCs. The function of the DSC is to contain radioactive materials under normal, off-normal and hypothetical accident conditions postulated to occur during transportation and storage. The DSC is designed to withstand the maximum possible internal pressure considering 100% fuel rod failure at maximum accident temperature. |
| NB-8000 | Requirements for nameplates, stamping & reports per NCA-8000. | The NUHOMS® DSC nameplate provides the information required by 10 CFR 71, 49 CFR 173 and 10 CFR 72 as appropriate. Code stamping is not required for the DSC. QA data packages are prepared in accordance with the requirements of TN's approved QA program. |
| NB-5520 | NDE personnel must be qualified to a specific edition of SNT-TC-1A | Permit use of a more recent edition of SNT-TC-1A. |

(continued)

## ASME Code Alternatives for NUHOMS® -24P, 24PHB and 52B DSC Basket Assembly

| Reference ASME Code Section/Article | Code Requirement | Alternatives, Justification and Compensatory Measures |
|---|---|---|
| NCA | All | Not compliant with NCA. Quality Assurance is provided according to 10 CFR 72 Subpart G in lieu of NCA-4000 |
| NCA-1140 | Use of Code editions and addenda | Code edition and addenda other than those specified in Section 4.2.2 may be used for construction but in no case earlier than 3 years before that specified in the Section 4.2.2 table.<br><br>Materials produced and certified in accordance with ASME Section II material specification from Code Editions and Addenda other than those specified in Section 4.2.2 may be used, so long as the materials meet all the requirements of Article 2000 of the applicable Subsection of the Section III Edition and Addenda used for construction. |
| NF-2130 | Material must be supplied by ASME approved material suppliers. | All DSC Basket Assembly sub-components designated as ASME on the DSC drawings are obtained from TN approved suppliers with Certified Material Test Reports (CMTR's). The DSC basket subcomponents listed below have been designated as non-Code.<br>• Guide Sleeves, Oversleeves, and extraction stops (PWR only)<br>• Neutron Absorber Plates and misc. hardware, such as anti-rotation pin, screws and locknuts, (BWR Only)<br>• Coating for Spacer Discs |
| NF-4121 | Material Certification by Certificate Holder | Material traceability and certification are maintained in accordance with TN's NRC approved QA program. |
| NF-8000 | Requirements for nameplates, stamping & reports per NCA-8000 | The NUHOMS® DSC nameplate provides the information required by 10 CFR 71, 49 CFR 173 and 10 CFR 72 as appropriate. Code stamping is not required for the DSC. QA data packages are prepared in accordance with the requirements of TN's approved QA program. |
| NF-5520 | NDE personnel must be qualified to a specific edition of SNT-TC-1A | Permit use of more recent edition of SNT-TC-1A. |

(continued)

## ASME Code Alternatives for NUHOMS® -61BT DSC Confinement Boundary

| Reference ASME Code Section/Article | Code Requirement | Alternatives, Justification & Compensatory Measures |
|---|---|---|
| NCA | All | Not compliant with NCA. Quality Assurance is provided according to 10 CFR 72 Subpart G in lieu of NCA-4000 |
| NCA-1140 | Use of Code editions and addenda | Code edition and addenda other than those specified in Section 4.2.2 may be used for construction but in no case earlier than 3 years before that specified in the Section 4.2.2 table.<br><br>Materials produced and certified in accordance with ASME Section II material specification from Code Editions and Addenda other than those specified in Section 4.2.2 may be used, so long as the materials meet all the requirements of Article 2000 of the applicable Subsection of the Section III Edition and Addenda used for construction. |
| NB-1100 | Requirements for Code Stamping of Components, Code reports and certificates, etc. | Code Stamping is not required. As Code Stamping is not required, the fabricator is not required to hold an ASME "N" or "NPT" stamp, or to be ASME Certified. |
| NB-1132 | Attachments with a pressure retaining function, including stiffeners, shall be considered part of the component. | Bottom shield plug and outer bottom cover plate are outside code jurisdiction; these components together are much larger than required to provide stiffening for the inner bottom cover plate; the weld that retains the outer bottom cover plate and with it the bottom shield plug is subject to root and final PT examination. |
| NB-2130 | Material must be supplied by ASME approved material suppliers. | Material is certified to meet all ASME Code criteria but is not eligible for certification or Code Stamping if a non-ASME fabricator is used. As the fabricator is not required to be ASME certified, material certification to NB-2130 is not possible. Material traceability and certification are maintained in accordance with TN's NRC approved QA program. |
| NB-4121 | Material Certification by Certificate Holder | |
| NB-4243 and NB-5230 | Category C weld joints in vessels and similar weld joints in other components shall be full penetration joints. These welds shall be examined by UT or RT and either PT or MT. | The joints between the top and inner cover plates and containment shell are designed and fabricated per ASME Code Case N-595-1. This includes the inner top cover plate weld around the vent and siphon block. The welds are partial penetration welds and the root and final layer are PT examined. The weld between the vent and siphon block and the shell is made at the fabricator's shop and receives a final PT examination. |
| NB-6100 and 6200 | All completed pressure retaining systems shall be pressure tested | The vent and siphon block is not pressure tested due to the manufacturing sequence. The siphon block weld is helium leak tested when fuel is loaded and then covered with the outer top closure plate. |
| NB-7000 | Overpressure Protection | No overpressure protection is provided for the NUHOMS® DSCs. The function of the DSC is to contain radioactive materials under normal, off-normal and hypothetical accident conditions postulated to occur during transportation and storage. The DSC is designed to withstand the maximum possible internal pressure considering 100% fuel rod failure at maximum accident temperature. |

(continued)

## ASME Code Alternatives for NUHOMS® -61BT DSC Confinement Boundary

| Reference ASME Code Section/Article | Code Requirement | Alternatives, Justification & Compensatory Measures |
|---|---|---|
| NB-8000 | Requirements for nameplates, stamping & reports per NCA-8000 | The NUHOMS® DSC nameplate provides the information required by 10 CFR 71, 49 CFR 173 and 10 CFR 72 as appropriate. Code stamping is not required for the DSC. QA data packages are prepared in accordance with the requirements of TN's approved QA program. |
| NB-5520 | NDE personnel must be qualified to a specific edition of SNT-TC-1A | Permit use of more recent edition of SNT-TC-1A. |

(continued)

## ASME Code Alternatives for NUHOMS® -61BT DSC Basket

| Reference ASME Code Section/Article | Code Requirement | Alternatives, Justification & Compensatory Measures |
|---|---|---|
| NCA | All | Not compliant with NCA. Quality Assurance is provided according to 10 CFR 72 Subpart G in lieu of NCA-4000 |
| NCA-1140 | Use of Code editions and addenda | Code edition and addenda other than those specified in Section 4.2.2 may be used for construction but in no case earlier than 3 years before that specified in the Section 4.2.2 table.<br><br>Materials produced and certified in accordance with ASME Section II material specification from Code Editions and Addenda other than those specified in Section 4.2.2 may be used, so long as the materials meet all the requirements of Article 2000 of the applicable Subsection of the Section III Edition and Addenda used for construction. |
| NG/NF-1100 | Requirements for Code Stamping of Components, Code reports and certificates, etc. | Code Stamping is not required. As Code Stamping is not required, the fabricator is not required to hold an ASME "N" or "NPT" stamp, or to be ASME Certified. |
| NG/NF-2000 | Use of ASME Code Material | Some baskets include neutron absorber and aluminum plates that are not ASME Code Class 1 material. They are used for criticality safety and heat transfer, and are only credited in the structural analysis with supporting their own weight and transmitting bearing loads through their thickness. |
| NG/NF-5520 | NDE personnel must be qualified to a specific edition of SNT-TC-1A | Permit use of more recent edition of SNT-TC-1A. |
| NG/NF-2130 | Material must be supplied by ASME approved material suppliers. | Material is certified to meet all ASME Code criteria but is not eligible for certification or Code Stamping if a non-ASME fabricator is used. As the fabricator is not required to be ASME certified, material certification to NG/NF-2130 is not possible. Material traceability and certification are maintained in accordance with TN's NRC approved QA program. |
| NG/NF-4121 | Material Certification by Certificate Holder | |
| NG/NF-8000 | Requirements for nameplates, stamping & reports per NCA-8000 | The NUHOMS® DSC nameplate provides the information required by 10 CFR 71, 49 CFR 173 and 10 CFR 72 as appropriate. Code stamping is not required for the DSC. QA data packages are prepared in accordance with the requirements of TN's approved QA program. |

(continued)

## Alternatives to the ASME Code for the NUHOMS® -32PT DSC Confinement Boundary

| Reference ASME Code Section/Article | Code Requirement | Alternatives, Justification & Compensatory Measures |
|---|---|---|
| NCA | All | Not compliant with NCA. Quality Assurance is provided according to 10 CFR 72 Subpart G in lieu of NCA-4000 |
| NCA-1140 | Use of Code editions and addenda | Code edition and addenda other than those specified in Section 4.2.2 may be used for construction but in no case earlier than 3 years before that specified in the Section 4.2.2 table.<br><br>Materials produced and certified in accordance with ASME Section II material specification from Code Editions and Addenda other than those specified in Section 4.2.2 may be used, so long as the materials meet all the requirements of Article 2000 of the applicable Subsection of the Section III Edition and Addenda used for construction. |
| NB-1100 | Requirements for Code Stamping of Components, Code reports and certificates, etc. | Code Stamping is not required. As Code Stamping is not required, the fabricator is not required to hold an ASME "N" or "NPT" stamp, or to be ASME Certified. |
| NB-1132 | Attachments with a pressure retaining function, including stiffeners, shall be considered part of the component. | Bottom shield plug and outer bottom cover plate are outside code jurisdiction; these components together are much larger than required to provide stiffening for the inner bottom cover plate; the weld that retains the outer bottom cover plate and with it the bottom shield plug is subject to root and final PT examination. |
| NB-2130 | Material must be supplied by ASME approved material suppliers. | Material is certified to meet all ASME Code criteria but is not eligible for certification or Code Stamping if a non-ASME fabricator is used. As the fabricator is not required to be ASME certified, material certification to NB-2130 is not possible. Material traceability and certification are maintained in accordance with TN's NRC approved QA program. |
| NB-4121 | Material Certification by Certificate Holder | |
| NB-4243 and NB-5230 | Category C weld joints in vessels and similar weld joints in other components shall be full penetration joints. These welds shall be examined by UT or RT and either PT or MT. | The joints between the top and inner cover plates and containment shell are designed and fabricated per ASME Code Case N-595-2, which provides alternative requirements for the design and examination of spent fuel canister closures. This includes the inner top cover plate weld around the vent and siphon block and the vent and siphon block welds to the shell. The closure welds are partial penetration welds and the root and final layer are subject to PT examination (in lieu of volumetric examination) in accordance with the provisions of ASME Code Case N-595-2.<br>The 32PT closure system employs austenitic stainless steel shell, lid materials, and welds. Because austenitic stainless steels are not subject to brittle fracture at the operating temperatures of the DSC, crack propagation is not a concern. Thus, multi-level PT examination provides reasonable assurance that flaws of interest will be identified. The PT examination is done by qualified personnel, in accordance with Section V and the acceptance standards of Section III, Subsection NB-5000. The alternative does not apply to other shell confinement welds, i.e., the longitudinal and circumferential welds applied to the DSC shell, and the inner bottom cover plate-to-shell weld which comply with NB-4243 and NB-5230. |

(continued)

**Alternatives to the ASME Code for the NUHOMS® -32PT DSC Confinement Boundary**

| Reference ASME Code Section/Article | Code Requirement | Alternatives, Justification & Compensatory Measures |
|---|---|---|
| NB-6100 and 6200 | All pressure retaining components and completed systems shall be pressure tested. The preferred method shall be hydrostatic test. | The NUHOMS® -32PT DSC is pressure tested in accordance with ASME Code Case N-595-2. The shield plug support ring and the vent and siphon block are not pressure tested due to the manufacturing sequence. The support ring is not a pressure-retaining item and the vent and siphon block weld is helium leak tested after fuel is loaded to the same criteria as the inner top closure plate-to-shell weld (ANSI N14.5-1997 leaktight criteria). |
| NB-7000 | Overpressure Protection | No overpressure protection is provided for the NUHOMS® DSCs. The function of the DSC is to contain radioactive materials under normal, off-normal and hypothetical accident conditions postulated to occur during transportation and storage. The DSC is designed to withstand the maximum possible internal pressure considering 100% fuel rod failure at maximum accident temperature. |
| NB-8000 | Requirements for nameplates, stamping & reports per NCA-8000. | The NUHOMS® DSC nameplate provides the information required by 10 CFR 71, 49 CFR 173 and 10 CFR 72 as appropriate. Code stamping is not required for the DSC. QA data packages are prepared in accordance with the requirements of TN's approved QA program. |
| NB-5250 | NDE Personnel must be qualified to a specific edition of SNT-TC-1A. | Permit use of more recent edition of SNT-TC-1A |

(continued)

## Alternatives to the ASME Code Exceptions for the NUHOMS® -32PT DSC Basket Assembly

| Reference ASME Code Section/Article | Code Requirement | Alternatives, Justification & Compensatory Measures |
|---|---|---|
| NCA | All | Not compliant with NCA. Quality Assurance is provided according to 10 CFR 72 Subpart G in lieu of NCA-4000 |
| NCA-1140 | Use of Code editions and addenda | Code edition and addenda other than those specified in Section 4.2.2 may be used for construction but in no case earlier than 3 years before that specified in the Section 4.2.2 table.<br><br>Materials produced and certified in accordance with ASME Section II material specification from Code Editions and Addenda other than those specified in Section 4.2.2 may be used, so long as the materials meet all the requirements of Article 2000 of the applicable Subsection of the Section III Edition and Addenda used for construction. |
| NG-1100 | Requirements for Code Stamping of Components, Code reports and certificates, etc. | Code Stamping is not required. As Code Stamping is not required, the fabricator is not required to hold an ASME "N" or "NPT" stamp, or to be ASME Certified. |
| NG-2000 | Use of ASME Material | Some baskets include neutron absorber and aluminum plates that are not ASME Code Class 1 material. They are used for criticality safety and heat transfer, and are only credited in the structural analysis with supporting their own weight and transmitting bearing loads through their thickness. Material properties in the ASME Code for Type 6061 aluminum are limited to 400°F to preclude the potential for annealing out the hardening properties. Annealed properties (as published by the Aluminum Association and the American Society of Metals) are conservatively assumed for the solid aluminum rails for use above the Code temperature limits. |
| NG-2130 | Material must be supplied by ASME approved material suppliers. | Material is certified to meet all ASME Code criteria but is not eligible for certification or Code Stamping if a non-ASME fabricator is used. As the fabricator is not required to be ASME certified, material certification to NG-2130 is not possible. Material traceability and certification are maintained in accordance with TN's NRC approved QA program. |
| NG-4121 | Material Certification by Certificate Holder | |
| NG-8000 | Requirements for nameplates, stamping & reports per NCA-8000 | The NUHOMS® DSC nameplate provides the information required by 10 CFR 71, 49 CFR 173 and 10 CFR 72 as appropriate. Code stamping is not required for the DSC. QA data packages are prepared in accordance with the requirements of TN's approved QA program. |
| NG-3000/ Section II, Part D, Table 2A | Maximum temperature limit for XM-19 plate material is 800°F | Not compliant with ASME Section II Part D Table 2A material temperature limit for XM-19 steel for the postulated transfer accident case (117°F, loss of sunshade, loss of neutron shield). This is a post-drop accident scenario, where the calculated maximum steady state temperature is 852°F, the expected reduction in material strength is small (less than 1 ksi by extrapolation), and the only primary stresses in the basket grid are deadweight stresses. The recovery actions following the postulated drop accident are as described in Section 8.2.5 of the UFSAR. |
| NG-5520 | NDE personnel must be qualified to a specific edition of SNT-TC-1A | Permit use of more recent edition of SNT-TC-1A. |

(continued)

## Alternatives to the ASME Code for the NUHOMS® -24PTH DSC Confinement Boundary

| Reference ASME Code Section/Article | Code Requirement | Alternatives, Justification & Compensatory Measures |
|---|---|---|
| NCA | All | Not compliant with NCA. Quality Assurance is provided according to 10 CFR 72 Subpart G in lieu of NCA-4000 |
| NCA-1140 | Use of Code editions and addenda | Code edition and addenda other than those specified in Section 4.2.2 may be used for construction but in no case earlier than 3 years before that specified in the Section 4.2.2 table.<br><br>Materials produced and certified in accordance with ASME Section II material specification from Code Editions and Addenda other than those specified in Section 4.2.2 may be used, so long as the materials meet all the requirements of Article 2000 of the applicable Subsection of the Section III Edition and Addenda used for construction. |
| NB-1100 | Requirements for Code Stamping of Components, Code reports and certificates, etc. | Code Stamping is not required. As Code Stamping is not required, the fabricator is not required to hold an ASME “N” or “NPT” stamp, or to be ASME Certified. |
| NB-1132 | Attachments with a pressure retaining function, including stiffeners, shall be considered part of the component. | Bottom shield plug, outer bottom cover plate, lifting posts, grapple ring, grapple ring support are outside code jurisdiction; these components together are much larger than required to provide stiffening for the inner bottom cover plate; the weld that retains the outer bottom cover plate and with it the bottom shield plug is subject to root and final PT examination. |
| NB-2130 | Material must be supplied by ASME approved material suppliers. | Material is certified to meet all ASME Code criteria but is not eligible for certification or Code Stamping if a non-ASME fabricator is used. As the fabricator is not required to be ASME certified, material certification to NB-2130 is not possible. Material traceability and certification are maintained in accordance with TN’s NRC approved QA program. |
| NB-4121 | Material Certification by Certificate Holder | |
| NB-4243 and NB-5230 | Category C weld joints in vessels and similar weld joints in other components shall be full penetration joints. These welds shall be examined by UT or RT and either PT or MT. | The joints between the top outer and inner cover plates (or top forging assembly for the 24PTH-S-LC) and containment shell are designed and fabricated per ASME Code Case N-595-2, which provides alternative requirements for the design and examination of spent fuel canister closures. This includes the inner top cover plate weld around the vent and siphon block and the vent and siphon block welds to the shell. The closure welds are partial penetration welds and the root and final layer are subject to PT examination (in lieu of volumetric examination) in accordance with the provisions of ASME Code Case N-595-2.<br>The 24PTH closure system employs austenitic stainless steel shell, lid materials, and welds. Because austenitic stainless steels are not subject to brittle fracture at the operating temperatures of the DSC, crack propagation is not a concern. Thus, multi-level PT examination provides reasonable assurance that flaws of interest will be identified. The PT examination is done by qualified personnel, in accordance with Section V and the acceptance standards of Section III, Subsection NB-5000. The alternative does not apply to other shell confinement welds, i.e., the longitudinal and circumferential welds applied to the DSC shell, and the inner bottom cover plate-to-shell weld which comply with NB-4243 and NB-5230. |

(continued)

**Alternatives to the ASME Code for the NUHOMS® -24PTH DSC Confinement Boundary**

| Reference ASME Code Section/Article | Code Requirement | Alternatives, Justification & Compensatory Measures |
|---|---|---|
| NB-6100 and 6200 | All pressure retaining components and completed systems shall be pressure tested. The preferred method shall be hydrostatic test. | The NUHOMS® -24PTH DSC is pressure tested in accordance with ASME Code Case N-595-2. The shield plug support ring and the vent and siphon block are not pressure tested due to the manufacturing sequence. The support ring is not a pressure-retaining item and the vent and siphon block weld is helium leak tested after fuel is loaded to the same criteria as the inner top closure plate-to-shell weld (ANSI N14.5-1997 leaktight criteria). |
| NB-7000 | Overpressure Protection | No overpressure protection is provided for the NUHOMS® DSCs. The function of the DSC is to contain radioactive materials under normal, off-normal and hypothetical accident conditions postulated to occur during transportation and storage. The DSC is designed to withstand the maximum possible internal pressure considering 100% fuel rod failure at maximum accident temperature. |
| NB-8000 | Requirements for nameplates, stamping & reports per NCA-8000. | The NUHOMS® DSC nameplate provides the information required by 10 CFR 71, 49 CFR 173 and 10 CFR 72 as appropriate. Code stamping is not required for the DSC. QA data packages are prepared in accordance with the requirements of TN's approved QA program. |
| NB-5250 | NDE Personnel must be qualified to a specific edition of SNT-TC-1A. | Permit use of more recent edition of SNT-TC-1A |

(continued)

## Alternatives to the ASME Code for the NUHOMS® -24PTH DSC Basket Assembly

| Reference ASME Code Section/Article | Code Requirement | Alternatives, Justification & Compensatory Measures |
|---|---|---|
| NCA | All | Not compliant with NCA. Quality Assurance is provided according to 10 CFR 72 Subpart G in lieu of NCA-4000 |
| NCA-1140 | Use of Code editions and addenda | Code edition and addenda other than those specified in Section 4.2.2 may be used for construction but in no case earlier than 3 years before that specified in the Section 4.2.2 table.<br><br>Materials produced and certified in accordance with ASME Section II material specification from Code Editions and Addenda other than those specified in Section 4.2.2 may be used, so long as the materials meet all the requirements of Article 2000 of the applicable Subsection of the Section III Edition and Addenda used for construction. |
| NG-1100 | Requirements for Code Stamping of Components, Code reports and certificates, etc. | Code Stamping is not required. As Code Stamping is not required, the fabricator is not required to hold an ASME "N" or "NPT" stamp, or to be ASME Certified. |
| NG-2000 | Use of ASME Material | Some baskets include neutron absorber and aluminum plates that are not ASME Code Class 1 material. They are used for criticality safety and heat transfer, and are only credited in the structural analysis with supporting their own weight and transmitting bearing loads through their thickness. Material properties in the ASME Code for Type 6061 aluminum are limited to 400°F to preclude the potential for annealing out the hardening properties. Annealed properties (as published by the Aluminum Association and the American Society of Metals) are conservatively assumed for the solid aluminum rails for use above the Code temperature limits. |
| NG-2130 | Material must be supplied by ASME approved material suppliers. | Material is certified to meet all ASME Code criteria but is not eligible for certification or Code Stamping if a non-ASME fabricator is used. As the fabricator is not required to be ASME certified, material certification to NG-2130 is not possible. Material traceability and certification are maintained in accordance with TN's NRC approved QA program. |
| NG-4121 | Material Certification by Certificate Holder | |
| NG-8000 | Requirements for nameplates, stamping & reports per NCA-8000 | The NUHOMS® DSC nameplate provides the information required by 10 CFR 71, 49 CFR 173 and 10 CFR 72 as appropriate. Code stamping is not required for the DSC. QA data packages are prepared in accordance with the requirements of TN's approved QA program. |

(continued)

## Alternatives to the ASME Code for the NUHOMS® -24PTH DSC Basket Assembly

| Reference ASME Code Section/Article | Code Requirement | Alternatives, Justification & Compensatory Measures |
|---|---|---|
| NG-3000/ Section II, Part D, Table 2A | Maximum temperature limit for Type 304 plate material is 800°F | Not compliant with ASME Section II Part D Table 2A material temperature limit for Type 304 steel for the postulated transfer accident case (117°F, loss of sunshade, loss of neutron shield). This is a post-drop accident scenario, where the calculated maximum steady state temperature is 862°F, the expected reduction in material strength is small (less than 1 ksi by extrapolation), and the only primary stresses in the basket grid are deadweight stresses. The recovery actions following the postulated drop accident are as described in Section 8.2.5 of the UFSAR. |
| NG-3352 | Table NG-3352-1 lists the permissible welded joints. | The fusion (spot) type welds between the stainless steel insert plates (straps) and the stainless steel fuel compartment tubes are not permissible welds per Table NG-3352-1. These welds are qualified by testing. The required minimum tested capacity of the welded connection (at each side of the tube) shall be 36 kips (at room temperature). This value is based on a margin of safety (test-to-design) of 1.6, which is larger than the Code-implied margin of safety for Level D loads. The minimum capacity shall be determined by shear tests of individual specimens made from production material. The tests shall be corrected for temperature differences (test-to-design) and for material properties (actual-to-ASME Code minimum values) to demonstrate that the capacity of the welded connection with ASME minimum properties, tested at design temperatures, will meet the 36 kips test requirement. The capacity of the welded connection is determined from the test of the weld pattern of a typical insert plate to the tube connection. The welds will be visually inspected to confirm that they are located over the insert plates, in lieu of the visual acceptance criteria of NG-5260 which are not appropriate for this type of weld. A joint efficiency (quality) factor of 1.0 is utilized for the fuel compartment longitudinal seam welds. Table NG-3352-1 permits a joint efficiency (quality) factor of 0.5 to be used for full penetration weld examined by ASME Section V visual examination (VT). For the 24PTH DSC, the compartment seam weld is thin and the weld will be made in one pass. Both surfaces of weld (inside and outside) will be fully examined by VT and therefore a factor of 2 x 0.5 = 1.0, will be used in the analysis. This is justified as both surfaces of the single weld pass/layer will be fully examined, and the stainless steel material that comprises the fuel compartment tubes is very ductile. |
| NG-5520 | NDE personnel must be qualified to a specific edition of SNT-TC-1A | Permit use of more recent edition of SNT-TC-1A. |

(continued)

## Alternatives to the ASME Code for the NUHOMS® -32PTH1 DSC Confinement Boundary

| Reference ASME Code Section/Article | Code Requirement | Alternatives, Justification & Compensatory Measures |
|---|---|---|
| NCA | All | Not compliant with NCA. Quality Assurance is provided according to 10 CFR 72 Subpart G in lieu of NCA-4000 |
| NCA-1140 | Use of Code editions and addenda | Code edition and addenda other than those specified in Section 4.2.2 may be used for construction but in no case earlier than 3 years before that specified in the Section 4.2.2 table.<br>Materials produced and certified in accordance with ASME Section II material specification from Code Editions and Addenda other than those specified in Section 4.2.2 may be used, so long as the materials meet all the requirements of Article 2000 of the applicable Subsection of the Section III Edition and Addenda used for construction. |
| NB-1100 | Requirements for Code Stamping of Components, Code reports and certificates, etc. | Code Stamping is not required. As Code Stamping is not required, the fabricator is not required to hold an ASME "N" or "NPT" stamp, or to be ASME Certified. |
| NB-2130 | Material must be supplied by ASME approved material suppliers. | Material is certified to meet all ASME Code criteria but is not eligible for certification or Code Stamping if a non-ASME fabricator is used. As the fabricator is not required to be ASME certified, material certification to NB-2130 is not possible. Material traceability and certification are maintained in accordance with TN's NRC approved QA program. |
| NB-4121 | Material Certification by Certificate Holder | |
| NB-4243 and NB-5230 | Category C weld joints in vessels and similar weld joints in other components shall be full penetration joints. These welds shall be examined by UT or RT and either PT or MT. | The shell to the outer top cover weld, the shell to the inner top cover/shield plug weld (including optional design configurations for the inner top cover as described in the 32PTH1 DSC drawings), the siphon/vent cover welds, and the vent and siphon block welds to the shell are all partial penetration welds. As an alternative to the NDE requirements of NB-5230, for Category C welds, all of these closure welds are multi-layer welds and receive a root and final PT examination, except for the shell to the outer top cover weld. The shell to the outer top cover weld will be a multi-layer weld and receive multi-level PT examination in accordance with the guidance provided in ISG-15 for NDE.<br>The multi-level PT examination provides reasonable assurance that flaws of interest will be identified. The PT examination is done by qualified personnel, in accordance with Section V and the acceptance standards of Section III, Subsection NB-5000. All of these welds are designed to meet the guidance provided in ISG-15 for stress reduction factor. |
| NB-1132 | Attachments with a pressure retaining function, including stiffeners, shall be considered part of the component. | Bottom shield plug and outer bottom cover plate are outside code jurisdiction; these components together are much larger than required to provide stiffening for the inner bottom cover plate; the weld that retains the outer bottom cover plate and with it the bottom shield plug is subject to root and final PT examination. |

(continued)

## Alternatives to the ASME Code for the NUHOMS® -32PTH1 DSC Confinement Boundary

| Reference ASME Code Section/Article | Code Requirement | Alternatives, Justification & Compensatory Measures |
|---|---|---|
| NB-6100 and 6200 | All pressure retaining components and completed systems shall be pressure tested. The preferred method shall be hydrostatic test. | The NUHOMS® -32PTH1 DSC is not a complete vessel until the top closure is welded following placement of fuel assemblies within the DSC. Due to the inaccessibility of the shell and lower end closure welds following fuel loading and top closure welding, as an alternative, the pressure testing of the DSC is performed in two parts. The DSC shell and inner bottom plate/forging (including all longitudinal and circumferential welds), are pressure tested and examined at the fabrication facility.<br>The shell to the inner top cover/shield plug closure weld (including optional design configurations for the inner top cover as described in the 32PTH1 DSC drawings) is pressure tested and examined for leakage in accordance with NB-6300 in the field.<br>The siphon/vent cover welds are not pressure tested; these welds and the shell to the inner top cover/shield plug closure weld (including Optional design configurations for the inner top cover as described in the 32PTH1 DSC drawings) are helium leak tested after the pressure test.<br>Per NB-6324 the examination for leakage shall be done at a pressure equal to the greater of the design pressure or three-fourths of the test pressure. As an alternative, if the examination for leakage of these field welds, following a pressure test, is performed using helium leak detection techniques, the examination pressure may be reduced to ≥1.5 psig. This is acceptable given the significantly greater sensitivity of the helium leak detection method. |
| NB-7000 | Overpressure Protection | No overpressure protection is provided for the NUHOMS® DSCs. The function of the DSC is to contain radioactive materials under normal, off-normal and hypothetical accident conditions postulated to occur during transportation and storage. The DSC is designed to withstand the maximum possible internal pressure considering 100% fuel rod failure at maximum accident temperature. |
| NB-8000 | Requirements for nameplates, stamping & reports per NCA-8000. | The NUHOMS® DSC nameplate provides the information required by 10 CFR 71, 49 CFR 173 and 10 CFR 72 as appropriate. Code stamping is not required for the DSC. QA data packages are prepared in accordance with the requirements of TN's approved QA program. |
| NB-5250 | NDE Personnel must be qualified to a specific edition of SNT-TC-1A. | Permit use of more recent edition of SNT-TC-1A |

(continued)

## Alternatives to the ASME Code for the NUHOMS® -32PTH1 DSC Basket Assembly

| Reference ASME Code Section/Article | Code Requirement | Alternatives, Justification & Compensatory Measures |
|---|---|---|
| NCA | All | Not compliant with NCA. Quality Assurance is provided according to 10 CFR 72 Subpart G in lieu of NCA-4000 |
| NCA-1140 | Use of Code editions and addenda | Code edition and addenda other than those specified in Section 4.2.2 may be used for construction but in no case earlier than 3 years before that specified in the Section 4.2.2 table.<br><br>Materials produced and certified in accordance with ASME Section II material specification from Code Editions and Addenda other than those specified in Section 4.2.2 may be used, so long as the materials meet all the requirements of Article 2000 of the applicable Subsection of the Section III Edition and Addenda used for construction. |
| NG-1100 | Requirements for Code Stamping of Components, Code reports and certificates, etc. | Code Stamping is not required. As Code Stamping is not required, the fabricator is not required to hold an ASME "N" or "NPT" stamp, or to be ASME Certified. |
| NG-2000 | Use of ASME Material | Some baskets include neutron absorber and aluminum plates that are not ASME Code Class 1 material. They are used for criticality safety and heat transfer, and are only credited in the structural analysis with supporting their own weight and transmitting bearing loads through their thickness. Material properties in the ASME Code for Type 6061 aluminum are limited to 400°F to preclude the potential for annealing out the hardening properties. Annealed properties (as published by the Aluminum Association and the American Society of Metals) are conservatively assumed for the solid aluminum rails for use above the Code temperature limits. |
| NG-2130 | Material must be supplied by ASME approved material suppliers. | Material is certified to meet all ASME Code criteria but is not eligible for certification or Code Stamping if a non-ASME fabricator is used. As the fabricator is not required to be ASME certified, material certification to NG-2130 is not possible. Material traceability and certification are maintained in accordance with TN's NRC approved QA program. |
| NG-4121 | Material Certification by Certificate Holder | |
| NG-8000 | Requirements for nameplates, stamping & reports per NCA-8000 | The NUHOMS® DSC nameplate provides the information required by 10 CFR 71, 49 CFR 173 and 10 CFR 72 as appropriate. Code stamping is not required for the DSC. QA data packages are prepared in accordance with the requirements of TN's approved QA program. |
| NG-3000/ Section II, Part D, Table 2A | Maximum temperature limit for Type 304 plate material is 800°F | Not compliant with ASME Section II Part D Table 2A material temperature limit for Type 304 steel for the postulated transfer accident case (117°F, loss of sunshade, loss of neutron shield) and blocked vent accident (117°F, 40 hr). The calculated maximum steady state temperature for transfer accident case and blocked vent accident case are less than 1000°F. The only primary stresses in the basket grid are deadweight stresses. The ASME Code allows use of SA240 Type 304 stainless steel to temperatures up to 1000°F, as shown in ASME Code, Section II, Part D, Table 1A. In the temperature range of interest (near 800°F), the $S_m$ values for SA240 Type 304 shown ASME Code, Section II Part D, Table 2A are identical to the allowable S values for the same material shown in Section B, Part D, Table 1A. The recovery actions following the postulated drop accident are as described in the UFSAR. |

(continued)

## Alternatives to the ASME Code for the NUHOMS® -32PTH1 DSC Basket Assembly

| Reference ASME Code Section/Article | Code Requirement | Alternatives, Justification & Compensatory Measures |
|---|---|---|
| NG-3352 | Table NG-3352-1 lists the permissible welded joints. | The fusion (spot) type welds between the stainless steel insert plates (straps) and the stainless steel fuel compartment tubes are not included in Table NG-3352-1. These welds are qualified by testing. The required minimum tested capacity of the welded connection (at each side of the tube) shall be 45 kips (at room temperature). The capacity shall be demonstrated by qualification and production testing. Testing shall be performed using, or corrected to, the lowest tensile strength of material used in the basket assembly or to minimum specified tensile strength. Testing may be performed on individual welds, or on weld patterns representative of one wall of the tube. ASME Code Section IX does not provide tests for qualification of these types of welds. Therefore, these welds are qualified using Section IX to the degree applicable together with the testing described here. The welds will be visually inspected to confirm that they are located over the insert plates, in lieu of the visual acceptance criteria of NG-5260 which are not appropriate for this type of weld.<br>A joint efficiency (quality) factor of 1.0 is utilized for the fuel compartment longitudinal seam welds. Table NG-3352-1 permits a joint efficiency (quality) factor of 0.5 to be used for full penetration weld examined by ASME Section V visual examination (VT). For the 32PTH1 DSC, the compartment seam weld is thin and the weld will be made in one pass. Both surfaces of weld (inside and outside) will be fully examined by VT and therefore a factor of 2 x 0.5 = 1.0, will be used in the analysis. This is justified as both surfaces of the single weld pass/layer will be fully examined, and the stainless steel material that comprises the fuel compartment tubes is very ductile. |
| NG-5520 | NDE personnel must be qualified to a specific edition of SNT-TC-1A | Permit use of more recent edition of SNT-TC-1A. |

(continued)

## ASME Code Alternatives for the NUHOMS® -61BTH DSC Confinement Boundary

| Reference ASME Code Section/Article | Code Requirement | Alternatives, Justification & Compensatory Measures |
|---|---|---|
| NCA | All | Not compliant with NCA. Quality Assurance is provided according to 10 CFR 72 Subpart G in lieu of NCA-4000 |
| NCA-1140 | Use of Code editions and addenda | Code edition and addenda other than those specified in Section 4.2.2 may be used for construction but in no case earlier than 3 years before that specified in the Section 4.2.2 table.<br><br>Materials produced and certified in accordance with ASME Section II material specification from Code Editions and Addenda other than those specified in Section 4.2.2 may be used, so long as the materials meet all the requirements of Article 2000 of the applicable Subsection of the Section III Edition and Addenda used for construction. |
| NB-1100 | Requirements for Code Stamping of Components, Code reports and certificates, etc. | Code Stamping is not required. As Code Stamping is not required, the fabricator is not required to hold an ASME "N" or "NPT" stamp, or to be ASME Certified. |
| NB-1132 | Attachments with a pressure retaining function, including stiffeners, shall be considered part of the component. | Bottom shield plug and outer bottom cover plate are outside code jurisdiction; these components together are much larger than required to provide stiffening for the inner bottom cover plate; the weld that retains the outer bottom cover plate and with it the bottom shield plug is subject to root and final PT examination. |
| NB-2130 | Material must be supplied by ASME approved material suppliers. | Material is certified to meet all ASME Code criteria but is not eligible for certification or Code Stamping if a non-ASME fabricator is used. As the fabricator is not required to be ASME certified, material certification to NB-2130 is not possible. Material traceability and certification are maintained in accordance with TN's NRC approved QA program. |
| NB-4121 | Material Certification by Certificate Holder | |
| NB-4243 and NB-5230 | Category C weld joints in vessels and similar weld joints in other components shall be full penetration joints. These welds shall be examined by UT or RT and either PT or MT. | The shell to the outer top cover weld, the shell to the inner top cover/weld, the siphon/vent cover welds and the vent and siphon block welds to the shell are all partial penetration welds.<br>As an alternative to the NDE requirements of NB-5230, for Category C welds, all of these closure welds are multi-layer welds and receive a root and final PT examination, except for the shell to the outer top cover weld. The shell to the outer top cover weld will be a multi-layer weld and receive multi-level PT examination in accordance with the guidance provided in ISG-15 for NDE. The multi-level PT Examination provides reasonable assurance that flaws of interest will be identified. The PT examination is done by qualified personnel, in accordance with Section V and the acceptance standards of Section III, Subsection NB-5000. All of these welds are designed to meet the guidance provided in ISG-15 for stress reduction factor. |

(continued)

## ASME Code Alternatives for the NUHOMS® -61BTH DSC Confinement Boundary

| Reference ASME Code Section/Article | Code Requirement | Alternatives, Justification & Compensatory Measures |
|---|---|---|
| NB-6100 and 6200 | All pressure retaining components and completed systems shall be pressure tested. The preferred method shall be hydrostatic test. | The 61BTH is not a complete or "installed" pressure vessel until the top closure is welded following placement of Fuel Assemblies with the DSC. Due to the inaccessibility of the shell and lower end closure welds following fuel loading and top closure welding, as an alternative, the pressure testing of the DSC is performed in two parts. The DSC shell (including all longitudinal and circumferential welds), are pressure tested and examined at the fabrication facility.<br>The shell to the inner top cover closure weld are pressure tested and examined for leakage in accordance with NB-6300 in the field.<br>The siphon/vent cover welds are not pressure tested; these welds and the shell to the inner top cover closure weld are helium leak tested after the pressure test.<br>Per NB-6324 the examination for leakage shall be done at a pressure equal to the greater of the design pressure or three-fourths of the test pressure. As an alternative, if the examination for leakage of these field welds, following a pressure test, is performed using helium leak detection techniques, the examination pressure may be reduced to ≥1.5 psig. This is acceptable given the significantly greater sensitivity of the helium leak detection method. |
| NB-7000 | Overpressure Protection | No overpressure protection is provided for the NUHOMS® DSCs. The function of the DSC is to contain radioactive materials under normal, off-normal and hypothetical accident conditions postulated to occur during transportation and storage. The DSC is designed to withstand the maximum possible internal pressure considering 100% fuel rod failure at maximum accident temperature. |
| NB-8000 | Requirements for nameplates, stamping & reports per NCA-8000. | The NUHOMS® DSC nameplate provides the information required by 10 CFR 71, 49 CFR 173 and 10 CFR 72 as appropriate. Code stamping is not required for the DSC. QA data packages are prepared in accordance with the requirements of TN's approved QA program. |
| NB-5250 | NDE Personnel must be qualified to a specific edition of SNT-TC-1A. | Permit use of more recent edition of SNT-TC-1A |

(continued)

## ASME Code Alternatives for the NUHOMS® -61BTH DSC Basket

| Reference ASME Code Section/Article | Code Requirement | Alternatives, Justification & Compensatory Measures |
|---|---|---|
| NCA | All | Not compliant with NCA. Quality Assurance is provided according to 10 CFR 72 Subpart G in lieu of NCA-4000 |
| NCA-1140 | Use of Code editions and addenda | Code edition and addenda other than those specified in Section 4.2.2 may be used for construction but in no case earlier than 3 years before that specified in the Section 4.2.2 table.<br><br>Materials produced and certified in accordance with ASME Section II material specification from Code Editions and Addenda other than those specified in Section 4.2.2 may be used, so long as the materials meet all the requirements of Article 2000 of the applicable Subsection of the Section III Edition and Addenda used for construction. |
| NG/NF-1100 | Requirements for Code Stamping of Components, Code reports and certificates, etc. | Code Stamping is not required. As Code Stamping is not required, the fabricator is not required to hold an ASME "N" or "NPT" stamp, or to be ASME Certified. |
| NG/NF-2000 | Use of ASME Material | Some baskets include neutron absorber and aluminum plates that are not ASME Code Class 1 material. They are used for criticality safety and heat transfer, and are only credited in the structural analysis with supporting their own weight and transmitting bearing loads through their thickness. Material properties in the ASME Code for Type 6061 aluminum are limited to 400°F to preclude the potential for annealing out the hardening properties. Annealed properties (as published by the Aluminum Association and the American Society of Metals) are conservatively assumed for the solid aluminum rails for use above the Code temperature limits. |
| NG/NF-2130 | Material must be supplied by ASME approved material suppliers. | Material is certified to meet all ASME Code criteria but is not eligible for certification or Code Stamping if a non-ASME fabricator is used. As the fabricator is not required to be ASME certified, material certification to NG/NF-2130 is not possible. Material traceability and certification are maintained in accordance with TN's NRC approved QA program. |
| NG/NF-4121 | Material Certification by Certificate Holder | |
| NG-3352 | Table NG-3352-1 lists the permissible welded joints and quality factors. | The fuel compartment tubes may be fabricated from sheet with full penetration seam weldments. Per Table NG-3352-1 a joint efficiency (quality) factor of 0.5 is to be used for full penetration weldments examined in accordance with ASME Section V visual examination (VT). A joint efficiency (quality) factor of 1.0 is utilized for the fuel compartment longitudinal seam welds (if present) with VT examination. This is justified because the compartment seam weld is thin and the weldment is made in one pass; and both surfaces of the weldment (inside and outside) receive 100% VT examination. The 0.5 quality factor, applicable to each surface of the weldment, results is a quality factor of 1.0 since both surfaces are 100% examined. In addition, the fuel compartments have no pressure retaining function and the stainless steel material that comprises the fuel compartment tubes is very ductile. |
| NG/NF-8000 | Requirements for nameplates, stamping & reports per NCA-8000 | The NUHOMS® DSC nameplate provides the information required by 10 CFR 71, 49 CFR 173 and 10 CFR 72 as appropriate. Code stamping is not required for the DSC. QA data packages are prepared in accordance with the requirements of TN's approved QA program. |
| NG-5520 | NDE personnel must be qualified to a specific edition of SNT-TC-1A | Permit use of more recent edition of SNT-TC-1A. |

(continued)

**ASME Code Alternatives for the Standardized NUHOMS® System TCs Except for the OS200 and OS200FC TCs**

(Applies to TC structural components only; lead shielding, neutron shielding, and neutron shield jacket of the TC are not addressed by this table)

| Reference ASME Code Section/Article | Code Requirement | Alternatives, Justification & Compensatory Measures |
|---|---|---|
| NCA | All | Not compliant with NCA. Quality Assurance is provided according to 10 CFR 72 Subpart G in lieu of NCA-4000 |
| NCA-1140 | Use of Code editions and addenda | Code edition and addenda other than those specified in Section 4.2.3 may be used for construction but in no case earlier than 3 years before that specified in the Section 4.2.3 table.<br><br>Materials produced and certified in accordance with ASME Section II material specification from Code Editions and Addenda other than those specified in Section 4.2.3 may be used, so long as the materials meet all the requirements of Article 2000 of the applicable Subsection of the Section III Edition and Addenda used for construction. |
| NC-1100 | Requirements for Code Stamping of Components. | The cask is designed and fabricated to the requirements of Subsection NC, to the maximum extent practical. However, the TC does not have a Code stamp. Code Stamping is not required by 10 CFR 72 regulation. Therefore, the fabricator is not required to be ASME Certified. |
| NC-2000 | ASME Code Materials are to be used | The Cask bottom ram access cover plate is made of ASTM A240, a non-ASME material. This cover plate is a water tight closure used during fuel LOADING/UNLOADING OPERATIONS in the fuel/reactor building only. This is not a pressure boundary component, and its failure does not result in any public safety concerns. |
| NC-2130 | Material must be supplied by ASME approved material suppliers. | Material designated as ASME on UFSAR Appendix E drawings are obtained by TN approved suppliers with Certified Material Test Reports (CMTR's). Material is certified to meet all ASME Code criteria but is not eligible for Certification or Code Stamping, if a non-ASME fabricator is used. As the fabricator is not required to be ASME certified, material certification to NC-2130 is not possible. |
| NC-4120 | Material Certification by Certificate Holder | Material traceability and certification are maintained in accordance with TN's NRC approved QA program. |
| NC-4240 | Full penetration welds are required for pressure boundary closure joints. | The joint between the ram access penetration forging and the bottom end plate consists of partial penetration welds, while NC-3200 would require full penetration welds. This cover plate is a water tight closure used during fuel LOADING/UNLOADING OPERATIONS in the fuel/reactor building only. This is not a pressure boundary component, and its failure does not result in any public safety concerns. |
| NC-5250 | Category A and B weld joints shall be fully radiographed. | UFSAR Appendix E drawing NUH-03-8001 permits weld examination of (a) the circumferential and longitudinal welds for the structural shell and (b) the weld between the bottom end plate and the bottom support ring to be done using radiography (RT) or ultrasound (UT) while NC-5250 allows full penetration welds to be examined by RT only. Since the structural shell is not a pressure boundary, this code exception is acceptable. |

(continued)

**ASME Code Alternatives for the Standardized NUHOMS® System TCs Except for the OS200 and OS200FC TCs**

(Applies to TC structural components only; lead shielding, neutron shielding, and neutron shield jacket of the TC are not addressed by this table)

| Reference ASME Code Section/Article | Code Requirement | Alternatives, Justification & Compensatory Measures |
|---|---|---|
| NC-6000 | All completed pressure retaining systems shall be pressure tested | With respect to pressure testing requirements, the TC is considered a non pressure retaining component. Therefore, no pressure testing is required. However, liquid neutron shield cavity, cask bottom neutron shield cavity, and the bottom cover plate assembly are pressure and leak tested. |
| NC-7000 | Overpressure Protection | The TC is considered a non pressure retaining component. Therefore, no overpressure protection is provided for the TC, except that a pressure relief valve is provided for the annular neutron shielding. |
| NC-8000 | Requirements for nameplates, stamping & reports per NCA-8000. | The TC nameplate provides the information required by 10 CFR 72. Code stamping is not required for the TC. QA Data packages are prepared in accordance with the requirements of 10 CFR 72 and TN's NRC approved QA program. |
| NC-5520 | NDE personnel must be qualified to a specific edition of SNT-TC-1A. | Permit use of more recent edition of SNT-TC-1A. |

(continued)

**ASME Code Alternatives for the Standardized NUHOMS® System OS200 and OS200FC TCs**

(Applies to TC structural components only; lead shielding, neutron shielding, and neutron shield jacket of the TC are not addressed by this table)

| Reference ASME Code Section/Article | Code Requirement | Alternatives, Justification & Compensatory Measures |
|---|---|---|
| NCA | All | Not compliant with NCA. Quality Assurance is provided according to 10 CFR 72 Subpart G in lieu of NCA-4000 |
| NCA-1140 | Use of Code editions and addenda | Code edition and addenda other than those specified in Section 4.2.3 may be used for construction but in no case earlier than 3 years before that specified in the Section 4.2.3 table.<br><br>Materials produced and certified in accordance with ASME Section II material specification from Code Editions and Addenda other than those specified in Section 4.2.3 may be used, so long as the materials meet all the requirements of Article 2000 of the applicable Subsection of the Section III Edition and Addenda used for construction. |
| NC-1100 | Requirements for Code Stamping of Components. | The OS200/OS200FC TC is designed and fabricated to the requirements of Subsection NC, to the maximum extent practical. However, the TC does not have a Code stamp. Code Stamping is not required by 10 CFR 72 regulation. Therefore, the fabricator is not required to be ASME Certified. |
| NC-2000 | ASME Code Materials are to be used | The TC bottom ram access cover plate is made of ASTM A240, a non-ASME material. This cover plate is a water tight closure used during fuel LOADING/UNLOADING OPERATIONS in the fuel/reactor building only. This is not a pressure boundary component, and its failure does not result in any public safety concerns. |
| NC-2130 | Material must be supplied by ASME approved material suppliers. | Material designated as ASME on UFSAR Appendix E drawings are obtained by TN approved suppliers with Certified Material Test Reports (CMTR's). Material is certified to meet all ASME Code criteria but is not eligible for Certification or Code Stamping, if a non-ASME fabricator is used. As the fabricator is not required to be ASME certified, material certification to NC-2130 is not possible. |
| NC-4120 | Material Certification by Certificate Holder | Material traceability and certification are maintained in accordance with TN's NRC approved QA program. |
| NC-5254 | Category D joints shall be RT or UT examined. | The trunnion-to-shell weld is a Category D joint which does not allow adequate UT or RT examination. This weld is not a pressure boundary but serves as lifting point for the TC. During fabrication, this weld is progressive PT examined and then load- tested to three times the design load.<br>The weld between the ram access penetration forging and bottom end plate is a Category D joint which does not allow meaningful RT or UT examination. This weld is PT examined root and final layers. This is not a pressure boundary component and its failure does not result in any public safety concerns. |
| NC-6000 | All completed pressure retaining systems shall be pressure tested. | With respect to pressure testing requirements, the TC is not a pressure retaining component. Therefore, no pressure testing is required. However, the liquid neutron shield cavity, cask bottom neutron shield cavity, and the bottom cover plate assembly are pressure and leak tested. |
| NC-7000 | Overpressure Protection | The TC is not a pressure retaining component. Therefore, no overpressure protection is provided for the TC, except that a pressure relief valve is provided for the annular neutron shielding. |

(continued)

**ASME Code Alternatives for the Standardized NUHOMS® System OS200 and OS200FC TCs**

(Applies to TC structural components only; lead shielding, neutron shielding, and neutron shield jacket of the TC are not addressed by this table)

| Reference ASME Code Section/Article | Code Requirement | Alternatives, Justification & Compensatory Measures |
|---|---|---|
| NC-8000 | Requirements for nameplates, stamping & reports per NCA-8000. | The TC nameplate provides the information required by 10 CFR 72. Code stamping is not required for the TC. QA data packages are prepared in accordance with the requirements of 10 CFR 72 and TN's NRC approved QA program. |
| NC-5520 | NDE personnel must be qualified to a specific edition of SNT-TC-1A. | Permit use of more recent edition of SNT-TC-1A. |

Proposed alternatives to the ASME code, other than the aforementioned ASME Code alternatives may be used when authorized by the Director of the Office of Nuclear Material Safety and Safeguards, or designee. The applicant should demonstrate that:

1. The proposed alternatives would provide an acceptable level of quality and safety, or
2. Compliance with the specified requirements of ASME Code, Section III, Edition year and Addenda indicated in Section 4.2.2 or Section 4.2.3 would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

Requests for exceptions in accordance with this section should be submitted in accordance with 10 CFR 72.4.

## 4.3 Storage Location Design Features

The following storage location design features and parameters shall be verified by the system user to assure technical agreement with the UFSAR.

### 4.3.1 Storage Configuration

HSMs are placed together in single rows or back-to-back arrays. An end shield wall is placed on the outside end of any loaded outside HSM. A rear shield wall is placed on the rear of any single row loaded HSM.

A minimum of two (2) HSM-H modules are required to be placed adjacent to each other for stability during design basis flood loads.

A minimum of three (3) high seismic option HSM-H modules are to be connected with each other.

### 4.3.2 Concrete Storage Pad Properties to Limit DSC Gravitational Loadings Due to Postulated Drops

The TC/DSC has been evaluated for drops of up to 80 inches onto a reinforced concrete storage pad.

(continued)

## 4.3 Storage Location Design Features

### 4.3.3 Site Specific Parameters and Analyses

The potential Standardized NUHOMS® System user (general licensee) shall perform the verifications and evaluations in accordance with 10 CFR 72.212 before the use of the system under the general license. The following parameters and analyses shall be verified by the system user for applicability at their specific site. Other natural phenomena events, such as lightning (damage to electrical system, e.g., thermal performance monitoring), tsunamis, hurricanes, and seiches, are site specific and their effects are generally bounded by other events, but they should be evaluated by the user.

1. The analyzed Flood conditions of 50 ft. height of water (full submergence of the loaded HSM with DSC) and water velocity of 15 fps.

2. One-hundred year roof snow load of 110 psf.

3. The maximum yearly average temperature shall be 70°F for the 24P, 52B and 61BT DSCs only. The average daily ambient temperature shall be 100°F or less for the 52B, 61BT, 32PT, 24PHB, 24PTH, and 61BTH DSCs. For the 32PTH1 DSC, the average daily ambient temperature shall be 106°F or less.

4. The temperature extremes either of 125°F (for the 24P, 52B and 61BT DSCs) or 117°F (for the 32PT, 24PHB, 24PTH, 61BTH and 32PTH1 DSCs). The 117°F extreme ambient temperature corresponds to a 24 hour calculated average temperature of 102°F for the 32PT DSC only. The extreme minimum ambient temperature is –40°F for storage of the DSC inside HSM.

5. The potential for fires and explosions shall be addressed, based on site-specific considerations.

6. Supplemental Shielding: In cases where supplemental shielding and engineered features (i.e., earthen berms, shield walls) are used to ensure that the requirements of 10 CFR 72.104(a) are met, such features are to be considered important to safety and must be evaluated to determine the applicable Quality Assurance Category.

7. Seismic restraints shall be provided to prevent overturning of a loaded TC in a vertical orientation in the plant's FUEL BUILDING during a seismic event if a certificate holder determines that the horizontal acceleration is 0.4g or greater. The determination of the horizontal acceleration acting at the center of gravity (CG) of the loaded TC must be based on a peak horizontal ground acceleration at the site.

(continued)

8. Site design spectra seismic Zero Period Acceleration (ZPA) levels of 0.25g horizontal and 0.17g vertical for the systems using the Standardized HSMs. Site design spectra seismic ZPA for systems using the HSM-H modules are payload specific as follows:

   - 0.3g horizontal and 0.2g vertical for the 24PTH and 61BTH DSCs
   - 0.3g horizontal and 0.25g vertical for the 32PTH1 DSC
   - Site design spectra seismic ZPA levels for the 32PTH1 DSC systems when stored within the “high seismic option” HSM-H modules are 1.0g horizontal and 1.0g vertical.

9. The storage pad location shall have no potential for liquification at the site-specific Safe Shutdown Earthquake (SSE) level.

10. Any other site parameters or considerations that could decrease the effectiveness of cask systems important to safety.

11. The storage pad location shall be evaluated for the effects of soil structure interaction which may affect the response of the loaded HSMs.

## 4.4 TC Design Features

The OS197L TC shall only be used with DSC models 61BT and 32PT with a maximum heat load of 12 kW per DSC or less, and 13 kW per DSC or less, respectively. The following TC design features and parameters for the OS197L TC shall be verified by the system user to assure technical agreement with the UFSAR:

4.4.1 The OS197L TC decontamination area shielding shall be used for all LOADING OPERATIONS when the TC is not in the spent fuel pool or suspended on the crane. The OS197L TC trailer shielding shall be used for all TRANSFER OPERATIONS. This shielding is necessary to ensure the OS197L TC system provides adequate radiation protection when the TC is not in the pool, or when the TC is not handled by remote operations.

4.4.2 The bare OS197L TC shall be handled using remote operations, including the use of laser/optical targeting and camera for confirmation of the cask location.

4.4.3 The placement of the Outer Top Shield of the Transfer Trailer Shield on the loaded OS197L TC shall take place in the FUEL BUILDING unless the FUEL BUILDING load limits would be exceeded. In that case, the placement of the Outer Top Shield takes place outside the FUEL BUILDING. If the placement of the Outer Top Shield is delayed due to building load limits, it must occur as soon as the Transfer Trailer has been moved to an area with acceptable load limits. The licensee must plan accordingly to minimize, to the greatest extent practicable, the delay of the placement of this Outer Top Shield.

4.4.4 During TRANSFER OPERATION of a loaded OS197L TC, every hour, visually monitor the Outer Top Trailer Shield vents and the opening around the cask ends for any sign of steaming which may indicate leakage of water from the cask neutron shield. If steaming is determined to be due to leakage of neutron shield water and not due to any rain or snow or other ambient conditions, then licensee must take appropriate corrective actions including use of supplemental cooling or replenishing the neutron shield water or terminating the transfer operation and returning the loaded cask to the FUEL BUILDING for further assessment.

## 5.0 ADMINISTRATIVE CONTROLS

### 5.1 Procedures

Each user of the standardized NUHOMS® System shall prepare, review, and approve written procedures for all normal operations (cask handling, loading movement and surveillance) and maintenance at the ISFSI prior to its operation. The operating procedures suggested generically in the UFSAR should provide the basis for the user's written operating procedures. Written procedures shall be established, implemented, and maintained covering the following activities that are important to safety:

- Organization and management
- Routine ISFSI operations
- Alarms and annunciators
- Emergency operations
- Design control and facility change/modification
- Control of surveillances and tests
- Control of special processes
- Maintenance
- Health physics, including ALARA practices
- Special nuclear material accountability
- Quality assurance, inspection, and audits
- Physical security and safeguards
- Records management
- Reporting
- All programs specified in Section 5.2

The fuel removal procedure which shall be part of the users operating procedures as a minimum shall include:

If fuel needs to be removed from the DSC, either at the end of service life or for inspection after an accident, precautions must be taken against the potential for the presence of damaged or oxidized fuel and to prevent radiological exposure to personnel during this operation. This can be achieved with this design by the use of the purge and fill valves which permit a determination of the atmosphere within the DSC before the removal of the inner top cover and shield plugs, prior to filling the DSC cavity with water (borated water for the 24P or 32PT or 24PHB or 24PTH or 32PTH1). If the atmosphere within the DSC is helium and radioactivity check of the atmosphere in the DSC cavity did not detect the presence of any airborne radioactive particulates, then operations should proceed normally with fuel removal either via the TC or in the pool, if available. However, if air or airborne radioactive particulates are present within the DSC, then appropriate filters should be in place to preclude the uncontrolled release of any potential airborne radioactive particulate from the DSC via the purge-fill valves. This will protect both personnel and the operations area from potential contamination. For the accident case, personnel protection in the form of respirators or supplied air should be considered in accordance with licensee's Radiation Protection Program.

(continued)

5.1.1 DSC Loading, Unloading and Preparation Program

Each user of the standardized NUHOMS® System shall establish a program to implement the UFSAR requirements for loading fuel and components into the DSC, unloading fuel and components from the DSC, and preparing the DSC for storage. The requirements of the programs for loading and preparing the DSC shall be complete prior to removing the DSC from the 10 CFR Part 50 structure. At a minimum, the program shall establish criteria that need to be verified to address UFSAR commitments and regulatory requirements for LCOs listed in Technical Specifications 3.1.1, 3.1.2, 3.2.1, 4.3.3, 5.2.4b, 5.2.4c, 5.2.4d, 5.2.4e, 5.2.6, and 5.4.

During unloading of fuel from the DSC, appropriate precautions shall be taken to limit the oxidation of the fuel. The recommendations of ISG-22, Revision 0 can be used as a guideline to address fuel oxidation concerns.

The program shall include compensatory measures and appropriate completion times if the program requirements are not met.

5.1.2 ISFSI Operations Program

A program shall be established to implement the UFSAR requirements for ISFSI operations.

At a minimum, the program shall verify that:

1. The HSMs are placed together in single rows or back-to-back arrays in accordance with the storage configuration specified in Technical Specification 4.3.1.

2. The concrete storage pad parameters are consistent with the UFSAR analysis.

3. The maximum lifting heights for the cask system meet Technical Specification 5.3.1 requirements.

5.1.3 Aging Management Program Procedures and Reporting

Each general licensee shall have a program to establish, implement, and maintain written procedures for each AMP described in the UFSAR. The program shall include provisions for changing AMP elements, as necessary, and within the limitations of the approved licensing bases to address new information on aging effects based on inspection findings and/or industry operating experience provided to the general licensee during the renewal period. Each procedure shall contain a reference to the specific aspect of the AMP element implemented by that procedure, and that reference shall be maintained even if the procedure is modified.

The general licensee shall establish and implement these written procedures within 180 days of the effective date of the renewal of the CoC or 180 days of the 20th anniversary of the loading of the first dry storage system at its site, whichever is later. The general licensee shall maintain these written procedures for as long as the general licensee continues to operate Standardized NUHOMS® Horizontal Modular Storage Systems in service for longer than 20 years.

## 5.2 Programs

Each user of the NUHOMS® System will implement the following programs:

- 10 CFR 72.48 Evaluation Program
- Training Program
- Radiological Environmental Monitoring Program
- Radiation Protection Program
- HSM Thermal Monitoring Program

### 5.2.1 10 CFR 72.48 Evaluation Program

Users shall conduct evaluations in accordance with 10 CFR 72.48 to determine whether proposed changes, tests, and experiments require NRC approval before implementation. Changes to the Technical Specification Bases and other licensing basis documents shall be conducted in accordance with approved administrative procedures.

Changes may be made to Technical Specification Bases and other licensing basis documents without prior NRC approval, provided the changes meet the criteria of 10 CFR 72.48.

The evaluation process shall contain provisions to ensure that the Technical Specification Bases and other licensing basis documents are maintained consistent with the UFSAR.

Proposed changes that do not meet the criteria above shall be reviewed and approved by the NRC before implementation. Changes to all of the licensing basis documents, including the Technical Specification Bases, implemented without prior NRC approval shall be provided to the NRC in accordance with 10 CFR 72.48.

(continued)

5.2 Programs

5.2.2 Training Program

Training modules shall be developed as required by 10 CFR Part 72. Training modules shall require a comprehensive program for the operation and maintenance of the standardized NUHOMS® System and the ISFSI. The training modules shall include the following elements, at a minimum:

- Standardized NUHOMS® System design (overview)
- ISFSI Facility design (overview)
- Structures, Systems, and Components Important to Safety (overview)
- NUHOMS® System UFSAR (overview)
- NRC Safety Evaluation Report (overview)
- Certificate of Compliance conditions (overview)
- NUHOMS® System Technical Specifications
- Applicable Regulatory Requirements (e.g.,10 CFR Part 72, Subpart K, 10 CFR Part 20, 10 CFR Part 73, 10 CFR Part 50)
- Required Instrumentation and Use
- Operating Experience Reviews
- NUHOMS® System and Maintenance procedures, including:
  - Fuel qualification and loading,
  - Rigging and handling,
  - Applicable LOADING OPERATIONS as described in Chapters 5, K.8, M.8, N.8, P.8, R.8, T.8, U.8, and W.8 of the UFSAR,
  - UNLOADING OPERATIONS including reflooding,
  - Auxiliary equipment operations and maintenance (i.e., welding operations, vacuum drying, helium backfilling and leak testing, reflooding),
  - TRANSFER OPERATIONS including loading and unloading of the Transfer Vehicle,
  - ISFSI Surveillance operations,
  - Radiation Protection,
  - Maintenance, as described in the UFSAR,
  - Security, and
  - Off-normal and accident conditions, responses and corrective actions.

5.2.3 Radiological Environmental Monitoring Program

a) A radiological environmental monitoring program shall be implemented to verify that the annual dose equivalent to an individual located outside the ISFSI controlled area does not exceed the annual dose limits specified in 10 CFR 72.104(a).

b) Operation of the ISFSI does not create any radioactive materials or result in any credible liquid or gaseous effluent release.

(continued)

5.2.4 Radiation Protection Program

The Radiation Protection Program shall establish administrative controls to limit personnel exposure to As Low As Reasonably Achievable (ALARA) levels in accordance with 10 CFR Part 20 and Part 72.

a) As part of its evaluation pursuant to 10 CFR 72.212, the licensee shall perform an analysis to confirm that the limits of 10 CFR 20 and 10 CFR 72.104 will be satisfied under the actual site conditions and configurations considering the planned number of DSCs/HSMs to be used and the planned fuel loading conditions.

A dose assessment shall also be performed to account for occupational exposures during normal LOADING and TRANSFER OPERATIONS. If remote handling devices are used for movement of a TC during LOADING OPERATIONS then the dose assessment shall include recovery from the off-normal event of a potential malfunction of these devices. The licensee shall perform this dose assessment including occupational and public exposures from off-normal and accident conditions as a part of their 10 CFR 72.212 evaluations and augment their 10 CFR 20 radiation protection plan as required. The licensee shall develop appropriate measures (such as use of remote camera monitoring, use of temporary shielding etc.) to keep the dose rates ALARA during recovery from these potential malfunctions if needed. The licensee shall provide appropriate training to personnel involved in the possible repair/recovery operations.

When using an OS197L TC, the ALARA assessment shall include at least the assessment of occupational and public exposures associated with the following:

1. The off-normal event of cask handling crane hangup during the movement of a loaded OS197L TC from the spent fuel pool to the decontamination area and from the decontamination area to the transfer trailer.
2. Surface, 100-meter and in the most affected unrestricted area (if any) dose rates from the transfer trailer without the top outer trailer shield in place for their impact on compliance with 10 CFR 72.104 and 10 CFR 20.1301(a)(2) dose values.
3. Worker doses associated with visual inspection of the openings at the top and bottom of the decontamination area shields.
4. Any other operation that has credible potential for high worker or public exposure.

For the OS197L, approved written procedures shall be developed and followed that address normal, off-normal, and accident conditions. Specifically, these procedures shall address the impact on plant operations due to potentially-increased radiation levels from the unshielded loaded OS197L. These may include operator actions required by 10 CFR Part 50 TSs, security guard actions, control room habitability, and response to alarms set off by the loaded OS197L.

Remote operations and appropriate ALARA practices shall be used due to very high dose rates during movement of the loaded OS197L TC from fuel pool to the decontamination area and from the decontamination area to the transfer trailer. When remote operations are used, approved written procedures shall be in place to govern these operations. When remote operations are used redundancy of equipment and their quality standards shall be considered and appropriate quality standards for the remote handling equipment shall be assigned.

When using an OS197L TC, the neutron shield (NS) shall be verified to be filled when DSC cavity draining or TC/DSC annulus draining operations are initiated and continually monitored during the first five minutes of the draining evolution to ensure the NS remains filled. The NS shall also be verified to be filled prior to movement of the loaded TC from the decontamination area (before the shield bell is removed). Observation of water level in the expansion tank or some other means can be used to verify compliance to this requirement.

When using a TC with a liquid NS, other than the OS197L TC, if draining the NS is required to meet the plant lifting crane capacity limits, the NS shall be verified to be filled after completion of the lift. If DSC cavity draining or TC/DSC annulus draining operations, as applicable, are initiated after the lift, the NS shall be verified to be filled before these draining operations are initiated and continually monitored during the first five minutes of the draining evolution to ensure the NS remains filled. Observation of water level in the expansion tank or some other means can be used to verify compliance to this requirement.

b) All DSC closure welds except those subjected to full volumetric inspection shall be dye penetrant tested in accordance with the requirements of the ASME Boiler and Pressure Vessel Code Section III, Division 1, Article NB-5000. The liquid penetrant test acceptance standards shall be those described in Subsection NB-5350 of the Code.

   This criteria is applicable to all DSCs. The welds include inner and outer top and bottom covers, and vent and siphon port covers.

   If the liquid penetrant test indicates that the weld is unacceptable:

   1. The weld shall be repaired in accordance with approved ASME procedures, and

   2. The new weld shall be re-examined in accordance with this specification.

c) Following completion of the seal weld of the DSC inner top cover plate/top shield plug assembly, (including vent and siphon port cover) this weld shall be leak tested with a helium leak detection device. The leak testing is performed to the criteria as listed below:

(continued)

| DSC Model | Leak Test Criterion | Reference |
|---|---|---|
| 24P, 52B | $\leq 1 \times 10^{-4}$ atm.cm$^3$/sec | ANSI N14.5-1987 |
| 61BT, 32PT, 24PHB, 24PTH, 61BTH or 32PTH1 | $\leq 1 \times 10^{-7}$ atm.cm$^3$/sec | "Leak-Tight" as defined in ANSI N14.5-1997 |

If the leakage rate of the inner seal weld exceeds the specified criterion, check and repair (a) the inner seal welds (b) the inner top cover and port covers for any surface indications resulting in leakage.

d) Following placement of each loaded TC/DSC into the cask decontamination area but prior to seal weld of the DSC inner top cover plate/top shield plug assembly to DSC shell, the DSC smearable surface contamination levels on the outer top 1 foot surface of the DSC shall be less than 2,200 dpm/100 cm$^2$ from beta and gamma sources, and less than 220 dpm/100 cm$^2$ from alpha sources.

If the required limits are not met, any available commercial decontamination technique may be used on the entire length of the DSC outer surface to reduce the DSC surface contamination levels to below the required limits. If contamination levels are still not met, remove the fuel assemblies from the DSC and put them back in the fuel pool, remove the DSC from the TC and decontaminate as necessary. Insert the clean DSC back in the TC. Check and replace the TC/DSC annulus seal if needed and repeat the canister loading process.

e) The TC total dose rate shall be less than or equal to the value specified below for the various DSCs. The dose rates should be measured as soon as possible after the TC is removed from the spent fuel pool when in the configuration defined below but before the TC is downended on the transfer trailer to be transferred to the ISFSI.

***Dose Rate Limits for the TC (except OS197L TC)***

| DSC Model | TC, Axial Surface Dose Rate Limit (mrem/hour) | TC, Radial Surface Dose Rate Limit (mrem/hour) |
|---|---|---|
| 24P | 600 | 600 |
| 52B | 600 | 600 |
| 61PT | 800 | 1200 |
| 32BT | 900 | 1000 |
| 24PHB | 1200 | 1200 |
| 24PTH | 950 | 1500* |
| 61BTH | 2200 | 1350 |
| 32 PTH1 | 800 | 650 |

*For the 24PTH-S-LC, the limit is 600 mrem/hour.

(continued)

***Dose Rate Limits for the OS197L TC***

| *DSC Model* | *TC, Axial Surface Dose Rate Limit (mrem/hour)* | *TC, Radial Decontamination Area Surface Dose Rate Limit (mrem/hour)* |
|---|---|---|
| *61BT* | *800* | *70* |
| *32PT* | *900* | *70* |

The following configuration shall be employed for all TC axial dose rate measurements:

- Neutron shielding material present in the TC neutron shield cavity
- TC/DSC annulus filled with water and water level in the annulus is at least up to the top of the fuel assembly level
- Bulk water removed from the DSC cavity. For the 24PHB DSC only, the DSC cavity is filled with water such that the fuel assemblies are submerged.
- DSC shield plug installed
- DSC inner top cover plate installed
- Temporary shielding present above the inner top cover plate – minimum effective equivalent to 3″ NS-3 and 1″ steel combined

The following locations shall be employed for all TC axial dose rate measurements:

- Five locations are chosen within a radius of 10 to 25 inches (diameter of 20 to 50 inches) around the DSC centerline on the top surface of the temporary shielding (as described earlier).
- None of these measurements shall exceed the specified dose rate limits.

The following configuration shall be employed for all TC radial dose rate measurements:

- Neutron shielding material present in the TC neutron shield cavity
- TC/DSC annulus water drained
- DSC cavity vacuum drying is complete
- DSC outer top cover plate welding completed
- TC top lid installed
- TC is in a vertical position

In addition to the configuration above, the decontamination area shielding is installed in the radial direction with a nominal thickness of 6 inches of steel only for the OS197L TC.

The following locations shall be employed for all TC radial dose rate measurements:

- Eight approximately equally spaced locations around the radial surface of the cask at an axial location corresponding to within approximately 24″ of the center of the TC.
- For the OS197L TC only, dose rate measurements are taken on the surface of the decontamination area shielding.
- None of these measurements shall exceed the specified dose rate limits.

(continued)

The TC dose rate limits are specified to maintain dose rates as-low-as-reasonably-achievable during DSC TRANSFER OPERATIONS. Additional temporary shielding can be employed before and/or after dose rate measurements to further reduce dose rates. These dose rate limits are based on the shielding analysis for the various DSCs included in the UFSAR Chapter 7 and Appendix J, Appendix K, Appendix M, Appendix N, Appendix P, Appendix T, Appendix U, and Appendix W with some added margin for uncertainty.

If the measured dose rates exceed above values, place temporary shielding around the affected areas of the TC and review plant records of the fuel assemblies which have been placed in the DSC to ensure that they conform to the fuel specification of Technical Specification 2.1 for the applicable DSCs. Submit a letter report to the NRC within 30 days summarizing actions taken and the results of the surveillance, investigation and findings. The report must be submitted using instructions in 10 CFR 72.4 with a copy sent to the administrator of the appropriate NRC regional office.

5.2.5 HSM or HSM-H Thermal Monitoring Program

This program provides guidance for temperature measurements that are used to monitor the thermal performance of each HSM.

Note: Only one of the two alternate surveillance activities listed below (5.2.5a or 5.2.5b) shall be performed for monitoring the HSM or HSM-H thermal performance.

a) Daily Visual Inspection of the HSM or HSM-H Air Inlets and Outlets (Front Wall and Roof Bird Screens)

A daily visual surveillance shall be conducted of the exterior of the air inlets and outlets to ensure that HSM air vents are not blocked for periods longer than assumed in the safety analysis.

In addition, a visual inspection shall be performed to ensure that no materials accumulate between the modules (only applicable for HSM designs with gap between adjacent modules) that could block the air flow.

If the surveillance shows blockage of air vents (inlets or outlets), they shall be cleared. If the bird screen is damaged, it shall be replaced.

b) Daily HSM or HSM-H Temperature Measurement

Verify the thermal performance of each HSM or HSM-H via a direct temperature measurement on a daily basis. The temperature measurement could be any parameter such as (1) a direct measurement of the HSM or HSM-H temperatures, (2) a direct measurement of the DSC temperatures, (3) a comparison of the inlet and outlet temperature difference to predicted temperature differences for each individual HSM or HSM-H, or (4) other means that would identify and allow for the correction

(continued)

of off-normal thermal conditions that could lead to exceeding the concrete and fuel clad temperature criteria. If air temperatures are measured, they must be measured in such a manner as to obtain representative values of inlet and outlet air temperatures. Also, due to the proximity of adjacent HSM or HSM-H modules, care must be exercised to ensure that measured air temperatures reflect only the thermal performance of an individual module, and not the combined performance of adjacent modules.

If the temperature measurement shows a significant unexplained difference, so as to indicate the approach to the concrete material or fuel clad temperature criteria, take appropriate action to determine the cause and return the canister to normal operation. If the measurement or other evidence suggests that the concrete accident temperature criteria (350 °F for HSM or the elevated temperature used in Section 5.5 to perform concrete testing for HSM-H) has been exceeded for more than 24 hours, the licensee can provide analysis results and/or test results in accordance with ACI-349, appendix A.4.3, demonstrating that the structural strength of the HSM or HSM-H has an adequate margin of safety. Take additional appropriate actions if necessary based on the results of the evaluation above.

The temperature measurement program should be of sufficient scope to provide the licensee with a positive means to identify conditions which threaten to approach temperature criteria for proper HSM or HSM-H operation and allow for the correction of off-normal thermal conditions that could lead to exceeding the concrete and fuel clad temperature criteria.

5.2.6 Hydrogen Gas Monitoring for 24P, 52B, 24PHB, 61BT, 32PT, 24PTH, 61BTH and 32PTH1 DSCs

For the 24P, 52B, 24PHB, 61BT, 32PT, 24PTH, 61BTH, and 32PTH1 DSCs, while welding the inner top cover plate during LOADING OPERATIONS, and while cutting the outer or inner top cover plates during UNLOADING OPERATIONS, hydrogen monitoring of the space under the shield plug in the DSC cavity is required, to ensure that the combustible mixture concentration remains below the flammability limit of 4%.

## 5.3 Cask Transfer Controls

### 5.3.1 TC/DSC Lifting/Handling Height Limits

The requirements of 10 CFR Part 72 apply to TC/DSC lifting/handling height limits outside the FUEL BUILDING. The requirements of 10 CFR Part 50 apply to TC/DSC lifting/handling height limits inside the FUEL BUILDING.

A. TC/DSC Lifting/Handling Height at Low Temperature and Location

Confirm the basket temperature and ambient temperature before the TRANSFER OPERATIONS of the loaded TC/DSC.

The lifting/handling height of a loaded TC/DSC, is limited as a function of location and low temperature as follows:

- No lifts or handling of the TC/DSC at any height are permissible at DSC basket temperatures below -20°F inside the FUEL BUILDING.
- The maximum lift height of the TC/DSC shall be 80 inches if the basket temperature is below 0°F but higher than -20°F inside the FUEL BUILDING.
- No lift height restriction is imposed on the TC/DSC if the basket temperature is higher than 0°F inside the FUEL BUILDING and a special lifting device that has at least twice the normal stress design factor for handling heavy loads, or a single failure proof handling system is used. If the special lifting device or single failure proof handling system is not used, measures shall be taken such that the drop g loads do not exceed those analyzed for the TC/DSC.
- When handling a loaded TC/DSC at a height greater than 80 inches outside the FUEL BUILDING, a special lifting device that has at least twice the normal stress design factor for handling heavy loads, or a single failure proof handling system shall be used and the basket temperature may not be lower than 0°F.

The requirements of 10 CFR Part 72 apply when the TC/DSC is in horizontal orientation on the transfer trailer. The requirements of 10 CFR Part 50 apply when the TC/DSC is being lifted/handled using the cask handling crane/hoist. (This distinction is valid only with respect to lifting/handling height limits.) If calculation or measurement of the basket temperature is unavailable, then the ambient temperature may be conservatively used.

B. TC/DSC TRANSFER OPERATIONS at High Ambient Temperatures

- The ambient temperature for TRANSFER OPERATIONS of a loaded TC/DSC (24P, 52B, 61BT, 32PT, 24PHB, 24PTH, or 61BTH DSC) shall not be greater than 100°F (when the cask is exposed to direct insolation). The corresponding ambient temperature limit for a TC with a loaded 32PTH1 DSC is 106°F.
- For TRANSFER OPERATIONS when ambient temperature exceeds 100°F (106°F for 32PTH1 TC/DSC), a solar shield shall be used to provide protection against direct solar radiation.

(continued)

5.3 Cask Transfer Controls

- This ambient temperature limit applies to all TRANSFER OPERATIONS of a loaded TC/DSC outside the FUEL BUILDING.
- Confirm what the ambient temperature is before transfer of the TC/DSC and every 2 hours when the loaded cask is exposed to direct insolation during TRANSFER OPERATIONS. If the ambient temperature before the transfer operation is greater than 100 °F or if the ambient temperature is expected to exceed the above limits provide an appropriate solar shield.

5.3.2 Cask Drop

Inspection Requirement

The DSC will be inspected for damage after any TC drop of fifteen inches or greater. In the event of a drop of a loaded TC/DSC from height greater than 15 inches outside or inside the FUEL BUILDING:

The DSC shall be inspected to ensure that it will continue to provide confinement of fuel. If the inspection reveals that above requirement is not satisfied, then fuel in the DSC shall be returned to the reactor spent fuel pool, the DSC shall be removed from the service and evaluated for further use, and the TC shall be inspected for damage and evaluated for further use.

5.3.3 TC Alignment with HSM or HSM-H

The TC shall be aligned with respect to the HSM or HSM-H such that the longitudinal centerline of the DSC in the TC is within ± ⅛ inch of its true position when the TC is docked with the HSM front access opening. This specification is applicable during the insertion and retrieval of all DSCs from the TC to HSM and back.

If the alignment tolerance is exceeded, the following actions should be taken:
a. Confirm that the transfer systems is properly configured,
b. Check and repair the alignment equipment, or
c. Confirm the locations of the alignment targets on the TC and HSM.

5.3.4 Trailer Shielding Drop onto OS197L TC

The DSC and the OS197L TC and the trailer shielding shall be inspected for damage and evaluated for further use after the accident drop of the trailer shielding onto the OS197L TC.

The lifting of outer top trailer shielding is restricted such that the bottommost part of the body of the outer top trailer shielding is less than 4 inches above the inner top trailer shielding.

## 5.4 HSM or HSM-H Dose Rate Evaluation Program

5.4.1 The licensee shall establish a set of HSM dose rate limits which are to be applied to DSCs used at the site to ensure the limits of 10 CFR 20 and 10 CFR 72.104 are met. Limits shall establish peak dose rates at the following three locations:

1) HSM front bird screen,
2) Outside HSM door, and
3) End shield wall exterior.

5.4.2 Notwithstanding the limits established in 5.4.1, the dose rate limits listed below for the Standardized HSM and HSM-H shall be met when a specific DSC model loaded with fuel is stored within a module:

Dose Rate Limits for the Standardized HSM and HSM-H

| DSC Model | HSM Model | Dose Rate Limit HSM Front Bird Screen (mrem/hour) | Dose Rate Limit Outside HSM Door (mrem/hour) | Dose Rate Limit End Shield Wall Exterior (mrem/hour) |
|---|---|---|---|---|
| 24P | Standardized HSM | 350 | 70 | 55 |
| 52B | Standardized HSM | 350 | 70 | 55 |
| 61BT | Standardized HSM | 1300 | 200 | 15 |
| 32PT | Standardized HSM | 850 | 200 | 6 |
| 24PHB | Standardized HSM | 525 | 20 | 275 |
| 24PTH* | Standardized HSM | 525 | 70 | 300 |
| 61BTH | Standardized HSM | 200 | 100 | 15 |
| 24PTH | HSM-H | 1300 | 2 | 5 |
| 61BTH | HSM-H | 650 | 2 | 4 |
| 32PTH1 | HSM-H | 525 | 2 | 2 |

* Applicable only to 24PTH-S-LC.

The number and locations of the dose rate measurements on the surface of front bird screen of the HSM are indicated below:

- Two dose rate measurements are taken for each front bird screen for the HSM-H. These dose rate measurements are approximately within 24 inches measured from the surface of the ISFSI pad and are approximately 6 inches from the centerline of each front bird screen.
- For the standardized HSM models, three dose rates are taken on the surface of each front bird screen. The central dose location shall be at the approximate centerline of the front bird screen. The other two dose locations are spaced at approximately equal distance on either side of the central dose location. All dose locations shall be at least 24 inches above the pad surface.
- None of these measurements shall exceed the specified dose rate limits.

(continued

The number and locations of the dose rate measurements on the outside surface of the HSM door are indicated below:

- Five locations within a radius of approximately 25 inches (diameter of approximately 50 inches) around the door centerline.
- None of these measurements shall exceed the specified dose rate limits.

The number and locations of the dose rate measurements on the exterior surface of the HSM end shield wall are indicated below:

- Five dose rate measurements are taken for every end shield wall. The central dose location shall be approximately 10 feet from the HSM front surface and at an elevation corresponding to the approximate door centerline. The remaining four dose locations shall be within a radius of approximately 25 inches (diameter of approximately 50 inches) around the central dose location.
- None of these measurements shall exceed the specified dose rate limits.

5.4.3 If the measured dose rates do not meet the limits of 5.4.1 or 5.4.2, whichever are lower, the licensee shall take the following actions until compliance is achieved:

a. Ensure proper installation of the HSM door and check for any streaming around the door, AND
b. Administratively verify that the spent fuel assemblies loaded in the DSC meet Section 2.0 limits, AND
c. Ensure that the DSC is properly positioned on the support rails. If compliance is not achieved then proceed to d and e.
d. Perform an analysis to determine that placement of the as-loaded DSC at the ISFSI will not cause the ISFSI to exceed the radiation exposure limits of 10 CFR Part 20 and 10 CFR 72.104(a) and ALARA and/or provide additional temporary or permanent shielding to assure exposure limits are not exceeded, and
e. Notify the U.S. Nuclear Regulatory Commission (Director of the Office of Nuclear Material Safety and Safeguards) within 30 days, summarizing the actions taken and the results of the surveillance, investigation and findings. This report must be submitted using instructions in 10 CFR 72.4 with a copy sent to the administrator of the appropriate NRC regional office

## 5.5 Concrete Testing for HSM-H

HSM-H concrete shall be tested during the fabrication process for elevated temperatures to verify that there are no significant signs of spalling or cracking and that the concrete compressive strength is greater than that assumed in the structural analysis. Tests shall be performed at or above the calculated peak temperature and for a period no less than the 40 hour duration of HSM-H blocked vent transient for components exceeding 350 °F.

HSM concrete temperature testing shall be performed whenever there is a significant change in the cement, aggregates or water-cement ratio of the concrete mix design.

## 5.6 HSM-H Configuration Changes

The use of HSM-H thermal performance methodology is allowed for evaluating HSM-H configuration changes except for changes to the HSM-H cavity height, cavity width, elevation and cross-sectional areas of the HSM-M air inlet/outlet vents, total outside height, length and width of HSM-H if these changes exceed 8% of their nominal design values shown on the approved CoC Amendment Number 8 drawings.

**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 Length (unirradiated) | 165.75 in (standard cavity)<br>171.71 in (long cavity) |
| Nominal Cross-Sectional Envelope | 8.536 in |
| 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 Length (unirradiated) | |
| With Burnup > 32,000 and ≤ 45,000 MWd/MTU | 171.71 in (long cavity) |
| With Burnup ≤ 32,000 MWd/MTU | 171.96 in (long cavity) |
| Nominal Cross-Sectional Envelope | 8.536 in |
| 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<br>Soluble boron requirements per Figure 1-1 |
| Assembly Average Burnup, Initial Enrichment, and Cooling Time | Per Table 1-2a (without BPRAs) or Per Table 1-2c (with BPRAs) |
| BPRA Cooling Time (Minimum) | 5 years for B&W Designs 10 years for Westinghouse Designs |
| **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 | ≤ $2.23 \times 10^{8}$ n/sec per assy with spectrum bounded by that in Chapter 7 of UFSAR |
| Gamma (Fuel + BPRA) Source | ≤ $7.45 \times 10^{15}$ 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 Length (unirradiated) | 176.16 in |
| Nominal Cross-Sectional Envelope* | 5.454 in |
| 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 |
| Assembly Average Burnup, Initial Enrichment, and Cooling Time | Per Table 1-2b |
| **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 | ≤ $1.01 \times 10^{8}$ n/sec per assy with spectrum bounded by that in Chapter 7 of UFSAR |
| Gamma Source | ≤ $2.63 \times 10^{15}$ g/sec per assy with spectrum bounded by that in Chapter 7 of UFSAR |

*Cross-Sectional Envelope is the outside dimension of the fuel channel.

**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 manufactured by General Electric or equivalent reload fuel that are enveloped by the fuel assembly design characteristics listed in Table 1-1d. |
| 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 Length | 176.2 in |
| Nominal Assembly Width (excluding channels) | 5.44 in |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 Type(3)) |
| 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 |
| Fuel Burnup, Initial Assembly Average Enrichment, and Cooling Time: | See Table 1-2q, except that for a 61BT DSC contained in an OS197L TC, see Tables 1-6a and 1-6b, and Figure 1-29. |
| Maximum Initial Uranium Content: | 198 kg/assembly |
| Maximum Decay Heat: | 300 W/assembly(1) |

(1) For FANP9 9x9-2 fuel assemblies, the maximum decay heat is limited to 0.21 kW/assembly.
(2) When the OS197L TC is employed, apply the requirements of Table 1-6a, Table 1-6b and Figure 1-29.
(3) Basket Type is specified in Table 1-1k.

**Table 1-1d**
**BWR Fuel Assembly Design Characteristics (1) (2)**
**for the NUHOMS®-61BT DSC**

| Transnuclear, ID | 7x7-49/0(5) | 8x8-63/1(5) | 8x8-62/2(5) | 8x8-60/4(5) | 8x8-60/1(5) | 9x9- 74/2 | 10x10-92/2 | 7x7-49/0(5) | 7x7-48/1Z(5) | 8x8-60/4Z(5) | 9x9-79/2 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| GE Designations | GE1<br>GE2<br>GE3 | GE4 | GE-5<br>GE-Pres<br>GE-Barrier<br>GE8<br>Type I | GE8<br>Type II | GE9<br>GE10 | GE11<br>GE13 | GE12 | ENC III-A | ENC III(3) | ENC Va &<br>ENC Vb | FANP9<br>9x9-2 |
| Maximum Length (in) (Unirradiated) | 176.2 | 176.2 | 176.2 | 176.2 | 176.2 | 176.2 | 176.2 | 176.2 | 176.2 | 176.2 | 176.2 |
| Nominal Width (in) (excluding channels) | 5.44 | 5.44 | 5.44 | 5.44 | 5.44 | 5.44 | 5.44 | 5.44 | 5.44 | 5.44 | 5.44 |
| Fissile Material | $UO_2$ | $UO_2$ | $UO_2$ | $UO_2$ | $UO_2$ | $UO_2$ | $UO_2$ | $UO_2$ | $UO_2$ | $UO_2$ | $UO_2$ |
| Number of Fuel Rods | 49 | 63 | 62 | 60 | 60 | 66 – Full<br>8 – Partial | 78 – Full<br>14 – Partial | 49 | 48 | 60 | 79 |
| Number of Water Holes | 0 | 1 | 2 | 4 | 1 | 2 | 2 | 0 | 1(4) | 4(4) | 2 |

(1) Any fuel channel average thickness up to 0.120 inch is acceptable on any of the fuel designs.
(2) Maximum fuel assembly weight with channel is 705 lb.
(3) Includes ENC III-E and ENC III-F.
(4) Solid Zirconium alloy rods instead of water holes.
(5) May be stored as damaged fuel.

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

| | |
|---|---|
| **PHYSICAL PARAMETERS:** | |
| Fuel Assembly Class | Only intact (including reconstituted) B&W 15x15, WE 17x17, CE 15x15, WE 15x15, CE 14x14 and WE 14x14 class PWR assemblies or equivalent reload fuel manufactured by other vendors that are enveloped by the fuel assembly design characteristics listed in Table 1-1f. |
| Reconstituted Fuel Assemblies | ≤ 32 assemblies per DSC with up to 56 stainless steel rods per assembly or unlimited number of lower enrichment $UO_2$ rods per assembly. |
| Fuel Cladding Material | Zircaloy |
| Fuel Damage | Cladding damage in excess of pinhole leaks or hairline cracks is not authorized to be stored as "Intact PWR Fuel." |
| Control Components (CCs) | • Up to 32 CCs are authorized for storage with all fuel assemblies except CE 15x15 class assemblies.<br>• 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.<br>• Design basis thermal and radiological characteristics for the CCs are listed in Table 1-1ee. |
| Maximum Assembly plus CC Weight | -1365 lbs for 32PT-S100 & 32PT-L100 System<br>-1682 lbs for 32PT-S125 & 32PT-L125 System |
| CC Damage | CCs with cladding failures are acceptable for loading. |
| **THERMAL/RADIOLOGICAL PARAMETERS:** | |
| Fuel Burnup and Cooling Time without CCs | Per Table 1-2d, Table 1-2e, Table 1-2f, Table 1-2g, Table 1-2h, and Figure 1-2 or Figure 1-3 or Figure 1-4, except that for a 32PT DSC contained in an OS197L TC, see Tables 1-6c and 1-6d, and Figure 1-30. |
| Fuel Burnup and Cooling Time with CCs | Per Table 1-2i, Table 1-2j, Table 1-2k, Table 1-2l, Table 1-2m and Figure 1-2 or Figure 1-3 or Figure 1-4, except that for a 32PT DSC contained in an OS197L TC, see Tables 1-6c and 1-6d, and Figure 1-30. |
| Maximum Planar Average Initial Fuel Enrichment | Per Table 1-1g and Figure 1-5 or Figure 1-6 or Figure 1-7. |

**Table 1-1f**
**PWR Fuel Assembly Design Characteristics for the NUHOMS®-32PT DSC**

| Assembly Class | B&W 15x15 | WE 17x17 | CE 15x15(3), (4) | WE 15x15 | CE 14x14 | WE 14x14 |
|---|---|---|---|---|---|---|
| **DSC Configuration** | **Maximum Unirradiated Length (in)** | | | | | |
| 32PT-S100/32PT-S125 | 165.75(1) | 165.75(1) | 165.75 | 165.75(1) | 165.75(1) | 165.75(1) |
| 32PT-L100/32PT-L125 | 171.71(1) | 171.71(1) | 171.71 | 171.71(1) | 171.71(1) | 171.71(1) |
| Fissile Material | UO2 | UO2 | UO2 | UO2 | UO2 | UO2 |
| Maximum MTU/assembly(2) | 0.475 | 0.475 | 0.475 | 0.475 | 0.475 | 0.475 |
| Maximum Number of Fuel Rods | 208 | 264 | 216 | 204 | 176 | 179 |
| Maximum Number of Guide/ Instrument Tubes | 17 | 25 | 9 | 21 | 5 | 17 |

(1) Maximum Assembly + CC Length (unirradiated)
(2) The maximum MTU/assembly is based on the shielding analysis. The listed value is higher than the actual.
(3) CE 15x15 assemblies with stainless steel plugging clusters installed are acceptable.
(4) Control Components are not authorized for storage with CE 15x15 class assemblies.

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

| 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 | -- | 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 | -- | NE | NE |
| | 2500 | 4.15 | 4.40 | -- | NE | NE |
| CE 15x15 Fuel Assembly | 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.
CC = Control Components. CCs shall not be stored in basket location where a PRA is required.
Type = Basket Types are specified in Table 1-1h.
NE = Not Evaluated.

**Table 1-1h**
**B10 Specification for the NUHOMS®-32PT Poison Plates**

| NUHOMS®-32PT DSC Basket Type | Minimum B10 Areal Density, (grams/cm$^2$) |
|---|---|
| A | 0.007 |
| B | 0.007 |
| C | 0.007 |
| D | 0.007 |

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

| **PHYSICAL PARAMETERS** | |
|---|---|
| Fuel | Only intact, unconsolidated B&W 15x15 (with or without BPRAs), WE 17x17, WE 15x15, CE 14x14, and WE 14x14 (all without BPRAs) Class PWR fuel assemblies or equivalent reload fuel manufactured by other vendor, with the following requirements: |
| Maximum Number of Reconstituted Assemblies per DSC with Stainless Steel rods | 4 |
| Maximum Number of Stainless Steel Rods per Reconstituted Assembly | 10 |
| Maximum Number of Reconstituted Assemblies per DSC with low enriched uranium oxide rods | 24 |
| Physical Parameters (without BPRAs)<br>Maximum Assembly Length (unirradiated) | 165.785 in (standard cavity)<br>171.96 in (long cavity) |
| Nominal Cross-Sectional Envelope | 8.536 in |
| 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)<br>Maximum Assembly + BPRA Length (unirradiated) | 171.96 in (long cavity) |
| Nominal Cross-Sectional Envelope | 8.536 in |
| 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**<br>Maximum Planar Average Initial Fuel Enrichment | Per Figure 1-10 |
| Minimum Boron Loading | Per Figure 1-10 |
| Maximum Initial Uranium loading per assembly | 0.490 MTU |
| Allowable loading configurations for each 24PHB DSC | As specified in Figure 1-8 or 1-9 |
| Burnup, Enrichment, and Minimum Cooling Time for Configuration 1 (Figure 1-8) | Table 1-2n for Zone 1 fuel; Table 1-2o for Zone 2 fuel; Table 1-2p for Zone 3 fuel |
| Burnup, Enrichment, and Minimum Cooling Time for Configuration 2 (Figure 1-9) | Table 1-2p for Zone 3 fuel |
| Minimum Cooling Time for BPRAs | 5 years |
| Total Decay Heat per DSC | 24 kW |
| Decay Heat Limits for Zone 1, 2 and 3 fuel | As specified in Figures 1-8 and 1-9. |

**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 manufactured by General Electric or Exxon/ANF or equivalent reload fuel that are enveloped by the Fuel assembly design characteristics listed in Table 1-1d for the 7x7 and 8x8 designs only. |
| 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. Missing cladding and/or crack size in the fuel pins is to be limited such that a fuel pellet is not able to pass through the gap created by the cladding opening during handling and retrievability is assured following Normal/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 Length (unirradiated) | 176.2 in |
| Nominal Assembly Width (excluding channels) | 5.44 in |
| Maximum Assembly Weight | 705 lbs |
| **RADIOLOGICAL PARAMETERS(1):** | No interpolation of Radiological Parameters is permitted between groups. |
| **Group 1:** | |
| Maximum Burnup: | 27,000 MWd/MTU |
| Minimum Cooling Time: | 5-years |
| 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 |
| 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 |
| 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 |

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

| | |
|---|---|
| **RADIOLOGICAL PARAMETERS:** | |
| **Group 4:** | |
| Maximum Burnup: | 40,000 MWd/MTU |
| Minimum Cooling Time: | 10-years |
| 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 |
| Fuel Burnup, Initial Assembly Average Enrichment, and Cooling Time: | See Table 1-2q, except that for a 61BT DSC contained in an OS197L TC, see Tables 1-6a and 1-6b, and Figure 1-29. |
| Maximum Pellet Enrichment: | 4.4 wt. % U-235 |
| Maximum Initial Uranium Content: | 198 kg/assembly |
| Maximum Decay Heat: | 300 W/assembly |

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

| | |
|---|---|
| **PHYSICAL PARAMETERS:**<br>Fuel Class | Intact or damaged unconsolidated B&W 15x15, WE 17x17, CE 15x15, WE 15x15, CE 14x14 and WE 14x14 class PWR assemblies (with or without control components) that are enveloped by the fuel assembly design characteristics listed in Table 1-1m. Equivalent reload fuel manufactured by other vendors but enveloped by the design characteristics listed in Table 1-1m is also acceptable. |
| Fuel Damage | Damaged PWR fuel assemblies are assemblies containing missing or partial fuel rods or fuel rods with known or suspected cladding defects greater than hairline cracks or pinhole leaks. The extent of cladding damage in the fuel rods is to be limited such that a fuel assembly needs to be handled by normal means. |
| Partial Length Shield Assemblies (PLSAs) | WE 15x15 class PLSAs which have only ever been irradiated in peripheral core locations with following characteristics are authorized:<br>• Maximum burnup, 40 GWd/MTU<br>• Minimum cooling time, 6.5 years<br>• Maximum decay heat, 900 watts |
| **Reconstituted Fuel Assemblies:**<br>• Maximum Number of Reconstituted Assemblies per DSC with Irradiated Stainless Steel Rods<br>• Maximum Number of Irradiated Stainless Steel Rods per Reconstituted Fuel Assembly<br>• 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 | 4<br><br>10<br><br>24 |
| Control Components (CCs) | • Up to 24 CCs are authorized for storage in 24PTH-L, 24PTH-S, and 24PTH-S-LC DSCs only.<br>• 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.<br>• Design basis thermal and radiological characteristics for the CCs are listed in Table 1-1n. |
| Nominal Assembly Width | 8.536 inches |
| Number of Intact Assemblies | ≤24 |
| Number and Location of Damaged Assemblies | 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.<br>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. |

(continued)

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

| | |
|---|---|
| Maximum Assembly plus CC Weight | 1682 lbs |
| **THERMAL/RADIOLOGICAL PARAMETERS:** | |
| Allowable Heat Load Zoning Configurations for each 24PTH DSC | Per Figure 1-11 or Figure 1-12 or Figure 1-13 or Figure 1-14 or Figure 1-15. |
| Burnup, Enrichment, and Minimum Cooling Time for Configuration 1 (Without CCs) | Per Table 1-3a for Zone 1 fuel. |
| Burnup, Enrichment, and Minimum Cooling Time for Configuration 2 (Without CCs) | Per Table 1-3b for Zone 2 fuel. |
| Burnup, Enrichment, and Minimum Cooling Time for Configuration 3 (Without CCs) | Per Table 1-3b for Zone 2 fuel and Table 1-3c for Zone 3 fuel. |
| Burnup, Enrichment, and Minimum Cooling Time for Configuration 4 (Without CCs) | Per Table 1-3d for Zone 4 fuel. |
| Burnup, Enrichment, and Minimum Cooling Time for Configuration 5 (Without CCs) | Per Table 1-3c for Zone 3 fuel and Table 1-3d for Zone 4 fuel. |
| Burnup, Enrichment, and Minimum Cooling Time for Configuration 1 (With CCs) | Per Table 1-3e for Zone 1 fuel. |
| Burnup, Enrichment, and Minimum Cooling Time for Configuration 2 (With CCs) | Per Table 1-3f for Zone 2 fuel. |
| Burnup, Enrichment, and Minimum Cooling Time for Configuration 3 (With CCs) | Per Table 1-3f for Zone 2 fuel and per Table 1-3g for Zone 3 fuel. |
| Burnup, Enrichment, and Minimum Cooling Time for Configuration 4 (With CCs) | Per Table 1-3h for Zone 4 fuel. |
| Burnup, Enrichment, and Minimum Cooling Time for Configuration 5 (With CCs) | Per Table 1-3g for Zone 3 fuel and per Table 1-3h for Zone 4 fuel. |
| Maximum Planar Average Initial Fuel Enrichment | Per Table 1-1p or Table 1-1q |
| Decay Heat | Type 1 Basket:<br>≤ 40.8 kW for 24PTH-S and 24PTH-L DSCs with decay heat limits for Zones 1, 2, 3 and 4 as specified in Figure 1-11 or Figure 1-12 or Figure 1-13 or Figure 1-14. |
| | Type 2 Basket:<br>Same as Type 1 Basket except ≤ 31.2 kW/DSC and ≤ 1.3 kW/fuel assembly for 24PTH-S and 24PTH-L DSCs.<br>≤ 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. |

**Table 1-1m**
**PWR Fuel Assembly Design Characteristics for the NUHOMS®-24PTH DSC**

| Assembly Class | | B&W 15x15 | WE 17x17 | CE 15x15 | WE 15x15 | CE 14x14 | WE 14x14 |
|---|---|---|---|---|---|---|---|
| Maximum Unirradiated Length (in)[1] | 24PTH-S | 165.75 | 165.75 | 165.75 | 165.75 | 165.75 | 165.75 |
| | 24PTH-L | 171.93 | 171.93 | 171.93 | 171.93 | 171.93 | 171.93 |
| | 24PTH-S-LC | 171.93 | N/A[3] | N/A[3] | N/A[3] | N/A[3] | N/A[3] |
| Fissile Material | | UO2 | UO2 | UO2 | UO2 | UO2 | UO2 |
| Maximum MTU/Assembly[2] | | 0.49 | 0.49 | 0.49 | 0.49(4) | 0.49 | 0.49 |
| Maximum Number of Fuel Rods | | 208 | 264 | 216 | 204 | 176 | 179 |
| Maximum Number of Guide/ Instrument Tubes | | 17 | 25 | 9 | 21 | 5 | 17 |

(1) Maximum Assembly + Control Component Length (unirradiated)
(2) The maximum MTU/assembly is based on the shielding analysis. The listed value is higher than the actual.
(3) Not authorized for storage.
(4) The maximum MTU/assembly for WE 15x15 PLSA = 0.33.

**Table 1-1n**
**Thermal and Radiological Characteristics for Control Components Stored in the NUHOMS® -24PTH 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 |
| Decay Heat (Watts/DSC) | 192.0 | 192.0 |

**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 | NR |
| | 2200 | 4.60 | 5.00 | NR |
| | 2300 | 4.70 | NR | NR |
| | 2400 | 4.80 | NR | NR |
| | 2500 | 4.90 | NR | NR |
| | 2600 | 5.00 | NR | NR |
| WE 14x14 [2] | 2100 | 4.80 | 5.00 | NR |
| | 2200 | 4.90 | NR | NR |
| | 2300 | 5.00 | NR | NR |
| 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 | NR |
| | 2700 | 4.50 | 4.90 | NR |
| | 2800 | 4.50 | 5.00 | NR |
| | 2900 | 4.60 | NR | NR |
| | 3000 | 4.70 | NR | NR |
| 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 | NR |
| | 2700 | 4.30 | 4.80 | NR |
| | 2800 | 4.40 | 4.90 | NR |
| | 2900 | 4.50 | 5.00 | NR |
| | 3000 | 4.60 | NR | NR |

(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 | NR |
| | 2800 | 4.40 | 4.80 | NR |
| | 2900 | 4.50 | 4.90 | NR |
| | 3000 | 4.60 | 5.00 | NR |
| 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 | NR |
| | 2900 | 4.30 | 4.80 | NR |
| | 3000 | 4.40 | 4.90 | NR |

**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.

NR = Not Required.

**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) 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] | 8 | 2150 | NR | 4.80 | NR |
| | 12 | 2150 | NR | 4.70 | NR |
| | 12 | 2450 | 4.50 | 5.00 | NR |
| **WE 14x14** [2] | 12 | 2150 | 4.50 | 5.00 | NR |
| **CE 15x15** [2] | 12 | 2150 | NR | NR | 4.50 |
| | 12 | 2550 | NR | NR | 5.00 |
| **WE 15x15** [2] | 8 | 2150 | NR | NR | 4.50 |
| | 12 | 2250 | NR | NR | 4.50 |
| | 8 | 2550 | NR | NR | 5.00 |
| | 12 | 2650 | NR | NR | 5.00 |
| **B&W 15x15** [2] | 12 | 2350 | NR | NR | 4.50 |
| | 12 | 2800 | NR | NR | 5.00 |
| **WE 17x17** [2] | 12 | 2250 | NR | NR | 4.50 |
| | 12 | 2650 | NR | NR | 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.

NR = Not Required.

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

| NUHOMS®-24PTH DSC Basket Type(1) | 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 |

(1) Basket Type 1 contains aluminum inserts in the R45 transition rails of the basket, Type 2 does not contain aluminum inserts.

**Table 1-1s**

**(deleted)**

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

| | |
|---|---|
| **PHYSICAL PARAMETERS:**<br>Fuel Class | Intact or damaged 7x7, 8x8, 9x9 or 10x10 BWR assemblies manufactured by General Electric or Exxon/ANF or FANP or reload fuel manufactured by other vendors that are enveloped by the fuel assembly design characteristics listed in Table 1-1u. 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 or suspected cladding defects greater than hairline cracks or pinhole leaks. The extent of damage in the fuel assembly is to be limited such that the fuel assembly will still be able to be handled by normal means and retrievability is assured following normal and off-normal conditions. Missing fuel rods are allowed. |
| **RECONSTITUTED FUEL ASSEMBLIES:**<br>• Maximum Number of Reconstituted Assemblies per DSC with Irradiated Stainless Steel Rods<br>• Maximum Number of Irradiated Stainless Steel Rods per Reconstituted Fuel Assembly<br>• 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 | 4<br><br>10<br><br>61 |
| Number of Intact Assemblies | ≤ 61 |
| Number and Location of Damaged Assemblies | Up to 16 damaged fuel assemblies, with balance intact or dummy assemblies, are authorized for storage in 61BTH DSC.<br>Damaged fuel assemblies may only be stored in the 2x2 compartments as shown in Figure 1-25. The DSC basket cells which store damaged fuel assemblies are provided with top and bottom end caps to assure retrievability. |
| Channels | Fuel may be stored with or without channels, channel fasteners, or finger springs. |
| Maximum Initial Uranium Content | 198 kg/assembly |
| Maximum Assembly Weight with Channels | 705 lbs |

(continued)

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

| | |
|---|---|
| **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. |
| 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. |
| Burnup, Enrichment, and Minimum Cooling Time for Heat Load Zoning Configuration 1 | Per Table 1-4c for Zone 3 fuel. |
| Burnup, Enrichment, and Minimum Cooling Time for Heat Load Zoning Configuration 2 | Per Table 1-4b for Zone 2 fuel, Table 1-4d for Zone 4 fuel, and Table 1-4e for Zone 5 fuel. |
| Burnup, Enrichment, and Minimum Cooling Time for Heat Load Zoning Configuration 3 | Per Table 1-4b for Zone 2 fuel. |
| Burnup, Enrichment, and Minimum Cooling Time for Heat Load Zoning Configuration 4 | Per Table 1-4a for Zone 1 fuel, Table 1-4b for Zone 2 fuel, Table 1-4d for Zone 4 fuel, and Table 1-4e for Zone 5 fuel. |
| Burnup, Enrichment, and Minimum Cooling Time for Heat Load Zoning Configuration 5 | Per Table 1-4b for Zone 2 fuel and Table 1-4e for Zone 5 fuel. |
| Burnup, Enrichment, and Minimum Cooling Time for Heat Load Zoning Configuration 6 | Per Table 1-4a for Zone 1 fuel, Table 1-4d for Zone 4 fuel, Table 1-4e for Zone 5 fuel, and Table 1-4f for Zone 6 fuel. |
| Burnup, Enrichment, and Minimum Cooling Time for Heat Load Zoning Configuration 7 | Per Table 1-4d for Zone 4 fuel and Table 1-4e for Zone 5 fuel. |
| Burnup, Enrichment, and Minimum Cooling Time for Heat Load Zoning Configuration 8 | Per Table 1-4b for Zone 2 fuel, Table 1-4c for Zone 3 fuel, Table 1-4d for Zone 4 fuel, and Table 1-4e for Zone 5 fuel. |
| Maximum Lattice Average Initial Enrichment | Per Table 1-1v or Table 1-1w |
| 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 |
| Decay Heat per DSC | ≤ 22.0 kW for Type 1 DSC |
| | ≤ 31.2 kW for Type 2 DSC |
| Minimum B10 Content in Poison Plates | Per Table 1-1v or Table 1-1w |

## Table 1-1u
## BWR Fuel Assembly Design Characteristics[1] for the NUHOMS®-61BTH DSC

| Transnuclear ID | 7x7-49/0 | 8x8-63/1 | 8x8-62/2 | 8x8-60/4 | 8x8-60/1 | 9x9-74/2 | 10x10-92/2 | 7x7-49/0 | 7x7-48/1Z | 8x8-60/4Z | 8x8-62/2 | 9x9-79/2 | Siemens QFA | 10x10-91/1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Initial Design or Reload Fuel Designation | GE1<br>GE2<br>GE3 | GE4 | GE-5<br>GE-Pres<br>GE-Barrier<br>GE8<br>Type I | GE8<br>Type II | GE9<br>GE10 | GE11<br>GE13 | GE12<br>GE14 | ENC-IIIA | ENC-III[2] | ENC Va<br>ENC Vb | FANP<br>8x8-2 | FANP9<br>9x9-2 | 9x9 | ATRIUM-10 |
| Maximum Length (in) (Unirradiated) | 176.51 | 176.51 | 176.51 | 176.51 | 176.51 | 176.51 | 176.51 | 176.51 | 176.51 | 176.51 | 176.51 | 176.2 | 176.51 | 176.51 |
| Fissile Material | $UO_2$ | $UO_2$ | $UO_2$ | $UO_2$ | $UO_2$ | $UO_2$ | $UO_2$ | $UO_2$ | $UO_2$ | $UO_2$ | $UO_2$ | $UO_2$ | $UO_2$ | $UO_2$ |
| Maximum Number of Fuel Rods | 49 | 63 | 62 | 60 | 60 | 74 | 92 | 49 | 48 | 60 | 62 | 79 | 72 | 91 |

(1) Any fuel channel average thickness up to 0.120 inch is acceptable on any of the fuel designs.
(2) Includes ENC-IIIE and ENC-IIIF.

**Table 1-1v**
**Maximum Fuel Assembly Lattice Average Initial Enrichment v/s Minimum B10 Requirements for the NUHOMS®-61BTH DSC Poison Plates (Intact Fuel)**

| 61BTH DSC Type | Basket Type | Maximum Lattice Average Enrichment (wt. % U-235) | Minimum B10 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 | 0.062 | 0.075 |

**Table 1-1w**
**Maximum Fuel Assembly Lattice Average Initial Enrichment v/s Minimum B10 Requirements for the NUHOMS®-61BTH DSC Poison Plates (Damaged Fuel)**

| 61BTH DSC Type | Basket Type | Maximum Lattice Average Enrichment (wt% U-235) | | Minimum B10 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 | 3.60 | 0.062 | 0.075 |

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

**Table 1-1x**
**(not used)**

**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:**<br><br>Fuel Class | Intact or damaged unconsolidated B&W 15x15, WE 17x17, CE 15x15, WE 15x15, CE 14x14, WE 14x14 and CE 16x16 class PWR assemblies (with or without control components) that are enveloped by the fuel assembly design characteristics listed in Table 1-1bb. Reload fuel manufactured by other vendors but enveloped by the design characteristics listed in Table 1-1bb is also acceptable. Damaged fuel assemblies beyond the definition contained below are not authorized for storage |
| Fuel Damage | Damaged PWR fuel assemblies are assemblies containing missing or partial fuel rods or fuel rods with known or suspected cladding defects greater than hairline cracks or pinhole leaks. The extent of damage in the fuel assembly is to be limited such that the fuel assembly will still be able to be handled by normal means and retrievability is assured following normal and off-normal conditions. |
| **Reconstituted Fuel Assemblies:**<br>• Maximum Number of Reconstituted Assemblies per DSC With Irradiated Stainless Steel Rods<br>• Maximum Number of Irradiated Stainless Steel Rods per Reconstituted Fuel Assembly<br>• 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 | 4<br><br>10<br><br>32 |
| Control Components (CCs) | • Up to 32 CCs are authorized for storage in 32PTH1-S, 32PTH1-M and 32PTH1-L DSCs.<br>• 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.<br>• Design basis thermal and radiological characteristics for the CCs are listed in Table 1-1ee. |
| 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.<br>Damaged fuel assemblies are to be placed in the center 16 locations as shown in Figures 1-26 through 1-28. The DSC basket cells which store damaged fuel assemblies are provided with top and bottom end caps to assure retrievability. |
| Maximum Assembly plus CC Weight | 1715 lbs |

(continued)

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

| | |
|---|---|
| **THERMAL/RADIOLOGICAL PARAMETERS:**<br>Allowable Heat Load Zoning Configurations for each 32PTH1 DSC | Per Figure 1-26 or Figure 1-27 or Figure 1-28. |
| Burnup, Enrichment, and Minimum Cooling Time for Configuration 1 | Per Table 1-5a for Zone 1 fuel, Per Table 1-5d and Table 1-5e for Zone 5 fuel, and Per Table 1-5f for Zone 6 fuel. |
| Burnup, Enrichment, and Minimum Cooling Time for Configuration 2 | Per Table 1-5c for Zone 4 and Zone 3 fuel. |
| Burnup, Enrichment, and Minimum Cooling Time for Configuration 3 | Per Table 1-5b for Zone 2 fuel. |
| Maximum Planar Average Initial Fuel Enrichment | Per Table 1-1cc or Table 1-1dd |
| Maximum Decay Heat Limits for Zones 1, 2, 3, 4, 5 and 6 Fuel | Per Figure 1-26 or Figure 1-27 or Figure 1-28. |
| 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. |

**Table 1-1bb**
**PWR Fuel Assembly Design Characteristics for the NUHOMS®-32PTH1 DSC**

| Assembly Class | | B&W 15x15 | WE 17x17 | CE 15x15 | WE 15x15 | CE 14x14 | WE 14x14 | CE 16x16 |
|---|---|---|---|---|---|---|---|---|
| Maximum Unirradiated Length (in)(1) | 32PTH1-S | 162.6 | 162.6 | 162.6 | 162.6 | 162.6 | 162.6 | 162.6 |
| | 32PTH1-M | 170.0 | 170.0 | 170.0 | 170.0 | 170.0 | 170.0 | 170.0 |
| | 32PTH1-L | 178.3 | 178.3 | 178.3 | 178.3 | 178.3 | 178.3 | 178.3 |
| Fissile Material | | $UO_2$ | $UO_2$ | $UO_2$ | $UO_2$ | $UO_2$ | $UO_2$ | $UO_2$ |
| Maximum MTU/Assembly(2) | | 0.49 | 0.49 | 0.49 | 0.49 | 0.49 | 0.49 | 0.49 |
| Maximum Number of Fuel Rods | | 208 | 264 | 216 | 204 | 176 | 179 | 236 |
| Maximum Number of Guide/ Instrument Tubes | | 17 | 25 | 9 | 21 | 5 | 17 | 5 |

Notes:
(1) Maximum Assembly + Control Component Length (unirradiated).
(2) The maximum MTU/assembly is based on the shielding analysis. The listed value is higher than the actual.

**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 | Minimum Soluble Boron (ppm) | Maximum Planar Average Initial Enrichment (wt. % U-235) as a Function of Soluble Boron Concentration and Basket Type (Fixed Poison Loading) | | | | |
|---|---|---|---|---|---|---|
| | | 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 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) | 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) | 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 |

(continued)

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

| Fuel Assembly Class | Minimum Soluble Boron (ppm) | Maximum Planar Average Initial Enrichment (wt. % U-235) as a Function of Soluble Boron Concentration and Basket Type (Fixed Poison Loading) | | | | |
|---|---|---|---|---|---|---|
| | | Basket Type[1] | | | | |
| | | 1A or 2A | 1B or 2B | 1C or 2C | 1D or 2D | 1E or 2E |
| 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 |
| BW 15x15 Assembly Class (with CCs) | 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) | 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) | 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 Fuel)**

| Fuel Assembly Class | Minimum Soluble Boron (ppm) | Maximum Planar Average Initial Enrichment (wt. % U-235) as a Function of Soluble Boron Concentration and Basket Type (Fixed Poison Loading) | | | | |
|---|---|---|---|---|---|---|
| | | 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) | 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) | 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) | 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) | 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.

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

| Parameter | BPRAs, NSAs, CRAs, RCCAs, VSIs, Neutron Sources, and APSRAs | TPAs and ORAs |
|---|---|---|
| Maximum Gamma Source (γ/sec/Assembly) | 3.91E+13 | 4.1E+12 |
| Decay Heat (Watts/Assembly) | 8 | 8 |

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 1-2a**
**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 | 5 | 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 | a | a | a | a | a | a | a | a | a | a | a | a |
| 28 | | | | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | a | a | a | a | a | a | a | a | a |
| 30 | | | | | | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | a | a | a | a | a | a | a | a |
| 32 | | | | | | | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | a | a | a | a | a | a |
| 34 | | | | | | | | 6 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | a | a | a | a |
| 36 | | | | | | | | | 6 | 6 | 6 | 6 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | a | a |
| 38 | | | | | | | | | | | 7 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 5 | 5 | 5 |
| 40 | | | | Not Acceptable or Not Analyzed | | | | | | | | 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 | 9 | 9 | 9 | 9 |
| 44 | | | | | | | | | | | | | | 11 | 11 | 11 | 11 | 10 | 10 | 10 | 10 |
| 45 | | | | | | | | | | | | | | 12 | 12 | 11 | 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 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| 34 | | | | | | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 7 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| 35 | | | | | | | 10 | 10 | 10 | 10 | 9 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 6 | 6 | 6 |
| 36 | | | | | | | 11 | 11 | 11 | 11 | 11 | 10 | 10 | 10 | 10 | 10 | 10 | 9 | 8 | 8 | 8 |
| 37 | | | | | | | | 13 | 13 | 12 | 12 | 12 | 12 | 11 | 11 | 11 | 11 | 11 | 10 | 10 | 10 |
| 38 | | | | | | | | 15 | 14 | 14 | 14 | 13 | 13 | 13 | 13 | 12 | 12 | 12 | 12 | 12 | 11 |
| 39 | | | Not Acceptable or Not Analyzed | | | | | 18 | 17 | 17 | 16 | 16 | 16 | 15 | 14 | 14 | 14 | 14 | 13 | 13 | 13 |
| 40 | | | | | | | | | 21 | 21 | 20 | 20 | 19 | 18 | 17 | 17 | 16 | 16 | 16 | 16 | 15 |
| 42 | | | | | | | | | | 22 | 22 | 22 | 21 | 21 | 20 | 20 | 20 | 19 | 18 | 17 | 17 |
| 44 | | | | | | | | | | 24 | 24 | 23 | 23 | 23 | 22 | 22 | 21 | 21 | 21 | 20 | 20 |
| 45 | | | | | | | | | | | 25 | 24 | 24 | 23 | 23 | 23 | 22 | 22 | 22 | 21 | 21 |

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 | 5 | 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 | a | a | a | a | a | a | a | a | a | a | a | a |
| 28 | | | | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | a | a | a | a | a | a | a | a | a |
| 30 | | | | | | 6 | 6 | 6 | 5 | 5 | 5 | 5 | 5 | a | a | a | a | a | a | a | a |
| 32 | | | | | | | 6 | 6 | 6 | 6 | 6 | 6 | 5 | 5 | 5 | a | a | a | a | a | a |
| 34 | | | | | | | | 7 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | a | a | a | a |
| 36 | | | | | | | | | 8 | 7 | 7 | 7 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | a | a |
| 38 | | | | | | | | | | | 8 | 8 | 7 | 7 | 7 | 7 | 6 | 6 | 6 | 6 | 6 |
| 40 | | | | Not Acceptable or Not Analyzed | | | | | | | | 9 | 9 | 8 | 8 | 8 | 7 | 7 | 7 | 7 | 6 |
| 41 | | | | | | | | | | | | 10 | 9 | 9 | 9 | 9 | 8 | 8 | 8 | 8 | 8 |
| 42 | | | | | | | | | | | | | 10 | 10 | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| 43 | | | | | | | | | | | | | 11 | 11 | 11 | 10 | 10 | 10 | 10 | 9 | 9 |
| 44 | | | | | | | | | | | | | | 12 | 11 | 11 | 11 | 11 | 10 | 10 | 10 |
| 45 | | | | | | | | | | | | | | 13 | 12 | 12 | 12 | 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.
- BPRA Burnup shall not exceed that of a BPRA irradiated in fuel assemblies with a total burnup of 36,000 MWd/MTU.
- Minimum cooling time for a BPRA 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.

**Table 1-2d**
**PWR Fuel Qualification Table for 1.2 kW per Assembly Fuel without CCs for the NUHOMS®-32PT DSC**
(Minimum required years of cooling time after reactor core discharge)

| BU GWd/MTU | 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 |
| 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 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 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 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| 30 | 6.0 | 6.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 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 | 6.0 | 6.0 | 6.0 | 6.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 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 | 7.0 | 7.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 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 | 8.0 | 8.0 | 7.0 | 7.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 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 | 9.0 | 9.0 | 8.0 | 7.0 | 7.0 | 7.0 | 7.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| 39 | 10.0 | 9.0 | 8.0 | 8.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| 40 | 10.0 | 10.0 | 9.0 | 8.0 | 8.0 | 8.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 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 | 11.0 | 10.0 | 10.0 | 9.0 | 8.0 | 8.0 | 8.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 6.0 | 6.0 | 6.0 | 6.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 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 | 11.5 | 11.0 | 10.0 | 9.0 | 9.0 | 8.0 | 8.0 | 8.0 | 8.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 5.0 | 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 | 13.0 | 11.5 | 10.5 | 10.0 | 9.0 | 9.0 | 9.0 | 8.0 | 8.0 | 8.0 | 8.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 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 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| 44 | 13.5 | 12.5 | 11.5 | 10.5 | 10.0 | 9.0 | 9.0 | 9.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 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 |
| 45 | 14.5 | 14.0 | 12.0 | 11.0 | 10.0 | 10.0 | 10.0 | 9.0 | 9.0 | 9.0 | 8.0 | 8.0 | 8.0 | 8.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 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 |

- 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 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.
- 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 after a six-year cooling time as defined by 3.7 wt. % U-235 (rounding down) and 42 GWd/MTU (rounding up) on the qualification table.

**Table 1-2e**
**PWR Fuel Qualification Table for 0.87 kW per Assembly Fuel without CCs for the NUHOMS®-32PT DSC**
(Minimum required years of cooling time after reactor core discharge)

| BU GWd/MTU | 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 |
| 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 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 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 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| 30 | 6.0 | 6.0 | 6.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 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 | 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 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 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 | 7.0 | 7.0 | 7.0 | 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 | 5.0 | 5.0 |
| 36 | 9.0 | 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 | 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 |
| 38 | 9.0 | 9.0 | 8.5 | 8.0 | 8.0 | 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 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| 39 | 10.0 | 9.0 | 9.0 | 8.5 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 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 |
| 40 | 10.0 | 10.0 | 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 | 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 |
| 41 | 11.0 | 10.5 | 10.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 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 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 |
| 42 | 12.0 | 11.5 | 11.0 | 10.5 | 10.0 | 10.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 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 |
| 43 | 13.0 | 12.0 | 10.5 | 10.5 | 10.5 | 10.5 | 10.5 | 10.5 | 10.0 | 10.0 | 10.0 | 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 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 |
| 44 | 13.0 | 13.0 | 12.5 | 12.0 | 11.5 | 10.5 | 10.5 | 10.5 | 10.0 | 10.0 | 10.0 | 10.0 | 9.5 | 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 | 8.0 | 8.0 |
| 45 | 14.0 | 13.5 | 13.0 | 12.5 | 12.5 | 12.0 | 12.0 | 12.0 | 12.0 | 10.5 | 10.5 | 11.5 | 10.5 | 10.5 | 10.5 | 10.0 | 10.0 | 10.0 | 9.5 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 |

- 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 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.
- 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 after an eight-year cooling time as defined by 3.7 wt. % U-235 (rounding down) and 42 GWd/MTU (rounding up) on the qualification table.

**Table 1-2f**
**PWR Fuel Qualification Table for 0.7 kW Fuel without CCs per Assembly for the NUHOMS®-32PT DSC**
(Minimum required years of cooling time after reactor core discharge)

| BU GWd /MTU | 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 |
| 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 | 6.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 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 | 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 | 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 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 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 |
| 32 | 8.0 | 8.0 | 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 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| 34 | 9.0 | 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 | 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 |
| 36 | 10.5 | 10.0 | 10.0 | 10.0 | 10.0 | 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 | 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 |
| 38 | 13.0 | 13.0 | 11.5 | 11.5 | 11.0 | 11.0 | 11.0 | 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 | 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 |
| 39 | 14.0 | 14.0 | 13.5 | 13.0 | 12.0 | 11.5 | 11.5 | 11.5 | 11.5 | 11.5 | 11.0 | 11.0 | 11.0 | 11.0 | 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 |
| 40 | 14.5 | 14.5 | 14.0 | 14.0 | 13.5 | 13.5 | 13.0 | 13.0 | 12.0 | 12.0 | 12.0 | 12.0 | 11.5 | 11.5 | 11.5 | 11.5 | 11.5 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 |
| 41 | 16.5 | 16.0 | 15.5 | 14.5 | 14.0 | 14.0 | 14.0 | 14.0 | 14.0 | 13.5 | 13.5 | 13.5 | 13.5 | 13.5 | 12.5 | 12.0 | 12.0 | 12.0 | 12.0 | 12.0 | 12.0 | 12.0 | 12.0 | 12.0 | 12.0 | 12.0 | 12.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 |
| 42 | 18.0 | 16.5 | 16.5 | 16.0 | 15.5 | 15.5 | 14.5 | 14.5 | 14.5 | 14.5 | 14.0 | 14.0 | 14.0 | 14.0 | 14.0 | 14.0 | 13.5 | 13.0 | 13.0 | 13.0 | 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 |
| 43 | 18.5 | 18.0 | 18.0 | 16.5 | 16.5 | 16.5 | 16.5 | 16.0 | 16.0 | 16.0 | 16.0 | 15.5 | 15.5 | 14.5 | 14.5 | 14.5 | 14.5 | 14.5 | 14.0 | 14.0 | 14.0 | 14.0 | 14.0 | 14.0 | 14.0 | 13.0 | 13.0 | 13.0 | 13.0 | 13.0 | 13.0 | 13.0 | 13.0 | 13.0 | 13.0 | 13.0 | 13.0 |
| 44 | 20.0 | 19.0 | 18.5 | 18.5 | 18.0 | 18.0 | 18.0 | 17.5 | 16.5 | 16.5 | 16.5 | 16.5 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 15.0 | 15.0 | 15.0 | 15.0 | 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 |
| 45 | 21.0 | 21.0 | 20.0 | 19.0 | 19.0 | 19.0 | 18.5 | 18.5 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 17.5 | 16.5 | 16.5 | 16.5 | 16.5 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 |

- 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 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.
- 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 after a thirteen-year cooling time as defined by 3.7 wt. % U-235 (rounding down) and 42 GWd/MTU (rounding up) on the qualification table.

**Table 1-2g**
**PWR Fuel Qualification Table for 0.63 kW per Assembly Fuel without CCs for the NUHOMS®-32PT DSC**
(Minimum required years of cooling time after reactor core discharge)

| BU GWd/MTU | 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 |
| 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 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 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 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 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 |
| 30 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 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 |
| 32 | 9.5 | 9.5 | 9.5 | 9.5 | 9.0 | 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 | 7.0 |
| 34 | 11.0 | 11.0 | 11.0 | 10.5 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 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 |
| 36 | 13.5 | 13.5 | 13.0 | 12.0 | 12.0 | 11.5 | 11.5 | 11.5 | 11.5 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 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 |
| 38 | 16.5 | 15.5 | 14.5 | 14.5 | 14.5 | 13.5 | 13.5 | 13.5 | 13.5 | 13.0 | 13.0 | 13.0 | 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 | 11.0 | 11.0 | 11.0 | 11.0 |
| 39 | 17.5 | 17.0 | 16.5 | 16.0 | 15.0 | 15.0 | 14.5 | 14.5 | 14.5 | 14.5 | 14.5 | 14.0 | 14.0 | 14.0 | 14.0 | 14.0 | 14.0 | 13.0 | 13.0 | 13.0 | 13.0 | 13.0 | 13.0 | 13.0 | 13.0 | 13.0 | 13.0 | 13.0 | 13.0 | 13.0 | 13.0 | 13.0 | 13.0 | 12.0 | 12.0 | 12.0 | 12.0 |
| 40 | 19.0 | 18.0 | 18.0 | 17.0 | 16.5 | 16.5 | 16.5 | 16.5 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 15.0 | 15.0 | 15.0 | 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 | 13.0 | 13.0 | 13.0 | 13.0 |
| 41 | 20.5 | 19.5 | 19.0 | 19.0 | 18.0 | 18.0 | 17.5 | 17.5 | 17.5 | 17.0 | 17.0 | 17.0 | 17.0 | 17.0 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | 14.0 |
| 42 | 22.0 | 20.5 | 20.5 | 19.5 | 19.5 | 19.5 | 19.0 | 19.0 | 18.5 | 18.5 | 18.5 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 17.0 | 17.0 | 17.0 | 17.0 | 17.0 | 17.0 | 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 |
| 43 | 23.0 | 22.5 | 22.5 | 21.5 | 21.5 | 21.0 | 20.0 | 20.0 | 19.5 | 19.5 | 19.5 | 19.0 | 19.0 | 19.0 | 19.0 | 19.0 | 19.0 | 19.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 17.0 | 17.0 | 17.0 | 17.0 | 17.0 | 17.0 | 17.0 | 17.0 | 17.0 | 17.0 |
| 44 | 24.5 | 24.5 | 23.0 | 23.0 | 22.0 | 22.0 | 22.0 | 22.0 | 21.5 | 21.5 | 21.5 | 21.0 | 21.0 | 21.0 | 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 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 |
| 45 | 25.5 | 25.5 | 25.0 | 24.0 | 23.0 | 23.0 | 23.0 | 23.0 | 23.0 | 22.5 | 22.5 | 22.5 | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 | 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 | 19.0 | 19.0 |

- 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 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.
- 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 after a sixteen-year cooling time as defined by 3.7 wt. % U-235 (rounding down) and 42 GWd/MTU (rounding up) on the qualification table.

**Table 1-2h**
**PWR Fuel Qualification Table for 0.6 kW per Assembly Fuel without CCs for the NUHOMS®-32PT DSC**
(Minimum required years of cooling time after reactor core discharge)

| BU GWd /MTU | 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 |
| 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 | 5.0 | 5.0 | 5.0 | 5.0 |
| 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 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| 30 | 9.0 | 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 | 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 |
| 32 | 10.5 | 10.5 | 9.5 | 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 | 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 |
| 34 | 12.0 | 12.0 | 12.0 | 11.5 | 11.0 | 11.0 | 11.0 | 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 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 |
| 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 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 |
| 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 | 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 | 13.0 | 13.0 | 13.0 | 13.0 | 13.0 | 13.0 | 13.0 | 13.0 | 13.0 | 13.0 | 13.0 | 13.0 |
| 39 | 19.5 | 19.0 | 18.5 | 18.0 | 17.0 | 16.5 | 16.5 | 16.5 | 16.5 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | 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 |
| 40 | 20.5 | 20.0 | 20.0 | 19.0 | 19.0 | 18.5 | 18.5 | 18.5 | 18.0 | 18.0 | 18.0 | 17.0 | 17.0 | 17.0 | 17.0 | 17.0 | 17.0 | 17.0 | 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 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 |
| 41 | 22.5 | 21.5 | 21.0 | 21.0 | 20.0 | 20.0 | 19.5 | 19.5 | 19.5 | 19.0 | 19.0 | 19.0 | 19.0 | 19.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 17.0 | 17.0 | 17.0 | 17.0 | 17.0 | 17.0 | 17.0 | 17.0 | 17.0 | 17.0 | 17.0 | 17.0 | 17.0 | 16.0 |
| 42 | 24.0 | 22.5 | 22.5 | 21.5 | 21.5 | 21.5 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 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 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 |
| 43 | 25.0 | 24.5 | 24.5 | 23.5 | 23.5 | 23.0 | 22.0 | 22.0 | 22.0 | 21.5 | 21.5 | 21.5 | 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 | 19.0 | 19.0 | 19.0 | 19.0 | 19.0 | 19.0 |
| 44 | 26.5 | 26.5 | 25.0 | 25.0 | 24.0 | 24.0 | 24.0 | 24.0 | 23.5 | 23.5 | 23.5 | 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 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 20.0 | 20.0 |
| 45 | 27.5 | 27.5 | 27.0 | 26.0 | 26.0 | 25.0 | 25.0 | 25.0 | 25.0 | 24.5 | 24.5 | 24.5 | 24.0 | 24.0 | 24.0 | 24.0 | 24.0 | 24.0 | 23.0 | 23.0 | 23.0 | 23.0 | 23.0 | 23.0 | 23.0 | 23.0 | 23.0 | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 |

- 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 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.
- 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 after a nineteen-year cooling time as defined by 3.7 wt. % U-235 (rounding down) and 42 GWd/MTU (rounding up) on the qualification table.

**Table 1-2i**
**PWR Fuel Qualification Table for 1.2 kW per Assembly Fuel with CCs for the NUHOMS®-32PT 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 | 4.6 | 4.7 | 4.8 | 4.9 | 5.0 |
| 10 | 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 |
| 15 | 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 |
| 20 | 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 |
| 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 |
| 28 | | | | 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 |
| 30 | | | | | | 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 |
| 32 | | | | | | | 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 |
| 34 | | | | | | | | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| 36 | | | | | | | | | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| 38 | | | | | | | | | | | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| 39 | | | Not Analyzed | | | | | | | | 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 |
| 41 | | | | | | | | | | | | 6 | 6 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| 42 | | | | | | | | | | | | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| 43 | | | | | | | | | | | | | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 5 | 5 | 5 |
| 44 | | | | | | | | | | | | | | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| 45 | | | | | | | | | | | | | | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |

- 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 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 2.0 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.
- 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 after a six-year cooling time as defined by 3.7 wt. % U-235 (rounding down) and 42 GWd/MTU (rounding up) on the qualification table.

**Table 1-2j**
**PWR Fuel Qualification Table for 0.87 kW per Assembly Fuel with CCs for the NUHOMS®-32PT 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 | 4.6 | 4.7 | 4.8 | 4.9 | 5.0 |
| 10 | 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 |
| 15 | 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 |
| 20 | 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 |
| 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 |
| 28 | | | | 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 |
| 30 | | | | | | 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 |
| 32 | | | | | | | 6 | 6 | 6 | 6 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| 34 | | | | | | | | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| 36 | | | | | | | | | 7 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| 38 | | | | | | | | | | | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 6 | 6 |
| 39 | | | | | | | | | | | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 |
| 40 | | | Not Analyzed | | | | | | | | | 8 | 8 | 8 | 8 | 8 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 |
| 41 | | | | | | | | | | | | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 7 | 7 | 7 | 7 |
| 42 | | | | | | | | | | | | 9 | 9 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| 43 | | | | | | | | | | | | | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| 44 | | | | | | | | | | | | | | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| 45 | | | | | | | | | | | | | | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 |

- 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 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 2.0 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.
- 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 after an eight-year cooling time as defined by 3.7 wt. % U-235 (rounding down) and 42 GWd/MTU (rounding up) on the qualification table.

**Table 1-2k**
**PWR Fuel Qualification Table for 0.7 kW per Assembly Fuel with CCs for the NUHOMS®-32PT 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 | 4.6 | 4.7 | 4.8 | 4.9 | 5.0 |
| 10 | 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 |
| 15 | 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 |
| 20 | 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 |
| 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 |
| 28 | | | | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| 30 | | | | | | 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 |
| 32 | | | | | | | 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 |
| 34 | | | | | | | | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 |
| 36 | | | | | | | | | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| 38 | | | | | | | | | | | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| 39 | | | Not Analyzed | | | | | | | | 11 | 11 | 11 | 11 | 11 | 11 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| 40 | | | | | | | | | | | | 12 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 |
| 41 | | | | | | | | | | | | 13 | 13 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 11 | 11 | 11 | 11 |
| 42 | | | | | | | | | | | | 14 | 14 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| 43 | | | | | | | | | | | | | 15 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 13 | 13 | 13 | 13 | 13 | 13 | 13 |
| 44 | | | | | | | | | | | | | | 16 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 14 | 14 | 14 | 14 | 14 | 14 |
| 45 | | | | | | | | | | | | | | 17 | 17 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 15 | 15 | 15 | 15 | 15 |

- 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 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 2.0 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.
- 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 after a thirteen-year cooling time as defined by 3.7 wt. % U-235 (rounding down) and 42 GWd/MTU (rounding up) on the qualification table.

**Table 1-2I**
**PWR Fuel Qualification Table for 0.63 kW per Assembly Fuel with CCs for the NUHOMS®-32PT 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 | 4.6 | 4.7 | 4.8 | 4.9 | 5.0 |
| 10 | 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 |
| 15 | 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 |
| 20 | 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 |
| 25 | | 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 |
| 28 | | | | 7 | 7 | 7 | 7 | 7 | 7 | 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 |
| 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 |
| 34 | | | | | | | | 10 | 10 | 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 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| 38 | | | | | | | | | | | 13 | 13 | 13 | 13 | 13 | 13 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| 39 | | | Not Analyzed | | | | | | | | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 |
| 40 | | | | | | | | | | | | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 |
| 41 | | | | | | | | | | | | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| 42 | | | | | | | | | | | | 18 | 18 | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 16 | 16 | 16 | 16 | 16 | 16 | 16 |
| 43 | | | | | | | | | | | | | 19 | 19 | 19 | 19 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 17 | 17 | 17 |
| 44 | | | | | | | | | | | | | | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 19 | 19 | 19 | 19 | 19 | 19 | 19 | 19 | 19 | 19 | 19 |
| 45 | | | | | | | | | | | | | | 22 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |

- 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 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 2.0 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.
- 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 after a seventeen-year cooling time as defined by 3.7 wt. % U-235 (rounding down) and 42 GWd/MTU (rounding up) on the qualification table.

**Table 1-2m**
**PWR Fuel Qualification Table for 0.6 kW per Assembly Fuel with CCs for the NUHOMS®-32PT 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 | 4.6 | 4.7 | 4.8 | 4.9 | 5.0 |
| 10 | 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 |
| 15 | 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 |
| 20 | 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 |
| 25 | | 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 |
| 28 | | | | 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 | 6 |
| 30 | | | | | | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 |
| 32 | | | | | | | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 8 | 8 | 8 | 8 | 8 | 8 |
| 34 | | | | | | | | 11 | 11 | 11 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| 36 | | | | | | | | | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 11 | 11 | 11 | 11 | 11 |
| 38 | | | | | | | | | | | 15 | 15 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 13 | 13 |
| 39 | | | Not Analyzed | | | | | | | | 16 | 16 | 16 | 16 | 16 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| 40 | | | | | | | | | | | | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 |
| 41 | | | | | | | | | | | | 19 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 17 |
| 42 | | | | | | | | | | | | 20 | 20 | 20 | 20 | 19 | 19 | 19 | 19 | 19 | 19 | 19 | 19 | 19 | 19 | 19 | 19 | 19 | 19 | 19 | 19 |
| 43 | | | | | | | | | | | | | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| 44 | | | | | | | | | | | | | | 23 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 21 | 21 | 21 | 21 | 21 | 21 |
| 45 | | | | | | | | | | | | | | 24 | 24 | 24 | 24 | 24 | 23 | 23 | 23 | 23 | 23 | 23 | 23 | 23 | 23 | 23 | 23 | 23 | 22 |

- 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 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 2.0 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.
- 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 after a nineteen-year cooling time as defined by 3.7 wt. % U-235 (rounding down) and 42 GWd/MTU (rounding up) on the qualification table.

**Table 1-2n**
**PWR Fuel Qualification Table for Zone 1 with 0.7 kW per Assembly, Fuel with or without BPRAs, 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 |
| 28 | | | 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 |
| 30 | | | | | | 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 |
| 32 | | | | | | | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 |
| 34 | | | | | | | | 8.0 | 8.0 | 8.0 | 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 |
| 36 | | | | | | | | | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 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 |
| 38 | | | | | | | | | | | 10.5 | 10.5 | 10.5 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 9.5 | 9.5 | 9.5 | 9.5 |
| 39 | | | | | | | | | | | 11.5 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 10.5 | 10.5 | 10.5 | 10.5 | 10.5 | 10.5 | 10.5 | 10.5 |
| 40 | | | | | | | | | | | 12.0 | 12.0 | 12.0 | 12.0 | 12.0 | 12.0 | 11.5 | 11.5 | 11.5 | 11.5 | 11.5 | 11.5 | 11.5 | 11.0 | 11.0 | 11.0 |
| 41 | | | | | | | | | | | 13.0 | 13.0 | 13.0 | 13.0 | 13.0 | 13.0 | 12.5 | 12.5 | 12.5 | 12.5 | 12.5 | 12.5 | 12.5 | 12.0 | 12.0 | 12.0 |
| 42 | | | | | | | | | | | 14.5 | 14.5 | 14.0 | 14.0 | 14.0 | 14.0 | 13.5 | 13.5 | 13.5 | 13.5 | 13.5 | 13.5 | 13.5 | 13.0 | 13.0 | 13.0 |
| 43 | | | Not Analyzed | | | | | | | | 15.5 | 15.5 | 15.5 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | 14.5 | 14.5 | 14.5 | 14.5 | 14.5 | 14.5 | 14.0 | 14.0 |
| 44 | | | | | | | | | | | 17.0 | 16.5 | 16.5 | 16.5 | 16.5 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 15.5 | 15.5 | 15.5 | 15.5 | 15.5 | 15.5 |
| 45 | | | | | | | | | | | | | 18.0 | 17.5 | 17.5 | 17.5 | 17.5 | 17.0 | 17.0 | 17.0 | 17.0 | 17.0 | 16.5 | 16.5 | 16.5 | 16.5 |
| 46 | | | | | | | | | | | | | 18.8 | 18.7 | 18.5 | 18.5 | 18.3 | 18.2 | 18.1 | 18.0 | 17.9 | 17.8 | 17.7 | 17.6 | 17.5 | 17.4 |
| 47 | | | | | | | | | | | | | 20.1 | 20.0 | 19.9 | 19.6 | 19.6 | 19.5 | 19.4 | 19.2 | 19.1 | 19.0 | 18.9 | 18.8 | 18.7 | 18.7 |
| 48 | | | | | | | | | | | | | 21.4 | 21.3 | 21.1 | 21.0 | 20.8 | 20.8 | 20.7 | 20.5 | 20.4 | 20.3 | 20.2 | 20.1 | 20.0 | 19.9 |
| 49 | | | | | | | | | | | | | 22.7 | 22.6 | 22.4 | 22.3 | 22.1 | 22.1 | 21.9 | 21.8 | 21.7 | 21.6 | 21.5 | 21.4 | 21.3 | 21.2 |
| 50 | | | | | | | | | | | | | | | 23.7 | 23.6 | 23.5 | 23.4 | 23.3 | 23.2 | 23.0 | 22.9 | 22.8 | 22.7 | 22.6 | 22.5 |
| 51 | | | | | | | | | | | | | | | 25.0 | 24.9 | 24.8 | 24.6 | 24.5 | 24.4 | 24.3 | 24.2 | 24.0 | 23.9 | 23.8 | 23.7 |
| 52 | | | | | | | | | | | | | | | 26.3 | 26.2 | 26.0 | 25.9 | 25.8 | 25.7 | 25.6 | 25.4 | 25.3 | 25.2 | 25.2 | 25.0 |
| 53 | | | | | | | | | | | | | | | 27.5 | 27.3 | 27.2 | 27.1 | 27.0 | 26.9 | 26.8 | 26.7 | 26.5 | 26.4 | 26.4 | 26.2 |
| 54 | | | | | | | | | | | | | | | 28.8 | 28.6 | 28.5 | 28.3 | 28.2 | 28.1 | 28.0 | 28.0 | 27.8 | 27.7 | 27.6 | 27.5 |
| 55 | | | | | | | | | | | | | | | 29.9 | 29.8 | 29.7 | 29.6 | 29.5 | 29.3 | 29.2 | 29.1 | 29.0 | 28.9 | 28.8 | 28.7 |

- 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 19.5 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 for a description of zones.
- For assemblies fuel reconstituted with Zircaloy clad uranium-oxide rods use the assembly average enrichment to determine the minimum cooling time.

**Table 1-2o**
**PWR Fuel Qualification Table for Zone 2 with 1.0 kW per Assembly, Fuel with or without BPRAs, 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 36 | | | | | | | | | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.0 | 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 | | | | | | | | | | | 6.0 | 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 | | | | | | | | | | | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 |
| 40 | | | | | | | | | | | 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 |
| 41 | | | | | | | | | | | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| 42 | | | | | | | | | | | 7.0 | 7.0 | 7.0 | 7.0 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 |
| 43 | | | | | | | | | | | 7.5 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 6.5 | 6.5 | 6.5 | 6.5 |
| 44 | | | | | | | | | | | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 |
| 45 | | | Not Analyzed | | | | | | | | | | 8.0 | 8.0 | 8.0 | 8.0 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.4 |
| 46 | | | | | | | | | | | | | 8.2 | 8.1 | 8.0 | 8.0 | 7.9 | 7.8 | 7.8 | 7.7 | 7.7 | 7.6 | 7.6 | 7.5 | 7.5 | 7.4 |
| 47 | | | | | | | | | | | | | 8.7 | 8.6 | 8.5 | 8.4 | 8.4 | 8.3 | 8.2 | 8.2 | 8.1 | 8.0 | 8.0 | 7.9 | 7.9 | 7.8 |
| 48 | | | | | | | | | | | | | 9.2 | 9.1 | 9.0 | 9.0 | 8.9 | 8.8 | 8.7 | 8.6 | 8.6 | 8.5 | 8.5 | 8.4 | 8.3 | 8.3 |
| 49 | | | | | | | | | | | | | 9.8 | 9.7 | 9.6 | 9.5 | 9.4 | 9.3 | 9.2 | 9.2 | 9.1 | 9.0 | 9.0 | 8.9 | 8.8 | 8.7 |
| 50 | | | | | | | | | | | | | | | 10.2 | 10.1 | 10.0 | 9.9 | 9.8 | 9.7 | 9.6 | 9.6 | 9.5 | 9.4 | 9.3 | 9.3 |
| 51 | | | | | | | | | | | | | | | 10.9 | 10.8 | 10.7 | 10.6 | 10.5 | 10.3 | 10.3 | 10.2 | 10.1 | 10.0 | 9.9 | 9.9 |
| 52 | | | | | | | | | | | | | | | 11.6 | 11.5 | 11.3 | 11.2 | 11.1 | 11.0 | 10.9 | 10.8 | 10.7 | 10.6 | 10.5 | 10.5 |
| 53 | | | | | | | | | | | | | | | 12.4 | 12.2 | 12.1 | 12.0 | 11.9 | 11.8 | 11.6 | 11.5 | 11.4 | 11.3 | 11.2 | 11.1 |
| 54 | | | | | | | | | | | | | | | 13.2 | 13.1 | 13.0 | 12.8 | 12.7 | 12.5 | 12.4 | 12.3 | 12.2 | 12.1 | 12.0 | 11.9 |
| 55 | | | | | | | | | | | | | | | 14.1 | 13.9 | 13.8 | 13.6 | 13.5 | 13.4 | 13.2 | 13.1 | 13.0 | 12.9 | 12.8 | 12.6 |

- 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 8.3 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 for a description of zones.
- For assemblies fuel reconstituted with Zircaloy clad uranium-oxide rods use the assembly average enrichment to determine the minimum cooling time.

## Table 1-2p
## PWR Fuel Qualification Table for Zone 3 with 1.3 kW per Assembly, Fuel with or without BPRAs, 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 | 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 | 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 | 6.0 | 6.0 | 6.0 |
| 44 | | | Not Analyzed | | | | | | | | 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 |
| 45 | | | | | | | | | | | | | 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 |
| 46 | | | | | | | | | | | | | 6.1 | 6.1 | 6.1 | 6.1 | 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 | 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 | 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 | 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 |
| 51 | | | | | | | | | | | | | | | 6.7 | 6.6 | 6.6 | 6.6 | 6.6 | 6.6 | 6.6 | 6.6 | 6.6 | 6.6 | 6.6 | 6.6 |
| 52 | | | | | | | | | | | | | | | 7.0 | 6.9 | 6.9 | 6.8 | 6.8 | 6.8 | 6.8 | 6.8 | 6.8 | 6.8 | 6.8 | 6.8 |
| 53 | | | | | | | | | | | | | | | 7.3 | 7.2 | 7.2 | 7.1 | 7.1 | 7.0 | 6.9 | 6.9 | 6.9 | 6.9 | 6.9 | 6.9 |
| 54 | | | | | | | | | | | | | | | 7.7 | 7.6 | 7.5 | 7.4 | 7.4 | 7.3 | 7.3 | 7.2 | 7.1 | 7.1 | 7.0 | 7.0 |
| 55 | | | | | | | | | | | | | | | 8.0 | 8.0 | 7.9 | 7.8 | 7.7 | 7.7 | 7.6 | 7.5 | 7.5 | 7.4 | 7.3 | 7.3 |

- 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 Zircaloy clad uranium-oxide rods use the assembly average enrichment to determine the minimum cooling time.

## 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 |
| 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 | 4 | 4 | 4 |
| 28 | Not Acceptable or Not Analyzed | | | | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| 30 | | | | | 7 | 7 | 7 | 7 | 7 | 7 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| 32 | | | | | 8 | 8 | 8 | 8 | 8 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| 34 | | | | | 9 | 9 | 9 | 9 | 9 | 9 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 |
| 36 | | | | | 11 | 11 | 11 | 10 | 10 | 10 | 10 | 10 | 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 | 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 | 11 | 11 | 11 | 11 | 11 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 9 | 9 | 9 | 9 |
| 40 | | | | | 16 | 16 | 15 | 15 | 15 | 14 | 14 | 14 | 13 | 13 | 13 | 12 | 12 | 12 | 12 | 12 | 11 | 11 | 11 | 11 | 11 | 10 | 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.

**Table 1-3a**
**PWR Fuel Qualification Table for Zone 1 Fuel with 1.7 kW per Assembly for the NUHOMS®-24PTH DSC (Fuel without CCs)**
(Minimum required years of cooling time after reactor core discharge)

| BU GWd /MTU | Assembly Average Initial Enrichment (wt. % U-235) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.7 | 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 |
| 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 |
| 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 |
| 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 |
| 28 | | 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 |
| 30 | | 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 |
| 32 | | 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 | 3.0 | 3.0 |
| 34 | | 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 |
| 36 | | 4.0 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.0 | 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 |
| 38 | | 4.5 | 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 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| 39 | | 4.5 | 4.0 | 4.0 | 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 |
| 40 | | 4.5 | 4.0 | 4.0 | 4.0 | 4.0 | 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 |
| 41 | | 5.0 | 4.5 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 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 |
| 42 | | | | | | | | | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 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 |
| 43 | | | | | | | | | | 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 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 |
| 44 | | | | | | | | | | 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 |
| 45 | | | | | | | | | | 4.5 | 4.5 | 4.5 | 4.5 | 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 |
| 46 | | | | | | | | | | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 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 |
| 47 | | | | | | | | | | 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 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| 48 | | | | | | | | | | 5.0 | 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 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| 49 | | | | | | | | | | | | | 5.0 | 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 |
| 50 | | | | | | | | | | | | | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 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 |
| 51 | | | | | | | | | | | | | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 |
| 52 | | | | | | | | | | | | | | 5.5 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 4.5 | 4.5 | 4.5 | 4.5 |
| 53 | | | | | | | | | | | | | | 5.5 | 5.5 | 5.5 | 5.5 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| 54 | | | | | | | | | | | | | | | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| 55 | | | | | | | | | | | | | | | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | |
| 56 | | | | | | | | | | | | | | | 6.0 | 6.0 | 6.0 | 6.0 | 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 | 5.0 |
| 57 | | | | | | | | | | | | | | | | | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 |
| 58 | | | | | | | | | | | | | | | | | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 |
| 59 | | | | | | | | | | | | | | | | | 6.5 | 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 | 5.5 |
| 60 | | | | | | | | | | | | | | | | | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| 61 | | | | | | | | | | | | | | | | | 7.0 | 7.0 | 7.0 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| 62 | | | | | | | | | | | | | | | | | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 |

Not Analyzed

Note: If irradiated stainless steel rods are present in the reconstituted fuel assembly, add an additional year of cooling time.

Note: The page that follows Table 1-3h provides the explanatory notes and limitations regarding the use of this table.

**Table 1-3b**
**PWR Fuel Qualification Table for Zone 2 Fuel with 2.0 kW per Assembly for the NUHOMS®-24PTH DSC (Fuel without CCs)**
(Minimum required years of cooling time after reactor core discharge)

| BU GWd/ MTU | Assembly Average Initial Enrichment (wt. % U-235) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.7 | 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 |
| 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 |
| 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 |
| 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 |
| 28 | | 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 |
| 30 | | 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 |
| 32 | | 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 |
| 34 | | 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 |
| 36 | | 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 | 3.0 | 3.0 |
| 38 | | 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 |
| 39 | | 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 |
| 40 | | 4.0 | 3.5 | 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 |
| 41 | | 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 | 3.0 | 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 |
| 42 | | | | | | | | | | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| 43 | | | | | | | | | | 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 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| 44 | | | | | | | | | | 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 |
| 45 | | | | | | | | | | 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 |
| 46 | | | | | | | | | | 4.0 | 4.0 | 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 |
| 47 | | | | | | | | | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 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 |
| 48 | | | | | | | | | | 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 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 |
| 49 | | | | | | | | | | | | | 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 | 3.5 | 3.5 | 3.5 |
| 50 | | | | | | | | | | | | | 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 |
| 51 | | | | | | | | | | | | | 4.5 | 4.5 | 4.5 | 4.5 | 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 |
| 52 | | | | | | | | | | | | | | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 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 |
| 53 | | | | | | | | | | | | | | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| 54 | | | | | | | | | | | | | | | 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 | 4.0 | 4.0 |
| 55 | | | | | | | | | | | | | | | 5.0 | 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 |
| 56 | | | | | | | | | | | | | | | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 4.5 | 4.5 | 4.5 | 4.5 |
| 57 | | | | | | | | | | | | | | | | | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| 58 | | | | | | | | | | | | | | | | | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| 59 | | | | | | | | | | | | | | | | | 5.5 | 5.5 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| 60 | | | | | | | | | | | | | | | | | 6.0 | 5.5 | 5.5 | 5.5 | 5.5 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| 61 | | | | | | | | | | | | | | | | | 6.0 | 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 |
| 62 | | | | | | | | | | | | | | | | | 6.0 | 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 |

Not Analyzed

Note: If irradiated stainless steel rods are present in the reconstituted fuel assembly, add an additional year of cooling time.

Note: The page that follows Table 1-3h provides the explanatory notes and limitations regarding the use of this table.

**Table 1-3c**
**PWR Fuel Qualification Table for Zone 3 Fuel with 1.5 kW per Assembly for the NUHOMS®-24PTH DSC (Fuel without CCs)**
(Minimum required years of cooling time after reactor core discharge)

| BU GWd/ MTU | Assembly Average Initial Enrichment (wt. % U-235) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.7 | 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 |
| 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 |
| 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 |
| 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 |
| 28 | | 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 | 3.0 | 3.0 |
| 30 | | 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 | 3.0 |
| 32 | | 4.0 | 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 |
| 34 | | 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 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| 36 | | 4.5 | 4.0 | 4.0 | 4.0 | 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 |
| 38 | | 5.0 | 4.5 | 4.5 | 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 | 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 |
| 39 | | 5.0 | 4.5 | 4.5 | 4.5 | 4.5 | 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 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 |
| 40 | | 5.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 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 | 3.5 |
| 41 | | 5.5 | 5.0 | 5.0 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 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 |
| 42 | | | | | | | | | | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 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 |
| 43 | | | | | | | | | | 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 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| 44 | | | | | | | | | | 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 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| 45 | | | | | | | | | | 5.0 | 5.0 | 5.0 | 5.0 | 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 |
| 46 | | | | | | | | | | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 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 |
| 47 | | | | | | | | | | 5.5 | 5.5 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 |
| 48 | | | | | | | | | | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 4.5 | 4.5 |
| 49 | | | | | | | | | | | | | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| 50 | | | | | | | | | | | | | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| 51 | | | | | | | | | | | | | 6.0 | 6.0 | 6.0 | 6.0 | 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 | 5.0 | 5.0 | 5.0 |
| 52 | | | | | | | | | | | | | | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 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 |
| 53 | | | | | | | | | | | | | | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 |
| 54 | | | | | | | | | | | | | | | 6.5 | 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 | 5.5 | 5.5 | 5.5 |
| 55 | | | | | | | | | | | | | | | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 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 |
| 56 | | | | | | | | | | | | | | | 7.0 | 7.0 | 7.0 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| 57 | | | | | | | | | | | | | | | | | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 |
| 58 | | | | | | | | | | | | | | | | | 7.5 | 7.5 | 7.5 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 |
| 59 | | | | | | | | | | | | | | | | | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 6.5 | 7.0 |
| 60 | | | | | | | | | | | | | | | | | 8.0 | 8.0 | 8.0 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 |
| 61 | | | | | | | | | | | | | | | | | 8.5 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 |
| 62 | | | | | | | | | | | | | | | | | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 7.5 | 7.5 | 7.5 | 7.5 |

Not Analyzed

Note: If irradiated stainless steel rods are present in the reconstituted fuel assembly, add an additional year of cooling time.

Note: The page that follows Table 1-3h provides the explanatory notes and limitations regarding the use of this table.

**Table 1-3d**
**PWR Fuel Qualification Table for Zone 4 Fuel with 1.3 kW per Assembly for the NUHOMS®-24PTH DSC (Fuel without CCs)**
(Minimum required years of cooling time after reactor core discharge)

| BU GWd/ MTU | Assembly Average Initial Enrichment (wt. % U-235) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.7 | 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 |
| 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 |
| 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 |
| 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 |
| 28 | | 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 | 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 | 3.0 | 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 |
| 32 | | 4.5 | 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 |
| 34 | | 4.5 | 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 | 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 |
| 36 | | 5.0 | 4.5 | 4.5 | 4.5 | 4.5 | 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 |
| 38 | | 5.5 | 5.0 | 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 | 4.0 | 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 |
| 39 | | 6.0 | 5.0 | 5.0 | 5.0 | 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 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| 40 | | 6.0 | 5.5 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 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 |
| 41 | | 6.5 | 5.5 | 5.5 | 5.5 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 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 |
| 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 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 |
| 43 | | | | | | | | | | 5.5 | 5.5 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 4.5 | 4.5 | 4.5 | 4.5 |
| 44 | | | | | | | | | | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| 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 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| 46 | | | | | | | | | | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 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 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| 47 | | | | | | | | | | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 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 |
| 48 | | | | | | | | | | 6.5 | 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 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 |
| 49 | | | | | | | | | | | | | 6.5 | 6.5 | 6.5 | 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 | 5.5 |
| 50 | | | | | | | Not Analyzed | | | | | | 7.0 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 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 |
| 51 | | | | | | | | | | | | | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.0 | 6.0 | 6.0 | 6.0 |
| 52 | | | | | | | | | | | | | | 7.5 | 7.5 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 |
| 53 | | | | | | | | | | | | | | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 6.5 | 6.5 | 6.5 | 6.5 |
| 54 | | | | | | | | | | | | | | | 8.0 | 8.0 | 8.0 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 |
| 55 | | Note: If irradiated stainless steel rods are present in the reconstituted fuel assembly, add an additional year of cooling time for cooling times less than 10 years. | | | | | | | | | | | | | 8.5 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.0 | 7.0 | 7.0 |
| 56 | | | | | | | | | | | | | | | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 |
| 57 | | | | | | | | | | | | | | | | | 9.0 | 9.0 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 |
| 58 | | | | | | | | | | | | | | | | | 9.5 | 9.5 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.0 | 8.0 | 8.0 |
| 59 | | | | | | | | | | | | | | | | | 10.0 | 10.0 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 8.5 | 8.5 | 8.5 | 8.5 |
| 60 | | | | | | | | | | | | | | | | | 10.5 | 10.5 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 |
| 61 | | | | | | | | | | | | | | | | | 11.0 | 11.0 | 11.0 | 10.5 | 10.5 | 10.5 | 10.5 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 9.5 | 9.5 | 9.5 | 9.5 |
| 62 | | | | | | | | | | | | | | | | | 11.5 | 11.5 | 11.5 | 11.5 | 11.0 | 11.0 | 11.0 | 10.5 | 10.5 | 10.5 | 10.5 | 10.5 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 |

Note: The page that follows Table 1-3h provides the explanatory notes and limitations regarding the use of this table.

**Table 1-3e**
**PWR Fuel Qualification Table for Zone 1 Fuel with 1.7 kW per Assembly for the NUHOMS®-24PTH DSC (Fuel with CCs)**
(Minimum required years of cooling time after reactor core discharge)

| BU GWd/ MTU | Assembly Average Initial Enrichment (wt. % U-235) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.7 | 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 |
| 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 |
| 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 |
| 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 |
| 28 | | 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 |
| 30 | | 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 |
| 32 | | 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 | 3.0 | 3.0 |
| 34 | | 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 |
| 36 | | 4.0 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.0 | 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 |
| 38 | | 4.5 | 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 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| 39 | | 4.5 | 4.0 | 4.0 | 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 |
| 40 | | 4.5 | 4.0 | 4.0 | 4.0 | 4.0 | 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 |
| 41 | | 5.0 | 4.5 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 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 |
| 42 | | | | | | | | | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 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 |
| 43 | | | | | | | | | | 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 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 |
| 44 | | | | | | | | | | 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 |
| 45 | | | | | | | | | | 4.5 | 4.5 | 4.5 | 4.5 | 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 |
| 46 | | | | | | | | | | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 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 |
| 47 | | | | | | | | | | 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 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| 48 | | | | | | | | | | 5.0 | 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 | 4.0 | 4.0 | 4.0 | 4.0 |
| 49 | | | | | | | | | | | | | 5.0 | 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 |
| 50 | | | | | | | | | | | | | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 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 |
| 51 | | | | | | | | | | | | | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 |
| 52 | | | | | | | | | | | | | | 5.5 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 4.5 | 4.5 | 4.5 |
| 53 | | | | | | | | | | | | | | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| 54 | | | | | | | | | | | | | | | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| 55 | | | | | | | | | | | | | | | 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 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| 56 | | | | | | | | | | | | | | | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 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 |
| 57 | | | | | | | | | | | | | | | | | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 |
| 58 | | | | | | | | | | | | | | | | | 6.5 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 |
| 59 | | | | | | | | | | | | | | | | | 6.5 | 6.5 | 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 |
| 60 | | | | | | | | | | | | | | | | | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| 61 | | | | | | | | | | | | | | | | | 7.0 | 7.0 | 7.0 | 7.0 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.0 | 6.0 | 6.0 |
| 62 | | | | | | | | | | | | | | | | | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 |

Not Analyzed

Note: If irradiated stainless steel rods are present in the reconstituted fuel assembly, add an additional year of cooling time.

Note: The page that follows Table 1-3h provides the explanatory notes and limitations regarding the use of this table.

**Table 1-3f**
**PWR Fuel Qualification Table for Zone 2 Fuel with 2.0 kW per Assembly for the NUHOMS®-24PTH DSC (Fuel with CCs)**
(Minimum required years of cooling time after reactor core discharge)

| BU GWd/ MTU | Assembly Average Initial Enrichment (wt. % U-235) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.7 | 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 |
| 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 |
| 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 |
| 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 |
| 28 | | 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 |
| 30 | | 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 |
| 32 | | 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 |
| 34 | | 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 |
| 36 | | 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 | 3.0 | 3.0 |
| 38 | | 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 |
| 39 | | 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 |
| 40 | | 4.0 | 3.5 | 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 |
| 41 | | 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 | 3.0 | 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 |
| 42 | | | | | | | | | | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| 43 | | | | | | | | | | 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 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| 44 | | | | | | | | | | 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 |
| 45 | | | | | | | | | | 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 |
| 46 | | | | | | | | | | 4.0 | 4.0 | 4.0 | 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 |
| 47 | | | | | | | | | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 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 |
| 48 | | | | | | | | | | 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 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 |
| 49 | | | | | | | | | | | | | 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 | 3.5 |
| 50 | | | | | | | | | | | | | 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 |
| 51 | | | | | | | | | | | | | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 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 |
| 52 | | | | | | | | | | | | | | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| 53 | | | | | | | | | | | | | | 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 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| 54 | | | | | | | | | | | | | | | 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 | 4.0 | 4.0 | 4.0 |
| 55 | | | | | | | | | | | | | | | 5.0 | 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 |
| 56 | | | | | | | | | | | | | | | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 |
| 57 | | | | | | | | | | | | | | | | | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| 58 | | | | | | | | | | | | | | | | | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| 59 | | | | | | | | | | | | | | | | | 5.5 | 5.5 | 5.5 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| 60 | | | | | | | | | | | | | | | | | 6.0 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| 61 | | | | | | | | | | | | | | | | | 6.0 | 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 |
| 62 | | | | | | | | | | | | | | | | | 6.0 | 6.0 | 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 |

Not Analyzed

Note: If irradiated stainless steel rods are present in the reconstituted fuel assembly, add an additional year of cooling time.

Note: The page that follows Table 1-3h provides the explanatory notes and limitations regarding the use of this table.

**Table 1-3g**
**PWR Fuel Qualification Table for Zone 3 Fuel with 1.5 kW per Assembly for the NUHOMS®-24PTH DSC (Fuel with CCs)**
(Minimum required years of cooling time after reactor core discharge)

| BU GWd/ MTU | Assembly Average Initial Enrichment (wt. % U-235) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.7 | 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 |
| 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 |
| 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 |
| 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 |
| 28 | | 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 | 3.0 | 3.0 |
| 30 | | 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 | 3.0 |
| 32 | | 4.0 | 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 |
| 34 | | 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 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| 36 | | 4.5 | 4.0 | 4.0 | 4.0 | 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 |
| 38 | | 5.0 | 4.5 | 4.5 | 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 | 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 |
| 39 | | 5.0 | 4.5 | 4.5 | 4.5 | 4.5 | 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 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 |
| 40 | | 5.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 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 |
| 41 | | 5.5 | 5.0 | 5.0 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 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 |
| 42 | | | | | | | | | | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 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 |
| 43 | | | | | | | | | | 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 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| 44 | | | | | | | | | | 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 | 4.0 |
| 45 | | | | | | | | | | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 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 |
| 46 | | | | | | | | | | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 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 |
| 47 | | | | | | | | | | 5.5 | 5.5 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 |
| 48 | | | | | | | | | | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| 49 | | | | | | | | | | | | | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| 50 | | | | | | | | | | | | | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| 51 | | | | | | | | | | | | | 6.0 | 6.0 | 6.0 | 6.0 | 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 | 5.0 | 5.0 | 5.0 |
| 52 | | | | | | | | | | | | | | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 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 |
| 53 | | | | | | | | | | | | | | 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 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 |
| 54 | | | | | | | | | | | | | | | 6.5 | 6.5 | 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 | 5.5 |
| 55 | | | | | | | | | | | | | | | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| 56 | | | | | | | | | | | | | | | 7.0 | 7.0 | 7.0 | 7.0 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.0 | 6.0 | 6.0 | 6.0 |
| 57 | | | | | | | | | | | | | | | | | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 |
| 58 | | | | | | | | | | | | | | | | | 7.5 | 7.5 | 7.5 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 |
| 59 | | | | | | | | | | | | | | | | | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 |
| 60 | | | | | | | | | | | | | | | | | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 |
| 61 | | | | | | | | | | | | | | | | | 8.5 | 8.5 | 8.5 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 |
| 62 | | | | | | | | | | | | | | | | | 9.0 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 7.5 | 7.5 | 7.5 |

Not Analyzed

Note: If irradiated stainless steel rods are present in the reconstituted fuel assembly, add an additional year of cooling time.

Note: The page that follows Table 1-3h provides the explanatory notes and limitations regarding the use of this table.

**Table 1-3h**
**PWR Fuel Qualification Table for Zone 4 Fuel with 1.3 kW per Assembly for the NUHOMS®-24PTH DSC (Fuel with CCs)**
(Minimum required years of cooling time after reactor core discharge)

| BU GWd/ MTU | Assembly Average Initial Enrichment (wt. % U-235) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.7 | 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 |
| 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 |
| 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 |
| 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 |
| 28 | | 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 | 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 | 3.0 | 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 |
| 32 | | 4.5 | 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 |
| 34 | | 4.5 | 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 | 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 |
| 36 | | 5.0 | 4.5 | 4.5 | 4.5 | 4.5 | 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 |
| 38 | | 5.5 | 5.0 | 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 | 4.0 | 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 |
| 39 | | 6.0 | 5.0 | 5.0 | 5.0 | 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 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| 40 | | 6.0 | 5.5 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 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 |
| 41 | | 6.5 | 5.5 | 5.5 | 5.5 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 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 |
| 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 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 |
| 43 | | | | | | | | | | 5.5 | 5.5 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 4.5 | 4.5 |
| 44 | | | | | | | | | | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| 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 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| 46 | | | | | | | | | | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 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 | 5.0 | 5.0 |
| 47 | | | | | | | | | | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 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 |
| 48 | | | | | | | | | | 6.5 | 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 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 |
| 49 | | | | | | | | | | | | | 6.5 | 6.5 | 6.5 | 6.5 | 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 |
| 50 | | | | | | | | | | | | | 7.0 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 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 |
| 51 | | | | | | | | | | | | | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.0 | 6.0 |
| 52 | | | | | | | | | | | | | | 7.5 | 7.5 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 |
| 53 | | | | | | | | | | | | | | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 6.5 | 6.5 |
| 54 | | | | | | | | | | | | | | | 8.0 | 8.0 | 8.0 | 8.0 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 |
| 55 | | | | | | | | | | | | | | | 8.5 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.0 |
| 56 | | | | | | | | | | | | | | | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 |
| 57 | | | | | | | | | | | | | | | | | 9.0 | 9.0 | 9.0 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 |
| 58 | | | | | | | | | | | | | | | | | 9.5 | 9.5 | 9.5 | 9.5 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.0 |
| 59 | | | | | | | | | | | | | | | | | 10.0 | 10.0 | 9.5 | 10.0 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 8.5 | 8.5 | 8.5 |
| 60 | | | | | | | | | | | | | | | | | 10.5 | 10.5 | 10.5 | 10.5 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.0 | 9.0 |
| 61 | | | | | | | | | | | | | | | | | 11.0 | 11.0 | 11.0 | 11.0 | 10.5 | 10.5 | 10.5 | 10.5 | 10.5 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 9.5 | 9.5 | 9.5 |
| 62 | | | | | | | | | | | | | | | | | 12.0 | 11.5 | 11.5 | 11.5 | 11.5 | 11.0 | 11.0 | 11.0 | 11.0 | 10.5 | 10.5 | 10.5 | 10.5 | 10.5 | 10.0 | 10.0 | 10.0 |

Not Analyzed

Note: If irradiated stainless steel rods are present in the reconstituted fuel assembly, add an additional year of cooling time for cooling times less than 10 years.

Note: The page that follows Table 1-3h provides the explanatory notes and limitations regarding the use of this table.

**Notes: Tables 1-3a through 1-3h:**

- 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 0.7 wt. % U-235 (or less than the minimum provided above for each burnup) and 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 3-years cooling.
- WE 15x15 PLSAs shall be limited to a minimum assembly average initial enrichment of 1.2 wt. % U-235.
- See Figures 1-11 through 1-15 for the description of zones.
- For reconstituted fuel assemblies with $UO_2$ 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.
- The cooling times for damaged and intact assemblies are identical.
- *Example*: An INTACT FUEL ASSEMBLY without CCs, with a decay heat load of 1.7 kW or less, an initial enrichment of 3.65 wt. % U-235 and a burnup of 41.5 GWd/MTU is acceptable for storage after a 4.0 year cooling time as defined by 3.6 wt. % U-235 (rounding down) and 42 GWd/MTU (rounding up) in Table 1-3a.

**Table 1-4a**
**BWR Fuel Qualification Table for Zone 1 Fuel with 0.22 kW per Assembly for the NUHOMS®-61BTH DSC**
(Minimum required years of cooling time after reactor core discharge)

| 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 |
| 15 | 4.0 | 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 |
| 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 | 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 |
| 23 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 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 |
| 25 | 7.0 | 7.0 | 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 | 6.0 | 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 | 8.5 | 8.5 | 8.5 | 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 | 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 |
| 30 | 10.5 | 10.0 | 9.5 | 9.5 | 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 | 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 |
| 32 | | | | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 10.5 | 10.5 | 10.5 | 10.5 | 10.5 | 10.5 | 10.5 | 10.5 | 10.5 | 10.5 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 |
| 34 | | | | 14.0 | 14.0 | 14.0 | 14.0 | 14.0 | 14.0 | 14.0 | 13.0 | 13.0 | 13.0 | 13.0 | 13.0 | 13.0 | 12.5 | 12.5 | 12.5 | 12.5 | 12.5 | 12.5 | 12.5 | 12.5 | 12.5 | 12.5 | 12.5 | 12.5 | 12.5 | 12.5 | 12.5 | 12.5 | 12.5 | 12.5 |
| 36 | | | | 16.5 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 15.5 | 15.5 | 15.5 | 15.5 | 15.5 | 15.5 | 15.5 | 15.5 | 15.5 | 15.5 | 15.5 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | 14.5 | 14.5 | 14.5 | 14.5 |
| 38 | | | | 19.5 | 19.0 | 19.0 | 19.0 | 19.0 | 18.5 | 18.5 | 18.5 | 18.5 | 18.5 | 18.5 | 18.5 | 18.5 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 |
| 39 | | | | 21.0 | 21.0 | 20.5 | 20.5 | 20.5 | 20.5 | 20.5 | 20.5 | 20.0 | 20.0 | 20.0 | 20.0 | 19.5 | 19.5 | 19.5 | 19.5 | 19.5 | 19.5 | 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 |
| 40 | | | | | | | | | | 22.0 | 21.5 | 21.5 | 21.5 | 21.5 | 21.5 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 20.5 | 20.5 | 20.5 | 20.5 | 20.5 | 20.5 | 20.5 | 20.5 | 20.5 | 20.5 | 20.5 |
| 41 | | | | | | | | | | 23.5 | 23.5 | 23.0 | 23.0 | 23.0 | 23.0 | 23.0 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 | 21.5 |
| 42 | | | | | | | | | | 24.5 | 24.5 | 24.5 | 24.5 | 24.5 | 24.5 | 24.0 | 24.0 | 24.0 | 24.0 | 24.0 | 24.0 | 24.0 | 24.0 | 24.0 | 24.0 | 23.5 | 23.5 | 23.5 | 23.5 | 23.5 | 23.5 | 23.5 | 23.5 | 23.5 |
| 43 | | | | | | | | | | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 25.5 | 25.5 | 25.5 | 25.5 | 25.5 | 25.5 | 25.5 | 25.5 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 24.5 |
| 44 | | | | | | | | | | 27.5 | 27.5 | 27.5 | 27.5 | 27.5 | 27.5 | 27.5 | 27.0 | 27.0 | 27.0 | 27.0 | 27.0 | 27.0 | 27.0 | 27.0 | 26.5 | 26.5 | 26.5 | 26.5 | 26.5 | 26.0 | 26.5 | 26.0 | 26.0 | 26.0 |
| 45 | | | | | | | | | | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 28.5 | 28.5 | 28.5 | 28.5 | 28.5 | 28.5 | 28.5 | 28.5 | 28.5 | 28.0 | 28.0 | 28.0 | 28.0 | 28.0 | 27.5 | 27.5 | 27.5 | 27.5 | 27.5 | 27.5 |
| 46 | | | | | | | | | | 30.5 | 30.5 | 30.5 | 30.5 | 30.0 | 30.0 | 30.0 | 30.0 | 30.0 | 30.0 | 30.0 | 30.0 | 30.0 | 29.5 | 29.5 | 29.5 | 29.5 | 29.5 | 29.5 | 29.5 | 29.5 | 29.5 | 29.0 | 29.0 | 29.0 |
| 47 | | | | | | | | | | 31.5 | 31.5 | 31.5 | 31.5 | 31.5 | 31.5 | 31.5 | 31.5 | 31.5 | 31.5 | 31.5 | 31.0 | 31.0 | 31.0 | 31.0 | 31.0 | 31.0 | 31.0 | 31.0 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 |
| 48 | | | | | | | | | | 33.0 | 33.0 | 33.0 | 33.0 | 33.0 | 33.0 | 33.0 | 33.0 | 32.5 | 32.5 | 32.5 | 32.5 | 32.5 | 32.5 | 32.5 | 32.5 | 32.5 | 32.5 | 32.0 | 32.0 | 32.0 | 32.0 | 32.0 | 32.0 | 32.0 |
| 49 | | | | | | | | | | 34.5 | 34.5 | 34.5 | 34.0 | 34.0 | 34.0 | 34.0 | 34.0 | 34.0 | 34.0 | 34.0 | 34.0 | 34.0 | 34.0 | 33.5 | 33.5 | 33.5 | 33.5 | 33.5 | 33.5 | 33.5 | 33.0 | 33.0 | 33.0 | 33.0 |
| 50 | | | | | | | | | | 36.0 | 35.5 | 35.5 | 35.5 | 35.5 | 35.5 | 35.5 | 35.5 | 35.5 | 35.5 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 34.5 | 34.5 | 34.5 | 34.5 | 34.5 | 34.5 | 34.5 | 34.5 |
| 51 | | | | | | | | | | 37.0 | 37.0 | 37.0 | 37.0 | 37.0 | 37.0 | 36.5 | 36.5 | 36.5 | 36.5 | 36.5 | 36.5 | 36.5 | 36.5 | 36.5 | 36.5 | 36.0 | 36.0 | 36.0 | 36.0 | 36.0 | 36.0 | 36.0 | 36.0 | 36.0 |
| 52 | | | | | | | | | | 38.5 | 38.0 | 38.0 | 38.0 | 38.0 | 38.0 | 38.0 | 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 | 37.0 |
| 53 | | | | | | | | | | 39.5 | 39.5 | 39.5 | 39.5 | 39.5 | 39.5 | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 | 39.5 | 39.0 | 38.5 | 38.5 | 38.5 | 38.5 |
| 54 | | | | | | | | | | 41.0 | 41.0 | 40.5 | 40.5 | 40.5 | 40.5 | 40.5 | 40.5 | 40.5 | 40.5 | 40.5 | 40.5 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 39.5 |
| 55 | | | | | | | | | | 41.5 | 41.5 | 41.5 | 41.5 | 41.5 | 41.5 | 41.5 | 41.5 | 41.5 | 41.5 | 41.5 | 41.5 | 41.5 | 41.5 | 41.5 | 41.5 | 41.5 | 41.5 | 41.5 | 41.0 | 41.0 | 41.0 | 41.0 | 41.0 | 41.0 |
| 56 | | | | | | | | | | 43.0 | 43.0 | 43.0 | 43.0 | 42.5 | 42.5 | 42.5 | 42.5 | 42.5 | 42.5 | 42.5 | 42.5 | 42.5 | 42.5 | 42.5 | 42.5 | 42.5 | 42.5 | 42.5 | 42.5 | 42.5 | 42.5 | 42.5 | 42.5 | 42.5 |
| 57 | | | | | | | | | | 44.0 | 44.0 | 44.0 | 44.0 | 44.0 | 44.0 | 44.0 | 44.0 | 44.0 | 44.0 | 44.0 | 43.5 | 43.5 | 43.5 | 43.5 | 43.5 | 43.5 | 43.5 | 43.5 | 43.5 | 43.5 | 43.5 | 43.5 | 43.5 | 43.5 |
| 58 | | | | | | | | | | 45.0 | 45.0 | 45.0 | 45.0 | 45.0 | 45.0 | 45.0 | 45.0 | 45.0 | 45.0 | 45.0 | 45.0 | 45.0 | 45.0 | 45.0 | 45.0 | 45.0 | 45.0 | 45.0 | 45.0 | 44.5 | 44.5 | 44.5 | 44.5 | 44.5 |
| 59 | | | | | | | | | | 46.0 | 46.0 | 46.0 | 46.0 | 46.0 | 46.5 | 46.0 | 46.0 | 46.0 | 46.0 | 46.0 | 46.0 | 46.0 | 46.0 | 46.0 | 46.5 | 46.0 | 46.0 | 46.0 | 46.0 | 46.0 | 46.0 | 46.0 | 46.0 | 45.5 |
| 60 | | | | | | | | | | 47.0 | 47.0 | 47.0 | 47.0 | 47.0 | 47.0 | 47.0 | 47.0 | 47.0 | 47.0 | 47.0 | 47.0 | 47.0 | 47.0 | 47.0 | 47.0 | 47.0 | 47.0 | 47.0 | 47.0 | 47.0 | 47.0 | 47.0 | 47.0 | 47.0 |
| 61 | | | | | | | | | | 48.0 | 48.0 | 48.0 | 48.0 | 48.0 | 48.0 | 48.0 | 48.0 | 48.0 | 48.0 | 48.0 | 48.0 | 48.0 | 48.0 | 48.0 | 48.0 | 48.0 | 48.0 | 48.0 | 48.5 | 48.0 | 48.0 | 48.0 | 48.0 | 48.0 |
| 62 | | | | | | | | | | 49.5 | 49.5 | 49.5 | 49.5 | 49.5 | 49.5 | 49.5 | 49.5 | 49.5 | 49.5 | 49.5 | 49.5 | 49.5 | 49.5 | 49.5 | 49.5 | 49.5 | 49.5 | 49.5 | 49.5 | 49.5 | 49.5 | 49.5 | 49.5 | 49.5 |

Not Analyzed

If 10 irradiated stainless steel rods are present in the reconstituted fuel assembly, add an additional 5.0 years of cooling time.

Note: The page that follows Table 1-4f provides explanatory notes and limitations regarding the use of this table.

## Table 1-4b
## BWR Fuel Qualification Table for Zone 2 Fuel with 0.35 kW per Assembly for the NUHOMS®-61BTH DSC
(Minimum required years of cooling time after reactor core discharge)

| 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 |
| 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 |
| 20 | 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 | 3.0 | 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 | 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 | 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 |
| 25 | 4.5 | 4.5 | 4.5 | 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 |
| 28 | 5.0 | 5.0 | 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 |
| 30 | 5.5 | 5.5 | 5.5 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 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 |
| 32 | | 6.0 | 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 | 5.0 | 5.0 | 5.0 | 5.0 | 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 | | | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 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 |
| 36 | | | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 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 |
| 38 | | | 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 | 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 |
| 39 | | | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 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 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 |
| 40 | | | | | | | | | | 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 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 |
| 41 | | | | | | | | | | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 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 |
| 42 | | | | | | | | | | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 |
| 43 | | | | | | | | | | 9.0 | 9.0 | 9.0 | 9.0 | 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 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 |
| 44 | | | | | | | | | | 9.5 | 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 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 |
| 45 | | | | | | | | | | 10.5 | 10.5 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 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 |
| 46 | | | | | | | | | | 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 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 |
| 47 | | | | | | | | | | 12.0 | 11.5 | 11.5 | 11.5 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 10.5 | 10.5 | 10.5 | 10.5 | 10.5 | 10.5 | 10.5 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 |
| 48 | | | | | | | | | | 12.5 | 12.5 | 12.5 | 12.5 | 12.5 | 12.5 | 12.0 | 11.5 | 11.5 | 11.5 | 11.5 | 11.5 | 11.5 | 11.5 | 11.5 | 11.5 | 11.5 | 11.5 | 11.5 | 11.5 | 11.5 | 11.5 | 11.0 | 10.5 | 10.5 | 10.5 |
| 49 | | | | | | | | | | 13.5 | 13.0 | 13.0 | 13.0 | 13.0 | 13.0 | 13.0 | 13.0 | 13.0 | 13.0 | 13.0 | 13.0 | 13.0 | 12.0 | 12.0 | 11.5 | 11.5 | 11.5 | 11.5 | 11.5 | 11.5 | 11.5 | 11.5 | 11.5 | 11.5 |
| 50 | | | | | | | | | | 14.5 | 14.5 | 14.5 | 14.5 | 14.5 | 14.5 | 14.5 | 14.5 | 13.0 | 13.0 | 13.0 | 13.0 | 13.0 | 13.0 | 13.0 | 13.0 | 13.0 | 13.0 | 12.5 | 12.5 | 12.5 | 12.0 | 12.0 | 12.0 | 12.0 |
| 51 | | | | | | | | | | 15.5 | 15.0 | 15.0 | 15.0 | 15.0 | 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 | 13.0 | 13.0 | 13.0 | 13.0 | 13.0 | 13.0 |
| 52 | | | | | | | | | | 16.5 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | 14.0 | 14.0 | 14.0 | 14.0 | 14.0 | 14.0 | 14.0 |
| 53 | | | | | | | | | | 17.5 | 17.0 | 17.0 | 17.0 | 17.0 | 17.0 | 17.0 | 17.0 | 17.0 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 |
| 54 | | | | | | | | | | 18.5 | 18.5 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 17.0 | 17.0 | 17.0 | 17.0 | 17.0 | 17.0 | 17.0 | 17.0 | 17.0 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 |
| 55 | | | | | | | | | | 20.5 | 20.5 | 19.0 | 19.0 | 19.0 | 19.0 | 19.0 | 19.0 | 19.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 17.0 | 17.0 | 17.0 | 17.0 | 17.0 | 17.0 |
| 56 | | | | | | | | | | 21.5 | 21.5 | 20.5 | 20.5 | 20.5 | 20.5 | 20.5 | 20.5 | 20.5 | 19.0 | 19.0 | 19.0 | 19.0 | 19.0 | 19.0 | 19.0 | 19.0 | 19.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 |
| 57 | | | | | | | | | | 22.5 | 22.5 | 22.5 | 21.5 | 21.5 | 21.5 | 21.5 | 21.5 | 21.5 | 21.5 | 20.0 | 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 |
| 58 | | | | | | | | | | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 20.0 | 20.0 | 20.0 | 20.0 |
| 59 | | | | | | | | | | 23.5 | 23.5 | 23.5 | 23.5 | 23.5 | 23.5 | 23.5 | 23.5 | 23.5 | 23.5 | 23.5 | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 | 21.0 | 21.0 | 21.0 | 21.0 |
| 60 | | | | | | | | | | 24.5 | 24.5 | 24.5 | 24.5 | 24.5 | 24.5 | 24.5 | 24.5 | 24.5 | 24.5 | 24.5 | 23.0 | 23.0 | 23.0 | 23.0 | 23.0 | 23.0 | 23.0 | 23.0 | 23.0 | 23.0 | 22.0 | 22.0 | 22.0 | 22.0 |
| 61 | | | | | | | | | | 26.5 | 26.5 | 26.5 | 25.5 | 25.5 | 25.5 | 25.5 | 25.5 | 25.5 | 25.5 | 25.5 | 24.0 | 24.0 | 24.0 | 24.0 | 24.0 | 24.0 | 24.0 | 24.0 | 24.0 | 24.0 | 23.0 | 23.0 | 23.0 | 23.0 |
| 62 | | | | | | | | | | 27.5 | 27.5 | 27.5 | 27.5 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 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 | 24.0 | 24.0 |

Not Analyzed

If 10 irradiated stainless steel rods are present in the reconstituted fuel assembly, add an additional 5.0 years of cooling time.

Note: The page that follows Table 1-4f provides the explanatory notes and limitations regarding the use of this table.

**Table 1-4c**
**BWR Fuel Qualification Table for Zone 3 Fuel with 0.393 kW per Assembly for the NUHOMS®-61BTH DSC**
(Minimum required years of cooling time after reactor core discharge)

| 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 |
| 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 |
| 20 | 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 | 3.0 | 3.0 | 3.0 | 3.0 |
| 23 | 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 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| 25 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 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 |
| 28 | 4.5 | 4.5 | 4.5 | 4.5 | 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 |
| 30 | 5.0 | 5.0 | 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 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| 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 | 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 |
| 34 | | | | 5.5 | 5.5 | 5.5 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 4.5 | 4.5 |
| 36 | | | | 6.0 | 6.0 | 6.0 | 6.0 | 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 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| 38 | | | | 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 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 |
| 39 | | | | 6.5 | 6.5 | 6.5 | 6.5 | 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 |
| 40 | | | | | | | | | | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 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 |
| 41 | | | | | | | | | | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 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 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| 42 | | | | | | | | | | 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 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 |
| 43 | | | | | | | | | | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 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 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 |
| 44 | | | | | | | | | | 8.0 | 8.0 | 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 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 |
| 45 | | | | | | | | | | 8.5 | 8.5 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 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 | 7.0 |
| 46 | | | | | | | | | | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 |
| 47 | | | | | | | | | | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 |
| 48 | | | | | | | | | | 10.0 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 |
| 49 | | | | | | | | | | 10.5 | 10.5 | 10.0 | 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 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 |
| 50 | | | | | | | | | | 11.0 | 11.0 | 11.0 | 10.5 | 10.5 | 10.5 | 10.5 | 10.5 | 10.5 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.0 | 9.0 |
| 51 | | | | | | | | | | 11.5 | 11.5 | 11.5 | 11.5 | 11.5 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 10.5 | 10.5 | 10.5 | 10.5 | 10.5 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 9.5 | 9.5 |
| 52 | | | | | | | | | | 12.5 | 12.5 | 12.0 | 12.0 | 12.0 | 12.0 | 12.0 | 11.5 | 11.5 | 11.5 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 10.5 | 10.5 | 10.5 | 10.5 | 10.5 | 10.5 |
| 53 | | | | | | | | | | 13.5 | 13.0 | 13.0 | 13.0 | 13.0 | 12.5 | 12.5 | 12.5 | 12.0 | 12.0 | 12.0 | 12.0 | 12.0 | 11.5 | 11.5 | 11.5 | 11.5 | 11.5 | 11.5 | 11.5 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 |
| 54 | | | | | | | | | | 14.0 | 14.0 | 14.0 | 13.5 | 13.5 | 13.5 | 13.0 | 13.0 | 13.0 | 13.0 | 13.0 | 13.0 | 12.5 | 12.5 | 12.5 | 12.5 | 12.0 | 12.0 | 12.0 | 12.0 | 12.0 | 11.5 | 11.5 | 11.5 | 11.5 |
| 55 | | | | | | | | | | 15.0 | 15.0 | 14.5 | 14.5 | 14.5 | 14.0 | 14.0 | 14.0 | 14.0 | 13.5 | 13.5 | 13.5 | 13.5 | 13.0 | 13.0 | 13.0 | 13.0 | 13.0 | 13.0 | 12.5 | 12.5 | 12.5 | 12.5 | 12.5 | 12.0 |
| 56 | | | | | | | | | | 16.0 | 16.0 | 15.5 | 15.5 | 15.5 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | 14.5 | 14.5 | 14.0 | 14.0 | 14.0 | 14.0 | 13.5 | 13.5 | 13.5 | 13.5 | 13.0 | 13.0 | 13.0 | 13.0 | 13.0 |
| 57 | | | | | | | | | | 17.0 | 16.5 | 16.5 | 16.5 | 16.0 | 16.0 | 16.0 | 15.5 | 15.5 | 15.5 | 15.5 | 15.5 | 15.0 | 15.0 | 14.5 | 14.5 | 14.5 | 14.5 | 14.5 | 14.5 | 14.0 | 14.0 | 14.0 | 14.0 | 14.0 |
| 58 | | | | | | | | | | 18.0 | 17.5 | 17.5 | 17.5 | 17.5 | 17.0 | 17.0 | 16.5 | 16.5 | 16.5 | 16.5 | 16.5 | 16.0 | 15.5 | 15.5 | 15.5 | 15.5 | 15.5 | 15.5 | 15.5 | 15.5 | 15.0 | 15.0 | 14.5 | 14.5 |
| 59 | | | | | | | | | | 19.5 | 18.5 | 18.5 | 18.0 | 18.0 | 18.0 | 17.5 | 17.5 | 17.5 | 17.5 | 17.0 | 17.0 | 17.0 | 17.0 | 16.5 | 16.5 | 16.5 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 15.5 | 15.5 |
| 60 | | | | | | | | | | 20.0 | 19.5 | 19.5 | 19.5 | 19.0 | 19.0 | 18.5 | 18.5 | 18.5 | 18.5 | 18.5 | 18.5 | 18.0 | 17.5 | 17.5 | 17.5 | 17.0 | 17.0 | 17.0 | 17.0 | 17.0 | 16.5 | 16.5 | 16.5 | 16.5 |
| 61 | | | | | | | | | | 20.5 | 20.5 | 20.5 | 20.5 | 20.5 | 20.0 | 19.5 | 19.5 | 19.5 | 19.0 | 19.0 | 19.0 | 18.5 | 18.5 | 18.5 | 18.5 | 18.5 | 18.0 | 18.0 | 18.0 | 18.0 | 17.5 | 17.5 | 17.5 | 17.5 |
| 62 | | | | | | | | | | 21.5 | 21.5 | 21.0 | 21.0 | 21.0 | 21.0 | 20.5 | 20.5 | 20.5 | 20.0 | 20.0 | 20.0 | 19.5 | 19.5 | 19.5 | 19.0 | 19.0 | 19.0 | 19.0 | 19.0 | 19.0 | 18.5 | 18.5 | 18.5 | 18.0 |

Not Analyzed

If 10 irradiated stainless steel rods are present in the reconstituted fuel assembly, add an additional 5.0 years of cooling time.

Note: The page that follows Table 1-4f provides the explanatory notes and limitations regarding the use of this table.

**Table 1-4d**
**BWR Fuel Qualification Table for Zone 4 Fuel with 0.48 kW per Assembly for the NUHOMS®-61BTH DSC**
(Minimum required years of cooling time after reactor core discharge)

| 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 |
| 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 |
| 20 | 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 | 3.0 | 3.0 | 3.0 |
| 23 | 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 | 3.0 | 3.0 | 3.0 |
| 25 | 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 | 3.0 |
| 28 | 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 |
| 30 | 4.5 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 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 |
| 32 | | | | 4.5 | 4.5 | 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 | 3.5 | 3.5 | 3.5 |
| 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 | 4.0 | 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 |
| 36 | | | | 5.0 | 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 |
| 38 | | | | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 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 |
| 39 | | | | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 |
| 40 | | | | | | | | | | 5.5 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 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 | | | | | | | | | | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 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 | | | | | | | | | | 6.0 | 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 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| 43 | | | | | | | | | | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 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 | | | | | | | | | | 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 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 |
| 45 | | | | | | | | | | 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 | 5.5 | 5.5 | 5.5 | 5.5 |
| 46 | | | | | | | | | | 6.5 | 6.5 | 6.5 | 6.5 | 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 |
| 47 | | | | | | | | | | 7.0 | 7.0 | 7.0 | 7.0 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 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 |
| 48 | | | | | | | | | | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.0 | 6.0 | 6.0 |
| 49 | | | | | | | | | | 7.5 | 7.5 | 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 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 |
| 50 | | | | | | | | | | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 6.5 | 6.5 | 6.5 | 6.5 |
| 51 | | | | | | | | | | 8.0 | 8.0 | 8.0 | 8.0 | 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 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 |
| 52 | | | | | | | | | | 8.5 | 8.5 | 8.5 | 8.5 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 |
| 53 | | | | | | | | | | 9.0 | 9.0 | 9.0 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 |
| 54 | | | | | | | | | | 9.5 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 7.5 |
| 55 | | | | | | | | | | 10.0 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 |
| 56 | | | | | | | | | | 10.5 | 10.0 | 10.0 | 10.0 | 10.0 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 |
| 57 | | | | | | | | | | 11.0 | 10.5 | 10.5 | 10.5 | 10.5 | 10.5 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 |
| 58 | | | | | | | | | | 11.5 | 11.5 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 10.5 | 10.5 | 10.5 | 10.5 | 10.5 | 10.0 | 10.0 | 10.0 | 10.0 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.0 | 9.0 |
| 59 | | | | | | | | | | 12.0 | 12.0 | 12.0 | 11.5 | 11.5 | 11.5 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 10.5 | 10.5 | 10.5 | 10.5 | 10.5 | 10.5 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 9.5 | 9.5 |
| 60 | | | | | | | | | | 13.0 | 12.5 | 12.5 | 12.5 | 12.0 | 12.0 | 12.0 | 12.0 | 11.5 | 11.5 | 11.5 | 11.5 | 11.5 | 11.0 | 11.0 | 11.0 | 10.5 | 10.5 | 10.5 | 10.5 | 10.5 | 10.5 | 10.0 | 10.0 | 10.0 |
| 61 | | | | | | | | | | 13.5 | 13.5 | 13.0 | 13.0 | 13.0 | 12.5 | 12.5 | 12.5 | 12.5 | 12.0 | 12.0 | 12.0 | 12.0 | 11.5 | 11.5 | 11.5 | 11.5 | 11.5 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 10.5 |
| 62 | | | | | | | | | | 14.0 | 14.0 | 14.0 | 14.0 | 13.5 | 13.5 | 13.0 | 13.0 | 13.0 | 12.5 | 12.5 | 12.5 | 12.5 | 12.5 | 12.0 | 12.0 | 12.0 | 12.0 | 12.0 | 11.5 | 11.5 | 11.5 | 11.5 | 11.0 | 11.0 |

Not Analyzed

If 10 irradiated stainless steel rods are present in the reconstituted fuel assembly, add an additional 5.0 years of cooling time.

Note: The page that follows Table 1-4f provides the explanatory notes and limitations regarding the use of this table.

## Table 1-4e
## BWR Fuel Qualification Table for Zone 5 Fuel with 0.54 kW per Assembly for the NUHOMS®-61BTH DSC
(Minimum required years of cooling time after reactor core discharge)

| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 32 | | | | 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 |
| 34 | | | | 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 | 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 |
| 36 | | | | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 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 |
| 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 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| 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 |
| 40 | | | | | | | | | | 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 |
| 41 | | | | | | | | | | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 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 |
| 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 | 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 |
| 43 | | | | | | | | | | 5.5 | 5.5 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 |
| 44 | | | | | | | | | | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| 45 | | | | | | | | | | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| 46 | | | | | | | | | | 6.0 | 6.0 | 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 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| 47 | | | | | | | | | | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 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 | 5.0 |
| 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 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 |
| 49 | | | | | | | | | | 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 | 5.5 | 5.5 | 5.5 | 5.5 |
| 50 | | | | | | | | | | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 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 | 5.5 |
| 51 | | | | | | | | | | 7.0 | 7.0 | 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 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| 52 | | | | | | | | | | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 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 | 6.0 | 6.0 |
| 53 | | | | | | | | | | 7.5 | 7.5 | 7.5 | 7.5 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 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 |
| 54 | | | | | | | | | | 8.0 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 |
| 55 | | | | | | | | | | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 6.5 |
| 56 | | | | | | | | | | 8.5 | 8.5 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 |
| 57 | | | | | | | | | | 9.0 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 |
| 58 | | | | | | | | | | 9.0 | 9.0 | 9.0 | 9.0 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 7.5 | 7.5 | 7.5 | 7.5 |
| 59 | | | | | | | | | | 9.5 | 9.5 | 9.5 | 9.5 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 |
| 60 | | | | | | | | | | 10.0 | 10.0 | 10.0 | 9.5 | 9.5 | 9.5 | 9.5 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.0 |
| 61 | | | | | | | | | | 10.5 | 10.5 | 10.5 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 |
| 62 | | | | | | | | | | 11.0 | 11.0 | 10.5 | 10.5 | 10.5 | 10.5 | 10.5 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 |

Not Analyzed

If 10 irradiated stainless steel rods are present in the reconstituted fuel assembly, add an additional 5.0 years of cooling time

Note: The page that follows Table 1-4f provides the explanatory notes and limitations regarding the use of this table.

**Table 1-4f**
**BWR Fuel Qualification Table for Zone 6 Fuel with 0.7 kW per Assembly for the NUHOMS®-61BTH DSC**
(Minimum required years of cooling time after reactor core discharge)

| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 28 | 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 |
| 30 | 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 | 3.0 | 3.0 |
| 32 | | | | 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 |
| 34 | | | | 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 | 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 |
| 36 | | | | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 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 |
| 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 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| 39 | | | | 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 | 4.0 | 4.0 | 4.0 | 4.0 |
| 40 | | | | | | | | | | 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 |
| 41 | | | | | | | | | | 5.0 | 5.0 | 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 |
| 42 | | | | | | | | | | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 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 |
| 43 | | | | | | | | | | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 |
| 44 | | | | | | | | | | 5.5 | 5.5 | 5.5 | 5.5 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 4.5 |
| 45 | | | | | | | | | | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| 46 | | | | | | | | | | 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 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| 47 | | | | | | | | | | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 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 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| 48 | | | | | | | | | | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 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 |
| 49 | | | | | | | | | | 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 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 |
| 50 | | | | | | | | | | 6.5 | 6.5 | 6.5 | 6.5 | 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 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 |
| 51 | | | | | | | | | | 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 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| 52 | | | | | | | | | | 7.0 | 7.0 | 7.0 | 7.0 | 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 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| 53 | | | | | | | | | | 7.5 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 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 |
| 54 | | | | | | | | | | 7.5 | 7.5 | 7.5 | 7.5 | 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 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 |
| 55 | | | | | | | | | | 8.0 | 8.0 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 |
| 56 | | | | | | | | | | 8.0 | 8.0 | 8.0 | 8.0 | 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 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 |
| 57 | | | | | | | | | | 8.5 | 8.5 | 8.5 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.0 | 7.0 | 7.0 |
| 58 | | | | | | | | | | 9.0 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 |
| 59 | | | | | | | | | | 9.5 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 7.5 | 7.5 |
| 60 | | | | | | | | | | 10.0 | 9.5 | 9.5 | 9.5 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 |
| 61 | | | | | | | | | | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 |
| 62 | | | | | | | | | | 10.5 | 10.5 | 10.5 | 10.5 | 10.5 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 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 | 8.5 | 8.5 |

Not Analyzed

If 10 irradiated stainless steel rods are present in the reconstituted fuel assembly, add an additional 5.0 years of cooling time.

Note: The page that follows Table 1-4f provides the explanatory notes and limitations regarding the use of this table.

**Notes: Tables 1-4a through 1-4f:**

- 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 a lattice average initial enrichment less than 0.9 (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 3-years cooling.
- See Figure 1-17 through Figure 1-24 for a description of the zones.
- 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 damaged and intact assemblies are identical.
- *Example*: An INTACT FUEL ASSEMBLY, with a decay heat load of 0.22 kW or less, an initial enrichment of 3.65 wt. % U-235 and a burnup of 41.5 GWd/MTU is acceptable for storage after a 24 year cooling time as defined by 3.6 wt. % U-235 (rounding down) and 42 GWd/MTU (rounding up) in Table 1-4a.

**Table 1-5a**
**PWR Fuel Qualification Table for Zone 1 Fuel with 0.6 kW per Assembly for the NUHOMS®-32PTH1 DSC (Fuel without CCs)**
(Minimum required years of cooling time after reactor core discharge)

| BU GWd/ MTU | Assembly Average Initial Enrichment (wt. % U-235) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.7 | 0.8 | 0.9 | 1.0 | 1.1 | 1.2 | 1.3 | 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 | 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 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| 15 | 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 | 3.0 | 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 | 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 | 4.0 | 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 |
| 25 | | | | | | | | | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 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 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| 28 | | | | | | | | | 7.5 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 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 | 6.0 | 6.0 | 6.0 |
| 30 | | | | | | | | | 8.5 | 8.5 | 8.5 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 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 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 |
| 32 | | | | | | | | | 10.0 | 10.0 | 10.0 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 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 | 8.0 | 8.0 | 8.0 |
| 34 | | | | | | | | | 12.0 | 12.0 | 11.5 | 11.5 | 11.5 | 11.5 | 11.5 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 10.5 | 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 | 9.5 | 9.5 | 9.5 | 9.5 |
| 36 | | | | | | | | | 14.5 | 14.5 | 14.0 | 14.0 | 14.0 | 14.0 | 13.5 | 13.5 | 13.5 | 13.0 | 13.0 | 13.0 | 13.0 | 13.0 | 12.5 | 12.5 | 12.5 | 12.5 | 12.5 | 12.5 | 12.0 | 12.0 | 12.0 | 12.0 | 12.0 | 12.0 | 12.0 | 11.5 | 11.5 | 11.5 | 11.5 | 11.5 | 11.5 | 11.5 | 11.5 | 11.5 |
| 38 | | | | | | | | | 17.5 | 17.0 | 17.0 | 17.0 | 17.0 | 17.0 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 15.0 | 15.0 | 15.0 | 14.5 | 14.5 | 14.5 | 14.5 | 14.5 | 14.5 | 14.0 | 14.0 | 14.0 | 14.0 | 14.0 | 14.0 | 14.0 | 14.0 | 14.0 | 14.0 | 14.0 | 14.0 | 13.5 |
| 39 | | | | | | | | | 18.5 | 18.5 | 18.5 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 17.0 | 17.0 | 17.0 | 16.5 | 16.5 | 16.5 | 16.5 | 16.5 | 16.5 | 16.0 | 16.0 | 16.0 | 15.5 | 15.5 | 15.5 | 15.5 | 15.5 | 15.5 | 15.5 | 15.5 | 15.5 | 15.5 | 15.5 | 15.5 | 15.0 | 15.0 | 15.0 |
| 40 | | | | | | | | | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 19.0 | 19.0 | 18.5 | 18.5 | 18.5 | 18.5 | 18.5 | 18.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.0 | 17.0 | 17.0 | 17.0 | 17.0 | 17.0 | 17.0 | 17.0 | 17.0 | 17.0 | 17.0 | 17.0 | 17.0 | 17.0 | 17.0 | 16.0 | 16.0 |
| 41 | | | | | | | | | 22.0 | 21.5 | 21.5 | 21.0 | 21.0 | 20.5 | 20.5 | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 19.5 | 19.5 | 19.5 | 19.0 | 19.0 | 19.0 | 18.5 | 18.5 | 18.5 | 18.5 | 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 |
| 42 | | | | | | | | | | | | | | | | | | | | | 21.0 | 21.0 | 20.5 | 20.5 | 20.5 | 20.5 | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 19.5 | 19.5 | 19.5 | 19.5 | 19.5 | 19.5 | 19.5 | 19.5 | 19.5 | 19.5 | 19.5 | 19.5 |
| 43 | | | | | | | | | | | | | | | | | | | | | 22.5 | 22.5 | 22.0 | 22.0 | 22.0 | 21.5 | 21.5 | 21.5 | 21.5 | 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 | 20.0 |
| 44 | | | | | | | | | | | | | | | | | | | | | 24.0 | 23.5 | 23.5 | 23.5 | 23.0 | 23.0 | 23.0 | 23.0 | 23.0 | 23.0 | 22.5 | 22.5 | 22.5 | 22.5 | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 |
| 45 | | | | | | | | | | | | | | | | | | | | | 25.5 | 25.0 | 25.0 | 25.0 | 24.5 | 24.5 | 24.5 | 24.5 | 24.5 | 24.0 | 24.0 | 24.0 | 24.0 | 23.5 | 23.5 | 23.5 | 23.5 | 23.5 | 23.5 | 23.5 | 23.5 | 23.5 | 23.5 | 23.5 |
| 46 | | | | | | | | | | | | | | | | | | | | | 27.0 | 26.5 | 26.5 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 25.5 | 25.5 | 25.5 | 25.5 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 24.5 |
| 47 | | | | | | | | | | | | | | | | | | | | | 28.0 | 28.0 | 28.0 | 27.5 | 27.5 | 27.5 | 27.5 | 27.0 | 27.0 | 27.0 | 27.0 | 27.0 | 26.5 | 26.5 | 26.5 | 26.5 | 26.5 | 26.5 | 26.5 | 26.5 | 26.5 | 26.5 | 26.5 | 26.5 |
| 48 | | | | | | | | | | | | | | | | | | | | | 29.5 | 29.5 | 29.5 | 29.0 | 29.0 | 29.0 | 28.5 | 28.5 | 28.5 | 28.5 | 28.5 | 28.5 | 28.0 | 28.0 | 28.0 | 28.0 | 28.0 | 28.0 | 28.0 | 28.0 | 28.0 | 28.0 | 28.0 | 28.0 |
| 49 | | | | | | | | | | | | | | | | | | | | | | | | 30.5 | 30.5 | 30.0 | 30.0 | 30.0 | 30.0 | 30.0 | 30.0 | 29.5 | 29.5 | 29.5 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 |
| 50 | | | | | | | | | | | | | | | | | | | | | | | | 31.5 | 31.5 | 31.5 | 31.5 | 31.0 | 31.0 | 31.0 | 31.0 | 31.0 | 31.0 | 31.0 | 30.5 | 30.5 | 30.5 | 30.5 | 30.0 | 30.0 | 30.0 | 30.0 | 30.0 | 30.0 |
| 51 | | | | | | | | | | | | | | | | | | | | | | | | 33.0 | 33.0 | 32.5 | 32.5 | 32.5 | 32.5 | 32.5 | 32.5 | 32.0 | 32.0 | 32.0 | 32.0 | 32.0 | 31.5 | 31.5 | 31.5 | 31.5 | 31.5 | 31.5 | 31.5 | 31.5 |
| 52 | | | | | | | | | | | | | | | | | | | | | | | | | 34.5 | 34.0 | 34.0 | 34.0 | 34.0 | 33.5 | 33.5 | 33.5 | 33.5 | 33.5 | 33.5 | 33.0 | 33.0 | 33.0 | 33.0 | 33.0 | 33.0 | 32.5 | 32.5 | 32.5 |
| 53 | | | | | | | | | | | | | | | | | | | | | | | | | 35.5 | 35.5 | 35.5 | 35.5 | 35.0 | 35.0 | 35.0 | 35.0 | 34.5 | 34.5 | 34.5 | 34.5 | 34.5 | 34.5 | 34.5 | 34.5 | 34.0 | 34.0 | 34.0 | 34.0 |
| 54 | | | | | | | | | | | | | | | | | | | | | | | | | | 36.5 | 36.5 | 36.5 | 36.5 | 36.5 | 36.5 | 36.0 | 36.0 | 36.0 | 36.0 | 35.5 | 35.5 | 35.5 | 35.5 | 35.5 | 35.5 | 35.5 | 35.0 | 35.0 |
| 55 | | | | | | | | | | | | | | | | | | | | | | | | | | 38.0 | 38.0 | 37.5 | 37.5 | 37.5 | 37.5 | 37.5 | 37.0 | 37.0 | 37.0 | 37.0 | 37.0 | 37.0 | 37.0 | 36.5 | 36.5 | 36.5 | 36.5 | 36.5 |
| 56 | | | | | | | | | | | | | | | | | | | | | | | | | | 39.0 | 39.0 | 38.5 | 38.5 | 38.5 | 38.5 | 38.5 | 38.5 | 38.5 | 38.5 | 38.5 | 38.0 | 38.0 | 38.0 | 38.0 | 38.0 | 38.0 | 37.5 | 37.5 |
| 57 | | | | | | | | | | | | | | | | | | | | | | | | | | | | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 39.5 | 39.5 | 39.5 | 39.5 | 39.5 | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 |
| 58 | | | | | | | | | | | | | | | | | | | | | | | | | | | | 41.0 | 41.0 | 41.0 | 41.0 | 41.0 | 41.0 | 41.0 | 41.0 | 41.0 | 40.5 | 40.5 | 40.5 | 40.5 | 40.5 | 40.0 | 40.0 | 40.0 |
| 59 | | | | | | | | | | | | | | | | | | | | | | | | | | | | 42.0 | 42.0 | 42.0 | 42.0 | 42.0 | 42.0 | 42.0 | 42.0 | 42.0 | 42.0 | 42.0 | 41.5 | 41.5 | 41.5 | 41.5 | 41.5 | 41.5 |
| 60 | | | | | | | | | | | | | | | | | | | | | | | | | | | | 43.5 | 43.5 | 43.0 | 43.0 | 43.0 | 43.0 | 43.0 | 43.0 | 43.0 | 43.0 | 43.0 | 43.0 | 43.0 | 43.0 | 42.5 | 42.5 | 42.5 |
| 61 | | | | | | | | | | | | | | | | | | | | | | | | | | | | 44.5 | 44.5 | 44.5 | 44.5 | 44.5 | 44.5 | 44.5 | 44.5 | 44.0 | 44.0 | 44.0 | 44.0 | 44.0 | 44.0 | 44.0 | 43.5 | 43.5 |
| 62 | | | | | | | | | | | | | | | | | | | | | | | | | | | | 45.5 | 45.5 | 45.5 | 45.5 | 45.5 | 45.5 | 45.5 | 45.5 | 45.0 | 45.0 | 45.0 | 45.0 | 45.0 | 45.0 | 45.0 | 45.0 | 45.0 |

Not Analyzed

Note: If irradiated stainless steel rods are present in the reconstituted fuel assembly, add an additional year of cooling time for cooling times less than 10 years.

Note: The page that follows Table 1-5f provides the explanatory notes and limitations regarding the use of this table.

**Table 1-5b**
**PWR Fuel Qualification Table for Zone 2 Fuel with 0.8 kW per Assembly for the NUHOMS®-32PTH1 DSC (Fuel without CCs)**
(Minimum required years of cooling time after reactor core discharge)

| BU GWd/ MTU | Assembly Average Initial Enrichment (wt. % U-235) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.7 | 0.8 | 0.9 | 1.0 | 1.1 | 1.2 | 1.3 | 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 | 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 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| 15 | 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 | 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 | 4.5 | 4.5 | 4.0 | 4.0 | 4.0 | 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 | 3.0 | 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 | | | | | | | | | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 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 |
| 28 | | | | | | | | | 5.5 | 5.5 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 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 |
| 30 | | | | | | | | | 6.0 | 6.0 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 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 | | | | | | | | | 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 | 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 |
| 34 | | | | | | | | | 7.5 | 7.0 | 7.0 | 7.0 | 7.0 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 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 |
| 36 | | | | | | | | | 8.0 | 8.0 | 8.0 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 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 |
| 38 | | | | | | | | | 9.0 | 9.0 | 9.0 | 9.0 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 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 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 |
| 39 | | | | | | | | | 10.0 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.0 | 9.0 | 9.0 | 9.0 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 |
| 40 | | | | | | | | | 10.5 | 10.5 | 10.5 | 10.0 | 10.0 | 10.0 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 |
| 41 | | | | | | | | | 11.5 | 11.5 | 11.0 | 11.0 | 10.5 | 10.5 | 10.5 | 10.5 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 9.5 | 9.5 | 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 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 |
| 42 | | | | | | | | | | | | | | | | | | | | | 10.5 | 10.5 | 10.5 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 |
| 43 | | | | | | | | | | | | | | | | | | | | | 11.5 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 10.5 | 10.5 | 10.5 | 10.5 | 10.5 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 |
| 44 | | | | | | | | | | | | | | | | | | | | | 12.0 | 12.0 | 12.0 | 12.0 | 11.5 | 11.5 | 11.5 | 11.5 | 11.5 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 10.5 | 10.5 | 10.5 | 10.5 | 10.5 | 10.5 | 10.5 | 10.5 |
| 45 | | | | | | | | | | | | | | | | | | | | | 13.0 | 13.0 | 13.0 | 12.5 | 12.5 | 12.5 | 12.5 | 12.0 | 12.0 | 12.0 | 12.0 | 12.0 | 11.5 | 11.5 | 11.5 | 11.5 | 11.5 | 11.5 | 11.5 | 11.5 | 11.0 | 11.0 | 11.0 | 11.0 |
| 46 | | | | | | | | | | | | | | | | | | | | | 14.0 | 14.0 | 14.0 | 13.5 | 13.5 | 13.5 | 13.5 | 13.0 | 13.0 | 13.0 | 13.0 | 13.0 | 12.5 | 12.5 | 12.5 | 12.5 | 12.5 | 12.5 | 12.5 | 12.0 | 12.0 | 12.0 | 12.0 | 12.0 |
| 47 | | | | | | | | | | | | | | | | | | | | | 15.0 | 15.0 | 15.0 | 14.5 | 14.5 | 14.5 | 14.5 | 14.0 | 14.0 | 14.0 | 14.0 | 14.0 | 13.5 | 13.5 | 13.5 | 13.5 | 13.5 | 13.5 | 13.0 | 13.0 | 13.0 | 13.0 | 13.0 | 13.0 |
| 48 | | | | | | | | | | | | | | | | | | | | | 16.5 | 16.0 | 16.0 | 15.5 | 15.5 | 15.5 | 15.5 | 15.5 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | 14.5 | 14.5 | 14.5 | 14.5 | 14.5 | 14.5 | 14.0 | 14.0 | 13.5 | 13.5 | 13.5 |
| 49 | | | | | | | | | | | | | | | | | | | | | | | | 17.0 | 17.0 | 16.5 | 16.5 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 15.5 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | 14.5 | 14.5 | 14.5 |
| 50 | | | | | | | | | | | | | | | | | | | | | | | | 18.0 | 18.0 | 18.0 | 17.5 | 17.5 | 17.5 | 17.5 | 17.0 | 17.0 | 17.0 | 17.0 | 17.0 | 16.5 | 16.5 | 16.5 | 16.5 | 16.5 | 16.0 | 15.5 | 15.5 | 15.5 |
| 51 | | | | | | | | | | | | | | | | | | | | | | | | 19.0 | 19.0 | 19.0 | 19.0 | 18.5 | 18.5 | 18.0 | 18.0 | 18.0 | 18.0 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.0 | 17.0 | 17.0 | 17.0 | 17.0 | 17.0 |
| 52 | | | | | | | | | | | | | | | | | | | | | | | | | 20.0 | 20.0 | 20.0 | 19.5 | 19.5 | 19.5 | 19.5 | 19.5 | 19.0 | 19.0 | 19.0 | 19.0 | 19.0 | 18.5 | 18.5 | 18.5 | 18.5 | 18.5 | 18.5 | 17.5 |
| 53 | | | | | | | | | | | | | | | | | | | | | | | | | 21.5 | 21.0 | 21.0 | 21.0 | 20.5 | 20.5 | 20.5 | 20.5 | 20.5 | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 19.5 | 19.5 | 19.5 | 19.5 | 19.5 | 19.0 |
| 54 | | | | | | | | | | | | | | | | | | | | | | | | | | 22.5 | 22.5 | 22.0 | 22.0 | 21.5 | 21.5 | 21.5 | 21.5 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 20.5 | 20.5 | 20.5 | 20.5 | 20.5 | 20.0 |
| 55 | | | | | | | | | | | | | | | | | | | | | | | | | | 23.5 | 23.5 | 23.0 | 23.0 | 23.0 | 23.0 | 23.0 | 23.0 | 22.5 | 22.5 | 22.5 | 22.5 | 22.0 | 21.5 | 21.5 | 21.5 | 21.5 | 21.5 | 21.0 |
| 56 | | | | | | | | | | | | | | | | | | | | | | | | | | 25.0 | 25.0 | 24.5 | 24.5 | 24.5 | 24.0 | 24.0 | 24.0 | 24.0 | 23.5 | 23.0 | 23.0 | 23.0 | 23.0 | 23.0 | 22.5 | 22.5 | 22.5 | 22.5 |
| 57 | | | | | | | | | | | | | | | | | | | | | | | | | | | | 25.5 | 25.5 | 25.5 | 25.5 | 25.0 | 25.0 | 25.0 | 25.0 | 24.5 | 24.5 | 24.5 | 24.5 | 24.5 | 23.5 | 23.5 | 23.5 | 23.5 |
| 58 | | | | | | | | | | | | | | | | | | | | | | | | | | | | 27.0 | 27.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 25.5 | 25.5 | 25.5 | 25.5 | 25.5 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 |
| 59 | | | | | | | | | | | | | | | | | | | | | | | | | | | | 27.5 | 27.5 | 27.5 | 27.5 | 27.5 | 27.5 | 27.5 | 27.0 | 27.0 | 27.0 | 27.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 25.5 |
| 60 | | | | | | | | | | | | | | | | | | | | | | | | | | | | 29.0 | 28.5 | 28.5 | 28.5 | 28.5 | 28.0 | 28.0 | 28.0 | 28.0 | 28.0 | 28.0 | 27.5 | 27.5 | 27.5 | 27.5 | 27.5 | 27.0 |
| 61 | | | | | | | | | | | | | | | | | | | | | | | | | | | | 29.5 | 29.5 | 29.5 | 29.5 | 29.5 | 29.5 | 29.5 | 29.5 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 28.0 | 28.0 | 28.0 | 28.0 |
| 62 | | | | | | | | | | | | | | | | | | | | | | | | | | | | 31.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.0 | 30.0 | 30.0 | 30.0 | 30.0 | 29.5 | 29.5 | 29.5 | 29.5 | 29.5 | 29.5 |

Not Analyzed

Note: If irradiated stainless steel rods are present in the reconstituted fuel assembly, add an additional year of cooling time for cooling times less than 10 years.

Note: The page that follows Table 1-5f provides the explanatory notes and limitations regarding the use of this table.

**Table 1-5c**

**PWR Fuel Qualification Table for Zone 3 or Zone 4 Fuel with 1.0 kW per Assembly for the NUHOMS®-32PTH1 DSC (Fuel without CCs)**

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

| BU GWd/ MTU | Assembly Average Initial Enrichment (wt. % U-235) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.7 | 0.8 | 0.9 | 1.0 | 1.1 | 1.2 | 1.3 | 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 | 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 | 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 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| 20 | 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 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| 25 | | | | | | | | | 4.0 | 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 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| 28 | | | | | | | | | 4.5 | 4.5 | 4.5 | 4.5 | 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 | 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 |
| 30 | | | | | | | | | 5.0 | 5.0 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 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 |
| 32 | | | | | | | | | 5.5 | 5.5 | 5.0 | 5.0 | 5.0 | 5.0 | 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 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| 34 | | | | | | | | | 6.0 | 6.0 | 5.5 | 5.5 | 5.5 | 5.5 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 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 |
| 36 | | | | | | | | | 6.5 | 6.5 | 6.0 | 6.0 | 6.0 | 6.0 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 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 | | | | | | | | | 7.5 | 7.0 | 7.0 | 6.5 | 6.5 | 6.5 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 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 | 5.0 | 5.0 |
| 39 | | | | | | | | | 7.5 | 7.5 | 7.0 | 7.0 | 7.0 | 6.5 | 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 | 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 | | | | | | | | | 8.0 | 8.0 | 7.5 | 7.5 | 7.0 | 7.0 | 7.0 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 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 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 |
| 41 | | | | | | | | | 8.5 | 8.5 | 8.0 | 7.5 | 7.5 | 7.5 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 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 |
| 42 | | | | | | | | | | | | | | | | | | | | | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 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 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| 43 | | | | | | | | | | | | | | | | | | | | | 7.5 | 7.5 | 7.5 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 |
| 44 | | | | | | | | | | | | | | | | | | | | | 8.0 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 6.5 | 6.5 | 6.5 |
| 45 | | | | | | | | | | | | | | | | | | | | | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 |
| 46 | | | | | | | | | | | | | | | | | | | | | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 |
| 47 | | | | | | | | | | | | | | | | | | | | | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 7.5 | 7.5 |
| 48 | | | | | | | | | | | | | | | | | | | | | 10.0 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.0 | 8.0 | 8.0 |
| 49 | | | | | | | | | | | | | | | | | | | | | | | | 10.0 | 10.0 | 10.0 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 8.5 | 8.5 | 8.5 | 8.5 |
| 50 | | | | | | | | | | | | | | | | | | | | | | | | 10.5 | 10.5 | 10.5 | 10.5 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.0 | 9.0 | 9.0 | 9.0 |
| 51 | | | | | | | | | | | | | | | | | | | | | | | | 11.5 | 11.5 | 11.0 | 11.0 | 11.0 | 11.0 | 10.5 | 10.5 | 10.5 | 10.5 | 10.5 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 9.5 | 9.5 | 9.5 | 9.5 |
| 52 | | | | | | | | | | | | | | | | | | | | | | | | | 12.0 | 12.0 | 12.0 | 11.5 | 11.5 | 11.5 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 10.5 | 10.5 | 10.5 | 10.5 | 10.5 | 10.5 | 10.0 | 10.0 | 10.0 |
| 53 | | | | | | | | | | | | | | | | | | | | | | | | | 13.0 | 12.5 | 12.5 | 12.5 | 12.0 | 12.0 | 12.0 | 12.0 | 11.5 | 11.5 | 11.5 | 11.5 | 11.5 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 10.5 |
| 54 | | | | | | | | | | | | | | | | | | | | | | | | | | 13.5 | 13.5 | 13.0 | 13.0 | 13.0 | 12.5 | 12.5 | 12.5 | 12.5 | 12.5 | 12.0 | 12.0 | 12.0 | 12.0 | 12.0 | 11.5 | 11.5 | 11.5 | 11.5 |
| 55 | | | | | | | | | | | | | | | | | | | | | | | | | | 14.5 | 14.0 | 14.0 | 14.0 | 13.5 | 13.5 | 13.5 | 13.5 | 13.0 | 13.0 | 13.0 | 13.0 | 12.5 | 12.5 | 12.5 | 12.5 | 12.5 | 12.0 | 12.0 |
| 56 | | | | | | | | | | | | | | | | | | | | | | | | | | 15.5 | 15.0 | 15.0 | 15.0 | 14.5 | 14.5 | 14.5 | 14.0 | 14.0 | 14.0 | 13.5 | 14.0 | 13.5 | 13.5 | 13.5 | 13.5 | 13.0 | 13.0 | 13.0 |
| 57 | | | | | | | | | | | | | | | | | | | | | | | | | | | | 16.0 | 15.5 | 15.5 | 15.5 | 15.5 | 15.0 | 15.0 | 15.0 | 14.5 | 14.5 | 14.5 | 14.5 | 14.0 | 14.0 | 14.0 | 14.0 | 13.5 |
| 58 | | | | | | | | | | | | | | | | | | | | | | | | | | | | 17.0 | 16.5 | 16.5 | 16.5 | 16.0 | 16.0 | 16.0 | 15.5 | 15.5 | 15.5 | 15.5 | 15.0 | 15.0 | 15.0 | 14.5 | 14.5 | 14.5 |
| 59 | | | | | | | | | | | | | | | | | | | | | | | | | | | | 18.0 | 17.5 | 17.5 | 17.5 | 17.0 | 17.0 | 17.0 | 16.5 | 16.5 | 16.5 | 16.0 | 16.0 | 16.0 | 16.0 | 15.5 | 15.5 | 15.5 |
| 60 | | | | | | | | | | | | | | | | | | | | | | | | | | | | 19.0 | 18.5 | 18.5 | 18.0 | 18.0 | 18.0 | 17.5 | 17.5 | 17.5 | 17.5 | 17.0 | 17.0 | 17.0 | 16.5 | 16.5 | 16.5 | 16.5 |
| 61 | | | | | | | | | | | | | | | | | | | | | | | | | | | | 20.0 | 19.5 | 19.5 | 19.0 | 19.5 | 19.0 | 18.5 | 18.5 | 18.5 | 18.0 | 18.0 | 18.5 | 18.0 | 17.5 | 17.5 | 17.5 | 17.5 |
| 62 | | | | | | | | | | | | | | | | | | | | | | | | | | | | 20.5 | 20.5 | 20.5 | 20.0 | 20.0 | 20.0 | 20.0 | 19.5 | 19.5 | 19.5 | 19.0 | 19.0 | 19.0 | 18.5 | 18.5 | 18.5 | 18.5 |

Not Analyzed

Note: If irradiated stainless steel rods are present in the reconstituted fuel assembly, add an additional year of cooling time for cooling times less than 10 years.

Note: The page that follows Table 1-5f provides the explanatory notes and limitations regarding the use of this table.

## Table 1-5d

### PWR Fuel Qualification Table for Zone 5 Fuel with 1.3 kW per Assembly for the NUHOMS®-32PTH1 DSC (Fuel without CCs)

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

| BU GWd/MTU | Assembly Average Initial Enrichment (wt. % U-235) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.7 | 0.8 | 0.9 | 1.0 | 1.1 | 1.2 | 1.3 | 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 | 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 | 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 | 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 | 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 |
| 28 | | | | | | | | | 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 | 3.0 | 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 |
| 32 | | | | | | | | | 4.5 | 4.0 | 4.0 | 4.0 | 4.0 | 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 |
| 34 | | | | | | | | | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 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 | 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 |
| 36 | | | | | | | | | 5.0 | 5.0 | 5.0 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 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 |
| 38 | | | | | | | | | 5.5 | 5.5 | 5.0 | 5.0 | 5.0 | 5.0 | 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 | 4.0 | 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 |
| 39 | | | | | | | | | 6.0 | 5.5 | 5.5 | 5.5 | 5.0 | 5.0 | 5.0 | 5.0 | 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 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| 40 | | | | | | | | | 6.0 | 6.0 | 5.5 | 5.5 | 5.5 | 5.5 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 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 |
| 41 | | | | | | | | | 6.5 | 6.0 | 6.0 | 6.0 | 5.5 | 5.5 | 5.5 | 5.5 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 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 |
| 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 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 |
| 43 | | | | | | | | | | | | | | | | | | | | | 5.5 | 5.5 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 4.5 | 4.5 | 4.5 | 4.5 |
| 44 | | | | | | | | | | | | | | | | | | | | | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| 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 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| 46 | | | | | | | | | | | | | | | | | | | | | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 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 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| 47 | | | | | | | | | | | | | | | | | | | | | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 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 |
| 48 | | | | | | | | | | | | | | | | | | | | | 6.5 | 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 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 |
| 49 | | | | | | | | | | | | | | | | | | | | | | | | 6.5 | 6.5 | 6.5 | 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 | 5.5 |
| 50 | | | | | | | | | | | | | | | | | | | | | | | | 7.0 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 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 |
| 51 | | | | | | | | | | | | | | | | | | | | | | | | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.0 | 6.0 | 6.0 | 6.0 |
| 52 | | | | | | | | | | | | | | | | | | | | | | | | | 7.5 | 7.5 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 |
| 53 | | | | | | | | | | | | | | | | | | | | | | | | | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 6.5 | 6.5 | 6.5 | 6.5 |
| 54 | | | | | | | | | | | | | | | | | | | | | | | | | | 8.0 | 8.0 | 8.0 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 |
| 55 | | | | | | | | | | | | | | | | | | | | | | | | | | 8.5 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.0 | 7.0 | 7.0 |
| 56 | | | | | | | | | | | | | | | | | | | | | | | | | | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 |
| 57 | | | | | | | | | | | | | | | | | | | | | | | | | | | | 9.0 | 9.0 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 |
| 58 | | | | | | | | | | | | | | | | | | | | | | | | | | | | 9.5 | 9.5 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.0 | 8.0 | 8.0 |
| 59 | | | | | | | | | | | | | | | | | | | | | | | | | | | | 10.0 | 10.0 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 8.5 | 8.5 | 8.5 | 8.5 |
| 60 | | | | | | | | | | | | | | | | | | | | | | | | | | | | 10.5 | 10.5 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 |
| 61 | | | | | | | | | | | | | | | | | | | | | | | | | | | | 11.0 | 11.0 | 11.0 | 10.5 | 10.5 | 10.5 | 10.5 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 9.5 | 9.5 | 9.5 | 9.5 |
| 62 | | | | | | | | | | | | | | | | | | | | | | | | | | | | 11.5 | 11.5 | 11.5 | 11.5 | 11.0 | 11.0 | 11.0 | 10.5 | 10.5 | 10.5 | 10.5 | 10.5 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 |

Not Analyzed

Note: If irradiated stainless steel rods are present in the reconstituted fuel assembly, add an additional year of cooling time for cooling times less than 10 years.

Note: The page that follows Table 1-5f provides the explanatory notes and limitations regarding the use of this table.

## Table 1-5e
## PWR Fuel Qualification Table for Zone 5 with Damaged Fuel with 1.2 kW per Assembly for the NUHOMS®-32PTH1 DSC (Fuel without CCs)

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

| BU GWd/MTU | Assembly Average Initial Enrichment (wt. % U-235) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.7 | 0.8 | 0.9 | 1 | 1.1 | 1.2 | 1.3 | 1.4 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2 | 2.1 | 2.2 | 2.3 | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 3 | 3.1 | 3.2 | 3.3 | 3.4 | 3.5 | 3.6 | 3.7 | 3.8 | 3.9 | 4 | 4.1 | 4.2 | 4.3 | 4.4 | 4.5 | 4.6 | 4.7 | 4.8 | 4.9 | 5 |
| 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 | 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 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| 20 | 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 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| 25 | | | | | | | | | 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 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| 28 | | | | | | | | | 4.0 | 4.0 | 4.0 | 4.0 | 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 |
| 30 | | | | | | | | | 4.5 | 4.5 | 4.5 | 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 | 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 | | | | | | | | | 5.0 | 5.0 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 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 | | | | | | | | | 5.5 | 5.5 | 5.0 | 5.0 | 5.0 | 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 | 4.0 | 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 |
| 36 | | | | | | | | | 6.0 | 6.0 | 5.5 | 5.5 | 5.5 | 5.5 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 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 |
| 38 | | | | | | | | | 6.5 | 6.5 | 6.0 | 6.0 | 6.0 | 6.0 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 4.5 | 4.5 |
| 39 | | | | | | | | | 7.0 | 6.5 | 6.5 | 6.5 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 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 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| 40 | | | | | | | | | 7.0 | 7.0 | 6.5 | 6.5 | 6.5 | 6.5 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 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 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| 41 | | | | | | | | | 7.5 | 7.0 | 7.0 | 7.0 | 6.5 | 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 | 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 |
| 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 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 |
| 43 | | | | | | | | | | | | | | | | | | | | | 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 | 5.5 | 5.5 | 5.5 | 5.5 |
| 44 | | | | | | | | | | | | | | | | | | | | | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 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 |
| 45 | | | | | | | | | | | | | | | | | | | | | 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 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| 46 | | | | | | | | | | | | | | | | | | | | | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 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 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| 47 | | | | | | | | | | | | | | | | | | | | | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 |
| 48 | | | | | | | | | | | | | | | | | | | | | 8.0 | 8.0 | 8.0 | 8.0 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 6.5 | 6.5 | 6.5 |
| 49 | | | | | | | | | | | | | | | | | | | | | | | | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.0 | 7.0 | 7.0 | 7.0 |
| 50 | | | | | | | | | | | | | | | | | | | | | | | | 8.5 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 |
| 51 | | | | | | | | | | | | | | | | | | | | | | | | 9.0 | 9.0 | 8.5 | 8.5 | 8.5 | 8.5 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 7.5 | 7.5 | 7.5 | 7.5 |
| 52 | | | | | | | | | | | | | | | | | | | | | | | | | 9.5 | 9.5 | 9.0 | 9.0 | 9.0 | 9.0 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 |
| 53 | | | | | | | | | | | | | | | | | | | | | | | | | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.0 |
| 54 | | | | | | | | | | | | | | | | | | | | | | | | | | 10.0 | 10.0 | 10.0 | 9.5 | 9.5 | 9.5 | 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 |
| 55 | | | | | | | | | | | | | | | | | | | | | | | | | | 11.0 | 10.5 | 10.5 | 10.5 | 10.0 | 10.0 | 10.0 | 10.0 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.0 | 9.0 | 9.0 |
| 56 | | | | | | | | | | | | | | | | | | | | | | | | | | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 10.5 | 10.5 | 10.5 | 10.5 | 10.0 | 10.5 | 10.0 | 10.0 | 10.0 | 10.0 | 9.5 | 9.5 | 9.5 |
| 57 | | | | | | | | | | | | | | | | | | | | | | | | | | | | 11.5 | 11.5 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 10.5 | 10.5 | 10.5 | 10.5 | 10.5 | 10.5 | 10.5 | 10.0 |
| 58 | | | | | | | | | | | | | | | | | | | | | | | | | | | | 12.5 | 12.0 | 12.0 | 12.0 | 11.5 | 11.5 | 11.5 | 11.5 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 10.5 | 10.5 | 10.5 |
| 59 | | | | | | | | | | | | | | | | | | | | | | | | | | | | 13.0 | 13.0 | 12.5 | 12.5 | 12.5 | 12.5 | 12.5 | 12.0 | 12.0 | 12.0 | 11.5 | 11.5 | 11.5 | 11.5 | 11.0 | 11.0 | 11.0 |
| 60 | | | | | | | | | | | | | | | | | | | | | | | | | | | | 13.5 | 13.5 | 13.0 | 13.0 | 13.0 | 13.0 | 13.0 | 12.5 | 12.5 | 12.5 | 12.5 | 12.5 | 12.0 | 12.0 | 12.0 | 12.0 | 12.0 |
| 61 | | | | | | | | | | | | | | | | | | | | | | | | | | | | 14.5 | 14.0 | 14.0 | 13.5 | 14.0 | 13.5 | 13.5 | 13.0 | 13.0 | 13.0 | 13.0 | 13.0 | 13.0 | 12.5 | 12.5 | 12.5 | 12.5 |
| 62 | | | | | | | | | | | | | | | | | | | | | | | | | | | | 15.0 | 15.0 | 15.0 | 14.5 | 14.5 | 14.5 | 14.5 | 14.0 | 14.0 | 14.0 | 13.5 | 13.5 | 13.5 | 13.0 | 13.0 | 13.0 | 13.0 |

Not Analyzed

Note: If irradiated stainless steel rods are present in the reconstituted fuel assembly, add an additional year of cooling time for cooling times less than 10 years.

Note: The page that follows Table 1-5f provides the explanatory notes and limitations regarding the use of this table.

## Table 1-5f
## PWR Fuel Qualification Table for Zone 6 Fuel with 1.5 kW per Assembly for the NUHOMS®-32PTH1 DSC (Fuel without CCs)

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

| BU GWd/MTU | Assembly Average Initial Enrichment (wt. % U-235) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.7 | 0.8 | 0.9 | 1.0 | 1.1 | 1.2 | 1.3 | 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 | 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 | 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 | 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 | 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 |
| 28 | | | | | | | | | 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 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| 30 | | | | | | | | | 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 | 3.0 |
| 32 | | | | | | | | | 4.0 | 3.5 | 3.5 | 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 |
| 34 | | | | | | | | | 4.0 | 4.0 | 4.0 | 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 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| 36 | | | | | | | | | 4.5 | 4.5 | 4.5 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 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 |
| 38 | | | | | | | | | 5.0 | 5.0 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 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 | 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 |
| 39 | | | | | | | | | 5.0 | 5.0 | 5.0 | 5.0 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 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 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 |
| 40 | | | | | | | | | 5.5 | 5.0 | 5.0 | 5.0 | 5.0 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 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 | 3.5 |
| 41 | | | | | | | | | 5.5 | 5.5 | 5.5 | 5.0 | 5.0 | 5.0 | 5.0 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 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 |
| 42 | | | | | | | | | | | | | | | | | | | | | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 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 |
| 43 | | | | | | | | | | | | | | | | | | | | | 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 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| 44 | | | | | | | | | | | | | | | | | | | | | 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 | 4.0 | 4.0 | 4.0 | 4.0 |
| 45 | | | | | | | | | | | | | | | | | | | | | 5.0 | 5.0 | 5.0 | 5.0 | 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 |
| 46 | | | | | | | | | | | | | | | | | | | | | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 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 |
| 47 | | | | | | | | | | | | | | | | | | | | | 5.5 | 5.5 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 |
| 48 | | | | | | | | | | | | | | | | | | | | | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 4.5 | 4.5 |
| 49 | | | | | | | | | | | | | | | | | | | | | | | | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| 50 | | | | | | | | | | | | | | | | | | | | | | | | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| 51 | | | | | | | | | | | | | | | | | | | | | | | | 6.0 | 6.0 | 6.0 | 6.0 | 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 | 5.0 | 5.0 | 5.0 |
| 52 | | | | | | | | | | | | | | | | | | | | | | | | | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 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 |
| 53 | | | | | | | | | | | | | | | | | | | | | | | | | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 |
| 54 | | | | | | | | | | | | | | | | | | | | | | | | | | 6.5 | 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 | 5.5 | 5.5 | 5.5 |
| 55 | | | | | | | | | | | | | | | | | | | | | | | | | | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 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 |
| 56 | | | | | | | | | | | | | | | | | | | | | | | | | | 7.0 | 7.0 | 7.0 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| 57 | | | | | | | | | | | | | | | | | | | | | | | | | | | | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 |
| 58 | | | | | | | | | | | | | | | | | | | | | | | | | | | | 7.5 | 7.5 | 7.5 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 |
| 59 | | | | | | | | | | | | | | | | | | | | | | | | | | | | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 6.5 | 7.0 |
| 60 | | | | | | | | | | | | | | | | | | | | | | | | | | | | 8.0 | 8.0 | 8.0 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 |
| 61 | | | | | | | | | | | | | | | | | | | | | | | | | | | | 8.5 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 |
| 62 | | | | | | | | | | | | | | | | | | | | | | | | | | | | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.5 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 7.5 | 7.5 | 7.5 | 7.5 |

Not Analyzed

Note: If irradiated stainless steel rods are present in the reconstituted fuel assembly, add an additional year of cooling time.

Note: The page that follows Table 1-5f provides the explanatory notes and limitations regarding the use of this table.

**Notes: Tables 1-5a through 1-5f**

- 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.
- For a fuel assembly with Control Components, for a given enrichment and burnup, increase the cooling time obtained from an FQT by one year.
- Fuel with an assembly average initial enrichment less than 0.7 (or less than the minimum provided above for each burnup) and 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 3-years cooling.
- See Figure 1-26 through Figure 1-28 for a description of the Heat Load Zones.
- For reconstituted fuel assemblies with $UO_2$ 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.
- The cooling times for damaged and intact assemblies are identical.
- *Example*: An INTACT FUEL ASSEMBLY without CCs, with a decay heat load of 1.5 kW or less, an initial enrichment of 3.65 wt. % U-235 and a burnup of 41.5 GWd/MTU is acceptable for storage after a 4.0 year cooling time as defined by 3.6 wt. % U-235 (rounding down) and 42 GWd/MTU (rounding up) in Table 1-5f. If the fuel assembly has CCs, the minimum cooling time is increased by an additional one year, resulting in five year minimum cooling time prior to storage.

**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 | 4 | 4 | 4 |
| 28 | Not Analyzed Domain | | | | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| 30 | | | | | 7 | 7 | 7 | 7 | 7 | 7 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| 32 | | | | | 8 | 8 | 8 | 8 | 8 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| 34 | | | | | 9 | 9 | 9 | 9 | 9 | 9 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 |
| 36 | | | | | 11 | 11 | 11 | 10 | 10 | 10 | 10 | 10 | 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 | 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 | 11 | 11 | 11 | 11 | 11 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 9 | 9 | 9 | 9 |
| 40 | | | | | 16 | 16 | 15 | 15 | 15 | 14 | 14 | 14 | 13 | 13 | 13 | 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 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.

## 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 | Assembly Average Initial Enrichment (wt. % U-235) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GWd/MTU | 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 |
| 11 | 22.0 | 22.0 | 22.0 | 22.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 19.0 | 19.0 | 19.0 | 19.0 | 19.0 | 19.0 | 19.0 | 19.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 |
| 12 | 23.0 | 23.0 | 23.0 | 23.0 | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 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 |
| 13 | 24.0 | 24.0 | 24.0 | 23.0 | 23.0 | 23.0 | 23.0 | 23.0 | 23.0 | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 | 21.0 | 21.0 | 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 |
| 14 | 25.0 | 25.0 | 25.0 | 24.0 | 24.0 | 24.0 | 24.0 | 24.0 | 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 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 |
| 15 | 26.0 | 26.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 24.0 | 24.0 | 24.0 | 24.0 | 24.0 | 24.0 | 23.0 | 23.0 | 23.0 | 23.0 | 23.0 | 23.0 | 23.0 | 23.0 | 23.0 | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 |
| 16 | 27.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 24.0 | 24.0 | 24.0 | 24.0 | 24.0 | 24.0 | 24.0 | 24.0 | 23.0 | 23.0 | 23.0 | 23.0 | 23.0 | 23.0 | 23.0 | 23.0 | 23.0 | 23.0 |
| 17 | 27.0 | 27.0 | 27.0 | 27.0 | 27.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 24.0 | 24.0 | 24.0 | 24.0 | 24.0 | 24.0 | 24.0 | 24.0 | 24.0 | 24.0 | 23.0 |
| 18 | 28.0 | 28.0 | 27.0 | 27.0 | 27.0 | 27.0 | 27.0 | 27.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 24.0 | 24.0 | 24.0 | 24.0 | 24.0 | 24.0 | 24.0 | 24.0 |
| 19 | 28.0 | 28.0 | 28.0 | 28.0 | 28.0 | 28.0 | 27.0 | 27.0 | 27.0 | 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 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 |
| 20 | 29.0 | 29.0 | 29.0 | 29.0 | 28.0 | 28.0 | 28.0 | 28.0 | 28.0 | 28.0 | 28.0 | 27.0 | 27.0 | 27.0 | 27.0 | 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 |
| 21 | 30.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 28.0 | 28.0 | 28.0 | 28.0 | 28.0 | 28.0 | 28.0 | 28.0 | 28.0 | 27.0 | 27.0 | 27.0 | 27.0 | 27.0 | 27.0 | 27.0 | 27.0 | 27.0 | 27.0 | 26.0 | 26.0 | 26.0 | 26.0 |
| 22 | 30.0 | 30.0 | 30.0 | 30.0 | 30.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 28.0 | 28.0 | 28.0 | 28.0 | 28.0 | 28.0 | 28.0 | 28.0 | 28.0 | 28.0 | 27.0 | 27.0 | 27.0 | 27.0 | 27.0 | 27.0 | 27.0 |
| 23 | 30.5 | 30.5 | 30.5 | 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 | 28.5 | 28.5 | 28.5 | 28.5 | 28.5 | 28.5 | 28.5 | 28.5 | 28.5 | 28.5 | 28.5 | 27.5 | 27.5 | 27.5 | 27.5 |
| 24 | 31.5 | 31.5 | 31.5 | 31.5 | 30.5 | 30.5 | 30.5 | 30.5 | 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 | 28.5 | 28.5 | 28.5 | 28.5 | 28.5 | 28.5 | 28.5 | 28.5 |
| 25 | 31.5 | 31.5 | 31.5 | 31.5 | 31.5 | 31.5 | 31.5 | 31.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 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 |
| 26 | Not Analyzed Domain | | | | 31.5 | 31.5 | 31.5 | 31.5 | 31.5 | 31.5 | 31.5 | 31.5 | 31.5 | 31.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 29.5 | 29.5 | 29.5 | 29.5 | 29.5 |
| 27 | | | | | 32.5 | 32.5 | 32.5 | 32.5 | 32.5 | 31.5 | 31.5 | 31.5 | 31.5 | 31.5 | 31.5 | 31.5 | 31.5 | 31.5 | 31.5 | 31.5 | 31.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 |
| 28 | | | | | 32.5 | 32.5 | 32.5 | 32.5 | 32.5 | 32.5 | 32.5 | 32.5 | 32.5 | 32.5 | 32.5 | 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 | 30.5 |
| 29 | | | | | 33.5 | 33.5 | 33.5 | 33.5 | 33.5 | 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 | 31.5 | 31.5 | 31.5 | 31.5 | 31.5 | 31.5 | 31.5 | 31.5 |
| 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 | 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 |
| 31 | | | | | 34.5 | 34.5 | 34.5 | 34.5 | 34.5 | 34.5 | 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 | 32.5 | 32.5 | 32.5 | 32.5 | 32.5 |
| 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 | 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 | | | | | 35.5 | 35.5 | 35.5 | 35.5 | 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 | 33.5 | 33.5 | 33.5 | 33.5 | 33.5 |
| 34 | | | | | 35.5 | 35.5 | 35.5 | 35.5 | 35.5 | 35.5 | 35.5 | 35.5 | 35.5 | 35.5 | 35.5 | 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 |
| 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 | 34.5 | 34.5 | 34.5 | 34.5 | 34.5 | 34.5 |
| 36 | | | | | 36.5 | 36.5 | 36.5 | 36.5 | 36.5 | 36.5 | 36.5 | 36.5 | 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 |
| 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 | 35.5 | 35.5 | 35.5 | 35.5 | 35.5 | 35.5 | 35.5 | 35.5 | 35.5 | 35.5 |
| 38 | | | | | 37.5 | 37.5 | 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 |
| 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 | 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 |
| 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 |

Note: The explanatory notes and limitations provided for Table 1-6a are also applicable to 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 GWd/ MTU | 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 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| 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 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| 30 | 9.0 | 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 | 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 |
| 32 | 10.5 | 10.5 | 9.5 | 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 | 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 |
| 34 | 12.0 | 12.0 | 12.0 | 11.5 | 11.0 | 11.0 | 11.0 | 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 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 |
| 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 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 |
| 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 | 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 | 13.0 | 13.0 | 13.0 | 13.0 | 13.0 | 13.0 | 13.0 | 13.0 | 13.0 | 13.0 | 13.0 | 13.0 |
| 39 | 19.5 | 19.0 | 18.5 | 18.0 | 17.0 | 16.5 | 16.5 | 16.5 | 16.5 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | 14.0 | 14.0 | 14.0 | 14.0 | 14.0 | 14.0 | 14.0 | 14.0 | 14.0 |
| 40 | 20.5 | 20.0 | 20.0 | 19.0 | 19.0 | 18.5 | 18.5 | 18.5 | 18.0 | 18.0 | 18.0 | 17.0 | 17.0 | 17.0 | 17.0 | 17.0 | 17.0 | 17.0 | 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 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 |
| 41 | 22.5 | 21.5 | 21.0 | 21.0 | 20.0 | 20.0 | 19.5 | 19.5 | 19.5 | 19.0 | 19.0 | 19.0 | 19.0 | 19.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 17.0 | 17.0 | 17.0 | 17.0 | 17.0 | 17.0 | 17.0 | 17.0 | 17.0 | 17.0 | 17.0 | 17.0 | 17.0 | 17.0 | 16.0 |
| 42 | 24.0 | 22.5 | 22.5 | 21.5 | 21.5 | 21.5 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 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 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 |
| 43 | 25.0 | 24.5 | 24.5 | 23.5 | 23.5 | 23.0 | 22.0 | 22.0 | 22.0 | 21.5 | 21.5 | 21.5 | 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 | 19.0 | 19.0 | 19.0 | 19.0 | 19.0 | 19.0 |
| 44 | 26.5 | 26.5 | 25.0 | 25.0 | 24.0 | 24.0 | 24.0 | 24.0 | 23.5 | 23.5 | 23.5 | 23.0 | 23.0 | 23.0 | 23.0 | 22.0 | 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 | 20.0 | 20.0 |
| 45 | 27.5 | 27.5 | 27.0 | 26.0 | 26.0 | 25.0 | 25.0 | 25.0 | 25.0 | 24.5 | 24.5 | 24.5 | 24.0 | 24.0 | 24.0 | 24.0 | 24.0 | 24.0 | 23.0 | 23.0 | 23.0 | 23.0 | 23.0 | 23.0 | 23.0 | 23.0 | 23.0 | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 |

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

## Table 1-6d
## Fuel Qualification Table for 0.4 kW PWR FAs in Zone 2 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)

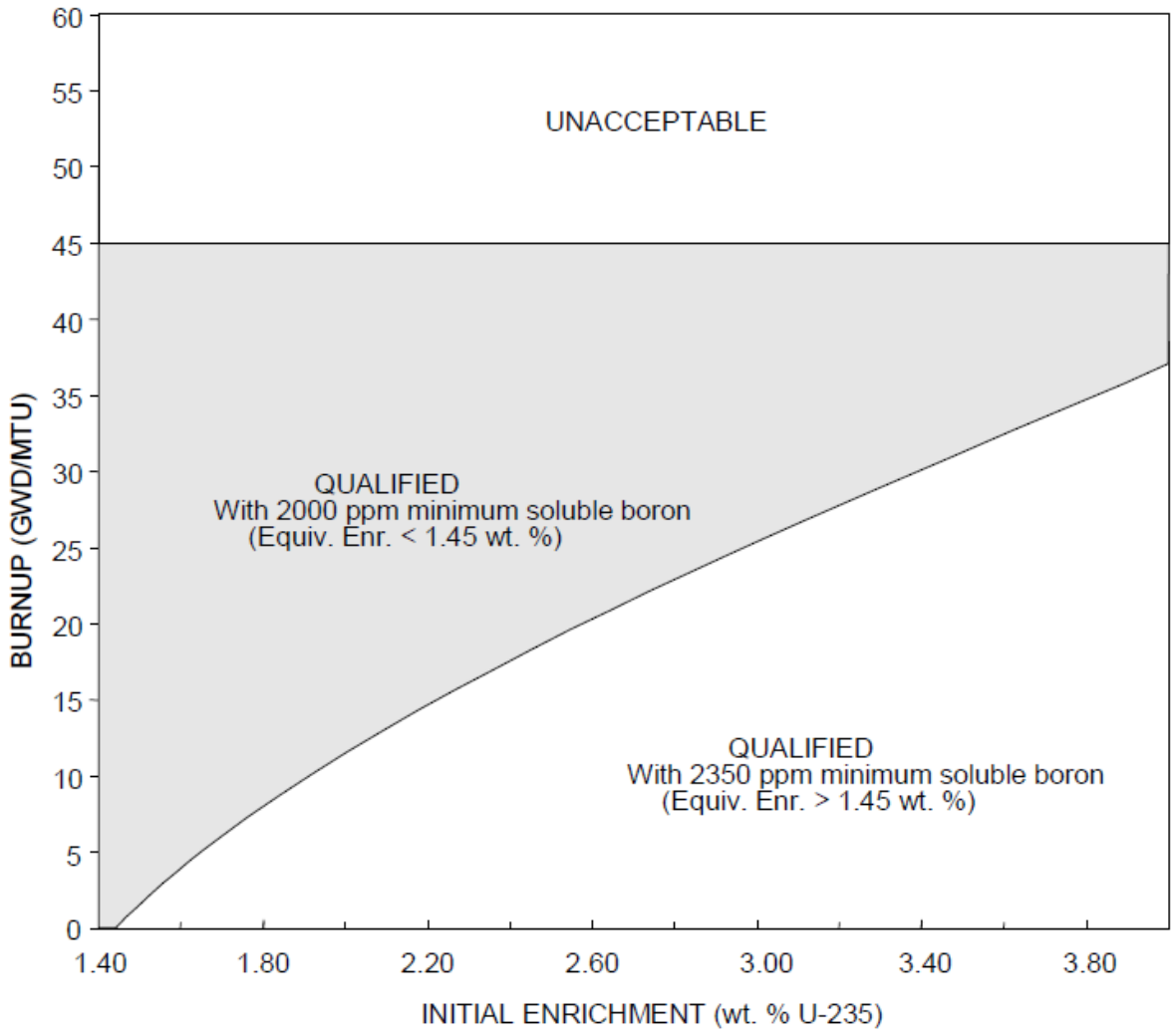
| BU GWd/ MTU | Assembly Average Initial Enrichment (wt. % U-235) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1.1 | 1.2 | 1.3 | 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 | 4.5 | 4.6 | 4.7 | 4.8 | 4.9 | 5.0 |
| 10 | 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 | 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 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 |
| 11 | 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 | 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 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 |
| 12 | 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 | 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 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 |
| 13 | 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 | 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 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 |
| 14 | 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 | 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 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 |
| 15 | 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 | 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 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 |
| 16 | 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 | 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 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 |
| 17 | 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 | 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 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 |
| 18 | 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 | 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 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 |
| 19 | 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 | 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 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 |
| 20 | 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 | 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 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 |
| 21 | 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 | 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 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 |
| 22 | 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 | 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 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 |
| 23 | 18.0 | 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 | 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 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 |
| 24 | 18.0 | 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 | 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 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 |
| 25 | 18.5 | 18.0 | 18.0 | 18.0 | 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 | 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 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 | 17.5 |
| 26 | 19.0 | 18.5 | 18.5 | 18.0 | 18.0 | 18.0 | 18.0 | 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 | 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 | 17.5 | 17.5 | 17.5 |
| 27 | 19.5 | 19.0 | 19.0 | 19.0 | 18.5 | 18.5 | 18.5 | 18.0 | 18.0 | 18.0 | 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 | 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 |
| 28 | 19.0 | 19.0 | 19.0 | 18.5 | 18.5 | 18.5 | 18.5 | 18.0 | 18.0 | 18.0 | 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 | 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 |
| 29 | 19.5 | 19.5 | 19.5 | 19.5 | 19.5 | 19.5 | 19.0 | 19.0 | 19.0 | 19.0 | 19.0 | 19.0 | 19.0 | 19.0 | 19.0 | 18.5 | 18.5 | 18.5 | 18.5 | 18.5 | 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 |
| 30 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 20.5 | 20.5 | 20.5 | 20.5 | 20.5 | 20.5 | 20.5 | 20.5 | 20.5 | 20.0 | 20.0 | 19.5 | 19.5 | 19.5 | 19.5 | 19.5 | 19.5 | 19.5 | 19.5 | 19.5 | 19.5 | 19.5 | 19.5 | 19.5 | 19.5 | 19.5 | 19.5 | 19.5 | 19.5 | 19.5 |
| 31 | 23.5 | 23.0 | 23.0 | 23.0 | 23.0 | 23.0 | 23.0 | 23.0 | 23.0 | 23.0 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 | 21.5 | 21.5 | 21.5 | 21.5 | 21.5 | 21.5 | 21.5 | 21.5 | 21.5 |
| 32 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 24.5 | 24.5 | 24.5 | 24.5 | 24.5 | 24.5 | 24.5 | 24.5 | 24.0 | 24.0 | 24.0 | 24.0 | 24.0 | 24.0 | 24.0 | 24.0 | 24.0 | 24.0 | 23.5 | 23.5 | 23.5 | 23.5 | 23.5 | 23.5 | 23.5 | 23.5 | 23.5 | 23.5 | 23.5 | 23.5 | 23.0 |
| 33 | 28.0 | 28.0 | 27.5 | 27.5 | 27.5 | 27.5 | 27.5 | 27.0 | 27.0 | 27.0 | 27.0 | 27.0 | 27.0 | 26.5 | 26.5 | 26.5 | 26.5 | 26.5 | 26.5 | 26.5 | 26.5 | 26.5 | 26.5 | 25.5 | 25.5 | 25.5 | 25.5 | 25.5 | 25.5 | 25.5 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 |
| 34 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 28.5 | 28.5 | 28.5 | 28.5 | 28.5 | 28.5 | 28.5 | 28.5 | 28.5 | 27.5 | 27.5 | 27.5 | 27.5 | 27.5 | 27.5 | 27.5 | 27.5 | 27.5 | 27.5 | 27.0 | 27.0 | 27.0 | 27.0 | 27.0 | 27.0 | 27.0 | 27.0 | 27.0 | 27.0 |
| 35 | 31.0 | 31.0 | 31.0 | 31.0 | 31.0 | 31.0 | 31.0 | 31.0 | 31.0 | 31.0 | 31.0 | 31.0 | 30.0 | 30.0 | 30.0 | 30.0 | 30.0 | 30.0 | 30.0 | 30.0 | 30.0 | 29.5 | 29.5 | 29.5 | 29.5 | 29.5 | 29.5 | 29.5 | 29.5 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 |
| 36 | 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 | 32.0 | 32.0 | 32.0 | 32.0 | 32.0 | 32.0 | 32.0 | 32.0 | 32.0 | 31.5 | 31.5 | 31.5 | 31.5 | 31.5 | 31.5 | 31.5 | 31.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.0 |
| 37 | 34.5 | 34.5 | 34.5 | 34.5 | 34.5 | 34.5 | 33.5 | 33.5 | 33.5 | 33.5 | 33.5 | 33.5 | 33.5 | 33.5 | 33.5 | 33.5 | 33.5 | 33.5 | 33.0 | 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 | 31.5 | 31.5 | 31.5 | 31.5 | 31.5 | 31.5 |
| 38 | 36.0 | 36.0 | 36.0 | 35.5 | 35.5 | 35.5 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 34.5 | 34.0 | 34.0 | 34.0 | 34.0 | 34.0 | 34.0 | 34.0 | 34.0 | 34.0 | 34.0 | 34.0 | 34.0 | 34.0 | 34.0 | 34.0 | 34.0 | 33.0 | 33.0 | 33.0 |
| 39 | 37.5 | 37.5 | 37.5 | 37.5 | 37.0 | 37.0 | 37.0 | 37.0 | 37.0 | 37.0 | 37.0 | 37.0 | 37.0 | 37.0 | 37.0 | 37.0 | 37.0 | 37.0 | 37.0 | 37.0 | 37.0 | 37.0 | 36.0 | 36.0 | 36.0 | 36.0 | 36.0 | 36.0 | 36.0 | 36.0 | 36.0 | 36.0 | 36.0 | 36.0 | 36.0 | 36.0 | 36.0 | 36.0 | 36.0 | 35.0 |
| 40 | 39.5 | 39.0 | 39.0 | 39.0 | 39.0 | 38.5 | 38.5 | 38.5 | 38.5 | 38.5 | 38.5 | 38.5 | 38.5 | 38.5 | 38.5 | 38.5 | 38.5 | 38.5 | 38.5 | 38.5 | 38.5 | 38.5 | 38.5 | 38.5 | 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 |
| 41 | 41.0 | 41.0 | 40.5 | 40.5 | 40.5 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 |
| 42 | 42.5 | 42.5 | 42.5 | 42.5 | 42.5 | 42.5 | 42.5 | 42.5 | 42.5 | 41.5 | 41.5 | 41.5 | 41.5 | 41.5 | 41.5 | 41.5 | 41.5 | 41.5 | 41.5 | 41.5 | 41.5 | 41.5 | 41.5 | 41.5 | 41.5 | 41.5 | 41.5 | 41.5 | 41.5 | 41.5 | 41.5 | 41.5 | 40.5 | 40.5 | 40.5 | 40.5 | 40.5 | 40.5 | 40.5 | 40.5 |
| 43 | 44.0 | 44.0 | 43.5 | 43.5 | 43.5 | 43.5 | 43.5 | 43.0 | 43.0 | 43.0 | 43.0 | 43.0 | 43.0 | 43.0 | 43.0 | 43.0 | 43.0 | 43.0 | 43.0 | 43.0 | 43.0 | 43.0 | 43.0 | 43.0 | 43.0 | 43.0 | 43.0 | 43.0 | 43.0 | 43.0 | 43.0 | 43.0 | 42.0 | 42.0 | 42.0 | 42.0 | 42.0 | 42.0 | 42.0 | 42.0 |
| 44 | 45.5 | 45.5 | 45.5 | 45.5 | 45.5 | 45.5 | 45.5 | 45.5 | 45.5 | 45.5 | 45.5 | 45.5 | 45.5 | 45.5 | 45.5 | 45.5 | 45.5 | 45.5 | 45.5 | 45.5 | 45.5 | 44.0 | 44.0 | 44.0 | 44.0 | 44.0 | 44.0 | 44.0 | 44.0 | 44.0 | 44.0 | 44.0 | 44.0 | 44.0 | 44.0 | 44.0 | 44.0 | 44.0 | 44.0 | 44.0 |
| 45 | 47.5 | 46.5 | 46.5 | 46.5 | 46.5 | 46.5 | 46.5 | 46.5 | 46.5 | 46.5 | 46.5 | 46.5 | 46.5 | 46.5 | 46.5 | 46.5 | 46.5 | 46.5 | 46.5 | 46.5 | 46.5 | 46.5 | 46.5 | 46.5 | 46.5 | 46.5 | 46.5 | 46.5 | 46.5 | 46.5 | 46.5 | 46.5 | 46.5 | 45.5 | 45.5 | 45.5 | 45.5 | 45.5 | 45.5 | 45.5 |

Explanatory notes and limitations regarding the use of this table follow.

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

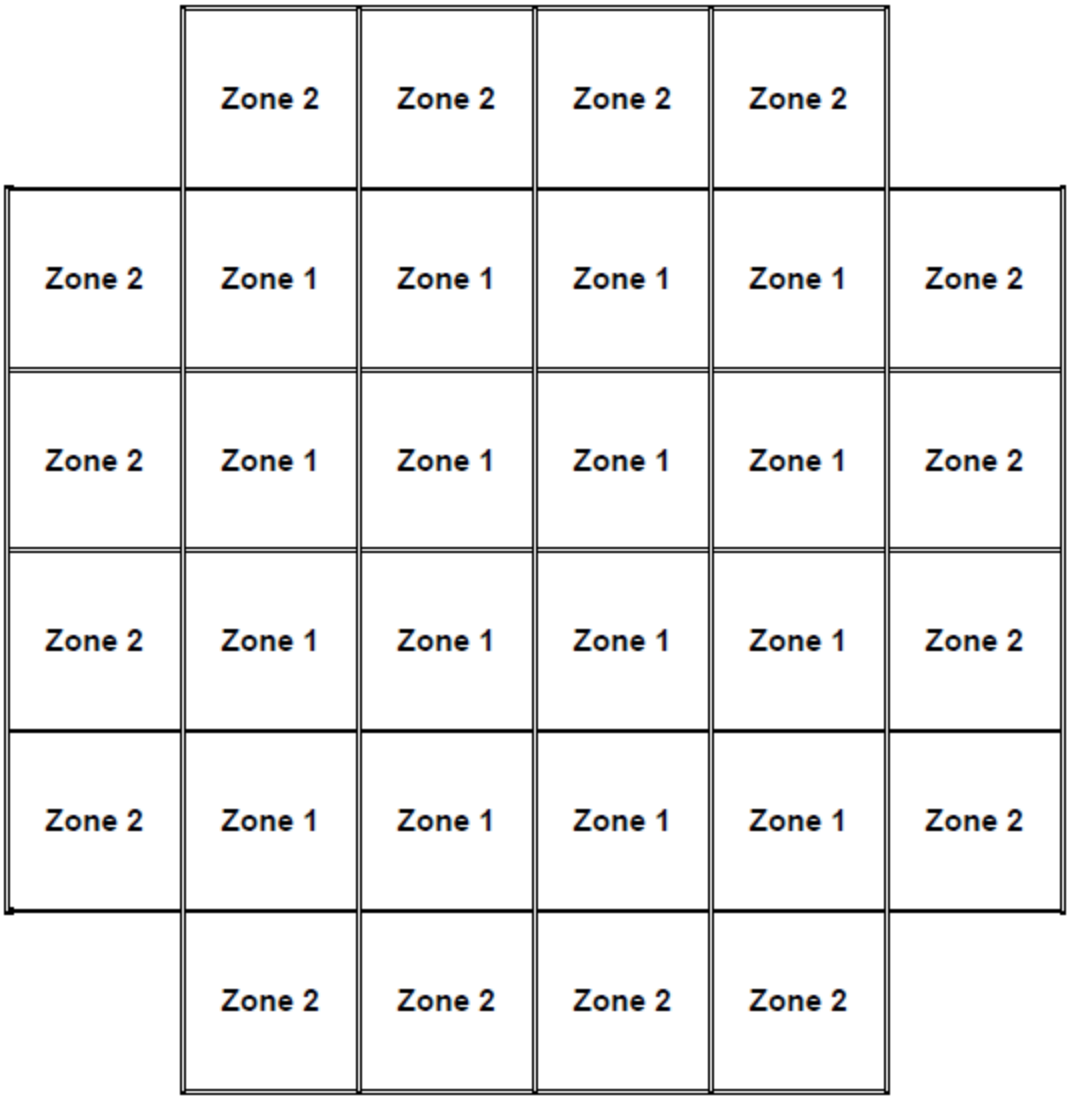
- BU = Assembly Average burnup.
- Use burnup and enrichment to look up minimum cooling time in years. Licensee is responsible for ensuring that uncertainties in fuel enrichment and burnup are correctly accounted for during fuel qualification.
- For fuel assemblies with CCs, increase the indicated cooling 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.

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 after a nineteen-year cooling time as defined by 3.7 wt. % U-235 (rounding down) and 42 GWd/MTU (rounding up) on the qualification table.



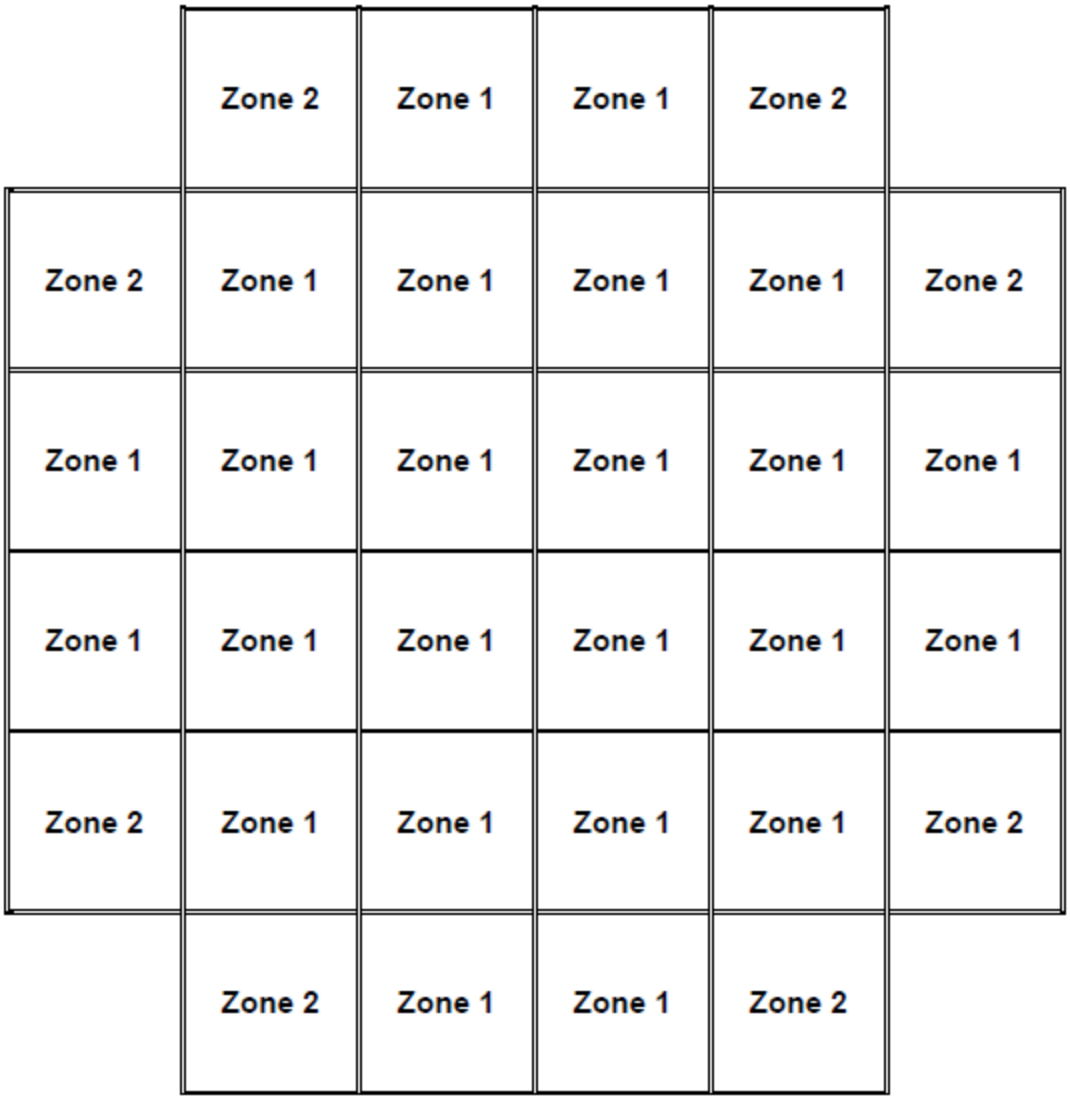

Note: The maximum planar average initial enrichment is specified as "initial enrichment."

**Figure 1-1**
**PWR Fuel Criticality Acceptance Curve for the 24P DSC**



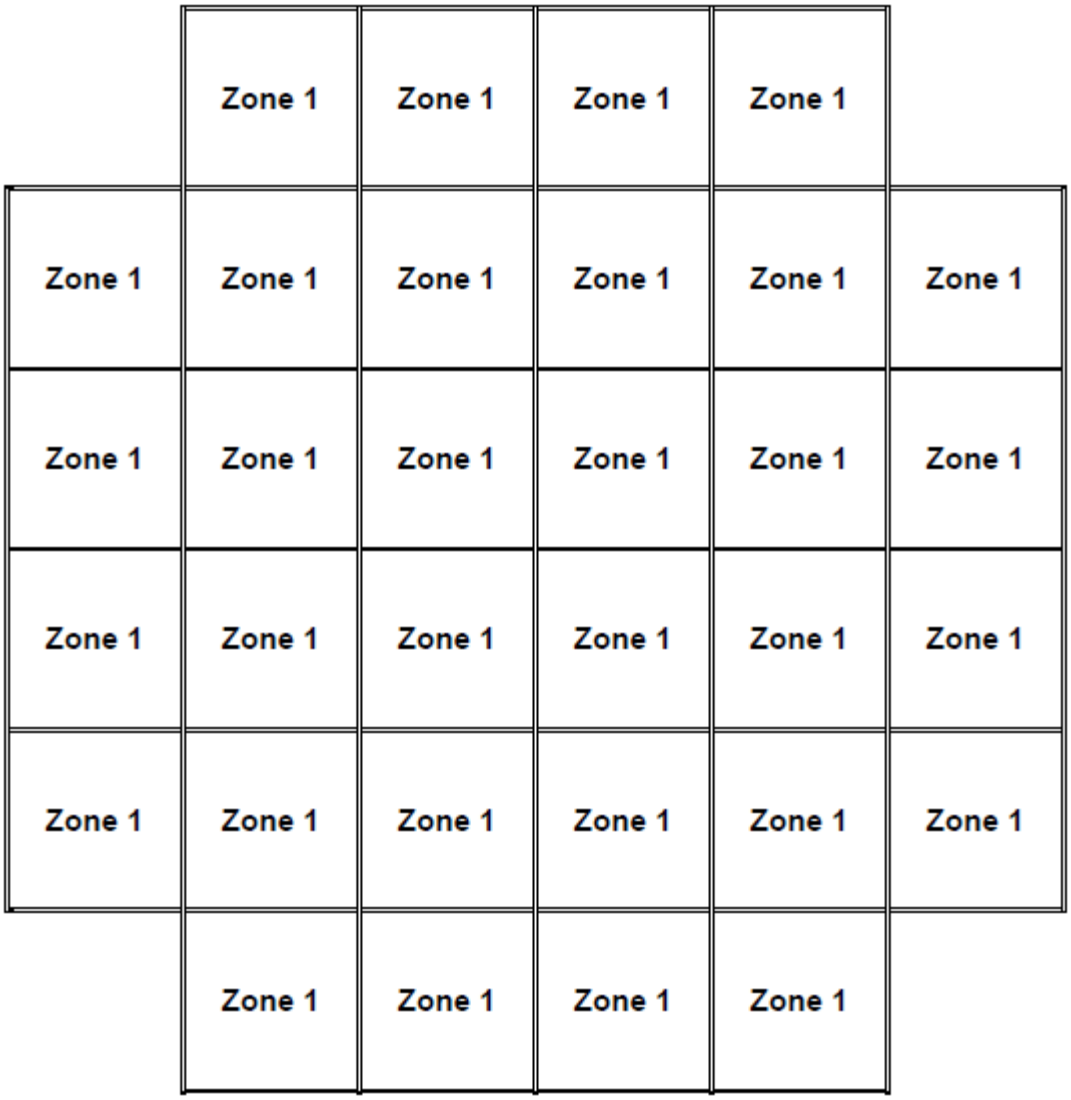

| | Zone 1 | Zone 2 |
|---|---|---|
| **Max. Decay Heat / FA (kW)** | 0.63 | 0.87 |
| **Max. Decay Heat / Zone (kW)** | 10.08 | 13.92 |
| **Max. Decay Heat / DSC (kW)** | 24.0 | |

**Figure 1-2**
**Heat Load Zoning Configuration 1 for the NUHOMS®-32PT DSC**




| | Zone 1 | Zone 2 |
|---|---|---|
| **Max. Decay Heat / FA (kW)** | 0.6 | 1.2 |
| **Max. Decay Heat / Zone (kW)** | 14.4 | 9.6 |
| **Max. Decay Heat / DSC (kW)** | 24.0 | |

**Figure 1-3**
**Heat Load Zoning Configuration 2 for the NUHOMS®-32PT DSC**




| | Zone 1 |
|---|---|
| **Max. Decay Heat/ FA (kW)** | **0.7** |
| **Max. Decay Heat/ Zone (kW)** | **22.4** |
| **Max. Decay Heat/ DSC (kW)** | **22.4** |

**Figure 1-4**
**Heat Load Zoning Configuration 3 for the NUHOMS®-32PT DSC**

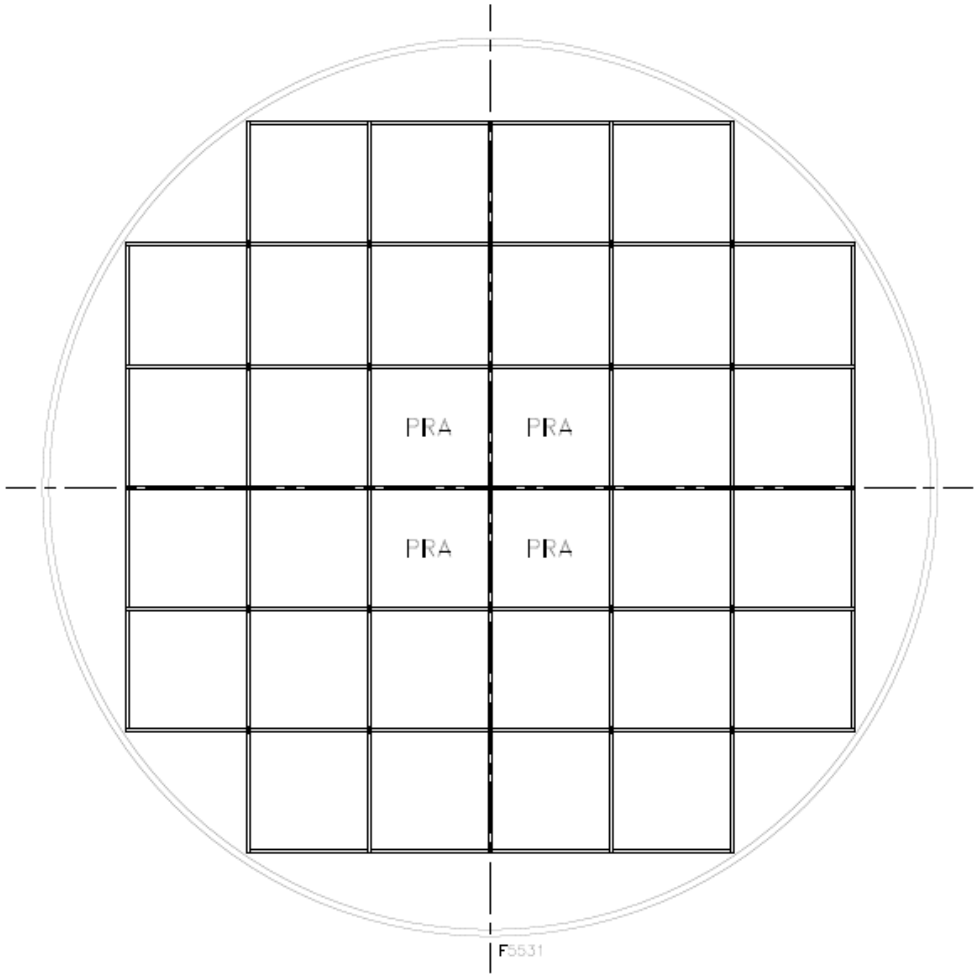
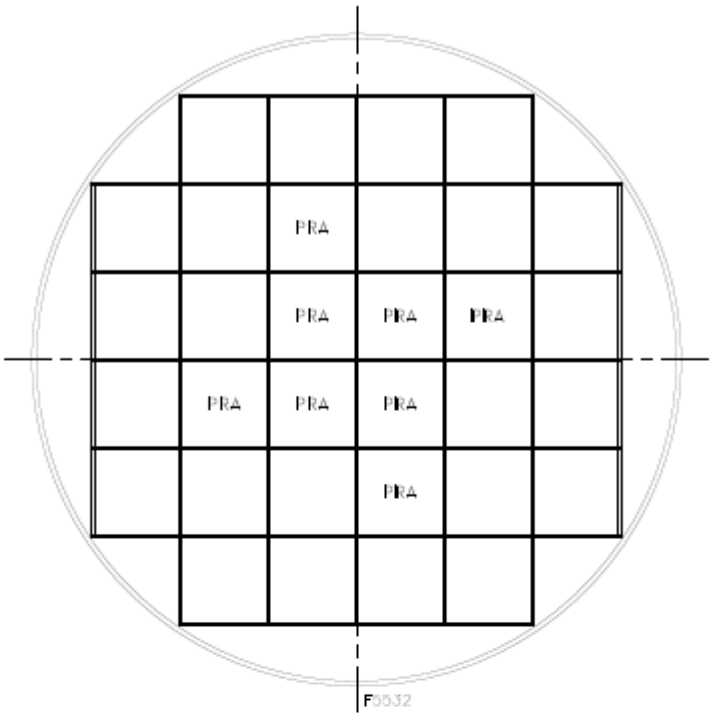



**Figure 1-5**
**Required PRA Locations for the NUHOMS®-32PT DSC Configuration with Four PRAs**




**Or**

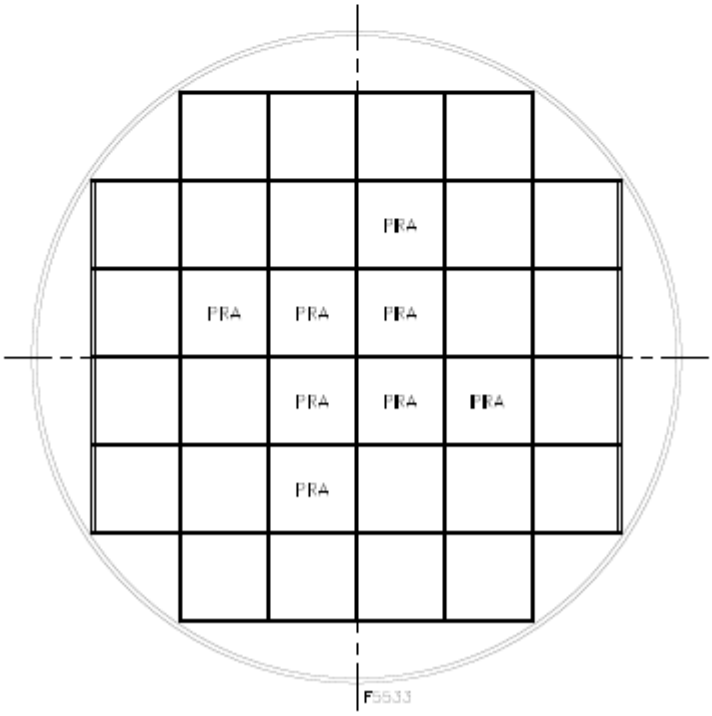



**Figure 1-6**
**Required PRA Locations for the NUHOMS®-32PT DSC Configuration with Eight PRAs**

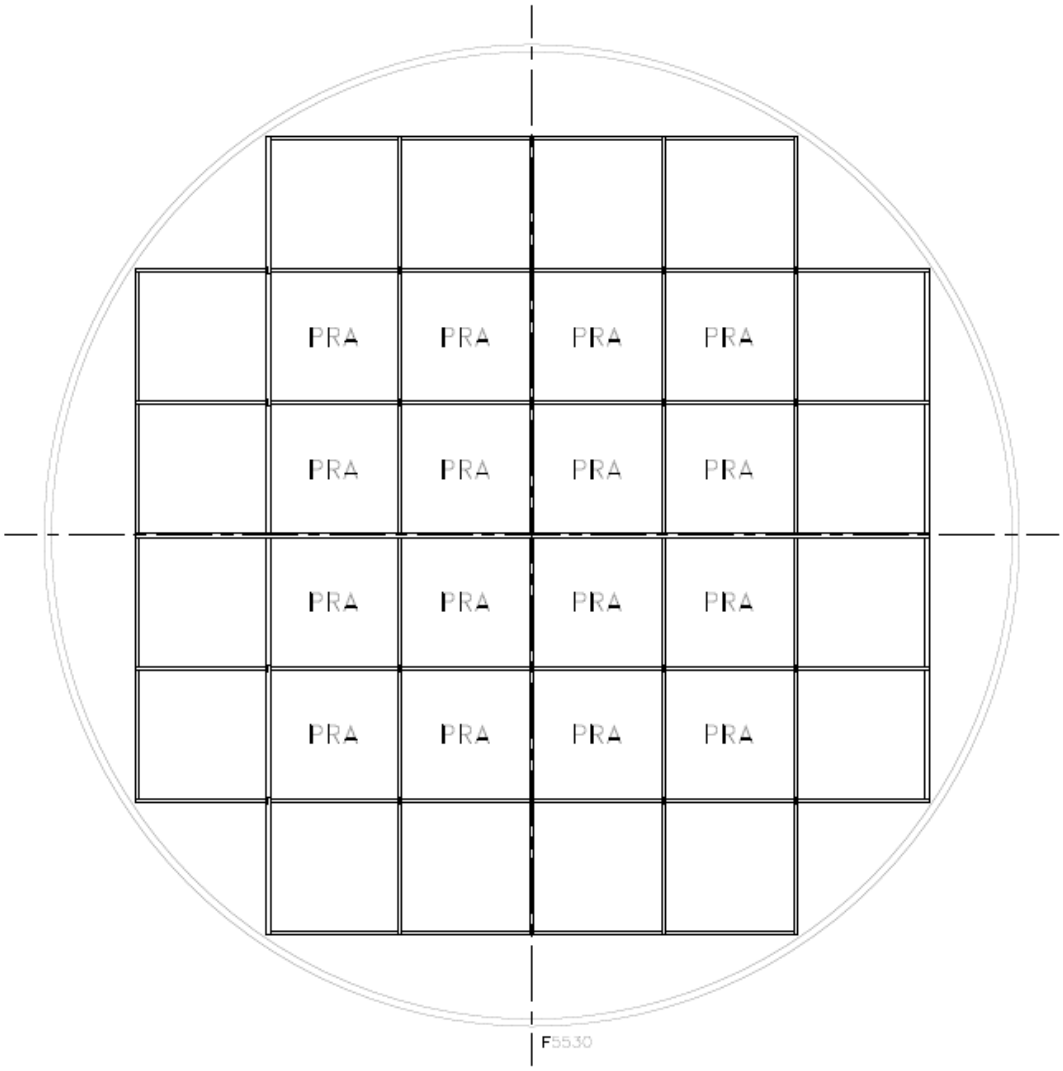
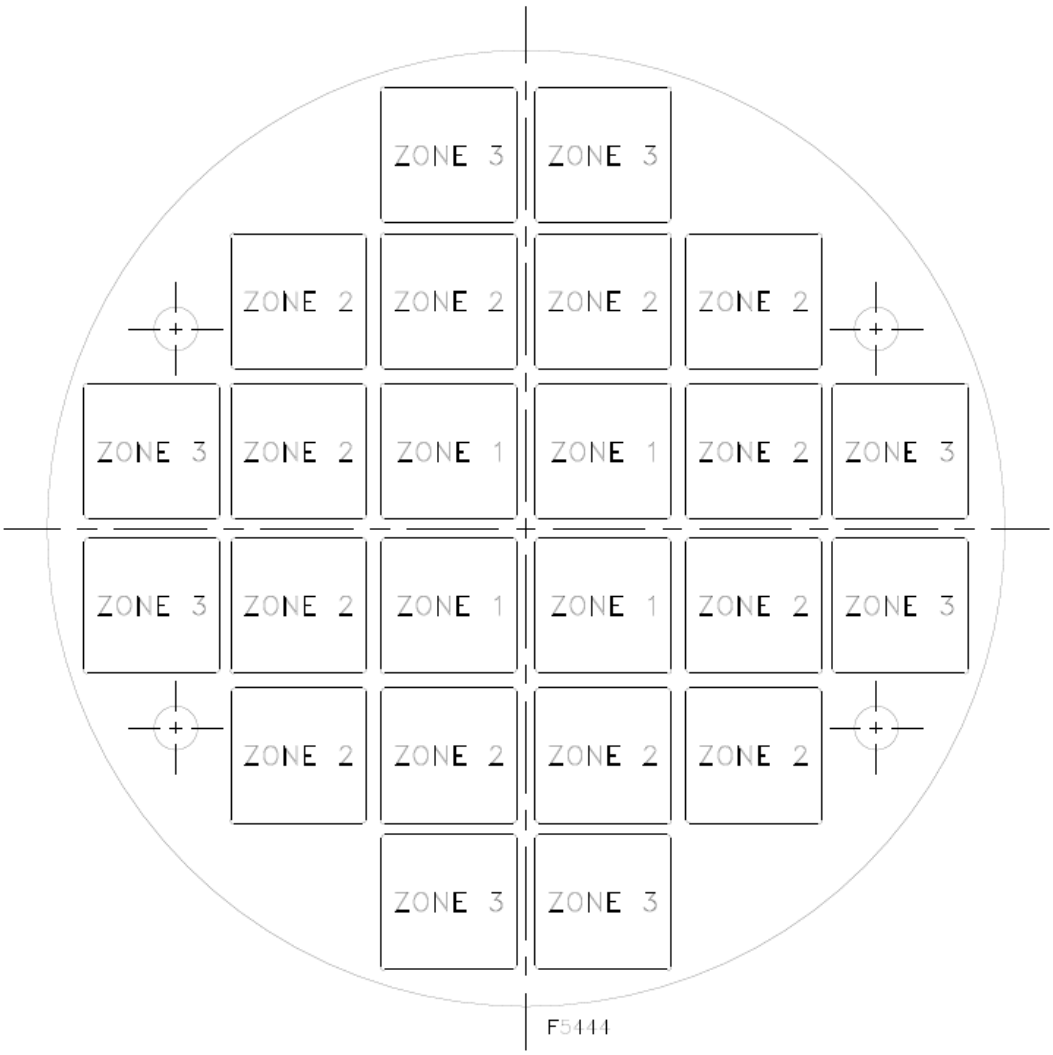
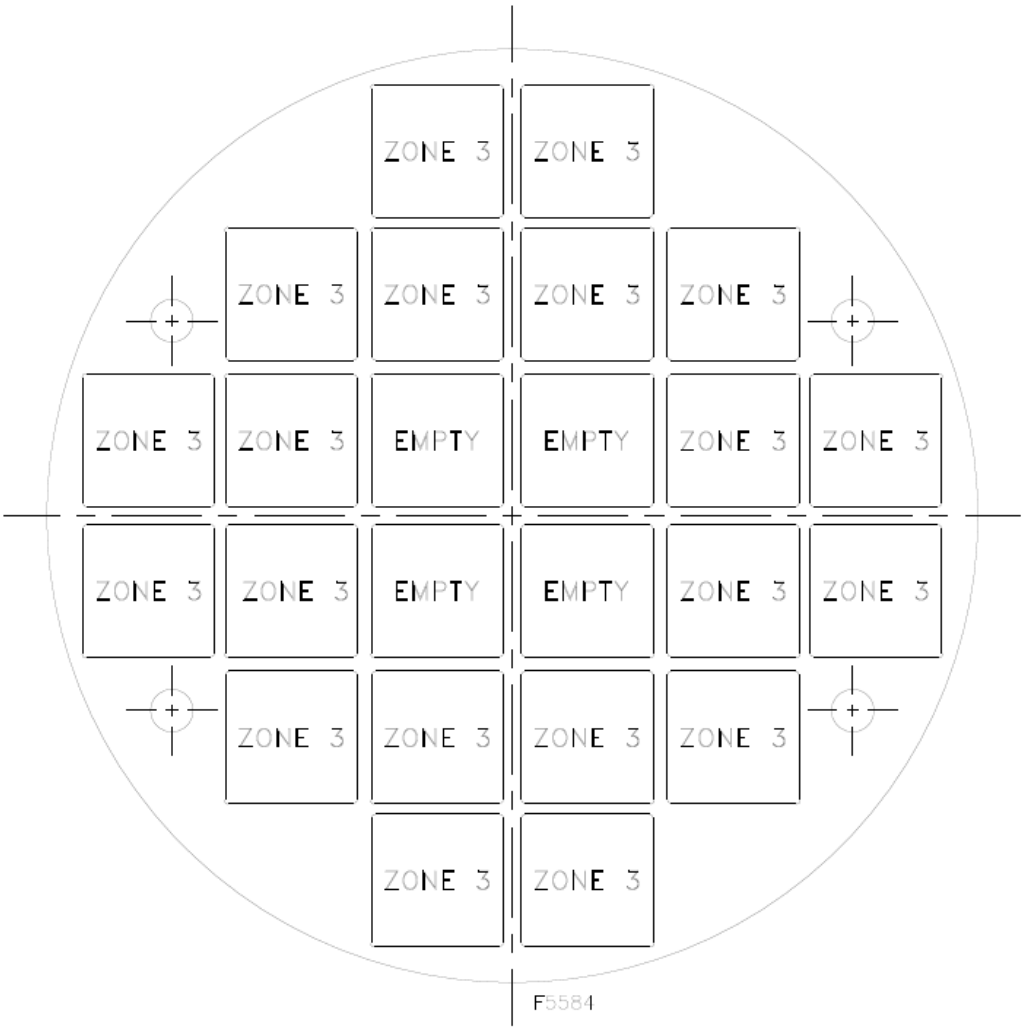



**Figure 1-7**
**Required PRA Locations for the NUHOMS®-32PT DSC Configuration with Sixteen PRAs**



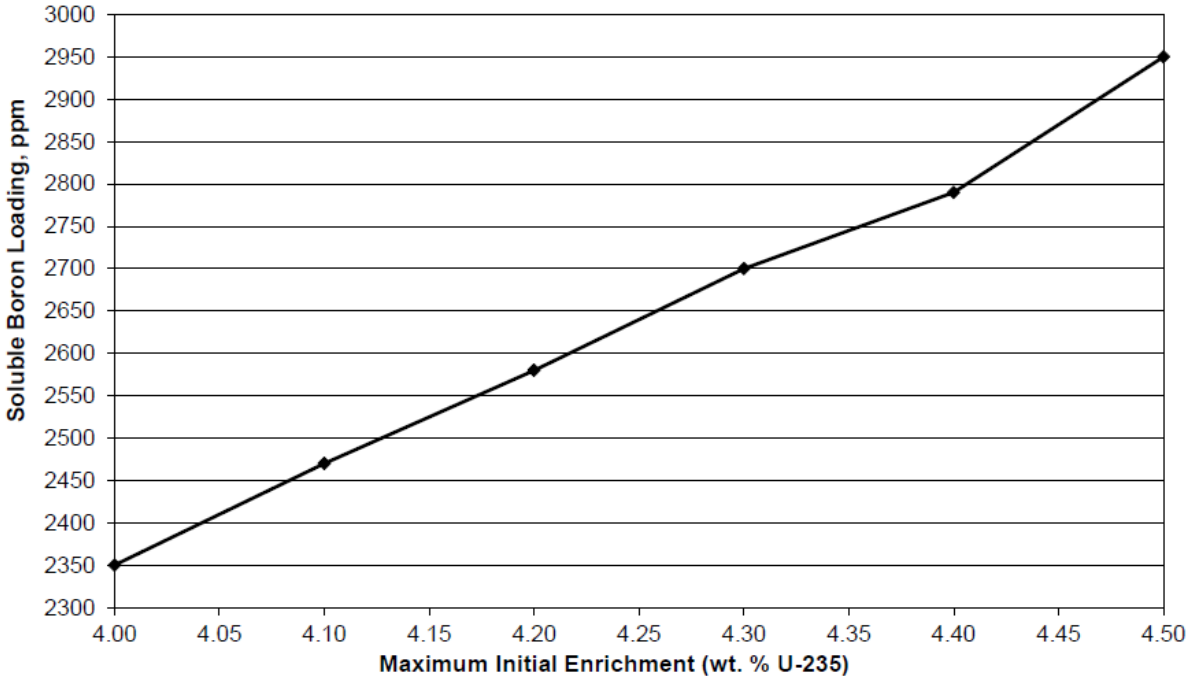

| | Zone 1 | Zone 2 | Zone 3 |
|---|---|---|---|
| Maximum Decay Heat (kW/FA) | 0.7 | 1 | 1.3 |
| Maximum Decay Heat per Zone (kW) | 2.8 | 10.8 | 10.4 |

**Figure 1-8**
**Heat Load Zoning Configurations for Fuel Assemblies (with or without BPRAs) Stored in NUHOMS®-24PHB DSC – Configuration 1**




| | Zone 1 | Zone 2 | Zone 3 |
|---|---|---|---|
| Maximum Decay Heat (kW/FA) | N/A | N/A | 1.3 |
| Maximum Decay Heat per Zone (kW) | N/A | N/A | 24.0 |

**Figure 1-9**
**Heat Load Zoning Configurations for Fuel Assemblies (with or without BPRAs) Stored in NUHOMS®-24PHB DSC – Configuration 2**

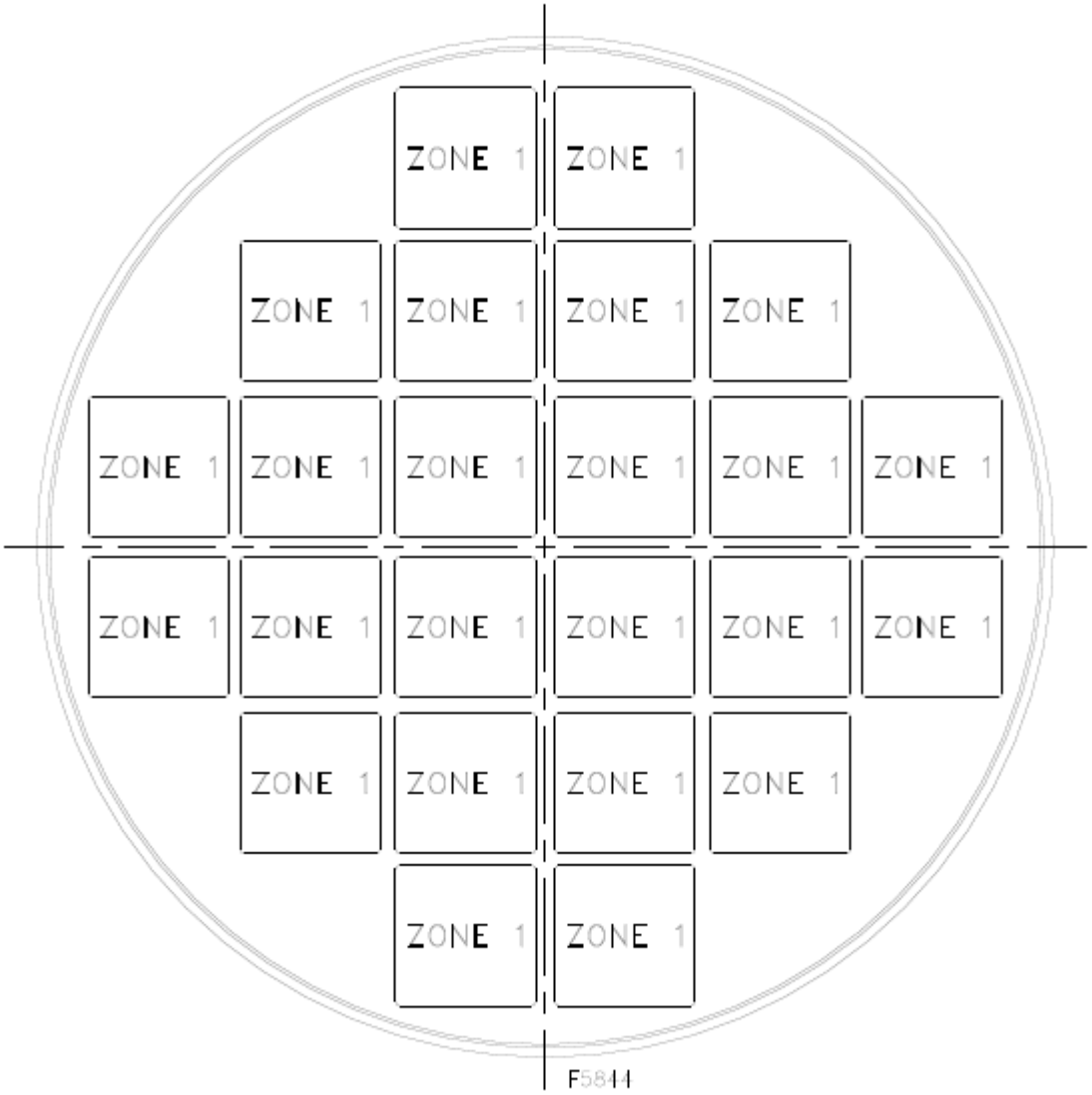



Linear Interpolation allowed between points.

| Initial Enrichment | Boron Loading, ppm |
|---|---|
| ≤4.0 | 2350 |
| 4.1 | 2470 |
| 4.2 | 2580 |
| 4.3 | 2700 |
| 4.4 | 2790 |
| 4.5 | 2950 |

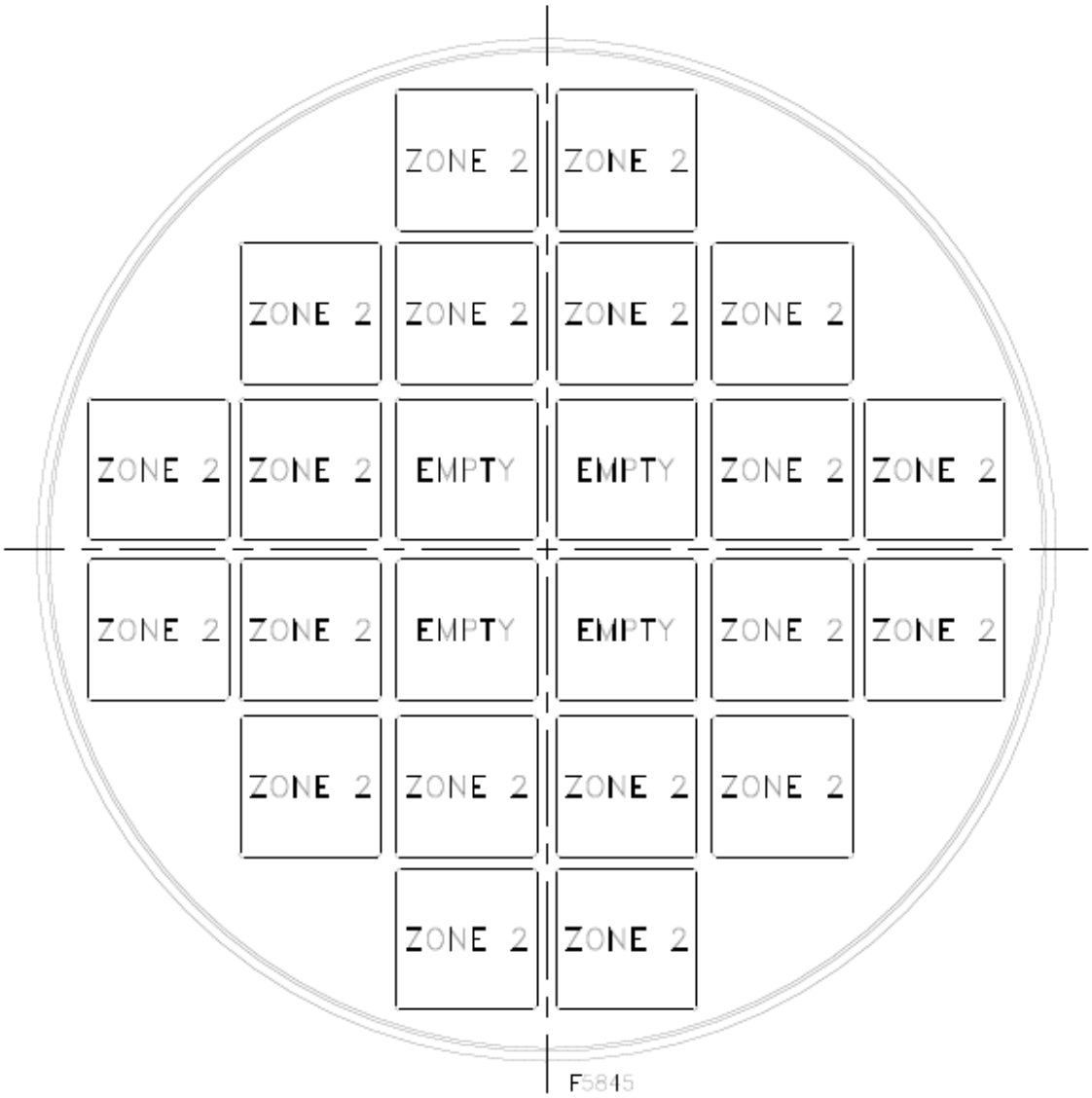
Note: The maximum planar average initial enrichment is specified as “initial enrichment.”

**Figure 1-10**
**Soluble Boron Concentration vs. Fuel Initial U-235 Enrichment for the 24PHB System**



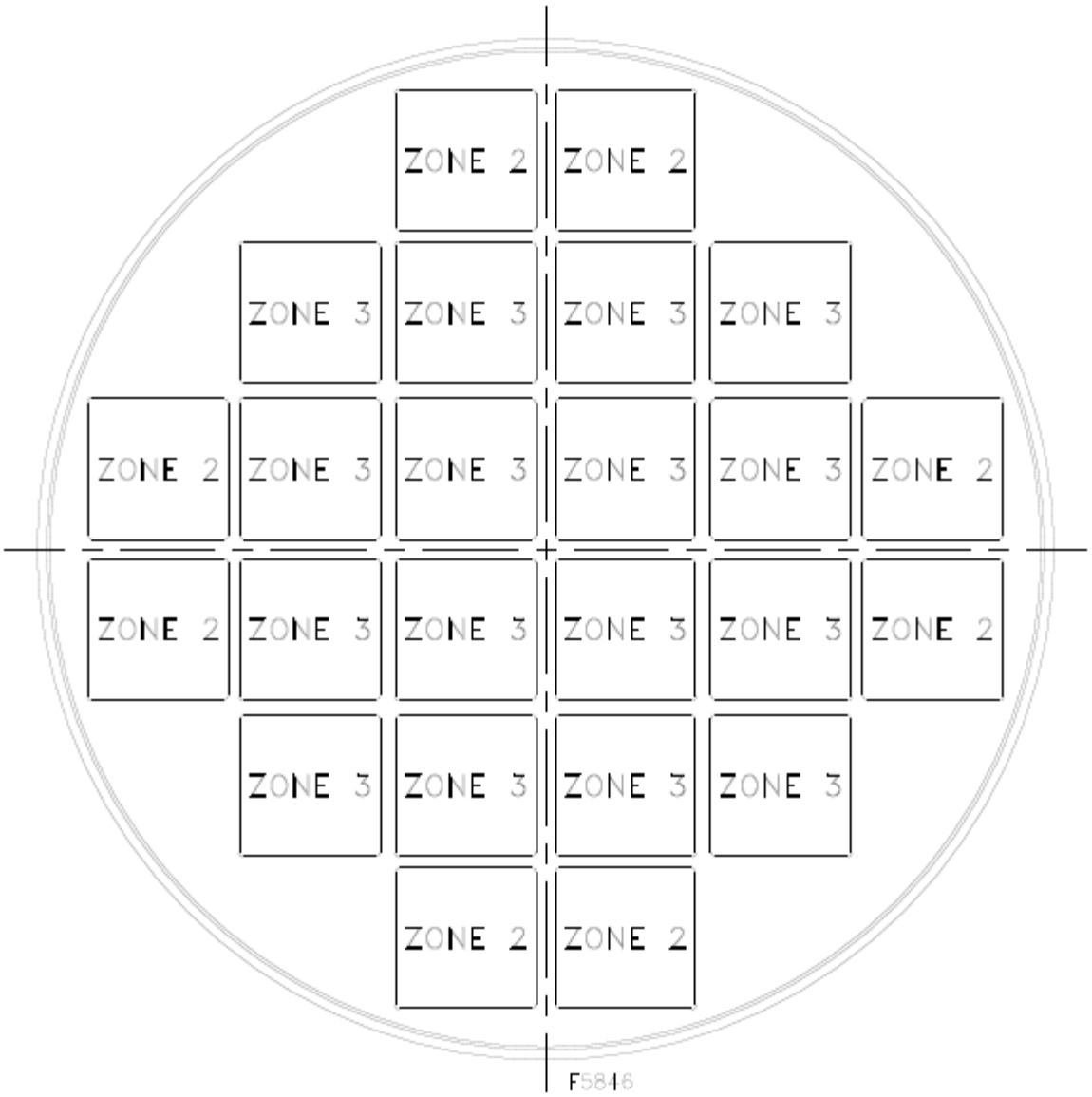

| | Zone 1 | Zone 2 | Zone 3 | Zone 4 |
|---|---|---|---|---|
| Maximum Decay Heat (kW/FA) | 1.7 | N/A | N/A | N/A |
| Maximum Decay Heat per Zone (kW) | 40.8 | N/A | N/A | N/A |

**Figure 1-11**
**Heat Load Zoning Configuration Number 1 for 24PTH-S and 24PTH-L DSCs (with or without Control Components)**



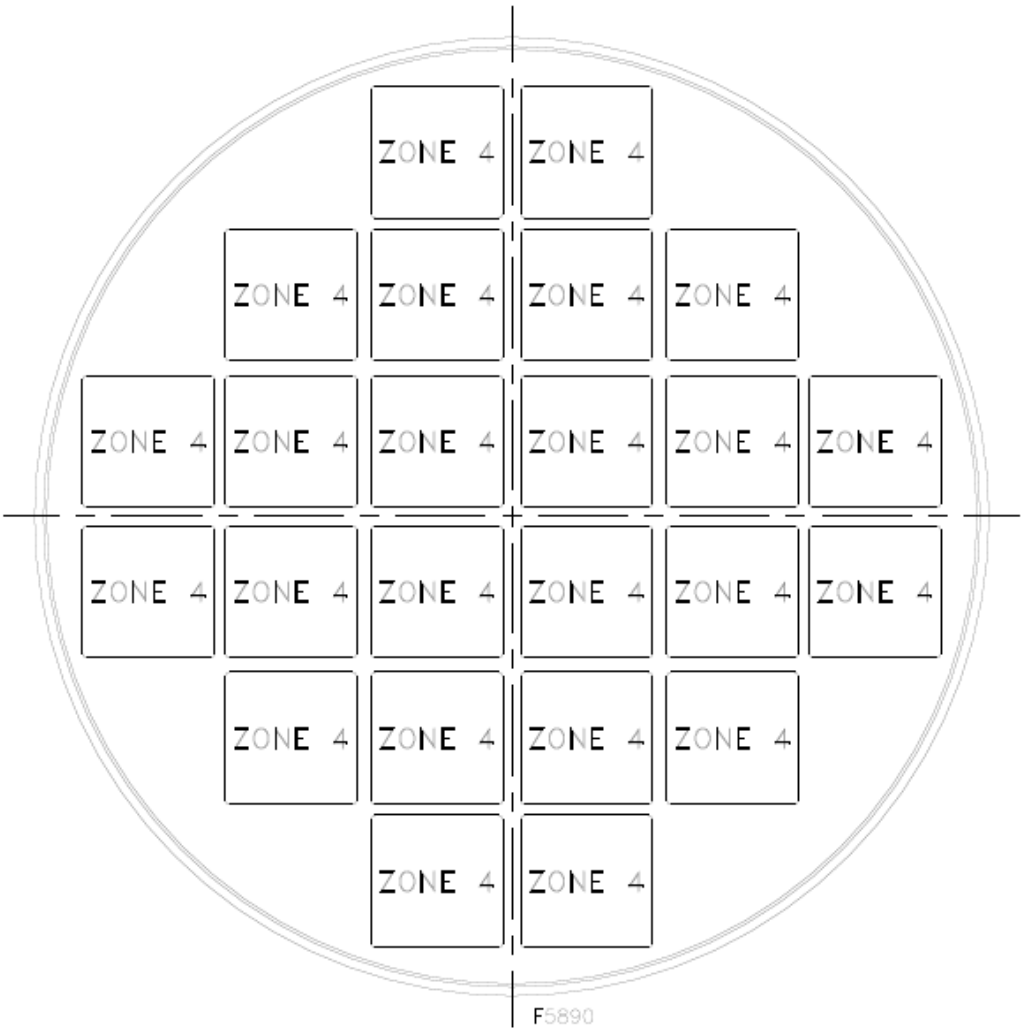

| | Zone 1 | Zone 2 | Zone 3 | Zone 4 |
|---|---|---|---|---|
| Maximum Decay Heat (kW/FA) | N/A | 2 | N/A | N/A |
| Maximum Decay Heat per Zone (kW) | N/A | 40 | N/A | N/A |

**Figure 1-12**
**Heat Load Zoning Configuration Number 2 for 24PTH-S and 24PTH-L DSCs**
**(with or without Control Components)**



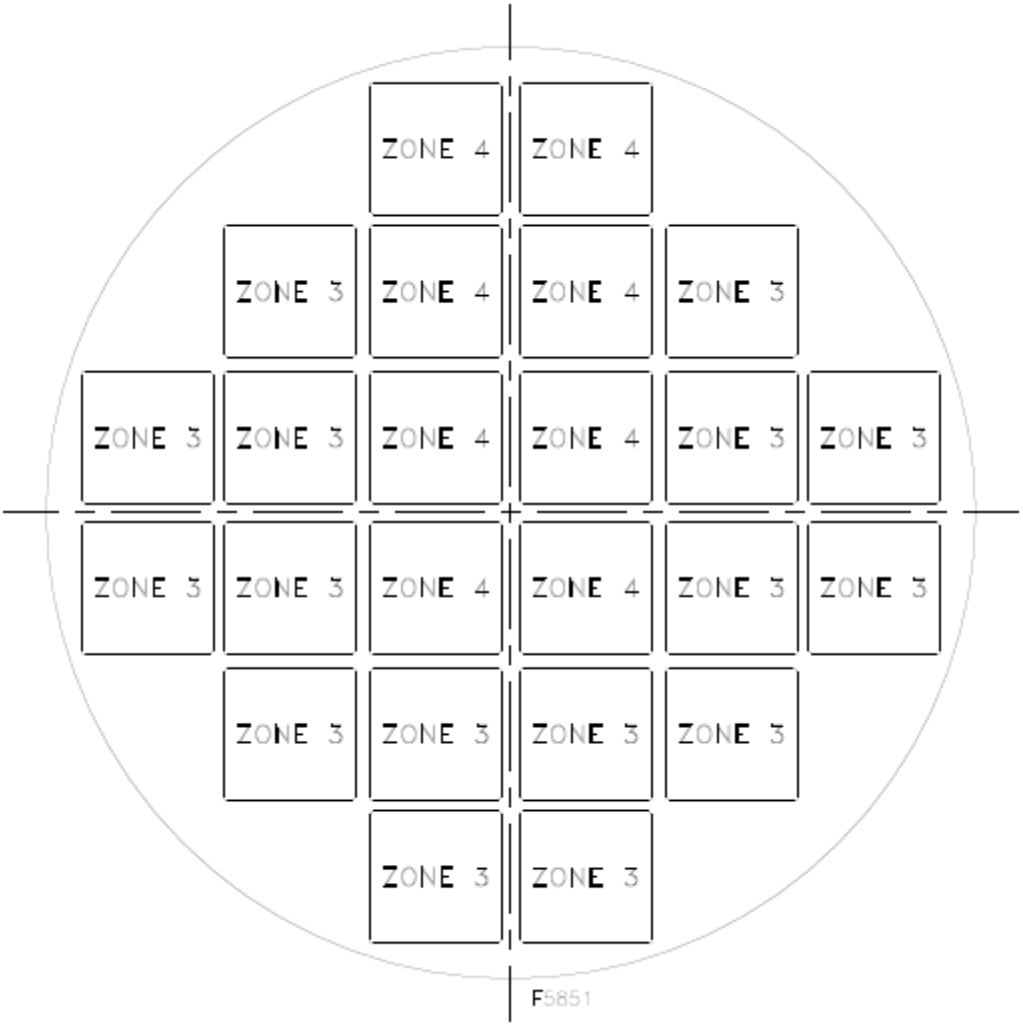

| | Zone 1 | Zone 2 | Zone 3 | Zone 4 |
|---|---|---|---|---|
| Maximum Decay Heat (kW/FA) | N/A | 2 | 1.5 | N/A |
| Maximum Decay Heat per Zone (kW) | N/A | 16 | 24 | N/A |

**Figure 1-13**
**Heat Load Zoning Configuration Number 3 for 24PTH-S and 24PTH-L DSCs**
**(with or without Control Components)**




| | Zone 1 | Zone 2 | Zone 3 | Zone 4 |
|---|---|---|---|---|
| Maximum Decay Heat (kW/FA) | N/A | N/A | N/A | 1.3 |
| Maximum Decay Heat per Zone (kW) | N/A | N/A | N/A | 31.2 |

**Figure 1-14**
**Heat Load Zoning Configuration Number 4 for 24PTH-S and 24PTH-L DSCs**
**(with or without Control Components)**

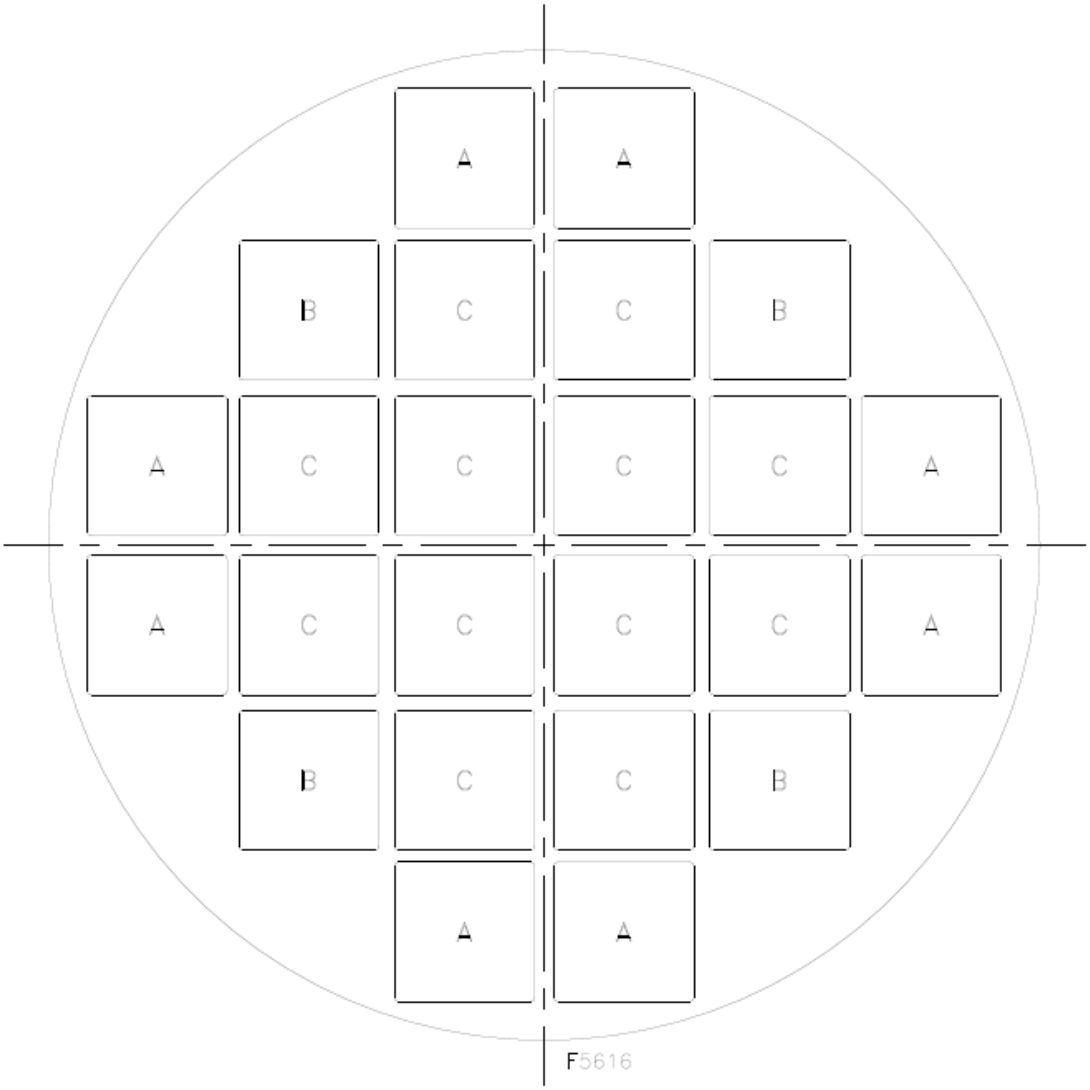



| | Zone 1 | Zone 2 | Zone 3 | Zone 4 |
|---|---|---|---|---|
| Maximum Decay Heat (kW/FA) | N/A | N/A | 1.5 | 1.3 |
| Maximum Decay Heat per Zone (kW) | N/A | N/A | Note 1 | 10.4 |

Notes:

1. Fuel assemblies with a maximum heat load of 1.5 kW are permitted in Zone 3 as long as the total of 24 kW/canister maximum heat load is maintained.
2. This configuration is applicable to Basket Types 2A, 2B, or 2C only (without aluminum inserts)

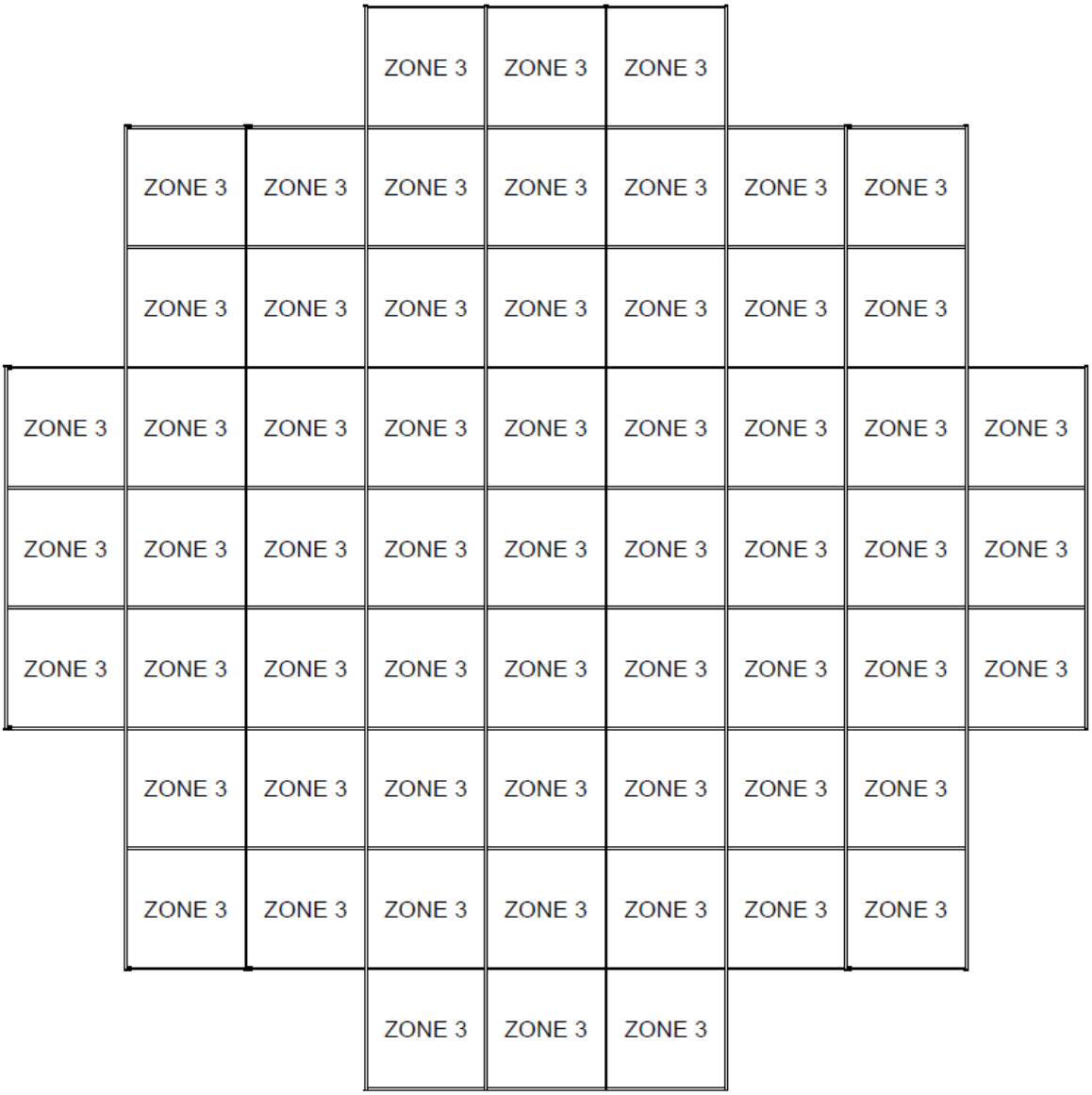
**Figure 1-15**
**Heat Load Zoning Configuration Number 5 for 24PTH-S and 24PTH-L DSCs (with or without Control Components)(2)**




Notes:

1. Locations identified as “A” are for placement of up to 8 damaged or intact fuel assemblies.
2. Locations identified as ”B“ are for placement of up to 4 additional damaged or intact fuel assemblies (Maximum of 12 damaged fuel assemblies allowed, Locations “A” and “B” combined).
3. Locations identified as “C” are for placement of up to 12 intact fuel assemblies, including 4 empty slots in the center as shown in Figure 1-12.

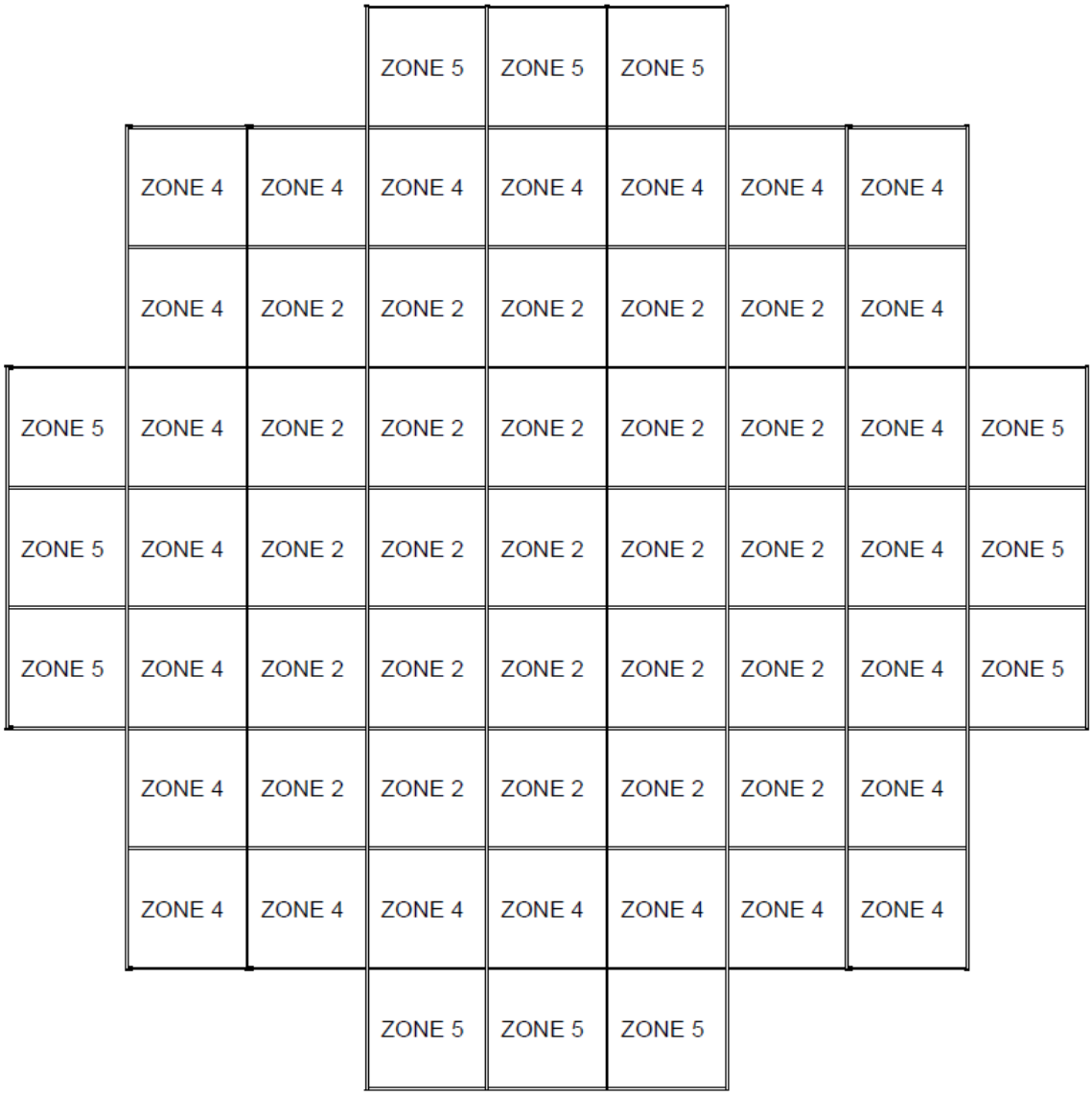
**Figure 1-16 Location of Damaged Fuel Inside 24PTH DSC[(1)(2)(3)]**




| | Zone 1 | Zone 2 | Zone 3 | Zone 4 | Zone 5 | Zone 6 |
|---|---|---|---|---|---|---|
| **Maximum Decay Heat (kW/FA)** | NA | NA | 0.393 | NA | NA | NA |
| **Maximum Decay Heat per Zone (kW)** | NA | NA | 22.0 | NA | NA | NA |
| **Maximum Decay Heat per DSC (kW)** | 22.0 | | | | | |

Note: This configuration is not allowed for a Type 1 61BTH DSC with MMC or Boral® Poison Plates.

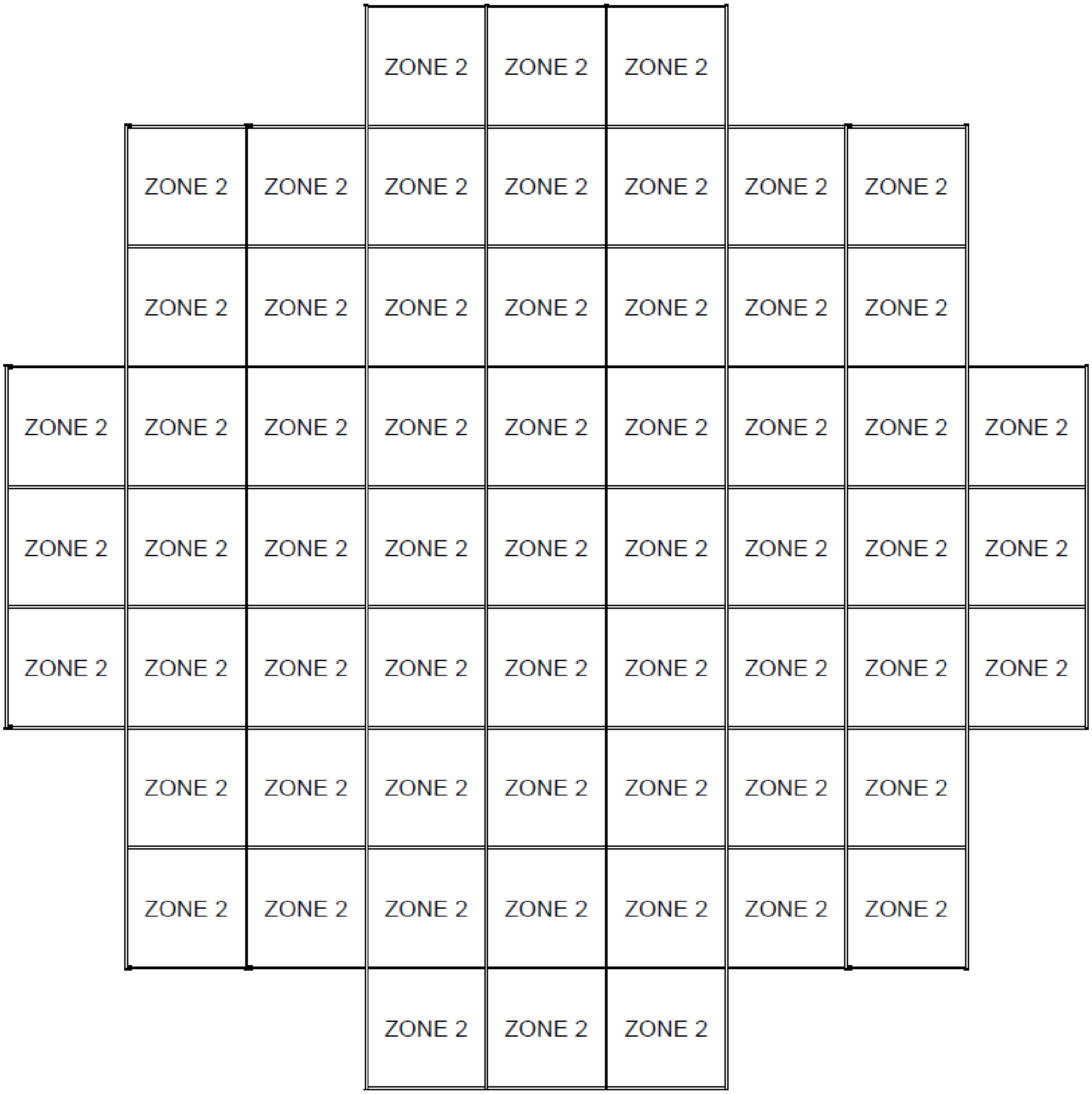
**Figure 1-17**
**Heat Load Zoning Configuration Number 1 for Type 1 or Type 2 61BTH DSCs**




| | Zone 1 | Zone 2 | Zone 3 | Zone 4 | Zone 5 | Zone 6 |
|---|---|---|---|---|---|---|
| **Maximum Decay Heat (kW/FA)** | NA | 0.35 | NA | 0.48 | 0.54 | NA |
| **Maximum Decay Heat per Zone (kW)** | NA | 8.75 | NA | 11.52 | 6.48 | NA |
| **Maximum Decay Heat per DSC (kW)** | 22.0[(2)] | | | | | |

Notes
1: This configuration is not allowed for a Type 1 61BTH DSC with MMC or Boral® Poison Plates.
2: Adjust payload to maintain total DSC heat load within the specified limit.

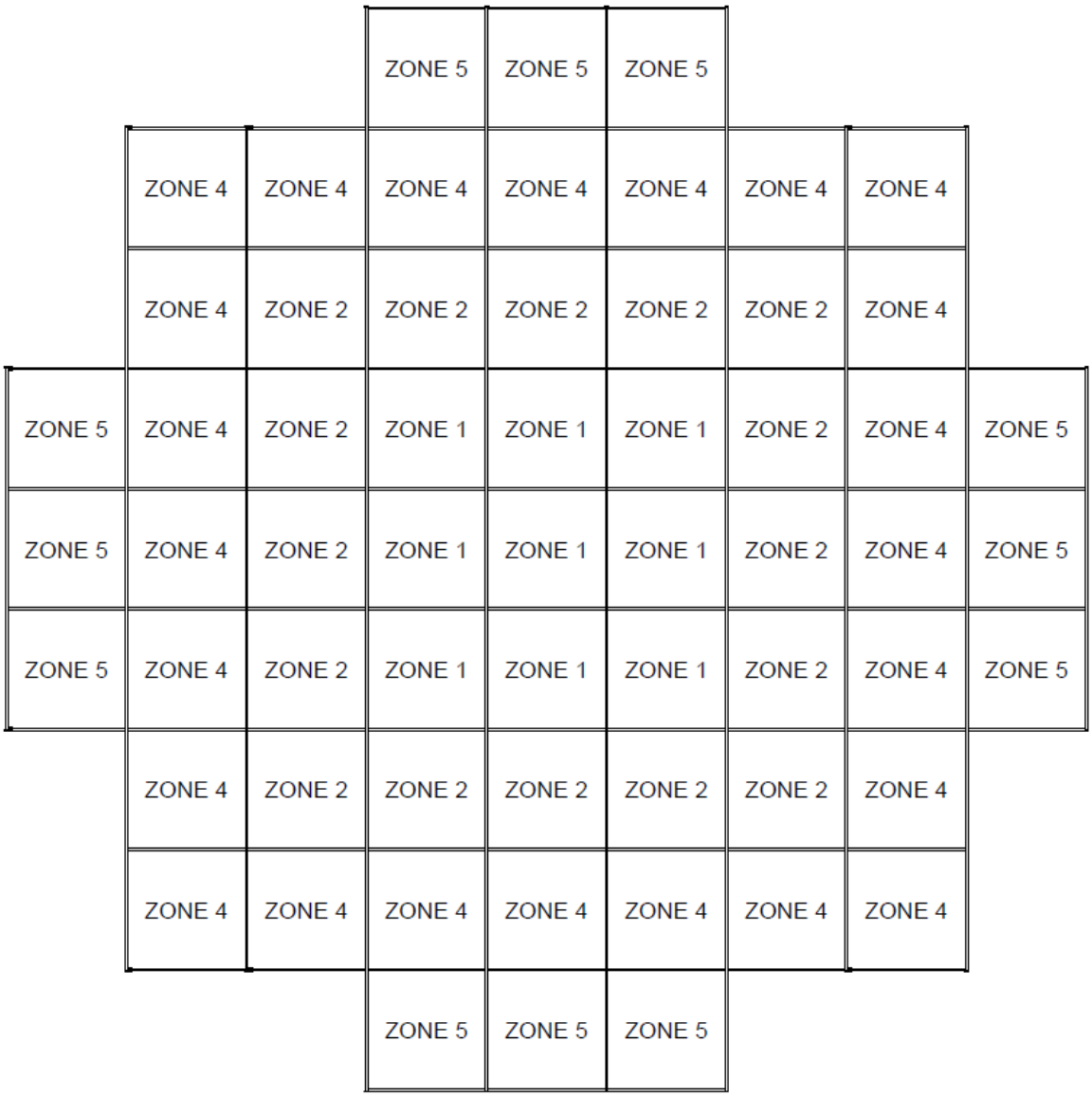
**Figure 1-18**
**Heat Load Zoning Configuration Number 2 for Type 1 or Type 2 61BTH DSCs[(1)]**




| | **Zone 1** | **Zone 2** | **Zone 3** | **Zone 4** | **Zone 5** | **Zone 6** |
|---|---|---|---|---|---|---|
| **Maximum Decay Heat (kW/FA)** | NA | 0.35 | NA | NA | NA | NA |
| **Maximum Decay Heat per Zone (kW)** | NA | 19.4 | NA | NA | NA | NA |
| **Maximum Decay Heat per DSC (kW)** | 19.4 | | | | | |

Note: This configuration does not have any restrictions as to the applicable Basket Poison Plates.

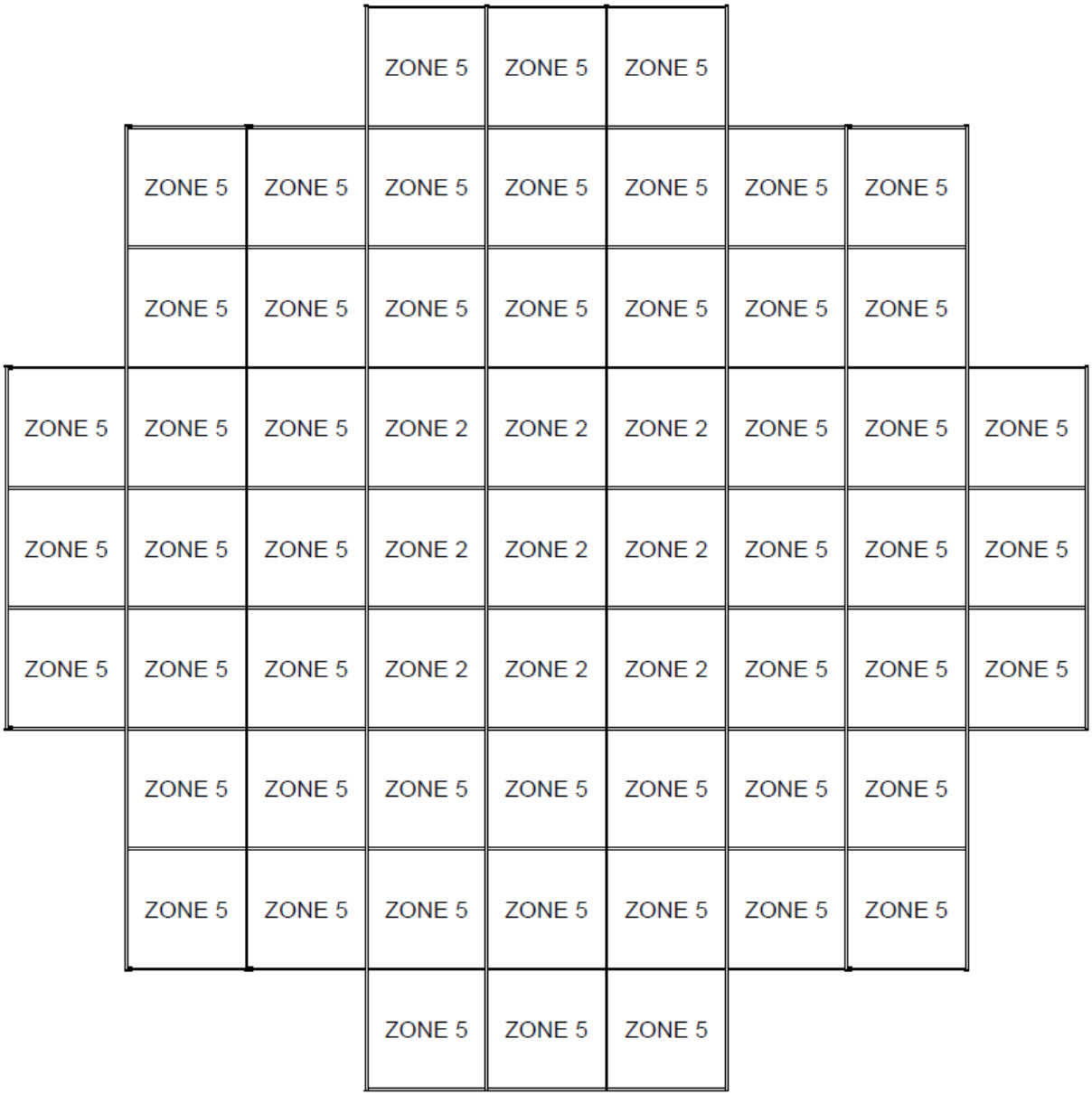
**Figure 1-19**
**Heat Load Zoning Configuration Number 3 for Type 1 or Type 2 61BTH DSCs**




| | Zone 1 | Zone 2 | Zone 3 | Zone 4 | Zone 5 | Zone 6 |
|---|---|---|---|---|---|---|
| **Maximum Decay Heat (kW/FA)** | 0.22 | 0.35 | NA | 0.48 | 0.54 | NA |
| **Maximum Decay Heat per Zone (kW)** | 1.98 | 5.60 | NA | 11.52 | 6.48 | NA |
| **Maximum Decay Heat per DSC (kW)** | 19.4(2) | | | | | |

Notes
1: This configuration does not have any restrictions as to the applicable Basket Poison Plates.
2: Adjust payload to maintain total DSC heat load within the specified limit.

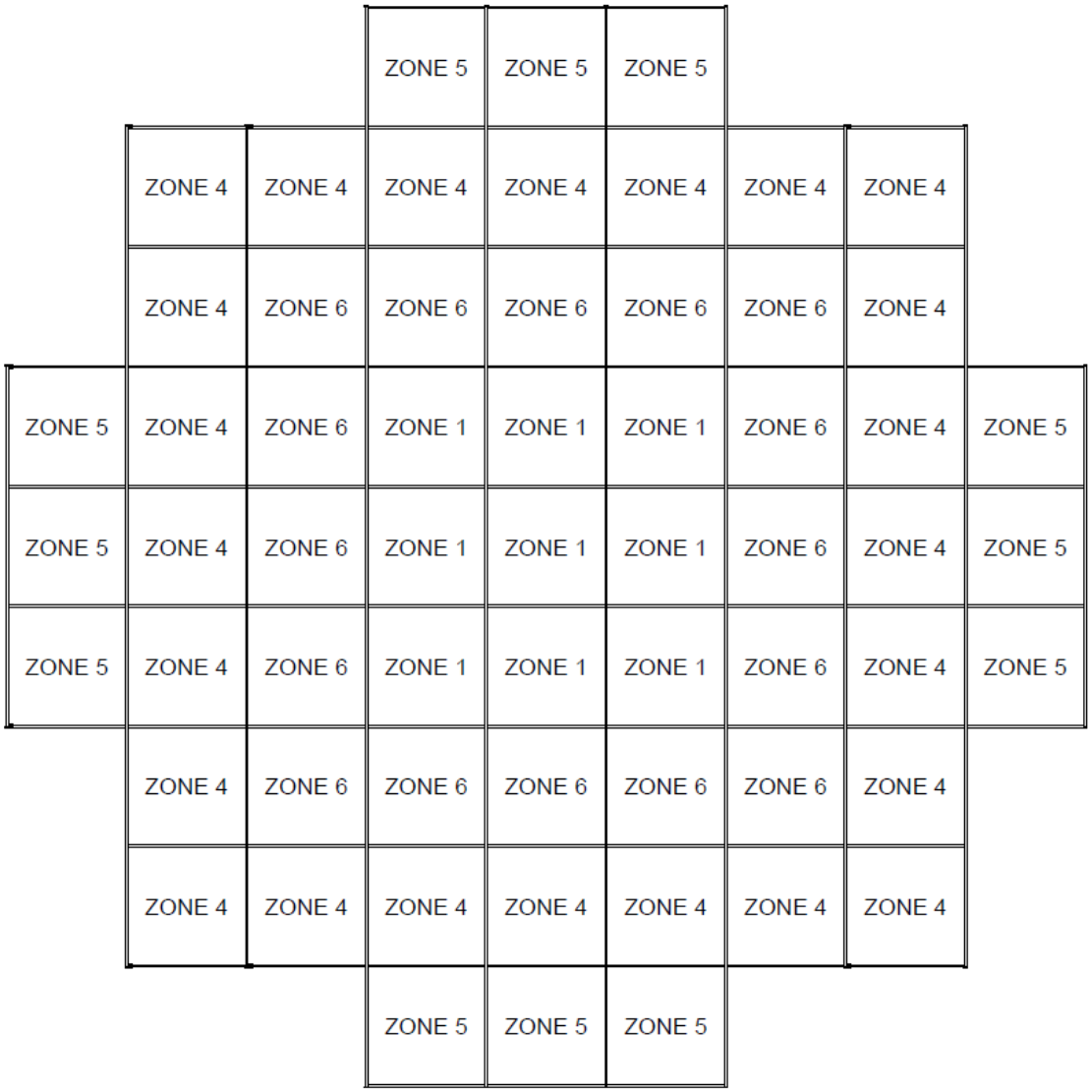
**Figure 1-20**
**Heat Load Zoning Configuration Number 4 for Type 1 or Type 2 61BTH DSCs(1)**




| | Zone 1 | Zone 2 | Zone 3 | Zone 4 | Zone 5 | Zone 6 |
|---|---|---|---|---|---|---|
| **Maximum Decay Heat (kW/FA)** | NA | 0.35 | NA | NA | 0.54 | NA |
| **Maximum Decay Heat per Zone (kW)** | NA | 3.15 | NA | NA | 28.08 | NA |
| **Maximum Decay Heat per DSC (kW)** | 31.2[2] | | | | | |

Notes:
1: This configuration is applicable to a Type 2 61BTH DSC only with Borated Aluminum Poison Plates.
2: Adjust payload to maintain total DSC heat load within the specified limit.

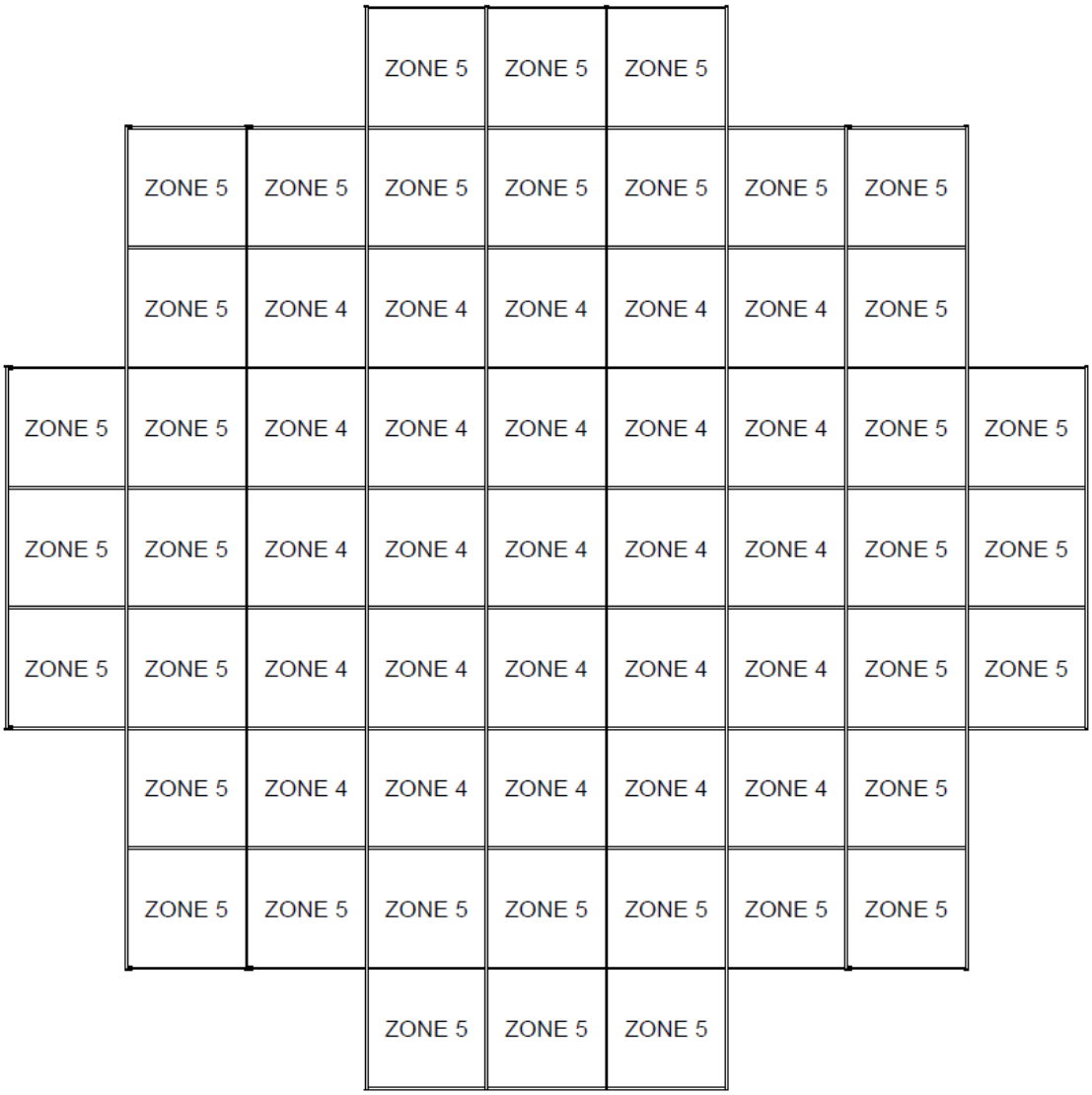
**Figure 1-21**
**Heat Load Zoning Configuration Number 5 for Type 2 61BTH DSCs[1]**




| | Zone 1 | Zone 2 | Zone 3 | Zone 4 | Zone 5 | Zone 6 |
|---|---|---|---|---|---|---|
| **Maximum Decay Heat (kW/FA)** | 0.22 | NA | NA | 0.48 | 0.54 | 0.70 |
| **Maximum Decay Heat per Zone (kW)** | 1.98 | NA | NA | 11.52 | 6.48 | 11.20 |
| **Maximum Decay Heat per DSC (kW)** | 31.2[(2)] | | | | | |

Notes:
1: This configuration is applicable to a Type 2 61BTH DSC only with Borated Aluminum Poison Plates.
2: Adjust payload to maintain total DSC heat load within the specified limit.

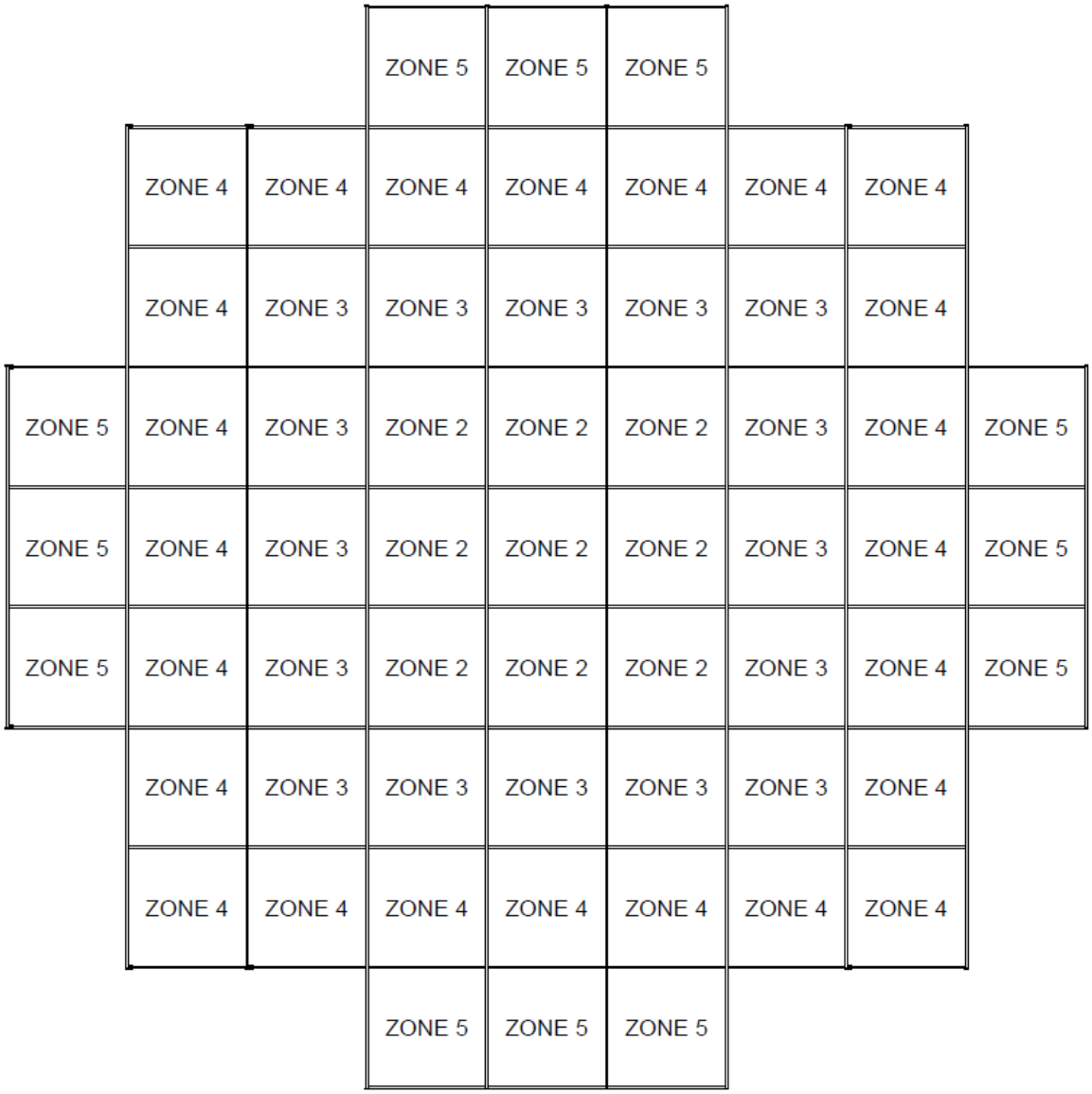
**Figure 1-22**
**Heat Load Zoning Configuration Number 6 for Type 2 61BTH DSCs[(1)]**




| | Zone 1 | Zone 2 | Zone 3 | Zone 4 | Zone 5 | Zone 6 |
|---|---|---|---|---|---|---|
| **Maximum Decay Heat (kW/FA)** | NA | NA | NA | 0.48 | 0.54 | NA |
| **Maximum Decay Heat per Zone (kW)** | NA | NA | NA | 12.00 | 19.44 | NA |
| **Maximum Decay Heat per DSC (kW)** | 31.2[(2)] | | | | | |

Notes
1: This configuration is applicable to a Type 2 61BTH DSC only with Borated Aluminum Poison Plates.
2: Adjust payload to maintain total DSC heat load within the specified limit.

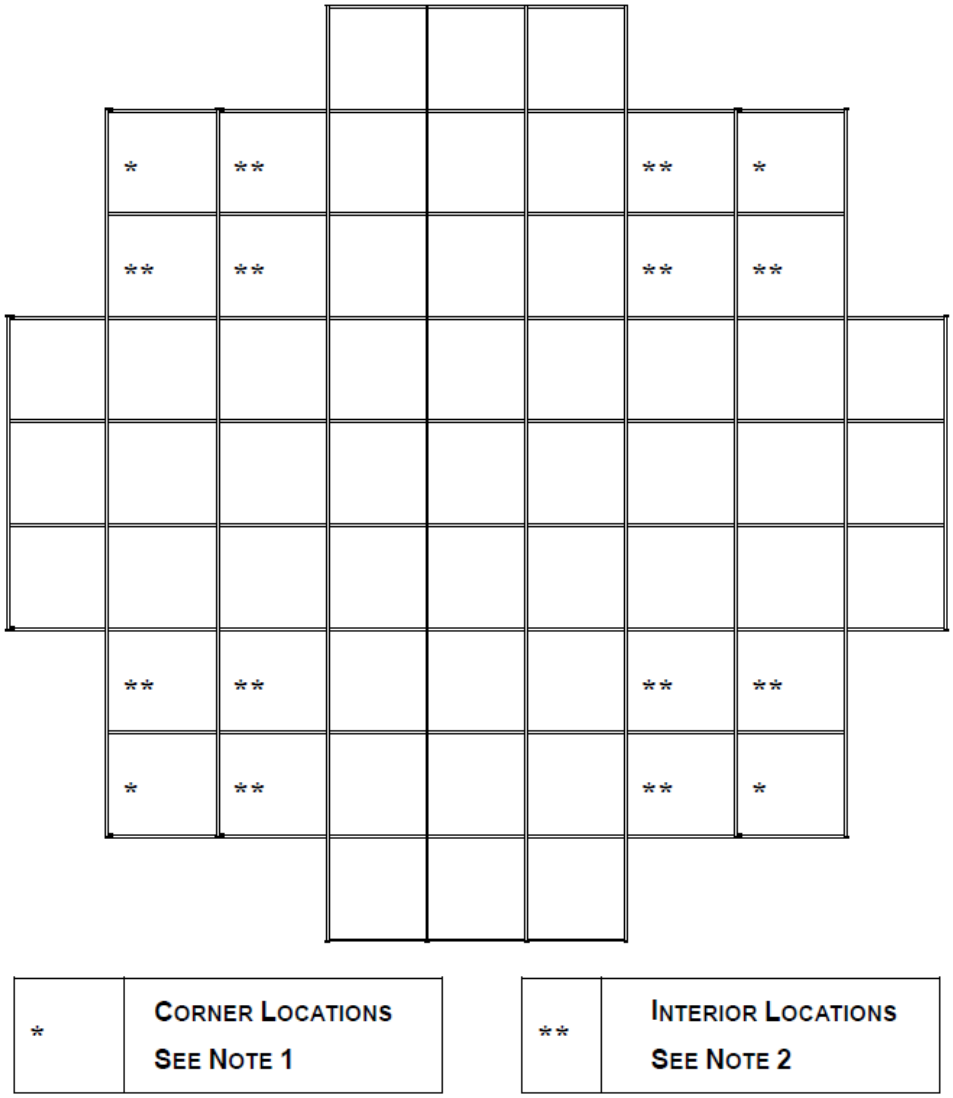
**Figure 1-23**
**Heat Load Zoning Configuration Number 7 for Type 2 61BTH DSCs[(1)]**




| | Zone 1 | Zone 2 | Zone 3 | Zone 4 | Zone 5 | Zone 6 |
|---|---|---|---|---|---|---|
| **Maximum Decay Heat (kW/FA)** | NA | 0.35 | 0.393 | 0.48 | 0.54 | NA |
| **Maximum Decay Heat per Zone (kW)** | NA | 3.15 | 6.288 | 11.52 | 6.48 | NA |
| **Maximum Decay Heat per DSC (kW)** | 27.4[2] | | | | | |

Notes:
1: This configuration is applicable to a Type 2 61BTH DSC only with Borated Aluminum or MMC or Boral® Poison Plates.
2: Adjust payload to maintain total DSC heat load within the specified limit.

**Figure 1-24**
**Heat Load Zoning Configuration Number 8 for Type 2 61BTH DSCs[1]**

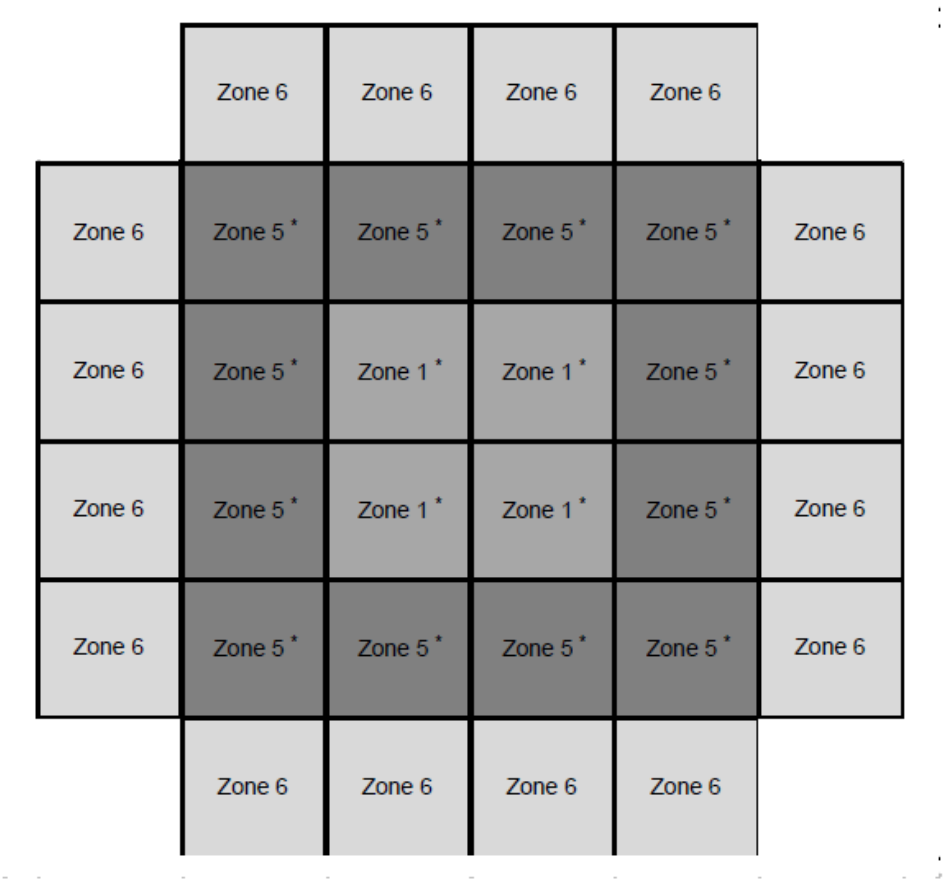



Notes:

1: These corner locations shall only be used to load up to four damaged assemblies with the remaining intact in a 61BTH Basket. The maximum lattice average initial enrichment of assemblies (damaged or intact stored in the 2x2 cells) is limited to the “up to 4 damaged assemblies” column of Table 1-1w.

2: If loading more than four damaged assemblies, place first four damaged assemblies in the corner locations per Note 1, and up to 12 additional damaged assemblies in these interior locations, with the remaining intact in a 61BTH Basket. The maximum lattice average initial enrichment of assemblies (damaged or intact stored in the 2x2 cells) is limited to the “Five or More Damaged Assemblies” column of Table 1-1w.

**Figure 1-25**
**Location of Damaged Fuel Inside 61BTH DSC**

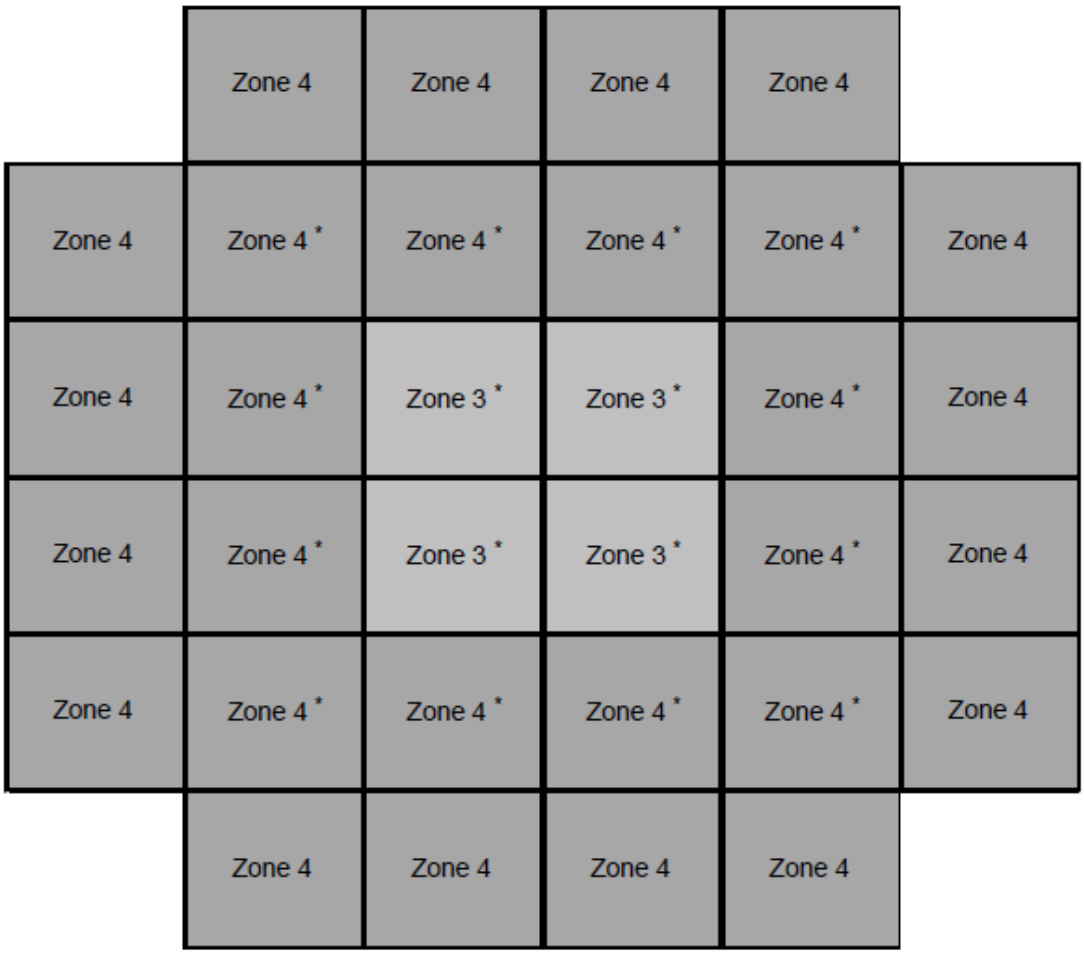



* denotes location where INTACT or DAMAGED FUEL ASSEMBLY can be stored.

| | Zone 1 | Zone 2 | Zone 3 | Zone 4 | Zone 5 | Zone 6 |
|---|---|---|---|---|---|---|
| **Max. Decay Heat/ FA (kW)** | 0.6 | N/A | N/A | N/A | 1.3(1) | 1.5 |
| **Max. Decay Heat/Zone (kW)** | 2.4 | N/A | N/A | N/A | 15.6 | 24.0 |
| **Max. Decay Heat/ DSC (kW)** | 40.8(2) | | | | | |

Notes:
1: 1.2 kW per FA is the maximum decay heat allowed for damaged fuel assemblies.
2: Adjust payload to maintain 40.8 kW heat load.

**Figure 1-26**
**Heat Load Zoning Configuration Number 1 for 32PTH1-S, 32PTH1-M and 32PTH1-L DSCs (Type 1 Baskets)**

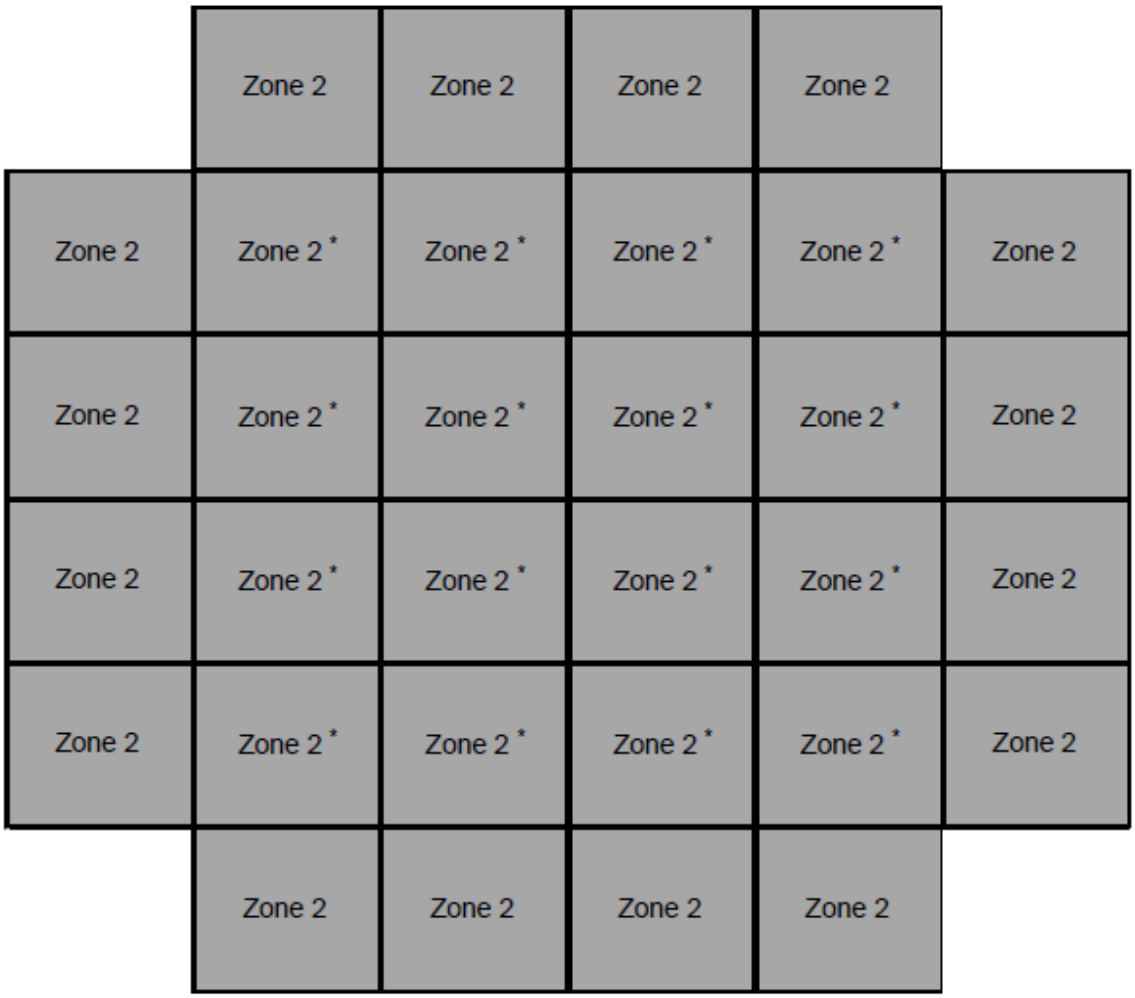



* denotes location where INTACT or DAMAGED FUEL ASSEMBLY can be stored.

| | Zone 1 | Zone 2 | Zone 3 | Zone 4 | Zone 5 | Zone 6 |
|---|---|---|---|---|---|---|
| **Max. Decay Heat/ FA (kW)** | N/A | N/A | 0.96(2) | 0.98(2) | N/A | N/A |
| **Max. Decay Heat/Zone (kW)** | N/A | N/A | 3.84 | 27.44 | N/A | N/A |
| **Max. Decay Heat/ DSC (kW)** | 31.2(1) | | | | | |

Notes:
1: Adjust payload to maintain 31.2 kW heat load.
2: The fuel qualification table corresponding to 1.0 kW/FA shall be used to determine burnup, cooling time, and enrichments corresponding to these heat loads.

**Figure 1-27**
**Heat Load Zoning Configuration Number 2 for 32PTH1-S, 32PTH1-M and 32PTH1-L DSCs (Type 1 or Type 2 Baskets)**

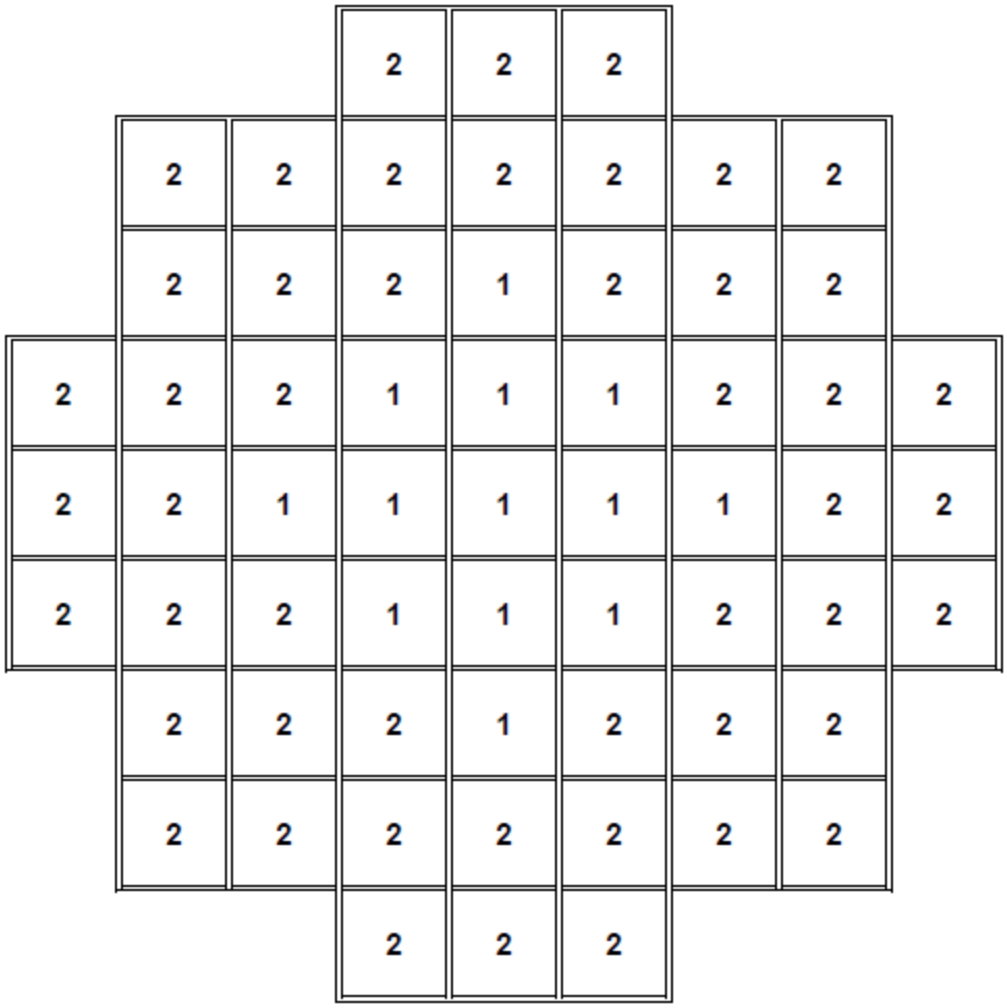



* denotes location where INTACT or DAMAGED FUEL ASSEMBLY can be stored.

| | Zone 1 | Zone 2 | Zone 3 | Zone 4 | Zone 5 | Zone 6 |
|---|---|---|---|---|---|---|
| Max. Decay Heat / FA (kW) | N/A | 0.8 | N/A | N/A | N/A | N/A |
| Max. Decay Heat / Zone (kW) | N/A | 24.0 | N/A | N/A | N/A | N/A |
| Max. Decay Heat / DSC (kW) | 24.0(1) | | | | | |

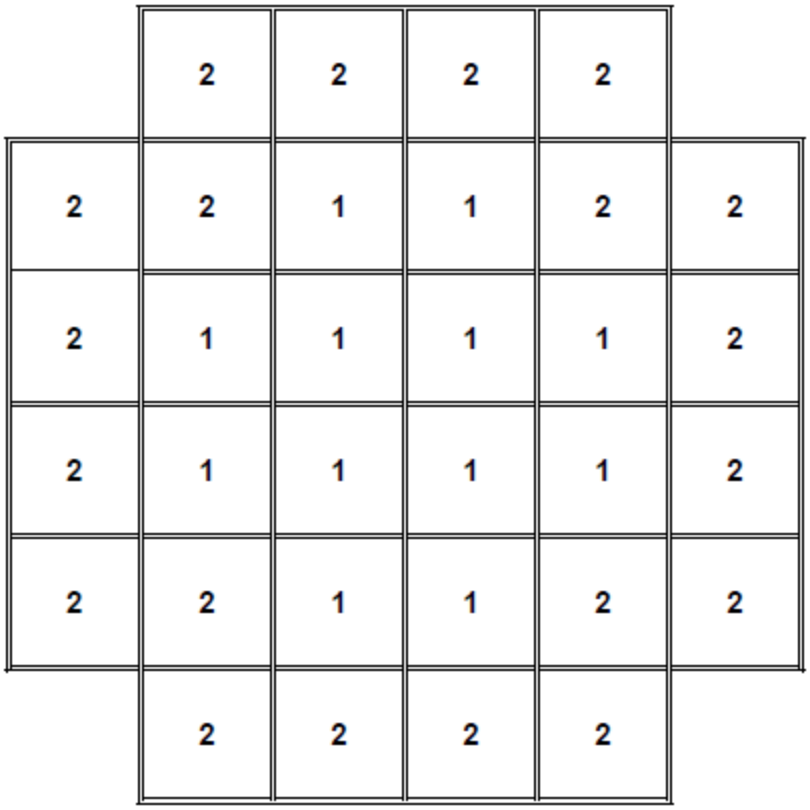
Notes:
1: Adjust payload to maintain 24.0 kW heat load.

**Figure 1-28**
**Heat Load Zoning Configuration Number 3 for 32PTH1-S, 32PTH1-M and 32PTH1-L DSCs (Type 1 or Type 2 Baskets)**




| Heat Zone Level | Zone 1 | Zone 2 |
|---|---|---|
| Max. Decay Heat/FA (kW) | 0.3 | 0.17 |
| Number of FAs/Zone | 13 | 48 |
| Max. Decay Heat/Zone (kW) | 3.9 | 8.2 |
| Max. Decay Heat/DSC (kW) | 12.0 | |

**Figure 1-29**
**Heat Load Zone Configuration for the 61BT DSC Contained in an OS197L TC**




| Heat Zone Level | Zone 1 | Zone 2 |
|---|---|---|
| Max. Decay Heat/FA (kW) | 0.6 | 0.4 |
| Number of FAs/Zone | 12 | 20 |
| Max. Decay Heat/Zone (kW) | 7.2 | 8.0 |
| Max. Decay Heat/DSC (kW) | 13.0 (1) | |

(1) Maximum decay heat load allowed in the OS197L TC.

**Figure 1-30**
**Heat Load Zone Configuration for the 32PT DSC Contained in an OS197L TC**