

**Enclosure 2 to E-53778**

**Description, Justification, and Evaluation of  
Amendment 2 Changes**

DESCRIPTION, JUSTIFICATION, AND EVALUATION OF AMENDMENT 2 CHANGES

1.0 INTRODUCTION

The scope of Amendment 2 to Certificate of Compliance (CoC) No. 1042 includes the changes described below.

Change No. 1:

Add the 61BTH Type 2 dry shielded canister (DSC) transferred in the OS197 Transfer Cask (TC) for storage in the new NUHOMS® MATRIX (HSM-MX) design submitted under Amendment 1 to CoC 1042. The 61BTH Type 2 DSC design included in this amendment is from CoC 1004 Amendment 15. The associated design changes to the HSM-MX include the addition of spacer blocks at the front and rear DSC supports to maintain the centerline of the DSC in line with the HSM door centerline.

Change No. 2:

For the EOS-37PTH DSC, add two new heat load zone configurations (HLZCs) for the EOS-37PTH for higher heat load assemblies, up to 3.5 kW/assembly, that also allow for damaged and failed fuel storage.

Change No. 3:

For the EOS-37PTH DSC, add basket type 4H, previously introduced in CoC No. 1042 Amendment 1, for HLZCs 1, 4, 5, 6, 8, and 9.

Change No. 4:

For the EOS-TC108 TC System with the EOS-37PTH DSC, add HLZCs 4 through 9 for the 4H basket and reduce the minimum cooling times to 2 years (HLZC 2 through 9).

Change No. 5:

For the EOS-37PTH DSC, increase the control component source terms to better address potential control component sources from various shutdown plants.

Change No. 6:

Certain CoC and TS items are revised for consistency and clarity, as described further in this enclosure.

## 2.0 DESCRIPTION OF THE CHANGES

### 2.1 Changes to the CoC 1042 NUHOMS® EOS System CoC

The table below provides proposed changes to the CoC pages, a brief description of the subject and/or change, and a reference to the scope item from Section 1.0 which relates to the change or changes.

CoC page	CoC Section Number	Description	Change No.
1	N/A	Amendment number changed to 2 and Amendment effective Date changed to "tbd".	none
1	1.a	Added "and the 61BTH Type 2 DSCs."	1
2	1.b	Added a paragraph describing the 61BTH Type 2 DSC.	1
2	1.b	Added a paragraph describing the 61BTH Type 2 DSC the types of poison materials in the basket.	1
2	1.b	Added a paragraph describing the OS197 transfer cask for use of transferring the 61BTH Type 2 DSCs.	1
2	1.c and 1.d	Update the SAR references in the Drawings and Principal Components to include the 61BTH Type 2 DSC in Appendix B.	1
3	2.	Update the SAR references in Operating Procedures to include the 61BTH Type 2 DSC in Appendix B.	1
3	3.	Update the SAR references in Acceptance Tests and Maintenance Program to include the 61BTH Type 2 DSC in Appendix B.	1
4	9.	Update the SAR references in Pre-Operational Testing and Training Exercise to include the 61BTH Type 2 DSC in Appendix B.	1
4	N/A	Amendment effective Date changed to "tbd".	none

Note: the proposed changes to the CoC are contained in Enclosure 3. Amendment 1 proposed changes to the CoC are annotated in blue and Amendment 2 proposed changes to the CoC are annotated in red.

## 2.2 Changes to the NUHOMS® EOS System CoC 1042 Technical Specifications

The table below provides proposed changes to the technical specification pages with a brief description of the subject and/or change, and a reference to the scope item from Section 1.0 which relates to the change or changes.

TS page	TS Number	Description	Change No.
Cover Page	N/A	Amendment number changed to 2.	none
TOC/LOT/LOF	N/A	Table of Contents, etc. automated updates.	none
1-2 to 1-4	1.1	Definitions for DAMAGED FUEL, DRY SHIELDED CANISTER, FUEL BUILDING, LOADING OPERATIONS, TRANSFER CASK, TRANSFER OPERATIONS and UNLOADING OPERATIONS are revised.	1,6
2-1 to 2-2	2.1	Various changes made to the authorized contents for the EOS-37PTH DSC.	2,4,6
2-6 to 2-7	2.3	Changed Section 2.3, "Functional and Operating Limits Violations", to Section 2.4 and added new Section 2.3, titled "Fuel to be stored in the 61BTH Type 2 DSC." Added detailed parameters regarding the fuel to be stored in the 61BTH Type 2 DSC.	1
2-8	2.4	Included renumbered Section 2.4, due to the changes to Section 2.3.	1

TS page	TS Number	Description	Change No.
3-7	3.1.3	Added 3 entries for the 61BTH Type 2 DSC regarding the applicable HLZC and time limit for completion of the DSC transfer. Added note numbers to various entries in the table. Updated Note 1 for clarification and added Note 2.	1,3
3-8	3.1.3	Revised the COMPLETION TIME entries for Action A.2.and A.3 for distinctions between the EOS-37PTH, the EOS-89BTH, and the 61BTH Type 2 DSCs. Added note 2 regarding the COMPLETION TIME for the 61BTH Type 2 DSC.	1
4-2	4.3	A paragraph was added to this section before Section 4.3.1 for a description of canister criticality control for the 61BTH Type 2 DSCs.	1
4-2	4.3.1	Added "or 61BTH Type 2 DSCs" and "Borated aluminum (61BTH Type 2 only) within the first paragraph of this section. Added "and borated aluminum)" to the title of the second paragraph in this section. Added "for EOS-37PTH, Table 8 for EOS-89BTH and Tables 9-12 for 61BTH Type 2 DSCs" to the end of the second sentence in second paragraph of this section.	1
4-2	4.3.2	Added "for EOS-37PTH and EOS-89BTH DSCs" to the title of this section.	1
4-3	4.4.2	Added "and 61BTH Type 2" to the title of this section. Added "NF, and NG" in the first sentence of the first paragraph. Added a second sentence to point to the table below. Added a table distinguishing the DSC type, Applicable Code, and the Edition/Year at the end of the paragraph in this section.	1

TS page	TS Number	Description	Change No.
4-4	4.4.3	Revised the first paragraph of this section to reflect the inclusion of the OS197 transfer cask design features with respect to codes and standards. Added a table containing the TC type, the applicable code and the code edition year.	1
4-4	4.4.4	Added “, and 61BTH Type 2 DSC” to the first sentence within this section.	1
4-5 through 4-7	4.4.4	Added “EOS-37PTH and EOS-89BTH” to the title of the table of Alternatives to Codes and Standards.	1,6
4-8 and 4-9	4.4.4	Added a table of ASME Code Alternatives for the 61BTH DSC Confinement Boundary.	1
4-10	4.4.4	Added a table of ASME Code Alternatives for the 61BTH DSC Basket.	1
4-12	4.5.2	Added a sentence regarding the 61BTH Type 2 DSC evaluation “for drops of up to 80 inches onto a reinforced concrete storage pad.”	1
5-3	5.1.2.g	Added this section, titled “High ambient temperatures for TRANSFER OPERATIONS of a 61BTH Type 2 DSC.”	1
5-7	5.2.1	Added “for the EOS-DSCs or 80 inches for the 61BTH Type 2 DSC” within the second paragraph in this section.	1
5-8	5.2.2	Added “for the EOS-DSCs and 80 inches for the 61BTH Type 2 DSC” to the first sentence in the paragraph. Added “This” and “/80-inch” to the second sentence in this paragraph.	1
5-9	5.5	Added “10, or 11” to the first paragraph in this section.	2

TS page	TS Number	Description	Change No.
T-1	Table 3	Table 3 is revised and reconfigured. The control component activity limits have been increased. Revised Note 1 to say "Not Used."	5
T-2 and T-3	Table 4	Added applicability of the A4H and B4H basket types for damaged/failed fuel. Added notes 2 and 3. See the Note 1 below for further information regarding this table.	2,3
T-6	Table 8	Clarified the title to include Minimum B-10 Areal Density; added "Initial" to the table header for enrichment, to be consistent with the table title.	6
T-7 through T-12	Table 9 through Table 14	Tables 9 through 14 are added for the 61BTH Type 2 DSC.	1
T-13 through T-15	Table 15 through Table 17	Tables 15 through 17 are added to clarify the various systems licensed in this amendment.	4,6
F-1	Figure 1A	Revised the title for Figure 1A.	4,6
F-2	Figure 1B	Revised the title and removed Note 1 for Figure 1B.	4,6
F-3	Figure 1C	Revised the title and removed Note 1 for Figure 1C.	4,6
F-4	Figure 1D	Revised the title for Figure 1D.	4,6
F-5	Figure 1E	Revised the title for Figure 1E.	4,6
F-6	Figure 1F	Revised the title for Figure 1F.	4,6
F-7	Figure 1G	Revised the title for Figure 1G.	4,6
F-8	Figure 1H	Revised the title for Figure 1H.	4,6
F-9	Figure 1I	Revised the title for Figure 1I.	4,6
F-10	Figure 1J	Adds new HLZC 10, for the EOS-37PTH DSC.	2

TS page	TS Number	Description	Change No.
F-11	Figure 1K	New HLZC 11, for the EOS-37PTH DSC.	2
F-12	Figure 2	Revised the title and removed the superscript "(4)" in the table below Figure 12.	6
F-15	Figure 4A	Adds new HLZC 1 for the 61BTH Type 2 DSC.	1
F-16	Figure 4B	Adds new HLZC 2 for the 61BTH Type 2 DSC.	1
F-17	Figure 4C	Adds new HLZC 3 for the 61BTH Type 2 DSC.	1
F-18	Figure 4D	Adds new HLZC 4 for the 61BTH Type 2 DSC.	1
F-19	Figure 4E	Adds new HLZC 5 for the 61BTH Type 2 DSC.	1
F-20	Figure 4F	Adds new HLZC 6 for the 61BTH Type 2 DSC	1
F-21	Figure 4G	Adds new HLZC 7 for the 61BTH Type 2 DSC	1
F-22	Figure 4H	Adds new HLZC 8 for the 61BTH Type 2 DSC	1
F-23	Figure 4I	Adds new HLZC 9 for the 61BTH Type 2 DSC	1
F-24	Figure 4J	Adds new HLZC 10 for the 61BTH Type 2 DSC	1
F-25	Figure 5	Adds the location of Damaged and Failed Fuel Assemblies inside the 61BTH Type 2 DSC.	1

## Notes:

1. TS Table 4 was revised in response to RAI 7-1 as part of CoC 1042 Amendment 1 (Document E-53166, dated February 19, 2019), with respect to basket types, and the revision inadvertently removed several of the previously listed basket types that should have remained. TN plans to submit a supplement to the Amendment 1 application,



revising the response to RAI 7-1. In the proposed Amendment 2 TS included herein, which reflect the Amendment 1 TS changes under NRC review, in order to convey a complete and clear understanding of the intended Amendment 2 Table 4, all associated basket types are shown, with the Amendment 2 changes to Table 4 tracked.

### 2.3 Changes to the NUHOMS® EOS System CoC 1042 UFSAR

Enclosure 5 (Proprietary version) and Enclosure 6 (Public version) provide proposed Amendment 2 changed pages and drawings for the NUHOMS® EOS System UFSAR. Amendment 2 proposed UFSAR changes are tracked by italicized text and revision bars.

The following paragraphs discuss the changed UFSAR areas, based on the changes described above. Editorial changes to correct spelling, grammar, etc. are also made to the changed UFSAR pages where appropriate.

In support of Change 1, a new major appendix (Appendix B) was added to the UFSAR. Changes were also made to UFSAR Chapters 1, 2, 3, 8, 9, 10, 12, 13, and Appendix A, Chapter A.12.

In support of Change 2, Chapter 4 Appendix 4.9.7 and Appendix A.4.6 were added to the UFSAR, and changes are made to UFSAR Chapters 1, 2, 6, 7, 11, 13, Appendix A, Chapters A.4, A.6, A.11, and A.12.

In support of Change 3, changes were made to UFSAR Chapters 1, 4, 7, and Appendix A, Chapter A.4.

In support of Change 4, changes were made to UFSAR Chapter 1, Chapter 4 Appendix 4.9.6 (adding Section 4.9.6.3), Chapters 6, 9, 10, 11, 12, 13, 14, A.4, and A.11

In support of change 5 and in conjunction with Changes 2 and 4, changes were made to UFSAR Chapters 6, 11, 12, A.6, A.11, and A.12.

### 3.0 JUSTIFICATION OF THE NEED FOR THESE CHANGES

Change 1 introduces the ability of to store intact, damaged, and failed BWR spent fuel, specifically the 61BTH Type 2 DSC transferred in the OS197 TC, in the HSM-MX. Change 2 introduces the ability to increase the thermal performance of the EOS System to meet the needs of plants with high heat load assemblies while allowing for failed and damaged fuel. Change 3 introduces increase the performance and versatility of the EOS-37PTH DSC 4H basket. Change 4 introduces the ability of the EOS-TC108/EOS-37PTH system to accommodate plants with low crane or space capacity. Change 5 introduces the ability of the EOS-37PTH to effectively address potential control component sources from various shutdown plants. Change 6 introduces improvements to the quality and consistency of the Technical Specifications.

### 4.0 EVALUATION OF CHANGES

TN has evaluated the changes described above for structural, thermal, shielding, confinement and criticality adequacy, as applicable, and has concluded that these changes to the NUHOMS® EOS System have no significant effect on safety.

The evaluations for the changes are included in Enclosure 5 (Proprietary version) and Enclosure 6 (Public version) of this submittal.