DESCRIPTION, JUSTIFICATION, AND EVALUATION OF AMENDMENT 1 CHANGES

1.0 INTRODUCTION

The scope of Amendment 1 to Certificate of Compliance (CoC) No. 1042 includes the changes described below.

Change No. 1:

For the EOS-37PTH DSC, add a new basket type (Type 4) with staggered alignment of the steel, aluminum, and poison basket plates. This change allows for the loading of intact, damaged or failed fuel – with up to eight damaged fuel assemblies, or four compartments containing failed fuel rods, with the remaining locations containing intact fuel assemblies. An option is also introduced for the Type 4 basket crediting a low emissivity option for the basket steel plates, and low conductivity for the basket poison plates. When equipped with the low emissivity coating and low conductivity poison, this basket type is identified as "4L". When equipped with the standard poison and coating identical to that of Type 1, 2 and 3 baskets, this basket type is identified as "4H." The Type 4 basket may be stored in either the EOS-HSM or the new NUHOMS® MATRIX design (described in Change #4 below). The Type 4 basket may be transferred onsite in either the EOS-TC125, EOS-TC135. The TS and Updated Final Safety Analysis (UFSAR) have been revised accordingly, as described further in this enclosure.

Change No. 2:

For the EOS-37PTH DSC, add a new basket type (Type 5) that is comparable in geometry to existing Types 1, 2 and 3 baskets , but with the low conductivity poison and low emissivity option of the Type 4 basket with the ability to be stored in either the EOS-HSM or the new NUHOMS® MATRIX design (described in Change #4 below). The Type 5 basket may be transferred onsite in either the EOS-TC125, or the EOS-TC135 System. The TS and UFSAR have been revised accordingly, as described further in this enclosure.

Change No. 3:

For the EOS-37PTH DSC, some locations within the basket are now able to accept fuel assemblies with a minimum cooling time of two years. The TS and UFSAR have been revised to incorporate this change, as described further in this enclosure.

Change No. 4:

Add a new NUHOMS® MATRIX (HSM-MX) design as an alternative to the EOS-HSM design for the storage of spent fuel canistered in an EOS-37PTH or an EOS-89BTH DSC. The HSM-MX provides a staggered two-tiered self-contained modular structure for storage of these spent fuel DSCs. The HSM-MX is designed to store the DSCs that are authorized for storage in the EOS-HSM Short and EOS-HSM Medium HSMs. The CoC and TS have been revised, and a new UFSAR Appendix A has been added to incorporate this change, as described further in this enclosure.

Change No. 5:

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 NUHOMS® EOS System CoC 1042 Technical Specifications

The table below provides proposed changes to the technical specification 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.

TS page	TS Number	Description	Scope Item
Cover Page	N/A	Amendment number changed to 1.	none
TOC/LOT/LOF	N/A	Table of Contents, etc. automated updates.	none
1-1 to 1-4	1.1	Definitions for BLEU FUEL MATERIAL, CONTROL COMPONENTS, DAMAGED FUEL, DRY SHIELDED CANISTER, FAILED FUEL, HORIZONTAL STORAGE MODULE, INTACT FUEL, LOADING OPERATIONS, RECONSTITUTED FUEL ASSEMBLY, TRANSFER CASK, and UNLOADING OPERATIONS are revised.	1, 2, 4, and 5
2-1 to 2-3	2.1	Various changes made to the authorized contents for the EOS-37PTH DSC.	1, 2, 3, and 5
2-4 and 2-5	2.2	Various changes made to the authorized contents for the 89BTH DSC.	5
2-6	2.3	“action” is changed to “ACTION”	5
3-7	3.1.3	Changes made to add time limits associated with the new heat load zoning configurations.	1 and 2
3-8	3.1.3	“SAR” changed to “UFSAR” for consistency. “action” is changed to “ACTION”	5

TS page	TS Number	Description	Scope Item
3-9	3.1.3	“the completion of LCO 3.1.2 actions or at” removed from “Once per DSC, after the completion of LCO 3.1.2 actions or at the initiation of draining of TC/DSC annulus water.”	5
3-10	3.2.1	“Dissolved” changed to “Soluble” for consistency.	5
3-10	3.2.1	“Immediately” changed to “24 hours.”	5
3-11	3.2.1.1	“assembly” changed to “fuel assembly” for clarity.	5
3-12	3.3.1	“TRANSFER CASK” is changed to “TC”	5
3-12	3.3.1	Change required Completion Time from “7 days AND Prior to TRANSFER OPERATIONS” to “Prior to TRANSFER OPERATIONS.”	5
3-13	3.3.1.1	“by either direct or indirect methods” removed from the surveillance description.	5
3-13	3.3.1.2	“TRANSFER CASK” is changed to “TC”	5
4-1	4.1.1 and 4.2.2	“SAR” changed to “UFSAR” for consistency.	5
4-1	4.2.2	“HSM” changed to “EOS-HSM” and seismic analysis statement added for the HSM-MX.	4
4-1	4.3	“in the DSC cavity water” is removed from the third line of the first paragraph.	5
4-2 and 4-3	4.3.2	“Low Alloy High Strength Steel” is more properly phrased as “High Strength Low Alloy Steel” and new requirements are added to this TS.	1

TS page	TS Number	Description	Scope Item
4-3	4.4	"Section" is changed to "Technical Specification" The DSC acronym is defined. "(TC)" is deleted.	5
4-4 and 4-6	4.4.4	"AREVA" removed from the last table row on the page.	5
4-7	4.4.4	"EOS-HSM" changed to "HSM."	5
4-7	4.4.4	Spelling of "specified" corrected.	5
4-8	4.5	"SAR" changed to "UFSAR" for consistency.	5
4-8	4.5.1	Distinction made between EOS-HSM and HSM-MX information.	4
4-8 and 4-9	4.5.3	Various distinctions made between EOS-HSM and HSM-MX requirements.	4
5-1 and 5-2	5.1.2	Various distinctions made between EOS-HSM and HSM-MX radiation protection requirements.	4
5-3 to 5-6	5.1.3	Various distinctions made between EOS-HSM and HSM-MX thermal monitoring requirements.	4
5-3	5.1.3.1.a.ii	"SAR" changed to "UFSAR" for consistency.	5
5-4	5.1.3.1.b.ii	"SAR" changed to "UFSAR" for consistency.	5
5-6	5.2.1	Hyphens are added to single-failure-proof.	5
5-7	5.2.2	"TRANSFER CASK" is changed to "TC"	5
5-7	5.3	Reference is made to TS 5.1.3 for the permissible duration.	4

TS page	TS Number	Description	Scope Item
5-8	5.5	The wind deflectors requirements are refined.	1 and 2
T-1	Table 1	“ASSEMBLY” is changed to “PWR FUEL”	5
T-1	Table 1, Table 2, and Table 3	Table 2 is deleted, based on the change to the definition for BLEU FUEL.	5
T-1	Table 1, Table 2, and Table 3	Table 3 is revised and reconfigured. The limits on Co-60 equivalent activity for the CCs are combined for Plenum and Top Nozzle regions and specified as a single value.	5
T-2 through T-4	Table 4 and Table 5	Table 4 and Table 5 are revised to include new basket types for the EOS-37PTH DSC.	1 and 2
T-5	Table 6	“G2” is changed to “GE-2” and other GE fuels nomenclature is corrected to add a hyphen	5
T-6	Table 7 and Table 8	Table 7 is deleted, based on the change to the definition for BLEU FUEL.	5
T-6	Table 8	Note 1 is revised to address certain basket types.	5
F-1	Figure 1A	Revised HLZC 1, for the EOS- 37PTH DSC.	1 and 5
F-2	Figure 1B	Revised HLZC 2 figure for the EOS-37PTH DSC.	1 and 5
F-3	Figure 1C	Revised HLZC 3 figure for the EOS-37PTH DSC.	1 and 5
F-4	Figure 1D	New HLZC 4, for the EOS-37PTH DSC.	1 and 2
F-5	Figure 1E	New HLZC 5, for the EOS-37PTH DSC.	1 and 2
F-6	Figure 1F	New HLZC 6, for the EOS-37PTH DSC.	1
F-7	Figure 1G	New HLZC 7, for the EOS-37PTH DSC.	1
F-8	Figure 1H	New HLZC 8, for the EOS-37PTH DSC.	1 and 2

TS page	TS Number	Description	Scope Item
F-9	Figure 1I	New HLZC 9, for the EOS-37PTH DSC.	1 and 2
F-10 and F-11	Figure 2	Figure 2 is revised.	5
F-12	Figure 3	New figure for Peripheral (P) and Inner (I) Fuel Locations for the EOS-37PTH DSC.	1

2.2 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 Number	Description	Scope Item
1	N/A	Amendment number changed to 1 and Amendment effective Date changed to "tbd".	none
2	1.b	Clarify description of the DSC shell – change "pressure vessel" to "sealed container." In addition, delete description of DSC basket transition rails as being made from "extruded" aluminum.	5
2	1.b	Delete extraneous information describing DSC transfer operations - "without undue galling, scratching, gouging, or other damage to the sliding surfaces."	5
2	1.b	Clarify the description of the HSM to include the new NUHOMS® Matrix HSM (HSM-MX) and ensure the description is consistent with both the EOS-HSM and the HSM-MX design alternatives.	4 and 5
2	1.c and 1.d	Update the SAR references in the Drawings and Principal Components to include the HSM-MX in Appendix A.	4
3	2.	Update the SAR references in Operating Procedures to include the HSM-MX in Appendix A.	4

CoC page	CoC Number	Description	Scope Item
3	3.	Update the SAR references in Acceptance Tests and Maintenance Program to include the HSM-MX in Appendix A.	4
4	9.	Update the SAR references in Pre-Operational Testing and Training Exercise to include the HSM-MX in Appendix A.	4

2.3 Changes to the NUHOMS® EOS System CoC 1042 UFSAR

Enclosure 5 (Proprietary version) and Enclosure 6 (Public version) provide proposed Amendment 1 changed pages and drawings for the NUHOMS® EOS System UFSAR. Amendment 1 proposed UFSAR changes are tracked by italicized text and revision bars.

The following paragraphs discuss the changed UFSAR areas proposed for change, 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, changes are made to UFSAR Chapters 1 through 13.

In support of Change 2, changes are made to UFSAR Chapters 1 through 4, 8 and 10.

In support of Change 3, changes are made to UFSAR Chapters 1, 6, and 11.

In support of Change 4, a new major appendix (Appendix A) is added to the UFSAR.

3.0 JUSTIFICATION OF CHANGES

These changes include changes to the design of some of the major components of the NUHOMS® EOS System, including a new NUHOMS® MATRIX (HSM-MX) design for the storage of spent fuel canistered in an EOS-37PTH or an EOS-89BTH DSC.

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.