

DESCRIPTION, JUSTIFICATION, AND EVALUATION OF AMENDMENT 3 CHANGES

1.0 INTRODUCTION

The scope of Amendment 3 to Certificate of Compliance (CoC) No. 1042 includes the changes described below.

Change No. 1:

Add three new heat load zone configurations (HLZCs) for the EOS-89BTH Dry Shielded Canister (DSC), with increased heat load up to 1.7 kW per fuel assembly, which reduces the minimum cooling time to 1 year.

Change No. 2:

Add a variable-lead thickness EOS-TC125 for transfer with the EOS-89BTH DSC.

Change No. 3:

Add ATRIUM 11 fuel as an allowable content in the EOS-89BTH DSC. Rerun the limiting GNF2 and ABB-10-C cases to reduce the statistical uncertainties and increase the enrichment limits.

Change No. 4:

Update the criticality evaluation to allow short-loading the EOS-89BTH DSC with less than 89 fuel assemblies to increase the enrichment limits.

Change No. 5:

For the Technical Specifications (TS); a revision to utilize a single pass high amperage gas tungsten arc weld (HA-GTAW) on the outer top cover plate (OTCP), and to allow for ultrasonic testing (UT) on the outer top cover plate weld.

Change No. 6:

For the TS; a revision to reduce EOS-37PTH HLZC 1 and 2 time limit for transfer to 8 hours.

Change No. 7

Utilizing the graded approach, incorporate a method to determine new loading patterns based on the maximum allowable heat load per DSC and per location specified in the TS. All HLZCs and time limits for transfer for the EOS-89BTH DSC transferred in the EOS-TC125 are moved from the TS to Updated Final Safety Analysis Report (UFSAR) Chapter 2.

Change No. 8:

For the single bottom forging EOS-DSCs, waive the fabrication pressure test requirement.

Change No. 9:

TS changes for consistency among DSC types and terminology clarification.

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 that relates to the change or changes.

CoC page	CoC Section Number	Description	Change No.
1	N/A	Amendment number changed to 3 and Amendment effective Date changed to "tbd".	none
1	N/A	TN Americas new address	none
2	N/A	Amendment number changed to 3.	none
2	N/A	Amendment 2 inserts-page.	none
3	N/A	Amendment number changed to 3.	none
4	N/A	Amendment number changed to 3 and Amendment effective Date changed to "tbd".	none

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

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

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

TS page	TS Number	Description	Change No.
Cover Page	N/A	Amendment number changed to 3.	none
TOC/LOT/LOF	N/A	Table of Contents, etc. automated updates.	none
2-4	2.2	In the FUEL CLASS Section, fuel class BWR 11x11 was added.	1, 3, 4
2-4	2.2	In the NUMBER OF INTACT FUEL ASSEMBLIES Section, wording regarding Channel Hardware is clarified.	9
2-4	2.2	In the RECONSTITUTED FUEL ASSEMBLIES Section, wording regarding transfer in the EOS-TC125 and in the EOS-TC108 was added.	1, 3, 4
2-5	2.2	In the THERMAL PARAMETERS Section, formerly titled THERMAL/RADIOLOGICAL PARAMETERS, the term Heat Load Zone Configuration has been changed to Maximum Heat Load Configuration (MHLC) and wording with respect to this change was revised. Also, wording for the Decay Heat per DSC entry has been revised.	1, 7, 9
2-6	2.2	In the RADIOLOGICAL PARAMETERS Section, formerly titled THERMAL/RADIOLOGICAL PARAMETERS, wording with respect to The Minimum Cooling time has been revised.	1, 7, 9

TS page	TS Number	Description	Change No.
2-6	2.2	In the RADIOLOGICAL PARAMETERS Section formerly titled THERMAL/RADIOLOGICAL PARAMETERS, wording with respect to Minimum Assembly Average Initial Fuel Enrichment and to the Number and location of LOW-ENRICHED OUTLIER FUEL (LEOF) was added.	1, 3, 4
2-7	2.3	In the NUMBER OF INTACT FUEL ASSEMBLIES Section, wording regarding Channel Hardware is clarified.	9
3-7	3.1.3 (LCO 3.1.3)	In the Time Limit for Completion of DSC Transfer Section, time limit entries for the EOS-37PTH and the EOS-89BTH were revised. Note 1 was revised and Note 2 was replaced.	6, 7
3-8	3.1.3 (ACTIONS)	In Note 1, the basis for the minimum air circulation timing for the EOS-89BTH is added.	6,7
4-1	4.3	Enrichment limit for fuel storage in 89BTH is increased to 5.00 wt. %.	3, 4
4-6	4.4.4	Code alternative revised to allow for the use of single pass high amperage GTAW weld on the OTCP, and UT on the OTCP.	5
4-7	4.4.4	Code alternative revised to eliminate the fabrication pressure test requirement for single bottom forging DSC's.	8
5-2	5.1.2.c.i	For the EOS-HSM, the value of 25 was changed to 65.	1, 3, 4
5-2	5.1.2.c.ii	For the EOS-HSM, the value of 10 was changed to 15.	1, 3, 4
5-2	5.1.2.c.i	For the HSM-MX, the value of 55 was changed to 165.	1, 3, 4
5-2	5.1.2.c.ii	For the HSM-MX, the value of 10 was changed to 15.	1, 3, 4

TS page	TS Number	Description	Change No.
T-5	Table 6	Table 6 was revised for clarity to group like fuel classes together.	9
T-9	Table 8	Table 8 was revised to reflect the loading configuration associated with increasing the maximum lattice average enrichment.	4
T-10	Table 8A	Added Table 8A: Maximum Lattice Average Initial Enrichment for ATRIUM 11 and Minimum B-10 Areal Density for the EOS-89BTH DSC.	3
T-18	Table 16	Table 16 has been deleted. HLZCs were moved to Chapter 2, so the associated table listing applicable HLZCs is deleted from the TS. This information is reflected in Chapter 1, Table 1-2.	7
T-20	Table 18	Added "EOS-89BTH DSC and" to the title and updated Note 2.	1, 3, 4
T-23	Table 21	Added Table 21: EOS-89BTH DSC Fuel Qualification Table, All Fuel.	1, 3, 4
T-24	Table 22	Added Table 22: EOS-89BTH DSC Reconstituted Fuel Limits for Transfer in the EOS-TC125.	1, 3, 4
T-25	Table 23	Added Table 23: EOS-89BTH DSC Reconstituted Fuel Limits for Transfer in the EOS-TC108.	1, 3, 4
F-12	Figure 2	Figure 2 has been revised to remove HLZC 1.	7
F-27	Figure 8	Added Figure 8: Peripheral (P) and Inner (I) Fuel Locations for the EOS-89BTH DSC.	1, 3, 4
F-28	Figure 9	Added Figure 9: EOS-89BTH DSC Allowed Reconstituted Fuel Locations for Transfer in the EOS-TC125.	1, 3, 4
F-29	Figure 10	Added Figure 10: Empty Locations in Short-Loading Configurations for the EOS-89BTH DSC.	4

TS page	TS Number	Description	Change No.
F-30	Figure 11	Added Figure 11: Maximum Heat Load Configuration 1 for EOS-89BTH DSC (MHLC-89-1) for Transfer in the EOS-TC125.	7

2.3 Changes to the NUHOMS® EOS System CoC 1042 UFSAR

Enclosure 5 (Proprietary version) and Enclosure 6 (Public version) provide proposed Amendment 3 changed pages and drawings for the NUHOMS® EOS System UFSAR. Amendment 3 proposed UFSAR changes are tracked by italicized text and revision bars.

The following paragraphs discuss the changed UFSAR areas, based on the changes described in Section 1 above. Editorial changes to correct spelling, grammar, etc. are also made to the changed UFSAR pages where appropriate.

In support of Change 1, changes were made to UFSAR Chapters 1, 2, 4, (Chapter 4 Appendix) 4.9.1, (Chapter 4 Appendix) 4.9.8, 6, 9, 11, 12, A.2, A.4, A.6, A.11, A.12, B.6, B.11, and B.12.

In support of Change 2, changes were made to UFSAR Chapters 1, 2, 6, 11, 12, A.6, and A.11, as well as drawings EOS01-2010-SAR, EOS01-2011-SAR, and EOS01-2021-SAR.

In support of Change 3, changes were made to UFSAR Chapters 1, 2, (Chapter 3 Appendix) 3.9.6, 6, 11, 12, A.6, A.11, A.12, B.6, B.11, and B.12.

In support of change 4, changes were made to UFSAR Chapters 1, 2, and 7.

In support of Change 5, changes were made to Chapters 1, 2, (Chapter 3 Appendix) 3.9.1, 8, 9, 10, as well as drawings EOS01-1000-SAR, EOS01-1001-SAR, EOS01-1005-SAR, and EOS01-10006-SAR.

In support of Change 6, changes were made to Chapter 2

In support of Change 7, changes were made to Chapters 1, 2, (Chapter 4 Appendix) 4.9.8, A.2, and A.4.

In support of Change 8, changes were made to Chapters 1, 2, (Chapter 3 Appendix) 3.9.1, 5, and 10.

3.0 JUSTIFICATION OF THE NEED FOR THESE CHANGES

Change 1 provides for increasing the heat per DSC and per compartment, and reducing the minimum cooling time, allowing for full pool offload much sooner than the HLZCs employed in previous amendments.

Change 2 introduces the ability of the EOS-TC125/EOS-89BTH system to accommodate plants with low crane capacity and allow for loading the EOS-89BTH without requiring water management or use of the aluminum interim TC top lid.

Change 3 introduces the ATRIUM 11 fuel to allow the EOS-89BTH DSC to offload pools with this fuel type.

Change 4 introduces the ability to short-load the EOS-89BTH DSC, thus allowing higher enrichments, up to 5 wt.% U-235.

Change 5 allows use of a single high amperage gas tungsten arc weld for a faster weld, resulting in less occupational exposure, and use of ultrasonic testing to verify the weld, which allows for more stringent weld examination.

Change 6 makes the time limit for transfer consistent among EOS-37PTH DSCs with transfer time limits.

Change 7 introduces the ability to allow flexibility in developing heat loading plans, in particular when performing full-core offload of shutdown cores.

Change 8 relieves the redundant pressure test during the fabrication process, which reduces fabrication time.

Change 9 introduces improvements to the quality and consistency of the TS.

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.