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February 25, 2022
E-60459

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
One White Flint North
11555 Rockville Pike
Rockville, MD 20852

Subject: Application for Amendment 3 to NUHOMS® EOS Certificate of Compliance No. 1042, Revision 5 (Docket 72-1042, CAC No. 001028, EPID: L-2021-LLA-0055) – Response to Request for Additional Information (New Scope) and Revised Responses to Request for Additional Information

References: [1] Letter from Christian Jacobs to Prakash Narayanan, "TN Americas LLC Application for Certificate of Compliance No. 1042, Amendment No. 3, to NUHOMS® EOS System (Docket No. 72-1042, CAC No. 001028, EPID: L-2021-LLA-0055) – Request for Additional Information (New Scope)," dated January 24, 2022

[2] Letter E-59795 from Prakash Narayanan, Application for Amendment 3 to NUHOMS® EOS Certificate of Compliance No. 1042, Revision 3 (Docket 72-1042, CAC No. 001028, EPID: L-2021-LLA-0055) – Response to Request for Additional Information, dated November 30, 2021

[3] Letter E-59819 from Prakash Narayanan, Application for Amendment 3 to NUHOMS® EOS Certificate of Compliance No. 1042, Revision 3a (Docket 72-1042, CAC No. 001028, EPID: L-2021-LLA-0055) – Amendment Scope Change, dated October 22, 2021

[4] Letter from Christian Jacobs to Prakash Narayanan, "TN Americas LLC Application for Certificate of Compliance No. 1042, Amendment No. 3, to NUHOMS® EOS System (Docket No. 72-1042, CAC No. 001028, EPID: L-2021-LLA-0055) – Request for Additional Information," dated October 28, 2021

[5] Letter E-58329 from Prakash Narayanan, Application for Amendment 3 to NUHOMS® EOS Certificate of Compliance No. 1042, Revision 0 (Docket 72-1042), dated March 31, 2021

Enclosures transmitted herein contain SUNSI. When separated from enclosures, this transmittal document is decontrolled.

This submittal provides responses to the Request for Additional Information (RAI) forwarded by Reference [1]. This submittal also is a supplement to Reference [2] and provides revised responses to specific RAI items forwarded by Reference [4]. As a follow-up to Reference [4], the NRC and TN held a conference call on February 1, 2022 for the purpose of discussing clarification to RAIs 4-6, 5-1, and 10-1.

Enclosure 2 herein provides a proprietary version of the RAI responses. Each RAI response has a section stating the impact of the response on the application, both Technical Specifications (TS) and updated final safety analysis report (UFSAR), indicating which sections, tables, etc., have been changed. Enclosure 3 provides a public version of these responses.

Enclosure 4 provides a listing of CoC 1042 Amendment 3 TS changes resulting from the RAIs. Enclosure 5 provides a listing of changed TS and UFSAR pages resulting from the RAIs.

Enclosure 6 provides the TS changed page, denoted as Revision 5 with changes indicated by italicized text and revision bars. The change is further annotated with gray shading and an indication of the RAI associated with the changes.

Enclosure 7 provides the UFSAR changed page associated with this Revision 5 to the application for Amendment 3. The page includes a footer annotated as "72-1042 Amendment 3, Revision 5, February 2022" with changes indicated by italicized text and revision bars. The changes associated with the RAI response are further demarcated with gray shading and an indication of the RAI associated with the changes.

Enclosure 8 provides the public version of the Enclosure 7 UFSAR changed page.

Certain portions of this submittal include proprietary information, which may not be used for any purpose other than to support the NRC staff's review of the application. In accordance with 10 CFR 2.390, TN Americas LLC is providing an affidavit (Enclosure 1), specifically requesting that this proprietary information be withheld from public disclosure.

Should the NRC staff require additional information to support review of this application, please do not hesitate to contact Mr. Glenn Mathues at 410-910-6538, or by email at Glenn.Mathues@orano.group.

Sincerely,

A. Prakash

Prakash Narayanan
Chief Technical Officer

cc: Chris Jacobs (NRC), Senior Project Manager, Storage and Transportation Licensing Branch Division of Fuel Management

Enclosures:

1. Affidavit Pursuant to 10 CFR 2.390
2. RAIs and Responses (Proprietary)
3. RAIs and Responses (Public)
4. List of New CoC 1042 Amendment 3, Revision 5 Technical Specifications Changes and Justifications
5. List of TS and UFSAR Pages Involved in CoC 1042 Amendment 3, Revision 5
6. CoC 1042 Proposed Amendment 3, Revision 5 Technical Specifications Changed Page
7. CoC 1042 Amendment 3, Revision 5 UFSAR Changed Page (Proprietary)
8. CoC 1042 Amendment 3, Revision 5 UFSAR Changed Page (Public)

AFFIDAVIT PURSUANT
TO 10 CFR 2.390

TN Americas LLC)
State of Maryland) SS.
County of Howard)

I, Prakash Narayanan, depose and say that I am Chief Technical Officer of TN Americas LLC, duly authorized to execute this affidavit, and have reviewed or caused to have reviewed the information that is identified as proprietary and referenced in the paragraph immediately below. I am submitting this affidavit in conformance with the provisions of 10 CFR 2.390 of the Commission's regulations for withholding this information.

The information for which proprietary treatment is sought is contained in Enclosures 2 and 7, as listed below:

- Enclosure 2 – RAIs and Responses
- Enclosure 7 - Portions of certain updated final safety analysis report (UFSAR) chapters

These documents have been appropriately designated as proprietary.

I have personal knowledge of the criteria and procedures utilized by TN Americas LLC in designating information as a trade secret, privileged or as confidential commercial or financial information.

Pursuant to the provisions of paragraph (b) (4) of Section 2.390 of the Commission's regulations, the following is furnished for consideration by the Commission in determining whether the information sought to be withheld from public disclosure, included in the above referenced document, should be withheld.

1) The information sought to be withheld from public disclosure involves portions of certain RAI responses and portions of the UFSAR, all related to the design of the NUHOMS® EOS System, which are owned and have been held in confidence by TN Americas LLC

2) The information is of a type customarily held in confidence by TN Americas LLC, and not customarily disclosed to the public. TN Americas LLC has a rational basis for determining the types of information customarily held in confidence by it.

3) Public disclosure of the information is likely to cause substantial harm to the competitive position of TN Americas LLC, because the information consists of descriptions of the design and analysis of dry spent fuel storage systems, the application of which provide a competitive economic advantage. The availability of such information to competitors would enable them to modify their product to better compete with TN Americas LLC, take marketing or other actions to improve their product's position or impair the position of TN Americas LLC's product, and avoid developing similar data and analyses in support of their processes, methods or apparatus.

Further the deponent sayeth not.

A. Prakash

Prakash Narayanan
Chief Technical Officer, TN Americas LLC

Subscribed and sworn before me this 22nd day of February 2022.

Notary Public

My Commission Expires 10/5/25

KHYNESYA TAYLOR
Notary Public
Howard County
Maryland
Commission Expires Oct. 5, 2025

Proprietary Information on Pages 1 through 3
Withheld Pursuant to 10 CFR 2.390

RAI 5-1:

Clarify and update the NUHOMS® EOS Safety Analysis Report (SAR) language that references the pressure test according to the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section III, Subarticle NB-6300.

There are a number of instances in the NUHOMS® EOS SAR where the new text for Amendment 3 does not convey a clear intent as to the type of acceptance test that is referenced. For example, the new text in SAR Section 10.1.1.1 stated that "… the fabrication leak test may be waived." However, the next sentence refers to a "pressure test." The sentence that follows is clear and explicitly mentions the "… helium leak test of Section 10.1.2." Another example is found in the table entitled, "EOS-37PTH and EOS-89BTH DSC ASME Code Alternatives, Subsection NB," in Technical Specification Section 4.4.4 (page 4-7), which refers to a "fabrication leak test" and "pressure test." Likewise, the new text in SAR Section 3.9.1.2.7.2 entitled, "Fabrication Pressure and Leak Testing," focuses on a "pressure test." The differentiation between a helium leak test according to the American National Standards Institute (ANSI) N14.5 versus a "fabrication leak test" and "pressure test" is not easily discernible among these select SAR sections; this is to be corrected because the important to safety confinement boundary's pressure test and helium leak test per ANSI N14.5 are distinct acceptance tests with different purposes and sensitivities.

This information is needed to determine compliance with 10 CFR 72.236(d), (j), and (l).

***Revised* Response to RAI 5-1:**

During the fabrication process, ASME III Subsection NB requires a pressure test per NB-6300. Additionally, a leak test is conducted of the confinement boundary welds to the ANSI N14.5 leaktight acceptance criteria of 1×10^{-7} ref. cm^3/sec. When using the single forging bottom cover plate, the weld between the forging and the DSC shell serves as the confinement boundary and would, therefore, be subject to both requirements. Amendment 3 proposes to remove the pneumatic test requirement per NB-6300 *for* the bottom assembly during fabrication only when using the single bottom forging option. *UFSAR* Chapters 3.9.1 and 10*, and Technical Specification Section 4.4.4* have been revised to clarify this intent.

Impact:

UFSAR Sections 3.9.1.2.7.2 and 10.1.1.1*, and Technical Specification Section 4.4.4* have been revised as described in the response.

RAI 9-1:

Describe how winds that are greater than 44 mph, which occur independent of tornados and thunderstorms, are addressed in the Technical Specification 1.1 and in the application as related to the definition of a SAFE CONDITION AND FORECAST.

Based on the staff's review of the warnings, watches, or advisories from the National Oceanic and Atmospheric Administration's National Weather Service, there are other external events that result in winds greater than 44 miles per hour (mph). Those warnings and watches include blizzard, high wind, hurricane, and tropical storm. A blizzard is a severe snowstorm characterized by strong sustained winds of at least 35 mph. High winds can be 40 mph or greater that last for one hour or longer or include wind gusts that are 58 mph or greater regardless of duration and observed on land. A Category 1 hurricane, the lowest hurricane category, can have sustained winds from 74 to 95 mph. A tropical storm can have sustained winds from 39 to 74 mph. In addition to the above watches and warnings, a wind advisory may be issued for sustained winds of 31 to 39 mph for an hour or more and/or wind gusts of 46 to 57 mph for any duration.

This information in necessary to determine compliance with 10 CFR 72.236(l).

Response to RAI 9-1:

TN agrees that winds with speeds greater than the operating limit of 44 mph can occur independent of tornado and severe thunderstorm conditions. The proposed change to Technical Specification (TS) 1.1 defines a SAFE CONDITION AND FORECAST in terms of the absence of a tornado warning or watch, or a severe thunderstorm advisory where the thunderstorm could be capable of spawning a tornado event. The proposed change incorporates administrative controls in TS 5.2.1 to check the weather forecast prior to lifting the loaded transfer cask/dry shielded canister (TC/DSC) above the lift height restriction of the TS.

In addition, transfer procedures conservatively require an initial check of the weather forecast prior to exiting the tornado protected structure where prior LOADING OPERATIONS occurred. This is intended to avoid the potential for a tornado accident to occur during short duration TRANSFER OPERATIONS involving the MATRIX Loading Crane (MX-LC). More specifically, these are accident conditions limited to tornado winds and tornado generated missiles, where such a tornado event is quite predictable in the short term via weather forecasting.

As defined in Section 4134 of ASME NOG-1, the Operating Wind is the maximum wind load under which the crane is permitted to operate. For the MX-LC, that Operating Wind limit is 44 mph as established in the associated design documents. In the associated structural calculations, the MX-LC is shown to be structurally adequate to safely operated under these conditions. Therefore, the Operating Wind represents a normal design condition.

A trained and certified crane operator is responsible for monitoring wind conditions during MX-LC operations. This is achieved by using a wind speed instrument (i.e., anemometer) located at the ISFSI that is capable of measuring sustained winds and peak wind gusts. In the event that the wind speed (either sustained wind or wind gusts) approaches the 44 mph operating limit, the crane operator suspends operations, lowers the MX-LC, places it in a safe parked position and secures the load (i.e., TC/DSC on transfer skid), consistent with ASME NOG-1 requirements. The use of an anemometer to monitor the wind speed and suspend crane operations prior to

exceeding the Operating Wind limit is typical for mobile cranes and outdoor fixed cranes, and consistent with Crane Manufacturer's Association of America (CMAA) operating protocol. Wind speeds exceeding the Operating Wind limit of 44 mph represent an off-normal design condition.

The proposed TS requirement to confirm a SAFE CONDITION AND FORECAST is limited to the accident condition only, in order to avoid TRANSFER OPERATIONS during impending tornado conditions. Restrictions on MX-LC operations during off-normal wind conditions are addressed through procedural controls that credit crane operator action to suspend MX-LC operations in the event the Operating Wind limit of 44 mph is approached where such procedural controls are not tied to the weather forecast, but rather require that the wind speed be monitored in real time. This approach is justified since an exceedance of the Operating Wind limit would not cause significant damage to the MX-LC due to inherent margins available in the structural design, whereas the accident loading due to tornado winds and/or tornado generated missile strikes could cause substantial damage to the MX-LC thereby hindering recovery operations from such an event. Therefore, the administrative controls proposed in the TS are more restrictive than those for wind conditions that exceed the Operating Wind limit.

In conclusion, TN believes that the requirements of 10 CFR 72.236(l) are satisfied, in that the spent fuel storage cask and its systems important to safety have been demonstrated to reasonably maintain confinement of radioactive material under normal, off-normal, and credible accident conditions.

Impact:

No change as a result of this RAI.

RAI 9-2:
Provide a basis for the updated final safety analysis report (UFSAR) eight-hour limit. Include a description of compensatory actions to cease transient operations when impending tornado conditions or forecasted winds are expected and/or exceed 44 mph to include mitigating actions related to safely securing the transfer cask in the event of transfer equipment failure. Further, provide a description of notification meteorological monitoring criterion prior to the start of the ISFSI transient operations (e.g., notification of control room, monitoring of weather during ISFSI transient operations, and site walkdowns to identify and secure any potential hazards).
UFSAR Section A.2.4.2.4, MX-LC Design Criteria, allows the use of administrative controls based on a conservative time frame of eight hours for completing operational tasks associated with insertion of a dry shielded canister into the HSM-MX. It is unclear as to the basis for eight hours. UFSAR Section 2.4.2.4 currently does not include a description of notification meteorological monitoring criterion prior to the start of the ISFSI transient operations to preclude short term operations during periods of adverse weather or during periods when adverse weather is predicted.
This information in necessary to determine compliance with 10 CFR 72.236(l).

Response to RAI 9-2:

The eight-hour time frame associated with the SAFE CONDITION AND FORECAST is described in the proposed change to UFSAR Section A.2.4.2.4, MX-LC Design Criteria. The proposed change states that the total duration to complete the tasks necessary to lift the loaded transfer cask (TC) with the MATRIX Loading Crane (MX-LC), dock the TC to the NUHOMS® MATRIX (HSM-MX), and insert the dry shielded canister (DSC) into the HSM-MX is conservatively estimated at eight hours. Recent activities using the MX-LC to load the HSM-MX have confirmed the conservative nature of this duration.

A defense-in-depth approach is provided for any compensatory actions needed when impending tornado conditions exist. Initially, as described in the Response to RAI 9-1, a SAFE CONDITION AND FORECAST is confirmed in the loading procedure prior to draining the TC/DSC annulus and entering TRANSFER OPERATIONS while the TC is still in the tornado protected structure where prior LOADING OPERATIONS occurred. Subsequent to exiting the tornado protected structure and transferring the loaded TC/DSC from the transfer trailer to the MX-LC, a SAFE CONDITION AND FORECAST is once again confirmed per the proposed Technical Specification (TS) 5.2.1 prior to lifting the TC/DSC above the lift height restriction of the Technical Specification. In the highly unlikely event the weather deteriorates from a SAFE CONDITION AND FORECAST to impending tornado conditions during the eight-hour duration when the MX-LC is in use, operations would then be reversed to lower the crane to below the TS lift height restriction, placing it in a safe parked position with the load secured. However, the intent of the TS weather check is to never be vulnerable to such a situation, based on a highly accurate short duration forecast for the absence of tornado or severe thunderstorm conditions.

Similarly, while the MX-LC is in use, if winds approach the Operating Wind limit of 44 mph as indicated by the crane operator’s wind speed instrument, the MX-LC would be secured, meaning that the crane would be lowered below the TS lift height restriction, and placed in a safe parked position with the load secured, consistent with Crane Manufacturer’s Association of America (CMAA) operating protocol.

In the event of an operational failure of the MX-LC equipment (e.g., inability to lower the crane), compensatory measures are provided in the transfer procedure to lower the load via alternate means. Although the MX-LC is designed as single-failure-proof, that does not preclude the possibility of an operational/functional failure (not gross structural failure) of the lifting equipment. The lifting equipment is qualified to fail safe (i.e., stop movement and continue to hold the load), but could lose its operational function to raise or lower the load. In the event the lifting equipment is unable to be repaired in the short duration, provisions are available in a recovery procedure to safely lower the load using contingency rigging hardware, which has the same single-failure-proof design requirements and safety classification as the MX-LC components that it replaces.

Regarding the meteorological monitoring process, as described above, prior to exiting the tornado protected structure, an initial weather check confirms a SAFE CONDITION AND FORECAST. The control room is notified at the start of TRANSFER OPERATIONS and prior to proceeding to the independent spent fuel storage installation (ISFSI). Both the weather forecast and wind speed are monitored for the duration of outdoor TRANSFER OPERATIONS until the DSC is inserted into the HSM-MX and the door installed. Such meteorological monitoring is coordinated with site operations procedures for tornado conditions, severe thunderstorms, and high winds. Prior to lifting the TC/DSC above the lift height restriction of TS 5.2.1, a SAFE CONDITION AND FORECAST is once again confirmed. The proposed change to UFSAR Chapter A.9 incorporates appropriate instructions to perform the weather check per TS 5.2.1. Additionally, a walkdown of the haul path and ISFSI apron is required to be performed to identify any potential hazards as a procedural prerequisite to the initiation of TRANSFER OPERATIONS.

In conclusion, TN believes that the requirements of 10 CFR 72.236(l) are satisfied, in that the spent fuel storage cask and its systems important-to-safety have been demonstrated to reasonably maintain confinement of radioactive material under normal, off-normal, and credible accident conditions.

Impact:

No change as a result of this RAI.

RAI 10-1:

Provide the following additional information on the proposed phased array ultrasonic testing (UT) system for the detection of flaws in the multi-pass gas tungsten arc welding (GTAW) and single pass high amperage gas tungsten arc welding (HA-GTAW) outer top cover plate (OTCP) welds:

1. Clarify whether the proposed phased array ultrasonic testing (UT) system would be used to inspect the multi-pass gas tungsten arc welding (GTAW) as an alternative to the multi-level PT examination.

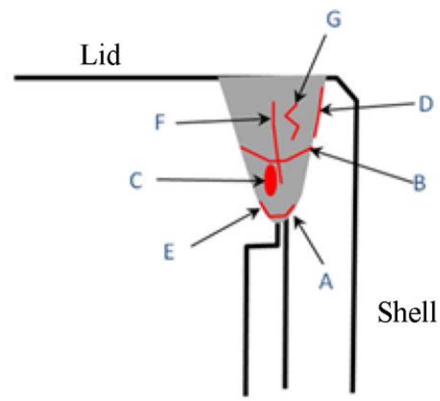
2. Describe the type, size, and orientation of the flaws that may be present in the OTCP weld(s) examined using the phased array UT system.

3. Describe the UT demonstration procedure including the mockup(s) for the OTCP weld(s) including the single-pass HA-GTAW weld and, if applicable, the multi-pass GTAW weld, a description of the type, size, and orientation of flaws in the that will be inserted into the OTCP weld mockup(s) to represent the flaws that may be present in the OTCP weld(s), the required probability of detection (POD) for the phased array UT of the OTCP weld(s), and how the POD will be determined.

It is not clear whether the phased array UT examination, conducted from the external surface of the OTCP, will be able to detect and size weld flaws such as lack of fusion. For the multi-pass GTAW OTCP weld, phased array UT was shown to be an acceptable method for lack of fusion flaws when the examination was conducted from the outer diameter of the DSC shell (ML16159A227). The phased array UT application reviewed by the NRC in ML16159A227 was determined to be acceptable because the procedure was qualified using a blind performance demonstration in accordance with ASME B&PV Code Section V, Article 14, T-1424(b) with Intermediate Rigor that qualifies the equipment, procedure, and data analysis personnel for the detection and dimensioning of welding fabrication flaws. The previous demonstration does not appear to be applicable to the phased array UT described in the current application because the proposed phased array UT would be conducted from the outer surface of the OTCP rather than the external surface of the DSC shell. Further, the weld joint geometry of the single-pass HA-GTAW OTCP weld appears to be a narrow grove weld. Lack of fusion flaws in the single pass HA-GTAW OTCP weld are likely to be oriented perpendicular to the exterior surface of the OTCP. Because of this likely flaw orientation, it is not clear that the proposed phased array UT method from the exterior of the OTCP will be able to detect and adequately size a lack of fusion flaw in the single-pass HA-GTAW OTCP weld.

This information is needed to determine compliance with 10 CFR 72.236(l).

***Revised* Response to RAI 10-1:**



1. Even though the HA-GTAW weld is a narrow groove the as-welded cross-sectional dimensions are similar to multi-pass GTAW welds. Thus, the phased array automated ultrasonic testing (PA-AUT) procedure can be qualified for HA-GTAW weld and multi-pass GTAW welds.

2. Minimum detectable and assessable flaw type and size width (w) /height (h)

   Minimum length of detectable flaw will be the dimension shown for each flaw type.

	Flaw type	Size (in.)
A	Inadequate penetration (IP)	0.08 h
B	Interpass lack of fusion (cold lap)	0.13 w
C	Trapped gas (not porosity)	0.13 h/w
D	Lack of side wall fusion	0.08 h
E	Lack of root fusion	0.08 h/w
F	Hot cracking (center vertical)	0.08 h/w
G	Solidification cracks	0.08 h/w

   The terms of flaw height and width are relative to the orientation of the flaw from an end-view of the weld.

   In general, planar flaws have width but little to no height while flaws such as lack of fusion and inclusions generally have more height than width. The flaw size in its respective orientation is relative to the referenced reflector amplitude.

3. Flaw types A through G, listed above, are typical of multi-pass GTAW.

The default acceptance criteria is the engineering calculated assessment currently approved for DSC OTCP welds where a critical flaw height of [ ] *is acceptable assured progressive PT inspections between controlled deposits.*

The HA-GTAW process is expected to be less prone to flaws of such height and the application of PA-AUT is a much more sensitive assessment process, therefore a more stringent acceptance criteria is targeted. Over time and development, it is expected that the HA-GTAW process, coupled with PA-AUT will meet the acceptance criteria set forth in NB-5331.

NB-5331 references section V article 4 where the reference reflectors are a 3/32-inch diameter side drilled hole. PA-AUT will be capable of providing enough resolution that flaws representing 20% of an equivalent reference reflection can be adequately investigated.

1. *PA-AUT will utilize a mockup (Figure RAI 10-1-1) representing the same joint design as used in closure welding. All appropriate reflectors are to be machined into the mockup to create a realistic calibration block. The PA-AUT system will be validated by successfully demonstrating accurately measuring the area of interest of each reflector in the mockup calibration block. The mockup calibration block will have, at a minimum, the 14 reflectors machined into the relevant inspection area and their respective areas of interest as shown in Figures RAI 10-1-2 through RAI 10-1-9 and their respective areas of interest, with examples shown in Figure RAI 10-1-2 and Figure RAI 10-1-6. To accommodate various sound paths (see Figures RAI 10-1-1 through RAI-10-1-13), the orientation of the cutting path used to create the reflector may be altered,* as *long as it does not interfere with assessing the reflector's area of interest. Since the PA-AUT procedure will need to be approved by an ASTN Level III, additional reflectors may be required per their request.*

2. *No post-welding surface preparation will be necessary.*

3. *There are multiple techniques (joint design and probe configurations) that can be employed to successfully scan the OTCP weld so long as they are proven to accurately detect the described reflectors in the mockup calibration block.*

4. *The PA-AUT process will be validated by utilizing a mockup joint design where known flaws sizes will be employed to verify that the appropriate reflector response is detected and displayed.*

Impact:

No change as a result of this RAI.

Proprietary Information on Pages 12 through 18
Withheld Pursuant to 10 CFR 2.390

List of New CoC 1042 Amendment 3, Revision 5 Technical Specifications
Changes and Justifications

Changed Technical Specifications (TS) Area and Page Number	Justification
Table of Contents, List of Tables, and List of Figures	Updated
Section 4.4.4, Page 4-7	As described in the revised response to Confinement, RAI 5-1, “fabrication leak” has been changes to “fabrication pressure” and the phrase “although the helium leak test requirement remains in place” has been added.

List of TS and UFSAR Pages
Involved in CoC 1042 Amendment 3, Revision 5

Technical Specifications Pages
4-7

UFSAR Pages
2-23

Enclosure 6 to E-60459

CoC 1042 Proposed Amendment 3, Revision 5

Technical Specification Changed Page

4.0 Design Features (continued)

EOS-37PTH and EOS-89BTH DSC ASME Code Alternatives, Subsection NB

(continued)

REFERENCE ASME CODE SECTION/ARTICLE	CODE REQUIREMENT	JUSTIFICATION AND COMPENSATORY MEASURES
NB-6000	All completed pressure retaining systems shall be pressure tested	The DSC is not a complete or "installed" pressure 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, shell bottom, including all longitudinal and circumferential welds, is pneumatically tested and examined at the fabrication facility *when using the three plate bottom assembly. If using a single piece bottom forging, the fabrication pressure test may be waived although the helium leak test requirement remains in place. The low test pressure test does not stress a single piece bottom and bottom-to-shell weld sufficiently to cause pre-existing defects to propagate into leaks. For the purpose of finding leaks, the helium leak test is far more sensitive than the pressure test.* The shell to the inner top cover closure weld is pressure tested and examined for leakage in accordance with NB-6300 in the field. The drain port cover and vent port plug welds will not be pressure tested; these welds and the shell to the inner top cover closure weld are helium leak tested after the pressure test. 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 the 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 EOS-37PTH or EOS-89BTH DSC. The function of the DSC is to contain radioactive materials under normal, off-normal, and hypothetical accident conditions postulated to occur during transportation. The DSC is designed to withstand the maximum internal pressure considering 100% fuel rod failure at maximum accident temperature.

(continued)

All Indicated Changes are in response to RAI 5-1

Enclosure 7 to E-60459

CoC 1042 Amendment 3, Revision 5 UFSAR Changed Page

Withheld Pursuant to 10 CFR 2.390

Enclosure 8 to E-60459

CoC 1042 Amendment 3, Revision 5 UFSAR Changed Page

(Public)

   c) *The calculated "Total Time for Transfer," as defined in Section 4.9.8.3.4, at the maximum allowable heat load for each HLZC qualified per Figure 11 of the TS shall not be less than the sum of the transfer time limit (8 hours) and the duration for recovery actions (5 hours) listed in LCO 3.1.3 of the TS. This requirement also applies to a "Total Time for Transfer" calculated with less than the maximum allowable heat load allowed per each HLZC.*

3. *The thermal evaluations for the storage or transfer configurations as described in Step 2 represent the fuel assemblies as homogenized regions. The bounding effective properties for homogenized regions for the various fuel assembly classes listed in Section 2.2 of the TS are listed in Chapter 4, Appendix 4.9.1. If the thermal properties for the homogenized regions are updated, they shall be calculated based on the same methodology as presented in Section 4.9.1.2.*

4. *If design changes of the system result in updating the thermal evaluations of the storage or transfer configuration as described in Step 2, the impact of these design changes shall be evaluated separately, and then as necessary, collectively. The design changes can be evaluated either based on the 10 CFR 72.48 process, or through a CoC No. 1042 amendment submitted to NRC for review and approval.*

Design changes (i.e., individual and collective) cannot result in an alteration of the thermal physics, correlations, and submodels of the thermal model being outside of their applicable ranges from the baseline analyses in Chapter 4, Appendix 4.9.8 and Appendix A.4, Section A.4.5.6.

All Indicated Changes are in response to RAI 4-6