UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

December 21, 2022

Prakash Narayanan
Orano TN
7160 Riverwood Drive
Suite 200
Columbia, MD 21046

SUBJECT: REVIEW OF AMENDMENT NO. 18 TO CERTIFICATE OF COMPLIANCE NO. 1004 FOR THE STANDARDIZED NUHOMS® SYSTEM – REQUEST FOR ADDITIONAL INFORMATION (EPID NO. L-2022-LLA-0079)

Dear Prakash Narayanan:

By letter dated May 20, 2022 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML22140A025), Orano TN submitted a request to the U.S. Nuclear Regulatory Commission to amend Certificate of Compliance (CoC) No. 1004 for the Standardized NUHOMS® System. The proposed amendment request seeks to add a new canister design to the CoC.

NRC staff has determined that additional information is required to complete its technical review of your application. The requests for additional information are identified in the enclosure to this letter. We request that you provide the requested information by January 13, 2023. Inform us at your earliest convenience, but no later than January 6, 2023, if you are not able to provide the information by that date. If you are unable to provide a response by January 13, 2023, please propose a new submittal date with the reasons for the delay.

Please reference Docket No. 72-1004 and EPID No. L-2022-LLA-0079 in future correspondence related to this licensing action. The staff is available to discuss these questions as well as your proposed responses. If you have any questions, please contact me at (301) 415-6877.

Sincerely,

William C. Allen Signed by Allen, William on 12/21/22

Chris Allen, Project Manager
Storage and Transportation Licensing Branch
Division of Fuel Management
Office of Nuclear Material Safety
and Safeguards

Docket No.: 72-1004
EPID NO. L-2022-LLA-0079

Enclosure:
Request for Additional Information

Request for Additional Information
Orano TN
Docket No. 72-1004
Proposed Amendment to CoC No. 1004

STRUCTURAL

4.1 Provide complete licensing drawings for the NUHOMS 24PTH dry shielded canister (DSC) Type 3 basket.

The drawings provided in section P.1.5 (reference 1) do not contain the necessary dimensional information on key components of the basket (e.g., R90 transition rails, R45 transition rails, R45 angle plates, steel plates, aluminum plates, and metal matrix composite plates) to evaluate the geometry, interlocking features, and numerical models. Reference dimensions alone are insufficient. The complete licensing drawings, including the missing dimensional information (including nominal dimensions and associated tolerances on thicknesses of components and overall basket and rail lengths) for the 24PTH DSC basket assemblies, are needed for the staff to completely evaluate the structural, criticality, and shielding performance impacts.

The above information is necessary to comply with Title 10 of the *Code of Federal Regulations* (10 CFR) 72.230(a); 72.124(a) and (b); and 72.236(b), (c) and (d).

4.2 Provide justification for the boundary conditions used in the accident side drop analyses.

The basket cross section model included various boundary conditions to account for the gap between the DSC and the transfer cask during accident side drop analyses. It is not clear what these different boundary conditions represent. Provide an explanation for the boundary conditions used and how values for the displacement conditions on the DSC were calculated. Correct evaluation of basket behavior (e.g., deformations) is important for and impacts, among others, the criticality and shielding analyses. Additional explanation is needed for the staff to adequately evaluate the ANSYS models.

The above information is necessary to comply with 10 CFR 72.236(c) and (d).

4.3 Provide justification for not using a dynamic load factor (DLF) for ANSYS quasi-static analysis of the basket cross-section model.

Quasi-static analyses use a DLF to capture the added deformation of dynamically applied loads as compared to statically applied loads (reference 3). The hypothetical accident side drop was evaluated with the quasi-static ANSYS cross-section model for a 75g maximum acceleration, but no DLF was used in the models or discussed in the application. The use of a DLF accounts for uncertainties involved in natural frequency, load duration, and load time history shape which depend on the physical characteristics of the fuels, the basket, the containment, and the cask. However, the applicant did not use a DLF in the analysis, which implies that there are no dynamic effects on a fuel system in a cask during a drop.

Provide a justification for not using a DLF for the quasi-static analysis approach. Correct evaluation of basket behavior (e.g., deformations) is important for and impacts, among others, the criticality and shielding analyses.

The above information is necessary to comply with 10 CFR 72.236(c) and (d).

4.4 Provide buckling evaluations of the 24PTH DSC and Type 3 Basket.

Buckling of the 24PTH DSC and the Type 3 basket were not evaluated. NUREG-2215 suggests that buckling of the fuel basket materials should be considered for normal and off-normal loading (section 4.5.5.1.2 of reference 2) and buckling of the canister should be considered for a load drop (section 4.5.6.1.1 of reference 2). Buckling evaluations of the 24PTH DSC and Type 3 Basket are needed for the staff to complete the evaluations. The resulting basket deformation from these evaluations should be appropriately included in the criticality analysis and shielding analysis since the basket affects axial dose rates.

The above information is necessary to comply with 10 CFR 72.236(c) and (d).

4.5 Provide justification that the cross-section model approach is appropriate for the 24PTH DSC Type 3 basket.

The interlocking egg-crate design of the Type 3 basket utilizes no welding and relies on attachments at the basket exterior to keep the structure intact. The mechanical interlocking of the plates at the center of the basket likely has clearance gaps for assembly and thermal growth that give the basket additional flexibility (drawing details were not available to evaluate the gap dimensions). The application has little discussion of the joints and gaps between the basket plate structures and how these are conservatively accounted for in the ANSYS cross-section model. It is not apparent that the short cross-section basket model accounts for the flexibility of the interlocking joints in the series of plates forming the egg-crate design, and the boundary conditions may be artificially stiffening the structure by disallowing any axial motion of the plates under flexure that could occur due to axial clearance gaps. If the cross-section model approach is overly stiff for simulation of an egg-crate design, this could lead to underprediction of the basket compartment relative displacements, which is important for and impacts, among others, the criticality and shielding analyses.

Provide justification that the modeling domain with the cross-section approach appropriately captures the inherent joint flexibility and assembly gaps of the Type 3 basket design to predict maximum compartment displacement. In addition, provide justification for not using the LS-DYNA approach as done with the Type 1 and Type 2 basket design.

The above information is necessary to comply with 10 CFR 72.236(c) and (d).

References:

1. Orano TN, Application for Amendment 18 to Standardized NUHOMS® Certificate of Compliance No. 1004 for Spent Fuel Storage Casks, Revision 0 (Docket No. 72-1004), May 20, 2022.

2. NUREG-2215, Standard Review Plan for Spent Fuel Dry Storage Systems and Facilities - Final Report, April 2020.

3. NUREG/CR-3966, Methods for Impact Analysis of Shipping Containers, November 1987.

THERMAL

5.1 Clarify the following portion of section 4.3.6 b in appendix B of the Standardized NUHOMS® CoC No. 1004 Technical Specifications (TS), "(3) a comparison of the inlet and outlet temperature difference to predicted temperature differences for each individual horizontal storage module (HSM) or HSM-H."

The staff notes, there is a table on page 10 of the Standardized NUHOMS® CoC No. 1004 appendix A TS, section 4.4, that describes the maximum air temperature rise through the HSM that is allowed as a function of the decay heat load of the DSC and the HSM model. If that table were removed, as proposed in proposed change #2, there would no longer be an inlet and outlet maximum air temperature rise criteria that is needed for (3) in the Standardized NUHOMS® CoC No. 1004 appendix B TS section 4.3.6 b to assure 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.

This information is needed to assess compliance with 10 CFR 72.236(f).

SHIELDING

6.1 Provide shielding integrity tests, including acceptance criteria, for the lead in the DSC shield plugs, and ensure the shielding analysis accounts for the impacts of the acceptance criteria on shielding performance and dose rates.

Section P.9.1.5 of the UFSAR includes the shielding integrity tests for the NUHOMS system with the 24PTH DSC. It states that the DSC shield plugs are steel. While two variants have steel shield plugs (the 24PTH-S and 24PTH-L), the 24PTH-S-LC has lead shield plugs. The lead may either be poured lead or precast and machined to fit into the shield plug cavity. Thus, the shielding integrity tests need to be modified to address the lead used in the 24PTH-S-LC DSC's shield plugs, using appropriate test methods and acceptance criteria. The applicant should also ensure that the shielding analysis appropriately addresses the impacts of these criteria for normal operations, off-normal conditions, and accident conditions dose rates and doses.

This information is needed to demonstrate compliance with 10 CFR 72.236(b) and (d).

6.2 Provide further justification for the proposed change to CoC appendix B, section 4.3.2 to remove verification and monitoring of the transfer cask's liquid neutron shield for draining operations of the DSC cavity. Also, modify the text of the condition as described below.

The condition to verify the transfer cask's liquid neutron shield is filled and to monitor it during draining operations of the DSC cavity and the DSC-TC annulus were introduced in Amendment 11 for the NUHOMS system (see safety evaluation report (SER) section 6.5 (ADAMS Accession No. ML14010A486) for Amendment 11, rev 0.). This resulted from an instance where the neutron shield was inadvertently drained during cask operations. The applicant's only justification for the currently proposed change is that the DSC cavity drain is on the opposite end of the DSC from the annulus and neutron shield drains. Based on the staff's review of the transfer cask drawings, the validity of the justification is not clear since the drawings indicate valves on the neutron shield that are on the same end of the DSC as the DSC cavity drain. It's also not clear how the current justification is sufficient to address the staff's review that led to this requirement as documented in the Amendment 11 SER. Further, there should be other means in addition to location differences to ensure against accidental draining of the neutron shield when the intention is to drain the DSC cavity. These means should include items such as operating procedures, sufficient descriptions of which are included in the UFSAR, with justification provided as to why these means are sufficient to ensure that even with the proposed technical specification change, inadvertent draining of the neutron shield will not occur.

Also, the text regarding this monitoring under the heading "TCs with a Liquid Neutron Shield, Other Than the OS197L TC" should be modified to read as: "When draining …, *verify the NS is filled when these draining operations are initiated and* monitor the NS continuously…" (italics indicate requested text changes) The required actions should be consistently described with the description given in the last paragraph under the heading "OS197L TC." Additionally, ensure the acronym 'NS' is defined on the first use.

This information is needed to confirm compliance with 10 CFR 72.236(b) and (d) and ensure the system is sufficient to facilitate licensee compliance with 10 CFR 20.1101 and 20.1201(a) and 10 CFR 72.126(a)(6).

6.3 Provide further justification for the proposed change to the first paragraph of CoC appendix B, section 4.3.2 to remove the reference to 10 CFR Part 20.

The applicant is proposing to remove the requirement that the licensee, as part of its 10 CFR 72.212 evaluation, perform an analysis to confirm the limits of 10 CFR Part 20 will be satisfied. The applicant states that this is because the purpose of the 72.212 evaluation is to confirm compliance with 10 CFR 72.104 limits. While that is the purpose in the regulation, the CoC and its appendices can specify that the evaluation also address other items as needed. This particular requirement was added as part of Amendment 11 to the NUHOMS system. A significant aspect of that amendment was the addition of the OS197L transfer cask, for which there were significant shielding and radiation protection concerns, as described and evaluated in the SER for that amendment (ADAMS Accession No. ML14010A486). In reformatting section 4.3.2, it appears some of the significance and purpose of that requirement (i.e., confirming limits of Part 20 will be satisfied as part of the 10 CFR 72.212 evaluation) is no longer clear. Given the concerns with the transfer casks in the NUHOMS system, particularly the OS197L, that led to the inclusion of this and other requirements, additional justification is needed for removing this requirement. That justification should address those related points that the staff's requests for additional information (see ML080020420, ML080020446, ML110320385, ML13149A438, ML092330146, ML102230097, ML102230099, and ML110590060 for the RAI responses, some of which are proprietary; the RAIs are included in these responses) and the SER described in the Amendment 11 review.

This information is needed to confirm compliance with 10 CFR 72.236(b) and (d) and ensure the system is sufficient to facilitate licensee compliance with 10 CFR 20.1101 and 20.1201(a) and 10 CFR 72.126(a)(6).

6.4 Justify the modification of the dose rate limits for the transfer casks and the storage modules to combine the 24PTH-S-LC with the 24PTH-S and 24PTH-L in the transfer cask and in the HSM-H.

It is not clear that the dose rate limits for the 24PTH-S and 24PTH-L DSCs for both the transfer cask and the HSM-H are also appropriate limits for the 24PTH-S-LC. Given the differences in the DSCs and the HSM-H versus the Standardized HSM, appropriate limits for the 24PTH-S-LC would be significantly less than for the 24PTH-S and 24PTH-L, by a factor of three on the radial transfer cask surface and about a factor of ten on the HSM-H front bird screens. Thus, the proposed changes would result in non-conservative dose rate limits for the 24PTH-S-LC DSC in the transfer cask and in the HSM-H storage module. The staff further notes that the dose rate limits for the 24PTH-S-LC DSC have been kept separate from the limits for the 24PTH-S and 24PTH-L DSCs from the time the 24PTH DSC was added to the Standardized NUHOMS system. So, it is not clear what has changed to support combining the limits for the transfer cask and using the limits for the 24PTH-S and 24PTH-L in the HSM-H for the 24PTH-S-LC in the HSM-H.

This information is needed to confirm compliance with 10 CFR 72.236(b) and (d) and ensure the system is sufficient to facilitate licensee compliance with 10 CFR 20.1101 and 20.1201(a) and 10 CFR 72.126(a)(6).

6.5 Clarify the meaning of the phrase “prior to installation” as it applies to the minimum lead thickness specified for the DSC bottom shield plug on sheet 4 of 5 of Drawing No. NUH24PTH-1002-SAR, revision 3A.

On sheet 4 of 5 of Drawing No. NUH24PTH-1002-SAR, revision 3A, the drawing specifies a minimum lead thickness for the DSC’s bottom shield plug. However, the specification includes the caveat that this is the minimum lead thickness prior to installation. The drawing should show the minimum lead thickness of the installed configuration. If upon installation the lead minimum thickness can be less than the currently specified value, the drawing should be revised to specify the installed lead minimum thickness. Also, the shielding analysis should be revised to use the installed lead minimum thickness for determining dose rates.

This information is needed to confirm compliance with 10 CFR 72.236(b) and (d).

6.6 Confirm the shielding calculations for the DSC with the baskets uses an appropriate density for the high-strength low-alloy steel (HSLA) of the basket, revising the calculations as necessary.

The density of the steel components of the DSC and its basket can have a significant impact on the dose rates for the DSC in the different configurations in the transfer cask and storage module. It is because of density differences that bounding analyses for systems that include options to use different steels (stainless steel and carbon steel options) will evaluate bounding dose rates with the option having the lower density (approximately 7.85 grams per cubic centimeter (g/cm^3) for carbon steel versus 7.92 g/cm^3 for stainless steel). The HSLA steel used for the Type 3 basket can have an even lower density of about 7.75 g/cm^3. Thus, with the basket having an impact on radial and axial dose rates, the shielding analysis models should use this density to determine dose rates for the 24PTH DSCs with this new basket. It is not clear from the application that the analysis models use an appropriate density for the HSLA steel of the basket. Sample input files indicate that the density associated with stainless steel was used.

This information is needed to confirm compliance with 10 CFR 72.236(b) and (d).

6.7 Confirm that the only gaps in the DSC shield plugs with the new lead option are radial gaps (i.e., that there are no axial gaps too). If axial gaps are allowed, revise the drawings to show the maximum axial gaps.

The revised drawings for the DSC (Drawing No. NUH24PTH-1001-SAR, rev 7A and Drawing No. NUH24PTH-1002-SAR, rev 3A) only show radial gaps for the new lead option in the 24PTH-S-LC DSCs' shield plugs (top and bottom). However, section P.4.12.3 discusses axial gaps between the lead and steel shield plug components. The drawings should show the maximum dimensions of any axial gaps. Both axial and radial gaps can be important for shielding, particularly in understanding how much the lead may deform, including under drop accident conditions, and the impacts for dose rates that deformation will have.

This information is needed to confirm compliance with 10 CFR 72.236(b) and (d).

6.8 Modify CoC appendix B tables that show allowed combinations of burnup, enrichment, and cooling time to show that the enrichment is a minimum assembly average initial enrichment, not a maximum.

Appendix B contains several tables for the different DSCs (e.g., tables 1-3k through 1-3m, 1-3o, and 1-3p for the 24PTH DSC) that specify allowed fuel assembly burnup, enrichment, and cooling time combinations. These combinations are specified for decay heats and to limit the radiation source terms of the spent fuel contents. For radiation source terms, the enrichment needs to be specified as a minimum assembly average initial enrichment since the radiation source term increases with decreasing enrichment. However, several tables, including those for the 24PTH DSC, incorrectly state the enrichment as maximum enrichments. The tables should also be clear that the burnup is the maximum assembly average burnup.

This information is needed to confirm compliance with 10 CFR 72.236(b) and (d).

6.9 Provide an evaluation of lead slump or creep in the DSC top and bottom shield plugs and the shielding impacts of lead slump or creep for the following cases:

a. slump due to accident conditions (e.g., a side drop of the DSC in the transfer cask from the maximum height the transfer cask would be lifted in this configuration)
b. creep of the lead over the operational life of the DSC

With radial gaps (and possibly axial gaps; see RAI 5.8), between the lead and the steel components of the shield plugs, there is potential for the lead shielding to deform either by slumping under accident conditions or with creep over time. This deformation of the lead shielding, depending on the extent possible, can have impacts on dose rates that are significant. The application does not appear to include an analysis addressing slump under accident conditions or creep over time as the DSC rests in the storage module. For creep over time, while the radiation source term also decays over time, it should be shown that the source term decay is at least enough to offset the effects on shielding capability of the lead shield plugs due to lead creep.

This information is needed to confirm compliance with 10 CFR 72.236(b) and (d).

6.10 Provide clarification that the geometric configuration of damaged fuel does not change under accident conditions or explain how a change in the configuration is bounded by the current shielding analysis.

The shielding analysis appears to treat the damaged fuel as intact fuel. The geometric configuration of the spent fuel contents impacts the geometric distribution of the source term that can lead to increased dose rates. Page P.5-8 of the updated final safety analysis report (UFSAR) indicates that damaged fuel has no impact on dose rates. The basis and justification for that statement are not clear.

This information is needed to confirm compliance with 10 CFR 72.236(b) and (d).

6.11 Revise the tables and figures in chapter P.5 of the UFSAR that describe the analysis model specifications to include the changes to the analysis models for this amendment.

While the text of chapter P.5 discusses the differences (e.g., lead density), the tables and figures in chapter P.5 are an important source for understanding the models quickly and easily. Thus, they should also reflect the information for analysis models with the new basket (e.g., density for the HSLA, configuration of basket materials) and the lead in the 24PTH-S-LC DSC's top and bottom shield plugs (e.g., lead density, lead dimensions). Consistent description of the models for the different models is necessary to ensure correct and consistent understanding of the analyses.

This information is needed to confirm compliance with 10 CFR 72.236(b) and (d).

6.12 Justify why the surface average dose rates on the HSM front do not increase with the changes in the basket for the 24PTH-L in the HSM-H and for the basket and shield plug changes for the 24PTH-S-LC in the HSM Model 102.

The maximum dose rates for the front surfaces change significantly (46% increase for the 24PTH-L and 45% increase for the 24PTH-S-LC in their respective HSM). Given the changes to the basket and, for the 24PTH-S-LC, the shield plugs, and that the changes affect a significant surface area, the staff expects that the average dose rates will also increase. Thus, further information is needed to understand why the average dose rates are unchanged. Otherwise, the analyses for those dose rates should be modified to reflect the increases in dose rates due to the changes to the basket and shield plugs for the respective variants of the 24PTH DSC.

This information is needed to confirm compliance with 10 CFR 72.236(b) and (d).

6.13 Confirm and justify the dose rate differences seen in the application for the transfer cask and HSM.

The radiation source terms and the geometry of those source terms for the spent fuel contents of the 24PTH-L and 24PTH-S-LC are not changing in this amendment. The amendment only changes the basket from the Type 2 to the Type 3 basket for both these DSC variants. The amendment also changes the lead shield plugs in the 24PTH-S-LC, reducing the lead density and reducing the minimum lead thickness in the bottom shield plug. Since only the basket is changing for the 24PTH-L, the staff expects that the impact to dose rates should be uniform for different analyzed configurations at the top and bottom axial ends of the DSC in the transfer cask and the storage module. The applicant's results indicate this is the case with the exception of the transfer cask top dose rates. All transfer cask dose rates increase by 25 to 33% except the top transfer operations configuration, which only increases 4.6%. The staff's simple calculations indicate that the change across all configurations should be a uniform increase of over 20%. The staff notes the increase for the HSM-H door is higher than expected based on its simple calculations, but the staff can find that to be acceptable (as the applicant's analyzed increase bounds the increase determined in the staff's evaluation).

For the 24PTH-S-LC, both the basket and the lead shield plugs are changing, with greater changes to the bottom lead shield plug (vs. the top lead shield plug). Yet, the applicant's dose rate results indicate that the transfer operations configuration dose rates for the top decrease slightly. This is inconsistent with the source term and source term configuration not changing, but the shielding due to the basket and the lead shield plug decreasing. Also, a comparison of the differences in HSM door dose rates for the 24PTH-L and 24PTH-S-LC show the difference in dose rates is comparable between the two DSC variants (46% increase vs. 45% increase). This is not consistent with differences in shielding changes between the two DSC variants. The relative increase in dose rates for the 24PTH-S-LC should be significantly higher (versus the increase seen for the 24PTH-L) given reduced shielding in not only the basket, but also in the lead shield plug (lower density and thinner minimum thickness). The staff's simple calculations indicate that the transfer cask top dose rates should increase significantly (by over 50%) and the transfer cask bottom dose rates and HSM door dose rates should also increase significantly (by 60 to 70%).

Based on the above, further justification and explanation of the dose rate changes is needed, or the analyses need to be corrected to appropriately reflect the shielding impacts due to the basket and lead shield plug changes. This is important for understanding and correctly characterizing dose rates for occupational dose assessments as well as normal, off-normal, and accident conditions doses for public dose assessments.

This information is needed to confirm compliance with 10 CFR 72.236(b) and (d) and ensure the system is sufficient to facilitate licensee compliance with 10 CFR 20.1101 and 20.1201(a) and 10 CFR 72.126(a)(6).

6.14 Explain how the additional allowed weight for the fuel assemblies and control components in the Type 3 basket will or will not affect the radiation source terms, including total source terms and axial distribution of source terms and modify the shielding analysis as necessary.

Since the Type 3 basket weighs less than the currently approved basket types in the 24PTH DSC, the applicant has proposed increasing the allowed weight of the fuel assembly and control component contents in each basket cell. The increase is about 15 kilograms. With an increase in mass comes an increase in source term as well. It is not clear how this increase in source term from increased allowed mass has been considered in the shielding analyses. The maximum mass of uranium per fuel assembly remains fixed. So, the increased mass would be in control components or assembly hardware, which increases the cobalt-60 source due to activation of these items. While increased mass does increase self-shielding, the staff's simple calculations indicate that the increased self-shielding is not sufficient to compensate for the increase in source term (i.e., dose rates will increase). Additionally, the distribution of the added weight and added source term can have a significant impact on dose rates. If the added mass is in either the upper or lower hardware zones of the assemblies, the respective axial dose rates for the DSC will increase, potentially significantly.

This information is needed to confirm compliance with 10 CFR 72.236(b) and (d).

RADIATION PROTECTION

10.1 Provide further clarification and information to explain the basis for the occupational dose estimate being only slightly impacted by the increased dose rates on the DSC top, transfer cask, and storage module that result from the DSC and basket changes.

In section P.10.1 of the application, the applicant states that the net effect of the changes on the occupational exposure is an increase of only 3%. Given the DSC and basket changes the staff estimates, using the applicant's reported dose rate information, that the impact could be more substantial. However, to confirm the conclusion, the staff needs information regarding personnel positions for the different operations covered by the table P.10-1 method for estimating occupational exposures, including where those positions are versus the dose rates calculated in chapter P.5 for the different configurations of the DSC in the transfer cask and the storage module.

The staff recognizes that the applicant also provided some limited data and a short discussion regarding measured occupational exposures from actual loading campaigns. However, the data and discussion do not include any meaningful information for applying the provided data to support the applicant's determination that the unchanged table P.10-1 exposure estimates remain adequate and conservative for the modified DSC and basket.

This information is needed to confirm compliance with 10 CFR 72.236(b) and (d) and ensure the system is sufficient to facilitate licensee compliance with 10 CFR 20.1101 and 20.1201(a) and 10 CFR 72.126(a)(6).

10.2 Provide an evaluation of the impact of the changes to the DSC and basket on the evaluation in the UFSAR on the demonstration for meeting the annual dose limits in 10 CFR 72.104(a), either modifying the evaluation for 10 CFR 72.104(a) or justifying that the current evaluation bounds the system with the modified DSC and basket.

With dose rates increasing as a result of the DSC and basket changes, the staff expects that there will be impacts to the evaluations to support demonstration of meeting the 10 CFR 72.104(a) limits. However, the applicant has not provided revised evaluations in chapter P.10 of the UFSAR to address this. Nor has the applicant provided justification for why the current analyses are bounding for the system with the modified DSC and basket.

This information is needed to confirm compliance with 10 CFR 72.236(b) and (d).

OPERATION PROCEDURES AND SYSTEMS

11.1 Describe the mechanism to alert general licensees of the need to review all design basis parameters that may be affected by adverse weather conditions (e.g., operating windspeed for any handling equipment used) and consider these design basis parameters along with weather forecasts for decision making and implementation when establishing these weather-related administrative controls for the expected duration of the activity.

While an acceptance criterion of "tornado watches, advisories, or warnings" may protect Structures Systems and Components (SSCs) from design basis tornado accidents, it may not alone protect SSCs from all normal and off normal wind conditions and therefore additional evaluation may be necessary to demonstrate an analyzed wind speed that is appropriate for normal operation of SSCs. The purpose of the weather-related administrative controls should be to prevent the DSC and any DSC ancillary systems from exceeding their design basis parameters due to weather conditions during handling operations. Design basis parameters may be exceeded by weather conditions that do not result in a weather alert.

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

11.2 Provide the basis for checking the forecast for 8 hours. Specifically provide the basis that 8 hours bounds all expected handling operations. Alternatively, specify that the weather should be checked for the expected duration of the handling operation.

The licensee should determine the expected bounding duration of the handling operation by either benchmarking or dry runs. The duration should then be periodically assessed based upon operating experience.

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

11.3 Provide additional guidance on how licensees will obtain weather forecasts prior to each loading/unloading evolution.

Licensees may use information from the National Weather Service unless another resource for the site (e.g., the National Oceanic Atmospheric Administration, Weather Forecast Office nearest the site, weather channel, etc.) is already approved for use or can be justified as providing equivalent information in terms of timeliness and accuracy. Prescribe specific times that the weather forecast would be checked, the area(s) considered, and the frequency of the forecast checks accounting for the site configuration and time necessary to be able to bring the system into an analyzed configuration at any time, if necessary, when there is a change in forecast. Describe ‘other’ conditions that cannot be met (e.g., occurrence of significant delays, equipment malfunctions, or manpower/labor issues) that would necessitate having to place the storage system SSCs in a safe and analyzed condition.

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

11.4 Provide a description of meteorological monitoring criterion to be satisfied prior to the start of the ISFSI transient operations.

Identify the actions to be performed before commencing ISFSI transient operations (e.g., notification of control room, assigning personnel to monitor weather during ISFSI transient operations, site walkdowns that identify and secure any potential hazards, etc.) that can preclude short term operations during periods of adverse weather or during periods when adverse weather is predicted. Satisfactory completion of these criteria should be recorded and maintained with the documentation for the DSC campaign and should be checked no greater than the frequency established in Step 1 thereafter until ISFSI handling operations are completed.

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

11.5 Provide a basis for not applying administrative controls to infrequently performed maintenance and inspection related activities during which ISFSI important to safety SSCs are in an unanalyzed condition.

Since performance of aging management activities may also require placing SSCs into unanalyzed conditions, consideration should also be given to applying administrative controls to these activities as well.

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