Enclosure 2 to DPG-18-114

RSIs and Observations and Responses

RSI-1

Provide supplemental information that describes the scoping evaluation and, if necessary, aging management review results for the greater than class C (GTCC) waste (i.e., the contents) stored at the Rancho Seco Independent Spent Fuel Storage Installation (ISFSI). Table 2-1 of the renewal application does not address the GTCC waste and Chapter 3 of the application does not include aging management review results for the GTCC waste.

The staff needs this information to proceed with its review to determine if the Rancho Seco ISFSI license renewal application meets the regulatory requirements of 10 CFR 72.42(a) and (b).

RESPONSE TO RSI-1:

The scoping evaluation results for the GTCC waste canister are provided in License Renewal Application (LRA) Table 2-6. Table 2-3 of the LRA summarizes the radioactive waste contents allowed for storage in the GTCC DSC. As shown in Table 2-3, the GTCC waste is non-fuel related material generated as a result of plant operations and decommissioning. This waste includes such items as incore components and instrument tips, activated metal from core support structures, and small reactor-related miscellaneous parts resulting from the reactor vessel internals segmentation/decommissioning process Reference [2-2]. Per the Scoping Criteria of NUREG-1927 R-1 and as supported by the results for the GTCC canister in Table 2-6, the GTCC waste is not within the scope of renewal. Additional clarification has been added to LRA Section 2.3.2, and a new Section 2.3.2.4 has been added to include the description of the GTCC waste as not being within the scope of renewal. In addition, the summary table of the scoping evaluation results (Table 2-1) has been revised to add the GTCC waste.

Impact:

LRA Sections 2.3.2 and 2.3.2.4, and Table 2-1 have been revised as described in the response.

RSI-2

Provide the susceptibility evaluation, Calculation 502917-AMR03, Revision 0, "Rancho Seco ISFSI Site Chloride-Induced Stress Corrosion Cracking Susceptibility Ranking" [3-63] referenced in Application Section 3.4.4.2 Discussion of Aging Mechanisms. The Rancho Seco ISFSI Pre-Application Inspection Conclusions states:

> *The Rancho Seco ISFSI site is a fundamentally benign environment for potential degradation of metal and concrete since it is not near a source of salt water, or operating cooling towers.*
>
> *A susceptibility evaluation, Calculation 502917-AMR03, Revision 0, "Rancho Seco ISFSI Site Chloride-Induced Stress Corrosion Cracking Susceptibility Ranking" [3-63], has been performed for the Rancho Seco ISFSI in accordance with the methodology described in EPRI Report 3002005371, Susceptibility Assessment Criteria for Chloride-Induced Stress Corrosion Cracking (CISCC) of Welded Stainless Steel Canisters for Dry Cask Storage Systems [3-62] to determine the CISCC susceptibility ranking at the Rancho Seco site…*
>
> *Based on the results of the susceptibility evaluation [3-63], the potential for CISCC on the external surface of the Rancho Seco DSC shell assembly is minimal. Therefore, cracking due to CISCC is an aging effect that does not require management.*

The staff note that based on aerial images/maps and Application Figure E-2, "Rancho Seco Owner-Controlled Area and Aerial mapping tools," the Rancho Seco ISFSI is less than 1000 meters from the cooling towers of the Cosumnes power plant. According to EPRI's Susceptibility Assessment Criteria for Chloride-Induced Stress Corrosion Cracking (CISCC) of Welded Stainless Steel Canisters for Dry Cask Storage Systems, cooling towers within 1000 meters of an ISFSI should be considered in the potential for CISCC.

It is not clear from the information provided in the renewal application how, or if, the cooling towers of the Cosumnes power plant were considered in the CISCC susceptibility assessment.

The staff needs this information to proceed with its review to determine if the Rancho Seco ISFSI license renewal application meets the regulatory requirements of 10 CFR 72.42(a) and (b).

RESPONSE TO RSI-2:

Consideration for cooling towers was included in Calculation 502917-AMR03 Revision 0 and this calculation is included in Enclosure 5 herein. The calculation is proprietary in its entirety.

Impact:

No LRA change as a result of this RSI.

RSI-3

Provide AREVA TN Calculation 502917-0501 Rancho Seco License Renewal Combustible Gas Generation Analysis, Rev 0, [A-9] referenced in Application Section A.2.4 Combustible Gas Generation. This analysis was performed to determine the amount of combustible gases generated as a result of irradiation of neutron shield material for the MP187 TC during its function as a TC during the assumed transport scenario at the Rancho Seco ISFSI site.

In addition, provide supplemental information, as required, to support the assessment in Application Sections 3.7.5.2 Supplemental Evaluation - Combustible Gas Generation and A.2.4 Combustible Gas Generation statistically insignificant. The analysis concludes that:

> *…the very small fractional loss of hydrogen will have an insignificant impact on the ability of the TC neutron shield material to perform its design shielding function over the Period of Extended Operations (PEO).*

The information provided in this assessment addresses the loss of hydrogen from the neutron absorber material and does not address the potential for an accumulation of combustible gasses.

The staff needs this information to proceed with its review to determine if the Rancho Seco ISFSI license renewal application meets the regulatory requirements of 10 CFR 72.42(a) and (b).

RESPONSE TO RSI-3:

Calculation 502917-0501 Revision 0 is provided in Enclosure 6 herein. This calculation is proprietary in its entirety.

Impact:

No LRA change as a result of this RSI.

RSI-4

Provide the following calculations/analyses:

1. AREVA TN Calculation 502917-0201 Rancho Seco License Renewal Dry Storage Canister (DSC) Thermal Fatigue Analysis, Rev. 1, [A-7] identified in Application Section A.2.1 Fatigue Analysis of the NUHOMS® DSC Shell Assembly. This Calculation includes the evaluation of the effects of cyclic loading (fatigue) for 60 years on the mechanical properties of the Dry Shielded Canister (DSC) shell assembly for the Rancho Seco ISFSI.

2. AREVA TN Calculation 502917-0200 Rancho Seco License Renewal MP187 Multi-Purpose Cask Thermal Fatigue Analysis, Rev. 0, [A-6] referenced in Application Section A.2.2 Fatigue Analysis of the NUHOMS® MP187 Transfer Cask (MP187 TC). This calculation evaluated the integrity of the MP187 TC due to fatigue loading.

3. AREVA TN Calculation 502917-0500 Rancho Seco License Renewal Boron Depletion and Fluence Analysis, Rev. 0, [A-8] referenced in Application Section A.2.3 Boron Depletion, Gamma Irradiation, and Neutron Fluence Analysis. This calculation was conducted to determine the amount of boron depletion of the poison plate material for the Fuel Only (FO) and Fuel with Control Components (FC) DSC types at the Rancho Seco site.

The staff needs this information to proceed with its review to determine if the Rancho Seco ISFSI license renewal application meets the regulatory requirements of 10 CFR 72.42(a) and (b).

RESPONSE TO RSI-4:

Calculation 502917-0201 Revision 1 is provided in Enclosure 7, Calculation 502917-0200 Revision 0 is provided in Enclosure 8, and Calculation 502917-0500 Revision 0 is provided in Enclosure 9 herein. These calculations are proprietary in their entirety.

Impact:

No LRA change as a result of this RSI.

OBSERVATION

OBS-1

Application Section 3.2.2.2 Rancho Seco ISFSI Operating Experience includes PDQ 02-0003 which states:

> *Scratch on TC rail after inserting DSC No. 8. During insertion of DSC No. 8 into HSM No. 6, one of the internal rails of the TC was scratched, leaving material deposited at the end of the rail. A work order was completed to remove the raised material and Quality Control verified the surface finish was sufficient in the worked areas.*

The staff notes that the work conducted to resolve the issue appears to be conducted on the transfer cask. The condition of the DSC is not described and the implications for the aging management of DSC No. 8 are not provided.

This information is necessary to assure compliance with 10 CFR 72.42(a) and (b).

RESPONSE TO OBS-1:

LRA Section 3.2.2.2 has been revised to clarify that the conditions identified by Potential Deviations from Quality (PDQ) 02-0003 did not compromise the integrity of dry shielded canister (DSC) No. 8 and that the conditions described in the PDQ do not require aging management.

Impact:

LRA Section 3.2.2.2 has been revised as described in the response.

OBS-2

Application Section 3.2.4.4 Chloride Sample Analysis Results describes the analysis of atmospheric deposits collected from surrogate surfaces near the Rancho Seco ISFSI. The staff note that the description does not address the following:

1. How was the sample collected and how was it determined that the collection methods allow a direct comparison to the previous analyses included in this table?

2. How long the surface was open to atmosphere, but not exposed to rain and snow prior to sample collection?

This information is necessary to assure compliance with 10 CFR 72.42(a) and (b).

RESPONSE TO OBS-2:

RESPONSE TO OBS-2 (1):

The samples in question consisted of pieces of metal. One piece was part of a door frame from within the Auxiliary Building and the other was a bracket from a structural column from within the Turbine Building. The pieces were sent to the laboratory where the chloride deposition was measured from the surfaces of the samples. This collection method provides a more direct measurement than samples collected via the SaltSmart™ sensor (which uses a wick to dissolve and transport the slats from the surface of the canister to a reservoir) used at Calvert Cliffs and Hope Creek. The LRA has been revised to reflect how the samples were collected and how this method compares to the method used at the other independent spent fuel storage installation (ISFSIs). Due to questions/concerns with the results of the measurements taken at the Diablo Canyon ISFSI, the LRA has been revised to remove Diablo Canyon information from the comparison table.

RESPONSE TO OBS-2 (2):

The buildings were decommissioned in 2008 and the samples were collected in May of 2017. Therefore, the samples were exposed to the atmosphere for more than eight years without environmental maintenance (e.g., cleaning) performed. The LRA has been revised to reflect when the samples were taken relative to when the buildings were decommissioned.

LRA Section 3.2.4.4 “Chloride Sample Analysis Results” has been revised to clarify the above information.

Impact:

LRA Section 3.2.4.4 has been revised as described in the responses.

OBS-3

Application Section 3.2.4 Rancho Seco ISFSI Pre-Application Inspection states:

> *The DSC with the longest time in service is DSC Serial No FO24P-P01, which was loaded in HSM No. 20 on April 19, 2001. This DSC has been in service for over 15 years and had an initial decay heat of 9.005 kW. This low heat load results in low DSC shell surface temperatures and continues to lower the DSC shell temperatures over the 15-year operating period, thus increasing relative humidity inside the HSM and potentially promoting incubation of ambient contaminants.*

The staff note that this information is not complete as it does not address how the selected DSC compared to the other DSCs at the Rancho Seco ISFSI. Additional information such as a comparison of the initial heat loads and time in service is necessary to support that the selected DSC was appropriate for a pre-renewal application inspection.

This information is necessary to assure compliance with 10 CFR 72.42(a) and (b).

RESPONSE TO OBS-3:

Table 2-11 has been added to the LRA to provide a loading overview of the spent fuel assemblies data at Rancho Seco Nuclear Generating Station (RSNGS). A reference to Table 2-11 has been added to Section 2.3.1 of the LRA. Section 3.2.4 of the LRA has been updated to provide additional information on the basis for selecting DSC FO24P-P01 as the selected DSC for pre-application inspection.

Impact:

LRA Sections 2.3.1 and 3.2.4 have been revised and Table 2-11 has been added as described in the response.

OBS-4

Application Section 3.2.2.2 Rancho Seco ISFSI Operating Experience DQ 01-0001 (page 3-10) which states:

> *During the HSM erection in early 1996, a problem was found with the paint on all of the HSM heat shields. It was determined that the existing heat shield paint was not qualified to the anticipated temperatures of the HSM.*

The staff note that the description of this operating experience is incomplete. Specifically the description does not addresses the following questions:

1. The inspection described occurred in 1996 during construction and the ISFSI License was originally granted in 2000. Clarify whether the problem identified was the result of an event such as exposure to elevated temperature or related to the a non-conformance or improper coating selection.

2. Was an extent of condition performed? If so, what was the result of that assessment?

3. Is there a potential for iron contamination of the DSC from corrosion of the heat shields and if so, was that considered in the ISFSI Aging Management Review?

This information is necessary to assure compliance with 10 CFR 72.42(a) and (b).

RESPONSE TO OBS-4 (1):

LRA Section 3.2.2.2, “Rancho Seco ISFSI Operating Experience,” has been revised to clarify the timing of the inspection relative to construction of the independent spent fuel storage installation (ISFSI) and when fuel was loaded. The LRA has also been revised to clarify that the cause of the peeling paint was due to poor workmanship, and that the resolution of the condition was to clean off the flaking paint and residue.

RESPONSE TO OBS-4 (2):

The condition was limited to the heat shields in Horizontal Storage Modules (HSMs) No. 2 and No. 6. Note that the thermal analysis performed in 1997 showed that all acceptance criteria were met for all conditions of the paint including no paint on the heat shield. Table 3-1, “Operating Experience Documentation of Potential Age-Related Degradation,” has been revised to add the revision number and date to Calculation NUH004.0421.

RESPONSE TO OBS-4 (3):

As described in Section 4.6 “Cathodic Protection” of Volume 1 of the LRA (and shown on Table 2-7 “Scoping Evaluation Results for HSM” and Table 3-8 “Rancho Seco HSM Intended Functions and AMR Results” of the LRA), the heat shields are galvanized for corrosion protection and painted on the inside surface. Therefore, corrosion of the heat shields is not expected even with the peeling paint and iron contamination of the DSC was not considered in the Aging Management Review.

Impact:

LRA Section 3.2.2.2 and Table 3-1 have been revised as described in the response.

OBS-5

Application Figure 3-6. DSC Bottom and Support Rail, East Side, between Support #2 and Support #3 shows the bottom of the DSC and the painted steel DSC support structure inside the HSM. The staff note that the picture appears to show evidence of paint blisters on the rail support beam that does not appear to be addressed in operating experience or considered in the aging management review.

This information is necessary to assure compliance with 10 CFR 72.42(a) and (b).

RESPONSE TO OBS-5:

Figure 3-6 does show paint blisters on the Support Rail. Section 3.2.4.2 and the caption for Figure 3-6 have been revised to acknowledge the presence of the blisters on the support rail.

As described in the Horizontal Storage Module (HSM) Aging Management Review Section, 3.5.4.5 “Coatings Evaluation,” no credit is taken for coatings of the HSM carbon steel subcomponents for performance of intended functions. Coatings are treated as a “material” rather than a “subcomponent”; therefore, an Aging Management Review on coating failure was performed in Section 3.5.4.5 to determine if it could adversely affect the safety function of a safety-related structure, system, and component. The section concludes that coating failure (e.g., blistering, cracking, flaking, and peeling) will not prevent the HSM from satisfactorily accomplishing its intended functions. Therefore, coating failure is not included as an inspection attribute within the HSM AMP.

Impact:

LRA Section 3.2.4.2, 3.5.4.5, and Figure 3-6 have been revised as described in the response.

OBS-6

The staff note the following observations in Application Section 3.4.4.2 Discussion of Aging Mechanism:

1. General Corrosion is focused on carbon steel. The last sentence of the first paragraph refers to “the specific metal involved.” It is not clear if this means the type of carbon steel (i.e., plain carbon steel vs. a weathering steel) or something else.

2. Elevated Temperature (Page 3-70) is not an aging mechanism. The content of this section addresses thermal embrittlement or thermal aging.

This information is necessary to assure compliance with 10 CFR 72.42(a) and (b).

RESPONSE TO OBS-6 (1):

The general corrosion discussion in LRA Section 3.4.4.2 is focused on carbon steel. The last sentence in the first paragraph has been revised to clarify that it is not referring to any other type of steel but carbon steel.

RESPONSE TO OBS-6 (2):

The discussion throughout the LRA referring to “Elevated Temperature” is intended to address the thermal aging mechanism. The term “elevated temperature” has been changed to “thermal aging” in Sections 3.4.4.1, 3.4.4.2, 3.5.4.1, 3.5.4.2, 3.5.4.4, 3.7.4.1, and 3.7.4.2 of the LRA.

Impact:

LRA Sections 3.4.4.1, 3.4.4.2, 3.5.4.1, 3.5.4.2, 3.5.4.4, 3.7.4.1, and 3.7.4.2 have been revised as described in the response.

OBS-7

Application Section 3.4.4.4 Coating Evaluation states the following:

> *All of the DSCs in storage service at the Rancho Seco ISFSI have been sealed, dried, and backfilled with helium. There is no event defined in the Rancho Seco ISFSI licensing basis that would expose the DSCs to a water environment through the PEO.*

The staff note that the statement in the application is inconsistent with the content of the section, which is referring to the potential to expose coated components contained within the DSCs to water.

This information is necessary to assure compliance with 10 CFR 72.42(a) and (b).

RESPONSE TO OBS-7:

LRA Section 3.4.4.4, Coating Evaluation, discusses the potential aging effects of the electroless nickel coating when exposed to a water environment. The LRA has been revised to clarify that the evaluation is for the electroless nickel coatings.

Impact:

LRA Section 3.4.4.4 has been revised as described in the response.

OBS-8

Application Section 3.4.4.5 Temporary Attachment Evaluation states:

> *Although the local temperature can be above the sensitization range at the location of the weld, the heat affected zone (HAZ) is limited to approximately a 0.125-inch depth, which is much less than the seam welds that extend through the thickness.*

The staff note that the evaluation is not supported with an assessment such as a technical paper, a reference to an industry report or operating experience.

This information is necessary to assure compliance with 10 CFR 72.42(a) and (b).

RESPONSE TO OBS-8:

LRA Section 3.4.4.5 “Temporary Attachment Evaluation” has been revised to include a supporting assessment.

Impact:

LRA Section 3.4.4.5 has been revised as described in the response.

OBS-9

Application aging management review of the DSCs in Tables 3-3, 3-4, 3-5, 3-6, HSMs in Table 3-8, and the TC in Table 3-10 only identify components and aging effects that are managed by aging management programs (AMPs). The staff note that the aging management review tables are not complete because aging effects that are managed by TLAAs are not identified.

This information is necessary to assure compliance with 10 CFR 72.42(a) and (b).

RESPONSE TO OBS-9:

LRA Section 3.4.5.1, “DSC TLAAs and Supplemental Analyses,” identified a fatigue evaluation and boron depletion evaluation as the time-limited aging analyses (TLAAs) associated with the DSCs. The fatigue evaluation showed that cracking of the DSC pressure boundary subcomponents due to thermal fatigue could be managed during the period of extended operations via the TLAA. Similarly, the boron depletion evaluation showed that the loss of criticality control due to boron depletion of the Boral neutron poison plates could be managed via the TLAA.

LRA Section 3.7.5.1 “TC Time-Limited Aging Analysis and Supplemental Evaluation” identified a fatigue evaluation as a TLAA associated with the transfer cask. The fatigue evaluation showed that cracking of the transfer cask subcomponents due to thermal fatigue could be managed during the period of extended operations via the TLAA.

Note that Sections 3.5.4, “Aging Effects Requiring Management for the HSMs,” and 3.6.4, “Summary of Aging Effects Requiring Management,” (for Basemat), did not identify any aging mechanisms/effects that would be managed via a TLAA for the horizontal storage modules (HSMs) and basemat.

The LRA has been revised to clarify that the following aging effects will be managed during the period of extended operations via a TLAA aging management activity.

- Cracking of the DSC pressure boundary components due to thermal fatigue
- Loss of criticality control due to boron depletion of the Boral neutron poison plates
- Cracking of the transfer cask subcomponents due to thermal fatigue

While reviewing the LRA to ensure that TLAAs were identified as aging management activities, it was identified that the distinction between TLAAs and supplemental evaluations/analyses was not always clear. While TLAAs are an aging management activity, the supplemental evaluations/analyses are used to show that the following aging mechanisms do not require aging management:

- Irradiation embrittlement
- Combustible gas generation

The LRA has been revised to clarify that the supplemental evaluations/analyses show that the above aging mechanism do not require aging management.

Impact:

The following LRA Sections have been revised as described in the response:

- Section 3.3
- Section 3.4.4.2
- Section 3.4.4.3
- Section 3.4.4.6
- Section 3.4.5.1
- Section 3.5.4.2
- Section 3.5.5.1
- Section 3.6.5
- Section 3.7.4.2
- Section 3.7.4.3
- Section 3.7.4.5
- Section 3.7.5.1
- Section 3.7.5.2
- Section 3.10
- Section A.2.1
- Section A.3
- Section C.2.1
- Section C.2.3
- Section C.2.4
- Section C.2.4.1
- Section C.2.4.4
- Section C.2.5.1
- Section C.2.5.2
- Section C.2.5.3
- Section C.2.5.4
- Section C.4

The following LRA Tables have been revised as described in the response:

- Table 3-3
- Table 3-4
- Table 3-5
- Table 3-6
- Table 3-10

OBS-10

Application Sections 3.5.4.6 Summary of Aging Effects Requiring Management, 3.6.4 Summary of Aging Effects Requiring Management, C.2.4.2 FSAR Section 9.8.3.2 – Results of Aging Management Review – HSM, C.2.4.3 FSAR Section 9.8.3.3 – Results of Aging Management Review – Concrete Basemat have sections titled “Changes in Material.” The staff note that these sections appear to address changes in material properties.

This information is necessary to assure compliance with 10 CFR 72.42(a) and (b).

RESPONSE TO OBS-10:

Leaching of Ca(OH)2 and aggressive chemical attacks are aging mechanisms that could lead to the change in material properties aging effect. Therefore, the following sections have been revised to clarify that the aging effect involved is change in material properties:

Section 3.5.4.6 “Summary of Aging Effects Requiring Management”

Section 3.6.4 “Summary of Aging Effects Requiring Management”

Section C.2.4.2 “FSAR Section 9.8.3.2 – Results of Aging Management Review – HSM”

Section C.2.4.3 “FSAR Section 9.8.3.3 – Results of Aging Management Review – Concrete Basemat”

Impact:

LRA Sections 3.5.4.6, 3.6.4, C.2.4.2, and C.2.4.3 have been revised as described in the response.

OBS-11

Application Section 3.5.4.5 Coatings Evaluation, which states:

> *The lubricant suffers no radiation effects because it consists entirely of graphite. Thus, lubricant failure would not prevent the HSM or the DSC from satisfactorily accomplishing its intended functions. Therefore, dry lubricant deterioration is not an effect requiring aging management.*

This information is necessary to assure compliance with 10 CFR 72.42(a) and (b).

RESPONSE TO OBS-11:

Dry lubricant deterioration is not an aging effect requiring aging management since the dry film lubricant is not relied upon for DSC retrievability. Additional justification is provided in Sections 3.5.4.5 and 3.7.4.4.

Impact:

LRA Sections 3.5.4.5 and 3.7.4.4 have been revised as described in the response.

OBS-12

Application Section 3.7.4.2 Discussion of Aging Mechanism - Galvanic Corrosion states:

> *There are no instances for the MP187 TC where two or more dissimilar metals are joined together in a conducting environment, setting up conditions for a possible galvanic reaction. Therefore, loss of material due to galvanic corrosion is not an aging effect requiring management.*

The staff note that the assessment does not appear to consider the potential for galvanic corrosion of the stainless steel components to the transfer cask in contact with graphite.

This information is necessary to assure compliance with 10 CFR 72.42(a) and (b).

RESPONSE TO OBS-12:

LRA Section 3.7.1 “Description of Transfer Cask Subcomponents” describes the use of a “high contact pressure dry film lubricant” of the transfer cask rails to facilitate dry shielded canister transfer into and out of the horizontal storage module. As described in LRA Section 3.7.4.4, this lubricant contains graphite, which is noble relative to the transfer cask rails, inner shell, and bottom end closure. Therefore, there is the potential for galvanic corrosion of the rails, inner shell, and bottom end closure.

Sections 3.7.1, 3.7.4.2, 3.7.4.5, B.5, and C.2.4.4 of the LRA have been revised to included loss of material due to galvanic corrosion for the transfer cask rails, inner shell, and bottom end closure.

Impact:

LRA Sections 3.7.1, 3.7.4.2, 3.7.4.5, B.5, and C.2.4.4 have been revised as described in the response.

OBS-13

Application Section 3.8.2 Spent Fuel Assemblies Materials Evaluated bounds the spent fuel assemblies stored at Rancho Seco. Application Section 3.8.2 states:

> *According to EPRI TR-108757 [3-35], "storage temperatures are too low to anneal out the radiation damage in stainless steel or nickel-based alloys [and] no significant changes are expected to occur in stainless steels and nickel-based superalloys during dry storage."*

The staff note that as stated, it is not clear that the analysis in EPRI TR-108757 bounds the conditions for the assemblies stored at the Rancho Seco ISFSI.

This information is necessary to assure compliance with 10 CFR 72.42(a) and (b).

RESPONSE TO OBS-13:

The characteristics of spent fuel assemblies (SFAs) allowed for storage in FO, FC and FF dry shielded canisters are provided in Table 2-2. The maximum cladding temperature at the beginning of storage (for off normal conditions) for SFAs loaded in FO and FC DSCs is 746 °F (397 °C) as provided in Section 3.8.3 of the LRA. [Reference: Volume II, Table 8-5 of the Rancho Seco ISFSI FSAR]. Also as provided in Table 8-5, this temperature is greater than the normal temperature of 714 °F (397 °C), but less than the fuel cladding acceptance criteria of 1058 °F (570 °C). LRA Section 3.8.3 has been updated to provide this additional clarification. The FF and GTCC DSC thermal analysis results are bounded by the FO/FC DSC thermal analysis results.

Impact:

LRA Section 3.8.3 has been revised as described in the response.

OBS-14

The staff note that Application Section B.3 DSC External Surfaces Aging Management Program appears to be inconsistent with other aging management programs, which also include the following statement in the Confirmation Process:

> *A tollgate will be established to assess effectiveness of corrective actions and update the AMP as necessary on a periodic basis.*

This information is necessary to assure compliance with 10 CFR 72.42(a) and (b).

RESPONSE TO OBS-14:

Tollgate assessments will be performed as part of the Aging Management Program. Section B.3.5 (AMP Element 8) of the LRA has been revised to reflect that tollgates will be established.

Impact:

LRA Section B.3.5 has been revised as described in the response.

OBS-15

Application Section B.5.2 identifies only a sheltered environment for the TC AMP. Consistently. Application Section B.5.5.4 states the following:

> *The TC cask was used at SMUD during fuel loading and transfer operations that concluded in August 2002 for all DSCs except the GTCC canister, which concluded in 2006. All of the DSCs are in storage in the HSMs and the TC will only be used when the DSCs are to be retrieved from the HSMs for offsite shipment. Therefore, pre-service inspections are more appropriate for the TC at SMUD.*

In addition, Application Section A.2.2.1 Atmospheric to Service Pressure Cycle states:

> *For on-site vertical storage conditions the cask is designed to serve as a pressure boundary during vertical storage of a leaking DSC.*

The staff note that the Transfer Cask Aging Management Program does not describe how the range of past and possible future operational environments for the TC are considered. Specifically the staff note that the aging management review does not appear to consider either (1) aging effects such as exposure to radiation; or (2) the potential role of the TC to store a leaking DSC (if such an event were to occur).

This information is necessary to assure compliance with 10 CFR 72.42(a) and (b).

RESPONSE TO OBS-15:

No response is provided at this time.

OBS-16

Clarify the following items in Application Tables B-1 and B-2:

1. Explain what an equivalent comparison inspection is and provide examples representative for each case.

2. The Frequency of Inspection and Trending columns appear to call out incorrect sections of the application. For example, Table B-2 Frequency (page B-36) calls out AMP Section 5.2 (7). It appears that this should call out B.5.5 (7). Correct as required.

This information is necessary to assure compliance with 10 CFR 72.42(a) and (b).

RESPONSE TO OBS-16 (1):

The Dry Shielded Canister (DSC) External Surface Aging Management Program Section B.3.5 "Evaluation and Technical Basis," Element 4.2 "Inspection Methods" states:

> "This AMP addresses detection of aging effects for inaccessible areas indirectly by monitoring the inspection findings in normally non-accessible areas. Therefore, inaccessible area inspections are only performed if Sacramento Municipal Utility District (SMUD's) Corrective Action Program determines it is necessary to ensure that the component's intended function is maintained during the PEO."

And, the HSM Aging Management Program Section B.4.5 "Evaluation and Technical Basis," Element 4 "Detection of Aging Effects" states:

> "This AMP addresses detection of aging effects for inaccessible areas indirectly by monitoring the inspection findings within accessible and normally non-accessible areas. Therefore, inaccessible area inspections may only be required because of the SMUD ISFSI Corrective Action Program to ensure the aging effect is adequately managed and that the component's intended function is maintained during the PEO."

Therefore, the inspection types of inaccessible areas would be determined by SMUD's Corrective Action Program and not from any specific method.

RESPONSE TO OBS-16 (2):

References to the sections within Appendix B of the LRA that identify corrective actions for the DSCs and the HSMs have been corrected.

Table B-1 "DSC AMP Inspections" has been revised to clarify that the Inspection Type of the inaccessible areas will be in accordance with the Corrective Actions, Section B.3.5(7). In addition, the table has been revised to correct the referenced section numbers.

Table B-2 "HSM AMP Inspections" has been revised to clarify that the Inspection Type of the inaccessible areas will be in accordance with the Corrective Actions, Section B.4.5(7). In addition, the table has been revised to correct the referenced section numbers.

Impact:

LRA Tables B-1 and B-2 have been revised as described in the response.

OBS-17

Clarify the following items in Application Table B-3:

1. MP187 External Surfaces Acceptance Criteria does not address wear. Application Section B.5.3 Aging Effects Requiring Management and B.5.5 (3) specifically identifies wear as a parameter that is monitored.

2. MP187 External Surfaces Acceptance Criteria does not address cracking. Application Section B.5.5 (3) states: *The surfaces of the cask cavity inner liner are examined for surface conditions and for indications of corrosion, cracking or excessive wear.*

This information is necessary to assure compliance with 10 CFR 72.42(a) and (b).

RESPONSE TO OBS-17 (1):

The Transfer Cask Aging Management Program in LRA Section B.5.5, “Evaluation and Technical Basis,” Element 4.3 “Parameters Monitored” states:

> “Visual inspections of the external surfaces of the TC, bearing surfaces of the upper and lower trunnion assemblies, fasteners, and cask lid surfaces are performed prior to use. Visual inspections look for signs of degradation (corrosion and wear).”

Therefore, wear is a parameter to be monitored on the external surfaces of the transfer cask.

LRA Table B-3 “Transfer Cask AMP Inspections” has been revised to include wear in the Acceptance Criteria column for MP187 External Surfaces.

RESPONSE TO OBS-17 (2):

The Transfer Cask Aging Management Program Section B.5.5 “Evaluation and Technical Basis”, Element 4.3 “Parameters Monitored” states:

> “The surfaces of the cask cavity inner liner are examined for surface conditions and for indications of corrosion, cracking or excessive wear.”

Therefore, cracking is a parameter to be monitored on the internal surfaces of the transfer cask.

LRA Table B-3 “Transfer Cask AMP Inspections” has been revised to include cracking in the Acceptance Criteria column for the MP187 Internal surfaces. Table B-3 was also corrected to list "exterior cask surfaces" under MP187 External Surfaces under the Subcomponents column

Impact:

LRA Table B-3 has been revised as described in the response.