Enclosure 3 to E-54257

RAI Responses

(Public Version)

Safety Analysis Report (SAR), Chapter 2, "Site Characteristics"

RAI NP-2.2-1:

Provide an evaluation and aircraft crash probability impact analysis of airway V68, which passes nearby the proposed WCS CISF, in accordance with guidance and acceptance criteria provided in NUREG-1567, Section 2.4.2.

During the NRC staff's review of the information presented in WCS CISF SAR Section 2.2, "Nearby Industrial, Transportation and Military Facilities," the NRC staff identified an airway V68 passing nearby the proposed WCS CISF, which is not addressed by ISP. The closest airport identified is the Lea County Airport, which is 18 miles from the WCS CISF. Provide an analysis and evaluation of airway V68 and incorporate the changes, as appropriate in the application.

This information is needed to determine compliance with 10 CFR 72.94.

Response to RAI NP-2.2-1:

ISP performed an aircraft hazards evaluation for the WCS CISF and added a summary of that evaluation in new SAR Section 2.2.1, Aircraft Hazard Evaluation. The evaluation uses the guidance in NUREG-0800. The evaluation results, based on site-specific flight information and nearby airport locations, indicate that the annual probability of aircraft crash at the WCS CISF is approximately 3.81E-7. Using an alternative conservative approach (i.e., that all flights pass over the site), the annual probability of occurrence is computed to be less than 7.38E-7. Both probabilities are below the NRC annual probability of occurrence threshold of 1.0E-6 for aircraft crash as articulated in NRC Memorandum and Order CLI-01-22. On this basis, ISP concludes that aircraft crash presents low risk to public health and safety and is therefore not necessary to be included as a design basis consideration. SAR Section 2.8 references have also been updated to include the new references added in Section 2.2.1. Also included with the RAI response is a copy of the Proprietary Aircraft Hazard Evaluation Report which forms the basis for SAR Section 2.2.1.

References:

1. U.S. Nuclear Regulatory Commission, "NUREG-0800, 3.5.1.6 Aircraft Hazards, R4," 2010.

2. U.S. Nuclear Regulatory Commission, "Memorandum and Order CLI-01-22 in the Matter of Independent Spent Fuel Storage Installation," 2001.

Impact:

SAR Sections 2.2 and 2.8 have been revised as described in the response.

SAR Section 2.2.1 has been added as described in the response.

SAR Tables 2-14 to 2-19 have been added as described in the response.

SAR Figures 2-38 to 2-40 have been added as described in the response.

RAI NP-2.2-2:

Provide the locations of nearby industrial, transportation, military, and nuclear installations. Describe potential hazards to the proposed WCS CISF from activities or materials at those facilities in accordance with the guidance and acceptance criteria provided in NUREG-1567, Section 2.4.2.

During the NRC staff's review, the NRC staff determined that ISP identified nearby facilities, but did not provide potential impact evaluations of these facilities on the proposed WCS CISF. Specifically, ISP identified a railroad, but did not provide details on products/materials transported by rail; the distance of the rail line from the proposed facility; or the potential impacts (if any) on the proposed facility. ISP identified Texas State Highway 176, but not the shortest distance between the highway and the proposed facility. ISP stated oil industry pipelines are located near the facility in WCS CISF SAR Section 12.2.2, but did not provide details as to what materials are transported in the pipelines; the distance of the pipelines from the proposed facility; or the impacts of the pipelines on the proposed facility. Different materials can be transported through these pipelines and these different materials can pose different potential hazards to the site.

Also, in accordance with SRP Section 15.5.2.10, ISP should analyze whether the effects of hazards near the site have been addressed as part of the WCS CISF design basis. When evaluating which external hazards should be considered in the design bases for the WCS CISF, ISP should use a screening criteria of 10^{-6} annual probability of exceeding the applicable dose criteria, not 1.0E-5, as stated in SAR Section 12.2.2. This criteria was established by the Commission for ISFSI's in the Private Fuel Storage proceeding (CLI-01-22) and further elucidated in CLI-05-19.

If the required impact evaluations are performed in some other section of the SAR, the NRC staff requests that these evaluations be cross referenced in SAR Section 2.2, pointing to where the evaluations are performed and conclusions are addressed for clarity. Provide a revised WCF CISF SAR Section 2.2, with details, additional analyses, and conclusions, as appropriate, by cross referencing the impact evaluations that are presented in Chapter 12, "Accidents Analysis," of the WCS CISF SAR.

This information is needed to determine compliance with 10 CFR 72.94.

Response to RAI NP-2.2-2:

In accordance with the guidance and acceptance criteria provided in NUREG-1567, Section 2.4.2, facilities within an 8-km (5-mile) radius and all relevant facilities at greater distances should be included in an evaluation of nearby industrial, transportation, and military facilities. In addition to the facilities mentioned in SAR Section 2.2, the section, along with Section 12.3 References, is revised to include New Mexico State Highway 18, the Texas & New Mexico Railway (TXN), a future travel stop, the Waste Control Specialists' rail spur and loop, and the natural gas pipeline that runs parallel to Texas State Highway 176. Figure 2-3 in the WCS CISF SAR is revised to include relevant facilities within an 8-km (5-mile) radius.

In addition to industrial and transportation facilities, gas and oilfield operations are common in west Texas. Regionally, the WCS CISF is located in the Permian Basin of west Texas and southeast New Mexico, which is one of the most important petroleum-producing regions in the United States, containing several thousand oil and gas wells (Dutton et al., 2005 [3]). However, significant petroleum storage is not located within 5 miles of the WCS CISF. Locally within the Waste Control Specialists' property boundaries, oil and gas activity also is very limited. There is no active oilfield activity within the WCS CISF footprint area and only one documented dry hole in the immediate area of the WCS CISF (new SAR Figure 2-36). That dry hole has been cemented to the surface and proper plugging and abandonment protocol was observed. There is no evidence of undocumented or "orphan" wells in the vicinity of the WCS CISF. If any open boreholes indicative of orphan wells are discovered during the construction process, these will be properly assessed and remediated using proper plugging and abandonment procedures in accordance with Texas Regulations. ISP joint venture member Waste Control Specialists also holds 100% of the Operating Rights for producing oil, gas, and other minerals for the area of land where the storage pads for Phase I and the future phases of the WCS CISF would be located. These rights allow ISP joint venture member Waste Control Specialists to prevent any drilling (horizontal or vertical) under WCS CISF footprint area for oil, gas, and other minerals. RAI NP-2.6-1 details why sinkholes associated with wells in the region are not likely at the WCS CISF. In SAR Figure 2-36, a 2014 survey by The Banks Group (www.banksinfo.com) of oil and gas wells within 1 mile of the WCS CISF shows that two dry holes were drilled and one well is no longer producing. Just outside the 1-mile radius of the WCS CISF are an additional four dry holes and two wells that are no longer producing. Based on the map of oil and gas activity around the WCS CISF, 10 out of 12 locations (83%) are dry or no longer producing, which indicates there are little economically viable oil and gas resources within 1 mile of the WCS CISF and therefore further petroleum recovery activities in this area are unlikely. As explained in SAR Section 2.6.2 and in the Probabilistic Seismic Hazard Analysis in Attachment D to SAR Chapter 2, it was determined that there is a relatively low seismic hazard at the WCS CISF even with petroleum recovery activities.

As referenced in Section 12.2.2 of the WCS CISF SAR Chapter 12, Regulatory Guide 1.91, Evaluations of Explosions Postulated to Occur at Nearby Facilities and on Transportation Routes near Nuclear Power Plants, Revision 2, was used to determine distances from nearby facilities or transportation routes beyond which any explosion that might occur is not likely to have an adverse effect on WCS CISF structures, systems, and components (SSCs) important-to-safety. The guidance in Regulatory Guide 1.91 is based on limiting the overpressure at SSCs to less than 1 psi from any explosion. The magnitude of explosions involving solid or liquid material is calculated by converting the weight of potentially explosive materials to their TNT equivalence. Per Regulatory Guide 1.91, a more detailed review of transporting explosive materials on these transportation routes would not be required beyond demonstrating that the overpressures at the WCS CISF can be shown not to exceed 1 psi for any explosion.

The nearest truck transportation routes include New Mexico Highway 18 to the west of the WCS CISF and Texas Highway 176, which is to the south of the WCS CISF. New Mexico Highway 18 is approximately 3.5 miles from the WCS CISF and Texas Highway 176 is approximately 1.5 miles (8000 feet) at the closest point to the WCS CISF.

Using the methodology of Regulatory Guide 1.91, the maximum probable hazardous solid cargo for a single highway truck is 50,000 lb, and detonation of this quantity of explosive could produce a 1 psi overpressure at a distance of approximately 1,660 ft (0.31 mile) from the detonation, which is well short of the WCS CISF.

The TXN is a railway consisting of 111 miles of track that run generally north-south between the Union Pacific lines in Monahans, Texas, and its termination in Lovington, New Mexico. This rail line, at its closest point, is approximately 4.8 miles from the west OCA boundary of the WCS CISF. The rail line typically carries oilfield commodities including drilling mud, hydrochloric acid, fracking sand, piping, and petroleum products including crude oil.

Regulatory Guide 1.91, Evaluations of Explosions Postulated to Occur at Nearby Facilities and on Transportation Routes near Nuclear Power Plants, Revision 2, was used to determine distances from nearby facilities or transportation routes beyond which any explosion that might occur is not likely to have an adverse effect on WCS CISF SSCs important-to-safety. The guidance in Regulatory Guide 1.91 is based on limiting the overpressure at SSCs to less than 1 psi from any explosion. The magnitude of explosions of solid or liquid materials is calculated by converting the weight of potentially explosive materials to their TNT equivalence.

Using the methodology of Regulatory Guide 1.91, the maximum weight of solid explosive cargo (which bounds liquid cargo) for a single box car is 132,000 lb, and detonation of this quantity of explosive (using its TNT equivalence) could produce a 1 psi overpressure at a distance of approximately 2,300 ft (0.44 mile) from the detonation. Considering for the possibility that multiple boxcars of explosive material are connected in a single train and multiple boxcars explode in the same event shows that ten completely full boxcars exploding in the same event produce 1 psi of overpressure at a distance of 5,000 feet from the detonation. This distance is much shorter than the distance to the WCS CISF. The weight of explosive material required to exceed 1 psi of overpressure at the WCS CISF makes the situation extremely unlikely under normal transportation conditions due to the configuration limitations (as the length of the train increases, each successive rail car gets further away from the WCS CISF).

The Waste Control Specialists rail spur and loop exits the Texas & New Mexico Railway near Eunice, New Mexico, as shown in updated Figure 2-3. This spur continues east until it reaches the existing Waste Control Specialists facility, where it forms a loop around the facility. The rail side track to the WCS CISF will begin by connecting to the northwest side of the existing loop and terminate by reconnecting at the north side of the loop. This rail line is completely controlled by ISP joint venture member Waste Control Specialists and limited to approved Waste Control Specialists waste shipments and transport casks. Railcars carrying contents with the potential to adversely affect the WCS CISF will not be permitted on the Waste Control Specialists rail spur and loop. Fire and explosion precautions for the WCS CISF rail side track are discussed in Section 3.3.6 of the SAR.

A natural gas pipeline owned by Energy Transfer LP (previously owned by Sid Richardson Energy Services Company) runs parallel to Texas State Highway 176 within an easement on Waste Control Specialists' property. This pipeline is approximately 7,700 feet from the WCS CISF at its closest point. An evaluation assessing the hazards to the WCS CISF due to a pipeline leak and subsequent vapor cloud explosion following the guidance of Regulatory Guide 1.91 determined that the distance between the pipeline and the WCS CISF is sufficient to preclude any adverse impacts to the facility. (Reference [4]) Reference [4] is being submitted along with this RAI response.

Directly adjacent (within 30 feet) and parallel to the Energy Transfer LP natural gas pipeline is an additional buried 14 inch diameter natural gas pipeline which is in idle status. This pipeline is also owned by Energy Transfer LP and it has been idle since before 2004. Should this pipeline be reactivated in the future, the hazard evaluation performed for the adjacent natural gas pipeline bounds this pipeline as well.

There is a 10 inch diameter buried CO_2 pipeline which runs along the western and southern boundary of New Mexico Section 32. This pipeline does not present a hazard to the WCS CISF based on the nature of the pipeline product and its distance from the WCS CISF, which is more than 8,000 feet at its closest point.

Love's Travel Stops & Country Stores has started construction on a travel stop in New Mexico at the southeast corner of the intersection of New Mexico Highway 18 and Texas Highway 176. The Travel Stop will store up to 40,000 gallons of diesel fuel, 28,000 gallons of gasoline, and up to 12,000 gallons of non-flammable Diesel Exhaust Fluid (DEF) in underground tanks. Emergency Response Guide 128 recommends a 0.5 mile safe distance for ignitable liquid tank fires, which is much less than the 3.5 mile distance from the Travel Stop to the closest point at the WCS CISF boundary.

The existing Waste Control Specialists facility has a number of fuel (diesel, gasoline, and propane) tanks used for fueling heavy equipment and site operations. These tanks and their potential hazards will be addressed in the response to RAI NP-12-4 [5]. Additional hazards presented by the Permian Basin Materials quarry near the CISF facility will be addressed in the response to RAI NP-12-3 [5].

SAR Section 12.2.2 has been revised, along with Section 12.3 References, to include discussion of potential risks from the Texas & New Mexico Railway and the Love's Travel Stop. In addition, the pipeline owned by Energy Transfer LP is added and identified as carrying natural gas. Evaluation of potential hazards to the WCS CISF from these sources is added to the section.

Section 2.2 of the SAR has been revised to include discussion of New Mexico State Highway 18, the TXN Railway, the Energy Transfer LP pipeline, the Love's Travel Stop, and reference to the evaluations discussed in SAR Section 12.2.2. SAR Figure 2-3 is updated to include facilities within a radius of 8-km (5-miles).

References:

1. U.S. Nuclear Regulatory Commission Regulatory Guide 1.91, "Evaluations of Explosions Postulated to Occur at Nearby Facilities and on Transportation Routes near Nuclear Power Plants," Revision 2, July 2013.

2. Emergency Response Guide 128, Emergency Response Guidebook (2016), U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration.

3. Dutton et al., 2005, "Play analysis and leading-edge oil-reservoir development methods in the Permian basin: Increased recovery through advanced technologies," AAPG Bulletin, v.89, No. 5 (May 2005), pp. 553-576.

4. ISP Calculation, "Hazard Analysis of Gas Pipeline for WCS CISF," WCS01-0211, Revision 0.

5. Letter from John-Chau Nguyen (NRC) to Jeffery D. Isakson, "Interim Storage Partners Llc's License Application To Construct And Operate The Waste Control Specialists Consolidated Interim Storage Facility, Andrews County, Texas, Docket No. 72-1050 - First Request For Additional Information, Part 2," dated March 6, 2019.

Impact:

SAR Sections 2.2, 2.8, 12.2.2, and 12.3 and SAR Figure 2-3 have been revised, and SAR Figure 2-36 has been added as described in the response.

RAI NP-2.4-1:

Provide technical justification for the rating curve of the large playa next to the WCS CISF storage area. This may include the outflow area cross section, the equation and parameters used to calculate the curve, and the details of the calculations under all surface water flow scenarios.

In the WCS request for supplemental information response dated December 16, 2016, WCS provided a flood calculation package of the CISF drainage area built on the U.S. Army Corps of Engineer's HEC-HMS model. ISP provided a rating curve of discharge from the large playa depression in the calculation package. ISP also provided outflow rates from the playa for a few surface water flow scenarios in Attachment B to SAR Chapter 2, Site Characteristics. However, the information provided in the attachment did not include the cross-section of the playa outflow area or the equation and parameters to calculate the outflow rates all the way to the top of the cross-section. The NRC staff requires the additional information to verify the rating curve used for the 2016 floodplain study.

This information is needed to determine compliance with 10 CFR 72.90(f) and 72.92(c).

Response to RAI NP-2.4-1:

Outflow from the large playa next to the WCS CISF storage area is calculated using a Hydrologic Modeling System (HMS) program developed by the U.S. Army Corps of Engineers' Hydrologic Engineering Center (HEC). The large playa next to the WCS CISF storage area is modeled as a reservoir element in HEC-HMS with an outflow structure routing method. To simulate flow out of the large playa (reservoir), the non-level dam top routine is used, which is described in Chapter 9 of Reference [1], the User's Manual for version 4.0 of the HEC-HMS computer program.

Using the non-level dam top method allows the outflow area from the large playa to be represented by a cross-section defined by eight station elevation pairs. A separate flow calculation is performed for each segment, and the total flow rate is calculated by combining the flow rate across the segments. The method assumes that each of the segments behave like a broad crested weir.

The equation or rating curve used by the HEC-HMS program for a broad crested weir is given in Chapter 10 of Reference [2], the Technical Reference Manual for the HEC-HMS computer program:

$$O = CLH^{1.5}$$

Where: O = flowrate over the weir; C = dimensional discharge coefficient; for a broad crested weir, L = effective weir width; and H = difference between the weir crest elevation and water surface elevation in the reservoir.

The flood calculation package of the CISF drainage area dated December 16, 2016, provides calculations and design data that are utilized as input data for the HEC-HMS program. The HEC-HMS non-level dam top routine using the broad crested weir equation and cross-section data internally generates a rating curve for outflow from the large playa and pairs it with the elevation-storage data to predict the peak storage, elevation, and discharge. The effective weir width and the difference between the weir crest elevation and water surface elevation in the reservoir is calculated within the HEC-HMS program using the eight station elevation pairs provided in Appendix C, page APP C-12, (weir width and elevation) and the elevation storage data in Appendix D, page APP C-9 (water surface elevation in the playa).

Routine inputs into the program include elevation-storage data, cross-section data, and a discharge coefficient. Post development elevation-storage data for the large playa used in the model are found in Appendix C, page APP C-9. The large playa cross-section data, along with reference notes that were used in the non-level dam routine, are provided in Appendix C, page APP C-12. The HEC-HMS model cross section for the large playa is named “DA 4 OVERTOP” and is in the model components tab under cross-sections in the paired data folder on the CD provided in Appendix E, HEC-HMS Input. A discharge coefficient of 2.6 is used for all segments of the non-level dam top routine for the playa and is found in Appendix E as a basin parameter input of the “Dam Top 1” component found in the Dam Tops folder under the playa reservoir hydrologic element.

Two extraneous paired data functions are also found in Appendix E in the paired data folder of the model input. Neither the elevation-discharge component named “Playa Road Rating Curve” nor the inflow-diversion component named “AP-4” is connected to any of the Basin Models and, therefore, do not affect the model results/output. The two functions can be deleted with no change to the model output or the conclusions reached in the flood calculation package of the CISF drainage area dated December 16, 2016. Attachment B, Flood Plain Report, to SAR Chapter 2 has been revised to remove the extraneous data from Appendix E.

References:

1. Hydrological Modeling System (HEC-HMS), US Army Corps of Engineers, Hydrological Engineering Center, User’s Manual, Revision 4.0, December 2013.

2. Hydrological Modeling System (HEC-HMS), US Army Corps of Engineers, Hydrological Engineering Center, Technical Reference Manual, March 2000.

Impact:

SAR Attachment B Chapter 2 has been revised as described in the response.

RAI NP-2.4-2:

Provide additional information on the erodibility and long-term erosion of the diversion berms, under normal and extreme precipitation events, through all phases of the proposed WCS CISF facility. Estimate the seepage through and underneath the berms and the impact of seepage to the berms' stability through all phases of the proposed facility.

In WCS CISF SAR Section 2.4.2.2, ISP stated that flood events are modeled without including the collection ditch and diversion berms to provide the greatest possible area contributing runoff to the playa that serves as a water detention pond and potentially to increase the water level of the playa. ISP stated that the ditch and berm are to be constructed to minimize, not prevent, run-on of storm water by diverting it around the operational storage area. ISP stated that compromise of the collection ditch and diversion berms upstream of the CISF facility may result in increased flow across the storage area during some precipitation events. ISP further stated that this increase of flow would be short term and temporary in nature. However, because of the build-up of water and sediment behind the berm can potentially create a flood water wave higher than those modeled without the berm in the event that the berm is breached. The NRC staff requires additional information to evaluate the likelihood that events and processes (e.g., overtopping, breach of berm structure, and short- and long-term erosion) may negatively impact the integrity of the system, structure and component in the storage area. Additionally, the NRC staff requires the estimates of seepage through and underneath the berms and the impact of the seepage to the berms' stability through all phases of the proposed CISF facility to evaluate potential impact of subsurface water to the foundation of the storage pads.

This information is needed to determine compliance with 10 CFR 72.90(f).

Response to RAI NP-2.4-2:

Response will be provided in a separate submittal in the near future.

Impact:

To be finalized.

RAI NP-2.4-3:

Provide clarification as to what is the exact design of WCS CISF rail side track, in particular the section east of the storage area.

In its 2016 floodplain analysis, ISP considered four drainage areas in the watershed encompassing the WCS CISF (i.e., P DA 1, P DA 2, P DA 3, and P DA 4, see SAR Figure 2-35). ISP stated that drainage area P DA 3 contains 42.8 acres and drains the southeast portion of the CISF site bounded by the existing WCS railroad and the CISF rail side track and that surface water runoff from P DA 3 discharges into the large playa located east of the facility (SAR Chapter 2 attachment B).

In reviewing the SAR, the NRC determined that the eastern portion of the CISF rail side track are not consistently identified in the site plan depicted in SAR Figures 2-1, 2-3, 2-4 and 2-15 versus that depicted in SAR Figure 2-35 and SAR Chapter 2, Attachment B, Figures 1.1.2-2 and 2.2.1-1. The drainage area P DA 3 depicted in the former group of figures appears to be larger than that depicted in the latter. Difference in the area of drainage P DA 3 may cause different flood water level on the south eastern corner of the storage area. If drainage area P DA 3 is correctly depicted in SAR Figure 2-35, the NRC staff requests that ISP correct the side rail track design in SAR Figures 2-1, 2-3, 2-4 and 2-15. If drainage area P DA 3 is correctly depicted in SAR Figure 2-1, the NRC request that ISP provide a floodplain analysis using the site plan in Figure 2-1.

This information is needed to determine compliance with 10 CFR 72.90(a) and (f).

Response to RAI NP-2.4-3:

The actual WCS CISF rail side track layout is shown in SAR Figures 2-26 and 2-35, which are in agreement with the floodplain analysis. SAR Figures 2-1, 2-3, 2-4, and 2-15 show the rail for orientation purposes only. To clarify this, SAR Figures 2-1, 2-4, and 2-15 have been updated with a note that indicates that the rail side track is shown for orientation purposes only and that the actual rail layout is shown on SAR Figures 2-26 and 2-35. SAR Figures 2-26 and 2-35 both show the relationship between the location of the rail line and the drainage playa for drainage area P DA 3. SAR Figure 2-3 has been updated in response to RAI NP 2.2-2 and no longer shows the rail side track.

Impact:

SAR Figures 2-1, 2-4, and 2-15 have been revised as described in the response.

RAI NP-2.6-1:

Clarify the origin of the circular features as identified in the red circles on Figure 2-3 below. Specifically, provide the dimensions of the features and determine whether they might represent surface deformation at the site due to subsurface dissolution resulting from past or ongoing natural processes or human activities in the site area, as mentioned in WCS CISF SAR Section 2.6.1. Also, discuss the potential for similar features to develop at the site in the future.

WCS CISF SAR Section 2.6.1 states, “near-surface regional structural controls may be locally modified by differential subsidence related to groundwater dissolution of Permian salt deposits.” However, the SAR does not specify where these locally modified areas of differential subsidence are located relative to the proposed site. The NRC staff noted the history of oil and gas exploration and extraction activities in the site area and the presence of some features in SAR Figure 2-3 that are circular in shape (i.e., similar to sinkholes or swales), some of which are shallow depressions 2 to 7 feet in depth.

This information is needed to determine compliance with 10 CFR 72.103(f)(1) and 10 CFR 72.103(f)(2)(ii).

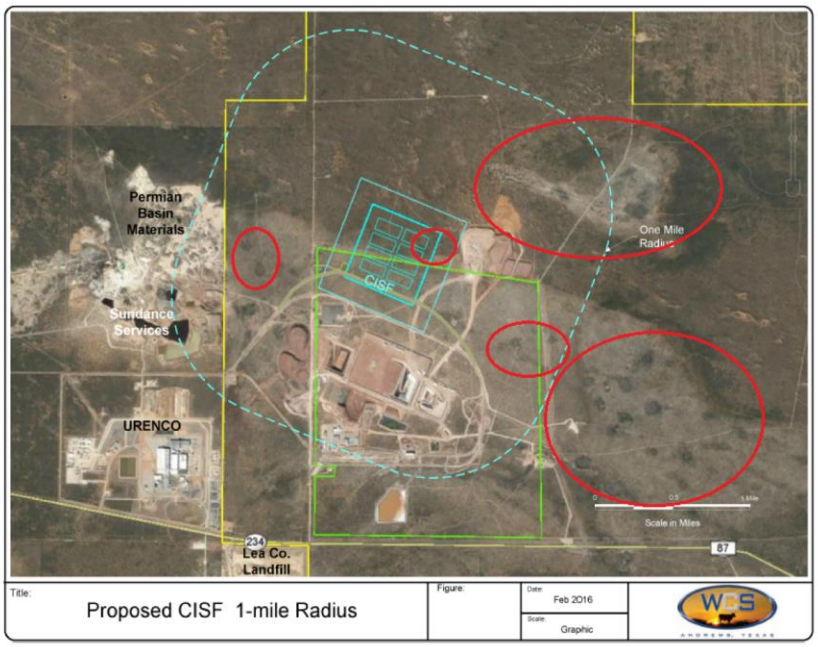

Figure 2-3
Proposed WCS CISF 1-mile Radius

Response to RAI NP-2.6-1:

Response will be provided in a separate submittal in the near future.

Impact:

To be finalized.

RAI NP-2.6-2:

Describe the origin and extent of the red-bed ridge mentioned in Attachment F, including: the relationship of the ridge to structures such as the inferred anticline and Mescalero Ridge escarpment described in Attachment F, or other local and regional geologic structures, including folds, faults of lineaments. Provide a figure showing the location of the red bed ridge relative to the WCS site. Provide an estimate of the depth to the crest and flanks of the red bed ridge and the estimated slope gradient from the crest to the flanks of the red-bed ridge at the WCS site, including a geotechnical stability analysis, if appropriate.

WCS CISF SAR Section 2.6.1 does not discuss the red-bed ridge, its origin or extent at the site, or its potential association with local and regional geologic structures or features. Attachment F to SAR Chapter 2 also notes that the red-bed ridge is parallel to regional escarpments, including the Mescalero Ridge in New Mexico. Attachment F concludes that the red-bed ridge is not the result of halite dissolution, but a “structural high exists in the southwestern part of the site area and is likely the eastern limb of a north-northwest trending anticline;” the anticline “appears to coincide with the red-bed ridge.” Previous site investigation reports from April 2000 (ML041910475) and February 2004 (ML041910489) describe the red-bed ridge as a paleotopographic divide between the Ogallala Aquifer and the Cenozoic basin fill aquifer or as a subsurface structure associated with a regional lineament that developed along the preferred jointing direction (300-310°). The NRC staff noted that based on boring logs from the monitoring wells, the slope gradient of the top of red-beds beneath the site may be as high as 5 percent, while the February 2004 report notes that the slope gradient may vary between 0.6 and 6.2 percent.

This information is needed to determine compliance with 10 CFR 72.103(f)(1).

Response to RAI NP-2.6-2:

Response will be provided in a separate submittal in the near future.

Impact:

To be finalized.

RAI NP-2.6-3:

Provide justification for why soil boring to depths greater than 45 feet are not needed.

WCS CISF SAR Section 2.6.4 states that the WCS CISF subsurface conditions were explored with eighteen soil borings. Among the eighteen borings, four borings encountered auger refusal conditions at depths ranging from 37 to 45 feet below ground surface (bgs), and fourteen borings were terminated at 25 feet bgs. General industrial guidance for geotechnical investigations, such as US Army Corps of Engineering[1] and FHWA[2] manual/standard, recommends the boring depth, for example, (1) be at least to a depth where the increased stress due to the estimated footing load is less than 10% of the existing effective overburden stress, (2) be 1.5 times the minimum dimension of footing below the base of the footing, or (3) penetrate a minimum of 3 meters into the bedrock, if bedrock is encountered before other required depths.

References:

1. US Army Corps of Engineers “Geotechnical Investigations” (EM 1110-1-1804, 1 January 2001).

2. FHWA “GEOTECHNICAL ENGINEERING CIRCULAR NO. 5 Evaluation of Soil and Rock Properties” (April 2002)

This information is needed to determine compliance with 10 CFR 72.103(f)(1) and 10 CFR 72.103(f)(2)(iv).

Response to RAI NP-2.6-3:

Response will be provided with First RAI Part 2 responses.

Impact:

To be finalized.

RAI NP-2.6-4:

Provide the following information with respect to the laboratory investigations:

a. Justify how the soil strength and deformation properties of the cohesive soils were determined and how the settlement potential of the clay stratum can be adequately evaluated given the absence of consolidated undrained triaxial tests and consolidated tests.

b. Provide results from the California Bearing Ratio (CBR) testing.

c. A description of the laboratory tests (including the test results) that were completed after the submittal of the Geotechnical Exploration Report (Attachment E to the SAR).

WCS CISF SAR Section 2.6.4 states the following tests were performed for this application: Atterberg Limits; Natural Moisture Content; Particle Size Analysis; Resistivity of Soil; Consolidated Undrained Triaxial Test; Standard Proctor Moisture-Density Tests; California Bearing Ratio; and Consolidation. However, Subsection 2.2 “Laboratory test program” of the Geotechnical Exploration Report (Attachment E to SAR) states that consolidated undrained triaxial tests and consolidation tests were not conducted because undisturbed Shelby tube samples could not be obtained due to the caliche. These tests are important for determining the shear strength parameters and consolidation characteristics of soil. Moreover, in the same subsection ISP indicated that one CBR test was performed. The staff reviewed ISP’s soil data summary enclosed in Attachment E, Appendix B to the SAR, and the CBR testing results were not reported. Additionally, Subsection 2.2, “Laboratory test program,” of the Geotechnical Exploration Report (Attachment E to SAR) states, “At the time this report was prepared, some of the laboratory testing was still on-going.” In order for the NRC staff to perform a complete evaluation of the laboratory investigations, ISP should provide a complete description of the laboratory tests, including the test results.

This information is needed to determine compliance with 10 CFR 72.103(f)(1) and 10 CFR 72.103(f)(2)(iv).

Response to RAI NP-2.6-4:

Response will be provided with First RAI Part 2 responses.

Impact:

To be finalized.

RAI NP-2.6-5:

Provide the basis for using 20% of the dynamic modulus for the static elastic modulus as these values are considerably higher for similar soils.

Appendix D of the Geotechnical Exploration Report (Attachment E to SAR) provides the calculated static elastic moduli used for the design and analysis for a depth of 100 ft bgs. These calculated static elastic moduli are based on derived dynamic moduli from seismic wave values determined by the refraction micro-tremor (ReMi) method. Specifically, ISP used 20% of the dynamic modulus as the static elastic modulus for design and analysis. However, these elastic moduli exceed the typical range of values for similar soils reported by various engineering literatures.

This information is needed to determine compliance with 10 CFR 72.103(f)(1) and 10 CFR 72.103(f)(2)(iv).

Response to RAI NP-2.6-5:

Response will be provided with First RAI Part 2 responses.

Impact:

To be finalized.

RAI NP-2.6-6:

Provide the following information regarding the slope stability evaluation:

a. Water resources in the site vicinity along with a description of its location; such as dams, natural or manmade ponds and how the stability of their embankments might affect the site.

b. When referring to the natural or manmade slopes, define the words “close enough” relative to the WCS CISF facilities and justify why the failure of these slopes would not adversely affect WCS CIFS facilities for phase 1 or for the total area of the proposed site, whichever applies.

WCS CISF SAR Section 2.6.5 provides general information regarding the slope stability of the site. Also, SAR Section 2.7 provides additional information linked to the slope stability of the site. SAR Section 2.7 states: “There are no slopes, natural or manmade, close enough to the proposed WCS CISF facilities that their failure would adversely affect these facilities.”

This information is needed to determine compliance with 10 CFR 72.103(f)(1) and 10 CFR 72.103(f)(2)(iv).

Response to RAI NP-2.6-6:

Response will be provided in a separate submittal in the near future.

Impact:

To be finalized.

Safety Analysis Report (SAR), Chapter 15, “Materials Evaluation"

RAI NP-15-1:

Clarify the following statements in WCS CISF SAR Appendix A, B, C and D, Section 3.4.6, “Material Selection.”

1. Provide an applicable reference for the following statement:

   The DSC and cask materials are resistant to corrosion and are not susceptible to other galvanic reactions. Studies under severe marine environments have demonstrated that the shell materials used in the DSC shells are expected to demonstrate minimal corrosion during an 80-year exposure.

2. Clarify the range of environmental conditions expected for the Dry Shielded Canister (DSC) internals referenced in the following statement:

   The DSC internals are enveloped in a dry, helium-inerted environment and are designed for all postulated environmental conditions.

3. Clarify the design life of the Horizontal Storage Module (HSM) in the following statement:

   The HSM is a reinforced concrete component with an internal DSC support structure that is fabricated to ACI and AISC Code requirements. Both have durability well beyond a design life of 80 years.

The NRC staff note that the following information is included in the UFSARs referenced in the WCS CISF application:

- Rancho Seco UFSAR Section 1.2, “General Description of the Installation,” indicates the system design life is 50 years.
- The Advanced NUHOMS UFSAR (CoC 72-1029) does not specifically identify a design life.
- The Standardized NUHOMS UFSAR indicates a service life of 50 years for the DSCs, TCs, and HSMs.

This information is needed to determine compliance with 10 CFR 72.24(c).

Response to NP-RAI 15-1:

During preparation of the CoC 1029 application, TN Americas LLC was requested by the lead utility to prepare a calculation describing the expected life of the various NUHOMS® components proposed for use at San Onofre Nuclear Generating Station. This calculation prepared in 2002 shows a life expectancy of various stainless steels for the dry shielded canisters(DSC) shell that is greater than 100 years for the worst case assumed marine environment (Kure Beach, NC data).

“Suitability of Materials for a Dry Storage Facility for 100 Years Service in a Marine Atmosphere Environment” also provides evaluations for the materials used for HSMs.

The evaluation prepared in 2002 - “Suitability of Materials for a Dry Storage Facility for 100 Years Service in a Marine Atmosphere Environment” SCE-01-0110-01, Revision 1 and a copy is attached to this RAI response.

The differences in the reported life expectancy between the Rancho Seco Site license and the general licenses for CoC 1004 and CoC 1029 can be explained by the time frame in which each was written and the purpose for each.

The Rancho Seco Site License application was written in the early 1990s and was patterned on the initial NRC approved issue of CoC 1004. As a Site Specific license, the site parameters were for a dry, non-marine site with very little moisture. Based on the knowledge available in the early 1990s, a life expectancy of greater than 50 years was easy to justify and far exceeded the anticipated time required to store the spent fuel before it would be removed from site by the DOE. This is in contrast for general license applications such as CoC 1004 and CoC 1029, which can be used at any site in the U.S. varying from a marine site such as San Onofre, California, located within 500 ft of the Pacific Ocean, to a semi-arid site such as Palo Verde, located outside Phoenix, Arizona.

Under these very variable environments, a calculation of life expectancy for any component in the NUHOMS® system would have to be based on a set of environmental assumptions that would not be applicable to any specific site. Also, with current knowledge regarding corrosion and crack propagation rates vs environment, it has been shown that the life expectancy of the most susceptible component of the NUHOMS® system is the DSC, and this exceeds the 60 years accepted by the NRC in the License Renewal application of CoC 1004. Based on the time-limited aging analysis (TLLA) and the proposed aging management reviews (AMR) and aging management programs (AMP), the DSC shells are expected to have a much greater life expectancy than currently predicted.

During preparation of the CoC 1029 application, TN Americas LLC was requested by the lead utility (Southern California Edison), to prepare a calculation describing the expected life of the various NUHOMS® components proposed for use at San Onofre Nuclear Generating Station. This calculation prepared in 2002 it was shown life expectancy of the 5/8” thick 316L stainless steel DSC shell was greater than 100 years for the worst case assumed marine environment.

The life expectancy of the NUHOMS® components proposed for installation at the WCS CISF will vary. The HSMs and DSC support structures will be fabricated for the site and, as such, will spend their life in the semiarid climate of Texas. Under these conditions, the HSMs and DSC support structures will have a life expectancy of greater than 100 years from the time of installation.

The individual DSCs will be transported from their present storage sites, and the life expectancy from the time they arrive at the WCS CISF will vary depending on the conditions at the parent site and time since put into service.

At this time, there are no plans for neutralizing any salt deposits that might result in chloride-induced stress corrosion cracking (CISCC) present on the DSC shells due to storage at the parent site upon receipt at the WCS CISF. As such, the life expectancy of each DSC for storage at the parent facility plus the WCS CISF is estimated with the assumption that the original storage conditions will continue after receipt of the DSC in Texas. As the first DSC is not expected to arrive at the WCS CISF until 2023, this means that some DSCs will have spent almost 35 years at the parent site before being shipped. This will result in a net estimated life expectancy from receipt at the WCS CISF varying from several decades to approximately 80 years depending on when and from where the DSCs are received.

Given the very dry conditions in this part of Texas and the implementation of an Aging Management Program, the expected life of each DSC easily exceeds the time required until the DOE can begin collection of the spent fuel for final disposal.

Finally, the wording in Sections A.3.4.6, B.3.4.6, C.3.4.6, and D.3.4.6 has been revised to clarify that the DSC internals are designed to withstand the loads from all normal, off-normal, and accident conditions.

Impact:

SAR Sections A.3.4.6, B.3.4.6, C.3.4.6, and D.3.4.6 have been revised as described in the response.

RAI NP-15-2:

Provide the following for the MP-187 system:

1. Drawings or a table that indicates the safety classification of the MP187 system structures, systems, and components (SSCs).

   None of the drawings for the MP-187 system includes a safety classification for the components of the DSCs or the MP-187. Drawings for the MP-187, FO-, FC-, and FF- DSCs are in the Rancho Seco SAR part 2 pages 813-830 (Docket No. 72-11). No Model 80 HSM or GTCC canister is included. The Model 80 HSM is in Appendix E.2 of the 72-1004 UFSAR. No HSM drawings are included in either the Rancho Seco or MP-187 UFSARs.

2. The complete set of drawings for the greater-than-Class C (GTCC) canister currently stored at Rancho Seco.

   The internal structure and contents of the Rancho Seco GTCC canister are not included in the drawings in the WCS CISF SAR Appendix H. In addition, provide the applicable codes and standards for the design and construction of the Rancho Seco GTCC canisters including code alternatives.

This information is needed to determine compliance with 10 CFR 72.24(c)(3) and (c)(4).

Response to RAI NP-15-2:

Item 1:

ISP has updated SAR Table 3-4 to point to new SAR Tables A.3-3 through A.3-6 in addition to SAR Appendix A.3.1 as the locations in the WCS CISF SAR where information related to the quality classification for SSCs important-to-safety can be found. Appendix A.3.1 is updated to acknowledge that the safety classification of the FO-, FC-, and FF-DSCs and MP187 cask are not provided on the drawings incorporated by reference in the WCS CISF SAR and to point to new Table A.3-3 and Table A.3-4, which provide the Quality Category for each item listed on the drawings incorporated by reference for the FO-, FC-, and FF-DSCs, and Table A.3-5 and Table A.3-6 for the drawings incorporated by reference for the MP187 cask.

Item 2:

The applicable drawings of the internal structure and contents are TN Americas drawings 11221-1000 Revision 1 and 11221-1002 Revision 0. The internal structure and contents are not-important-to-safety as the internal structure was used to facilitate loading, keep occupational exposures as low as reasonably achievable (ALARA) during the loading and sealing of the canister at Rancho Seco, and to enable efficient draining and vacuum drying of the canister. Drawings 11221-1000 Revision 1 and 11221-1002 Revision 0 are attached to this RAI response for NRC reviewer information.

Per note 2 on Drawing 13302-1005 Revision 0, “fabrication including qualification of welding procedures, welders and welding shall be performed in accordance with the requirements of AWS D1.1-98, AWS D1.6-99 (as applicable) or ASME Code Section IX.”

The Rancho Seco greater than Class C (GTCC) waste canister shell is a thicker version of the FO/FC-DSC designs and the structural evaluations performed for the GTCC waste canister shell rely on the structural evaluations for the FO/FC-DSCs.

The design report (Drawing 13302-0102 Revision 0) for the Rancho Seco GTCC waste canister specifically states that “[t]he design analysis, fabrication and inspection of ASME Subsection NB are not applicable.” Therefore, no code alternatives are specified for the canister.

Impact:

SAR Appendix A.3.1 and Table 3-4 have been revised as described in the response. Tables A.3-3 through A.3-6 have been added to the SAR as described in the response.

RAI NP-15-3:

Clarify whether the 24PT1 canisters from San Onofre included in the WCS CISF SAR include the GTCC canister. If the GTCC canister from San Onofre is included in the SAR, provide drawings for this GTCC canister.

The NRC staff note that there are currently 17 24PT1 canisters loaded with spent fuel at San Onofre. One of the canisters is loaded with GTCC from San Onofre 1. The GTCC is not in the approved contents of the 24PT1 DSC in the 72-1029 CoC (i.e., not included in technical specifications for the 72-1029 system (NRC ADAMS ML15054A513)).

This information is needed to determine compliance with 10 CFR 72.24(c).

Response to RAI NP-15-3:

ISP is not requesting approval in this application to store GTCC containers (canisters) currently stored at San Onofre.

Impact:

No change as a result of this RAI.

RAI NP-15-4:

Provide the complete set of drawings for the GTCC canisters currently stored at Maine-Yankee, Yankee-Rowe, Connecticut-Yankee, and Zion.

The drawings in WCS CISF SAR Appendix H are only of the multi-purpose cask (MPC), not the basket or the contents. In addition, provide the applicable codes and standards for the design and construction of these GTCC canisters.

This information is needed to determine compliance with 10 CFR 72.24(c)(3) and (c)(4).

Response to RAI NP-15-4:

The drawings for each of the NAC greater than Class C (GTCC) systems were included by reference in WCS SAR Appendix H, Section H.4.8. This section includes references to the latest revision of the NAC-STC SAR, UMS Transport SAR, and MAGNATRAN SAR. These SARs contain the drawings for the canister and canister liner. The vertical concrete cask and the complete storage system assembly for NAC-UMS at Maine-Yankee (MY), NAC-MPC at Yankee-Rowe (CY-MPC), NAC-MPC at Connecticut-Yankee (CY-MPC), and MAGNASTOR at Zion are included in the WCS SAR since they are not within the scope of the existing NAC storage and transportation Certificates of Compliance. Thus, these drawings are explicitly listed in SAR Section H.4.8 and included at the end of WCS SAR Appendix H.

The references to the latest revision of the NAC-STC SAR, UMS Transport SAR, and MAGNATRAN SAR contain the standards used for the design and construction of the canisters and canister liners. The canister loading of GTCC waste for the NAC-UMS system is addressed in the NAC-UMS Transport SAR. The design information can be found in Sections 1.3.1.1.2, 2.11.2, 3.6.1, 4.5.1.1, and 5.5.1.2. The canister loading of GTCC waste for the NAC-MPC system is addressed in the NAC-STC SAR. The design information can be found in Sections 2.6.13, 2.6.15, 2.6.18, 2.6.19, 2.7, 2.11, 3.1.4, 3.4.1.2.5, and 3.4.2.5; Table 4.1-1; and Sections 5.2.2, 5.2.3, 5.3.2, 5.3.3, and 6.0. For the NAC MAGNASTOR system, the canister loading of GTCC waste is addressed in the MAGNATRAN SAR. The design information can be found in Sections 1.3.1, 2.6.16, 2.7.12, 3.4.1.1, 4.0, 5.0, 5.8.11, 6.1.1, 6.2.3, and 8.1.2.

Section H.3 has been revised to state:

> All GTCC canisters will be stored in the same storage overpacks used to store SNF canisters for each of the storage systems used at WCS CISF (Table 1-1). In addition, the GTCC canisters used for each storage system have external characteristics that are similar, and in most cases identical, to the canisters used for SNF. The drawings describing the GTCC containers, internal basket designs, and applicable design codes are listed for each of the storage systems in Section H.4.8. Additional descriptions of the GTCC canisters and internals can be found in the references listed in Section H.3.1.1.

Impact:

SAR Section H.3 has been revised as described in the response.

RAI NP-15-5:

Clarify the quality category of the MP197HB cask used for transportation and transfer operations for the 61BT and 61BTH DSCs.

WCS CISF SAR Appendix C.4.2.3 (61BT DSC) states that the MP197HB is an Important to Safety (ITS) Quality Category C component, whereas Appendix D.4.2.3 (61BTH DSC) states that the MP197HB is an ITS Quality Category A component.

This information is needed to determine compliance with 10 CFR 72.24(c)(3) and (c)(4).

Response to RAI NP-15-5:

The MP197HB cask is a Quality Category A component because it also acts as the transportation cask to the site. SAR Section C.4.2.3 has been revised to reflect this quality classification. Two additional revisions are made to SAR Sections A.4.2.3 and B.4.2.3 to recognize that the NUHOMS® MP187 Cask is also a Quality Category A component consistent with the response to RAI NP-15-2, Part 1.

Impact:

SAR Sections A.4.2.3, B.4.2.3, and C.4.2.3 have been revised as described in the response.

RAI NP-15-6:

Identify the code exceptions for the 72-1029 system components designed and fabricated in accordance with the ASME code in WCS CISF SAR Appendix B, Section B.3.4.6. “Material Selection.” These are listed in 72-1029 UFSAR (R-6) Table 3.1-14.

This information should be included and specifically referenced in the application. See the reference to code exceptions in WCS CISF SAR Appendix A, Section A.3.4.6, “Material Selection,” as an example.

This information is needed to determine compliance with 10 CFR 72.24(c)(3) and (c)(4).

Response to RAI NP-15-6:

Section B.3.4.6 in Appendix B of the WCS CISF SAR has been updated to incorporate by reference the approved ASME Code Alternatives for 24PT1 DSC confinement boundary listed in Table 3.1-14 of the 72-1029 UFSAR.

Impact:

SAR Section B.3.4.6 has been revised as described in the response.

RAI NP-15-7:

Specify the Quality Category of the coatings for the NAC-MPC vertical concrete cask and transfer cask identified in WCS CISF SAR Appendix E Sections E.7.1.10 and E.7.2.10.

The NRC staff note that the NAC-MPC UFSAR Section 3.8 and 3.A.8 do not specify whether the coatings are ITS. In contrast, the NRC staff note that the NAC-UMS UFSAR (72-1015) Section 3.8 has a statement indicating that the coatings are Not Important to Safety (NITS). Similarly, the NAC-MAGNASTOR UFSAR Section 8.6.2 has a statement indicating that the coatings are NITS.

This information is needed to determine compliance with 10 CFR 72.24(c)(3) and (c)(4).

Response to RAI NP-15-7:

The NAC-MPC system was approved by the NRC, summarizing the quality category classifications for each bill of materials item on each license drawing. These are detailed in NAC-MPC Final Safety Analysis Report, Chapter 2, Table 2.3-1 [1]. All carbon steel coatings and concrete sealers are listed as NQ. They are not important-to-safety. See the quality category classifications for the following:

- Drawing 455-864, “Shield Plug, Vertical Concrete Cask,” FSAR [1] Page 2.3-10, Item No. 5, “Coating System”
- Drawing 455-866, “Reinforcing Bar and Concrete Placement,” FSAR [1] Page 2.3-10, Item No. 25, “Sealer”
- Drawing 455-860, “Assembly, Transfer Cask,” FSAR [1] Page 2.3-13, Item No. 23, “Coating System”
- Drawing 414-860, “Assembly, Transfer Cask (TFR),” FSAR [1] Page 2.3-15, Item No. 22, “Coating System”
- Drawing 414-866, “Reinforcing Bar and Concrete Placement, Vertical Concrete Cask (VCC),” FSAR [1] Page 2.3-17, Item No. 25, “Sealer”

Reference:

1. NAC-MPC Final Safety Analysis Report, Revision 10, January 2014.

Impact:

No change as a result of this RAI.

RAI NP-15-8:

Provide additional information to justify the classification of the 130-ton Crane and the WCS Lift Beam as NITS Components based on the NUHOMS system transfers being limited to heights of less than 80 inches.

Rancho Seco FSAR Appendix B, “Standardized SAR References,” Section 8.2.5.1 states:

The height of 80 inches is chosen as this envelopes the maximum vertical height of the transfer cask when secured to the transport skid/trailer assembly.

The transfer operation (shown in WCS CISF SAR Figure A.5-1) of the loaded MP187 from an incoming railcar to the NUHOMS Transfer Trailer that takes place in the canister handling building (shown in WCS CISF SAR Figure 1-7) appears to involve a lift of the NUHOMS system that is greater than 80 inches because the underside of the MP187 transfer cask (in the horizontal position as shown in Figure A.5-1) will be lifted above the trunnion attachment points on the MP187 Transfer Trailer. As described, the dimensions of the MP187 Transfer Trailer and the MP187 Cask, and the description of the WCS canister handling building and the transfer operation do not support a lift height of no more than 80 inches.

This information is needed to determine compliance with 10 CFR 72.24(c), 72.24(d)(1) and (2), and 72.24(h).

Response to RAI NP-15-8:

To verify that the NUHOMS® MP187 and MP197 transfer casks can be moved from the railcar to the transfer trailer and skid without lifting the casks above 80 inches above the floor of the Cask Handing Building (CHB), ISP performed a clearance study. ISP reviewed the drawings for several Kasgro Rail Corporation railcars that are suitable for use in transporting these casks. Of the suitable railcars that could be used to transport the casks and contents, ISP chose the highest railcar deck as the basis of its study, which is 52 inches above the floor of the CHB. The transfer trailer that will be used at the WCS CISF has an adjustable deck height. During the transfer of the cask from the railcar to the transfer trailer the deck height is set at 35 inches above the CHB floor.

Figure RAI NP-15-8-1 is a summary of the clearance study performed using solidworks models of the skids, cask and trailer deck heights showing the distance between the bottom of the horizontal cask and the CHB floor at the lift heights required to clear the skids and allow free movement of the cask from the transportation skid attached to the railcar to the transfer skid attached to the transfer trailer. As shown in Figure RAI NP-15-8-1, the cask must be lifted 7 inches above its resting position on the transportation skid to allow it to clear the key way and the balance of the skid. This results in the cask being lifted to less than 76 inches from the floor of the CHB. To load the cask onto the transfer trailer, it can be lowered to just over 66 inches and then slid onto the transfer skid and then set down on the trunnion towers as shown in Figure RAI NP-15-8-1.

SAR Figures A.5-1, B.5-1, C.5-1, and D.5-1 have been updated to reduce the apparent height that the cask is lifted off the ground during transfer from the railcar to the transfer trailer.

Impact:

SAR Figures A.5-1, B.5-1, C.5-1, and D.5-1 have been revised as described in the response.

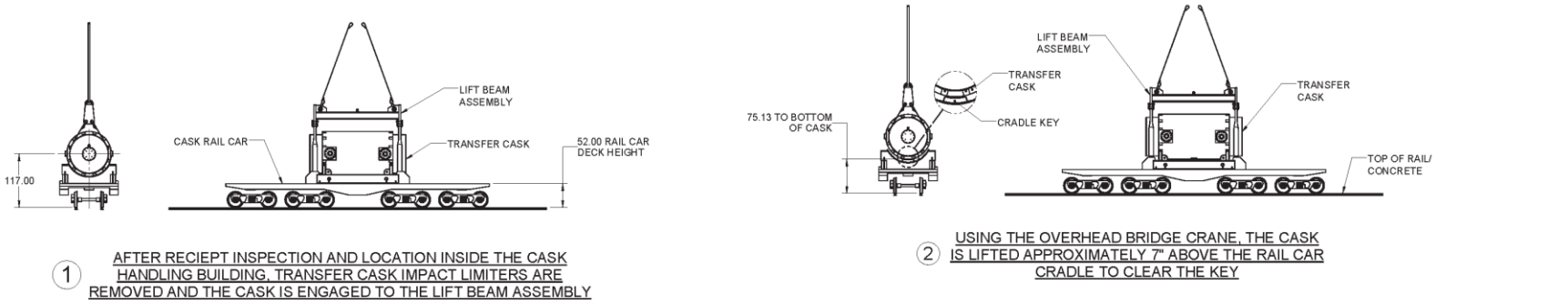

Figure RAI NP-15-8-1
Clearance Study

RAI NP-15-9:

Provide information to show that the design criteria for the GTCC storage systems are the same as or bounding with respect to the WCS CISF site specific conditions.

The WCS CISF SAR Appendices A through G provide a comparison of the principal design criteria of the spent fuel storage systems to the conditions of the WCS CISF storage site. No such comparison was provided for the GTCC storage systems in the WCS CISF SAR.

This information is needed to determine compliance with 10 CFR 72.24(c), 72.24(d)(1) and (2).

Response to RAI NP-15-9:

All greater than Class C (GTCC) canisters will be stored in storage overpacks with the same design criteria as those storage overpacks used to store SNF canisters for each of the storage systems used at WCS CISF (see SAR Table 1-1). In addition, the GTCC canisters used for each storage system have external characteristics that are similar, and in most cases identical, to the canisters used for SNF.

The design criteria used for WCS CISF are summarized in Table 1-2 and discussed in Chapter 3 of the SAR. A comparison of the design criteria for each of the storage systems with the WCS CISF design criteria is given in SAR Appendices A–G (specifically in Tables A.3-1, B.3-1, C.3-1, D.3-1, E.3-1, F.3-1, and G.3-1). These comparisons demonstrate that the design criteria used for the storage systems are bounded by the WCS CISF design criteria.

Since the design criteria for the GTCC storage systems at WCS CISF are the same as the design criteria used for storage systems listed in SAR Table 1-1, a comparison of the design criteria for GTCC storage in any of the storage systems with WCS site conditions would be the same as the comparisons already shown for the storage systems in SAR Appendices A–G.

Section H.3, Principal Design Criteria, has been revised to clarify information concerning GTCC canisters.

Impact:

SAR Section H.3 has been revised as described in the response.

RAI NP-15-10:

Provide the following information for ASTM A572 Grade 50 steel: (1) modulus of elasticity, (2) coefficient of thermal expansion, and (3) density.

This material is identified in WCS CISF SAR Section 15.3.2, “Canister Transfer System,” and Section 15.3.3, “Vertical Cask Transporter.” These property specifications are not provided in WCS CISF SAR Sections 15.3.2 and 15.3.3.

This information is necessary to assure compliance with 10 CFR 72.24(c)(3) and (c)(4).

Response to RAI NP-15-10:

While these parameters were specified in the application, the values were inadvertently omitted. The corresponding values have now been added to the SAR. In addition, several references for ASTM materials have been corrected within SAR Section 15.3. Reference 15-3 in SAR Section 15.4 has recently been revised. Reference 15-3 is now at Revision 9 and the updated calculation is being provided via this submittal.

Impact:

SAR Sections 15.3.2, 15.3.3, and 15.4 have been revised as described in the response.

In addition, an updated copy of calculation 71160-2101 Revision 9 (Reference 15-3 of the SAR) is also provided for your information.

RAI NP-15-12:

Clarify whether the NUHOMS MP187 Multi-Purpose Cask will potentially be used to contain a failed NUHOMS Dry Shielded Canister (DSC) such as a FO-, FC-, or FF- DSC currently in use at Rancho Seco or the 24PT1 DSCs that are in use at the San Onofre ISFSI.

Procedures for placement of a DSC into the metal cask for storage at an onsite facility are described in Section 7.1.6 of the NUHOMS MP187 Multi-Purpose Cask Safety Analysis Report (ADAMS Accession No. ML063520505).

This information is needed to determine compliance with 10 CFR 72.24(e) and (h).

Response to RAI NP-15-12:

ISP is not requesting authorization to contain failed canisters in the NUHOMS® MP187 Multi-Purpose Cask as part of this licensing action.

As stated in Chapter 11 of the SAR, the canisters authorized for storage at the WCS Consolidated Interim Storage Facility (WCS CISF) are designed to ensure confinement of stored materials under normal, off-normal, and accident conditions during all operations, transfers, and storage. In addition, the confinement boundary of each canister type authorized for storage at the WCS CISF is evaluated to demonstrate that loads during normal conditions of transport do not exceed ASME B&PV Subsection NB Article NB-3200 (Level A allowables) to ensure that the confinement boundary of the canisters is not adversely impacted during transport to the WCS CISF. Consistent with their design, the canister confinement boundaries are also fabricated and tested in accordance with the ASME B&PV code, with specified ASME Code alternatives, assuring that the confinement boundaries perform their safety function during the entire time that the canisters are in storage at the WCS CISF. Based on the above, the design analysis and documented bases for evaluation acceptably demonstrate that the important-to-safety confinement boundaries for the canisters will maintain confinement of radioactive material under normal, off-normal, and credible accident conditions.

Impact:

No change as a result of this RAI.

RAI NP-15-13:

Clarify the incorporation of approved aging management programs for the 61BT and 61BTH DSCs that are part of CoC No. 1004. CoC No. 1004 was renewed in December 2017.

The CoC holder has developed NRC approved aging management programs (AMP) for the 72-1004 SSCs including the DSCs. WCS CISF SAR Section 1.1 page 1-3 states: "*As these systems approach 20 years of service time, their applications for License Renewal, including Aging Management Program (AMP) requirements, will be submitted to the NRC for review and approval."* However, the WCS CISF application does not include AMP for this system.

This information is needed to determine compliance necessary to assure compliance with 10 CFR 72.42(a)(2) and 72.240(c)(3).

Response to RAI NP-15-13:

In accordance with the proposed license condition 20(1), "The Licensee shall commit to the AMPs committed to in the approved License Renewal of CoC 1004 for all NUHOMS® Spent Fuel Canisters and storage overpacks." Interim Storage Partners (ISP) has incorporated the AMPs from the Renewed CoC 1004 [1] for all NUHOMS® DSCs and HSMs as described below.

Section A.13 has been added to Appendix A to require the AMPs in Appendix C, Section C.13, to be applied to the MP187 Cask System (i.e., the FO, FC, FF, and greater than Class C (GTCC) dry shielded canisters (DSCs) and the Model 80 HSM). SAR Tables 15.3-1 and 15.3-2 review the subcomponents of the FO, FC, FF, and GTCC DSCs, compare them to corresponding DSC subcomponents evaluated in the renewed CoC 1004, and conclude that no aging management activity (AMA) is required or that the AMPs in CoC 1004 are applicable. Note that the Model 80 HSM was explicitly included as an SSC in the scope of renewal of CoC 1004. Therefore, the AMPs in Appendix C (SAR Section C.13) are applicable to the SSCs of the MP187 system proposed for storage at the WCS CISF.

SAR Section B.13 has been added to Appendix B to require the AMPs in Appendix C, Section C.13, to be applied to the Standardized Advanced NUHOMS® System (i.e., the 24PT1 DSC and the AHSM). SAR Tables 15.3-3 and 15.3-4 review the subcomponents of the 24PT1 DSCs and AHSM, compare them to corresponding DSC and HSM subcomponents evaluated in the Renewed CoC 1004, and conclude that no AMA is required or that the AMPs in CoC 1004 are applicable. Therefore, the AMPs in Appendix C (SAR Section C.13) are applicable to the SSCs of the MP187 system proposed for storage at the WCS CISF.

The aging management programs (AMPs) for the SSCs at the WCS CISF site have been added to Appendix C (SAR Section C.13). These AMPs are based on the approved AMPs for the renewed CoC 1004 [1]. Note that the Standardized NUHOMS® 61BT system was explicitly included as an SSC in the scope of the renewed CoC 1004. Therefore, the AMPs in the renewed CoC 1004 are applicable to the 61BT system proposed for storage at the WCS CISF. The following changes have been made to the AMPs in the renewed CoC [1] to reflect operation at the WCS CISF:

- Rearranged program element requirements to align with NUREG-1927 Revision 1.
  Explanation/Justification – The AMPs submitted for the renewed CoC 1004 were originally drafted before the guidance in NUREG-1927 Revision 1 [2] was issued. As such, the location of some of the information/requirements in the program elements does not correspond to the location called for in the NUREG-1927 Revision 1 guidance. The AMPs in Appendix C.13 have relocated the renewed CoC 1004 AMP information/requirements to be consistent with the guidance provided in NUREG-1927 Revision 1. This relocation did not change any of the requirements of the AMPS.

- Did not included the high burnup (HBU) AMP
  Explanation/Justification – ISP application explicitly says that no high burnup fuel will be stored. Therefore, there is no need/requirement for a high burnup AMP.

- Did not include the Transfer Cask AMP
  Explanation/Justification – The 10 CFR Part 71 transportation casks used to transport the DSCs from the originating ISFSIs to the WCS CISF will also be used to transfer the DSCs from the cask handling building to the HSMs. The inspections and maintenance performed on the transportation casks (i.e., to ensure the casks meet the Part 71 requirements) will be relied upon to ensure the casks are able to perform their intended functions as transfer casks. Therefore, no 10 CFR Part 72 Transfer Cask AMP is required.

- Did not include the HSM Inlets and Outlets Ventilation AMP
  Explanation/Justification – The renewed CoC 1004 submittal states that the focus of the Inlet and Outlet Ventilation AMP is on vent blockage (Section 6A.6.5.1 of [1]). The need for this AMP was driven by operating experience of rust on the bird screens leading to partial blockage of the vents. However, the bird screens on the HSM vents at the WCS CISF will be made of stainless steel and will not be subject to general corrosion that could lead to blockage of the vents. Therefore, there are no aging mechanism/effects that could lead to blockage of the vents and no AMP is required.

- Removed references to renewal and the CoC 1004 Amendments
  Explanation/Justification – ISP is requesting specific license for the WCS CISF ISFSI and, as such, it is not appropriate to discuss the applicability of the AMPs to the CoC 1004 amendments or to refer to renewed CoC.

- Defined extended period of operation
  Explanation/Justification – ISP is requesting a specific license for a 40-year period. However, the AMPs are to be implemented after the DSCs and HSMs have been in service for 20 years. To be consistent with the terminology used in the renewed CoC 1004 AMPs, the phrase “period of extended operation” is defined to reflect SSCs that have been in service for greater than 20 years.

- Changed reference from Part 50, Appendix B program to TN Americas 10 CFR Part 72, Subpart G Program
  Explanation/Justification – ISP is requesting a specific license and thus will not have a Part 50, Appendix B QA program. As stated in Chapter 6, ISP has adopted the TN Americas CFR 72, Subpart G quality assurance program. Therefore, the AMPs should reference to TN Americas QA program rather than a general licensee's Part 50, Appendix B program.

- Changed reference from general licensees to ISP
  Explanation/Justification – ISP is requesting a specific license. Therefore, the AMPs need to be applicable to the specific license and not a general Part 72 license.

- Removed reference to 72.212 report
  Explanation/Justification – As a specific license, ISP will not have a 72.212 report to document various evaluations. However, the requirement to document the evaluations was not removed.

- Clarified that minimum DSCs for inspection is one from each originating ISFSI
  Explanation/Justification – The in-service environment of the DSC at the originating ISFSI could affect the aging of the DSC SSCs, depending on how long the DSC was in service at the originating ISFSI. To ensure that the impact of the originating ISFSI environment is accounted for, the AMPs will require that at least one DSC from each originating ISFSI will be inspected. In addition, the time in service was clarified to include the time at the originating ISFSI and at the WCS CISF.

- Removed grace period for first inspections
  Explanation/Justification – The renewed CoC 1004 AMPs [1] provided a graduated grace period for conducting the first AMP inspections for general licensees who loaded early in the initial CoC 1004 licensed period. However, the grace period for those general licensees required inspection to be completed by 2021. Section 1.1 of the ISP submittal states that operation of the WCS CISF is not planned to begin until July 2023. Therefore, there is no need for a grace period for the initial AMP inspections.

- Removed reference to "Standardized NUMOMS® dry storage system"
  Explanation/Justification – It is ISP intention to have a single set of AMPs for all NUMOMS® related systems. Therefore, the specific name "Standardized NUMOMS® dry storage system" has been removed.

- Removed sentence for licensees not committed to ACI 349.3R
  Explanation/Justification – ISP has elected to apply the inspection and acceptance criteria in ACI 349.3R [3] to the basemat. Therefore, the allowance to use site specific criteria is not needed.

- Various editorial changes
  Various editorial changes were made to improve readability of the AMPs and to reflect that ISP is reasonable for implementing the AMPs rather than a general licensee.

Section D.13 has been added to Appendix D to require the AMPs in Appendix C, Section C.13, to be applied to the 61PTH system. Note that the Standardized NUHOMS® 61BTH system was explicitly included as an SSC in the scope of renewal of CoC 1004. Therefore, the AMPs in Appendix C (SAR Section C.13) are applicable to the SSCs of the 61BTH system proposed for storage at the WCS CISF.

References:

1. Letter E-46190 from Jayant Bondre (AREVA Inc.) to Document Control Desk (NRC), "Response to Re-Issue of Second Request for Additional Information – AREVA Inc. Renewal application for Standardized NUHOMS® System – CoC 1004 (Docket No. 72-1004, CAC No. L24964)," September 29, 2016, (ADAMS Accession Number ML16279A367).

2. NUREG-1927, "Standard Review Plan for Renewal of Spent Fuel Dry Cask Storage System Licenses and Certificates of Compliance," U.S. Nuclear Regulatory Commission, Revision 1, June 2016.

3. ACI 349.3R, "Evaluation of Existing Nuclear Safety-Related Concrete Structures," American Concrete Institute, 2002.

Impact:

SAR Sections A.13, B.13, C.13, and D.13 have been added as described in the response.

Table RAI 15-13-1
FO, FC, FF DSCs

(5 pages)

Subcomponent Parts	FO & FC Drawing NUH-05-4004 Item No.	FF Drawing NUH-05-4005 Item No.	FO & FC or FF Material	FO, FC, FF Safety Classification	CoC 1004 DSC & AMR Results Table	CoC 1004 Material	CoC 1004 Safety Classification	Environment	CoC 1004 Aging Effects Requiring Management	CoC 1004 Aging Management Activity	Applicability of CoC 1004 AMR and AMP to 24PT1
Spacer Discs	9, 10, 13	7, 8	FO, FC - SA-537 CL2 FF - SA-240 Type XM19	ITS	24PT2S and 24PT2L Table 1C-12	SA-533, GR B, CL 1	ITS	Inert Gas	None Identified	None Required	While the FO and FC material is SA-537 CL2, and the 24PT2 material is SA-533 GR B CL1, they are both carbon steel. Since they are both carbon steel and see the inert gas environment, no AMA is required. The material of the FF DSCs is SA-240 Type XM19, i.e., stainless steel, which has no aging effects in an inert environment requiring aging management. Therefore, the CoC 1004 AMR results are applicable to the FO, FC, & FF DSCs and no AMA is required.
Stop Plate	47	N/A	SA-240 Type 304	ITS	24PT2S and 24PT2L Table 1C-12	SA-240 Type 304	NITS	N/A	N/A	N/A	While the stop plate for the FO and FC is classified as important-to-safety, it is made of stainless steel and is in an inert gas environment. Therefore, no AMA is required.
FO, FC - Support Rod Assembly with Spacer Sleeve (all spacer sleeves) FF – Inner and Outer Support Plate	16, 37, 38,39, 40, 41, 42, 43, 44	9, 10	FO, FC - SA-564 Type 630 FF – SA-240 Type XM19	ITS	24PT2S and 24PT2L Table 1C-12	SA-564 Type 630	ITS	Inert Gas	None Identified	None Required	These components for the FO, FC, and 24PT2 DSCs are made of the same material. The material for the FF DSC is SA-240 XM19, but that is also a stainless steel material. Since they are all stainless steel and see the same type of environment, the CoC 1004 AMR results are applicable to the FO, FC, and FF DSCs and no AMA is required
Cylindrical Shell	1	1	SA-240 Type 304	ITS	24PT2S and 24PT2L Table 1C-12	SA-240 Type 304	ITS	Inert Gas / Sheltered	Loss of Material, Cracking	NUHOMS® Aging Management Program (AMP)	These components are made of the same material and see the same type of environment. Therefore, the CoC 1004 AMR results and AMP are applicable to the FO, FC, FF DSCs.
Outer Bottom Cover Plate	2	2	SA-240 Type 304	ITS	24PT2S and 24PT2L Table 1C-12	A240 Type 304	ITS	Sheltered	Loss of Material, Cracking	NUHOMS® AMP	These components are made of the same material and see the same type of environment. Therefore, the CoC 1004 AMR results and AMP are applicable to the FO, FC, FF DSCs.
Bottom Shield Plug	27	N/A	A36	ITS	24PT2S Table 1C-12	A36	NITS(1)	Embedded/ Encased	None Identified	None Required	These components are made of the same material and see the same type of environment. Therefore, the CoC 1004 AMR results and AMP are applicable to the FO, FC, FF DSCs.
Grapple Ring	4	4	SA-240 Type 304	ITS	24PT2S and 24PT2L Table 1C-12	A240 Type 304	ITS	Sheltered	Loss of Material, Cracking	NUHOMS® AMP	These components are made of the same material and see the same type of environment. Therefore, the CoC 1004 AMR results and AMP are applicable to the FO, FC, FF DSCs.

Table RAI 15-13-1
FO, FC, FF DSCs

(5 pages)

Subcomponent Parts	FO & FC Drawing NUH-05-4004 Item No.	FF Drawing NUH-05-4005 Item No.	FO & FC or FF Material	FO, FC, FF Safety Classification	CoC 1004 DSC & AMR Results Table	CoC 1004 Material	CoC 1004 Safety Classification	Environment	CoC 1004 Aging Effects Requiring Management	CoC 1004 Aging Management Activity	Applicability of CoC 1004 AMR and AMP to 24PT1
Grapple Ring Support	5	5	SA-240 Type 304	ITS	24PT2S and 24PT2L Table 1C-12	A240 Type 304	ITS	Sheltered	Loss of Material, Cracking	NUHOMS® AMP	These components are made of the same material and see the same type of environment. Therefore, the CoC 1004 AMR results and AMP are applicable to the FO, FC, FF DSCs.
Inner Bottom Cover Plate	6	6	SA-240 Type 304	ITS	24PT2S and 24PT2L Table 1C-12	SA-240 Type 304	ITS	Inert Gas	None Identified	None Required	These components are made of the same material and see the same type of environment. Therefore, the CoC 1004 AMR results are applicable to the FO, FC, FF DSCs and no AMA is required.
Shear Key	17	31	SA-240 Type 304	ITS	32PT Table 1E-10	A240 Type 304	ITS	Sheltered	Loss of Material, Cracking	NUHOMS® AMP	These components are made of the same material and see the same type of environment. Therefore, the CoC 1004 AMR results and AMP are applicable to the FO, FC, FF DSCs.
Key	19	3	SA-240 Type 304	ITS	32PT Table 1E-10	SA-240 or SA-479 Type 304	ITS	Inert Gas	None Identified	None Required	These components are made of the same material and see the same type of environment. Therefore, the CoC 1004 AMR results and AMP are applicable to the FO, FC, FF DSCs.
Siphon & Vent Block	20	15	SA-240 Type 304 (Options for FF – SA-182 GR F304 Or F304N, SA-479 Type 304)	ITS	24PT2S and 24PT2L Table 1C-12	SA-240 Type 304	ITS	Inert Gas	None Identified	None Required	While the FF DSC lists SA-182 GR F304 or F304N, SA-479 Type 304 as optional materials, there are stainless steel. Since these components are all stainless steel and see the same type of environment, the CoC 1004 AMR results are applicable to the 24PT1 and no AMA is required
Siphon Tubing	21	16	AISI-304 Option for FF – A249 Type 304 or 316	NITS	24PT2S and 24PT2L Table 1C-12	AISI-304; A249/A213 (Type 304, Type 316)	NITS	N/A	N/A	N/A	A not-important-to-safety item that is not in-scope. Therefore, no AMA is required.
Swagelok Connections	22, 23	17, 18	S.S	NITS	24PT2S and 24PT2L Table 1C-12	SST	NITS	N/A	N/A	N/A	A not-important-to-safety item that is not in-scope. Therefore, no AMA is required.
Lifting Lug	24	19	SA-240 Type 304	ITS	32PT Table 1E-10	A240 Type 304	ITS	Inert Gas	None Identified	None Required	These components are made of the same material and see the same type of environment. Therefore, the CoC 1004 AMR results are applicable to the FO, FC, FF DSCs and no AMA is required.

Table RAI 15-13-1
FO, FC, FF DSCs

(5 pages)

Subcomponent Parts	FO & FC Drawing NUH-05-4004 Item No.	FF Drawing NUH-05-4005 Item No.	FO & FC or FF Material	FO, FC, FF Safety Classification	CoC 1004 DSC & AMR Results Table	CoC 1004 Material	CoC 1004 Safety Classification	Environment	CoC 1004 Aging Effects Requiring Management	CoC 1004 Aging Management Activity	Applicability of CoC 1004 AMR and AMP to 24PT1
Support Ring, Plate	25	20	SA-240 Type 304 (Option for FF – SA-479 Type 304)	ITS	32PT Table 1E-10	SA-240 Type 304 or SA-479 Type 304	ITS	Inert Gas	None Identified	None Required	These components are made of the same material and see the same type of environment. Therefore, the CoC 1004 AMR results are applicable to the FO, FC, FF DSCs and no AMA is required.
Top Shield Plug	26	N/A	A36	ITS	24PT2S Table 1C12	A36	NITS(1)	Inert Gas	None Identified	None Required	These components are made of the same material and see the same type of environment. Therefore, the CoC 1004 AMR results are applicable to the FO, FC, FF DSCs and no AMA is required.
Outer Top Cover Plate	29	22	SA-240 Type 304	ITS	24PT2S Table 1C-12	SA-240 Type 304	ITS	Sheltered	Loss of Material, Cracking	NUHOMS® AMP	These components are made of the same material and see the same type of environment. Therefore, the CoC 1004 AMR results and AMP are applicable to the FO, FC, FF DSCs.
Siphon & Vent Port Cover Plate	30	23	SA-240 Type 304	ITS	24PT2S and 24PT2L Table 1C-12	SA-240 Type 304	ITS	Embedded (Top Surface) Inert Gas (Bottom Surface)	None Identified	None Required	These components are made of the same material and see the same type of environment. Therefore, the CoC 1004 AMR results are applicable to the FO, FC, FF DSCs and no AMA is required.
Inner Top Cover Plate	28	21	SA-240 Type 304	ITS	24PT2S and 24PT2L Table 1C-12	SA-240 Type 304	ITS	Embedded (Top Surface Only) Inert Gas (Balance)	None Identified	None Required	These components are made of the same material and see the same type of environment. Therefore, the CoC 1004 AMR results are applicable to the FO, FC, FF DSCs and no AMA is required.
Guidesleeve	11	N/A	SA-240 Type 304	ITS	24PT2S and 24PT2L Table 1C-12	SA-240 Type 304	ITS	Inert Gas	None Identified	None Required	These components are made of the same material and see the same type of environment. Therefore, the CoC 1004 AMR results are applicable to the FO, FC, FF DSCs and no AMA is required.
Neutron Absorber Sheet	14	N/A	Boral®	ITS	24PT2S and 24PT2L Table 1C-12	Boral®	ITS	Inert Gas	None Identified	None Required	These components are made of the same material and see the same type of environment. Therefore, the CoC 1004 AMR results are applicable to the FO, FC, FF DSCs and no AMA is required.
Oversleeve	12	N/A	SA-240 Type 304	ITS	24PT2S and 24PT2L Table 1C-12	SA-240 Type 304	ITS	Inert Gas	None Identified	None Required	These components are made of the same material and see the same type of environment. Therefore, the CoC 1004 AMR results are applicable to the FO, FC, FF DSCs and no AMA is required.

Table RAI 15-13-1
FO, FC, FF DSCs

(5 pages)

Subcomponent Parts	FO & FC Drawing NUH-05-4004 Item No.	FF Drawing NUH-05-4005 Item No.	FO & FC or FF Material	FO, FC, FF Safety Classification	CoC 1004 DSC & AMR Results Table	CoC 1004 Material	CoC 1004 Safety Classification	Environment	CoC 1004 Aging Effects Requiring Management	CoC 1004 Aging Management Activity	Applicability of CoC 1004 AMR and AMP to 24PT1
Shim Plate (Extension plate)	18, 48	N/A	SA-240 Type 304	ITS	24PT2S and 24PT2L Table 1C-12	A-240 Type 304	ITS	Inert Gas	None Identified	None Required	These components are made of the same material and see the same type of environment. Therefore, the CoC 1004 AMR results are applicable to the FO, FC, FF DSCs and no AMA is required.
Lead Shielding (For Top and Bottom Shield Plug Assemblies)	3	11	B29 Lead	ITS	24PTL Table 1C-12	B29 Lead	ITS	Embedded /Encased	None Identified	None Required	These components are made of the same material and see the same type of environment. Therefore, the CoC 1004 AMR results are applicable to the FO, FC, FF DSCs and no AMA is required.
Top Shield Plug Assembly	31, 32, 33, 34	24, 25, 26, 27	A36	ITS	24PTL Table 1C-12	A36	ITS	Inert Gas	None Identified	None Required	These components are made of the same material and see the same type of environment. Therefore, the CoC 1004 AMR results are applicable to the FO, FC, FF DSCs and no AMA is required.
Bottom Shield Plug Assembly and Shield Plug Stiffeners	7, 49, 50, 51, 52 (and 36 for top shield)	12, 40, 41, 42, 43 (and 44 for top shield)	SA-240 Type 304	ITS	24PTL Table 1C-12	SA-240 Type 304	ITS	Embedded/ Encased	None Identified	None Required	These components are made of the same material and see the same type of environment. Therefore, the CoC 1004 AMR results are applicable to the FO, FC, FF DSCs and no AMA is required.
Failed Fuel Can (Liner, Bottom Lid, Top Lid Liner and Top Plate)	N/A	29, 30, 32, 33, 34	SA-240 304	ITS	24PTH Table 1J-13	SA-240 Type 304	ITS	Inert Gas	None Identified	None Required	These components are made of the same material and see the same type of environment. Therefore, the CoC 1004 AMR results are applicable to the FO, FC, FF DSCs and no AMA is required.
Washer Plate, spacer bar, cover plate side plate	N/A	36, 37, 38, 39	Items 36, 37, 38 - A240 Type 304 Item 39 - SA-240 Type 304	ITS	24PTH Table 1J-13	A240 Type 304	ITS	Inert Gas	None Identified	None Required	These components are made of the same material and see the same type of environment. Therefore, the CoC 1004 AMR results are applicable to the FO, FC, FF DSCs and no AMA is required.
Mesh	N/A	35	Stainless Steel	ITS	24PTH Table 1J-13	Stainless Steel	ITS	Inert Gas	None Identified	None Required	These components are made of the same material and see the same type of environment. Therefore, the CoC 1004 AMR results are applicable to the FO, FC, FF DSCs and no AMA is required.

Table RAI 15-13-1
FO, FC, FF DSCs

(5 pages)

Subcomponent Parts	FO & FC Drawing NUH-05-4004 Item No.	FF Drawing NUH-05-4005 Item No.	FO & FC or FF Material	FO, FC, FF Safety Classification	CoC 1004 DSC & AMR Results Table	CoC 1004 Material	CoC 1004 Safety Classification	Environment	CoC 1004 Aging Effects Requiring Management	CoC 1004 Aging Management Activity	Applicability of CoC 1004 AMR and AMP to 24PT1
Angle and Plate	45, 46	N/A	Item 45 - SA-479 Type 304 Item 46 - SA-240 Type 304	ITS	N/A	N/A	N/A	N/A	N/A	N/A	While the renewal of CoC 1004 did not explicitly evaluate this component, it is made of stainless steel and is in an inert environment. Therefore, no AMA is required.
Not Used	8, 15, 35	13, 14, 28	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

(1) Failure of this NITS item would prevent fulfillment of an important-to-safety function.

Table 15-13-2
GTCC DSC

(2 pages)

Subcomponent Parts	GTCC Drawing 13302-1005 Item No.	GTCC Material	GTCC Safety Classification	CoC 1004 DSC & AMR Results Table	CoC 1004 Material	CoC 1004 Safety Classification	Environment	CoC 1004 Aging Effects Requiring Management	CoC 1004 Aging Management Activity	Applicability of CoC 1004 AMR and AMP to 24PT1
Cylindrical Shell	1	SA-240 Type 304	ITS	24PT2S and 24PT2L Table 1C-12	SA-240 Type 304	ITS	Inert Gas / Sheltered	Loss of Material, Cracking	NUHOMS® Aging Management Program (AMP)	These components are made of the same material and see the same type of environment. Therefore, the CoC 1004 AMR results and AMP are applicable to the GTCC DSC.
Outer Bottom Cover Plate	7	SA-240 Type 304	ITS	24PT2S and 24PT2L Table 1C-12	A240 Type 304	ITS	Sheltered	Loss of Material, Cracking	NUHOMS® AMP	While the GTCC DSC calls SA-240, and 24PT2 calls for A240, both materials are stainless steel. These components are made of the same type of material, i.e., stainless steel, and see the same type of environment. Therefore, the CoC 1004 AMR results and AMP are applicable to the GTCC DSC.
Bottom Shield Plug(2)	2	SA-240 Type 304	ITS	32PT Table 1E-10	SA-182 Type F304	ITS	Sheltered / Inert gas	Loss of Material, Cracking	NUHOMS® AMP	While the GTCC DSC calls SA-240 Type 304, and 32PT calls for SA-182 Type F304, both materials are stainless steel. These components are made of the same type of material, i.e., stainless steel, and see the same type of environments. Therefore, the CoC 1004 AMR results and AMP are applicable to the GTCC DSC
Grapple Ring	3	SA-240 Type 304	ITS	24PT2S and 24PT2L Table 1C-12	A240 Type 304	ITS	Sheltered	Loss of Material, Cracking	NUHOMS® AMP	While the GTCC DSC calls SA-240, and 24PT2 calls for A240, both materials are stainless steel. These components are made of the same type of material, i.e., stainless steel, and see the same type of environment. Therefore, the CoC 1004 AMR results and AMP are applicable to the GTCC DSC.
Grapple Ring Support	4	SA-240 Type 304	ITS	24PT2S and 24PT2L Table 1C-12	A240 Type 304	ITS	Sheltered	Loss of Material, Cracking	NUHOMS® AMP	While the GTCC DSC calls SA-240, and 24PT2 calls for A240, both materials are stainless steel. These components are made of the same type of material, i.e., stainless steel, and see the same type of environment. Therefore, the CoC 1004 AMR results and AMP are applicable to the GTCC DSC.
Basket Key	8	A-240 Type 304	NITS	32PT Table 1E-10	SA-240 or SA-479 Type 304	ITS	Inert Gas	None Identified	None Required	While the GTCC DSC calls A-240, and 24PT2 calls for SA-240, both materials are stainless steel. These components are made of the same type of material, i.e., stainless steel, and see the same type of environment. Therefore, the CoC 1004 AMR results are applicable to the GTCC DSC and no AMA is required
Swagelok Connections	14	S.S	NITS	24PT2S and 24PT2L Table 1C-12	SST	NITS	N/A	N/A	N/A	A not-important-to-safety item that is not in-scope. Therefore, no AMA required.

Table 15-13-2
GTCC DSC

(2 pages)

Subcomponent Parts	GTCC Drawing 13302-1005 Item No.	GTCC Material	GTCC Safety Classification	CoC 1004 DSC & AMR Results Table	CoC 1004 Material	CoC 1004 Safety Classification	Environment	CoC 1004 Aging Effects Requiring Management	CoC 1004 Aging Management Activity	Applicability of CoC 1004 AMR and AMP to 24PT1
Top Shield Plug	5	A36	ITS	24PT2S Table 1C12	A36	NITS(1)	Inert Gas	None Identified	None Required	These components are made of the same material and see the same type of environment. Therefore, the CoC 1004 AMR results are applicable to the GTCC DSC and no AMA is required.
Outer Top Cover Plate	6	SA-240 Type 304	ITS	24PT2S Table 1C-12	SA-240 Type 304	ITS	Sheltered	Loss of Material, Cracking	NUHOMS® AMP	These components are made of the same material and see the same type of environment. Therefore, the CoC 1004 AMR results and AMP are applicable to the GTCC DSC.
Siphon & Vent Port Cover Plate	12	A36	ITS	24PT2S and 24PT2L Table 1C-12	SA-240 Type 304	ITS	Embedded (Top Surface) Inert Gas (Bottom Surface)	None Identified	None Required	While the GTCC material is carbon steel (A36) and the 24PT2 is stainless steel (SA-240 Type 304) both are in an embedded and inert environment. Therefore, no AMA is required.
Top shield Plug Alignment Key	9	A240-Type 304	NITS	N/A	N/A	N/A	N/A	N/A	N/A	A not-important-to-safety item that is not in-scope. Therefore, no AMA required.
O-Ring	10, 11	Parker #2-326	NITS	N/A	N/A	N/A	N/A	N/A	N/A	A not-important-to-safety item that is not in-scope. Therefore, no AMA required.
Basket Assembly	13 (11221-1000 11221-1002)	A240, stainless steel, A276, A269	NITS	N/A	N/A	N/A	N/A	N/A	N/A	A not-important-to-safety items in an inert gas. Therefore, no AMA required.

(1) Failure of this NITS item would prevent fulfillment of an important-to-safety function.
(2) The bottom shield plug for the GTCC DSC is configured the same as the shell bottom of the 32PT DSC.

Table RAI 15.13-3
24PT1 DSC

(5 pages)

Subcomponent Parts	24PT1 SAR Drawing NUH-05-4010 Item No.	24PT1 SAR Drawing NUH-05-4010 Material	24PT1 Safety Classification	CoC 1004 DSC & AMR Results Table	CoC 1004 Material	CoC 1004 Safety Classification	Environment	CoC 1004 Aging Effects Requiring Management	CoC 1004 Aging Management Activity	Applicability of CoC 1004 AMR and AMP to 24PT1
Spacer Discs	1, 2	SA-537, CL 2	ITS	24PT2S and 24PT2L Table 1C-12	SA-533, GR B, CL 1	ITS	Inert Gas	None Identified	None Required	While the 24PT1 material is SA-537 CL2, and the 24PT2 material is SA-533 GR B CL1, they are both carbon steel. Since they are both carbon steel and see the same type of environment, the CoC 1004 AMR results are the applicable to the 24PT1 and no Aging Management Activity (AMA) is required.
Stop Plate	3	SA-240 Type 304, Or A240 Type 304	NITS	24PT2S and 24PT2L Table 1C-12	SA-240 Type 304	NITS	N/A	N/A	N/A	A not-important-to-safety item that is not in-scope. Therefore, no AMA is required.
Support Rod Assembly with Spacer Sleeve (all spacer sleeves)	4, 5, 6, 7, 8, 9, 10, 11, 12	SA-564 Type 630	ITS	24PT2S and 24PT2L Table 1C-12	SA-564 Type 630	ITS	Inert Gas	None Identified	None Required	These components are made of the same material and see the same type of environment. Therefore, the results of the CoC 1004 AMR are applicable to the 24PT1 and no AMA is required.
Pin	13	A276 Type 304	ITS	24PT2S and 24PT2L Table 1C-12	A276 Type 304	ITS	Inert Gas	None Identified	None Required	These components are made of the same material and see the same type of environment. Therefore, the results of the CoC 1004 AMR are applicable to the 24PT1 and no AMA is required.
Cylindrical Shell	14	SA-240 Type 316	ITS	24PT2S and 24PT2L Table 1C-12	SA-240 Type 304	ITS	Inert Gas / Sheltered	Loss of Material, Cracking	NUHOMS® Aging Management Program (AMP)	While the 24PT1 material is Type 316 and the 24PT2 material is Type 304, they are both stainless steel. Since they are both stainless steel and see the same type of environment, the CoC 1004 AMR results and AMP are applicable to the 24PT1.
Outer Bottom Cover Plate	15	A240 Type 316	ITS	24PT2S and 24PT2L Table 1C-12	A240 Type 304	ITS	Sheltered	Loss of Material, Cracking	NUHOMS® AMP	While the 24PT1 material is Type 316 and the 24PT2 material is Type 304, they are both stainless steel. Since they are both stainless steel and see the same type of environment, the CoC 1004 AMR results and AMP are applicable to the 24PT1.
Bottom Shield Plug	16	A36	ITS	24PT2S Table 1C-12	A36	NITS(1)	Embedded/ Encased	None Identified	None Required	These components are made of the same material and see the same type of environment. Therefore, the results of the CoC 1004 AMR are applicable to the 24PT1 and no AMA is required.
Grapple Ring	17	A240 Type 316	ITS	24PT2S and 24PT2L Table 1C-12	A240 Type 304	ITS	Sheltered	Loss of Material, Cracking	NUHOMS® AMP	While the 24PT1 material is Type 316 and the 24PT2 material is Type 304, they are both stainless steel. Since they are both stainless steel and see the same type of environment, the CoC 1004 AMR results and AMP are applicable to the 24PT1.

Table RAI 15.13-3
24PT1 DSC

(5 pages)

Subcomponent Parts	24PT1 SAR Drawing NUH-05-4010 Item No.	24PT1 SAR Drawing NUH-05-4010 Material	24PT1 Safety Classification	CoC 1004 DSC & AMR Results Table	CoC 1004 Material	CoC 1004 Safety Classification	Environment	CoC 1004 Aging Effects Requiring Management	CoC 1004 Aging Management Activity	Applicability of CoC 1004 AMR and AMP to 24PT1
Grapple Ring Support	18	A240 Type 316	ITS	24PT2S and 24PT2L Table 1C-12	A240 Type 304	ITS	Sheltered	Loss of Material, Cracking	NUHOMS® AMP	While the 24PT1 material is Type 316 and the 24PT2 material is Type 304, they are both stainless steel. Since they are both stainless steel and see the same type of environment, the CoC 1004 AMR results and AMP are applicable to the 24PT1.
Inner Bottom Cover Plate	19	SA-240 Type 316	ITS	24PT2S and 24PT2L Table 1C-12	SA-240 Type 304	ITS	Inert Gas	None Identified	None Required	While the 24PT1 material is Type 316 and the 24PT2 material is Type 304, they are both stainless steel. Since they are both stainless steel and see the same type of environment, the CoC 1004 AMR results are applicable to the 24PT1 and no AMA is required
Shear Key	20	A240 Type 316	ITS	32PT Table 1E-10	A240 Type 304	ITS	Sheltered	Loss of Material, Cracking	NUHOMS® AMP	While the 24PT1 material is Type 316 and the 32PT material is Type 304, they are both stainless steel. Since they are both stainless steel and see the same type of environment, the CoC 1004 AMR results and AMP are applicable to the 24PT1.
Basket Key	21	A240 Type 316	ITS	32PT Table 1E-10	SA-240 or SA-479 Type 304	ITS	Inert Gas	None Identified	None Required	While the 24PT1 material is Type 316 and the 32PT material is Type 304, they are both stainless steel. Since they are both stainless steel and see the same type of environment, the CoC 1004 AMR results are applicable to the 24PT1 and no AMA is required.
Siphon & Vent Block	22	SA-240 Type 316	ITS	24PT2S and 24PT2L Table 1C-12	SA-240 Type 304	ITS	Inert Gas	None Identified	None Required	While the 24PT1 material is Type 316 and the 24PT2 material is Type 304, they are both stainless steel. Since they are both stainless steel and see the same type of environment, the CoC 1004 AMR results are applicable to the 24PT1 and no AMA is required
Siphon Tubing	23	AISI-304, Or A213,Type 304, Or 316	NITS	24PT2S and 24PT2L Table 1C-12	AISI-304; A249/A213 (Type 304, Type 316)	NITS	N/A	N/A	N/A	A not-important-to-safety item that is not in-scope. Therefore, no AMA is required.
Swagelok Connections	24, 25	Stainless Steel	NITS	24PT2S and 24PT2L Table 1C-12	SST	NITS	N/A	N/A	N/A	A not-important-to-safety item that is not in-scope. Therefore, no AMA is required.
Lifting Lug	26	SA-240 Type 316	ITS	32PT Table 1E-10	A240 Type 304	ITS	Inert Gas	None Identified	None Required	While the 24PT1 material is Type 316 and the 32PT material is Type 304, they are both stainless steel. Since they are both stainless steel and see the same type of environment, the CoC 1004 AMR results are applicable to the 24PT1 and no AMA is required

Table RAI 15.13-3
24PT1 DSC

(5 pages)

Subcomponent Parts	24PT1 SAR Drawing NUH-05-4010 Item No.	24PT1 SAR Drawing NUH-05-4010 Material	24PT1 Safety Classification	CoC 1004 DSC & AMR Results Table	CoC 1004 Material	CoC 1004 Safety Classification	Environment	CoC 1004 Aging Effects Requiring Management	CoC 1004 Aging Management Activity	Applicability of CoC 1004 AMR and AMP to 24PT1
Support Ring, Plate	27	SA-479 Type 316	ITS	24PT2S and 24PT2L Table 1C-12	SA-240 Type 304	ITS	Inert Gas	None Identified	None Required	While the 24PT1 material is SA-479 Type 316 and the 24PT2 material is SA-240 Type 304, they are both stainless steel. Since they are both stainless steel and see the same type of environment, the CoC 1004 AMR results are applicable to the 24PT1 and no AMA is required
Top Shield Plug	28	A36	ITS	24PT2S Table 1C12	A36	NITS(1)	Inert Gas	None Identified	None Required	These components are made of the same material and see the same type of environment. Therefore, the results of the CoC 1004 AMR are applicable to the 24PT1 and no AMA is required.
Outer Top Cover Plate	29	SA-240 Type 316	ITS	24PT2S Table 1C-12	SA-240 Type 304	ITS	Sheltered	Loss of Material, Cracking	NUHOMS® AMP	While the 24PT1 material is Type 316 and the 24PT2 material is Type 304, they are both stainless steel. Since they are both stainless steel and see the same type of environment, the CoC 1004 AMR results and AMP are applicable to the 24PT1.
Siphon & Vent Port Cover Plate	30	SA-240 Type 316	ITS	24PT2S and 24PT2L Table 1C-12	SA-240 Type 304	ITS	Embedded (Top Surface) Inert Gas (Bottom Surface)	None Identified	None Required	While the 24PT1 material is Type 316 and the 24PT2 material is Type 304, they are both stainless steel. Since they are both stainless steel and see the same type of environment, the CoC 1004 AMR results are applicable to the 24PT1 and no AMA is required
Inner Top Cover Plate	31	SA-240 Type 316	ITS	24PT2S and 24PT2L Table 1C-12	SA-240 Type 304	ITS	Embedded (Top Surface Only) Inert Gas (Balance)	None Identified	None Required	While the 24PT1 material is Type 316 and the 24PT2 material is Type 304, they are both stainless steel. Since they are both stainless steel and see the same type of environment, the CoC 1004 AMR results are applicable to the 24PT1 and no AMA is required
Guidesleeve	32	SA-240 Type 304	ITS	24PT2S and 24PT2L Table 1C-12	SA-240 Type 304	ITS	Inert Gas	None Identified	None Required	These components are made of the same material and see the same type of environment. Therefore, the results of the CoC 1004 AMR are applicable to the 24PT1 and no AMA is required.
Neutron Absorber Sheet	33	Boral	ITS	24PT2S and 24PT2L Table 1C-12	Boral®	ITS	Inert Gas	None Identified	None Required	These components are made of the same material and see the same type of environment. Therefore, the results of the CoC 1004 AMR are applicable to the 24PT1 and no AMA is required.
Oversleeve	34	SA-240 Type 304	ITS	24PT2S and 24PT2L Table 1C-12	SA-240 Type 304	ITS	Inert Gas	None Identified	None Required	These components are made of the same material and see the same type of environment. Therefore, the results of the CoC 1004 AMR are applicable to the 24PT1 and no AMA is required.

Table RAI 15.13-3
24PT1 DSC

(5 pages)

Subcomponent Parts	24PT1 SAR Drawing NUH-05-4010 Item No.	24PT1 SAR Drawing NUH-05-4010 Material	24PT1 Safety Classification	CoC 1004 DSC & AMR Results Table	CoC 1004 Material	CoC 1004 Safety Classification	Environment	CoC 1004 Aging Effects Requiring Management	CoC 1004 Aging Management Activity	Applicability of CoC 1004 AMR and AMP to 24PT1
Shim Plate	35	SA-240 Type 304	ITS	24PT2S and 24PT2L Table 1C-12	A-240 Type 304	ITS	Inert Gas	None Identified	None Required	These components are made of the same material and see the same type of environment. Therefore, the results of the CoC 1004 AMR are applicable to the 24PT1 and no AMA is required.
Liner, Bottom Lid, Top Lid Liner and Top Plate (and other failed fuel can subcomponents)	36, 37, 38, 39, 40, 41	SA-240 Type 304, (Or SA182 Type F305 for Top lid)	ITS	24PTH Table 1J-13	SA-240 Type 304	ITS	Inert Gas	None Identified	None Required	These components are made of the same material (SA182 type F305 is also stainless steel) and see the same type of environment. Therefore, the results of the CoC 1004 AMR are applicable to the 24PT1 and no AMA is required.
Washer Plate	42	A240 Type 304	ITS	24PTH Table 1J-13	A240 Type 304	ITS	Inert Gas	None Identified	None Required	These components are made of the same material and see the same type of environment. Therefore, the results of the CoC 1004 AMR are applicable to the 24PT1 and no AMA is required.
Mesh	43	Stainless Steel	ITS	24PTH Table 1J-13	Stainless Steel	ITS	Inert Gas	None Identified	None Required	These components are made of the same material and see the same type of environment. Therefore, the results of the CoC 1004 AMR are applicable to the 24PT1 and no AMA is required.
Spacer Bar	44	A240 Type 304	ITS	24PTH Table 1J-13	Stainless Steel	NITS	Inert Gas	N/A	N/A	The 24PT1 failed fuel can spacer bar is made of the same material as the failed fuel can washer plate (Item #42) and sees the same type of environment. Since no AMA was required for the washer plate, no AMA is required for the spacer bar.
Top and Bottom Spacers	45, 46, 47, 49	A240 Type 304, A479 Type 304	ITS	N/A	N/A	N/A	Inert Gas	None Identified	None Required	CoC 1029 SAR describes the use of stainless steel fuel spacers to center the short 14x14 Westinghouse fuel. While these subcomponents were not explicitly evaluated in the renewal of CoC 1004, these are stainless steel components in an inert gas environment. Therefore, no AMA is required.
Not used	48, 50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Test Port Plug	51	SA-479 Type 316	ITS	32PT Table 1E-10	SA-479 Type 304	ITS	Sheltered	Loss of Material, Cracking	NUHOMS® AMP	While the 24PT1 material is Type 316 and the 32PT material is Type 304, they are both stainless steel. Since they are both stainless steel and see the same type of environment, the CoC 1004 AMR results and AMP are applicable to the 24PT1.
Bottom Shield Plug Outer Casing	52	A240 Type 316	ITS	32PT Table 1E-10	A240 Type 304	ITS	Sheltered	Loss of Material, Cracking	NUHOMS® AMP	While the 24PT1 material is Type 316 and the 32PT material is Type 304, they are both stainless steel. Since they are both stainless steel and see the same type of environment, the CoC 1004 AMR results and AMP are applicable to the 24PT1.

Table RAI 15.13-3
24PT1 DSC

(5 pages)

Subcomponent Parts	24PT1 SAR Drawing NUH-05-4010 Item No.	24PT1 SAR Drawing NUH-05-4010 Material	24PT1 Safety Classification	CoC 1004 DSC & AMR Results Table	CoC 1004 Material	CoC 1004 Safety Classification	Environment	CoC 1004 Aging Effects Requiring Management	CoC 1004 Aging Management Activity	Applicability of CoC 1004 AMR and AMP to 24PT1
Alternative Outer Bottom Cover Plate	53	A240 Type 316, Or A182 Type F316	ITS	32PT Table 1E-10	A240 Type 304	ITS	Sheltered	Loss of Material, Cracking	NUHOMS® AMP	While the 24PT1 material is Type 316 (or A182 Type F316) and the 32PT material is Type 304, they are both stainless steel. Since they are both stainless steel and see the same type of environment, the CoC 1004 AMR results and AMP are applicable to the 24PT1.
Alternative Inner Bottom Cover Plate	54	SA-182 Type F316	ITS	32PT Table 1E-10	SA-182 Type F304	ITS	Inert Gas / Sheltered	Loss of Material, Cracking	NUHOMS® AMP	While the 24PT1 material is Type 316 and the 32PT material is Type 304, they are both stainless steel. Since they are both stainless steel and see the same type of environment, the CoC 1004 AMR results and AMP are applicable to the 24PT1.
Shim Plate	55	SA-240 Type 304	ITS	24PT2S and 24PT2L Table 1C-12	SA-240 Type 304	ITS	Inert Gas	None Identified	None Required	These components are made of the same material and see the same type of environment. Therefore, the results of the CoC 1004 AMR are applicable to the 24PT1 and no AMA is required.
Screw Socket HD Cap	56	A193 GR B7	ITS	N/A	N/A	N/A	Inert Gas	None Identified	None Required	The failed fuel can Socket Cap screw is in an inert Gas environment and therefore, no AMA is required.
Alternate Bottom Shield Plug	57	A240 Type 316, Or A182 Type F316	ITS	N/A	N/A	N/A	Sheltered	Loss of Material, Cracking	NUHOMS® AMP	While a portion of the 24PT1 alternate bottom shield plug is in an encased environment (and thus no AMA is required,) a portion is exposed to the sheltered environment. The portion exposed to a sheltered environment is susceptible to the same aging effects as Item #53. Since the CoC 1004 AMR results and AMP were determined to be applicable to item #53, they are also applicable to item #57.

(1) Failure of this NITS item would prevent fulfillment of an important-to-safety function.

Table RAI 15.13-4
AHSM

(5 pages)

Subcomponent Parts	AHSM SAR Drawing NUH-03-4011 Item Nos.	AHSM SAR Drawing NUH-03-4011 Material	AHSM Safety Classification	CoC 1004 HSM & AMR Results Table	CoC 1004 Material	CoC 1004 Safety Classification	Environment	CoC 1004 Aging Effects Requiring Management	CoC 1004 Aging Management Activity	Applicability of CoC 1004 AMR and AMP to AHSM
HSM Base Walls and Roof	N/A(2)	Reinforced Concrete	ITS	Model 152 Table 1F-15	Reinforced Concrete	ITS	External Sheltered(1)	Loss of Material, Cracking, Change in Material Properties	NUHOMS® AMP	These components are made of the same material and see the same type of environment. Therefore, the CoC 1004 AMR results and AMP are applicable to the AHSM.
HSM End and Rear Shield Walls	N/A(2)	Reinforced Concrete	ITS	Model 152 Table 1F-15	Reinforced Concrete	ITS	External / Sheltered	Loss of Material, Cracking, Change in Material Properties	NUHOMS® AMP	These components are made of the same material and see the same type of environment. Therefore, the CoC 1004 AMR results and AMP are applicable to the AHSM.
Shielded Door	N/A(2)	Reinforced Concrete	ITS	Model 152 Table 1F-15	Reinforced Concrete	ITS	Embedded/ Encased	Loss of Material, Cracking, Change in Material Properties	NUHOMS® AMP	These components are made of the same material and see the same type of environment. Therefore, the CoC 1004 AMR results and AMP are applicable to the AHSM.
Door Plate	1	A36	ITS	Model 152 Table 1F-15	A36	ITS	External	Loss of Material	NUHOMS® AMP	These components are made of the same material and see the same type of environment. Therefore, the CoC 1004 AMR results and AMP are applicable to the AHSM.
Door Deformed Bar Anchors	2	A496	ITS	Model 152 Table 1F-15	A496	ITS	Embedded/ Encased	None Identified	None Required	These components are made of the same material and see the same type of environment. Therefore, the results of the CoC 1004 AMR are applicable to the AHSM and no AMA is required.
Support Rail Beam & Cross Beam	3, 14	A240 Type 304 Or A479 Type 304	ITS	Model 152 Table 1F-15	A240 TYPE 304 or A479 Type 304	ITS	Sheltered	Loss of Material	NUHOMS® AMP	These components are made of the same material and see the same type of environment. Therefore, the CoC 1004 AMR results and AMP are applicable to the AHSM.
Support Rail Plate	6, 7	Nitronic 60 UNC S21800, Or RC 29-35	NITS	Model 152 Table 1F-15	NITRONIC®60 RC 29-35	NITS(1)	Sheltered	Loss of Material	NUHOMS® AMP	These components are made of the same material and see the same type of environment. Therefore, the CoC 1004 AMR results and AMP are applicable to the AHSM.
Support Structure Steel (Rail Extension Plate / Baseplate, DSC Stop Plate & Extension Plate, Stiffener Plates, Gussets, Base Plates)	4, 5, 8, 9, 10, 11, 12, 13, 47	ITS	A240 Type 304	Model 152 Table 1F-15	A 240 TYPE 304	ITS	Sheltered	Loss of Material	NUHOMS® AMP	These components are made of the same material and see the same type of environment. Therefore, the CoC 1004 AMR results and AMP are applicable to the AHSM. Note that CoC 1004 Table 1F-15 erroneously failed to list the NUHOMS® AMP as a required AMA, even though it listed loss of material as aging effects that require management.

Table RAI 15.13-4
AHSM

(5 pages)

Subcomponent Parts	AHSM SAR Drawing NUH-03-4011 Item Nos.	AHSM SAR Drawing NUH-03-4011 Material	AHSM Safety Classification	CoC 1004 HSM & AMR Results Table	CoC 1004 Material	CoC 1004 Safety Classification	Environment	CoC 1004 Aging Effects Requiring Management	CoC 1004 Aging Management Activity	Applicability of CoC 1004 AMR and AMP to AHSM
Rear Shield Wall Attachment Hardware (Stud, Nut, Coupling Nut)	15, 16, 17	A193 GR B7, Or A325, Or A490, Or A453 GR 660, Or A193 CL2, GR B8M2 Or CL1C GR B8R Or B8RA	ITS	Model 152 Table 1F-15	A193 Gr B7. A325 or A490 / A194 Gr 2H or A563 Gr A	ITS	External	Loss of Material	NUHOMS® AMP	While the AHSM allows the use of stainless steel material in addition to carbon steel, the CoC 1004 HSM AMP manages the aging effect of stainless steel in an external environment. Therefore, the CoC 1004 AMP is applicable to the AHSM.
Vent Cover Attachment Embedments (Stud /Nut /Washer /Washer Plate)	18, 19, 20, 26	A193 GR7, Or A325, Or A490, Or A453 GR 660, Or A193 CL2, GR B8M2 Or CL1C GR B8R Or B8RA, A194 Gr 2H, GR 8M, Or A563 GrA, Carbon or Stainless/Steel, A36	ITS	Model 152 Table 1F-15	A193 Gr B7, A325 or A490 / A194 Gr 2H or A563 Gr A/ Carbon Steel /A36	ITS	Embedded / Encased	Loss of Material	NUHOMS® AMP	While the AHSM allows the use of stainless steel material in addition to carbon steel, the CoC 1004 HSM AMP manages the aging effect of stainless steel in an embedded/encased environment. Therefore, the CoC 1004 AMP is applicable to the AHSM.
Threaded Insert Dayton Superior (for Heat Shields & Outlet Vent)	22, 27, 28	Carbon Or Stainless Steel	ITS	Model 152 Table 1F-15	Carbon Steel	ITS	Embedded/ Encased	Loss of Material	NUHOMS® AMP	While the AHSM allows the use of stainless steel material in addition to carbon steel, the CoC 1004 HSM AMP manages the aging effect of stainless steel in an embedded/encased environment. Therefore, the CoC 1004 AMP is applicable to the AHSM.
Not Used	23, 50, 51, 52, 73	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Flexible Material	24	--	NITS	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Richmond Dowel Bar Splicer	25, 72, 72A	A615 Or A706, GR60, Or Carbon Steel	ITS	Model 152 Table 1F-15	A615 GR 60 or Equiv	NITS(1)	Embedded/ Encased	None Identified	None Required	The AHSM Material A706 Gr60 and Carbon Steel is equivalent to A615 GR 60 for aging management review, i.e., they are all carbon steel. Therefore the CoC 1004 AMR is applicable to the AHSM and no AMA is required.
Door Attachment-Embedment (Stud, Nut and Coupling Nut)	29, 30, 31	A193 GR B7, Or A325, Or A490, Or A453 GR 660, Or A193 CL2, GR B8M2 Or CL1C GR B8R Or B8RA	ITS	Model 152 Table 1F-15	A193 Gr B7, A325 or A490 / A194 Gr 2H or A563 Gr A	ITS	Embedded / Encased	Loss of Material	NUHOMS® AMP	While the AHSM allows the use of stainless steel material in addition to carbon steel, the CoC 1004 HSM AMP manages the aging effect of stainless steel in an embedded/encased environment. Therefore, the CoC 1004 AMP is applicable to the AHSM.

Table RAI 15.13-4
AHSM

(5 pages)

Subcomponent Parts	AHSM SAR Drawing NUH-03-4011 Item Nos.	AHSM SAR Drawing NUH-03-4011 Material	AHSM Safety Classification	CoC 1004 HSM & AMR Results Table	CoC 1004 Material	CoC 1004 Safety Classification	Environment	CoC 1004 Aging Effects Requiring Management	CoC 1004 Aging Management Activity	Applicability of CoC 1004 AMR and AMP to AHSM
Cask Alignment Target (Plate, Stud)	32, 33	A36 Or Stainless Steel	NITS	Model 152 Table 1F-15	A36 / Carbon Steel	NITS	N/A	N/A	N/A	A not-important-to-safety item that is not in-scope. Therefore, no AMA required. Note that CoC 1004 Table 1F-15 erroneously listed the NUHOMS® AMP as a required AMA, even though it listed no aging effects that require management.
Tube Steel and Plate (Embedded)	34, 35, 36	A36, Or Stainless Steel, Or A500 GR B	NITS	Model 152 Table 1F-15	Carbon Steel	ITS	Embedded/ Encased	Loss of Material	NUHOMS® AMP	While the AHSM allows the use of stainless steel material in addition to carbon steel, the CoC 1004 HSM AMP manages the aging effect of stainless steel in an embedded/encased environment. Therefore, the CoC 1004 AMP is applicable to the AHSM.
Expanded Coil Insert Dayton Superior	37	Carbon Or stainless Steel	ITS	Model 152 Table 1F-15	Carbon Steel	ITS	Embedded/ Encased	Loss of Material	NUHOMS® AMP	While the AHSM allows the use of stainless steel material in addition to carbon steel, the CoC 1004 HSM AMP manages the aging effect of stainless steel in an embedded/encased environment. Therefore, the CoC 1004 AMP is applicable to the AHSM.
Door Attachment Hardware (Stud / Nut /Washer / Washer Plate)	38, 39, 40, 41	A193 GR B7, Or A453 Gr 660, Or A193 CL2, GR B8M2 Or CL1C, GR B8R Or B8RA, Or A194 GR 2H, Or 8M, Carbon or Stainless Steel, Or A36	ITS	Model 152 Table 1F-15	A193 Gr B7, A325 or A490 / A194 Gr 2H or A563 Gr A / Carbon Steel / A36	ITS	External / Embedded	Loss of Material	NUHOMS® AMP	While the AHSM allows the use of stainless steel material in addition to carbon steel, the CoC 1004 HSM AMP manages the aging effect of stainless steel in an external/embedded environment. Therefore, the CoC 1004 AMP is applicable to the AHSM.
Top Block Attachment Bolt	42, 43	A193 GR B7, Or A325, Or A490, Or A453 GR660, Or A193 CL2, GR B8M2 Or CL1C, GR B8R Or B8RA	ITS	Model 152 Table 1F-15	A325 or A193 GR B7 or A490	NITS(1)	External	Loss of Material	NUHOMS® AMP	While the AHSM allows the use of stainless steel material in addition to carbon steel, the CoC 1004 HSM AMP manages the aging effect of stainless steel in an external environment. Therefore, the CoC 1004 AMP is applicable to the AHSM.
Top Block Attachment Hardware (Nut, Washer, Washer Plate)	44, 45, 46	A193 GR B7, Or A453 GR 660, Or A193 CL2, GR B8M2 Or CL1C, GR B8R Or B8RA, Or Caron Or Stainless Steel, Or A36	ITS (and NITS(1))	Model 152 Table 1F-15	A194 Gr 2H or A563 Gr A / Carbon Steel / A36	NITS(1)	External / Embedded	Loss of Material	NUHOMS® AMP	While the AHSM allows the use of stainless steel material in addition to carbon steel, the CoC 1004 HSM AMP manages the aging effect of stainless steel in an external/embedded environment. Therefore, the CoC 1004 AMP is applicable to the AHSM.

Table RAI 15.13-4
AHSM

(5 pages)

Subcomponent Parts	AHSM SAR Drawing NUH-03-4011 Item Nos.	AHSM SAR Drawing NUH-03-4011 Material	AHSM Safety Classification	CoC 1004 HSM & AMR Results Table	CoC 1004 Material	CoC 1004 Safety Classification	Environment	CoC 1004 Aging Effects Requiring Management	CoC 1004 Aging Management Activity	Applicability of CoC 1004 AMR and AMP to AHSM
DSC Axial Retainer	48	A500 GR B, A618, A847, A453, A588	ITS	Model 152 Table 1F-15	Carbon Steel	ITS	Sheltered	Loss of Material	NUHOMS® AMP	All of the allowed AHSM material is carbon steel. Therefore, these components are of the same material, i.e., carbon steel, and see the same type of environment. Therefore, the CoC 1004 AMR results and AMP are applicable to the AHSM.
Support Attachment Hardware (Bolt, Stud, Nut, Jam Nut, Washer Plate)	53, 54, 55, 56, 57	A193 GR B7, CL2 GRM2,Or A325,Or A490,Or A453 GR 660, Or Stainless Steel, Or A194 GR 2H, Or A563 GR A, Or A36	ITS	Model 152 Table 1F-15	A193 Gr B7, A325 or A490 / A194 Gr 2H or A563 Gr A / A194 Gr 2H or A563 Gr A / A36	ITS	Sheltered	Loss of Material	NUHOMS® AMP	While the AHSM allows the use of stainless steel material in addition to carbon steel, the CoC 1004 HSM AMP manages the aging effect of stainless steel in a sheltered environment. Therefore, the CoC 1004 AMP is applicable to the AHSM.
Inner & Outer Heat Shield	58, 59	304 Or 316 Stainless Steel	ITS	Model 152 Table 1F-15	304 or 316 SST	ITS	Sheltered	Loss of Material	NUHOMS® AMP	These components are made of the same material and see the same type of environment. Therefore, the CoC 1004 AMR results and AMP are applicable to the AHSM.
Support Structure Heat Shield	60	304 Or 316 Stainless Steel	ITS	Model 152 Table 1F-15	304 Or 316 Stainless Steel	ITS	Sheltered	Loss of Material	NUHOMS® AMP	These components are made of the same material and see the same type of environment. Therefore, the CoC 1004 AMR results and AMP are applicable to the AHSM.
Zee Bracket	61	304 Or 316 Stainless Steel	ITS	Model 152 Table 1F-15	304 Or 316 Stainless Steel	ITS	Sheltered	Loss of Material	NUHOMS® AMP	These components are made of the same material and see the same type of environment. Therefore, the CoC 1004 AMR results and AMP are applicable to the AHSM.
Heat Shield Attachment Hardware (Stud, Hex Flange Nut)	49, 62, 63, 64	A194 GR 2H, Or A563 GR A, Or Stainless Steel, A193 GR B7, CL2, GR B8, B8MN, Or A325, Or A490	ITS	Model 152 Table 1F-15	A193 Gr B7, A325 or A490 / A194 Gr 2H or A563 Gr A	ITS	Sheltered	Loss of Material	NUHOMS® AMP	While the AHSM allows the use of stainless steel material in addition to carbon steel, the CoC 1004 HSM AMP manages the aging effect of stainless steel in a sheltered environment. Therefore, the CoC 1004 AMP is applicable to the AHSM.

Table RAI 15.13-4
AHSM

(5 pages)

Subcomponent Parts	AHSM SAR Drawing NUH-03-4011 Item Nos.	AHSM SAR Drawing NUH-03-4011 Material	AHSM Safety Classification	CoC 1004 HSM & AMR Results Table	CoC 1004 Material	CoC 1004 Safety Classification	Environment	CoC 1004 Aging Effects Requiring Management	CoC 1004 Aging Management Activity	Applicability of CoC 1004 AMR and AMP to AHSM
Wall Attachment Hardware (Stud, Washer Plate, Nut, Washer)	65, 66, 67, 68, 69, 70, 71	A193 GR B7, Or A453 GR 660, Or A193 CL2 GR B8M2 Or CL1C, GR B8R Or B8RA, Or A36, Or Stainless Steel, A194 GR 2H, Or 8M, Or Carbon Steel	ITS	Model 152 Table 1F-15	A193 Gr B7, A325 or A490 / A36 / A194 Gr 2H or A563 Gr A/ Carbon Steel	ITS	External /Embedded	Loss of Material	NUHOMS® AMP	While the AHSM allows the use of stainless steel material in addition to carbon steel, the CoC 1004 HSM AMP manages the aging effect of stainless steel in an external/embedded environment. Therefore, the CoC 1004 AMP is applicable to the AHSM.
Birdscreen Strip, Wire Cloth	74, 75	Stainless Steel	NITS	Model 152 Table 1F-15	Stainless Steel	NITS	N/A	N/A	N/A	A not-important-to-safety item that is not in-scope. Therefore, no AMA required.
Concrete Anchor	76	Stainless Steel	NITS	Model 152 Table 1F-15	Stainless Steel	NITS	N/A	N/A	N/A	A not-important-to-safety item that is not in-scope. Therefore, no AMA required.
Rain Protection	77	Stainless Steel	NITS	Model 152 Table 1F-15	Stainless Steel	NITS	N/A	N/A	N/A	A not-important-to-safety item that is not in-scope. Therefore, no AMA required.

(1) Failure of this NITS item would prevent fulfillment of an important-to-safety function.
(2) Drawing NUH-03-4011 does not assign a part number to these subcomponents; however, the drawing does call them out and specifies the design and construction standards (i.e., Note 1 on Drawing NUH-03-4011).

Consolidated Emergency Response Plan (CERP)

RAI EP-1:

Clarify the approval authority for the proposed CERP.

The regulation in 10 CFR 72.44(f), states, in part: “A licensee shall follow and maintain in effect an emergency plan that is approved by the Commission.” However, the transmittal letter dated March 16, 2017, states:

A Draft WCS Emergency Response Plan (ERP) is included as part of this revised application. WCS is required to seek agreement state approval for changes to the ERP, and therefore, only a draft version is provided until such time that NRC approves the content of the ERP and agreement state approval may be sought.

This information is necessary to determine compliance with 10 CFR 72.44(f).

Response to RAI EP-1:

The proposed CERP must be approved by both the NRC and Texas Commission on Environmental Quality (TCEQ) before it becomes effective. The CERP must be approved by the NRC to comply with the provisions in 10 CFR 72.44(f), which states in part: “A licensee shall follow and maintain in effect an emergency plan that is approved by the Commission.” The TCEQ must approve the proposed CERP because it is based on amending the current Emergency Response Plan (ERP) in place for the Storage, Processing and Disposal (SP&D) facilities at the Waste Control Specialists site that are licensed under TCEQ Radioactive Material License (RML) R04100.

The proposed consolidated CERP covers emergency response activities for both the WCS CISF and the existing Waste Control Specialists SP&D facilities. A consolidated plan is appropriate given that the WCS CISF and Waste Control Specialists SP&D facilities would share common resources and personnel and are in close proximity. It also ensures the integration of planning/preparedness activities (e.g., development, coordination, drills, exercises, response, and recovery planning activities) for all facilities and would help assure there is no confusion on the part of responders as to what to do in an emergency.

ISP is seeking approval of the revised consolidated CERP first by the NRC, with the intent of having TCEQ review the NRC’s approval and any proposed revisions. The TCEQ review will be limited to considering the effects that the amended plan has on Waste Control Specialists SP&D facilities. Changes (if any) suggested by the TCEQ will be resubmitted to the NRC for a final review. The revised CERP will not become effective until it is approved by both the NRC and TCEQ.

The approval authority and process for amending the CERP once it has been initially approved by both the NRC and TCEQ are discussed in the response to RAI EP-16.

Impact:

No change as a result of this RAI.

RAI EP-2:

Identify any part of the CERP that does not apply to the 10 CFR 72.32(a) requirements for the CISF.

Section 3.1, “Classification System,” of RG 3.67 states in part:

The licensee should clearly identify any part of the emergency plan does not apply to activities licensed by the NRC.

This information is necessary to determine compliance with 10 CFR 72.44(f).

Response to RAI EP-2:

ISP has revised the draft CERP to better differentiate the parts of the CERP that address NRC requirements (including those in 10 CFR 72.32(a)), TCEQ requirements, or both NRC and TCEQ requirements.

Items that apply specifically to either the CISF or the Waste Control Specialists CS SP&D Facilities are identified in Section Headings or in Table Titles. Items that do not reference the WCS CISF or the Waste Control Specialists SP&D Facilities specifically apply to both the WCS CISF and the Waste Control Specialists SP&D Facilities.

Impact:

The CERP throughout has been revised as described in the response.

RAI EP-3:

Provide the location where emergency response personnel will observe indications for fire and smoke alarms and for radiation monitoring instrumentation.

Section 2.2, “Detection of Accidents,” of the proposed CERP states, in part:

Detection of accidents is dependent on personnel observation, by fire and smoke alarms, and radiation monitoring instrumentation.

The proposed CERP should state the specific location where personnel can observe indications of alarms and radiation monitoring instrumentation for the detection of an accident and to ensure accurate and timely emergency classification.

This information is necessary to determine compliance with the requirements of 10 CFR 72.32(a)(4).

Response to RAI EP-3:

The fire, smoke, and radiation alarms and instrumentation for the CISF will be monitored from the central alarm panel located within the Central Alarm Station (CAS) in the Security and Administration Building. The CAS is manned 24/7. Alarms will sound both in the building where the detector is located and at the central alarm panel. Employees observing an alarm from outside the Security and Administration Building will notify Security, his/her supervisor, and the Incident Commander (IC) immediately. The employee observing the alarm is also responsible for obtaining initial information to pass on to the IC or Security to facilitate accurate and timely emergency classification.

ISP has updated Section 2.2.2 of the draft CERP to reflect where the fire, smoke, and radiation alarms and instrumentation will be monitored.

Impact:

CERP Section 2.2.2 has been revised as described in the response.

RAI EP-4:

Clarify the statements in Section 3.1, “Classifications of Accidents,” of the proposed CERP, which refer to classification of accidents at the proposed CISF for both an Alert and Site Area Emergency declarations.

The provisions of 10 CFR 72.32(a)(3), *“Classification of accidents,”* only require an “Alert” classification for accidents at an independent spent fuel storage installation (ISFSI), while 10 CFR 72.32(b)(3) requires a classification for accidents at a monitored retrievable storage facility as either an “alert” or “site area emergency.”

Section 3.1, of the proposed CERP states, in part:

Emergencies are classified as an Alert or Site Area Emergency.

This information is necessary to determine compliance with 10 CFR 72.32(a)(3).

Response to RAI EP-4:

ISP has revised Section 3.1, including Tables A and B, of the draft CERP to clarify which classifications of accidents are specific to each facility (the existing Waste Control Specialists Storage, Processing and Disposal (SP&D) facilities or WCS CISF). Per 10 CFR 72.32(a)(3), the classification of accidents at the proposed WCS CISF includes only an Alert. The Site Area Emergency classification would only apply to accidents that fall under TCEQ requirements for accidents impacting the Waste Control Specialists SP&D Facilities.

Impact:

CERP Section 3.1, including Table A and new Table B, have been revised as described in the response.

RAI EP-5:

Clarify the statements in Table A, “Emergency Classification,” of the proposed CERP, which refer to a response to an Alert classification at the proposed CISF.

The provisions of 10 CFR 72.32(a)(8) states, in part:

The licensee shall also commit to notify the NRC operations center immediately after notifications of the appropriate offsite response organizations and not later than one hour after the licensee declares an emergency.

Table A of the proposed CERP for response to a Site Area Emergency classification states, in part:

...Notify state and local agencies.

Notify the NRC Operations Center immediately after off-site notifications are made and no later than 1 hour after declaring a Site Area Emergency.

However, there is no statement regarding notification of the State and local agencies, as well as the NRC Operations Center for an Alert classification.

This information is necessary to determine compliance with 10 CFR 72.32(a)(8).

Response to RAI EP-5:

ISP has replaced Table A (Emergency Classification) in the draft CERP with Tables A (WCS Storage, Processing and Disposal (SP&D) Emergency Classification) and B (WCS CISF Emergency Classifications).

In the event of an Alert, Table B requires the IC to notify appropriate offsite response organizations, the NRC Operations Center, and affected state and local agencies. Per 10 CFR 72.32(a)(8), Table B requires notification of the NRC Operations Center immediately after off-site response organizations are notified but no later than 1 hour after an Alert is declared.

NRC will be notified by the State of Texas, as an agreement state, in accordance with NUREG-0728 Revision 4 for events occurring at the WCS SP&D facilities.

Impact:

CERP Table A (with new Table B) has been revised as described in the response.

RAI EP-6:

Clarify the individual (designated emergency response organization (ERO) position) on site at all times (24-hour per day, 7 days per week) with the authority and responsibility to accurately and timely perform emergency classification, and notify offsite agencies and the NRC.

Section 4.4, “Incident Commander (IC),” of the proposed CERP states, in part:

The IC or alternate is on the facility premises or on call 24 hours a day (i.e., available to respond to an emergency by reaching the facility within less than one hour if after working hours). In the absence or unavailability of the primary IC, an alternate IC is designated as the primary IC under a delegation of authority memorandum.

Section 4.4.1, “Delegation and Assignment,” of the proposed CERP states, in part:

These personnel may not always be present at the facility when an event occurs. One of the ICs listed in Attachment F, Emergency Information List of EP-1.1, Consolidated Emergency Response, is always on-call. If the on-call IC is not at the facility, then he / she is available to those individuals present at the facility through communication device or other means.

Section 5.1.3, “Initial Response and Notification,” of the proposed CERP states, in part:

WCS Security Officers are trained to assume the duties of initial response and notification during these times. Upon detecting a perceived emergency, Security personnel on duty will immediately inform the IC.

This information is necessary to determine compliance with 10 CFR 72.32(a)(7).

Response to RAI EP-6:

The CERP in Section 4.4 designates the Incident Commander (IC) or alternate as the primary individuals with the authority and responsibility to accurately and timely perform emergency classification and notify offsite agencies and the NRC. These individuals are on the facility premises or on call 24 hours a day.

In the event that the IC or designated alternate IC is not onsite and cannot be reached in 15 minutes, a trained employee (Security Supervisor/Manager) that is verified to be onsite has the responsibility to perform emergency classification of an event and notify offsite agencies and the NRC. In most cases this will be security personnel (who are always onsite) specifically trained and qualified in classifying accidents and making required notifications. Security personnel will either be patrolling the site or be in the Security and Administration Building where fire, smoke, and radiation alarms and instrumentation for the WCS CISF will be monitored from a central alarm panel (see response to RAI EP-3). The designated security person will be trained and have the authority to make emergency classifications and provide notification to the NRC within one hour.

The CERP has been revised in Sections 4.4.1 and 5.1.3 to designate an individual who can assume the authority and responsibility to perform emergency classifications and notify offsite agencies and the NRC in the event that the IC or alternate IC is not onsite and cannot be reached in 10 minutes. The revised CERP includes requirements that the Security Supervisor/Manager performing this role; 1) be verified as being onsite when there is no IC present; 2) understands his role in making an emergency classification and notifying the NRC within one hour; 3) has received the proper training.

Impact:

CERP Sections 4.4 and 5.1.3 have been revised as described in the response.

RAI EP-7:

Clarify the NRC's responsibilities for detecting, measuring and supervising cleanup for a release of Agreement State licensed radioactive materials at the proposed CISF.

Section 4.11, "Coordination with Participating Government Agencies," of the proposed CERP states, in part:

*The DSHS [Department of State Health Services], TCEQ [Texas Commission on Environmental Quality] and **NRC have** responsibilities for detecting, measuring, and supervising cleanup of radioactive materials that are released into the environment.*

This information is necessary to determine compliance with 10 CFR 72.32(a)(7) and (8).

Response to RAI EP-7:

The NRC's roles and responsibilities for incident response and recovery are described in NUREG-0728, NRC Incident Response Plan, Revision 4, April 2005. The plan states in part:

> "For incidents involving facilities and/or materials licensed by the NRC or an Agreement State, NRC is the Coordinating Agency under the Nuclear/Radiological Incident Annex. Accordingly, the NRC performs the specified Federal-level response functions, as appropriate and consistent with the agency's authorities and responsibilities, including (1) coordinating actions of Federal agencies related to the overall response; (2) coordinating Federal activities related to response and recovery of the radiological aspects of the incident; (3) coordinating security activities related to Federal response operations; (4) ensuring coordination of technical data (collection, analysis, storage, and dissemination); (5) ensuring Federal protective action recommendations are developed in a timely and effective manner and providing advice and assistance to State, local, and tribal governments for implementation; (6) coordinating release of Federal information to the public; (7) coordinating release of Federal information to Congress; (8) informing the White House on all aspects of the incident; and (9) ensuring coordination of demobilization of Federal assets. The designated cooperating agencies (e.g., DOE, EPA, USDA) provide assistance and support to the NRC."

As described above, NRC's roles and responsibilities for incident response and recovery (which includes cleanup) are essentially the same whether the accidental release of radioactive material originated in the Waste Control Specialists Storage, Processing and Disposal (SP&D) facilities or at the WCS CISF. NRC's primary role during the cleanup of radioactive materials released by either an Agreement State licensee or NRC licensee would be coordinating Federal activities related to response and recovery of the radiological aspects of the incident.

The primary responsibility for dealing with an incident (and cleanup) originating at the Waste Control Specialists SP&D facilities remains with the licensee – Waste Control Specialists.

Under its response plan, NRC would provide advisory support and assist in diagnosing the situation, help isolate critical problems, and determine what courses of action and additional precautionary measures are necessary and appropriate. NRC would advise the licensee and, as applicable, state/local/tribal authorities and other Federal agencies.

Section 4.11 has been revised to clarify NRC roles and responsibilities in assisting WCS during incident response and recovery activities by adding the following text:

> "In responding to a Site Emergency or Alert and subsequent recovery (i.e. cleanup of radioactive material releases), NRC would provide advisory support and assistance in diagnosing the situation, help isolate critical problems, and determine what courses of action and additional precautionary measures are necessary and appropriate, in accordance with the NRC Incident Response Plan (NUREG-0728, Revision 4)."

Impact:

CERP Section 4.11 has been revised as described in the response.

RAI EP-8:

Clarify what State (Texas and/or New Mexico) and local response organizations that are notified at the declaration of an Alert classification. Additionally, what is the timing of these notifications?

Section 4.10, "Activation of the ERP [Emergency Response Plan]," of the proposed CERP states, in part:

- *Activation for any reason is reported to the TCEQ Region 7…*
- *If an emergency is declared notify the DSHS emergency number…within one hour of contacting off-site response agencies…*

This information is necessary to determine compliance with 10 CFR 72.32(a)(8).

Response to RAI EP-8:

The IC or designated alternate IC will begin notifying applicable local response organizations within 15 minutes and in no case more than an hour of an alert being declared at either the Waste Control Specialists Storage, Processing and Disposal (SP&D) Facilities or the WCS CISF. The purpose of the notifications is to inform the organizations that an Alert has been declared and not necessarily to request an immediate response. Local response organizations that would be notified include Andrews Police Department, Andrews County Sheriff, Eunice Fire and Rescue, Eunice Police Department, and Lea County Sheriff. Contact information for making these notifications will be updated on at least a semi-annual basis and will be posted in the security building and will be in the possession of the IC or designated alternate IC. (See response to RAI EP-6.) Appropriate State organizations from Texas will be notified by telephone in approximately 15 minutes after an Alert is declared at either the Waste Control Specialists SP&D Facilities or the WCS CISF, and in no case later than 1 hour. Texas organizations notified include TCEQ Executive Director, TCEQ Region 7, and Department of State Health Services. New Mexico organizations notified include New Mexico Department of Homeland Security and Emergency Management and the New Mexico Department of Public Safety. Contact information for making these notifications will be updated on a semi-annual basis and will be posted in the security building and will be in the possession of the IC or designated alternate IC.

A list of State and local response organizations to be contacted when an Alert is declared is included in Attachment F of the flow down procedure EP-1.1 – Consolidated Emergency Response. The contact list is also referenced in Tables A and B in Section 3.1 and in Section 4.10.

References:

Regulatory Guide 3.67, Standard Format and Content Guide for Emergency Plans for Fuel Cycle and Materials Facilities, Revision 1, April 2011.

Impact:

CERP Sections 3.1 and 4.10 and Tables A and B have been revised as described in the response.

Proprietary Information on Pages 65 through 66
Withheld Pursuant to 10 CFR 2.390

RAI EP-9:

Clarify how the source term is determined for a release from the proposed CISF.

Section 5.2, "Accident Assessment," of the proposed CERP states, in part:

The WCS inventory program can provide a real time radiological source term. This inventory tracking program can provide immediate real time information on the radionuclides that are stored in the specific areas impacted by the incident/accident.

This information is necessary to determine compliance with 10 CFR 72.32(a)(6).

Response to RAI EP-9:

As stated in Section 11.1 of the SAR:

> "In general, all of the canisters to be stored at the WCS CISF are designed to be leak tight under all normal, off-normal, and accident conditions. Therefore, the confinement of the SNF or GTCC waste is maintained under all conditions. The only exceptions to this are the FO-, FC-, FF- Dry Shielded Canisters (DSCs or canisters) that were leak tested to a leakage rate of 10^{-5} std·cm^3/sec. The confinement evaluation for these canisters is presented in Appendix A.11."

The contribution to the source term for release is zero for the leak tight canisters. Table A.11-6 provides the Isotope Specific Release Rates for FO-, FC-, FF-DSCs. The following Table based on Table A.11-6 has been added to Section 5.2 of the CERP to clarify what the accident source terms are for the FO-, FC-, FF- Dry Shielded Canisters:

Accident Source Terms to be used for the FO-, FC-, FF-Dry Storage Canisters

Nuclide	Type	Accident (Ci/sec)
Cs-137	Volatile	4.055E-13
Ba-137m	Volatile	4.055E-13
Y-90	Volatile	2.614E-13
Sr-90	Volatile	2.614E-13
Pu-241	Fine	9.253E-13
Am-241	Fine	1.341E-13
Pu-238	Fine	9.737E-14
Cm-244	Fine	3.416E-14
Kr-85	Gas	1.576E-08
Pu-240	Fine	1.837E-14
Eu-154	Fine	1.598E-14
Pu-239	Fine	1.120E-14

Nuclide	Type	Accident (Ci/sec)
Ni-63	Fine	1.042E-14
Sm-151	Fine	1.010E-14
H-3	Gas	2.193E-09
Np-239	Fine	1.020E-15
Am-243	Fine	1.020E-15
Am-242m	Fine	9.161E-16
Am-242	Fine	9.122E-16
Cm-242	Fine	7.558E-16
Cm-243	Fine	6.053E-16
I-129	Gas	4.885E-13
Co-60	Crud	1.561E-12

Note: Accident source term based on a single canister.
Source: Table A.11.6 from Appendix A of the WCS Consolidated Interim Storage Facility Safety Analysis Report.

Impact:

CERP Section 5.2 has been revised as described in the response.

RAI EP-10:

Clarify if there are agreements in place or a memorandum of understanding with the New Mexico State Police.

Section 5.3.1, “Mitigation of Fires,” of the proposed CERP states, in part:

In the event of a catastrophic fire, the Andrews and Lea County Sheriff’s Departments, Texas Department of Public Safety and/or the New Mexico State Police are responsible for directing traffic along Highway 176 and evacuating any of the general public surrounding the facility that may be affected by windblown or gaseous wastes.

This information is necessary to determine compliance with 10 CFR 72.32(a)(8).

Response to RAI EP-10:

No MOU or agreements are currently in place with the New Mexico State Police or the Texas Department of Public Safety. However, a catastrophic fire would cause ISP and Waste Control Specialists to call 911 (911 emergencies from ISP and Waste Control Specialists go to Andrews County Sheriff’s Department and Lea County Sheriff’s Department simultaneously) and to declare an Alert for the WCS CISF, or an Alert or Site Area Emergency for the Waste Control Specialists SP&D facilities. If needed, the New Mexico State Police and the Texas Department of Public Safety would be notified via local authorities responding to the fire.

Agreements are currently in place with the Andrews Police Department, the Andrews County Sheriff’s Department, and the Eunice Police Department for the Waste Control Specialists SP&D facilities. Under the current agreements, the Eunice Police Department, the Andrews Police Department, and the Andrews County Sheriff’s Department are responsible for coordinating with Waste Control Specialists to establish law enforcement, traffic control, and evacuation services (should they be needed at the Waste Control Specialists site) within their respective states. The Eunice Police Department may request assistance from the New Mexico State Police and the Andrews Police Department may request assistance from the Texas Department of Public Safety as part of their efforts to coordinate traffic control and evacuation services.

Once the WCS CISF license application is approved, the Agreements with the Eunice Police Department, the Andrews Police Department, and Andrews County Sheriff’s Department will be amended to include the WCS CISF, and implemented after a 60-day comment period.

Section 5.3.1, Mitigation of Fires, has been revised to read:

> “In the event of a catastrophic fire, the Andrews Police Department and the Andrews County Sheriff’s Department in Texas and the Eunice Police Department in New Mexico are responsible for directing traffic along Highway 176 and aiding the evacuation of any of the general public surrounding the facility that may be affected by windblown or gaseous wastes. These parties may request assistance from the Texas Department of Public Safety and/or the New Mexico State Police as needed.”

Impact:

CERP Section 5.3.1 has been revised as described in the response.

RAI EP-11:

Clarify if there are agreements in place or a memorandum of understanding with the State of New Mexico for notification of the transportation of a contaminated person for treatment at a medical facility in New Mexico.

Section 5.3.5, “Mitigation of Injuries,” of the proposed CERP states, in part:

The primary treatment facility for radiological contaminated individuals will be the Carlsbad Medical Center in Carlsbad, New Mexico….

This information is necessary to determine compliance with 10 CFR 72.32(a)(8).

Response to RAI EP-11:

There are currently no agreements nor memorandum of understanding with the State of New Mexico for notification of the transportation of a contaminated person for treatment at a medical facility in New Mexico.

ISP has revised Section 5.3.5 of the CERP to require notification of the New Mexico Department of Homeland Security and Emergency Management when a contaminated person or persons are being routed to the Carlsbad Medical Center. ISP will also notify the Carlsbad Medical Center in a timely manner of incoming patients who may be contaminated. This will enable the medical center added time to call in any critical personnel and equipment that may be needed, and to make arrangements for isolating and decontaminating injured individuals.

Impact:

CERP Section 5.3.5 has been revised as described in the response.

RAI EP-12:

Clarify what recommended protective actions will be provided to off-site response organizations for the design-basis accidents at the CISF related to the ISFSI.

Section 5.4.5, “Off-site Protective Actions,” of the proposed CERP states, in part:

After declaration of a Site Emergency, the IC has the authority to recommend off-site protective actions. The IC or designee will make off-site notifications to local authorities.

This information is necessary to determine compliance with 10 CFR 72.32(a)(9).

Response to RAI EP-12:

ISP has revised CERP Section 5.4.5 to clarify that protective actions are not needed for off-site response organizations for design-basis accidents at the WCS CISF. In addition, ISP has revised CERP Section 3.1 to clarify that site area emergencies only apply to Waste Control Specialists SP&D facilities (see Table A in the revised CERP). The only emergency classification that applies to the WCS CISF is an Alert (see newly created Table B).

Section 3.6.4 of Interim Staff Guidance 16, Emergency Planning, advises that protective action recommendations for dry cask storage should be consistent with the analysis results in NUREG-1140, A Regulatory Analysis on Emergency Preparedness for Fuel Cycle and Other Material Licensees, and the limits in EPA’s Manual of Protective Action Guides. NUREG-1140 calculates the effective dose equivalent for the worst expected accident for dry cask and dry vault storage of spent fuel to be 0.003 rem at 100 meters for Stability Class F and 1 m/s wind speed and that the child’s thyroid dose would be 0.005 to 0.04 rem within 100 meters. These doses are below the EPA's protective action guides for taking protective action after an accident. Therefore, offsite emergency preparedness and recommended protective actions are not necessary for design-basis accidents for spent fuel storage in dry casks.

References:

1. NRC Interim Staff Guidance 16, Emergency Planning, June 14, 2000.

2. NUREG-1140, “A Regulatory Analysis on Emergency Preparedness for Fuel Cycle and Other Material Licensees,” August 1991.

3. Manual of Protective Action Guides and Protective Actions for Nuclear accidents, U.S. Environmental Protection Agency, 1992.

Impact:

CERP Sections 3.1 and 5.4.5 have been revised and new Table B has been added as described in the response.

RAI EP-13:

Revise the threshold limits in Section 5.5, “Exposure Control,” and Table B, “Protective Action Guidance,” of the proposed CERP to ensure consistency with the latest version of the U.S. Environmental Protection Agency (EPA) Protective Action Guide (PAG) Manual for early phase PAGs.

Section 5.5, “Exposure Control,” of the proposed CERP states, in part:

The PAG threshold of concern for WSC is based on the EPA limits of less than one Rem Committed Effective Dose Equivalent (CEDE), five Rem thyroid, or 50 Rem skin dose at the site boundary.

Reference – “Manual of Protective Action Guides and Protective Actions for Nuclear Incidents,” Office of Radiation Programs, USEPA, 1992

These limits are not consistent with those provided in either Table 2-1, “PAGs for the Early Phase of a Nuclear Incident,” of the Manual of Protective Action Guides and Protective Actions for Nuclear Incidents (EPA-400-R-92-001, May 1992) or in Table 1-1, “Summary Table for PAGs, Guidelines, and Planning Guidance for Radiological Incidents,” of the PAG Manual: Protective Action Guides and Planning Guidance for Radiological Incidents (EPA-400/R-17/001, January 2017).

This information is necessary to determine compliance with 10 CFR 72.32(a)(9).

Response to RAI EP-13:

ISP has revised the table in CERP Section 5.5 and designated the table as Table C to ensure consistency with the latest version of the U.S. Environmental Protection Agency’s (EPA) Protective Action Guide (PAG) Manual for early phase PAGs [1]. Specifically, the doses in REM in Table C were changed to match the values in the PAGs. The recommended actions listed in Table C are consistent with the PAG but are worded slightly different to more closely match the WCS facilities.

References:

1. Manual of Protective Action Guides and Protective Actions for Nuclear Accidents, U.S. Environmental Protection Agency, 1992.

Impact:

CERP Section 5.5 and Table C have been revised as described in the response.

RAI EP-14:

Provide a basis for the size of the emergency planning zone (EPZ) with respect to the CISF, and clarify the definitions for chief elected officials in Section 5.9, "Emergency Planning Zone," of the proposed CERP.

Section 5.9 of the proposed CERP states, in part:

Based on the potential consequences of postulated emergencies, the EPZ for the WCS Facility has been defined as 6km [kilometer] (3.7 mile) radius circle centered on the Site.

Section 5.9 further states:

The size of the EPZ is sufficiently large that:

- *Detailed planning within the EPZ provides both an adequate basis for responding to all reasonably credible accidents and a substantial base for the expansion of response efforts in the event that this proves necessary by WCS, State of Texas, local agencies and other organizations responsible for off-site emergency response.*

- *Projected maximum doses resulting from credible accidents, under unfavorable meteorological conditions, within the site will not require protective actions to be taken outside the EPZ.*

Chief elected officials responsible for various portions of the WCS EPZ will provide the public information on operational emergencies at the WCS Facility and, based on inputs from the site and regulatory agencies, may recommend public protective actions, such as sheltering or evacuation."

The NRC staff needs additional information related to agreements or a memorandum of understanding with the State of New Mexico due to the proposed size of the EPZ includes several miles of the State of New Mexico, as well as an NRC-licensed fuel facility. The NRC staff also needs further clarification on the definition of "Chief elected officials," as referenced in Section 5.9.

This information is necessary to determine compliance with 10 CFR 72.32(a)(1) and 10 CFR 72.32(a)(9).

Response to RAI EP-14:

The Emergency Planning Zone at the Waste Control Specialists' site was established based on potential incidents/accidents that could occur at the Waste Control Specialists SP&D Facilities. It is used to plan and implement emergency response actions resulting from those incidents/accidents. The WCS CISF could be impacted because it is located within the Waste Control Specialists SP&D Facilities EPZ. ISP has revised CERP Section 5.9 to clarify this.

The WCS CISF does not require the establishment of a separate EPZ because the Commission determined in NUREG-1140 that offsite emergency preparedness and recommended protective actions are not necessary for design-basis accidents for spent fuel storage in dry casks or dry vaults (see response to RAI EP-12). Thus, the EPZ established for the Waste Control Specialists SP&D Facilities is not used to plan and implement emergency response actions resulting from incidents/accidents originating at the WCS CISF.

Section 4.11 of the CERP discusses the Texas Chief Elected Officials. New Mexico notifications will go to New Mexico Department of Homeland Security and Emergency Management.

References:

NUREG-1140, “A Regulatory Analysis on Emergency Preparedness for Fuel Cycle and Other Material Licensees,” August 1991.

Impact:

CERP Section 5.9 has been revised as described in the response.

RAI EP-15:

Provide a description, by position or title, of the person responsible for developing, maintaining and updating the CERP.

Section 7.0, “Maintaining Emergency Preparedness Capability,” of the proposed CERP does not include the identification of the personnel responsible for developing, maintaining, and updating the plan, as required in 10 CFR 72.32(a)(7).

This information is necessary to determine compliance with 10 CFR 72.32(a)(7).

Response to RAI EP-15:

ISP has revised CERP Section 7.1 to designate the primary Incident Commander as the individual responsible for developing, maintaining, and updating the CERP.

Impact:

CERP Section 7.1 has been revised as described in the response.

RAI EP-16:

Clarify that the change process for the proposed CERP under the QA [Quality Assurance] Program will be evaluated in accordance with 10 CFR 72.44(f), and that maintenance and updating of the CERP will be consistent with the requirements of 10 CFR 72.32(a)(14).

Section 7.1, “Written Emergency Plan Procedures,” of the proposed CERP states, in part:

Changes to ERP-100, Emergency Response Plan, and EP-1.1, Consolidated Emergency Response, are composed in accordance with QA-5.1, Standard Operating Procedures and Work Instructions.

This information is necessary to determine compliance with 10 CFR 72.44(f) and the requirements of 10 CFR 72.32(a)(14).

Response to RAI EP-16:

The change process for amending the Consolidated Emergency Response Plan will comply with the provisions of 10 CFR 72.44(f). ISP will review all proposed changes to the CERP that may affect the implementation of NRC requirements to determine whether the changes decrease the effectiveness of the CERP. In making this determination, ISP will rely on the following guidance given in Regulatory Issue Summary 2005-02, Revision 1, Clarifying the Process for Making Emergency Response Plan Changes to determine the scope of its review and the criteria used to assess a decrease in effectiveness:

A decrease in effectiveness will occur if there is a decrease in the capabilities, resources, or methods identified in the emergency plan, without actions or measures to compensate for the change, which results in a reduction in the licensee’s capability for performing an emergency planning function. The overall impact of proposed changes on the effectiveness of the emergency plan, or its implementation, is to be determined, not just the effect that individual changes have on a specific part of the emergency plan.

If the changes do not decrease the effectiveness of the approved CERP, then ISP will make those changes and submit a report (in accordance with 10 CFR 72.4) describing the changes to the NRC within six months after a change is made. If the changes would decrease the effectiveness of the approved CERP, then ISP would not implement those changes until it has received prior NRC approval. Additionally, ISP will comply with 10 CFR 72.32(a)(14) to the extent it applies to future changes to portions of the CERP that address NRC requirements. ISP has incorporated the change control process from 10 CFR 72.44(f) and 10 CFR 72.32(a)(14) into Section 7.1 of the draft CERP.

Impact:

CERP Section 7.1 has been revised as described in the response.

RAI EP-17:

Clarify how the training of the staff at the Lea Regional Medical Center and Carlsbad Medical Center by the Waste Isolation Pilot Plant (WIPP) is verified and documented.

Section 7.2.3, “Off-Site Response Teams,” of the proposed CERP states, in part:

Currently, the staff at the Lea Regional Medical Center in Hobbs, New Mexico and Carlsbad Medical Center in Carlsbad, New Mexico train with WIPP.

This information is necessary to determine compliance with 10 CFR 72.32(a)(10).

Response to RAI EP-17:

All emergency organizations, including the Lea Regional Medical Center and Carlsbad Medical Center, are offered participation opportunities to drill with WCS and tour the facility. Annually, ISP will request written verification and documentation of the ERO drills that Lea Regional Medical Center and Carlsbad Medical Center have participated in with WIPP and any training obtained. CERP Section 7.2.3 has been updated to reflect these commitments.

Impact:

CERP Section 7.2.3 has been revised as described in the response.

RAI EP-18:

Clarify or revise the frequency and scope of the emergency planning drills and exercises, as provided in Section 7.3 of the CERP.

Section 7.3, "Drills and Exercises," of the proposed CERP states, in part:

Emergency drills and exercises are conducted systematically….

[…]

Consistent with the requirements in 10 CFR 72.32 (a) and (b), documented quarterly communications checks with off-site response organizations will include the check and update of all necessary telephone numbers."

This information is not consistent with 10 CFR 72.32(a)(12), *"Exercises,"* which states, in part:

[p]rovisions for conducting semiannual communications checks with offsite response organizations and biennial onsite exercises to test response to simulated emergencies. Radiological/Health Physics, Medical, and Fire drills shall be conducted annually.

Section 7.3 of the proposed CERP does not contain provision identified for radiological/health physics, medical, and fire drills to be conducted annually, or a requirement to conduct a biennial exercise. Additionally, communication checks are required semiannually, rather than quarterly as identified in Section 7.3.

This information is necessary to determine compliance with 10 CFR 72.32(a)(12).

Response to RAI EP-18:

The tables below list the points to be addressed from 10 CFR Part 72.32(a) (12) (i) and (II), respectively, and indicate where each point is addressed in the updated WCS CERP.

10 CFR 72.32(a)(12)(i)	Location Addressed in CERP
Provisions for conducting semiannual communications checks with offsite response organizations	The 6th paragraph of Section 7.3 is updated to add a reference to 10 CFR 72.32(a) to indicate that the quarterly communications checks with off-site response organizations currently in the plan are those used to fulfil the semiannual requirement in the regulation.
Provisions for conducting biennial onsite exercises to test response to simulated emergencies	The 5th paragraph of Section 7.3 requires that the CERP be fully exercised twice per year. This would include testing responses to simulated emergencies.
Radiological/Health Physics, Medical, and Fire drills shall be conducted annually	The 5th paragraph of Section 7.3 is updated to require Radiological/Health Physics, Medical, and Fire drills be conducted annually at the CISF.

10 CFR 72.32(a)(12)(i)	Location Addressed in CERP
Semiannual communications checks with offsite response organizations must include the check and update of all necessary telephone numbers.	The 6th paragraph of Section 7.3 requires updates to all necessary telephone numbers as part of the quarterly communications checks with off-site response organizations.
The licensee shall invite offsite response organizations to participate in the biennial exercise.	The 5th paragraph of Section 7.3 states that off-site response organizations will be invited to participate in exercises that are required to be held twice per year.

10 CFR 72.32(a)(12)(ii)	Location Addressed in CERP
Participation of offsite response organizations in biennial exercises, although recommended, is not required.	The 5th paragraph of Section 7.3 states that although participation by off-site organizations is recommended, it is not a requirement that they participate in order for the exercises to be conducted.
Exercises must use scenarios not known to most exercise participants.	The 5th paragraph of Section 7.3 states that at least one unannounced site-wide drill will be conducted annually and that operational supervisors will not be notified in advance of the unannounced drills.
The licensee shall critique each exercise using individuals not having direct implementation responsibility for conducting the exercise.	The 5th paragraph of Section 7.3 states that each drill and exercise will be critiqued using individuals that do not have direct implementation responsibility for the plan.
Critiques of exercises must evaluate the appropriateness of the plan, emergency procedures, facilities, equipment, training of personnel, and overall effectiveness of the response.	The 5th paragraph of Section 7.3 states that critiques of the exercises will evaluate the appropriateness of the CERP, emergency procedures, facilities, equipment, training of personnel, and overall effectiveness of the incident response.
Deficiencies found by the critiques must be corrected.	The 5th paragraph of Section 7.3 requires that any deficiencies found by the critiques be entered into the corrective action program for resolution.

Impact:

CERP Section 7.3 has been revised as described in the response.

RAI EP-19:

Justify why the most recent version of the NRC endorsed methodology for the development of emergency action levels (EALs) was not used in the development of the EALs for the WCS CERP specific to the CISF.

The guidance used by the industry for the development of EALs is the Nuclear Energy Institute (NEI) document, NEI 99-01 “Development of Emergency Action Levels for Non Passive Reactors,” Revision 6, dated November 2012 (ADAMS Accession No. ML12326A805). Specifically, Section 1.3, “Independent Spent Fuel Storage Installation (ISFSI),” provides guidance on the development of EALs for an ISFSI.

This information is necessary to determine compliance with 10 CFR 72.32(a)(3).

Response to RAI EP-19:

A new Appendix D of the CERP, WCS CISF Facility Emergency Action Levels, has been added using NEI 99-01 “Development of Emergency Action Levels for Non Passive Reactors,” Revision 6, dated November 2012 [1], to develop EALs applicable to the WCS CISF. The revised section now references use of the NEI guidance.

References:

1. NEI 99-01 “Development of Emergency Action Levels for Non Passive Reactors,” Revision 6, dated November 2012 (ADAMS Accession No. ML12326A805).

Impact:

CERP Appendix D has been added as described in the response.

RAI EP-20:

Justify the Alert criteria and the dose thresholds used for the radiological plume incident in Appendix C, “Facility Emergency Action levels,” of the proposed CERP.

Appendix C contains the following Alert criteria for a radiological plume incident:

>100 mrem CEDE but <500 mrem CEDE from an accidental release of radioactive material to the general public.

--------or------

>1 rem CEDE in a Facility from an accidental release of radioactive material to Facility workers.

Additionally, Appendix C contains the following Site Area Emergency criteria for a radiological plume incident:

>500 mrem CEDE but <1 rem CEDE from an accidental release of radioactive material to the general public.

--------or------

>1 rem CEDE, calculated at a facility boundary, from an accidental release of radioactive material to Facility workers.

These criterion are not consistent with the analysis for dry cask storage of spent fuel in NUREG-1140, “A Regulatory Analysis on Emergency Preparedness for Fuel Cycle and Other Radioactive Material Licensees,” dated January 1988, (ADAMS Accession No. ML062020791). Additionally, the Alert criteria is more representative of the typical thresholds for a Site Area Emergency classification. Please provide justification for the use of these radiation levels as thresholds for an Alert classification, or revise accordingly.

In addition, the use of a CEDE dose threshold is inconsistent with NRC-endorsed EAL guidance. Please provide a justification for using the CEDE dose, or revise accordingly consistent with the latest NRC-endorsed EAL guidance.

This information is necessary to determine compliance with 10 CFR 72.32(a)(3).

Response to RAI EP-20:

The information included in Appendix C of the earlier draft CERP was developed for the Waste Control Specialists SP&D Facilities and is not applicable to the WCS CISF. As explained in the response to RAI EP-19, the CERP has been revised using NEI 99-01 “Development of Emergency Action Levels for Non Passive Reactors,” Revision 6, dated November 2012, to develop EALs specific to the WCS CISF. Appendix D, WCS CISF Facility Emergency Action Levels, has been added to the CERP to address those EALs. This revision assures that the CDDE dose threshold is consistent with both NEI 99-01 “Development of Emergency Action Levels for Non Passive Reactors,” Revision 6, and NUREG-1140, “A Regulatory Analysis on Emergency Preparedness for Fuel Cycle and Other Radioactive Material Licensees,” dated January 1988.

Appendix C of the CERP has been revised to clarify that it applies only to the Waste Control Specialists SP&D Facilities and not the WCS CISF. Additionally, a new Appendix D, WCS CISF Facility Emergency Action Levels, has been added to the CERP.

References:

1. NUREG-1140, “A Regulatory Analysis on Emergency Preparedness for Fuel Cycle and Other Radioactive Material Licensees,” dated January 1988.

2. NEI 99-01 “Development of Emergency Action Levels for Non Passive Reactors,” Revision 6, dated November 2012.

Impact:

CERP Appendix C has been revised and a new Appendix D has been added as described in the response.

Proprietary Information on Pages 84 through 93
Withheld Pursuant to 10 CFR 2.390