Items Included in Enclosure 6:

General Description	OBS NP-1.3
Site Characteristics	OBS NP-2.1
SSC and Design Criteria	RSI NP-4.2
Radiation Protection	OBS NP-12.1
Decommissioning	OBS NP-14.1
Materials	RSI P-10-1

Observations

OBS NP-1.3

Provide justification for the request for a 40 year license for Waste Control Specialists LLC. (WCS) considering storage systems have already been licensed for 20 years, but canister final safety analysis reports (FSARs) describe a 50 year design life.

Canister FSARs describe a 50 year design life. It is not clear how this is resolved with storage systems that are licensed for 20 years and the request to license the WCS for 40 years which would in total exceed the 50 year design life.

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

Response to OBS NP-1.3

WCS requests a license term that is consistent with NRC regulations, and is sufficient to address the anticipated operating life of the Consolidated Interim Storage Facility (CISF). The facility license term must be at least coextensive with the longest-lived canister and storage system expected to be stored at the facility. In addition to remaining within the facility license term, Part 72 licensees must maintain canisters and storage systems on their facilities within the terms of the NRC approvals specific to those dry storage systems and components.

In this regard, 10 CFR 72.42 permits an applicant to seek, and the NRC to issue, an ISFSI license with a 40-year term. It also permits an independent spent fuel storage installation (ISFSI) licensee to seek renewal of its license for an additional 40-year term, provided that the applicant submits: (1) time-limited aging analyses (TLAAs) demonstrating that structures, systems, and components (SSCs) important to safety will continue to perform their intended function for the requested period of extended operation; and (2) a description of the aging management program (AMP) for management of issues associated with aging that could adversely affect SSCs important to safety.

In addition, Section 72.240(a) of NRC regulations states that the certificate holder for a spent fuel storage cask, any licensee using a spent fuel storage cask (or a representative of such licensee), or another certificate holder may apply for renewal of the design of a spent fuel storage cask for a term of up to another 40 years. Thus, NRC regulations and guidance (NUREG-1927, Rev. 1) recognize and account for the possibility that licensed ISFSI operations may exceed the initial design life of spent fuel storage casks, and that spent fuel storage cask designs may be renewed.

As part of the WCS License Application, proposed License Condition (LC) 20 would commit WCS to submit a license amendment within 120 days of the effective date of license renewal approval to adopt aging management programs of NUHOMS® and NAC systems.

As the federal government determines the nation's path forward subsequent to storage of used nuclear fuel, all Part 72 licensees (general and specific) face the same challenges associated with aging canisters and storage systems. WCS anticipates that some of the storage systems transferred to the CISF will already have obtained license renewal and WCS will adopt the aging management programs associated with those systems. For storage systems that have not yet reached their current term, WCS anticipates it may need to apply for license renewal before the federal government is ready to transfer the SNF from the WCS CISF.

This issue is not unique to WCS or connected to the length of the requested license term. All Part 72 licensees, whether at a CISF or a reactor site, will need to evaluate alternatives for continued safe storage of SNF in the event the federal government does not accept and remove SNF from their facilities before their SNF canisters reach their current 50-year design life. The Commission considered this issue in connection with the Continued Storage Rule. The NRC's Generic Environmental Impact Statement (GEIS) addressed the potential for storage beyond the current license term (NUREG-2157, Vol. 1, App. B, page B-19):

> "The NRC has renewed three specific ISFSI licenses for an extended 40-year period. Because at that time Part 72 only provided for a renewal period of 20 years, an exemption was granted as part of the NRC's review of the safety of renewing Part 72 license for 40 years. The NRC published a final rule on February 16, 2011, to clarify the processes for the renewal of ISFSIs operated under the general license provisions of 10 CFR Part 72, for renewal of the Certificate of Compliance for dry cask storage systems, and for extending the license and renewal terms to 40 years (76 FR 8872). In these cases, the NRC's technical review has encompassed the applicant's evaluation of aging effects on the structures, systems, and components important to safety, supplemented by the applicant's aging management program. These comprehensive reviews support the technical feasibility of continued safe storage of spent fuel in these ISFSIs and, thus, reaffirm the technical feasibility of safe, interim dry storage for an extended period."

WCS anticipates that well prior to exceeding the design or licensed life of any of the canister or storage systems deployed at the CISF, in consultation with the Department of Energy, the fuel owner, WCS will determine a preferred alternative and, if required, submit an appropriate license amendment request in a timely manner to the NRC.

Application/SAR Impact:

No changes as a result of this question.

2. Radiation Protection

Observation

OBS NP-2.1

There is no basis provided in the SAR that the selected offsite meteorological station represents meteorological conditions at WCS. There is only a short record of meteorological data from onsite stations, and the time period of this data does not significantly overlap the data reported from the offsite stations. Weather stations from four cities surrounding the WCS site are listed in Table 2-1 of the SAR along with elevation and distance from WCS. But, only data from Andrews, TX, is reported for temperature and precipitation summaries. The footnote for Table 2-1 of the WCS SAR implies that an analysis of the meteorological data from each station may have been performed ("compiled data for climatological analyses"), though no climatological analysis is found in the WCS SAR comparing the four stations for the designated time period in the table. No basis was provided for Andrews, TX, being more representative of conditions at WCS than the other weather stations listed in Table 2-1 of the SAR.

This information is needed to determine compliance with 10 CFR 72.103 and 10 CFR 72.90.

Response to OBS NP-2.1

WCS SAR Chapter 2, Section 2.3.2 has been revised to add additional clarification describing the new Attachment H that includes compiled meteorological and climatology data for the period ranging from 1914 to 2006, including four stations within 65 miles of WCS, and demonstrating how data collected from within 65 miles of the site can be considered representative of the general climate of the site.

Application/SAR Impact:

SAR Section 2.3.2 has been revised as described in the response.

Attachment H has been added to SAR Chapter 2.

Changed application/SAR pages are provided in Enclosure 5 of this submittal.

4. SSC and Design Criteria

RSI NP-4.2

Provide a characterization of the greater than Class C (GTCC) waste proposed for storage at the WCS CISF, and provide a description, including drawings, of the storage containers for the GTCC waste.

The application indicates an intention to store GTCC waste at the proposed CISF. However, the SAR does not include, either explicitly or by reference, any kind of characterization of the GTCC waste to be stored at the CISF. The SAR also lacks any description, either explicit or by reference, of the containers that will be used to store the GTCC waste at the CISF. The description of the containers should include drawings and discussion of features in terms of the functions they perform (e.g., shielding, confinement). The GTCC waste should be limited to solid reactor-related GTCC waste since only this type of waste may be stored under a 10 CFR Part 72 specific license. The description of the waste should also include a specific limit as to the amount of GTCC waste to be stored at the site as the SAR evaluations do not support storage of an unlimited quantity of this waste.

This information is needed to determine compliance with 10 CFR 72.18, 10 CFR 72.104(a), 10 CFR 72.106(b), 10 CFR 72.120(a-c), 10 CFR 72.122(b) and (c), 10 CFR 72.126(a), and 10 CFR 72.128(a).

Response to RSI NP-4.2

GTCC Waste Characterization

Section 1.2.4 has been updated to clarify that the GTCC waste requested to be stored at the WCS CISF includes only reactor related low-level radioactive waste generated as a result of plant operation and decommissioning where the radionuclide concentration limits of 10 CFR 61.55 are exceeded. This waste may include such components as incore components, core support structures, and small reactor related miscellaneous parts resulting from the reactor vessel internals segmentation/decommissioning processes.

All waste stored within the various GTCC canisters will be in the physical form of activated metals that may have surface contamination. The GTCC canisters will not contain process wastes containing paper, plastics or ion exchange resins that could result in the generation of combustible gases or chemical or galvanic corrosion reactions with the canister. Proposed License Conditions 6-B and 7-B contain language limiting what type and physical form of GTCC waste is allowed for storage at the WCS CISF site.

The characterization of the GTCC waste stored in NAC storage systems at the WCS CISF is described in the associated transportation cask Safety Analysis Report (SAR) for each system. GTCC waste for Phase 1 of the project may come from Maine Yankee (GTCC-Canister-MY), Connecticut Yankee (GTCC-Canister-CY), Yankee Rowe (GTCC-Canister-YR), and Zion (GTCC-Canister-ZN).

Maine Yankee GTCC waste is stored in the NAC-UMS system and the GTCC canister (GTCC-Canister-MY) is authorized for shipment within the NAC-UMS transportation cask, NRC Docket No. 71-9270. The GTCC waste is described in proposed Materials License Conditions 6-B and 7-B, and specific pointers are provided for the isotopic contents of the GTCC canisters to the NAC-UMS transportation cask SAR in the WCS CISF SAR, Section 3.1 and 9.2.1.1. The characterization of the GTCC waste authorized for receipt at the WCS CISF can be found in the NAC-UMS transportation cask SAR, Section 1.3.1.1.2. The maximum quantity of GTCC waste allowed for transport in the GTCC-Canister-MY, and, therefore, the maximum per GTCC-Canister-MY to be received at the WCS CISF, is 20,000 pounds per GTCC-Canister-MY.

Connecticut Yankee and Yankee Rowe GTCC waste is stored in the NAC-MPC system and the GTCC canisters (GTCC-Canister-CY and GTCC-Canister-YR, respectively) is authorized for shipment within the NAC-STC transportation cask, NRC Docket No. 71-9235. The GTCC waste is described in proposed Materials License Conditions 6-B and 7-B, and specific pointers are provided for the isotopic contents of the GTCC canisters to the NAC-STC transportation cask SAR in the WCS CISF SAR, Section 3.1 and 9.2.1.1. The characterization of the GTCC waste authorized for receipt at the WCS CISF for both the GTCC-Canister-CY and GTCC-Canister-YR can be found in the NAC-STC transportation cask SAR, Section 1.2.3.2. The maximum quantity of GTCC waste allowed for transport, and, therefore, the maximum per canister to be received at the WCS CISF, is 18,743 pounds per GTCC-Canister-CY and 12,350 pounds per GTCC-Canister-YR.

Zion GTCC waste is stored in the NAC-MAGNASTOR system in a GTCC-Canister-ZN. The GTCC-Canister-ZN is intended for shipment within the NAC-MAGNATRAN transportation cask, NRC Docket No. 71-9356. The GTCC waste is described in proposed Materials License Conditions 6-B and 7-B, and specific pointers are provided for the isotopic contents of the GTCC canisters to the NAC-MAGNATRAN transportation cask SAR in the WCS CISF SAR, Section 3.1 and 9.2.1.1. The characterization of the GTCC waste authorized for receipt at the WCS CISF can be found in the NAC-MAGNATRAN transportation cask SAR, Section 1.3.2. The maximum quantity of GTCC waste allowed for transport, and, therefore, the maximum per GTCC-Canister-ZN to be received at the WCS CISF, is 55,000 pounds per GTCC-Canister-ZN.

GTCC Waste Canisters and Storage System Descriptions

Descriptions of the containers, including drawings and discussion of features in terms of the functions they perform (e.g., shielding, confinement), were added for the NUHOMS® MP187 System GTCC canister as part of the response the RSI NP 4.5. The drawings for the GTCC canister are included in Section A.4.6 and the descriptions are provided in Section A.4.2 and associated subsections. To provide more clarity related to the structural, thermal, shielding, and containment evaluations incorporated by reference into the WCS CISF SAR, specific pointers are added to the appropriate chapters in Appendix A to the specific sections of the Rancho Seco SAR, which is incorporated by reference into the WCS CISF SAR.

The license drawings for the GTCC-Canister-MY are 790-611 and 790-612, respectively. These license drawings can be found listed in the NAC-UMS transportation cask CoC and are located in the transportation cask SAR, which are now listed for incorporation by reference in WCS CISF SAR Section F.4.3. NAC has generated a WCS CISF site-specific license drawing showing the GTCC-Canister-MY system configuration. The new site-specific license drawing has been provided in the WCS CISF SAR as license drawing 30039-590 and has been added to WCS CISF SAR Section F.4.3.

The license drawings for the GTCC-Canister-CY are 414-887, 414-888, and 414-889. The license drawings for the GTCC-Canister-YR are 455-887 and 455-888. These license drawings can be found listed in the NAC-STC transportation cask CoC and are located in the transportation cask SAR, and are now listed for incorporation by reference into WCS CISF SAR Section E.4.4. NAC has generated WCS CISF site-specific license drawings showing the GTCC-Canister-CY and GTCC-Canister-YR system configurations. The new site-specific license drawings have been provided in the WCS CISF SAR as license drawings 30039-863 and 30039-862 for GTCC-Canister-CY and GTCC-Canister-YR, respectively, and have been added to WCS CISF SAR Section E.4.4.

The NAC-MAGNATRAN transportation cask is currently in the final stages of review and initial approval by the NRC. The license drawings for the GTCC-Canister-ZN are 71160-711, 71160-781, and 71160-785. These license drawings are located in the transportation cask SAR, and are now listed for incorporation by reference into WCS CISF SAR Section G.4.3. NAC has generated a WCS CISF site-specific license drawing showing the GTCC-Canister-ZN system configuration. The new site-specific license drawing is being provided in the WCS CISF SAR as license drawing 30039-591 for GTCC-Canister-ZN and is added in WCS CISF SAR Section G.4.3.

Materials License Conditions 6-B and 7-B have been modified to be consistent with the preceding discussion.

Specific limits for the total quantity of GTCC waste to be stored at the WCS CISF have been added as Materials License Condition 8-B (231.3 MT or 510,000 pounds) and to Sections 3.1 and 3.6.3 of the WCS CISF SAR.

Provision for GTCC waste in the Standardized Advanced NUHOMS® System, Standardized NUHOMS®-61BT System, and Standardized NUHOMS®-61BTH Type 1 System was removed from the WCS CISF application as part of the response to RSI NP-4.5.

Impact on the Proposed Materials License:

Materials License Conditions 6-B, 7-B, and 8-D have been updated as described in the response.

Impact on the WCS SAR:

SAR Sections 1.2.4, 3.1, 3.6.3, 3.8, 9.1.2, 9.1.3, 9.2.1.1, A.3.1, A.8, A.8.1, A.11, A.12, B.5, B.7.1, B.8, B.9.2.2, C.5, C.7, C.9.2.2, D.5, E.4, E.4.3, E.4.4, E.8, E.11, E.12, F.4, F.4.2, F.4.3, F.8, F.11, F.12, G.4, G.4.2, and G.4.3 have been revised as described in the response.

SAR Tables 1-1, 3-1, 4-1, 5-1, 7-2, 8-1, 9-4, 11-1, 12-2, and B.9-1 have been revised as described in the response.

SAR Drawings 30039-590, 30039-591, 30039-862, and 30039-863 have been added as described in the response.

Changed application/SAR pages are provided in Enclosure 5 of this submittal.

12. Radiation Protection

Observation

OBS NP-12.1

Clarify how monitoring for neutron doses/dose rates is to be done. The CISF SAR discusses the use of OSL detectors. It is staff's understanding that OSL detectors only measure gamma radiation.

This information is needed to determine compliance with 10 CFR 72.44(d) and 10 CFR 72.126(c).

Response to OBS NP-12.1

The NRC staff is correct that optically stimulated luminescence (OSL) dosimeters are insensitive to neutrons.

To clarify, the model of Landauer dosimeter WCS intends to use for personnel monitoring is the Luxel® +. In its standard form, the dosimeter is referred to as the Luxel®+ Pa and responds to beta and photon (gamma and X-ray) radiation fields.

WCS also uses an additional component, based on Landauer's CR-39 technology, which is inserted into the dosimeter to perform neutron dosimetry for fast and thermal neutrons, to provide an integral beta/photon/neutron dosimeter. The dosimeter in this form that responds to beta, photon and fast and thermal neutrons is denoted as the "Luxel®+ Ta."

The Ta dosimeter provides measurement and assessment of deep dose equivalent (DDE) [Hp(10)], arising from:

- X-ray and/or gamma radiation in the energy range from 5 keV to 6 MeV and/or,
- Beta radiation in the energy range from 240 keV to 0.8 MeV (E_{avg}) [0.8 MeV – 2.4 MeV (E_{max})].
- Fast and thermal neutrons with energies between 0.2 eV and 40 MeV.

Additionally, the measurement and assessment of shallow dose equivalent (SDE) [Hp(0.07)] and lens dose equivalent (LDE) [Hp(3)] arising from:

- X-ray and/or gamma radiation in the energy range from 5 keV to 6 MeV and/or,
- Beta radiation in the energy range from 240 keV to 0.8 MeV (E_{mean}) [0.8 MeV – 2.4 MeV (E_{max})].

In addition to personnel dosimetry, dose rates shall be verified using Ludlum Model 9-3 and/or Model 19 beta/gamma monitors and Ludlum Model 12-4 neutron monitors or equivalent, per the routine monitoring surveys performed for the CISF. Environmental boundary air monitoring (i.e., Low Volume air sampling and High Volume air sampling) will be performed at a minimum of two locations, in addition to the locations currently performed under the Consolidated Radiological Environmental Monitoring Program (REMP). Analyses will be for air particulate, H-3, and air cartridges as stated in the current REMP, and will be performed by a certified offsite laboratory.

WCS also uses the Luxel+ Ta dosimeter for area monitoring and the Landauer Inlight® EX9 dosimeter for perimeter environmental monitoring of beta and photons. Environmental boundary air monitoring (i.e., Low Volume air sampling and High Volume air sampling) will be performed at a minimum of two locations, in addition to the locations currently performed under the REMP. Analyses will be for air particulate, H-3, and air cartridges as stated in the current REMP and performed by a certified offsite laboratory.

Application/SAR Impact:

SAR Section 4.3.10 has been revised as described in the response.

Changed application/SAR pages are provided in Enclosure 5 of this submittal.

14. Decommissioning

Observation

OBS NP-14.1

Preliminary Decommissioning Plan, Appendix B of the license application, Section 2.2, Paragraph 3, discusses what the Final Decommissioning Plan will address but this does not track with the specific requirements of 10 CFR 72.54(g).

This information is needed to determine compliance with 10 CFR 72.54(g).

Response to OBS NP-14.1

WCS has revised the Preliminary Decommissioning Plan, Appendix B of the license application, Section 2.2, to incorporate the 10 CFR 72.54(g) requirements.

Application/SAR Impact:

Application Appendix B, Preliminary Decommissioning Plan Section 2.2 has been revised as described in the response.

Changed application/SAR pages are provided in Enclosure 5 of this submittal.

Proprietary Information on Pages 12 and 13
Withheld Pursuant to 10 CFR 2.390