INTERIM STORAGE PARTNERS LLC

LICENSE APPLICATION

INTERIM STORAGE PARTNERS LLC

DOCKET 72-1050

ANDREWS COUNTY, TEXAS

TABLE OF CONTENTS

TABLE OF CONTENTS

LIST OF ATTACHMENTS

TABLE OF CONTENTS

LIST OF APPENDICES

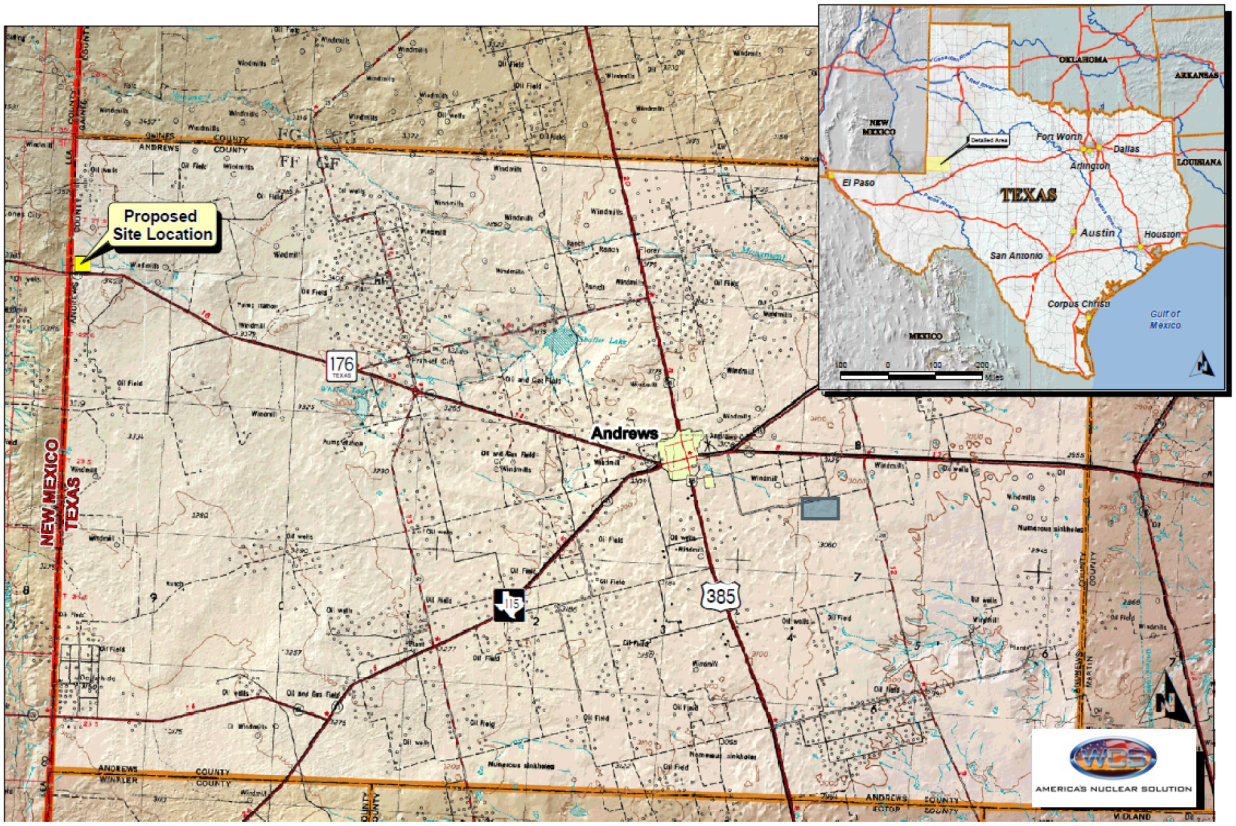
CHAPTER 1

GENERAL AND FINANCIAL INFORMATION

1.1 APPLICATION FOR LICENSE

Interim Storage Partners LLC (ISP), a joint venture (JV) between Waste Control Specialists LLC and Orano CIS LLC, proposes to construct and operate a Consolidated Interim Storage Facility (CISF) at an away from reactor site located in Andrews County, Texas. The site is located on Texas Highway 176 West, approximately 32 miles west of Andrews, Texas (Figure 1-1).

Figure 1-1 Map Depicting the Location of the CISF in Andrews County, Texas.



The function of the CISF will be to store spent nuclear fuel and reactor-related Greater Than Class C (GTCC) Low-Level Radioactive Waste (LLRW) (both are collectively referenced henceforth as spent nuclear fuel *or SNF*) that has been used to generate electricity from commercial nuclear power reactors. The U.S. Department of Energy (DOE) *or other holders of the title to SNF at commercial nuclear power facilities (SNF Title Holder(s)) will hold title to the*

SNF during transportation to and from and while in storage at the CISF. The SNF will be delivered to the CISF by rail.

ISP will use multipurpose canisters in both the shipping casks and storage casks. No handling of bare spent nuclear fuel will occur at the CISF since operations will be restricted to handling of sealed canisters. *ISP* will operate the facility in a manner that minimizes the likelihood of transporting any externally contaminated canisters to the CISF. The canisters will be stored either in a horizontal or vertical configuration inside concrete storage casks, which will be stored on concrete pads inside the designated Protected Area.

This License Application for the proposed CISF has been prepared in accordance with 10 CFR 72 and the Regulatory Guide 3.50 titled, *Standard Format and Content for a License Application to Store Spent Fuel and Radioactive Waste, Standard Format and Content for a Specific License Application for an Independent Spent Fuel Storage Installation or Monitored Retrievable Storage Facility*, Rev. 2, September 2014. The License Application includes the technical information as required in 10 CFR 72, Subpart B. Additionally, the following documents are submitted herewith the License Application:

1. The License Application, including the Proposed Technical Specifications, Preliminary Decommissioning Plan, and Decommissioning Funding Plan, required pursuant to 10 CFR §72.26 and 10 CFR §72.30, respectively.

2. A Safety Analysis Report as required by 10 CFR §72.24.

3. The Emergency Plan required pursuant to 10 CFR §72.32.

4. The Environmental Report required as specified in 10 CFR §72.34 and 10 CFR §51.61.

5. Physical protection and safeguards information in accordance with 10 CFR 72, Subpart H, submitted separately as part of this license application to the NRC.

Operations at the originating commercial nuclear reactors in preparation or support of spent nuclear fuel shipments to the CISF are performed under the individual reactor licenses. Any changes to a reactor licensee's facilities or procedures needed to accommodate these activities are the responsibilities of the individual reactor licensees and are not part of this License Application.

Transportation of the spent nuclear fuel shipping casks from the originating commercial nuclear reactor to the CISF will be performed in accordance with 10 CFR 71 and the originating reactor licenses and is not part of this License Application.

1.2 NAME OF THE APPLICANT

Interim Storage Partners LLC (ISP)

1.3 ADDRESS OF THE APPLICANT

Interim Storage Partners LLC
9998 Highway 176 West
Andrews, Texas 79714

1.4 DESCRIPTION OF THE LICENSE APPLICANT

Interim Storage Partners LLC (ISP) is a limited liability company formed in Delaware with principal offices at Andrews, Texas. ISP is jointly owned by Orano CIS (51%) and Waste Control Specialists LLC (49%). The sole purpose of ISP is to license, design, construct and operate the CISF at the Waste Control Specialists site in Andrews, Texas, referred to as the WCS CISF.

1.5 LEGAL STATUS AND ORGANIZATION

ISP is a limited liability company organized and existing under the laws of the State of Delaware. Its principal office is located in Andrews, Texas. The proposed site for the CISF is at the Waste Control Specialists waste disposal and storage facilities located at 9998 Texas Highway 176 West, approximately 32 miles west of Andrews, Texas. The organizational structure for the WCS CISF is further described in Section 13.1 of the Safety Analysis Report.

ISP is majority owned and controlled by Orano CIS, which is owned 100% by Orano USA LLC. Orano CIS and Orano USA are both limited liability companies formed in the State of Delaware. Orano USA is ultimately majority owned and controlled by FAE AEC, an entity of the French government. Orano participates in a wide range of nuclear fuel cycle activities in the United States regulated by the NRC. All ISP officers, managers and management board members will be U.S. citizens. Given the nature of the CISF and the role of Orano across the U.S. nuclear fuel cycle, the participation of Orano in this project raises no inimicality concerns. The names of ISP governance and principal officers, all of whom are citizens of the United States, are provided at the end of this chapter.

The oversight and governance of ISP is provided by a Management Board that consists of the head of Orano CIS and one of the key members of its management team and the head of Waste Control Specialists and a key member of its management team.

1.6 FINANCIAL QUALIFICATIONS AND FINANCIAL ASSURANCE

This section demonstrates that ISP's financial qualifications are adequate to carry out the activities for which the license is sought in accordance with the applicable regulations and to meet other financial assurance requirements specified in 10 CFR 72.30. The members of ISP,

Orano and Waste Control Specialists are well capitalized going concerns in the U.S. nuclear power business.

Below is a summary of the Orano 2017 financial results (results converted to USD based on a 1.23USD/Euro exchange rate):

- *The order backlog corresponds to nearly 8 years of revenue. Order intake over the period stands at $3.8 billion, notably including the supply of uranium and conversion and enrichment services under the Hinkley Point C (HPC) project.*
- *Orano's revenue amounted to $4819 million, down from 2016, in line with the company's expectations regarding realization of backlog.*
- *Operating income amounted to $42 million in 2017, mainly due to asset impairment losses in Mining and Front-End amounting to $604 million.*
- *The bottom line is stable compared to 2016.*
- *The performance objectives were met, with almost $589 million in savings compared to 2014.*

Specific Consolidated Financial Statements of Orano demonstrating the financial strength of Orano is located here: http://www.orano.group/assets/img/finances/PDF/pdf-Publications-financiaires-informations-reglementees/EN/2017_PUBLICATIONS/Orano_Decembre31-2017-12months_SpecificConsolidatedFinancialStatements.pdf.

Waste Control Specialists has invested over $300 million in licenses, buildings, equipment and improvements at the current radioactive waste disposal facility in Andrews County, Texas. Waste Control Specialists is well funded and insured, including over $63 million of secured debt, primarily used to secure the new licenses and expanded licenses and over $27 million of invested funds used to capitalize the Company, invest in capital equipment and provide working capital from ongoing operations.

Orano and Waste Control Specialists will provide initial capitalization of ISP. Orano and Waste Control Specialists will provide periodic capitalization as necessary to execute the business plan of ISP.

The CISF will be located in Andrews County, Texas, adjacent to *the existing Waste Control Specialists* LLRW facilities that were licensed as a 10 CFR Part 61 equivalent by Texas as an NRC Agreement State. *ISP* requests a license for 40 years.

1.6.1 Funding of Construction Activities

The funding for constructing the CISF is expected to be primarily through future contract*s* for storage of SNF with the DOE *or other SNF Title Holder(s)*. *T*he funding may include a combination of debt financing, equity investments, and net income.

The location of the CISF is on land that has already been characterized and has access roads, electricity and water. Existing administration buildings, warehouses and other facilities already being used for non-CISF operations at the *ISP joint venture member Waste Control Specialists* facilities can supplement the CISF buildings and construction projects as needed. New construction is expected to include a rail side track, a Cask Handling Building and a Security and Administration Building. The storage pads and related storage systems will be constructed, as they are needed, to reduce the initial construction costs. The Electric Power Research Institute estimated cost for construction of the CISF that will be used to store 5,000 MTU is approximately $170 million.

1.6.2 Funding of Operating Activities

Waste Control Specialists currently operates a facility that treats, stores and disposes of hazardous wastes and LLRW licensed by the TCEQ. The existing facility has operations and administrative personnel, licensing, environmental monitoring and compliance programs, health and safety programs, health physics, insurance policies and financial assurance mechanisms and other programs in place that have been approved by cognizant regulatory authorities as would be required of any similar facility. Many of these same activities and related costs would also be required of a CISF *and will be available to ISP*. The historical operating costs for the existing facility provide a reasonable estimate of the fixed costs of operating the CISF since both programs are similar based on *Waste Control Specialists*' experience of constructing and operating radioactive waste treatment, storage, and disposal facilities.

The incremental additional costs of the CISF will be due mainly to variable costs and costs attributable to a general increase in operating activities. Variable costs will include labor, construction costs, canister overpacks, equipment costs, and other similar costs. *ISP* also expects additional licensing and regulatory costs.

The Electric Power Research Institute estimated the operating and labor cost needed to store 5,000 MTU of SNF at an interim consolidated storage facility for 40 years at $394,612,500. *ISP* will obtain funds to operate the CISF pursuant to future contracts with the DOE *or other SNF Title Holder(s)*. *ISP* shall not receive SNF until such a contract with the DOE *or other SNF Title Holder(s)* is provided to the NRC as a condition of the license. *P*roposed license condition*s are attached to this* license application.

1.6.3 Financial Assurance for Decommissioning

CISF decommissioning costs will be kept to a minimum by designing and operating the CISF in a manner that minimizes contamination pursuant to 10 CFR 20.1406 and 10 CFR 72.130. Waste canisters will not be opened, so the spent nuclear fuel will not be exposed to the CISF facilities, water, air or the surrounding environment. Therefore, the likelihood of a contamination event is considered very low and unlikely as described in the Safety Analysis Report. As a "start-clean/stay-clean" facility, the WCS CISF will operate in a manner that supports decommissioning activities throughout the life of the facility.

ISP's request to provide an alternative to the financial assurance requirements specified in 10 CFR 72.30(e) is based on its intent to collect funds for the decommissioning of equipment, facilities, and land at the CISF pursuant to a future contract with the DOE as described in Section 1.7, *Exemptions*, of the License Application. Alternatively, *ISP* may use a surety bond combined with a conformity external sinking fund as authorized by 10 CFR 72.30(e)(3). Payments from storage operations would be deposited into the external sinking fund as waste is received. A surety bond would be used to assure the difference in the decommissioning cost estimate and the value of the sinking fund until the sinking fund is fully funded by DOE *or other SNF Title Holder(s)*.

Decommissioning costs have been estimated to be $12,650,000. The decommissioning costs were estimated based on the size of the CISF authorized to store 5,000 MTU consistent with NUREG 1757, *Consolidated Decommissioning Guidance*. Additional information regarding the cost of decommissioning the CISF is provided in Appendix D of the License Application.

1.7 EXEMPTIONS

ISP seeks approval of the following regulatory specific exemption authorized pursuant to 10 CFR 72.7, *Specific Exemptions*.

1.7.1 Exemption from 10 CFR 72.30(e) Requirements

ISP requests an exemption from the requirements specified in 10 CFR 72.30 *Financial Assurance and Recordkeeping for Decommissioning*. *ISP* is providing an alternative method of financial assurance that will guarantee the necessary funding for decommissioning the CISF authorized to store the material defined in Conditions 8A and 8B of the license that is equivalent to the provisions of 10 CFR 72.30(e).

ISP is seeking a contract with the DOE that shall guarantee decommissioning funds will be provided for use by *ISP*. This contract shall require the DOE to pay the actual costs of decommissioning the facilities, equipment, storage systems, and land used to store the material at the CISF.

In the event that the DOE does not enter into a contract to specifically guarantee that the funds shall be available for use by *ISP* to decommission said facilities, equipment, and land, then *ISP* shall have one of the financial assurance instruments, specified in 10 CFR 72.30(e), as specifically approved by the NRC, prior to receipt of SNF at the CISF, as a condition of the license. *P*roposed license condition*s are* provided in Attachment A of this License Application.

Pursuant to 10 CFR 72.7, *Specific Exemptions*, the NRC may upon application by an interested person or upon its own initiative, grant such exemptions from the requirements of the regulations in 10 CFR 72 as it determines are authorized by law and will not endanger life or property or the common defense and security and are otherwise in the public interest.

The NRC has the authority to issue *ISP*'*s* requested exemption. The specific exemption would not conflict with any provision of the Atomic Energy Act or any other law. The NRC has approved similar exemptions to use an alternative financial assurance instrument whereby such funds for decommissioning would be guaranteed by the DOE by contract for a facility licensed under 10 CFR Part 70. For these reasons, *ISPs*'

request to provide an alternative financial assurance instrument equivalent to those specified in 10 CFR 72.30(e) guaranteeing that decommissioning funds are available as described herein are authorized by law.

The exemption request described herein will not endanger life or property or the common defense and security. The exemption does not pertain to NRC safety requirements that apply to the design, construction, and operation of the CISF. Additionally, the NRC must conclude that the storage of SNF based on the commitments contained in the license application, supporting safety analysis, and physical security program comply with the requirements specified by regulation established by the NRC. Upon issuance of the license, the NRC will have determined that receipt and storage of of licensed material at the CISF will not pose an inimical impact to human health, property, or the common defense and security.

ISP seeks this exemption for the case where the DOE will be contractually responsible for taking title of SNF prior to transport and while it is placed into interim storage at the CISF. The NRC has recognized that a contract by the DOE specifically guaranteeing that funds will be made available to decommission equipment, facilities, and land is an equivalent financial assurance instrument that may be relied upon and that will save tax payers in a manner that is in the public interest.

1.8 SITE LOCATION AND COMPLETENESS DATES

The proposed CISF is located at 9998 Highway 176 West, approximately 32 miles west of Andrews, Texas. It is anticipated that the *ISP* will receive a specific license authorizing the receipt, and possession of spent nuclear fuel in accordance with the requirements *of* 10 CFR 72 by *September 2020*. Construction of the Phase One of the facility shall commence in September *2021* and is expected to be completed within one year or on April 1, *2022*. The construction and preoperational testing is expected to be completed allowing the first receipt of spent nuclear fuel no later than *July 2023*.

1.9 RESTRICTED DATA

This application does not contain any Restricted Data, defense or national security information. Furthermore, if Restricted Data does become included as part of the

application, the applicant will not permit any individual to have access to Restricted Data except in accordance with the requirements of 10 CFR Part 95.

1.10 COMMUNICATIONS

It is requested that all communications pertaining to this application be sent to:

Jack Boshoven
Chief Engineer CISF Licensing and Engineering
Interim Storage Partners
c/o TN Americas LLC
7135 Minstrel Way, Suite 300
Columbia, Maryland 21045 USA

INTERIM STORAGE PARTNERS LLC

Oversight and Governance

April 2018

The business and affairs of ISP are managed by its Management Board. The current members of the Management *Board* are:

David Carlson, U.S. Citizen
President & Chief Operating Officer
Waste Control Specialists LLC
17101 Preston Road
Suite *115*
Dallas, Texas *75248*

Gregory T. Vesey, U.S. Citizen
President, Orano CIS LLC
7135 Minstrel Way Suite 300
Columbia Maryland, 20145

Sam Shakir, U.S. Citizen
Chief Executive Officer, Orano USA LLC
1155 F Street NW
Suite 800
Washington, DC 20004

Scott State, U.S. Citizen
Chief Executive Officer & Chief Nuclear Officer
Waste Control Specialists LLC
17101 Preston Road
Suite 115
Dallas, Texas 75248

Principal Officers

Jeffery D. Isakson, U.S. Citizen
Chief Executive Officer and President
7135 Minstrel Way Suite 300
Columbia Maryland, 20145

Elicia B. Sanchez, U.S. Citizen
Chief Financial Officer
9998 West State Highway 176
Andrews, Texas 79714

CHAPTER 2

TECHNICAL QUALIFICATIONS

The Technical Qualifications that shall be required of *the* staff to design, construct and operate the CISF are provided in Chapter 13 of the WCS Safety Analysis Report (SAR). *ISP* hereby commits to staff the project with personnel possessing the required skills throughout all phases of the project.

ISP has evaluated the dry cask storage systems that are currently available and under development and has selected the canister-based system for use at the CISF. *ISP* has selected *TN Americas* and NAC International as the vendors to provide the canister-based storage systems at the CISF. *TN Americas*' dry cask storage systems described in the SAR include the TN NUHOMS®, Standardized NUHOMS®, Standardized Advanced NUHOMS®. The *TN Americas* and NAC International dry cask storage systems described in the SAR are depicted in Table 2-1. Each of these dry cask storage systems have been licensed by the Nuclear Regulatory Commission.

Table 2-1 Dry Cask Storage Systems.

Cask System	NRC Docket No.	Canister	Overpack
NUHOMS® MP187 Cask System	71-9255 72-11 (SNM-2510)	FO-DSC	HSM (Model 80)
		FC-DSC	
		FF-DSC	
		GTCC Canister	
Advanced Standardized NUHOMS® System	71-9255 72-1029	NUHOMS® 24PT1	AHSM
Standardized NUHOMS® System	71-9302 72-1004	NUHOMS® 61BT	HSM Model 102
		NUHOMS® 61BTH Type 1	
NAC-MPC	71-9235 72-1025	Yankee Class	VCC
		Connecticut Yankee	
		LACBWR	
		GTCC-Canister-CY	
		GTCC-Canister-YR	
NAC-UMS	71-9270 72-1015	Classes 1 through 5	VCC
		GTCC-Canister-MY	
MAGNASTOR	71-9356 72-1031	TSC1 through TSC4	CC1 through CC4

The CISF will be designed, engineered and constructed by *ISP*. *The ISP joint venture members and affiliated companies have* significant experience in the *design, licensing, fabrication, installation and placing of SNF and GTCC waste into dry storage and the* design, licensing, construction and operations at *the Waste Control Specialists'* LLRW Facilities in Andrews County, Texas. *ISP staff assigned to this project are* qualified in licensing, engineering, health physics, environmental science, nuclear operations, quality assurance, maintenance, administration and legal support.

Details of *ISP's* organizational structure, preoperational testing and operations of the CISF, as well as the CISF training program, physical security, and emergency planning are described in Chapters 7, 9 and 11, respectively, of the License Application.

CHAPTER 3

TECHNICAL INFORMATION - SAFETY ANALYSIS REPORT

Phase one of the CISF is designed to provide storage for the material defined in Conditions 8A and 8B of the license received from commercial nuclear power reactors across the United States. Small amounts of mixed oxide fuels are anticipated to require storage at the CISF. The spent nuclear fuel received at *the CISF* will be placed into dry cask storage. *ISP* will employ the dry cask storage system technology that has been used, and licensed by the Nuclear Regulatory Commission pursuant to 10 CFR 72, at various commercial nuclear reactors across the country.

The dry cask storage systems that will be employed at the CISF are passive and provide physical protection, containment, nuclear criticality controls and radiation shielding required for the safe storage of spent nuclear fuel. Heat dissipation is accomplished by radiant natural convective cooling. The CISF is designed to store spent nuclear fuel until a permanent repository is constructed and operating. The initial request for a license is for a term of 40 years.

These canister-based dry cask storage systems are designed and licensed to store multiple spent nuclear fuel assemblies inside a metal canister in a dry inert environment. Phase one of the CISF is designed to store the material defined in Conditions 8A and 8B of the license. *ISP* anticipates that each of the storage casks will be placed on concrete pads constructed at the CISF.

The SNF will originate from commercial nuclear power plants across the United States. The spent nuclear fuel will be placed inside a dual purpose canister and transported to the CISF. Activities at the commercial nuclear power plants and during transport to the CISF are required to comply with 10 CFR 50 and 10 CFR 71, respectively, and are not part of this license application. Activities conducted at the CISF include receipt of the dual purpose canisters and transfer of the dual purpose canisters into the dry cask storage systems. The dry cask storage systems will be located on top of the concrete pads constructed at the CISF. These activities will be performed in compliance with 10 CFR 72.

ISP anticipates only small quantities of LLRW will be generated at the CISF. Upon receipt of the dual purpose canisters, staff will be required to perform radiation and contamination surveys to ensure all regulatory and license limits and requirements are fulfilled. Only small quantities of

radioactive waste are anticipated to be generated during these survey activities. Radioactive waste generated at the CISF may be disposed of at one of *Waste Control Specialists*' radioactive waste disposal facilities pursuant to *Waste Control Specialists*' current TCEQ radioactive material license.

The SAR documents the adequacy of the dry cask storage system components to safely store spent nuclear fuel and comply with the requirements specified in 10 CFR 72. The SAR adequately describes the safety basis for the components needed to protect workers, the general public and the environment during normal and off-normal events.

The SAR was prepared using Regulatory Guide 3.48, *Standard Format and Content for the Safety Analysis Report for an Independent Spent Fuel Storage Installation or Monitored Retrievable Storage Installation (Dry Storage*), Revision 1, and August 1989, *Standard Review Plan for Spent Fuel Dry Storage Facilities*, Final Report, March 2000, and the Interim Staff Guidance used by the Spent Fuel Project Office.

The dry cask storage systems that will be employed at the CISF are provided in Table 3-1.

Table 3-1, Dry Cask Storage Systems

Cask System	NRC Docket	Canister	Overpack
NUHOMS® MP187 Cask System	72-11 (SNM-2510)	FO-DSC	HSM (Model 80)
		FC-DSC	
		FF-DSC	
		GTCC Canister	
Standardized Advanced NUHOMS® System	72-1029	NUHOMS® 24PT1	AHSM
Standardized NUHOMS® System	72-1004	NUHOMS® 61BT	HSM Model 102
		NUHOMS® 61BTH Type 1	
NAC-MPC	72-1025	Yankee Class	VCC
		Connecticut Yankee	
		LACBWR	
		GTCC-Canister-CY	
		GTCC-Canister-YR	
NAC-UMS®	72-1015	Classes 1 thru 5	VCC
		GTCC-Canister-MY	
MAGNASTOR®	72-1031	TSC1 thru TSC4	CC1 through CC4
		GTCC-Canister-ZN	

CHAPTER 4

CONFORMITY TO GENERAL DESIGN CRITERIA

The WCS CISF complies with the general design criteria of 10 CFR 72, Subpart F. The CISF's specific conformance to the general design criteria is covered in more detail in the Safety Analysis Report and other documents submitted with this License Application. A cross reference to the applicable SAR sections is provided in Table 4-1 below.

CHAPTER 5

OPERATING PROCEDURES -

ADMINISTRATIVE AND MANAGEMENT CONTROLS

Procedures for operating the CISF will be developed under the Quality Assurance Program *described in Chapter 6 of this License Application*. Procedures will include those necessary for each operating mode as well as the various mechanical, electrical, and instrument operating and maintenance functions. Procedures will also be in place for the handling of Special Nuclear Material (SNM) in accordance with 10 CFR 72.72. The CISF procedures will consider all license terms and restrictions and will reflect the commitments made in the Safety Analysis Report regarding CISF operations. Operating procedures will be reviewed and approved by Operations Management, Radiation Safety Management and Health and Safety Management; and will be maintained in a controlled manner to ensure that only current copies are available for staff usage in operating or maintaining the facility. Operating procedures will cover shipping cask receipt, inspection and unloading; canister transfer between shipping cask and storage cask; movement of storage cask between Cask Handling Building and Storage Area; assembly of storage cask instrumentation; preparation and release of shipping cask for off-site transport; and periodic monitoring of storage casks.

Administrative and management controls will be developed to ensure the principles of protecting human health and the environment, including the public and staff, and protecting against danger to SSCs important to safety, are placed ahead of other considerations. Chapter 13 of the Safety Analysis Report provides specific information regarding the organizational structure and training program which have been outlined for the CISF. Operating controls and limits are further addressed in Chapters 4, 5, 10, and 13 of the Safety Analysis Report and in the Technical Specifications which have been proposed for the CISF.

CHAPTER 6

QUALITY ASSURANCE PROGRAM

All CISF activities affecting quality associated with the site investigation, design, licensing, procurement, construction, operation and decommissioning, which are classified as important-to-safety or safety-related are subject to the requirements of the *TN Americas' Quality Assurance (QA) program which has been established in accordance with the requirements of 10 CFR 72, Subpart G* in accordance with 10 CFR § 72.24(n). *ISP has adopted the TN Americas Quality Assurance Program for its use. The TN Americas Quality Assurance Program Description Manual (QAPDM) is Docketed under 71-0250. TN Americas will submit an update to the QAPDM to add Interim Storage Partners and its locations to the list of entities covered by the QAPDM.*

Personnel who perform quality related and important to safety functions governed by this QA Program, to include activities performed prior to submittal of the License Application, are responsible for the understanding and proper implementation of the requirements of this QA Program.

The QA Program is applied to activities, structures, systems, and components of the CISF commensurate with their importance to safety.

CHAPTER 7

OPERATOR TRAINING

The Operator Training Program will meet the requirements of 10 CFR Part 72, Subpart I, and will consist of a combination of on-the-job training (OJT) and classroom training leading to qualification. The OJT requirements will be documented in a set of qualification cards containing the Job Performance Measures (JPM) of practical factors that are required to be performed by the operator. Each person to become qualified must have these qualification cards completed prior to being allowed to independently perform the applicable tasks.

The operators will have to pass comprehensive written and practical examinations in order to become qualified. The trainee must score 80% or higher on the written exam to pass. The practical exam shall be on a pass/fail basis, as evaluated by previously qualified personnel.

The Operator Training Program will include requirements regarding the physical condition and general health of personnel certified for the operations of equipment and controls that are important to safety such that they may not cause operational errors that could endanger other in-facility personnel or the public health and safety. Any condition that might cause impaired judgement or motor coordination will be considered in the selection of personnel for activities that are important to safety. However, these conditions will not categorically disqualify a person, if appropriate provisions are made to accommodate such defect.

The CISF training program's content, documentation and recordkeeping requirements are more fully set forth in the SAR.

CHAPTER 8

INVENTORY AND RECORDS REQUIREMENTS

Records showing the receipt, inventory, location, disposal, acquisition and transfer of all spent nuclear fuel at the CISF will be maintained in accordance with the requirements of 10 CFR 72.72. The CISF material status reports and nuclear material transaction reports will be maintained in accordance with the requirements of 10 CFR 72.76 and 10 CFR 72.78. It is expected that material accountability at the CISF will be under a separate Reporting Identification Symbol (RIS) number to be designated by the NRC.

CHAPTER 9

PHYSICAL PROTECTION

Pursuant to Subpart H of 10 CFR 72, Physical Protection, the WCS *CISF* Physical Security Program is described in the following documents:

- Physical Security Plan
- Security Force Training & Qualification Plan
- Safeguards Contingency Plan

These plans are marked and protected as Safeguards Information and are thereby controlled and withheld from public disclosure pursuant to 10 CFR 73.21, *Protection of Safeguards Information: Performance Requirements*. The plans referenced above are submitted separately, under separate cover, as part of this License Application.

ISP as the licensee will have responsibility for all NRC security requirements. ISP will contract with Waste Control Specialists, as a member of the ISP joint venture and in coordination with existing security activities at the site, to implement (under ISP's direction and oversight) the Physical Security Program and provide Security for the WCS CISF.

CHAPTER 10

DECOMMISSIONING PLAN

10.1 GENERAL

The decontamination and decommissioning (D&D) cost estimate is based on the guidance of NUREG-1757, *Consolidated Decommissioning Guidance*, and is developed on the basis that the CISF will be constructed and operated under the requirements of 10 CFR 20.*1406 Minimization of Contamination*. This regulation requires that the applicant design and operate the facility to *"…minimize, to the extent practicable, contamination of the facility and the environment, facilitate eventual decommissioning, and minimize, to the extent practicable, the generation of radioactive waste."* As a temporary storage facility, waste containers will not be opened at the *CISF*. Continual radiological surveillance during the operational period will ensure that contamination is quickly discovered, identified, and removed in a timely manner before the decommissioning period begins.

NUREG-1757 allows the assumption that routine conditions prevail at the time of the decommissioning and that a worst-case decommissioning scenario need not be considered. At the end of the storage period, all of the spent nuclear fuel located at the CISF will be removed and shipped for permanent disposal in a geologic repository. Once the fuel is removed and the CISF is no longer being used for its principal licensed purpose, *ISP* must prepare a Decommissioning Plan (DP) for review and approval by the NRC pursuant to the Timeliness Rule (10 CFR 72.54).

10.2 BACKGROUND

10 CFR § 72.30, *Financial assurance and recordkeeping for decommissioning*, requires that each holder of, or applicant for, a license under this part must submit for NRC review and approval a decommissioning funding plan that contains information on how reasonable assurance will be provided that funds will be available to decommission the CISF.

10.3 CISF DESCRIPTION

The CISF will utilize the NUHOMS® storage systems (AREVA TN *Americas*) along with the NAC-MPC, NAC-UMS®, and MAGNASTOR® storage systems (NAC International). The facility will provide storage of the material defined in Conditions 8A and 8B of the license.

10.4 COST ESTIMATE APPROACH

The decommissioning cost estimate is based on the condition of the CISF after all of the spent nuclear fuel has been removed from the site. No interior or exterior radioactive surface contamination is expected. During the lifetime of the facility, only sealed canisters will be accepted for storage. The facility does not open the canisters at any time and therefore does not perform any sampling or processing of waste. Canisters are only accepted into the facility after a radiological survey has determined that they are free from contamination. Only small quantities of radioactive waste are expected to be generated during routine operations, attributable primarily to performing radiological surveys at the facility.

Radioactive surface contamination at the time of decommissioning will be minimized due to radiological survey and monitoring activities during and after fuel transfer operations through the life of the facility. Due to this limited scope of operational activity and the survey controls, it is anticipated that the CISF storage modules, storage pads, and the Cask Handling Building area will not be contaminated. The decommissioning cost estimate conservatively assumes that some contamination will exist at decommissioning.

Decommissioning is assumed to be performed by an independent contractor. Labor rates used in the estimate are based on 2015 industry labor rates. These rates were compiled from current *Waste Control Specialists* labor rates. *Waste Control Specialists* employs a wide range of people including: Laborers, Equipment Operators, Radiation Technicians (RT), Health Physicists, Engineers, Administrative Assistants, and other labor categories that are directly applicable to a decommissioning project. The cost estimate uses the direct labor rate with a multiplier of 2.5 applied to account for fringe benefits, indirect labor costs, and profit.

Additional cost estimate approach information can be found in the Preliminary Decommissioning Plan (Appendix B). The cost estimate development is located in the Decommissioning Funding Plan (Appendix D).

Table 10-1 – CISF Decommissioning Costs

Task/Component	Cost
Planning and Preparation	$444,300
Decontamination and/or Dismantling of Radioactive Facility Components	$489,000
Packaging, Shipping, and Disposal of Radioactive Wastes	$74,400
Restoration of Contaminated Areas on Facility Grounds	$0
Final Radiation Survey	$5,755,400
Site Stabilization and Long-Term Surveillance	$0
Packing Materials Costs	$61,805
Shipping Costs	$11,160
Waste Disposal Costs	$24,579
Equipment/Supply Costs	$397,825
Laboratory Costs	$915,408
Miscellaneous Costs	$441,000
Contractor Overhead and Profit	$1,500,000
SUBTOTAL	$10,114,877
25% Contingency	$2,528,719
TOTAL DECOMMISSIONING COST ESTIMATE	**$12,643,596**

CHAPTER 11

EMERGENCY PLAN

The Emergency Plan (EP) has been prepared to establish the procedures and practices for management control over unplanned or emergency events that may occur at the CISF, and to meet the requirements of 10 CFR 72.32(a).

The CISF EP considers and evaluates the consequences of credible events and emergencies hypothesized to occur at the CISF. The EP details the types of accidents, accident classification, notification requirements, protective response, organizational control, safe condition of reentry and recovery planning. The EP also describes the required training of emergency response personnel, maintenance of emergency preparedness and emergency response records and resources available at the CISF.

There is a single emergency classification level for events at the CISF, the Alert classification. This is based on worst-case consequences of potential accidents at the CISF and the guidance of NUREG-1567, and is consistent with NUREG-1140, which concluded that the worst-case accident involving a CISF has insignificant consequences to the public health and safety.

The CISF EP has been shared with Andrews County and Lea County, the off-site authorities expected to respond to the site in the event of an accident, with local law enforcement, fire support and medical services and their comments have been addressed.

ISP as the licensee will have responsibility for all NRC emergency planning requirements. ISP will contract with Waste Control Specialists, as a member of the ISP joint venture and in coordination with existing emergency planning activities at the Waste Control Specialists site, to maintain the Emergency Plan and implement the Emergency Plan (under ISP's direction and oversight) in the event of an emergency at the WCS CISF.

CHAPTER 12

ENVIRONMENTAL REPORT

The proposed site for the CISF is located in Andrews County, Texas, which is in the northwestern portion of the state, bordered on the north by Gaines County; on the east by Martin County; on the south by Winkler, Ector and Midland Counties; and on the west by the State of New Mexico (Lea County). The CISF will be located in the High Plains region, which is part of the Central Great Plains. Andrews County environments are typical of the much larger region of western Texas and adjacent areas of New Mexico. The terrain is gently rolling and is characterized by shallow washes, some of which are bordered by trees. Soil texture ranges from clay loam to fine sand. A few rocky outcrops are present approximately 1.5 miles west of the proposed CISF. Natural vegetation in the region consists primarily of low desert grassland with scattered shrubs and cacti. With few exceptions, the flora and fauna on and in the vicinity of the site consists of species that occur widely throughout the region. Most of the area is or was grazed.

The CISF site is situated within Andrews County, about 1.25 miles north of Texas Highway 176, and about 0.25 mile east of the Texas-New Mexico state boundary *on Waste Control Specialists property.* The *Waste Control Specialists* property consists of approximately 14,000 acres of land. Figure 12-1 depicts the site location and land use within a 5-mile radius surrounding the property. The nearest towns to the proposed disposal Site are Andrews, Texas located 32 miles east and the City of Eunice, New Mexico located approximately 6 miles west of the proposed facility. The nearest residence is situated approximately 3.8 miles west of the site. *The portion of the Waste Control Specialists land on which the WCS CISF would be constructed and operated would be controlled by ISP through a long term lease from ISP joint venture member Waste Control Specialists.*

Outside of the *Waste Control Specialists* footprint, industries include gravel and caliche mining, oil and gas production, landfill operations, cattle grazing and ranching. Louisiana Energy Services (LES) operates the National Enrichment Facility as URENCO, USA, about 1 mile southwest of the site, under license by the Nuclear Regulatory Commission. The majority of the land within five miles of the Site is used for grazing and ranching activities. Other businesses in proximity to the *Waste Control Specialists* property include Permian Basin Materials, Sundance, Inc., and DD Land farm located about one mile northwest and west of the proposed

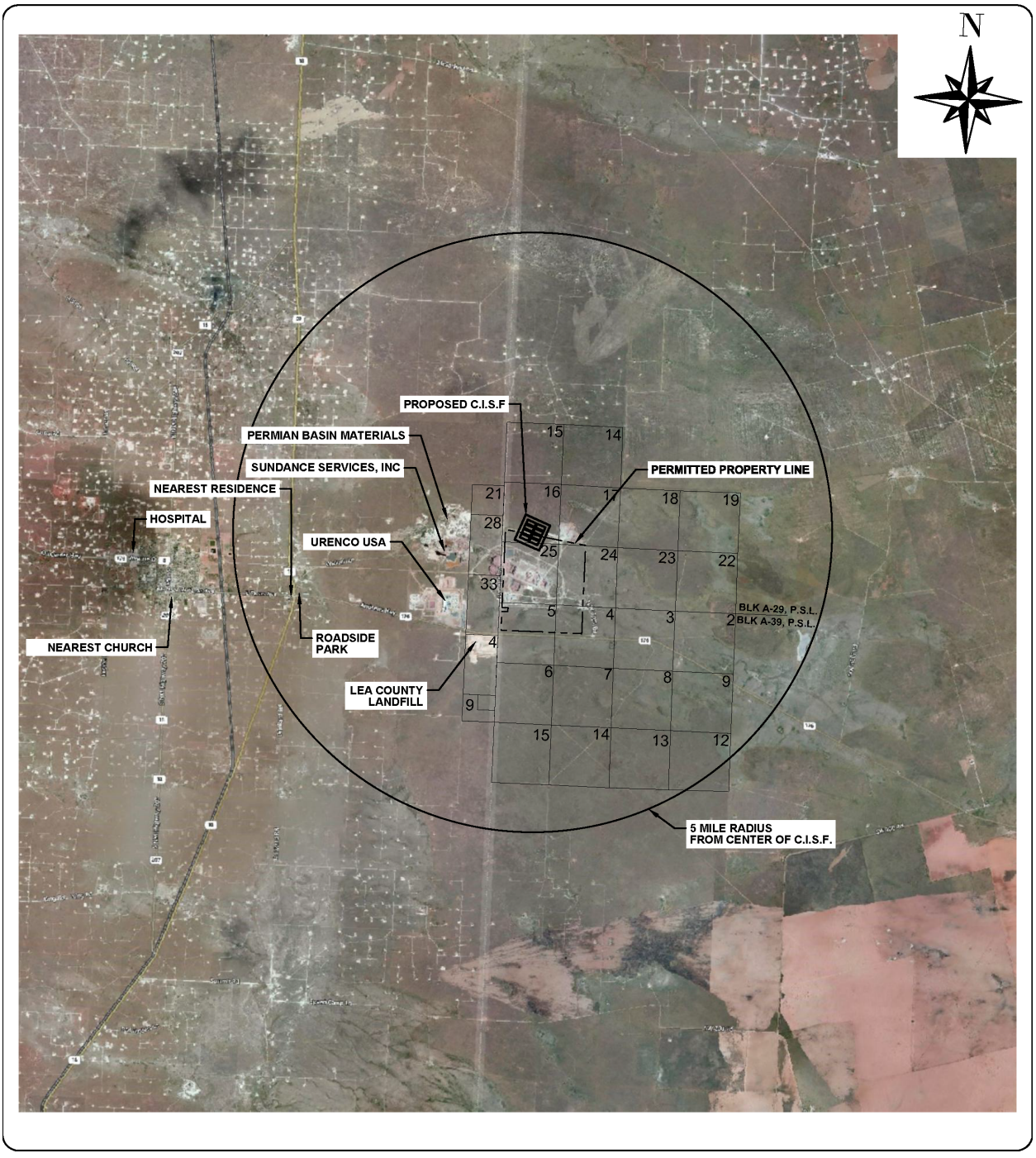
CISF. The remaining land in the vicinity of the proposed CISF is used for livestock grazing, oil and gas production or is unused land. No other significant business development within a 10-mile radius is identified at this time. The Lea County, New Mexico Landfill occupies approximately 40 acres and is located about 1.25 miles south southwest of the proposed CISF.

Subsurface petroleum product exploration and production have been conducted in the area of the Central Basin Platform for over 75 years. The local area has been heavily explored for oil and gas reserves over the last 35 years. Most of the oil wells in the vicinity of the CISF site have been abandoned or are in the process of secondary or tertiary recovery. The absence of oil wells on the site supports the absence of favorable conditions for oil production. Oil and gas wells are also located to the west in New Mexico.

The effects to the environment associated with the construction, operation, and decommissioning of the CISF have been evaluated and are documented in the CISF Environmental Report. These effects were found to be minimal due, among other things, to the passive design features of the canister-based storage system that has been selected for use at the CISF and the location of the facility. Radiation doses resulting from storage of spent nuclear fuel at the CISF to areas outside of the Restricted Area, Owner Controlled Area and nearest residence have been determined to be within 10 CFR 20 and 10 CFR 72 limits.

The Environmental Report, which is being submitted with this License Application, was prepared in accordance with the requirements of 10 CFR 72.34, *Environmental Report*. 10 CFR 72.34 requires applicants to submit, as part of the license application, an environmental report that satisfies the requirements in 10 CFR Part 51*, Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions*, Subpart A, *National Environmental Policy Act—Regulations Implementing Section 102(2)*. Also used in preparation of the Environmental Report was Chapter 6 of NUREG-1748, *Environmental Review Guidance for Licensing Actions Associated with NMSS Programs*, which was issued August 2003, and provides format and technical content information for the Environmental Report that is required by 10 CFR 72.34.

Figure 12-1 5-Mile Radius.



CHAPTER 13

PROPOSED LICENSE CONDITIONS

The proposed license conditions for this license application are listed in Attachment A.

ATTACHMENT A

PROPOSED LICENSE CONDITIONS

LICENSE FOR INDEPENDENT STORAGE OF SPENT NUCLEAR FUEL AND HIGH-LEVEL RADIOACTIVE WASTE

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974 (Public Law 93-438), and Title 10, Code of Federal Regulations, Chapter 1, Part 72, and in reliance on statements and representations heretofore made by the licensee, a license is hereby issued authorizing the licensee to receive, acquire, and possess the power reactor spent fuel and other radioactive materials associated with spent fuel storage designated below; to use such material for the purpose(s) and at the place(s) designated below; and to deliver or transfer such material to persons authorized to receive it in accordance with the regulations of the applicable Part(s). This license shall be deemed to contain the conditions specified in Section 183 of the Atomic Energy Act of 1954, as amended, and is subject to all applicable rules, regulations, and orders of the Nuclear Regulatory Commission now or hereafter in effect and to any conditions specified herein.

Licensee

1. *Interim Storage Partners LLC (ISP)*

2. *WCS CISF*
9998 Highway 176 West
Andrews, Texas, 79714

3. License No. SNM-1050
Amendment No. 0

4. Expiration Date December XX, 20XX

5. Docket or Reference No. 72-1050

6. Byproduct, Source, and/or Special Nuclear Material	7. Chemical and/or Physical Form	8. Maximum Amount That Licensee May Possess at Any One Time Under This License
A. Spent nuclear fuel elements from commercial nuclear utilities licensed pursuant to 10 CFR Part 50 , *including those stored under either a Part 50 general license or Part 72 specific license,* and associated fuel assembly control components and associated radioactive materials related to the receipt, transfer, and storage of that spent nuclear fuel.	A. Intact fuel assemblies, damaged fuel assemblies, failed fuel and fuel debris, as allowed by Materials License SNM-2510, Amendment 4; Table 1-1c or Table 1-1j of Certificate of Compliance No. 1004, Amendments 3 through 13; Table 1-1t of Certificate of Compliance No. 1004, Amendments 10 through 13; Section 2.1 of Certificate of Compliance No. 1029, Amendments 0, 1, and 3; Section B 2.1 of Certificate of Compliance No. 1025, Amendments 0 through 6; Section B 2.1.2 of Certificate of Compliance No. 1015, Amendments 0 through 5; Table B 2-1 of Certificate of Compliance No. 1031, Amendments 0 through 3 Revision 1, and 4 through 5, modified as described in Condition 9 below.	A. 5,000 MT of Uranium or Mixed-Oxide (MOX) in the form of intact spent fuel assemblies, damaged fuel assemblies, failed fuel assemblies, and fuel debris. In addition, the cumulative amount of material received and accepted during the licensed term of the facility may not exceed 5,000 Metric Tons of Uranium plus MOX.
B. Greater than Class C Waste, reactor related material generated as a result of plant operations and decommissioning where radionuclide concentration limits of Class C waste in 10 CFR 61.55 are exceeded.	B. Greater than Class C Waste, as activated and potentially surface contaminated metals comprised of miscellaneous solid waste resulting from segmentation and decommissioning processes.	B. 231.3 MT (510,000 pounds) of Greater than Class C Waste.

LICENSE FOR INDEPENDENT STORAGE OF SPENT NUCLEAR FUEL AND HIGH-LEVEL RADIOACTIVE WASTE

SUPPLEMENTARY SHEET

9. Authorized Use: The material identified in 6.A, 6.B, 7.A and 7.B above is authorized for receipt, possession, storage, and transfer at the *WCS* Consolidated Interim Storage Facility (WCS CISF), as described in the WCS CISF Safety Analysis Report (SAR), Revision *2* and as may be further supplemented and amended in accordance with 10 CFR 72.70 and 10 CFR 72.48. Storage of fuel is authorized only in canisters referenced in Section 2.1 of the Attachment, Appendix A Technical Specifications and all fuel with assembly average burnup greater than 45 GWd/MTHM shall be canned inside the canister.

10. Authorized Place of Use: The licensed material is to be received, possessed, transferred, and stored at the WCS CISF, geographically located within Andrews County, Texas.

11. The Technical Specifications contained in the Appendix attached hereto are incorporated into the license. The Licensee shall operate the installation in accordance with the Technical Specifications in the Appendix. The Appendix contains Technical Specifications related to environmental protection to satisfy the requirements of 10 CFR 72.44(d)(2).

12. The design, construction, and operation of the WCS CISF shall be accomplished in accordance with the NRC's regulations specified in Title 10 of the *Code of Federal Regulations*.

13. Reserved.

14. Activities in the areas of design, purchase, fabrication, assembly, inspection, testing, operation, maintenance, repair, modification of structures, systems and components, and decommissioning shall be conducted in accordance with a quality assurance program that satisfies the applicable requirements of 10 CFR Part 72, Subpart G, and that is established, maintained, and executed with regard to the WCS CISF.

15. The Licensee shall follow the "Emergency Plan," Revision 1, and as further supplemented and revised in accordance with 10 CFR 72.44(f).

16. The Licensee shall:

    (1) follow the "Physical Protection Plan," Revision *2*, as it may be further amended under the provisions of 10 CFR 72.44(e) and 72.186(b);

    (2) follow the "Safeguards Contingency Plan," Revision *2*, as it may be further amended under the provisions of 10 CFR 72.44(e) and 72.186(b); and

    (3) follow the "Security Training and Qualification Plan," Revision 1, as it may be further amended under the provisions of 10 CFR 72.44(e) and 72.186(b).

17. Construction of the WCS CISF shall not commence before funding (equity, revenue, and debt) is fully committed, that is adequate to construct a facility with the initial capacity as specified by the Licensee to the NRC. Construction of any additional capacity beyond the initial capacity amount shall commence only after funding is fully committed that is adequate to construct such additional capacity.

18. The Licensee shall*:*

    (1) include in the contracts provisions requiring clients to retain title to the material identified in 6.A, 6.B, 7.A or 7.B, and allocating legal and financial liability among the Licensee and the client(s);

    (2) include in the contracts provisions requiring clients to periodically provide credit information, and, when necessary, additional financial assurances such as guarantees, prepayment, or payment bond(s);

    (3) include in the contracts a provision requiring the Licensee not to terminate the license prior to furnishing storage services covered by the contract.

LICENSE FOR INDEPENDENT STORAGE OF SPENT NUCLEAR FUEL AND HIGH-LEVEL RADIOACTIVE WASTE

SUPPLEMENTARY SHEET

19. The Licensee shall obtain onsite and offsite insurance coverage in the amounts committed to by *ISP* in the *ISP* license application.

20. The Licensee shall submit License Amendment(s) to this license to incorporate applicable portions of License Renewals listed below, within 120 days of the effective date of License Renewal Approval for each of the following:

    (1) Aging Management Program (AMP) for NUHOMS® Systems

    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.

    (2) AMP for NAC Systems

    The Licensee shall commit to the AMPs committed to in the approved License Renewal of CoC 1015 AND 1025 AND 1031 for all applicable NAC Spent Fuel Canisters and storage overpacks.

21. The Licensee shall submit a Startup Plan to the NRC at least 90 days prior to receipt and storage of the material identified in 6.A, 6.B, 7.A or 7.B at the facility.

22. Prior to removing the shipping cask closure lid, the gas inside the shipping cask shall be sampled to verify that the canister confinement boundary is intact *to the extent reasonably practicable by this test.*

23. Prior to commencement of operations, the Licensee shall have an executed contract with the U.S. Department of Energy (DOE) *or other SNF Title Holder(s)* stipulating that the DOE *or the other SNF Title Holder(s)* is*/are* responsible for funding operations required for storing the material identified in 6.A, 6.B, 7.A or 7.B at the CISF as licensed by the U.S. Nuclear Regulatory Commission.

24. Prior to receipt of the material identified in 6.A, 6.B, 7.A or 7.B, the Licensee shall have a financial assurance instrument required pursuant to 10 CFR 72.30 *acceptable to* the U.S. Nuclear Regulatory Commission or an executed contract with DOE guaranteeing decommissioning funds will be provided for use by the Licensee.

25. This license is effective as of the date of issuance shown below.

FOR THE NUCLEAR REGULATORY COMMISSION

John McKirgan, Chief
Spent Fuel Licensing Branch
Division of Spent Fuel Management
Office of Nuclear Material
Safety and Safeguards

Date of Issuance December XX, 20XX

Attachments: Appendix A –WCS Interim Storage Facility Technical Specifications

INTERIM STORAGE PARTNERS LLC

CONSOLIDATED INTERIM SPENT FUEL STORAGE FACILITY
LICENSE APPLICATION

APPENDIX A
PROPOSED TECHNICAL SPECIFICATIONS

DOCKET 72-1050

ANDREWS COUNTY, TEXAS

PROPOSED

MATERIALS LICENSE No. SNM-1050

APPENDIX A

WCS CONSOLIDATED INTERIM STORAGE FACILITY TECHNICAL SPECIFICATIONS

Docket 72-1050

Amendment 0

1.0 USE AND APPLICATION

1.1 Definitions

---------- NOTE ----------

The defined terms of this section appear in capitalized type and are applicable throughout these Technical Specifications and Bases.

Term	Definition
ACTIONS	ACTIONS shall be that part of a Specification that prescribes Required Actions to be taken under designated Conditions within specified Completion Times.
CANISTER	CANISTERs are the sealed used nuclear fuel containers that consist of a fuel basket contained in a cylindrical shell, which is a welded pressure vessel that provides confinement of used fuel assemblies in an inert atmosphere or a cylindrical shell containing GTCC waste.
CANISTER TRANSFER SYSTEM (CTS)	The CTS is a structure designed for the transfer of a CANISTER from or to the TRANSPORTATION CASK to or from a VCC.
HORIZONTAL STORAGE MODULE (HSM)	An HSM (Standardized HSM, AHSM or other models enveloped by these designs) is a reinforced concrete structure for storage of a CANISTER at a used fuel storage installation (e.g., Standardized HSM includes the HSM Model 80 and Model 102 as described in the SAR.)
WCS CONSOLIDATED INTERIM STORAGE FACILITY (CISF)	The WCS CISF is a complex designed and constructed for the interim storage of canisterized used nuclear fuel and other canisterized radioactive materials associated with used fuel. The canisterized material is stored within HSMs or VCCs.
LOADING OPERATIONS (for NUHOMS® Systems)	LOADING OPERATIONS for NUHOMS® Systems include all licensed activities associated with the horizontal raising or lowering of the CANISTER and STC from the transport conveyance to the transfer vehicle. LOADING OPERATIONS begin when the Impact Limiters are removed from the STC and end when the STC is ready for TRANSFER OPERATIONS.

(continued)

1.1 Definitions (continued)

LOADING OPERATIONS (for Vertical Systems)	LOADING OPERATIONS for Vertical Systems include all licensed activities associated with the VCT lifting the TRANSPORTATION CASK from the transport conveyance and placing in/“under” the CTS. LOADING OPERATIONS begin when the Impact Limiters are removed from the TRANSPORTATION CASK and end when the TRANSPORTATION CASK is ready for TRANSFER OPERATIONS.
OPERABLE	An OPERABLE VCC heat removal system transfers sufficient heat away from the fuel assemblies such that the fuel cladding, CANISTER component and CONCRETE CASK temperatures do not exceed applicable limits.
SHIPPING/TRANSFER CASK (STC)	A 10 CFR Part 71 licensed TRANSPORTATION CASK that is also licensed under 10 CFR Part 72 as a Transfer Cask will be used to transport the CANISTER to the WCS CISF and will be placed on a transfer vehicle for movement of a CANISTER to the HSM. (NUHOMS® Systems)
STORAGE OPERATIONS	STORAGE OPERATIONS include all licensed activities that are performed at the WCS CISF, while a CANISTER is located in an HSM or VCC on the storage pad within the WCS CISF perimeter. STORAGE OPERATIONS do not include CANISTER transfer between the STC and the HSM or transfer of the VCC between the CTS and storage pad.
TRANSFER CASK	TRANSFER CASK is a shielded device designed to hold the CANISTER during LOADING OPERATIONS, and UNLOADING OPERATIONS for the Vertical Systems.
TRANSFER OPERATIONS (NUHOMS® Systems)	TRANSFER OPERATIONS for NUHOMS® Systems include all licensed activities involving the movement of an STC loaded with a loaded CANISTER. TRANSFER OPERATIONS begin when the STC has been placed horizontal on the transfer vehicle ready for TRANSFER OPERATIONS and end when the CANISTER is located in an HSM on the storage pad within the WCS CISF perimeter. TRANSFER OPERATIONS include CANISTER transfer between the STC and the HSM.

(continued)

1.1 Definitions (continued)

TRANSFER OPERATIONS (Vertical Systems)	TRANSFER OPERATIONS for Vertical Systems include all licensed activities involved in using a TRANSFER CASK to move a loaded and sealed CANISTER.
TRANSPORT OPERATIONS (Vertical Systems)	TRANSPORT OPERATIONS for Vertical Systems include all licensed activities performed on a loaded VERTICAL CONCRETE CASK when it is being moved to and from its designated location on the storage pad. TRANSPORT OPERATIONS begin when the loaded VERTICAL CONCRETE CASK is placed on or lifted by a VCT and end when the CONCRETE CASK is set down in its storage position on the storage pad.
TRANSPORTATION CASK	A 10 CFR Part 71 licensed TRANSPORTATION CASK used to transport CANISTERS for the Vertical Systems.
UNLOADING OPERATIONS (NUHOMS® Systems)	UNLOADING OPERATIONS for NUHOMS® Systems include all licensed activities on a CANISTER to ready it for shipment off-site. UNLOADING OPERATIONS begin when the CANISTER and STC is removed from the transfer vehicle and end when the CANISTER and STC is loaded on the transport conveyance and is being prepared for transport.
UNLOADING OPERATIONS (Vertical Systems)	UNLOADING OPERATIONS for Vertical Systems include all licensed activities on a CANISTER to ready it for shipment off-site. UNLOADING OPERATIONS begin when the CANISTER is placed in the TRANSPORTATION CASK and end when the CANISTER and TRANSPORTATION CASK is loaded on the transport conveyance and is being prepared for transport.
VERTICAL CONCRETE CASK (VCC)	VERTICAL CONCRETE CASK is the cask that receives and holds a sealed CANISTER. It provides the gamma and neutron shielding and convective cooling of the spent fuel confined in the CANISTER.
VERTICAL CANISTER TRANSPORTER (VCT)	The VCT is used to move the TRANSPORTATION CASK from or to its transport conveyance to or from the CTS.

1.0 USE AND APPLICATION

1.2 Logical Connectors

PURPOSE

The purpose of this section is to explain the meaning of logical connectors.

Logical connectors are used in Technical Specifications (TS) to discriminate between, and yet connect, Discrete Conditions, Required Actions, Completion Times, Surveillances, and Frequencies. The only logical connectors that appear in TS are AND and OR. The physical arrangement of these connectors constitutes logical conventions with specific meanings.

BACKGROUND

Several levels of logic may be used to state Required Actions. These levels are identified by the placement (or nesting) of the logical connectors and by the number assigned to each Required Action. The first level of logic is identified by the first digit of the number assigned to a Required Action and the placement of the logical connector in the first level of nesting (i.e., left justified with the number of the Required Action). The successive levels of logic are identified by additional digits of the Required Action number and by successive indentions of the logical connectors.

When logical connectors are used to state a Condition, Completion Time, Surveillance, or Frequency, only the first level of logic is used, and the logical connector is left justified with the statement of the Condition, Completion Time, Surveillance, or Frequency.

EXAMPLES

The following examples illustrate the use of logical connectors:

EXAMPLE 1.2-1

ACTIONS:

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. LCO (Limiting Condition for Operation) not met.	A.1 Verify… AND A.2 Restore…	

In this example the logical connector AND is used to indicate that when in Condition A, both Required Actions A.1 and A.2 must be completed.

(continued)

1.2 Logical Connectors (continued)

EXAMPLES (continued)

EXAMPLE 1.2-2

ACTIONS:

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. LCO not met.	A.1 Stop… OR A.2 A.2.1 Verify… AND A.2.2 A.2.2.1 Reduce… OR A.2.2.2 Perform… OR A.3 Remove…	

This example represents a more complicated use of logical connectors. Required Actions A.1, A.2, and A.3 are alternative choices, only one of which must be performed as indicated by the use of the logical connector OR and the left justified placement. Any one of these three Actions may be chosen. If A.2 is chosen, then both A.2.1 and A.2.2 must be performed as indicated by the logical connector AND. Required Action A.2.2 is met by performing A.2.2.1 or A.2.2.2. The indented position of the logical connector OR indicates that A.2.2.1 and A.2.2.2 are alternative choices, only one of which must be performed.

1.0 USE AND APPLICATION

1.3 Completion Times

PURPOSE

The purpose of this section is to establish the Completion Time convention and to provide guidance for its use.

BACKGROUND

Limiting Conditions for Operation (LCOs) specify the lowest functional capability or performance levels of equipment required for safe operation of the facility. The ACTIONS associated with an LCO state Conditions that typically describe the ways in which the requirements of the LCO are not met. Specified with each stated Condition are Required Action(s) and Completion Times(s).

DESCRIPTION

The Completion Time is the amount of time allowed for completing a Required Action. It is referenced to the time of discovery of a situation (e.g., equipment or variable not within limits) that requires entering an ACTIONS Condition unless otherwise specified, providing the facility is in a specified condition stated in the Applicability of the LCO. Required Actions must be completed prior to the expiration of the specified Completion Time. An ACTIONS Condition remains in effect and the Required Actions apply until the Condition no longer exists or the facility is not within the LCO Applicability.

Once a Condition has been entered, subsequent subsystems, components, or variables expressed in the Condition, discovered to be not within limits, will not result in separate entry into the Condition unless specifically stated. The Required Actions of the Condition continue to apply to each additional failure, with Completion Times based on initial entry into the Condition.

EXAMPLES

The following examples illustrate the use of Completion Times with different types of Conditions and Changing Conditions.

EXAMPLE 1.3-1

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Required Action and associated Completion Time not met.	B.1 Perform Action B.1 AND B.2 Perform Action B.2	12 hours 36 hours

(continued)

1.3 Completion Times (continued)

EXAMPLES (continued)

Condition B has two Required Actions. Each Required Action has its own separate Completion Time. Each Completion Time is referenced to the time that Condition B is entered.

The Required Actions of Condition B are to complete action B.1 within 12 hours AND complete action B.2 within 36 hours. A total of 12 hours is allowed for completing action B.1 and a total of 36 hours (not 48 hours) is allowed for completing action B.2 from the time that Condition B was entered. If action B.1 is completed within 6 hours, the time allowed for completing action B.2 is the next 30 hours because the total time allowed for completing action B.2 is 36 hours.

EXAMPLES

EXAMPLE 1.3-2

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One system not within limit.	A.1 Restore system to within limit.	7 days
B. Required Action and associated Completion Time not met.	B.1 Perform Action B.1. AND B.2 Perform Action B.2.	12 hours 36 hours

When a system is determined to not meet the LCO, Condition A is entered. If the system is not restored within 7 days, Condition B is also entered and the Completion Time clocks for Required Actions B.1 and B.2 start. If the system is restored after Condition B is entered, Condition A and B are exited, and therefore, the Required Actions of Condition B may be terminated.

(continued)

1.3 Completion Times (continued)

EXAMPLES (continued)

EXAMPLE 1.3-3

ACTIONS

----------NOTE----------

Separate Condition entry is allowed for each component.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. LCO not met.	A.1 Restore compliance with LCO.	4 hours
B. Required Action and associated Completion Time not met.	B.1 Perform Action B.1. AND B.2 Perform Action B.2.	6 hours 12 hours

The Note above the ACTIONS Table is a method of modifying how the Completion Time is tracked. If this method of modifying how the Completion Time is tracked was applicable only to a specific Condition, the Note would appear in that Condition rather than at the top of the ACTIONS Table.

The Note allows Condition A to be entered separately for each component, and Completion Times tracked on a per component basis. When a component is determined to not meet the LCO, Condition A is entered and its Completion Time starts. If subsequent components are determined to not meet the LCO, Condition A is entered for each component and separate Completion Times start and are tracked for each component.

IMMEDIATE COMPLETION TIME

When "Immediately" is used as a Completion Time, the Required Action should be pursued without delay and in a controlled manner.

1.0 USE AND APPLICATION

1.4 Frequency

PURPOSE	The purpose of this section is to define the proper use and application of Frequency requirements
DESCRIPTION	Each Surveillance Requirement (SR) has a specified Frequency in which the Surveillance must be met in order to meet the associated Limiting Condition for Operation (LCO). An understanding of the correct application of the specified Frequency is necessary for compliance with the SR. The "Specified Frequency" is referred to throughout this section and each of the Specifications of Section 3.0, Limiting Condition for Operation (LCO) and Surveillance Requirement (SR) Applicability. The "Specified Frequency" consists of the requirements of the Frequency column of each SR, as well as certain Notes in the Surveillance column that modify performance requirements. Situations where a Surveillance could be required (i.e., its Frequency could expire), but where it is not possible or not desired that it be performed until sometime after the associated LCO is within its Applicability, represent potential SR 3.0.4 conflicts. To avoid these conflicts, the SR (i.e., the Surveillance or the Frequency) is stated such that it is only "required" when it can be and should be performed. With a SR satisfied, SR 3.0.4 imposes no restriction.

(continued)

1.4 Frequency (continued)

EXAMPLES The following examples illustrate the various ways that Frequencies are specified:

EXAMPLE 1.4-1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
Verify pressure within limit.	12 hours

Example 1.4-1 contains the type of SR most often encountered in the Technical Specifications (TS). The Frequency specifies an interval (12 hours) during which the associated Surveillance must be performed at least one time. Performance of the Surveillance initiates the subsequent interval. Although the Frequency is stated as 12 hours, an extension of the time interval to 1.25 times the stated Frequency is allowed by SR 3.0.2 for operational flexibility. The measurement of this interval continues at all times, even when the SR is not required to be met per SR 3.0.1 (such as when the equipment is determined to not meet the LCO, a variable is outside specified limits, or the unit is outside the Applicability of the LCO). If the interval specified by SR 3.0.2 is exceeded while the facility is in a condition specified in the Applicability of the LCO, the LCO is not met in accordance with SR 3.0.1.

If the interval as specified by SR 3.0.2 is exceeded while the facility is not in a condition specified in the Applicability of the LCO for which performance of the SR is required, the Surveillance must be performed within the Frequency requirements of SR 3.0.2 prior to entry into the specified condition. Failure to do so would result in a violation of SR 3.0.4.

(continued)

1.4 Frequency (continued)

EXAMPLES (continued)

EXAMPLE 1.4-2

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
Verify flow is within limits.	Once within 12 hours prior to starting activity AND 24 hours thereafter

Example 1.4-2 has two Frequencies. The first is a one-time performance Frequency, and the second is of the type shown in Example 1.4-1. The logical connector "AND" indicates that both Frequency requirements must be met. Each time the example activity is to be performed, the Surveillance must be performed prior to starting the activity.

The use of "once" indicates a single performance will satisfy the specified Frequency (assuming no other Frequencies are connected by "AND"). This type of Frequency does not qualify for the 25% extension allowed by SR 3.0.2.

"Thereafter" indicates future performances must be established per SR 3.0.2, but only after a specified condition is first met (i.e., the "once" performance in this example). If the specified activity is canceled or not performed, the measurement of both intervals stops. New intervals start upon preparing to restart the specified activity.

2.0 FUNCTIONAL AND OPERATING LIMITS

2.1 Functional and Operating Limits

Subject to the limitation of the last sentence of Condition 9 of this license SNM-1050, the used nuclear fuel to be stored in an HSM or VCC at the WCS CISF shall meet the Approved Contents requirements of one of the following:

2.1.1 NRC Materials License SNM-2510, Amendment 4.

2.1.2 Table 1-1c or Table 1-1j (NUHOMS® 61BT DSC) of Certificate of Compliance 1004 Appendix A Technical Specifications For The Standardized NUHOMS® Horizontal Modular Storage System, including Amendments 3 through 13 inclusive.

2.1.3 Table 1-1t (NUHOMS® 61BTH DSC) of Certificate of Compliance 1004 Appendix A Technical Specifications For The Standardized NUHOMS® Horizontal Modular Storage System, including Amendments 10 through 13 inclusive.

2.1.4 Section 2.1 (NUHOMS® 24PT1) of Certificate of Compliance 1029 Appendix A Technical Specifications For The Standardized Advanced NUHOMS® System Operating Controls And Limits, including Amendments 0, 1, and 3.

2.1.5 Section B 2.1 (NAC-MPC System) of Certificate of Compliance 1025 Appendix B Technical Specification For The NAC-MPC System Approved Contents and Design Features, including Amendments 0 through 6.

2.1.6 Section B 2.1.2, “Maine Yankee SITE SPECIFIC FUEL Preferential Loading,” (NAC-UMS System) of Certificate of Compliance 1015 Appendix B Technical Specification For The NAC-UMS System Approved Contents and Design Features, including Amendments 0 through 5.

2.1.7 Table B.2-1, “PWR Fuel,” (MAGNASTOR System) of Certificate of Compliance 1031 Appendix B Technical Specification For The MAGNASTOR System Approved Contents, including Amendments 0 through 3, Revision 1, and Amendments 4 and 5.

2.0 FUNCTIONAL AND OPERATING LIMITS

2.2 Functional and Operating Limits Violations

If any Functional and Operating Limit of 2.1 is violated, the following actions shall be completed:

2.2.1 The affected CANISTER shall be placed in a safe condition.

2.2.2 Within 24 hours of discovering the event, notify the NRC Operations Center of the violation.

2.2.3 Within 60 days, submit a special report which describes the cause of the violation and the actions taken to restore compliance and prevent recurrence.

3.0 LIMITING CONDITION FOR OPERATION (LCO) AND SURVEILLANCE REQUIREMENT (SR) APPLICABILITY

LIMITING CONDITION FOR OPERATION

LCO 3.0.1	LCOs shall be met during specified conditions in the Applicability, except as provided in LCO 3.0.2.
LCO 3.0.2	Upon discovery of a failure to meet an LCO, the Required Actions of the associated Conditions shall be met, except as provided in LCO 3.0.5. If the LCO is met or is no longer applicable prior to expiration of the specified Completion Time(s), completion of the Required Action(s) is not required, unless otherwise stated.
LCO 3.0.3	Not applicable to a spent fuel storage cask.
LCO 3.0.4	When an LCO is not met, entry into a specified condition in the Applicability shall not be made except when the associated ACTIONS to be entered permit continued operation in the specified condition in the Applicability for an unlimited period of time. This Specification shall not prevent changes in specified conditions in the Applicability that are required to comply with ACTIONS. Exceptions to this Specification are stated in the individual Specifications. These exceptions allow entry into specified conditions in the Applicability when the associated ACTIONS to be entered allow operation in the specified condition in the Applicability only for a limited period of time.
LCO 3.0.5	Equipment removed from service or not in service in compliance with ACTIONS may be returned to service under administrative control solely to perform testing required to demonstrate it meets the LCO or that other equipment meets the LCO. This is an exception to LCO 3.0.2 for the system returned to service under administrative control to perform the testing required to demonstrate that the LCO is met.
LCO 3.0.6	Not applicable to a spent fuel storage cask.
LCO 3.0.7	Not applicable to a spent fuel storage cask.

(continued)

SURVEILLANCE REQUIREMENTS

SR 3.0.1	SRs shall be met during the specified conditions in the Applicability for individual LCOs, unless otherwise stated in the SR. Failure to meet a Surveillance, whether such failure is experienced during the performance of the Surveillance or between performances of the Surveillance, shall be failure to meet the LCO. Failure to perform a Surveillance within the specified Frequency shall be failure to meet the LCO except as provided in SR 3.0.3. Surveillances do not have to be performed on equipment or variables outside specified limits.
SR 3.0.2	The specified Frequency for each SR is met if the Surveillance is performed within 1.25 times the interval specified in the Frequency, as measured from the previous performance or as measured from the time a specified condition of the Frequency is met. For Frequencies specified as "once," the above interval extension does not apply. If a Completion Time requires periodic performance on a "once per . . ." basis, the above Frequency extension applies to each performance after the initial performance. Exceptions to this Specification are stated in the individual Specifications.
SR 3.0.3	If it is discovered that a Surveillance was not performed within its specified Frequency, then compliance with the requirement to declare the LCO not met may be delayed, from the time of discovery, up to 24 hours or up to the limit of the specified Frequency, whichever is less. This delay period is permitted to allow performance of the Surveillance. If the Surveillance is not performed within the delay period, the LCO must immediately be declared not met, and the applicable Condition(s) must be entered. When the Surveillance is performed within the delay period and the Surveillance is not met, the LCO must immediately be declared not met, and the applicable Condition(s) must be entered.
SR 3.0.4	Entry into a specified condition in the Applicability of an LCO shall not be made unless the LCO's Surveillances have been met within their specified Frequency. This provision shall not prevent entry into specified conditions in the Applicability that are required to comply with ACTIONS.

3.0 Limiting Condition For Operation (continued)

3.1 Radiation Protection

3.1.1 SHIPPING/TRANSFER CASK Exterior Surface Contamination

LCO 3.1.1 Removable surface contamination on the STC shall not exceed:

a. 2,200 dpm/100 cm^2 from beta and gamma sources; and

b. 220 dpm/100 cm^2 from alpha sources.

APPLICABILITY: During LOADING OPERATIONS (NUHOMS® Systems)

ACTIONS:

---------- NOTE ----------
Separate condition entry is allowed for each STC.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. SHIPPING/TRANSFER CASK removable surface contamination limits not met.	A.1 Decontaminate the SHIPPING/TRANSFER CASK to bring the removable contamination to within limits	7 days AND Prior to TRANSFER OPERATIONS

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.1.1	Verify by either direct or indirect methods that the removable contamination on the exterior surfaces of the SHIPPING/TRANSFER CASK is within limits.	Once, prior to TRANSFER OPERATIONS.

3.2 NAC-MPC SYSTEM Integrity

3.2.1 CANISTER Maximum Time in the TRANSFER CASK

LCO 3.2.1 The CANISTER shall be transferred from the TRANSFER CASK to a VCC, or to a TRANSPORTATION CASK.

APPLICABILITY: During TRANSFER OPERATIONS and prior to TRANSPORT OPERATIONS (NAC MPC Systems)

ACTIONS:

---------- NOTE ----------
Separate condition entry is allowed for each NAC-MPC SYSTEM.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. CANISTER transfer not completed.	A.1 Complete CANISTER TRANSFER OPERATIONS	25 days
B. Required Action and associated completion time not met	B.1 Return CANISTER to TRANSPORTATION CASK or VCC	5 days

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.2.1.1 Verify CANISTER transfer completed	Once within 25 days.

3.2 NAC-MPC SYSTEM Integrity

3.2.2 VCC Heat Removal System

LCO 3.2.1 The VCC Heat Removal System shall be OPERABLE. The VCC heat removal system is considered OPERABLE if the difference between the WCS CISF ambient temperature and the average outlet air temperature is ≤ 92°F for the YANKEE-MPC and for the MPC-LACBWR; or ≤ 110°F for the CY-MPC, or if all four air inlet and outlet screens are visually verified to be unobstructed. Failing this, a VCC heat removal system may be declared OPERABLE if an engineering evaluation determines the VCC has adequate heat transfer capabilities to assure continued spent nuclear fuel, CANISTER and VCC integrity.

APPLICABILITY: During STORAGE OPERATIONS (NAC MPC Systems)

ACTIONS:

---------- NOTE ----------
Separate condition entry is allowed for each NAC-MPC SYSTEM.

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. LCO not met	A.1	Restore VCC Heat Removal System to OPERABLE status	8 hours
B. Required Action A.1 and associated completion time not met	B.1	Perform SR 3.2.2.1	Immediately and every 6 hours thereafter
	AND		
	B.2.1	Perform an engineering evaluation to determine that the VCC Heat Removal System is OPERABLE	12 hours
	OR		
	B.2.2	Place the NAC-MPC SYSTEM in a safe condition	12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.2.2.1	Verify the difference between the average VCC air outlet temperature and WCS CISF ambient temperature is ≤92°F for the YANKEE-MPC CANISTER and the MPC-LACBWR CANISTER or ≤110°F for the CY-MPC CANISTER OR	24 hours
	Visually verify all four air inlet and outlet screens are unobstructed	24 hours.

3.3 NAC-UMS® SYSTEM Integrity

3.3.1 CANISTER Maximum Time in the TRANSFER CASK

LCO 3.3.1 The CANISTER shall be transferred from the TRANSFER CASK to a VCC, or to a TRANSPORTATION CASK.

APPLICABILITY: During TRANSFER OPERATIONS and prior to TRANSPORT OPERATIONS (NAC UMS® Systems)

ACTIONS:

---------- NOTE ----------
Separate condition entry is allowed for each NAC-UMS® SYSTEM.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. 600 hour cumulative time limit not met	A.1 Load CANISTER into VCC	5 days
	OR	
	A.2 Load CANISTER into TRANSPORTATION CASK	5 days

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.1.1	Monitor elapsed time for compliance with LCO 3.3.1	As required to meet the time limit.

3.3 NAC-UMS® SYSTEM Integrity

3.3.2 VCC Heat Removal System

LCO 3.3.2 The VCC Heat Removal System shall be OPERABLE. The VCC heat removal system is considered OPERABLE if the difference between the ISFSI ambient temperature and the average outlet air temperature is ≤102°F for the PWR CANISTER, or if all four air inlet and outlet screens are visually verified to be unobstructed. Failing this, a VCC heat removal system may be declared OPERABLE if an engineering evaluation determines the VCC has adequate heat transfer capabilities to assure continued spent nuclear fuel and CANISTER integrity.

APPLICABILITY: During STORAGE OPERATIONS (NAC UMS® Systems)

ACTIONS:

---------- NOTE ----------
Separate condition entry is allowed for each NAC-UMS® SYSTEM.

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. LCO not met	A.1	Ensure adequate heat removal to prevent exceeding short-term temperature limits	Immediately
	AND		
	A.2	Restore VCC Heat Removal System to OPERABLE status	25 days
B. Required Action A.1 or A.2 and associated completion time not met	B.1	Perform an engineering evaluation to determine that the VCC Heat Removal System is OPERABLE	5 days
	OR		
	B.2	Place the NAC-UMS SYSTEM in a safe condition	5 days

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.2.1	Verify the difference between the WCS CISF ambient temperature and the average outlet air outlet temperature is ≤102°F for the PWR CANISTER OR Visually verify all four air inlet and outlet screens are unobstructed	24 hours 24 hours.
SR 3.3.2.2	Verify the difference between the WCS CISF ambient temperature and the average outlet air outlet temperature is ≤102°F for the PWR CANISTER	Once between 5 and 30 days after STORAGE OPERATIONS begin

3.4 MAGNASTOR SYSTEM Integrity

3.4.1 CANISTER Maximum Time in the TRANSFER CASK

LCO 3.4.1 The maximum time a CANISTER can remain in the MAGNASTOR TRANSFER CASK without the active cooling system running is shown below for the initial and subsequent transfer attempts. If the initial transfer attempt cannot be completed within the time limits shown in Table A, then subsequent transfer attempts shall comply with the time limits in Table B after the Required Actions in Condition A are met.

This time frame starts from the time a loaded MAGNATRAN TRANSPORTATION CASK is received and the MAGNATRAN TRANSPORTATION CASK is no longer in the horizontal orientation until the CANISTER is placed on the pedestal in a VCC. Likewise, this time frame also starts from the time a loaded CANISTER is lifted off the VCC pedestal until it is placed in the MAGNATRAN TRANSPORTATION CASK and the MAGNATRAN TRANSPORTATION CASK is placed in the horizontal orientation.

A. Initial Transfer Attempt Time Limits

Total PWR Heat Load (kW)	Maximum CANISTER Transfer Time (hours)
≤23	41

B. Subsequent Transfer Attempt Time Limits

Total PWR Heat Load (kW)	Maximum CANISTER Transfer Time (hours)
≤23	31

APPLICABILITY: During LOADING OPERATIONS, TRANSFER OPERATIONS or UNLOADING OPERATIONS (NAC MAGNASTOR® Systems)

3.4.1 CANISTER Maximum Time in the TRANSFER CASK

ACTIONS:

---------- NOTE ----------
Separate condition entry is allowed for each MAGNASTOR® SYSTEM.

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. CANISTER transfer time limit not met.	A.1	Return the loaded CANISTER to the MAGNASTOR TRANSFER CASK	Immediately
	AND		
	A.2	Initiate the MAGNASTOR TRANSFER CASK active cooling system.	Immediately
	AND		
	A.3	Maintain the MAGNASTOR TRANSFER CASK active cooling system for a minimum of 24 hours	24 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.1.1	Monitor elapsed time that a loaded CANISTER is not sitting on a VCC pedestal or in a MAGNATRAN TRANSPORTATION CASK that is not in the horizontal orientation and while the MAGNASTOR TRANSFER CASK active cooling system is not in operation.	Continuous during TRANSFER OPERATIONS and prior to TRANSPORT OPERATIONS.

3.4 MAGNASTOR SYSTEM Integrity

3.4.2 VCC Heat Removal System

LCO 3.4.2 The VCC Heat Removal System shall be OPERABLE.

APPLICABILITY: During STORAGE OPERATIONS (MAGNASTOR Systems)

ACTIONS:

---------- NOTE ----------
Separate condition entry is allowed for each MAGNASTOR SYSTEM.

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. VCC Heat Removal System inoperable	A.1	Ensure adequate heat removal to prevent exceeding short-term temperature limits	Immediately
	AND		
	A.2	Restore VCC Heat Removal System to OPERABLE status	30 days

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.2.1	Verify the difference between the average VCC air outlet temperature and the WCS CISF ambient temperature indicates that the VCC Heat Removal System is operable in accordance with the MAGNASTOR thermal evaluation.	24 hours
	OR	
	Visually verify all VCC air inlet and outlet screens are free of blockage	24 hours.

4.0 DESIGN FEATURES

The specifications in this section include the design characteristics of special importance to each of the physical barriers and to the maintenance of safety margins in the WCS CISF design.

4.1 Site

The WCS CISF is located approximately 30 miles west of the City of Andrews, Texas, and five miles east of the City of Eunice, New Mexico. The WCS CISF is located approximately one-half mile east of the Texas-New Mexico boundary and approximately one mile north of Texas State Highway 176.

4.2 Storage System Features

4.2.1 Storage Systems

The WCS CISF is licensed to store spent fuel and GTCC waste in various NUHOMS® System HSMs. Each CANISTER shall be loaded at a 10 CFR Part 50 licensee's facility in accordance with one of the following 10 CFR Part 72 Materials License or Certificates of Compliance (CoC):

- SNM-2510, or
- CoC No. 1004, or
- CoC No. 1029

and shipped to the WCS CISF in a 10 CFR Part 71 certified shipping package (the STC). The CANISTER shall be transferred directly from the STC to the HSM at the Storage Pad.

In addition, the WCS CISF is licensed to store spent fuel and GTCC waste in various NAC VCCs, which include VCCs for the NAC-MPC, NAC-UMS, and MAGNASTOR. Each CANISTER shall be loaded at a 10 CFR Part 50 licensee's facility in accordance with one of the following 10 CFR Part 72 Certificates of Compliance (CoC):

- CoC No. 1025, or
- CoC No. 1015, or
- CoC No. 1031

and shipped to the WCS CISF in a 10 CFR Part 71 certified TRANSPORTATION CASK. The CANISTER shall be transferred from the TRANSPORTATION CASK to the VCC with the CTS and the VCC and CANISTER will be transferred from the CTS to the Storage Pad with the VCT.

4.2.2 Storage Capacity

The total storage capacity of the WCS CISF is limited to the material defined in Conditions 8A and 8B of the license. This total capacity of spent fuel assemblies is in the form of intact fuel assemblies, damaged fuel assemblies, failed fuel assemblies and fuel debris, as defined in SNM-2510; CoC No. 1004; CoC No. 1029, CoC No. 1025, CoC No. 1015, and CoC No. 1031.

(continued)

4.0 Design Features (continued)

4.3 Storage Area Design Features

The following storage location design features and parameters shall be implemented at the WCS CISF.

4.3.1 Storage Configuration

HSMs are placed together in single rows or back-to-back arrays. An end shield wall is placed on the outside end of any loaded outside HSM. A rear shield wall is placed on the rear of any single row loaded HSM.

The VCCs for NAC-MPC, NAC-UMS, and MAGNASTOR Systems shall meet the minimum center-to-center spacing requirements presented in the SAR.

4.3.2 Concrete Storage Pad Properties to Limit CANISTER Gravitational Loadings Due to Postulated Drops

The STCs with NUHOMS® CANISTERs have been evaluated for drops of up to 80 inches onto a reinforced concrete storage pad.

For concrete storage pads loaded with NAC-MPC, NAC-UMS, and/or MAGNASTOR VCC systems, the storage pad shall meet the concrete storage pad properties presented in CoC No. 1025, Section B 3.4, CoC No. 1015, Section B 3.4, and CoC No. 1031, Sections 4.3.1 and 5.4.

4.4 Cask Receipt and CTS

4.4.1 Lifting

Vertical lifting of the STC with a NUHOMS® CANISTER is not allowed. Horizontal lifting of the TRANSPORTATION CASK or TRANSFER CASK with an NAC-MPC, NAC-UMS or MAGNASTOR CANISTER is not allowed.

Lifting of a loaded TRANSPORTATION CASK, TRANSFER CASK, or VCC with an NAC-MPC, NAC-UMS or MAGNASTOR CANISTER shall be performed with the CTS in accordance with the guidelines of NUREG-0612, “Control of Heavy Loads at Nuclear Power Plants,” July 1980. The CTS and VCT lifting devices shall be designed, fabricated, operated, tested, inspected, and maintained in accordance with the guidelines of NUREG-0612 with the following clarifications.

- The CTS cranes shall be classified as Type 1 cranes in accordance with ASME NOG-1, 1995. Allowable stresses used in the crane designs shall be in accordance with ASME NOG-1. These cranes shall be of single-failure-proof design and meet the applicable guidelines of NUREG-0554, “Single-Failure-Proof Cranes for Nuclear Power Plants,” May 1970 and NUREG-0612. In addition, the CTS shall be designed, fabricated, operated, tested, inspected, and maintained in accordance with the guidelines of NUREG-0612. The specific applicable standard being applied to each primary gantry system component is as follows:

  - Hydraulic Locking Telescoping Boom Gantry Leg Assemblies on Self Propelled Dollies – ASME B30.1
  - Lift Beams (spanning the Telescoping Gantry Leg Assemblies) – ASME NOG-1

4.0 Design Features (continued)

- Trolley Beam (spanning the Lift Beams & also mounted on Self Propelled Dollies) - ASME NOG-1
- Standard Lift Links - ASME B30.26
- Standard Shackles - ASME B30.26
- Standard Slings - ASME B30.9
- Transfer Cask Lift Plates - ANSI N14.6
- Air Operated Chain Hoist (suspended from Trolley Beam) – ASME NUM-1 Qualified with Rated Load per ASME HST-5
- Canister Lift Adapter (which mates with canister) – ANSI N14.6

- The VCT with CANISTER lifting devices used with the CTS shall be designed, fabricated, operated, tested, inspected and maintained in accordance with the guidance of NUREG-0612, Section 5.1. The specific applicable standard being applied to each primary VCT is as follows:

  - Hydraulic Locking Telescoping Boom Assemblies – ASME B30.1
  - Lift Beam(s) (spanning the Telescoping Boom Assemblies) ANSI N14.6
  - Cask Lift Links - ANSI N14.6

5.0 ADMINISTRATIVE CONTROLS

5.1 Programs

Interim Storage Partners shall implement the following programs to ensure the safe operation and maintenance of the WCS CISF:

- Radiological Environmental Monitoring Program (see 5.1.1 below)
- Radiation Protection Program (see 5.1.2 below)
- HSM Thermal Monitoring Program (see 5.1.3 below)

5.1.1 Radiological Environmental Monitoring Program

a. A radiological environmental monitoring program will be implemented to ensure that the annual dose equivalent to an individual located outside the WCS CISF controlled area does not exceed the annual dose limits specified in 10 CFR 72.104(a).

b. Operation of the WCS CISF will not create any radioactive materials or result in any credible liquid or gaseous effluent release.

5.1.2 Radiation Protection Program

a. The Radiation Protection Program will establish administrative controls to limit personnel exposure to As Low As Reasonably Achievable (ALARA) levels in accordance with 10 CFR Part 20 and Part 72.

b. Dosimetry will be used to monitor direct radiation around the WCS CISF.

c. In accordance with 10 CFR 72.44(d), a periodic report will be submitted specifying the quantity of each of the principal radionuclides released to the environment in liquid and gaseous effluents during the previous calendar year of operation.

(continued)

5.0 Administrative Controls (continued)

5.1.3 HSM Thermal Monitoring Program

This program provides guidance for temperature measurements that are used to monitor the thermal performance of each HSM. The intent of the program is to prevent conditions that could lead to exceeding the concrete and fuel clad temperature criteria. Each user must implement either TS 5.1.3(a) OR 5.1.3(b).

a. Daily Visual Inspection of HSM Inlets and Outlets (Front Wall and Roof Birdscreens)

The user shall develop and implement procedures to perform visual inspection of HSM inlets and outlets on a daily basis. There is a possibility that the HSM air inlet and outlet openings could become blocked by debris, as postulated and analyzed in the SAR accident analyses for air vent blockage. The procedures shall ensure that blockage will not exist for periods longer than assumed in the SAR analyses.

Perform a daily visual inspection of the air vents to ensure that HSM air vents are not blocked for more than 40 hours. If visual inspection indicates blockage, clear air vents and replace or repair birdscreens if damaged. If the air vents are blocked or could have been blocked for more than 40 hours, evaluate existing conditions in accordance with the site corrective action program to confirm that conditions adversely affecting the concrete or fuel cladding do not exist.

b. Daily HSM Temperature Measurement Program

i. The user shall develop a daily temperature measurement program to verify the thermal performance of each HSM. The user shall establish administrative temperature limits to (1) detect off-normal and accident blockage conditions before the HSM components and fuel cladding temperatures would exceed temperature design limits and (2) ensure the HSM air vents are not blocked for more than 40 hours. The daily temperature measurements shall include at least one of the following three options:

1. direct measurement of the HSM concrete temperature
2. direct measurement of the CANISTER temperature
3. direct measurement of inlet and outlet air temperatures

If the direct measurement of the inlet and outlet air temperatures (option 3) is performed, the measured temperature differences of the inlet and outlet vents of each individual HSM must be compared to the predicted temperature differences for each individual HSM during normal operations.

(continued)

5.0 Administrative Controls (continued)

ii. The user shall establish in the program, measurement locations in the HSM that are representative of the HSM thermal performance and directly correlated to the predicted fuel cladding temperatures, air mass flow rates, and System temperature distributions that would occur with the off-normal and accident blockage conditions, as analyzed in the SAR. The administrative temperature limits shall employ appropriate safety margins that ensure temperatures would not exceed design basis temperature limits in the SAR, and be based on the SAR methodologies used to predict thermal performance of the System. If the direct measurement of the inlet and outlet air temperatures (option 3) is performed, the user must develop procedures to measure air temperatures that are representative of inlet and outlet air temperatures, as analyzed in the SAR. The user must also consider site-specific environmental conditions, loaded decay heat patterns, and the proximity of adjacent HSM modules in the daily air temperature measurement program. The user must ensure that measured air temperatures reflect only the thermal performance of each individual module, and not the combined performance of adjacent modules.

iii. The user shall establish in the program the appropriate actions to be taken if administrative temperature criteria are exceeded. If an administrative temperature limit is exceeded during a daily measurement, the user shall inspect the vents and implement TS 5.1.3(a) for the affected system, until the cause of the excursion is determined and necessary corrective actions are completed under the site corrective action program.

iv. If measurements or other evidence indicates that the HSM concrete temperatures have exceeded the concrete accident criteria of 500 °F for more than 40 hours, the user shall implement TS 5.3 and perform an analysis and/or tests of the concrete in accordance with ACI-349, Appendix A.4.3. The user shall demonstrate that the structural strength of the HSM has an adequate margin of safety and take appropriate actions to return the HSM to normal operating conditions.

v. If measurements or other evidence indicates that off-normal or accident temperature limits for fuel cladding have been exceeded, verify that CANISTER confinement is maintained and assess analytically the condition of the fuel. Additionally, within 30 days, take appropriate actions to restore the spent fuel to a safe configuration.

(continued)

5.0 Administrative Controls (continued)

5.2 Lifting Controls

5.2.1 Lifting Height and Temperature Limits

The requirements of 10 CFR 72 apply to the STC, TRANSFER CASK and VCC transporter with CANISTER lifting/handling height limits outside the VCT and CTS. The requirements of TS 4.4 apply to the VCT and CTS. Confirm the surface temperature of the STC or TRANSFER CASK before TRANSFER OPERATIONS of the loaded STC or TRANSFER CASK with CANISTER.

The lifting height of a STC or TRANSFER CASK with CANISTER is limited as a function of low temperature and the type of lifting/handling device, as follows:

- No lifts or handling of the STC or TRANSFER CASK with CANISTER at any height are permissible at STC or TRANSFER CASK surface temperatures below 0 °F.
- The maximum lift height of the STC with CANISTER shall be 80 inches if the surface temperature of the SHIPPING/TRANSFER CASK is above 0 °F and a non-single failure proof lifting/handling device is used.
- No lift height restriction is imposed on the STC or TRANSFER CASK with CANISTER if the STC or TRANSFER CASK surface temperature is higher than 0 °F and a single failure proof lifting/handling system is used.

The requirements of 10 CFR Part 72 apply when the STC with CANISTER is in a horizontal orientation on the transfer vehicle.

The VCC loaded with an NAC-MPC, NAC-UMS, or MAGNASTOR CANISTER is not permitted to be lifted greater than 6 inches, 24 inches, and 24 inches in the vertical direction, respectively.

5.2.2 Cask Drop

Inspection Requirement

The NUHOMS® CANISTER will be inspected for damage after any STC with CANISTER side drop of 15 inches or greater.

Safety Analysis

The analysis of bounding drop scenarios shows that the STC will maintain the structural integrity of the CANISTER confinement boundary from an analyzed side drop height of 80 inches. The 80-inch drop height envelopes the maximum height from the bottom of the STC when secured to the transfer vehicle while enroute to the HSM.

(continued)

5.0 Administrative Controls (continued)

Although analyses performed for cask drop accidents at various orientations indicate much greater resistance to damage, requiring the inspection of the CANISTER after a side drop of 15 inches or greater ensures that:

1. The CANISTER will continue to provide confinement.
2. The STC can continue to perform its design function regarding CANISTER transfer and shielding.

5.3 Concrete Testing

HSM concrete shall be tested during the fabrication process for elevated temperatures to verify that there are no significant signs of spalling or cracking and that the concrete compressive strength is greater than that assumed in the structural analysis. Tests shall be performed at or above the calculated peak temperature and for a period no less than the 40 hour duration of HSM blocked vent transient for components exceeding 500 °F.

HSM concrete temperature testing shall be performed whenever:

- There is a change in the supplier of the cement, or
- There is a change in the source of the aggregate, or
- The water-cement ratio changes by more than 0.04.

APPENDIX B

PRELIMINARY DECOMMISSIONING PLAN

TABLE OF CONTENTS

CHAPTER 1

INTRODUCTION

This Preliminary Decommissioning Plan has been developed to comply with the requirements of 10 CFR 72.30 and describes the proposed approach for decommissioning of the WCS Consolidated Interim Storage Facility (*WCS* CISF). The Final Decommissioning Plan containing specific information and details will be submitted to the NRC for review and approval prior to the commencement of decommissioning activities.

CHAPTER 2

DECOMMISSIONING OBJECTIVE, ACTIVITIES, AND TASKS

2.1 DECOMMISSIONING OBJECTIVE

The objective of decommissioning activities at the WCS CISF is to verify that any potential radioactive contamination is below established release limits, and in the unlikely event of contamination, to identify and remove radioactive contamination having activities above the NRC release limits, so that the site may be released for unrestricted use and the NRC license terminated.

2.2 DECOMMISSIONING ACTIVITIES

A Final Decommissioning Plan detailing activities and procedures for decommissioning will be provided after the spent nuclear fuel and GTCC waste are removed from the facility. The facility is configured and will be operated as a "clean" facility. All components of the facility including the transport casks and storage canisters are designed to minimize the potential for any contamination. Continual radiological survey throughout the life of the facility will be performed to identify any possible contamination and to verify that the facility remains clean. The actual decommissioning activities presented in the Final Decommissioning Plan will depend on the operating history of the facility and the results of the initial characterization survey performed at the beginning of the decommissioning period. This preliminary plan will outline the planned approach to decommissioning.

As indicated previously, the *WCS CISF* will be operated as a "clean" facility. Residual radioactive contamination is not anticipated at the WCS *CISF* for several reasons:

- Canisters are surveyed and decontaminated at the generator facility to ensure the outer surfaces are clean before shipment to *the* WCS *CISF*.
- Canisters are welded shut and sealed to prevent leaks.
- Canisters will not be opened during transport to *the* WCS *CISF* or during storage at the WCS *CISF* at any time.
- Radiological activation of storage modules and pad materials is expected to be insignificant with radiation levels below the applicable NRC criteria for unrestricted release.

The Final Decommissioning Plan will address final status survey of the site and termination of the license. The Final Decommissioning Plan will include detailed information on the following:

1. A current description of the existing conditions of the site including all facilities sufficient to evaluate the acceptability of the plan;

2. The choice of the alternative for decommissioning and a description of the activities involved including:

   - Organization and staffing
   - Site Preparation
   - Procedures for removal of systems and components
   - Design activities
   - Procurement
   - Outside contractors
   - Procedures for decontamination
   - Procedures for radiological survey
   - Schedule

3. A description of controls and limits on procedures and equipment to protect occupational and public health and safety;
4. A description of the planned final radiation survey;
5. An updated detailed cost estimate for the chosen alternative for decommissioning, a comparison of that estimate with present funds set aside for decommissioning, and a plan for assuring the availability of adequate funds for completion of the decommissioning including means for adjusting cost estimates and associated funding levels over any storage or surveillance period; and
6. A description of technical specifications and quality assurance provisions in place during decommissioning.

The final plan will evaluate NRC criteria for decommissioning to ensure all requirements are satisfied. Decommissioning activities will be planned using ALARA principles and in a manner that protects the public and environment during the process.

2.3 DECONTAMINATION TASKS

Once all of the spent nuclear fuel canisters stored at *the* WCS *CISF* have been shipped off-site and the decommissioning period begins, characterization surveys will be performed to verify that the storage modules and the storage pads are free of contamination. It is anticipated that the storage modules and pads will not be contaminated and will be left in place or removed as determined by *ISP*. In the unlikely event the characterization surveys identify contamination levels above the NRC limits for unrestricted release, conventional decontamination techniques will be used which minimize the volume of waste. Any waste generated will be sent to a licensed facility for disposal. For conservatism in Financial Assurance, *ISP* assumes some contamination will be present.

2.4 DECOMMISSIONING ORGANIZATION

Successful planning and execution of the Decommissioning Plan will include utilizing individuals *from* the *ISP* organization. In addition to *ISP* staff, many of the decommissioning activities will be performed by contractors. The Final Decommissioning Plan will provide information on *ISP* staff organization, Contractor organization, and qualifications for working with radiological materials and health and safety issues. Work performed by contractors will be controlled under the NRC license for the WCS CISF.

CHAPTER 3

DECOMMISSIONING RECORDS

ISP will maintain records until the facility is released for unrestricted use. The records, in accordance with 10 CFR 72.30(f), will be used to plan final decommissioning efforts. The following records will be maintained:

- Records of spills or un-planned occurrences involving the spread of radiation
- As-built drawings of structures, components and equipment used in the storage of radioactive materials
- Documentation containing a list of all areas designated at any time as a restricted area and all other areas involved in the spread of contamination
- Decommissioning cost estimates and the funding method used.

CHAPTER 4

DECOMMISSIONING COST ESTIMATE

4.1 SUMMARY

The decommissioning cost estimate (Appendix D) is based on the guidance of NUREG-1757, *Consolidated Decommissioning Guidance*, and is developed on the basis that the WCS CISF will be constructed and operated under the requirements of 10 CFR 20.1406, *Minimization of Contamination*. This regulation requires that the applicant design and operate the facility to *"…minimize, to the extent practicable, contamination of the facility and the environment, facilitate eventual decommissioning, and minimize, to the extent practicable, the generation of radioactive waste."* As a temporary storage facility, waste containers will not be opened at the WCS *CISF*. Continual radiological surveillance during the operational period will ensure that any contamination is promptly discovered, identified and removed in a timely manner before the decommissioning period begins.

At the end of the storage period, all of the spent nuclear fuel located at the WCS CISF will be removed and shipped for final disposal in a geologic repository. Once the fuel and GTCC waste are removed and the CISF is no longer being used for its principal licensed purpose, *ISP* will prepare a Decommissioning Plan for review and approval by the NRC pursuant to the Timeliness Rule (10 CFR § 72.54).

4.2 BACKGROUND

10 CFR § 72.30, *Financial assurance and recordkeeping for decommissioning*, requires that each holder of, or applicant for, a license under this part must submit for NRC review and approval a Decommissioning Funding Plan that contains information on how reasonable assurance will be provided that adequate funds will be available to decommission the CISF. The CISF decommissioning process will commence after the spent nuclear fuel *is removed* from the facility.

4.3 CISF DESCRIPTION

The WCS CISF will utilize the NUHOMS® storage system (TN *Americas*) along with the MAGNASTOR®, NAC-UMS® and NAC- MPC storage systems (NAC International). The CISF will have 450 storage modules placed on approximately 125,000 square feet of storage pad.

4.4 COST ESTIMATE APPROACH

The decommissioning cost estimate (Appendix D) is based on the condition of the CISF after all of the spent nuclear fuel and GTCC waste have been removed from the site. No interior or exterior radioactive surface contamination is expected. During the lifetime of the facility, only sealed canisters will be accepted for storage. The facility does not open the canisters at any time and therefore does not perform any sampling or processing of waste. As a "start-clean/stay-clean" facility, the WCS CISF will operate in a manner that supports decommissioning activities throughout the life of the facility.

Radioactive surface contamination at the time of decommissioning will be minimized due to radiological survey and monitoring activities during and after fuel transfer operations through the life of the facility. Due to this limited scope of operational activity and the survey controls, it is anticipated that the CISF storage modules, storage pad, and the Cask Handling Building area will not be contaminated. The decommissioning cost estimate conservatively assumes that some contamination will exist at decommissioning.

Decommissioning is assumed to be performed by an independent contractor. Labor rates used in the estimate are based on 2015 industry labor rates. These rates were compiled from *ISP joint venture member Waste Control Specialists' current* labor rates. *Waste Control Specialists* employs a wide range of people including: Laborers, Equipment Operators, Radiation Technicians (RT), Health Physicists, Engineers, Administrative Assistants, and other labor categories that are directly applicable to a decommissioning project. The cost estimates uses direct labor rate with a multiplier of 2.5 applied to account for fringe benefits, indirect labor costs, and profit.

The initial step in development of the D&D cost estimate is to determine the required activities to complete D&D. The basic activities for D&D of the WCS CISF are:

4.4.1 Decommissioning Plan (DP)

The DP will be developed and submitted for NRC review and approval before any D&D activities occur. The DP will include Derived Concentration Guideline Levels (DCGLs) or "clean-up" criteria and a Final Status Survey Plan consistent with the requirements in NUREG-1757. Costs associated with the DP include time and materials for a consultant to prepare the DP for submittal. Initial site Characterization Survey results will be included in the DP.

4.4.2 Decontamination and Waste Disposal

Initial characterization surveys will be performed to identify any areas of contamination requiring decontamination and/or disassembly. These areas will be decontaminated using conventional methods to the extent practical. Contaminated components will be disassembled as necessary and sent to a licensed facility for disposal. Major components of this portion of the D&D estimate include the following:

- Initial characterization survey
- Decontamination work activities
- Decontamination waste disposal

4.4.3 Final Status Survey

The Final Status Survey will consist of a thorough investigation of the facility to demonstrate that the facility meets the DCGLs established for decommissioning. The investigation will include:

- Radiation survey over the interior and exterior of each storage module container
- Radiation survey of the storage pad
- Radiation survey of the Cask Handling Building

The methods used to estimate the time required for survey activities are based on *ISP joint venture member Waste Control Specialists' current* procedures for radiological survey.

4.4.4 Final Report

The Final Report contains the analysis results of the Final Status Survey and the completion of the DP. This document will be submitted to the NRC for approval and termination of the Part 72 license.

4.5 CONTINGENCY

Because of uncertainty associated with decommissioning, a contingency factor of 25 percent is then applied to the sum of all estimated decommissioning costs.

CHAPTER 5

DECOMMISSIONING FACILITATION

The configuration of the storage systems used at *the* WCS *CISF* allow for decommissioning in conformance with 10 CFR § 72.130. The facility and storage systems are designed with decommissioning as one of the primary functions.

Canisters containing spent nuclear fuel and GTCC waste are loaded at the generating reactor facility. Procedures are implemented by the generators to ensure loading operations occur without contamination remaining on the exterior of the canister. Before the canisters arrive and are accepted at *the WCS CISF*, they are surveyed to verify that any contamination on the canister is below acceptable limits. Once at *the WCS CISF* for storage, sealed canisters are not opened. Therefore, canisters arriving at the WCS *CISF* will have contamination below acceptable release limits, and since they will remain sealed during storage, there is no expectation that contamination in excess of those limits will exist at the CISF at decommissioning.

The storage modules that hold the canisters are clean and have no contamination when they are fabricated. Health physics technicians are involved in all parts of canister movement and transfer operations and will perform surveys of all applicable components during and after the transfer process. These measures identify and control the spread of contamination should an unexpected spread of contamination occur. These measures ensure that in the small chance there is contamination from a canister shipped to *the WCS CISF*, there will be no spread of contamination from the Transfer Facility to the Storage Pads. Any contamination found during operations will be identified and decontaminated promptly while the facility is still in the operations phase.

Facility design, planning and operations have been established in a manner to produce a site that maintains a “start clean/stay clean” philosophy. This purpose built facility is established so that decommissioning activities can be completed in a safe, timely and straightforward manner.

CHAPTER 6

REFERENCES

1. 10 CFR 72, “Licensing Requirements for the Independent Storage of Spent Nuclear Fuel, High-Level Radioactive Waste, and Reactor-Related Greater than Class C Waste.”

2. 10 CFR 20, “Standards for Protection Against Radiation.”

3. NUREG-1757, “Consolidated Decommissioning Guidance.”

APPENDIX C

NOT USED

APPENDIX D

DECOMMISSIONING FUNDING PLAN

TABLE OF CONTENTS

CHAPTER 1

INTRODUCTION

This Decommissioning Funding Plan has been developed to describe the proposed approach for funding decommissioning activities and to provide a decommissioning cost estimate using the approach provided in NUREG 1757, Volume 3.

CHAPTER 2

DECOMMISSIONING FUNDING METHODS

A fully executed written contract between *ISP* and the United States Government, Department of Energy (DOE) *or the other SNF Title Holder(s)*, will be established prior to receipt of SNF or reactor-related GTCC LLW at the CISF. Pursuant to this contract, *if* the DOE shall take legal title of the SNF and reactor-related GTCC LLW prior to receipt*, DOE* shall also be responsible for all costs associated with the decommissioning of the CISF allowing for its unrestricted release pursuant to 10 CFR 20 Subpart E at the time of license termination. *If other SNF Title Holder(s), other than DOE, (Client(s)), enter into a contract with ISP for storage services, the contract shall allocate legal and financial liability among the licensee and the clients and shall include provisions requiring clients to periodically provide credit information, and, when necessary financial assurances to cover their decommissioning obligations.*

ISP has requested an exemption from the financial assurance methods specified in 10 CFR 72.30(e) from the NRC *if ISP stores the SNF or reactor-related GTCC LLW at the CISF on behalf of DOE*. *This* alternative method of financial assurance that will guarantee the necessary funding for decommissioning equipment and facilities at the CISF that is equivalent to the provisions in 10 CFR 72.30(e). This alternative method will require that the DOE establish a contract with *ISP* that will guarantee that the DOE shall be responsible for ensuring adequate funds will be provided for the decommissioning of equipment and facilities at the CISF to levels that will allow for its unrestricted use pursuant to 10 CFR 20, Subpart E.

ISP shall be required to obtain an exemption from the NRC or otherwise provide a financial assurance method, as specified in 10 CFR 72.30(e), to provide the necessary funds to decommission equipment and facilities at the CISF to levels allowing for its unrestricted use prior to receipt of SNF or reactor-related GTCC LLW. *If ISP enters into contracts with SNF Title Holder(s) other than DOE, then it will comply with the 10 CFR 72.30(e) requirements.*

CHAPTER 3

SITE SPECIFIC DECOMMISSIONING COST ESTIMATE

3.1 Summary

The decommissioning cost estimate is based on the guidance of Section A.3 of Appendix A of NUREG-1757, Vol. 3, *Consolidated Decommissioning Guidance*, and is developed on the basis that the WCS CISF will be constructed and operated under the requirements of 10 CFR 20.1406 "Minimization of Contamination." This regulation requires that the applicant design and operate the facility to *"…minimize, to the extent practicable, contamination of the facility and the environment, facilitate eventual decommissioning, and minimize, to the extent practicable, the generation of radioactive waste."* As a temporary storage facility, waste containers will not be opened at the WCS *CISF*. Continual radiological surveillance during the operational period will ensure that any contamination is promptly discovered, identified and removed in a timely manner before the decommissioning period begins.

3.1.1 Facility Description

At the time of decommissioning, there will be no radiological materials at the site. The License will allow for the storage of material defined in Conditions 8A and 8B of the license.. All of this material will be removed before decommissioning begins. During the operational life of the facility, the spent fuel is stored in storage modules on concrete pads placed on the ground. Support facilities include a Security and Administration Building as well as a Cask Handling Building. As a "start-clean/stay-clean" facility, the WCS CISF will operate in a manner that supports decommissioning activities throughout the life of the facility

There are no facility components (e.g. fume hoods, glove boxes, laboratory benches, ductwork) that will require decontamination. In order to provide a conservative value to the decommissioning cost estimate, *ISP* assumes that a portion of the storage pad and the storage modules will require decontamination.

3.1.2 Estimated Decommissioning Costs

The Decommissioning Cost Estimate accounts for all phases of the decommissioning process. The cost estimate distinguishes between labor and non-labor costs and includes a contingency factor.

3.1.2.1 Labor Costs

Labor costs associated with decommissioning tasks and activities have been used in the cost estimate for this facility. These costs have been gathered to provide sufficient cost data that would allow an independent third party to carry out the decommissioning project. The following sources have been used to provide labor rates:

- *ISP joint venture member* Waste Control Specialists LLC Employment Data
- RSMeans 2015 Heavy Construction Cost Data, Construction Publishers & Consultants, Norwell, MA

Waste Control Specialists currently (2015) employs personnel in the same occupational job categories that would be required for the decommissioning project. Current *Waste Control Specialists* rates are competitive with other employers to ensure a stable and efficient workforce at the existing facility. Data on current *Waste Control Specialists* labor rates for applicable job descriptions provide an accurate labor estimate for the job type and area of the country. Table 3-1 provides standard Labor rates provided by *Waste Control Specialists*.

The table breaks the rate down into the "Direct Cost" (rate paid to employee), "Fringe Costs" (rate that covers additional labor costs associated with employees such as: insurance, benefits, and taxes), and "Indirect Costs" (rate that covers overhead costs such as property costs, support staff, depreciation, etc.). The Loaded Labor Rate (Direct Cost + Fringe Costs + Indirect Costs) can be determined by applying a multiplier of 2.5 to the labor Direct Cost.

Table 3-1, *Waste Control Specialists* 2015 Labor Rates

Labor Category	Direct Cost	Fringe Costs	Indirect Costs	Loaded Rate
Laborer/Operator	$24.00	$24.00	$12.00	$60.00
Foreman Laborer	$30.00	$30.00	$15.00	$75.00
Administrative Assistant	$20.00	$20.00	$10.00	$50.00
Engineer	$50.00	$50.00	$25.00	$125.00
Radiation Technician (RT)	$40.00	$40.00	$20.00	$100.00
RT Supervisor	$45.00	$45.00	$22.50	$112.50
Health Physicist	$50.00	$50.00	$25.00	$125.00
Project Manager	$100.00	$100.00	$50.00	$250.00
Security Guard	$25.00	$25.00	$12.50	$62.50
Security Supervisor	$30.00	$30.00	$15.00	$75.00

RSMeans (2015) is a commonly used standard cost estimating manual used to provide comprehensive construction cost data. Cost information includes data on materials, labor, equipment, management, and overhead and profit. Costs used from this reference will already include allowances for overhead and profit. Most of the RSMeans costs used in this estimate are a combination of Labor and Non-Labor rates. This is noted where applicable.

Labor totals broken out and are estimated in Tables 3-5 through 3-14 for different decommissioning activities.

3.1.2.2 Non-Labor Costs

Non-Labor costs will be a part of the decommissioning effort. Equipment, Shipping, and Disposal costs will be the main components. Cost information for these items was referenced from RSMeans (2015) and potential vendor product information. Significant Non-Labor costs fall into the following areas:

Decontamination Equipment

The Decommissioning Cost Estimate assumes that decontamination efforts will involve standard concrete scabbleing techniques. *ISP joint venture member Waste Control Specialists* has received quotes from Pentek Inc. for their Nuclear Decon tools for use in the cost estimate. These tools *that are* in the decontamination industry for the safe decontamination of concrete components. Components include scabblers, concrete shavers, vacuum packages, hoses, and other appurtenances.

Waste Shipping

Waste generated during decontamination activities will be drums for transport to a licensed disposal cell. The existing *Waste Control Specialists* Low Activity Waste (LAW) disposal cell is less than 2 miles from the CISF. RSMeans (2015) was used to estimate equipment (fork truck, tractor, and trailer) necessary to transport the waste to the LAW cell. RSMeans combines Non-Labor and Labor costs for these activities by also including a crew used to operate the equipment. This has been accounted for and noted where applicable in the cost estimate.

Waste Disposal

Waste generated during decontamination activities will be disposed of at the *Waste Control Specialists* LAW disposal cell. The cost estimate used a current disposal price for bulk waste disposal in the cell.

Non-Labor quantities and costs are listed in Tables 3-15 through 3-18.

3.1.2.3 Contingency Factor

A contingency factor of 25% was applied to the total cost estimate amount. Due to the uncertainty of contamination levels, waste disposal costs, and unforeseen circumstances, a contingency factor is used to provide a factor of safety to the cost estimate. While some costs are known exactly with more certainty than others, the contingency factor is applied to everything. This percentage of contingency should be sufficiently large especially when taken with the conservative assumptions made in the required activities of the decommissioning project. The contingency factor is included in Table 3-19, Total Decommissioning Costs.

3.1.3 Key Assumptions

The decommissioning estimate is based on the condition of the CISF after all of the canisters have been removed from the site. No interior or exterior radioactive surface contamination is expected. During the lifetime of the facility, only sealed canisters (welded) will be accepted for storage. The facility does not open the canisters at any time. The canisters are surveyed at the generator facility and will not be transported to *the* WCS *CISF* unless surface contamination levels are below specified limits. Only small quantities of radioactive waste are expected to be generated, attributable primarily to performing radiological surveys at the facility. No other waste is generated by the facility. Canisters are only accepted at arrival at the facility after a radiological survey has determined that they are free from contamination. The cost estimate for decommissioning will conservatively assume that certain areas and components will require decontamination.

Disposal Costs and Transportation rates are assumed to be applicable disposal rates at the *Waste Control Specialists* licensed disposal facility. Transportation will occur over a short distance all within *Waste Control Specialists* private property.

Potential areas for contamination are discussed below:

Storage Modules: The storage module vendors have indicated that contamination is not anticipated from the stored waste. Contamination controls mentioned above minimize the possibility that storage modules will have radioactive contamination above the specified release limits established by the NRC. For purposes of the cost estimate, *ISP* has assumed that parts of some of the storage modules will require decontamination. The initial characterization survey and sampling of each storage module will determine the nature and location of any contamination. The interior area of a storage module is approximately 455 square feet. 100% of

this area will be surveyed in the initial characterization survey. Three concrete core samples will be retrieved and analyzed from each module. The cost estimate assumes that the maximum portion of a storage module that would require decontamination is 20%. Decontamination activities would include scabbling contaminated concrete or bead-blasting steel. Waste generated (scabbled concrete, steel scale, misc. tools and filters, and PPE) will be packed into drums for transportation by truck to the adjacent *Waste Control Specialists* LAW disposal cell.

Storage Pads: The storage pads will be used to support the storage modules. It is not anticipated that these concrete pads will become contaminated due to the canister controls. *ISP* has assumed that 20% of the storage pad areas have levels of contamination above allowable release limits. The total storage pad area is 125,000 square feet, 25,000 square feet of this area is assumed to be contaminated. Decontamination activities would include scabbling of concrete. Waste generated will be packed into drums for transportation by truck to the adjacent *Waste Control Specialists* LAW disposal cell.

Cask Handling Building: The Cask Handling Building is an operational feature and not a storage system. The building will be surveyed during unloading and loading operations through the life of the facility. Any contamination discovered will be located and removed during the operational life of the building and not as part of the decommissioning.

Salvage: The cost estimate does not take credit for any salvage value that might be realized from the sale of potential assets during or after decommissioning.

3.2 Adjusting The Cost Estimate

The Decommissioning Cost Estimate will be updated at a minimum every three years. The update will capture the current price of goods and services and make any adjustments necessary for inflation. The update also provides an opportunity to account for the effect any facility modifications would have on the cost estimate. In addition, experience operating this new facility will provide additional input and verification of key assumptions of the original Decommissioning Cost Estimate.

3.3 Decommissioning Cost Estimate

The Decommissioning Cost Estimate is provided in Tables 3-2 through 3-18.

Table 3-2, Number and Dimensions of Facility Components

Area: Storage Modules

Level of Contamination: Up to 20% of internal surface area, light

Component	Number of Components	Dimensions of Components (ft^2)	Total Dimensions (ft^2)
Glove Boxes	0	-	-
Fume Hoods	0	-	-
Lab Benches	0	-	-
Sinks	0	-	-
Drains	0	-	-
Floors	0	-	-
Walls	0	-	-
Ceilings	0	-	-
Ventilation/Ductwork	0	-	-
Hot Cells	0	-	-
Equipment/Materials	0	-	-
Soil Plots	0	-	-
Storage Tanks	0	-	-
Storage Areas	0	-	-
Radwaste Areas	0	-	-
Scrap Recovery Areas	0	-	-
Maintenance Shop	0	-	-
Equipment Decontamination Areas	0	-	-
Utilities/Piping	0	-	-
Other: Storage Modules	450	455	204,750

Table 3-3, Number and Dimensions of Facility Components

Area: Storage Pad

Level of Contamination: Up to 20% of surface area, light

Component	Number of Components	Dimensions of Components (ft^2)	Total Dimensions (ft^2)
Glove Boxes	0	-	-
Fume Hoods	0	-	-
Lab Benches	0	-	-
Sinks	0	-	-
Drains	0	-	-
Floors	0	-	-
Walls	0	-	-
Ceilings	0	-	-
Ventilation/Ductwork	0	-	-
Hot Cells	0	-	-
Equipment/Materials	0	-	-
Soil Plots	0	-	-
Storage Tanks	0	-	-
Storage Areas	0	-	-
Radwaste Areas	0	-	-
Scrap Recovery Areas	0	-	-
Maintenance Shop	0	-	-
Equipment Decontamination Areas	0	-	-
Utilities/Piping	0	-	-
Other: Storage Pad Type 1	1	30,175	30,175
Other: Storage Pad Type 2	15	6,144	92,160

Table 3-4, Number and Dimensions of Facility Components

Area: Cask Handling Building

Level of Contamination: None

Component	Number of Components	Dimensions of Components	Total Dimensions
Glove Boxes	0	-	-
Fume Hoods	0	-	-
Lab Benches	0	-	-
Sinks	0	-	-
Drains	0	-	-
Floors	1	150'x 150'	22,500 ft^2
Walls	4	150' x 65'	9,000 ft^2
Ceilings	1	150' x 150'	22,500 ft^2
Ventilation/Ductwork	0	-	-
Hot Cells	0	-	-
Equipment/Materials	0	-	-
Soil Plots	0	-	-
Storage Tanks	0	-	-
Storage Areas	1	50' x 50'	2,500 ft^2
Radwaste Areas	0	-	-
Scrap Recovery Areas	0	-	-
Maintenance Shop	0	-	-
Equipment Decontamination Areas	0	-	-
Utilities/Piping	1	-	-
Other: Rail	1	150'	150'
Other: Overhead Cranes	2	75'	150'

Table 3-5, Planning and Preparation (Workdays)

Activity	Labor Category					
	Health Physicist	Radiation Technician (RT)	RT Supervisor	Engineer	Project Manager	Administrative Assistant
Preparation of Documentation for Regulatory Agencies	125	0	0	50	14	25
Submittal of Decommissioning Plan to NRC When required by 10 CFR 72.54(g)	0	0	0	0	10	10
Procurement of Special Equipment	1	0	0	1	1	1
Characterization of Radiological Condition of the Facility (including sampling soil, concrete)	37	74	19	0	15	19
Administrative Fees (procurement fees for third party contractor, legal fees, local permits, utilities, financial assurance fees, and NRC staff review of these items	15	0	0	15	5	30
TOTALS	178	74	19	66	45	85

Table 3-6, Decontamination or Dismantling of Radioactive Facility Components (Workdays)

Number of workdays, by specific labor category, which will be required to complete decontamination and/or dismantling activities for each facility component.

Area: Storage Modules

Level of Contamination: Up to 20% of surface area, light

Component	Decon. Method	Laborer	Foreman Laborer
Glove Boxes	-	0	0
Fume Hoods	-	0	0
Lab Benches	-	0	0
Sinks	-	0	0
Drains	-	0	0
Floors	-	0	0
Walls	-	0	0
Ceilings	-	0	0
Ventilation/Ductwork	-	0	0
Hot Cells	-	0	0
Equipment/Materials	-	0	0
Soil Plots	-	0	0
Storage Tanks	-	0	0
Storage Areas	-	0	0
Radwaste Areas	-	0	0
Scrap Recovery Areas	-	0	0
Maintenance Shop	-	0	0
Equipment Decontamination Areas	-	0	0
Utilities/Piping	-	0	0
Other: Storage Module	Scabbling	505	101
TOTALS		505	101

Table 3-7, Decontamination or Dismantling of Radioactive Facility Components (Workdays)

Number of workdays, by specific labor category, which will be required to complete decontamination and/or dismantling activities for each facility component.

Area: Storage Pads

Level of Contamination: Up to 20% of surface area, light

Component	Decon. Method	Laborer	Foreman Laborer
Glove Boxes	-	0	0
Fume Hoods	-	0	0
Lab Benches	-	0	0
Sinks	-	0	0
Drains	-	0	0
Floors	-	0	0
Walls	-	0	0
Ceilings	-	0	0
Ventilation/Ductwork	-	0	0
Hot Cells	-	0	0
Equipment/Materials	-	0	0
Soil Plots	-	0	0
Storage Tanks	-	0	0
Storage Areas	-	0	0
Radwaste Areas	-	0	0
Scrap Recovery Areas	-	0	0
Maintenance Shop	-	0	0
Equipment Decontamination Areas	-	0	0
Utilities/Piping	-	0	0
Other: Storage Pad Type 1	Scabbling	80	16
Other: Storage Pad Type 2	Scabbling	230	46
TOTALS		310	62

Table 3-8, Decontamination or Dismantling of Radioactive Facility Components (Workdays)

Number of workdays, by specific labor category, which will be required to complete decontamination and/or dismantling activities for each facility component.

Area: Cask Handling Building

Level of Contamination: None

Component	Decon. Method	Laborer	Foreman Laborer
Glove Boxes	-	0	0
Fume Hoods	-	0	0
Lab Benches	-	0	0
Sinks	-	0	0
Drains	-	0	0
Floors	-	0	0
Walls	-	0	0
Ceilings	-	0	0
Ventilation/Ductwork	-	0	0
Hot Cells	-	0	0
Equipment/Materials	-	0	0
Soil Plots	-	0	0
Storage Tanks	-	0	0
Storage Areas	-	0	0
Radwaste Areas	-	0	0
Scrap Recovery Areas	-	0	0
Maintenance Shop	-	0	0
Equipment Decontamination Areas	-	0	0
Utilities/Piping	-	0	0
Other: Rail	-	0	0
TOTALS		0	0

Table 3-9, Restoration of Contaminated Areas on Facility Grounds (Workdays)

Estimate the number of workdays, by specific labor category, required to restore contaminated areas on facility grounds.

Activity	Laborer	Foreman Laborer
Backfill and Restore Site	0	0
TOTALS	**0**	**0**

Note: Once contaminated areas have been decontaminated and/or dismantled (Table 3-6), no restoration on facility grounds will be required.

Table 3-10, Final Radiation Survey (Workdays)

Estimate the number of workdays, by specific labor category, required to conduct a final radiation survey.

Activity	Labor Category					
	Health Physicist	**Radiation Technician (RT)**	**RT Supervisor**	**Engineer**	**Project Manager**	**Administrative Assistant**
Final Status Survey	1125	2813	1125	50	536	281
Final Report Preparation and Submittal	75	0	0	0	14	75
TOTALS	**1200**	**2813**	**1125**	**50**	**550**	**356**

Table 3-11, Site Stabilization and Long-Term Surveillance (Workdays)

Estimate the number of workdays, by specific labor category, required to complete site stabilization and long-term surveillance activities.

Activity	Labor Category					
	Health Physicist	**Radiation Technician (RT)**	**RT Supervisor**	**Engineer**	**Project Manager**	**Administrative Assistant**
Not Applicable	0	0	0	0	0	0
TOTALS	**0**	**0**	**0**	**0**	**0**	**0**

Table 3-12 Total Workdays by Labor Category

Estimate the number of workdays, by specific labor category, required to conduct a final radiation survey.

Task	Labor Category							
	Health Physicist	Radiation Technician (RT)	RT Supervisor	Engineer	Project Manager	Administrative Assistant	Laborer	Foreman Laborer
Planning and Preparation (TOTALS from Table 3-5)	178	74	19	66	45	85	0	0
Decontamination or Dismantling of Radioactive Facility Components (Sum of TOTALS from all copies of Table 3-7)	0	0	0	0	0	0	815	163
Packaging, Shipping, and Disposal of Radioactive Wastes *	8	24	24	0	8	24	0	0
Restoration of Contaminated Areas on Facility Grounds (TOTALS from Table 3-9)	0	0	0	0	0	0	0	0
Final Radiation Survey (TOTALS from Table 3-10)	1200	2813	1125	50	550	356	0	0
Site Stabilization and Long-Term Surveillance (TOTALS from Table 3-11)	0	0	0	0	0	0	0	0

Note:
* Labor workdays in this category are estimated for Radiation monitoring and Administrative actions during this activity. Labor for actual work is included in Table 3-15.

Table 3-13, Worker Unit Cost Schedule

Estimate labor costs (including salary, fringe benefits, and corporate overhead). Include all appropriate labor categories, including Supervisor, Foreman, Craftsman, Technician, Health Physicist, Laborer, Clerical, and others as needed.

Labor Cost Component	Labor Category							
	Health Physicist	Radiation Technician (RT)	RT Supervisor	Engineer	Project Manager	Administrative Assistant	Laborer	Foreman Laborer
Salary & Fringe ($/year)*	208,000	166,400	187,200	208,000	416,000	83,200	99,840	124,800
Overhead Rate (%)	25	25	25	25	25	25	25	25
Total Cost Per Year	260,000	208,000	234,000	260,000	520,000	104,000	124,800	156,000
Total Cost Per Workday**	1,000	800	900	1000	2,000	400	480	600

Notes:
* Source: *Waste Control Specialists* Wage Rate Range 2015
** Based on 260 workdays per year and an 8 hour work day

Table 3-14, Total Labor Costs by Major Decommissioning Task

Multiply the estimated workdays for each specific labor category (from Table 3-12) by the total cost per workday for the corresponding labor category (from Table 3-13), and enter the results in the tale below. Then, add across all labor categories to determine the total labor costs for each major decommissioning task.

Task	Labor Category								
	Health Physicist	Radiation Technician (RT)	RT Supervisor	Engineer	Project Manager	Administrative Assistant	Laborer	Foreman Laborer	Total Labor Cost
Planning and Preparation	$178K	$59.2K	$17.1K	$66K	$90K	$34K	0	0	$444.3K
Decontamination or Dismantling of Radioactive Facility Components	0	0	0	0	0	0	$391.2K	97.8K	$489K
Packaging, Shipping, and Disposal of Radioactive Wastes*	$8K	$19.2K	$21.6K	0	16K	$9.6K	0	0	$74.4K
Restoration of Contaminated Areas on Facility Grounds	0	0	0	0	0	0	0	0	0
Final Radiation Survey	$1,200K	$2,250K	$1,013K	$50K	$1,100K	$142.4K	0	0	$5,755.4K
Site Stabilization and Long-Term Surveillance	0	0	0	0	0	0	0	0	0
Note:* Labor in this Table is for Radiation monitoring and Administrative actions during this activity. Labor for Packaging waste is included in the" Decontamination or Dismantling or Radioactive facility Components" Task. Labor for actual work is included in Table 3-15.									

Table 3-15, Packaging, Shipping, and Disposal of Radioactive Wastes

(a) Packing Material Costs

Estimate the types and volumes of waste expected to be generated, along with the number and types of containers required for packaging the waste. Multiply the number of containers required by the unit cost per container.

Waste Type	Volume (m^3)	Number of Containers	Type of Container	Unit Cost of Container	Total Packaging Costs
DAW	3.7	19	55 Gallon Steel Drum	$263.00	$4,997
Misc Tools, Equipment	3.7	19	55 Gallon Steel Drum	$263.00	$4,997
Soil Like (Scabbled Concrete, etc.)	39	197	55 Gallon Steel Drum	$263.00	$51,811
TOTAL	**46.4**	**235**	**-**	**-**	**$61,805**

(b) Shipping Costs

Estimate the number of truckloads of waste to be shipped. Multiply shipping costs per mile (including truckload costs, surcharges, and overweight charges) by the total distance shipped.

Waste Type	Number of Loads	Unit Cost ($/mile/ truckload) *	Surcharge ($/mile) **	Overweight Charges ($/mile) **	Distance Shipped (miles)	Total Shipping Costs
55 Gallon Drums (Low Activity)	3	$929.99	$0	$0	4	$11,160
TOTAL	**3**	**-**	**-**	**-**	**-**	**$11,160**

Notes:
* Mileage cost derived from daily equipment and crew costs assuming one truckload per day. Cost based on RS Means 2015 Construction Data.
** Transport is short distance on private property. No Surcharge or Overweight changes are applicable.

(c) Waste Disposal Costs

Estimate the volume of waste to be disposed. Multiply the volume of waste disposed by the unit disposal cost (including any volume-based surcharges). Add any surcharges that are based on the number of containers of waste.

Waste Type	Disposal Volume (m^3)	Unit Cost ($/$m^3$)	Surcharges ($/$m^3$ or $/container)	Total Disposal Costs
55 Gallon Drums (Low Activity)	46.4	$529.72	$0	$24,579
TOTAL	**46.4**	**$529.72**	**-**	**$24,579**
Disposal Cost based on *Waste Control Specialists* Low Activity Waste Landfill Rates				

Table 3-16, Equipment/Supply Costs (Excluding Containers)

Estimate the quantity of equipment and supplies required for decommissioning and multiply that quantity by the appropriate unit costs.

Equipment/Supplies	Quantity	Unit Cost	Total Equipment/Supply Cost
HEPA Vacuum	1	$80,000	$80,000
HEPA Filters	3	$906.61	$2,720
Rough Filters	9	$271.26	$2,441
Vacuum Hose	12	$272.00	$3,264
Vac Scabbler	6	$25,000	$150,000
Vac Floor Shaver	1	$65,000	$65,000
Scabbler Bits	8	$502.37	$4,019
Shaver Blades	6	$10,753	$64,518
Side Shaver Blades	4	$4,840.80	$19,363
PPE	1	$6,500	$6,500
TOTAL	**-**	**-**	**$397,825**

Table 3-17, Laboratory Costs

If applicable, estimate costs for analyses to be performed by an independent third-party laboratory.

Activity	Total Costs
Core Sampling	$361,600
Soil Sampling	$29,600
Testing and Analysis (includes Transport)	$524,208
TOTAL	**$915,408**

Table 3-18, Miscellaneous Costs

Estimate any other applicable costs.

Cost Item	Total Cost
Security	$341,000
Insurance	$100,000
TOTAL	**$441,000**

Table 3-19, Total Decommissioning Costs

Task/Component	Cost	Percentage
Planning and Preparation (From Table 3-14)	$444,300	4.4%
Decontamination and/or Dismantling of Radioactive Facility Components (From Table 3-14)	$489,000	4.8%
Packaging, Shipping, and Disposal of Radioactive Wastes (From Table 3-14)	$74,400	0.7%
Restoration of Contaminated Areas on Facility Grounds (from Table 3-14)	$0	0%
Final Radiation Survey (From Table 3-14)	$5,755,400	57.0%
Site Stabilization and Long-Term Surveillance (From Table 3-14)	$0	0%
Packing Materials Costs (TOTAL From Table 3-15(a))	$61,805	0.6%
Shipping Costs (TOTAL From Table 3-15(b))	$11,160	0.1%
Waste Disposal Costs (TOTAL From Table 3-15(c))	$24,579	0.2%
Equipment/Supply Costs (TOTAL from Table 3-16	$397,825	3.9%
Laboratory Costs (TOTAL From Table 3-17)	$915,408	9.1%
Miscellaneous Costs (TOTAL From Table 3-18)	$441,000	4.4%
Contractor Overhead and Profit	$1,500,000	14.8%
SUBTOTAL	$10,114,877	100.0%
25% Contingency	$2,528,719	25.0%
TOTAL DECOMMISSIONING COST ESTIMATE	**$12,643,596**	**125.0%**

CHAPTER 4

REFERENCES

1. 10 CFR 72, “Licensing Requirements for the Independent Storage of Spent Nuclear Fuel, High-Level Radioactive Waste, and Reactor-Related Greater than Class C Waste.”

2. 10 CFR 20, “Standards for Protection Against Radiation.”

3. NUREG-1757, “Consolidated Decommissioning Guidance.”