UNITED STATED NUCLEAR REGULATORY COMMISSION

WASTE CONTROL SPECIALISTS LLC

DOCKET NO. 72-1050

APPLICATION FOR A LICENSE FOR A CONSOLIDATED INTERIM SPENT FUEL STORAGE FACILITY

Pursuant to the requirements of Title 10 of the Code of Federal Regulations, Part 72, Waste Control Specialists LLC hereby applies for a license for a Consolidated Interim Spent Fuel Storage Facility at an away from reactor site located in Andrews County, Texas.

The following individual was responsible for preparing this license application: J .Scott Kirk, CHP

This application contains no Restricted Data or other defense information.

WASTE CONTROL SPECIALISTS LLC

By J. Scott Kirk, CHP

Vice President of Licensing and Regulatory Affairs

On this 19 day of April, 2016, before me, a notary public in and for the State of Texas, personally appeared Rodney Baltzer, Chief Executive Officer and President of Waste Control Specialists LLC, and being first duly sworn acknowledged that he is authorized to execute this document on behalf of Waste Control Specialists LLC, that he knows the contents thereof, and that to the best of his knowledge, information, and belief the statements made herein are true.

Rodney Baltzer, Chief Executive Officer and President of Waste Control Specialists LLC
(signature)

Sandra R. Murdock
(Notary Name), Notary Public
Sondra R. Murdock
My Commission Expires on (Date) June 18, 2018

SONDRA R. MURDOCK
Notary Public, State of Texas
My Commission Expires
June 18, 2018

WASTE CONTROL SPECIALISTS LLC

LICENSE APPLICATION

WASTE CONTROL SPECIALISTS LLC

AMERICA'S NUCLEAR SOLUTION

DOCKET 72-1050

ANDREWS COUNTY, TEXAS

TABLE OF CONTENTS

TABLE OF CONTENTS

LIST OF ATTACHMENTS

TABLE OF CONTENTS

LIST OF APPENDICES

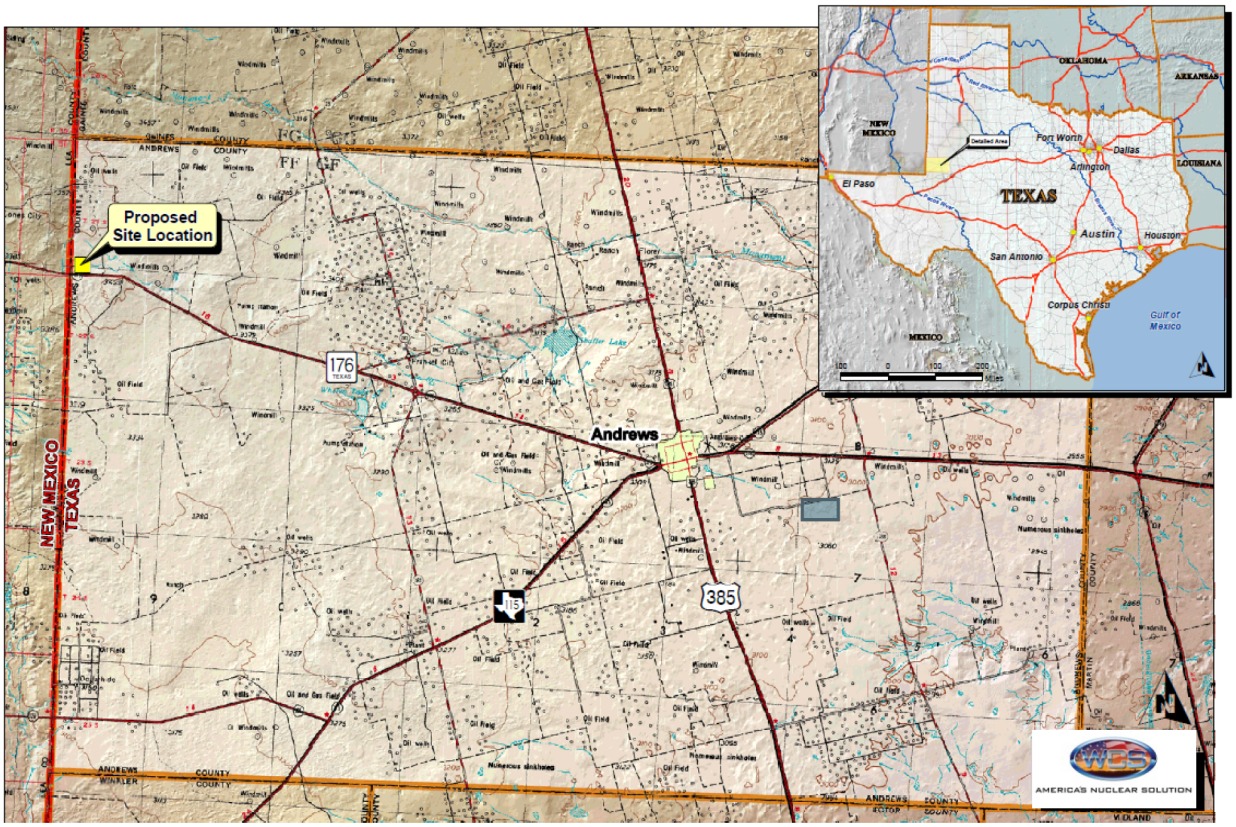
CHAPTER 1

GENERAL AND FINANCIAL INFORMATION

1.1 APPLICATION FOR LICENSE

Waste Control Specialists LLC (WCS) proposes to construct and operate a Consolidated Interim Storage Facility (CISF) at an away from reactor site located in Andrews County, Texas. The WCS 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 (LLW) (both are collectively referenced henceforth as spent nuclear fuel) that has been used to generate electricity from commercial nuclear power reactors. The U.S. Department of Energy (DOE) will be contractually responsible for taking title of the spent fuel at the commercial reactors sites and transporting the spent fuel to the CISF, by rail. The reactor-related GTCC LLW will be shipped to the CISF by either road or rail.

WCS will use multipurpose canisters as 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. WCS 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

Waste Control Specialists LLC

1.3 ADDRESS OF THE APPLICANT

Waste Control Specialists LLC
5430 LBJ Freeway, Three Lincoln Centre
Suite 1700
Dallas, Texas 75240

1.4 DESCRIPTION OF THE LICENSE APPLICANT

WCS is a Delaware limited liability company which controls and operates a waste disposal facility in West Texas for the processing, treatment, storage and disposal of a broad range of radioactive, hazardous, toxic and other wastes. WCS has permits from the Texas Commission on Environmental Quality (TCEQ) and the U.S. Environmental Protection Agency (U.S. EPA) to accept hazardous and toxic wastes, LLW and byproduct waste material governed by various laws and regulations, including the Atomic Energy Act (AEA), Resource Conservation and Recovery Act (RCRA) and the Toxic Substances Control Act (TSCA), for treatment, storage and/or disposal. WCS is currently the only facility in the U.S. that can accept Class A, B and C LLRW for disposal from generators across the U.S. WCS also provides waste management services to the commercial sector and Federal government waste generators.

1.5 LEGAL STATUS AND ORGANIZATION

WCS is a limited liability company organized and existing under the laws of the State of Delaware. Its corporate headquarters is located in Dallas, Texas. WCS waste disposal and storage facilities described in Section 1.4 of the license application are located at 9998 Texas Highway 176 West, approximately 32 miles west of Andrews, Texas.

WCS is not owned, controlled, or dominated by any alien, a foreign corporation, or foreign government. The names of WCS directors and principal officers, all of whom are citizens of the United States, are provided at the end of this chapter.

1.6 FINANCIAL QUALIFICATIONS AND FINANCIAL ASSURANCE

This section demonstrates that WCS' 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. WCS has invested over $300 million in licenses, buildings, equipment and improvements at the current radioactive waste disposal facility in Andrews County, Texas. In addition, its owner has invested additional capital to fund other cash needs. The investments made to date demonstrate the strong commitment that WCS and its owner have to the current and future facilities.

The CISF will be located in Andrews County, Texas, adjacent to its current LLW facilities that were licensed as a 10 CFR Part 61 equivalent by Texas as an NRC Agreement State. WCS 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 a contract for storage of SNF with the DOE. Alternatively, the funding may include a combination of debt financing, equity investments, and net income. If debt and/or equity financing is used, it is anticipated to be needed only prior to construction. Net income is expected to provide the necessary capital once operations commence.

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 WCS 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

WCS currently operates a facility that treats, stores and disposes of hazardous wastes and LLW 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. 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 WCS' 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. WCS 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. WCS will obtain funds to operate the CISF pursuant to a contract with the DOE. WCS expects that the DOE will be its only customer for storage of 5,000 MTU of SNF. WCS shall not receive SNF until such a contract with the DOE is provided to the NRC as a condition of the license. A proposed license condition is provided in the 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.

WCS' 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 contract with the DOE as described in Section 1.7, *Exemption*, of the License Application. Alternatively, WCS may use a surety bond combined with a conformity external sinking fund as authorized by 10 CFR 72.(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.

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

WCS 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

WCS requests an exemption from the requirements specified in 10 CFR 72.30 *Financial Assurance and Recordkeeping for Decommissioning*. WCS is providing an alternative method of financial assurance that will guarantee the necessary funding for decommissioning the CISF authorized to store 5,000 MTU of SNF that is equivalent to the provisions of 10 CFR 72.30(e).

WCS is seeking a contract with the DOE that shall guarantee decommissioning funds will be provided for use by WCS. This contract shall require the DOE to pay the actual costs of decommissioning the facilities, equipment, storage systems, and land used to store 5,000 MTU of SNF at the CISF.

In the event that the DOE does not enter into contract to specifically guarantee that the funds shall be available for use by WCS to decommission said facilities, equipment, and land, then WCS 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. A proposed license condition is 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 WCS' 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, WCS' 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 5,000 MTU of SNF at the CISF will not pose an inimical impact to human health, property, or the common defense and security.

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 WCS will receive a specific license authorizing the receipt, and possession of spent nuclear fuel in accordance with the requirements 10 CFR 72 by June 2019. Construction of the Phase One of the facility shall commence in September 2019 and is expected to be completed within one year or on April 1, 2020. The construction and preoperational testing is expected to be completed allowing the first receipt of spent nuclear fuel no later than December 2020.

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:

J. Scott Kirk, CHP
Vice President of Licensing and Regulatory Affairs
Waste Control Specialists LLC
5430 LBJ Fwy, Three Lincoln Centre, Suite 1700
Dallas, Texas 75240

WASTE CONTROL SPECIALISTS LLC

Directors

April 2016

The business and affairs of WCS are managed by its sole member, Andrews County Holdings, Inc. The sole member exercises certain of its management duties through a Management Committee. The current members of the Management Committee are:

Rodney A. Baltzer, U.S. Citizen
5430 LBJ Fwy, Three Lincoln Center
Suite 1700
Dallas, Texas 75240

Bobby D. O'Brien, U.S. Citizen
5430 LBJ Fwy, Three Lincoln Center
Suite 1700
Dallas, Texas 75240

Steven L Watson, U.S. Citizen
5430 LBJ Fwy, Three Lincoln Center
Suite 1700
Dallas, Texas 75240

Principal Officers

Rodney L. Baltzer, U.S. Citizen
Chief Executive Officer and President
5430 LBJ Fwy, Three Lincoln Center
Suite 1700
Dallas, Texas 75240

J. Scott Kirk, CHP, U.S. Citizen
Vice President of Licensing and Regulatory Affairs
5430 LBJ Fwy, Three Lincoln Center
Suite 1700
Dallas, Texas 75240

Elicia B. Sanchez, U.S. Citizen
Senior Vice President and General Manager
998 West State Highway 176
Andrews, Texas 79714

CHAPTER 2

TECHNICAL QUALIFICATIONS

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

WCS 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. WCS has selected AREVA and NAC International as the vendors to provide the canister-based storage systems at the CISF. AREVA's dry cask storage systems described in the SAR include the TN NUHOMS®, Standardized NUHOMS®, Standardized Advanced NUHOMS®. The AREVA 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	Canister	Overpack
NUHOMS® MP187 Cask System	72-11 (SNM-2510)	FO-DSC	HSM (Model 80)
		FC-DSC	
		FF-DSC	
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	
NAC-UMS®	72-1015	Classes 1 thru 5	VCC
MAGNASTOR®	72-1031	TSC1 thru TSC4	CC1 through CC4

The CISF will be designed, engineered and constructed by WCS. WCS has significant experience in the design, licensing, construction and operations at its LLW Facilities in Andrews County, Texas. WCS has staff qualified in licensing, engineering, health physics, environmental science, nuclear operations, quality assurance, maintenance, administration and legal support.

Details of WCS' 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 up to 5,000 Metric Tons of Uranium (MTU) of spent nuclear fuel (including mixed-oxide (MOX) spent fuel) 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 WCS will be placed into dry cask storage. WCS 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 a minimum of 5,000 MTU, including small amounts of MOX fuel. WCS 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.

WCS anticipates only small quantities of LLW 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 WCS' radioactive waste disposal facilities pursuant to WCS' 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 in accordance with the format specified in 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. It was also prepared following NUREG-1567, *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	
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	
NAC-UMS®	72-1015	Classes 1 thru 5	VCC
MAGNASTOR®	72-1031	TSC1 thru TSC4	CC1 through CC4

THIS PAGE INTENTIONALLY LEFT BLANK

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.

Table 4-1, WCS Consolidated Independent Storage Facility Compliance with 10 CFR 72 Subpart F

WCS Consolidated Independent Storage Facility Compliance with General Design Criteria (10 CFR 72, Subpart F)		
10 CFR 72 SECTION	**TOPIC**	**APPLICABLE SAR SECTION**
72.122 (a)	Quality Standards	Quality Assurance Requirements are addressed in Section 1.4.4.3
72.122 (b)	Protection Against Environmental Conditions and Natural Phenomena	Extreme environmental conditions for the WCS CISF are defined in Chapter 2. The design criteria (Chapter 3) require the storage system be designed to withstand the design earthquake, high ambient temperature and extreme winds.
72.122 (c)	Protection Against Fires and Explosions	The design criteria (Chapter 3) require that the storage systems be designed so that it can continue to perform its safety function effectively under credible fire and explosion conditions. As discussed in Section 3.3.1.8 no large fire or explosion within the WCS CISF is considered credible.
72.122 (d)	Sharing of Structures, Systems, and Components	The storage system and the other WCS CISF support systems will not be shared with any other facilities, and WCS CISF activities will not impair any activities at the WCS waste disposal site.
72.122 (e)	Proximity of Sites	As demonstrated in the Chapter 4 of the Environmental Report Radiation levels at the site remain at background. The design and operation of the WCS CISF will result in minimal risk to the health and safety of the public. The WCS CISF is independent of operations at the WCS disposal sites and the URENCO National Enrichment facility. Chapter 9 of the SAR discusses radiation protection in detail.

WCS Consolidated Independent Storage Facility Compliance with General Design Criteria (10 CFR 72, Subpart F)		
72.122 (f)	Testing and Maintenance of Systems and Components	The design criteria require that the Storage Overpacks be design to permit inspection, maintenance and testing. Although the storage system requires minimal maintenance (Section 4.3.8), the design of the WCS CISF allows for appropriate testing, inspection and maintenance, if required.
72.122 (g)	Emergency Capability	Scenarios requiring emergency actions are not considered credible and are not postulated to occur (Section 3.3). However, emergency facilities and responses are described in the WCS Emergency Plan and are available, if needed (Section 13.5). The WCS Emergency Plan meets the requirements of 10 CFR 72.32.
72.122 (h)	Confinement Barriers and Systems	The design of the storage systems ensures that spent fuel cladding is protected from degradation during storage and that stored fuel is maintained in a safe condition (Section 3.3.3).
72.122 (i)	Instrumentation and Control Systems	No control systems are needed for the storage system to perform its safety function (Section 1.2). The parameters that affect the long-term safe storage of spent fuel are structural integrity of confinement, shielding, passive cooling (heat rejection) and criticality control. To ensure adequate thermal performance the Technical Specifications provides two methods to ensure the vents are working properly. There are no accident scenarios that require instrumentation or control system monitoring to verify safe operation of the WCS CISF.
72.122 (j)	Control Room or Control Area	The WCS CISF is a passive installation (Section 1.2), with no need for operator actions. No control room is needed for normal operations.
72.122 (k)	Utility or Other Services	There are no utility or emergency systems required to perform safety functions at the WCS CISF. Section 4.3 addresses auxiliary system requirements.
72.122 (l)	Retrievability	Only canisterized fuel and GTCC shipped to the site in accordance with 10 CFR 71 requirements will be stored at the site. Chapter 5 addresses how to retrieve the canisterized fuel and ship it off site.
72.124 (a)	Design for Criticality Safety	The design criteria (Section 3.3.5) require that the canisters be designed to maintain criticality subcriticality at all times. Chapter 10 demonstrates that this criterion is met for each of the authorized systems.

WCS Consolidated Independent Storage Facility Compliance with General Design Criteria (10 CFR 72, Subpart F)		
72.124 (b)	Methods of Criticality Control	The primary nuclear criticality safety design criterion is to provide design features that ensure that the fuel contained in the canisters remains subcritical under normal, off-normal and accident conditions (Chapter 10). The control methods for the prevention of criticality are discussed in the Chapter 10 and the associated appendices for each system.
72.124 (c)	Criticality Monitoring	Due to the criticality safety design of the canisters, no criticality monitoring of the systems is required (10.1.2)
72.126 (a)	Exposure Control	Operations at the WCS CISF are conducted in accordance with ALARA Procedures (Section 9.1). Minimal maintenance operations are needed following placement of the canisters into storage on the storage pad. Fuel is stored on the CISF Storage Pad and access is controlled by a double fence with locked gates.
72.126 (b)	Radiological Alarm Systems	No radioactive releases are considered credible at the WCS CISF, and no alarm systems are needed (Section 11.2).
72.126 (c)	Effluent and Direct Radiation Monitoring	Operation of the WCS CISF is not expected to result in radioactive contamination of any effluents (Section 9.6.2.1). No safety-related monitors are needed. Dosimeters will be used monitor direct radiation around the WCS CISF (Section 9.5).
72.126 (d)	Effluent Control	No radioactive releases are considered credible at the WCS CISF (Section 9.6.2.1)
72.128 (a)	Spent Fuel and GTCC LLW Storage and Handling Systems	The designs of the systems provide sufficient shielding (Chapter 9); maintain containment (Chapter 11) to maintain the spent fuel in a safe condition under all normal, off-normal and credible accident conditions. Any radioactive waste generated would be during transportation cask decontamination when the cask enters or leaves the Cask Handling Building (Section 1.3.1.4).
72.128 (b)	Waste Treatment	There are no radioactive waste streams requiring waste treatment (Section 1.3.1.4).
72.130	Criteria for Decommissioning	Operation of the WCS CISF is not expected to result in contamination of any WCS CISF components. Decommissioning considerations are discussed in Section 3.3.6.

THIS PAGE INTENTIONALLY LEFT BLANK

CHAPTER 5

OPERATING PROCEDURES - ADMINISTRATIVE AND MANAGEMENT CONTROLS

Procedures for operating the CISF will be developed under the Quality Assurance Program provided as an attachment to this License Application as Appendix C. 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.

THIS PAGE INTENTIONALLY LEFT BLANK

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 CISF Quality Assurance (QA) Program in accordance with 10 CFR § 72.24(n).

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. The QA Program is provided with this license application as Appendix C.

THIS PAGE INTENTIONALLY LEFT BLANK

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.

THIS PAGE INTENTIONALLY LEFT BLANK

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.

THIS PAGE INTENTIONALLY LEFT BLANK

CHAPTER 9

PHYSICAL PROTECTION

Pursuant to Subpart H of 10 CFR 72, Physical Protection, the WCS 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.

THIS PAGE INTENTIONALLY LEFT BLANK

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 WCS facility. 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 WCS 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, WCS 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 WCS CISF will utilize the NUHOMS® storage systems (AREVA TN) along with the NAC-MPC, NAC-UMS®, and MAGNASTORE® storage systems (NAC International). The facility will provide storage for up to 5,000 MTU.

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 WCS labor rates. WCS 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**

THIS PAGE INTENTIONALLY LEFT BLANK

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 reviewed by 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. The comments and WCS' resolutions are provided with this LA.

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. The WCS 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.

Outside of the WCS 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 WCS 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.

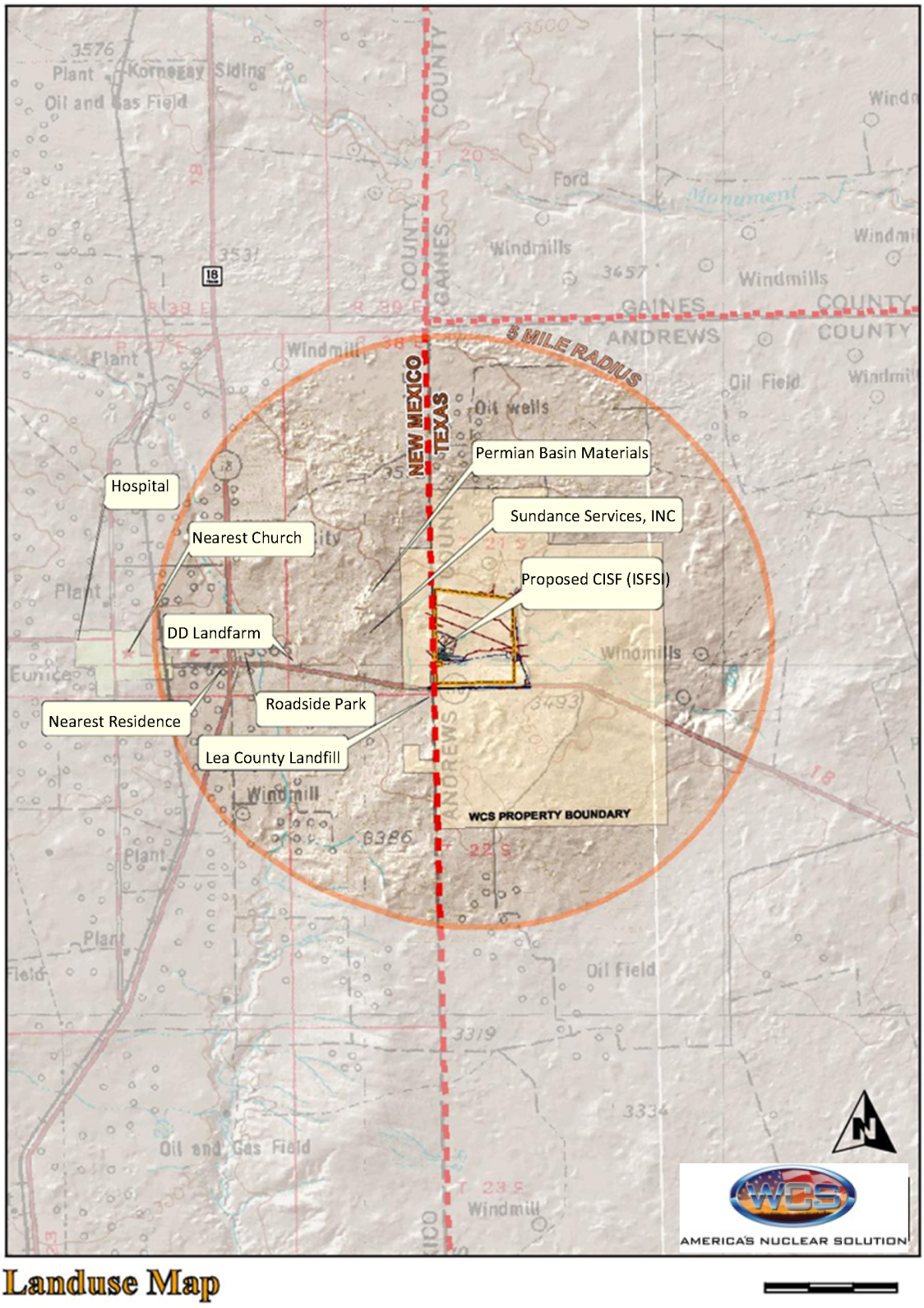


Figure 12-1, 5 Mile Radius Map

CHAPTER 13

PROPOSED LICENSE CONDITIONS

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

ATTACHMENT A

PROPOSED LICENSE CONDITIONS

AMERICA'S NUCLEAR SOLUTION

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. Waste Control Specialists LLC

2. Waste Control Specialists
Consolidated Interim Storage Facility
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 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, including any amendment; Table 1-1c or Table 1-1j or Table 1-1t of Certificate of Compliance No. 1004, including any amendment; Section 2.1 of Certificate of Compliance No. 1029, including any amendment; Section B 2.1 of Certificate of Compliance No. 1025, including any amendment; Section B 2.1 of Certificate of Compliance No. 1015, including any amendment; Sections 1.0 and 2.0 of Certificate of Compliance No. 1031, including any amendment, modified as described in paragraph 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, non-fuel 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 metals comprised of miscellaneous solid waste resulting from segmentation and decommissioning processes.	B. Any amount 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 Waste Control Specialists Consolidated Interim Storage Facility (WCS CISF), as described in the WCS CISF Safety Analysis Report (SAR),Revision 0 and as may be further supplemented and amended in accordance with 10 CFR 72.70 and 10 CFR 72.48. Storage is authorized only in canisters referenced in the 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. Pursuant to 10 CFR 72.7, the licensee is hereby exempted from the provisions of 10 CFR 72.102(f)(1) regarding the seismic design criteria of 10 CFR Part 100, Appendix A. The exemption to 10 CFR 72.102(f)(1) allows the licensee to use a Probabilistic Seismic Hazards Analysis methodology to calculate the design earthquake values to be used in the facility design.

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 0, 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 0, 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 0, 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 0, 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 not commence operation of the WCS CISF until the United States Department of Energy signs an agreement with the Licensee that the federal government will 1) retain or assume all right, title, and interest in the material identified in 6.A., 6.B, 7.A or 7.B throughout the storage term for all material accepted at the WCS CISF and 2) pay for costs incurred and services provided for storage of the material during the entire duration it is stored at the WCS CISF.

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 WCS in the WCS 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 spent fuel 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.

23. Prior to commencement of operations, the licensee shall have an executed contract with the U.S. Department of Energy (DOE) stipulating that the DOE is responsible for funding operations required for storing Spent Nuclear Fuel at the CISF as licensed by the U.S. Nuclear Regulatory Commission.

24. Prior to receipt of Spent Nuclear Fuel, the licensee shall have a financial assurance instrument required pursuant to 10 CFR 72.30 approved the U.S. Nuclear Regulatory Commission.

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

FOR THE NUCLEAR REGULATORY COMMISSION

Michele M. Sampson, Chief
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

WASTE CONTROL SPECIALISTS LLC

CONSOLIDATED INTERIM SPENT FUEL STORAGE FACILITY
LICENSE APPLICATION

APPENDIX A
PROPOSED TECHNICAL SPECIFICATIONS

AMERICA'S NUCLEAR SOLUTION

DOCKET 72-1050

ANDREWS COUNTY, TEXAS

PROPOSED

MATERIALS LICENSE No. SNM-1050

APPENDIX A

WCS 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 STATION (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.)
WASTE CONTROL SPECIALISTS, LLC (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

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, including any amendment.

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 any amendment.

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 any amendment.

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 any amendment.

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 any amendment.

2.1.6 Section B 2.1 (NAC-UMS System) of Certificate of Compliance 1015 Appendix B Technical Specification For The NAC-UMS System Approved Contents and Design Features, including any amendment.

2.1.7 Section 1.0 and 2.0 (MAGNASTOR System) of Certificate of Compliance 1031 Appendix B Technical Specification For The MAGNASTOR System Approved Contents, including any amendment.

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 can't 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 TRANSPORT 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 UMS® 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 AND	Immediately
	A.2 Initiate the MAGNASTOR TRANSFER CASK active cooling system. AND	Immediately
	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 TRANSPORT 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 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 5,000 MTU. 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, 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 requirements of NUREG-0554, “Single-Failure-Proof Cranes for Nuclear Power Plants,” May 1970 and NUREG-0612.

- The VCT with CANISTER lifting devices used with the CTS shall be designed, fabricated, operated, tested, inspected and maintained in accordance with NUREG-0612, Section 5.1.

5.0 ADMINISTRATIVE CONTROLS

5.1 Programs

WCS 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 with 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 SRC 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

AMERICA'S NUCLEAR SOLUTION

TABLE OF CONTENTS

THIS PAGE INTENTIONALLY LEFT BLANK

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 Waste Control Specialist (WCS) Consolidated Interim Storage Facility (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.

THIS PAGE INTENTIONALLY LEFT BLANK

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 is 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 facility will be operated as a “clean” facility. Residual radioactive contamination is not anticipated at the WCS facility for several reasons:

- Canisters are surveyed and decontaminated at the generator facility to ensure the outer surfaces are clean before shipment to WCS.
- Canisters are welded shut and sealed to prevent leaks.
- Canisters will not be opened during transport to WCS or during storage at the WCS facility 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 components:

- 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

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 WCS 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 WCS. 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, WCS assumes some contamination will be present.

2.4 Decommissioning Organization

Successful planning and execution of the decommissioning plan will include utilizing individuals within the WCS organization. In addition to WCS staff, many of the decommissioning activities will be performed by contractors. The Final Decommissioning Plan will provide information on WCS 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

WCS 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.

THIS PAGE INTENTIONALLY LEFT BLANK

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 facility. 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 is removed and the CISF is no longer being used for its principal licensed purpose, WCS 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 DOE transfers spent nuclear fuel from the facility.

4.3 CISF Description

The WCS CISF will utilize the NUHOMS® storage system (AREVA TN) along with the MAGNASTORE®, NAC-UMC® 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 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. No other waste is generated by the facility. Canisters are only accepted at the facility after a radiological survey has determined that they are free from contamination.

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 current WCS labor rates. WCS 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 Transfer Building

The methods used to estimate the time required for survey activities are based on current WCS 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 WCS 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 are loaded at the generating reactor facility. Procedures are implemented by the spent fuel generators to ensure loading operations occur without contamination remaining on the exterior of the canister. Before the canisters arrive and are accepted at WCS, they are surveyed to verify that any contamination on the canister is below acceptable limits. Once at WCS for storage, sealed canisters are not opened. Therefore, canisters arriving at the WCS site 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. In addition to engineered controls, the facility will be constantly monitored for any releases.

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 WCS, 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.

THIS PAGE INTENTIONALLY LEFT BLANK

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.”

THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX C

QUALITY ASSURANCE PROGRAM DESCRIPTION

AMERICA'S NUCLEAR SOLUTION

AMERICA'S NUCLEAR SOLUTION

Quality Assurance Program Description

(QAPD-400)

Rev. 1

(Quality Assurance Program for Consolidated Interim Spent Fuel Storage Facility and the Packaging and Transportation of Radioactive Materials)

Effective Date: _____

PROGRAM APPROVALS:		
Jeff Shouse		2/29/16
DIRECTOR OF QUALITY ASSURANCE	DIRECTOR OF QUALITY ASSURANCE (signature)	DATE
Elicia Sanchez		3/1/16
SR. VICE PRESIDENT/GENERAL MANAGER	SR. VICE PRESIDENT/GENERAL MANAGER (signature)	DATE
Rodney Baltzer		3/1/16
CEO/PRESIDENT	CEO/PRESIDENT (signature)	DATE

Table of Contents

Contents

i REVISION RECORD

Rev	Date	Section	Description
0	09/08/2015	NA	Original Document Issue
1	02/19/2016	Various	Incorporate initial review comments from NRC

ii QUALITY ASSURANCE POLICY AND AUTHORITY STATEMENT

The Quality Assurance Program Description (QAPD) herein has been developed by Waste Control Specialists LLC (WCS) to direct important to safety and quality related activities at the WCS Consolidated Interim Storage Facility (CISF). This QA Program complies with Title 10, Code of Federal Regulations, Part 72, Subpart G, "Quality Assurance for Independent Storage of Spent Nuclear Fuel and High-Level Radioactive Waste."

In addition to 10 CFR 72 activities, this QA Program applies to activities covered by 10 CFR 71, Subpart H, "Quality Assurance for Packaging and Transportation of Radioactive Material," This document also implements the requirement of the American Society of Mechanical Engineers (ASME) NQA-1-2008/2009 Addendum. Although not applicable, this document meets the requirements outlined within Title 10, Code of Federal Regulations, Part 50, Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants." and the American National Standards Institute.

The Quality Assurance Program applies to all activities affecting quality and includes quality assurance requirements that apply to design, purchase, fabrication, handling, shipping, storing, cleaning, assembly, inspection, testing, operation, maintenance, repair, modification of structures, systems and components of storage and transport systems for spent fuel and radioactive materials to include decommissioning that are classified as important to safety or safety related.

WCS personnel who perform quality related and important to safety functions are responsible for complying with the requirements of this QA Program.

Changes to the QA Program shall be documented and approved by the Director of Quality Assurance, Sr. Vice President/General Manager and the CEO/President.

The authority to administer the WCS QA Program is assigned to the WCS Quality Assurance Director.

All matters concerning quality that cannot be resolved at the normal organizational interfaces shall be referred to me for final resolution.

This program has my complete support and is to be followed at all times. Compliance with the requirements of the WCS QA program is mandatory.

Rodney A. Baltzer

WCS CEO/President

iii INTRODUCTION

Waste Control Specialists LLC (WCS) proposes the development and operation of a Consolidated Interim Storage Facility (CISF) to be operated in accordance with Title 10 of the Code of Federal Regulations (CFR), Part 72, to receive and provide long term storage capabilities to the commercial nuclear industry. Additionally, WCS shall have the ability to perform services associated with the use and management of NRC approved Type B packaging.

This Quality Assurance Program Description (QAPD) describes the quality assurance program requirements that apply to activities affecting quality associated with the site investigation, design, licensing, procurement, construction and decommissioning, fabrication, handling, shipping, cleaning, assembly, inspection, modification, testing, operation, repair, lease and maintenance of storage and transportation systems for spent fuel and radioactive materials which are classified as important to safety or safety related and subject to the requirements of 10 CFR Part 71 Subpart H, 10 CFR Part 72 Subpart G, ASME NQA-1 2008/2009 Addendum and associated Nuclear Regulatory Commission (NRC) Certificate(s) of Compliance (CoCs).

This QAPD applies to the following WCS locations and other service locations when required by customer contract provisions:

Waste Control Specialists LLC
9998 W. State Hwy 176
Andrews, TX 79714

WCS retains the responsibility for the implementation and overall effectiveness of the QA Program. Requirements of the QA Program will utilize controlled and approved procedures to implement program requirements.

1.0 ORGANIZATION

1.1 The Chief Executive Officer (CEO)/President is the executive in charge of managing all WCS functional areas to include those actions necessary to comply with the applicable requirements of 10 CFR Part 71 Subpart H, 10 CFR Part 72 Subpart G, 10 CFR Part 50, Appendix B, and ASME NQA-1.

1.2 The WCS CEO/President establishes the basic policies of the WCS QAPD. The requirements described in this QAPD and implementing documents are transmitted to all levels of management through the use of controlled documents.

1.3 The WCS CEO/President is the highest level of management responsible for the WCS QA policies, goals and objectives. Those reporting to the CEO/President who have quality affecting responsibilities are the: Vice President of Licensing and Regulatory Affairs; Sr. Vice President / General Manager (Sr. VP/GM); and Director of Quality Assurance (DQA).

1.4 Responsibility and authority for developing, maintaining and verifying proper implementation of the QAPD is assigned to the Director of Quality Assurance. Each organization within WCS is responsible for implementation of the program for their respective scope of responsibility.

1.5 The organizational structure, functional responsibilities, levels of authority and lines of communication for activities affecting quality are documented.

1.6 The Vice President of Licensing and Regulatory Affairs is responsibile for implementing document control activities subject to the requirements of the QA Program, is responsible for the facility's license and has the authority and reporting responsibility as Responsible Officer associated with 10 CFR Part 21.

1.7 The Sr. VP/GM is responsible for the overall operation and administration of the facility. The Sr. VP/GM is responsible for ensuring that all activities are conducted within the limitations of the facility's license and in compliance with applicable federal and state regulations.

1.8 The VP of Operations is responsible for scheduling of project personnel, site work activities, operations, maintenance, project management functions, and reporting performance data to the Sr. VP/GM as well as responsibilities over site engineering activities.

1.9 The DQA reports to the CEO/President and has overall responsibility for the implementation of the QA Program. This responsibility includes setting priorities, objectives, and ensuring activities subject to the requirements of the QAPD are performed in accordance with the QA Program and implementing procedures. The DQA is independent of cost and schedule considerations and has direct access to the WCS CEO/President.

1.10 The DQA has the authority to shut down or suspend any operation or activity. Resumption of any activity shut down or suspended by the DQA shall require the approval of the DQA.

1.11 The DQA is responsible for developing and maintaining the QA Program. The DQA is responsible for; administering the corrective action program, ensuring QA staff is appropriately qualified, conducting audits, surveillances and inspections to verify activities are conducted in accordance with QAPD requirements, initiating corrective action requests when conditions or significant conditions adverse to quality are identified by QA staff and periodically reporting to the CEO/President and the Sr. VP/GM on the status and effectiveness of the program. The DQA and the Quality Assurance organization have:

1.11.1 Sufficient authority and organizational freedom to identify quality problems, require that corrective action be taken and verify corrective action effectiveness.

1.11.2 Sufficient independence from cost and schedule considerations.

1.11.3 The authority to stop unsatisfactory work and prevent its further processing, installation, use or delivery.

1.11.4 Sufficient expertise and training in the field of Nuclear Quality Assurance to enable them to assess the quality functions in accordance with the applicable regulatory criteria, codes and standards invoked by the QA Program. Records will be maintained to document qualifications of the Quality Assurance personnel where required.

1.12 The Radiation Safety Officer (RSO)/Director of Health and Radiation Safety reports to the Sr. VP/General Manager and is responsible for ensuring compliance to WCS' Radioactive Materials License(s) along with State and Federal regulations related to radiological safety. The Radiation Safety Officer (RSO)/Director of Health and Radiation Safety has a direct line of communication with the CEO/President.

1.13 The Director of Contracts and Administrative Services reports to the VP of Legal Services (who reports to the CEO/President) and is responsible for records management and quality related purchasing activities, negotiating contracts and issuing procurement documents in support of engineering, fabrication, maintenance, test and other activities associated with storage and transportation systems and other related activities subject to the requirements of the QA Program.

1.14 The Training Manager reports to the Sr. VP/GM and is responsible for staff training and improvement initiatives focused on improving performance across the WCS organization.

1.15 The WCS Director of Engineering, reports to the VP of Operations and is responsible for design control and configuration management activities subject to the requirements of the QA Program.

1.16 The Manager of Facility Compliance reports to the Vice President of Licensing and Regulatory Affairs and has the day-to-day responsibility of ensuring site compliance with all licensing requirements.

1.17 The Director of Logistics and Transportation (DLT) reports to the Sr. VP Planning & Business Development (who reports to the CEO/President). The DLT is responsible for Field Services & Operations and Fleet Asset Management functions associated with storage / transportation systems and other related activities subject to the requirements of the QA Program.

1.18 Management assigned responsibility for performing activities, may delegate the performance of their assigned duties to qualified individuals, to include contractors, but shall retain the responsibility for their assigned activities.

1.19 The WCS organization for quality affecting activities is included as Figure 1 in Section 20.0 of this QAPD.

2.0 QUALITY ASSURANCE PROGRAM

2.1 General

2.1.1 WCS has established a QAPD consistent with the regulations and codes defined in this manual for the control of activities affecting quality in the areas of site investigation, design, licensing, procurement, construction, decommissioning, fabrication, handling, shipping, cleaning, assembly, inspection, modification, testing, operation, repair, lease and maintenance of storage and transportation systems for spent fuel and radioactive materials which are classified as important-to-safety or safety-related. The program ensures activities affecting quality are accomplished under suitable controlled conditions for accomplishing the activity, such as adequate cleanliness and that prerequisites for given activities are satisfied.

2.1.2 The QA program is comprised of this QAPD, the Quality Assurance Program and the associated implementing procedures, all of which are designed and administered to meet the applicable requirements of 10 CFR Part 71 Subpart H, 10 CFR Part 72 Subpart G, 10 CFR Part 50, Appendix B and ASME NQA-1.

2.1.3 The QAPD utilizes the guidance provided in United States Nuclear Regulatory Commission (NRC) Regulatory Guide 7.10 and NRC NUREG/CR-6407 for implementing program requirements for activities subject to the requirements of 10 CFR Part 71 and 10 CFR Part 72 in a graded fashion commensurate with safety significance.

2.1.4 The Statement of Quality Policy and Authority directs all employees working on important-to-safety or safety-related activities and related quality affecting activities to comply with the provisions of the QAPD.

2.1.5 The Statement of Quality Policy and Authority directs that the applicable provisions of the QAPD be applied to activities affecting quality being performed at approved supplier locations for important-to-safety or safety-related items and services subcontracted by WCS.

2.1.6 WCS commits to complying with the provisions of 10 CFR Part 21.

2.1.7 More specific details or methods of implementing QAPD requirements are defined within the associated Quality Assurance Program and implementing procedures. Applicability of other quality standards, unique customer or project requirements, or other contract considerations may dictate the need to address unique project requirements that are not specifically covered by implementing procedures. These requirements or considerations are defined during the project planning process and implemented with project specific procedures, instructions or drawings.

2.1.8 Requirements for the review, approval, and control of implementing procedures, project plans and project specific procedures, instructions or drawings are defined in these implementing procedures.

2.1.9 Controls are established for activities affecting the quality of the identified CISF structures, systems, and components to an extent commensurate with the importance to safety, and as necessary to ensure conformance to the approved CISF design.

2.1.10 Quality Assurance requirements and procedures are based on the following considerations concerning the complexity and proposed use of the CISF structures, systems, or components:

- The impact of malfunction or failure of the item on safety
- The design and fabrication complexity or uniqueness of the item
- The need for special controls and surveillance over processes and equipment
- The degree to which functional compliance can be demonstrated by inspection or test
- The quality history and degree of standardization of the item

2.2 Preparation and Control of the QAPD

2.2.1 This QAPD provides for the planning and accomplishment of activities affecting quality for items and services classified as important-to-safety or safety-related in a controlled manner.

2.2.2 This QAPD and revisions thereof are approved by the Sr.VP/GM, DQA and the WCS CEO/President.

2.2.3 This QAPD and all revisions thereof are subject to review and approval by the NRC. Following NRC approval, the implementation date is identified as the Effective Date on the cover of the QAPD.

2.3 Management Review of Quality Assurance Program

2.3.1 The DQA regularly evaluates the QA Program for adherence to baseline commitments in scope, implementation and effectiveness. The DQA informs the CEO/President, Sr. VP/GM and other responsible senior management personnel annually of the status and adequacy of the QA Program implementation. Management of other organizations participating in the Quality Assurance program shall regularly review the status and adequacy of that part of the program which they are executing.

2.3.2 Annually, a Management Audit of the QA organization is conducted by an organization independent of the WCS QA organization. An audit team appointed by the CEO/President performs the audit. The purpose of this audit is to assess the adequacy and effectiveness of those parts of the QAPD for which the QA organization is responsible. The audit report is transmitted to management for correction of any observed deficiencies.

2.4 Indoctrination and Training

2.4.1 Procedures shall be implemented to ensure QA Program indoctrination training is provided for employees who perform quality-affecting activities related to items and services classified as important-to-safety or safety-related. Measures have been established to:

2.4.1.1 Identify personnel performing activities affecting quality

2.4.1.2 Define indoctrination and training requirements

2.4.1.3 Define documentation requirements

2.4.2 When necessary, training in project unique quality requirements is provided by the appropriate Project Manager or other individuals knowledgeable in the subject matter. This training is conducted in accordance with approved procedures.

2.4.3 When required by applicable codes and standards, personnel are appropriately qualified and certified in accordance with approved procedures.

2.4.4 Training and/or evaluation of personnel qualifications are required for all QA functions in accordance with written procedures. WCS' training program requires that employees who participate in QA Program activities receive training commensurate with their involvement in those activities. Personnel performing test and inspection activities are qualified in accordance with written procedures.

2.4.5 Records of training, qualification and certification are maintained in accordance with the approved procedures to demonstrate compliance with training requirements.

2.4.6 Personnel performing audit activities are qualified in accordance with approved procedures. Personnel who are designated as Lead Auditors are certified by the DQA after confirmation that they meet applicable requirements for qualification. All records of personnel training, qualification and certification, including previous certifications used in support of current qualifications, are retained as QA Records. Capability demonstrations (tests) of Lead Auditors are documented.

3.0 DESIGN CONTROL

3.1 This section establishes the requirements to assure structures, systems and components are designed, added, deleted or modified in accordance with applicable regulatory requirements, codes and standards.

3.2 The design control process shall be implemented in accordance with written procedures. Design input and criteria are translated into specifications, drawings, procedures, calculations, instructions and procurement documents prepared and reviewed by qualified personnel. Design inputs include the design basis, regulatory requirements, applicable codes and standards and quality assurance requirements.

3.3 Design control procedures shall be prepared to describe and control the design and any changes from inception through final approval, release, distribution and implementation. The procedures shall provide identification and control of design interfaces and for coordination among participating design organizations. The procedures shall provide for the review of items such as: stress, hydraulic, thermal, criticality physics, radiation, shielding, accident analyses, compatibility of materials, accessibility for inspection, maintenance, repair, features to facilitate decontamination and delineation of acceptance criteria for inspections and tests. The procedure shall provide for a design review by qualified personnel other than those performing the design.

3.4 Any design change or field change shall be subjected to the same design control measures as specified for the original design.

3.5 Procedures shall be established to control design and licensing activities to ensure that:

3.5.1 Design and licensing activities are planned, controlled and documented.

3.5.2 Regulatory requirements, design requirements and appropriate quality standards are correctly translated into specifications, drawings and procedures.

3.5.3 Competent engineering personnel, independent of design activities, perform design verification. Verification may include design reviews, alternate calculations or qualification testing. Qualification tests are conducted in accordance with approved test programs or procedures under the most adverse design conditions.

3.5.4 Design interface controls are established and adequate.

3.5.5 Design, specification and drawing changes are reviewed and approved in the same manner as the original issue. In cases where a proposed design change potentially impacts licensed conditions, ensure through procedural controls that licensing considerations are reviewed and complied with or otherwise reconciled by obtaining a revision to an existing NRC Certificate of Compliance or Competent Authority Certification for Radioactive Material Packages or evaluating the change in accordance with the requirements of 10 CFR Part 72.48 for Spent Fuel or High Level Waste and Greater than Class C Storage Casks and obtaining an amendment to the NRC Certificate of Compliance for the Storage Casks when determined necessary.

3.5.6 Design errors and deficiencies are documented, corrected and action is taken to prevent recurrence when determined necessary.

3.5.7 Design organization(s) and their responsibilities and authorities are delineated and controlled through written procedures.

3.6 Materials, parts, equipment and processes essential to the function of items that are important-to-safety or safety-related are selected and reviewed for suitability of application.

3.7 Computer programs used for design analysis or verification are controlled in accordance with approved procedures. These procedures provide for verification of the accuracy of computer results and for the assessment and resolution of reported computer program errors.

4.0 PROCUREMENT DOCUMENT CONTROL

4.1 Procedures shall be implemented to ensure that procurement documents are prepared to clearly define applicable technical and quality requirements including codes, standards, regulatory requirements, commitments and contractual requirements. These documents serve as the principal documents for the procurement of structures, systems and components, and related services for use in the design, fabrication, maintenance, and operation, inspection, testing and leasing of storage / transportation systems and other items subject to the requirements of the QA Program.

4.2 Procurement activities are performed in accordance with procedures that establish requirements for preparation, review, approval and control of procurement documents. Revisions to procurement documents that involve changes to technical and quality requirements receive the same level of approval as originally required.

4.3 The assignment of quality requirements to procurement documents for important-to-safety and safety-related items and services is administered and controlled in accordance with procedures. These procedures require consideration of the applicable provisions of 10 CFR Part 71 Subpart H, 10 CFR Part 72 Subpart G and other regulations, codes, or standards as appropriate for the scope of the procurement.

4.4 WCS procurement documents require suppliers to pass on appropriate quality assurance program requirements to sub-tier suppliers.

4.5 WCS procurement documents include provisions that require suppliers to either maintain or supply those QA records that provide evidence of conformance to the procurement documents. Additionally, procurement documents designate those supplier documents required for submittal to WCS for review and/or approval.

4.6 WCS procurement documents include requirements for the right of access to supplier facilities for the purposes of audit, surveillance or inspections as determined necessary by WCS.

4.7 When applicable, WCS procurement documents include the reporting requirements of 10 CFR Part 21 for the Reporting of Defects and Noncompliance.

5.0 INSTRUCTIONS, PROCEDURES AND DRAWINGS

5.1 Procedures shall be implemented to ensure activities affecting quality are controlled in accordance with appropriate instructions, procedures and drawings necessary for complying with the applicable criteria of 10 CFR Part 71 Subpart H, 10 CFR Part 72 Subpart G for items and services classified as important-to-safety or safety-related.

5.2 Instructions, procedures and drawings are developed, reviewed, approved, utilized and controlled in accordance with the requirements of approved procedures. These instructions, procedures and drawings include appropriate quantitative and qualitative acceptance criteria.

5.3 Changes to instructions, procedures and drawings, receive the same level of review and approval as originally required.

5.4 Compliance with these approved instructions, procedures and drawings is mandatory for all personnel performing activities subject to the requirements of the QA Program.

6.0 DOCUMENT CONTROL

6.1 Procedures shall be implemented to control the issuance of documents that prescribe requirements for activities affecting quality associated with items or services classified as important-to-safety or safety-related to ensure adequate review, approval, release, distribution and use of documents and their revisions. Controlled documents may include, but are not limited to:

- Design documents (e.g., computer codes)
- Procurement documents
- Modification procedures
- Inspection procedures
- Nonconformance reports
- Design change requests
- Corrective action reports
- Design specifications
- Design and fabrication drawings
- Special process specifications and procedures
- QA Program
- Operations, Maintenance and Test procedures

6.2 Changes to documents, which prescribe requirements for important-to-safety or safety-related activities, are reviewed and approved by the same organization that performed the initial review and approval or by qualified responsible organizations.

6.3 Documents that prescribe requirements for important-to-safety or safety-related activities are reviewed and approved for technical adequacy and inclusion of appropriate quality requirements prior to approval and issuance.

6.4 Measures are taken to ensure only current documents are available at the locations where important-to-safety or safety-related activities are being performed. Access to documents stored electronically shall be controlled to ensure that the latest versions are available and changes are properly authorized and implemented. The software and hardware systems used to store electronic information shall be reliable and secure to avoid alteration or corruption of the information. These measures include controls for electronic records when appropriate.

7.0 CONTROL OF PURCHASED MATERIAL, EQUIPMENT AND SERVICES

7.1 Procedures shall be implemented to ensure that purchased material, equipment and services, whether purchased directly or through contractors and subcontractors, conform to procurement documents.

7.2 Procurement documents are reviewed and approved by authorized personnel for acceptability of proposed suppliers based on the quality requirements of the items/services being purchased.

7.3 WCS and its designees who subcontract activities affecting quality (e.g., design, site characterization) to others (e.g., NDE contractors, consultants and engineering firms) shall ensure that procurement documents include applicable regulatory requirements and QA program attributes. WCS shall ensure audits of contractor activities ensure establishment and implementation of each QA program attribute in accordance with program requirements.

7.4 WCS shall ensure procurement documents include the reporting requirements of 10 CFR Part 21 for the Reporting of Defects and Noncompliance where applicable.

7.5 When purchasing commercial calibration and testing services subject to the requirements for commercial-grade dedication, procurement documents shall include necessary technical and quality requirements based on NRC endorsed industry guidance.

7.6 Approved suppliers are listed on the Approved Suppliers List (ASL) for the items and/or services they provide. The ASL is controlled in accordance with approved procedures.

7.7 As required, audits and/or surveys are conducted to determine supplier approval. These audits/surveys are based on one or all of the following criteria:

7.7.1 The suppliers' capability to comply with the requirements of 10 CFR Part 71 Subpart H, 10 CFR Part 72 Subpart G, and other regulations, codes or standards that are applicable to the scope of work to be performed.

7.7.2 A review of previous records to establish the past performance history of the supplier.

7.7.3 A survey of the suppliers' facilities and review of the supplier's QA Program to assess the adequacy and verify implementation of quality controls consistent with the requirements being invoked.

7.8 Controls are established to require that QA program users review procurements of replacement parts important to safety to ensure that appropriate technical and QA requirements are included in purchase orders and that the purchase orders are placed with suppliers previously qualified during packaging fabrication. If replacement parts are purchased from suppliers not previously identified as qualified sources, the QA program user shall ensure that the replacement parts meet requirements at least as stringent as the original criteria.

7.9 Qualified personnel conduct audits and surveys. Audit/survey results are documented and retained as Quality Assurance Records. Suppliers are re-audited and/or re-evaluated at planned intervals to verify they continue to comply with quality requirements and to assess the continued effectiveness of their QA Program. Additionally, periodic evaluations are performed of supplier quality activities to verify implementation of their QA Program.

7.10 Suppliers are required to provide objective evidence that items or services provided meet the requirements specified in procurement documents prior to installation or use of the material and equipment. Items are properly identified to appropriate records that are available to permit verification of conformance with quality and technical requirements outlined within the procurement documents. Any procurement requirements not met by suppliers are reported to WCS for review and approval. These conditions are reviewed by technical and quality personnel to ensure that they have not compromised the quality of the item or service.

7.11 Periodic surveillance of supplier in-process activities is performed at intervals consistent with the importance, complexity and quantity of the product or service provided, to verify supplier compliance with the procurement documents. When necessary, the need for surveillance is noted in approved quality or project planning documents, and surveillances are performed and documented in accordance with approved procedures. Personnel performing surveillance of supplier activities are trained and qualified in accordance with approved procedures.

7.12 Procedures shall establish measures to ensure the proper disposition of items or services that do not meet procurement requirements. These measures shall include evaluation of nonconforming items categorized by the supplier, along with technical justification and recommended disposition (e.g., “use as is” or “repair”) as applicable.

7.13 Controls are established to ensure that suppliers furnish records that identify material or equipment and the specific procurement requirements (e.g., codes, standards, and specifications met by the items); any procurement requirements that have not been met, along with a description of those nonconformances designated “use as is” or “repair”; supplied material and equipment meets the applicable procurement requirements before installation or use; appropriate documentation, as identified in the purchase order, which will accompany the NRC-approved packaging during transport and be received at the destination by the user.

7.14 Where pertinent documentation is in an electronic format, WCS shall maintain information on the specific software applications and storage or computing hardware used to prepare and deliver the documentation.

7.15 Quality planning for the performance of source surveillance, test, shipping and/or receiving inspection activities to verify compliance with approved design and licensing requirements, applicable regulatory criteria, procurement document requirements or contract specifications is performed in accordance with approved procedures.

7.16 For commercial "off-the-shelf" items or services, where specific quality controls appropriate for nuclear applications cannot be imposed in a practical manner, additional quality verification is performed to the extent necessary to verify the acceptability and

conformance of the items to procurement document requirements. When dedication of a commercial grade item or service is required for use in an important-to-safety or a safety-related application, such dedication is performed in accordance with approved procedures.

8.0 IDENTIFICATION AND CONTROL OF MATERIALS, PARTS AND COMPONENTS

8.1 Procedures shall be implemented to identify and control materials, parts and components. These procedures ensure identification of items by appropriate means during fabrication, installation and use of the items and prevent the inadvertent use of incorrect or defective items.

8.2 Requirements for identification are established during the preparation of procedures and specifications. An identification system shall be used which includes use of part numbers, serial numbers, purchase order numbers or other means of identification to ensure control of materials, parts and components.

8.3 Methods and location of identification are selected so as not to adversely affect the fit, function or quality of the items being identified.

8.4 Methods of identification shall provide for traceability.

8.5 Use of items having limited shelf or operating life are controlled.

8.6 Physical identification shall be used to the maximum extent possible relating items to applicable documentation. Identification shall be on the item or on records traceable to the item. Where physical identification is impractical, physical separation, procedural control or other appropriate means shall be employed.

9.0 CONTROL OF SPECIAL PROCESSES

9.1 This section establishes the measures to assure special processes used in the fabrication, maintenance and inspection of storage / transportation systems and other items subject to the requirements of the QA Program, are controlled and accomplished by qualified personnel using qualified procedures in accordance with applicable codes, standards, specifications, criteria and other special requirements.

9.2 Special processes shall be planned through items such as documented work instructions, defining the sequence of operations, special environments, suitable equipment and criteria for workmanship standards. Process controls shall be established to ensure characteristics are maintained within specified requirements.

9.3 Each special process shall be performed in accordance with instructions, procedures, drawings, checklists or other appropriate means. Measures will be taken to ensure process parameters are controlled and environmental conditions such as temperature, humidity and cleanliness are maintained.

9.4 The written procedures for special processes shall specify the qualifications of personnel, the proper equipment to be used and control of materials and supplies in accordance with applicable codes, standards, specifications and other special requirements.

9.5 Equipment used for accomplishing special processes shall be calibrated, maintained, stored, handled and issued in accordance with applicable procedures.

9.6 Personnel shall be qualified to ensure proficiency in the special skills required for the process. The knowledge and capabilities required of personnel performing special processes shall be delineated in written instructions, including requirements for periodic evaluations of continuing proficiency.

9.7 Records of procedure and personnel qualifications are maintained as QA Records.

10.0 INSPECTION

10.1 WCS shall implement a program of inspection or surveillance to verify material, parts and processes, classified as important-to-safety or safety-related and quality affecting activities, conform to documented and approved procedures, drawings and specifications as applicable.

10.2 WCS shall implement a program of inspection or surveillance to ensure final inspections provide for resolution of nonconformances identified in earlier inspections; the inspected item is identifiable and traceable to specific records and is adequately protected from physical or environmental damage; supervisors review inspection records to verify that all inspection requirements have been satisfied.

10.3 WCS shall implement a program of inspection or surveillance to ensure adequate maintenance of Part 71 packaging which identifies items to be maintained, acceptability criteria, replacement criteria and the frequency that each item requires inspection.

10.4 Personnel performing inspection and surveillance activities are trained and qualified in accordance with approved procedures.

10.5 Inspections and surveillances are performed by individuals other than those who performed or supervised the subject activities.

10.6 Inspection or surveillance and process monitoring are both required where neither one by itself will not provide assurance of quality.

10.7 Inspection and surveillance activities are performed in accordance with written instructions and the results documented and maintained as QA records.

10.8 Mandatory inspection hold points, which require witnessing or inspecting an activity before processing, shall be indicated in the appropriate procedures or specifications.

10.9 Inspection requirements shall apply to all activities whether performed by company personnel or contractor personnel; and shall require approved inspection procedures and instructions delineating inspection methods, characteristics, drawings and documentation requirements are provided prior to commencing inspection activities.

10.10 Inspection requirements governing modifications, repairs and replacement shall be in accordance with the original design and inspection requirements or, as amended, by approved changes to the original design.

10.11 If direct inspection of processed material or products cannot be carried out, indirect control by monitoring processing methods, equipment and personnel must be provided.

10.12 Procedures shall be developed and implemented to control accepted items until they are placed in stock or released for use, as well as provisions for the proper disposition of rejected items.

11.0 TEST CONTROL

11.1 Procedures shall be implemented to ensure tests; acceptance and/or operational tests required by specifications, drawings, procurement documents and regulatory requirements are performed and appropriately controlled.

11.2 Test personnel have appropriate training and are qualified for the level of testing they are performing. Personnel are qualified in accordance with approved instructions or procedures.

11.3 Tests are performed by qualified personnel in accordance with approved instructions, procedures and/or checklists that contain or reference the following information, as applicable:

11.3.1 Acceptance criteria contained in the applicable test specifications, or design and procurement documents

11.3.2 Instructions for performance of tests, including environmental conditions

11.3.3 Test prerequisites such as test equipment and instrumentation requirements, personnel qualification requirements, fabrication or operational status of the items to be tested

11.3.4 Provisions for data recording and records retention

11.4 Test results are documented and evaluated to ensure acceptance criteria have been satisfied.

11.5 Test results which fail to meet the requirements and acceptance criteria shall be properly noted and appropriate corrective action taken.

11.6 Tests to be conducted after modifications, repairs or replacements of important-to-safety or safety-related structures, systems or components are performed in accordance with the original design and testing requirements or acceptable alternatives.

12.0 CONTROL OF MEASURING AND TEST EQUIPMENT

12.1 Procedures shall be implemented to ensure tools, gages, instruments and other measuring and testing devices (M&TE) used in important-to-safety or safety-related activities are properly controlled, calibrated and adjusted to maintain accuracy within required limits.

12.2 Calibrations are performed against in-house reference or transfer standards that are traceable to nationally recognized standards. Where national standards do not exist, provisions will be established to document the basis for calibration.

12.3 To assure equipment accuracy; inspection, measuring and test equipment shall be controlled, calibrated, adjusted and maintained periodically, or prior to use.

12.4 Measuring and test equipment is identified to indicate its calibration status.

12.5 When test and measuring equipment is found to be out of calibration,WCS shall take measures to validate previous inspection and test results up to the time of previous calibration.

12.6 Inspection, test and work procedures shall include provisions to assure tools, gauges, instruments and other inspection, measuring and test equipment and devices used in activities affecting quality are of the proper range, type and accuracy to verify compliance to established requirements and test parameters.

13.0 HANDLING, STORAGE, AND SHIPPING

13.1 Procedures shall be implemented identifying the requirements for handling, storage, shipping, cleaning, packaging and preservation of materials, parts, assemblies, special tools and equipment to prevent damage, loss of identity or deterioration during shipment, installation or use.

13.2 Procedures shall be implemented identifying the requirements special handling equipment, lifting devices and storage devices (e.g., cranes, shock absorbers or special marking) to adequately identify and preserve packaging components or assemblies.

13.3 Special conditions identified in Certificates of Compliance shall be adhered to during all unloading operations.

13.4 When necessary, storage procedures address special equipment and requirements for environmental protection such as inert gas atmospheres, coatings, moisture control, temperature levels, etc.

13.5 Documentation such as records of inspections, maintenance or required shipping documentation shall be specified in procedures and instructions.

14.0 INSPECTION, TEST AND OPERATING STATUS

14.1 Procedures shall be implemented to ensure the inspection, test and operating status of materials, items, structures, systems and components throughout fabrication, installation, operation, inspections and tests are clearly indicated by suitable means (e.g., tags, labels, cards, form sheets, check lists, etc.).

14.2 Bypassing of required inspections, tests, or other critical operations is prevented through the use of approved instructions or procedures

14.3 The use of status indicators shall be utilized on systems or components, when operation or removal from operation, would adversely affect performance of the system, constitute an operational safety or environmental hazard or violate statutory/regulatory compliance requirements.

14.4 The application and removal of status indicators is performed in accordance with approved instructions and procedures.

15.0 NONCONFORMING MATERIAL, PARTS OR COMPONENTS

15.1 Procedures shall be implemented to control materials, parts and components that do not conform to requirements to prevent their inadvertent use or installation.

15.2 Nonconforming items include those items that do not meet specification or drawing requirements. Additionally, nonconforming items include items not fabricated or tested (1) in accordance with approved written procedures, (2) by qualified processes, or (3) by qualified personnel, where use of such procedures, processes or personnel is required by fabrication, test, inspection or other quality assurance requirements.

15.3 Nonconforming items are identified and/or segregated to prevent their inadvertent use or installation until proper disposition has been determined. The identification of nonconforming items is by marking, tagging or other methods that do not adversely affect the end use of the item. The identification shall be legible and easily recognizable. When identification of each nonconforming item is not practical, the container, package, or segregated storage area, as appropriate, is identified.

15.4 Nonconforming conditions are documented on Nonconformance Reports (NCRs) and affected organizations are notified. These reports include a description of the nonconforming condition to include a disposition as use-as-is, reject, repair or rework.

15.5 Inspection or surveillance requirements for nonconforming items following rework or repair are detailed in the NCRs and approved following completion of the disposition.

15.6 Inspection, testing, rework and repair methods are documented and controlled.

15.7 The disposition of nonconforming items as use-as-is or repair shall contain a documented technical justification.

15.8 Nonconforming materials, parts, and components dispositioned as rework or repair are re-inspected and retested in accordance with the original inspection and test requirements or equivalent inspection/testing methods.

15.9 Engineering approval of the disposition is obtained and follow-up activities are performed to ensure the requirements of the disposition have been satisfied prior to closure of the NCR.

15.10 Compliance with the evaluation and reporting requirements of 10 CFR Part 21 related to defects and noncompliance is controlled in accordance with approved procedures.

16.0 CORRECTIVE ACTION

16.1 Procedures shall be implemented to ensure that the causes of conditions adverse to quality such as; failures, malfunctions, deficiencies, deviations, defective material and equipment and nonconformance are promptly identified, corrected and reported to appropriate levels of management.

16.2 Corrective actions and schedules for implementation as well as responsible individuals are established and recorded.

16.3 For significant conditions adverse to quality, the cause of the condition and corrective action necessary to prevent recurrence shall be identified, implemented and followed-up to verify corrective action effectiveness using approved procedures.

16.4 Periodically, quality trends are evaluated and appropriate corrective actions taken.

16.5 Compliance with the evaluation and reporting requirements of 10 CFR Part 21 related to defects and noncompliance is controlled in accordance with approved procedures.

16.6 Controls shall be established to obtain corrective actions from suppliers and to ensure that follow-up actions are properly documented to verify that corrective actions are implemented and effective.

17.0 QUALITY ASSURANCE RECORDS

17.1 Procedures shall be implemented to ensure the control of quality records. The WCS record system ensures documented evidence pertaining to safety-related or important-to-safety activities is maintained and available for use.

17.2 Approved procedures shall be developed and implemented to establish controls for the identification, receipt, storage, preservation, safekeeping, traceability, retrieval and disposition of records.

17.3 For electronic records, the software systems used to image and store information should be compatible with new hardware as current technologies are implemented. Procedures shall be in place prior to the installation of any new hardware system to ensure that new systems can reliably store and retrieve information from existing software systems.

17.4 Written procedures shall address the use, management, storage, and protection of electronic records and data. Records shall be maintained providing information on the specific software applications and storage or computing hardware.

17.5 Electronic information storage systems shall be accessible only through security measures such as passwords, and the number of personnel who have authorized access should be limited where applicable. In addition, personnel who have authorized access should have identified privileges, such as “read only” or “read and add only.”

17.6 Requirements for legibility, indexing, record retention period(s), storage method(s) and location(s), classification, preservation measures, electronic records, disposition of nonpermanent records and responsibility for safekeeping are specified in approved procedures.

17.7 Record storage facilities shall be designed to prevent destruction of the records by fire, flood, theft and deterioration due to environmental conditions (such as temperature, humidity or vermin). As an alternative, two identical sets of records (hardcopy or electronic media) may be maintained at separate locations.

17.8 Quality Assurance Records are maintained for periods specified in the applicable regulations to furnish evidence of the quality for important-to-safety or safety-related structures, systems and components. Records to be maintained shall include, but not limited to, design, engineering, procurement, manufacturing, construction, fabrication, assembly, erection, installation, operations, maintenance, records of use, results of reviews, inspections, tests, audits, monitoring of work performance, material analyses, maintenance activities, modification activities, repair activities, calibration, audit, personnel qualifications and changes to the QA program as required by 10 CFR 71.106.

17.9 Inspection and test records shall identify the inspector or data recorder, the type of observation performed, the results of the observation, its acceptability and any actions taken in connection with any noted deficiency.

17.10 WCS retains required records for at least three (3) years beyond the date of last engagement in the activities under the scope of the QAPD for 10 CFR Part 71 related records and/or until the NRC terminates the CoC for 10 CFR Part 72 related records.

18.0 AUDITS

18.1 Procedures shall be implemented to ensure that planned periodic audits are performed to verify compliance with all quality assurance program requirements; performance criteria are met, and to determine program effectiveness.

18.2 Those areas and activities to be audited, such as design, procurement, fabrication, inspection and testing of storage/transportation systems, are identified in audit planning.

18.3 Audits are planned and scheduled in a manner to provide coverage and coordination with ongoing QA Program activities commensurate with the status and importance of the activities. Audit schedules will be developed annually which identify activities important to safety, such as design activities, procurement, fabrication, inspection, and testing of storage/transportation systems, that are to be audited and the frequency at which each quality criterion is to be audited.

18.4 The audit schedule will identify a Management Audit of the QA organization which shall be conducted by an organization independent of the WCS QA organization. An audit team appointed by the CEO/President will perform the audit. The purpose of this audit is to assess the overall effectiveness of the implementation of the described in-house QA program for which the QA organization is responsible. The audit report shall be transmitted to the responsible management for correction of any observed deficiencies.

18.5 The annual internal audit schedule shall ensure that applicable elements of the QA program are audited annually or at least once within the life of the activity, whichever is shorter.

18.6 For external audits, the schedule should ensure that all elements of a major supplier's (or major contractor's) QA program are audited on a triennial basis. The 3-year period should begin with performance of an audit when sufficient work is in progress to demonstrate implementation of a QA program that has the required scope for purchases placed during the 3-year period.

18.7 A grace period of 90 days may be applied to provisions that are required to be performed on a periodic basis, unless otherwise noted. Annual evaluations and audits that must be performed on a triennial basis are examples where the 90 day general period could be applied. The grace period does not allow the "clock" for a particular activity to be reset forward. The "clock" for an activity is reset backwards by performing the activity early. Audit schedules are based on the month in which the audit starts.

18.8 Audits are performed by trained and qualified personnel not having direct responsibilities in the areas being audited and are conducted in accordance with written approved procedures or checklists.

18.9 Audit results are documented and reviewed with the appropriate level of management having responsibility for the area audited.

18.10 Audit reports include an objective evaluation of the quality-related practices, procedures and instructions for the areas or activities being audited and the effectiveness of their implementation.

18.11 Responsible management undertakes corrective actions as a follow-up to audit reports when appropriate. Audit results are evaluated for indications of adverse trends that could affect quality. When results of such assessments so indicate, appropriate corrective actions are implemented.

18.12 Follow-up actions including re-audit of deficient areas are performed when determined necessary to ensure that corrective actions taken are effective.

18.13 Additional requirements for audit of supplier activities are provided in Section 7.0 of this QAPD.

19.0 REFERENCES

Title 10, Code of Federal Regulations, Part 21 - Reporting of Defects and Noncompliance

Title 10, Code of Federal Regulations, Part 50, Appendix B - Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants

Title 10, Code of Federal Regulations, Part 71, Subpart H - Packaging and Transportation of Radioactive Material, Quality Assurance

Title 10, Code of Federal Regulations, Part 72, Subpart G - Licensing Requirements for the Independent Storage of Spent Nuclear Fuel and High-Level Radioactive Waste, Quality Assurance

Regulatory Guide 7.10, Revision 2, March 2006 - Establishing Quality Assurance Programs For Packaging Used In Transportation Of Radioactive Material

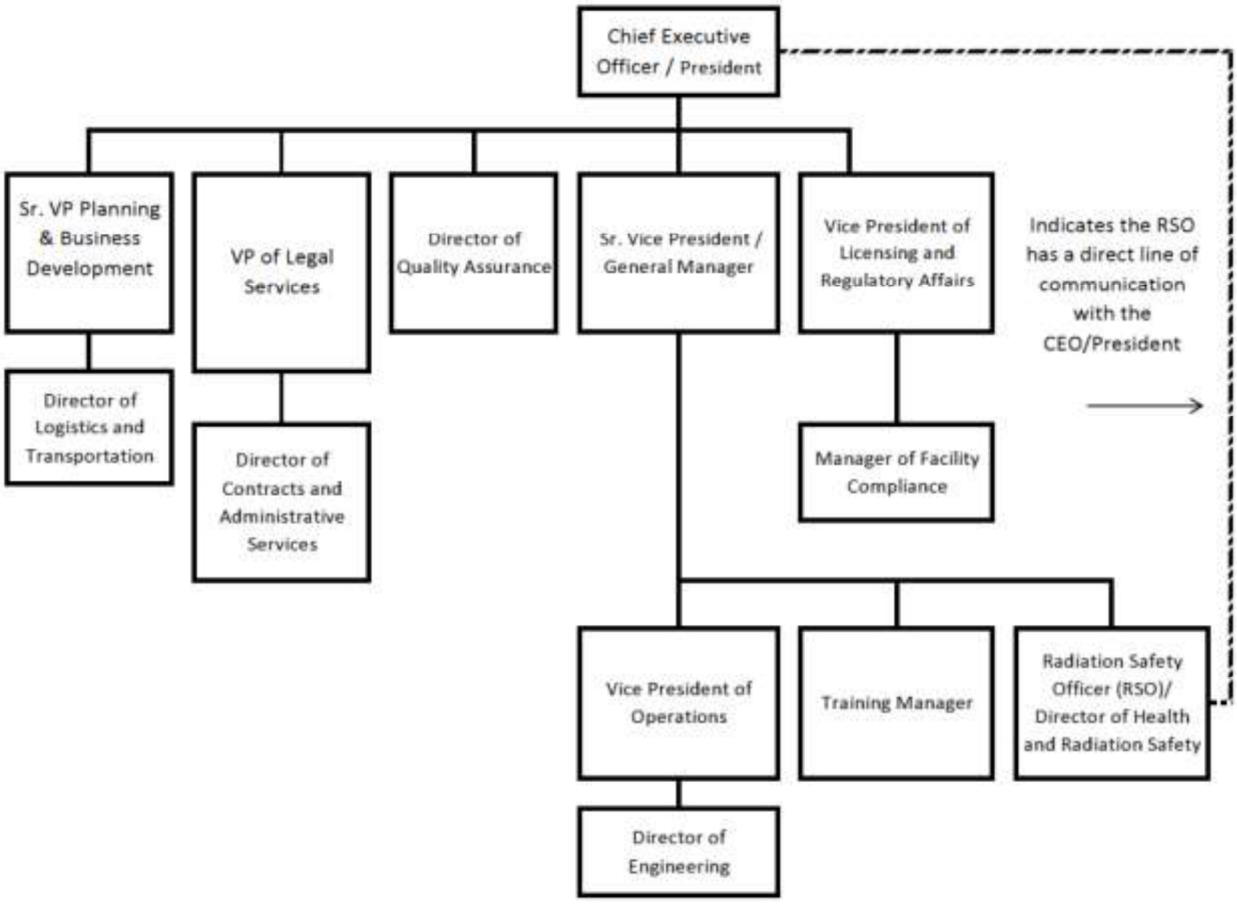
NUREG/CR-6407, February 1996 - Classification of Transportation Packaging and Dry Spent Fuel Storage System Components According to Importance to Safety

ASME NQA – 1 - Quality Assurance Requirements for Nuclear Facility Applications – 2008/2009 Addendum

NRC Regulatory Guide 1.28, Rev. 4, Quality Assurance Program Requirements (Design and Construction)

20.0 FIGURES

Figure 1 – WCS Organization Chart.



APPENDIX D

DECOMMISSIONING FUNDING PLAN

AMERICA'S NUCLEAR SOLUTION

TABLE OF CONTENTS

THIS PAGE INTENTIONALLY LEFT BLANK

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.

THIS PAGE INTENTIONALLY LEFT BLANK

CHAPTER 2

DECOMMISSIONING FUNDING METHODS

A fully executed written contract between WCS and the United States Government, Department of Energy (DOE), will be established prior to receipt of SNF or reactor-related GTCC LLW at the CISF. Pursuant to this contract, the DOE shall take legal title of the SNF and reactor-related GTCC LLW prior to receipt and 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.

WCS has requested an exemption from the financial assurance methods specified in 10 CFR 72.30(e) from the NRC. WCS shall provide an 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 WCS 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.

WCS 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.

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 facility. 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 5,000 MTHM. 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. No radiological materials are stored in either building.

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, WCS 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:

- Waste Control Specialists LLC Employment Data
- RSMeans 2015 Heavy Construction Cost Data, Construction Publishers & Consultants, Norwell, MA

WCS currently (2015) employs personnel in the same occupational job categories that would be required for the decommissioning project. Current WCS rates are competitive with other employers to ensure a stable and efficient workforce at the existing facility. Data on current WCS 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 WCS.

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, WCS 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. WCS has received quotes from Pentek Inc. for their Nuclear Decon tools for use in the cost estimate. These tools are used 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 WCS 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 WCS 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 know 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 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 (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 WCS 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 WCS licensed disposal facility. Transportation will occur over a short distance all within WCS 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, WCS 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 WCS 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. WCS 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 WCS 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: WCS 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 WCS 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%**

THIS PAGE INTENTIONALLY LEFT BLANK

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.”

THIS PAGE INTENTIONALLY LEFT BLANK