ENGINEERING CHANGE NOTICE

1. ECN 654458

Proj. ECN

2. ECN Category (mark one)	3. Originator's Name, Organization, MSIN, and Telephone No.	4. USQ Required?	5. Date
Supplemental [ ] Direct Revision [x] Change ECN [ ] Temporary [ ] Standby [ ] Supersedure [ ] Cancel/Void [ ]	S. A. Krieg, CSB Engineering, S8-06, 376-0931	[x] Yes [ ] No SAK CSB-00-1096	10-17-00
	6. Project Title/No./Work Order No. CSB Sub-Project	7. Bldg./Sys./Fac. No. 212H	8. Approval Designator E, S, Q, D
	9. Document Numbers Changed by this ECN (includes sheet no. and rev.) WHC-SD-SNF-FRD-010, Rev. 1	10. Related ECN No(s). N/A	11. Related PO No. N/A

12a. Modification Work	12b. Work Package No.	12c. Modification Work Complete	12d. Restored to Original Condition (Temp. or Standby ECN only)
[ ] Yes (fill out Blk. 12b) [x] No (NA Blks. 12b, 12c, 12d)	N/A	N/A Design Authority/Cog. Engineer Signature & Date	N/A Design Authority/Cog. Engineer Signature & Date

13a. Description of Change

13b. Design Baseline Document? [x] Yes [ ] No

General update of the Canister Storage Building (CSB) Functions & Requirements document to reflect deletion of Hot Conditioning and current design baseline.

14a. Justification (mark one)

Criteria Change	[x]	Design Improvement	[ ]	Environmental	[ ]	Facility Deactivation	[ ]
As-Found	[ ]	Facilitate Const	[ ]	Const. Error/Omission	[ ]	Design Error/Omission	[ ]

14b. Justification Details

Design Verification by independent review per AP EN-6-027 S.A. Krieg 9-19-00.

The CSB mission was changed to delete Hot Conditioning from its scope. Now the CSB mission reflected in the Functions & Requirements document and the CSB Final Safety Analysis Report are consistent. Changes made to the CSB design baseline (by Engineering Change Notices or Design Change Notices) have been included in the Functions & Requirements document as well.

15. Distribution (include name, MSIN, and no. of copies)

See attached distribution coversheet.

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A-7900-013-2 (05/96) GEF095

ENGINEERING CHANGE NOTICE

1. ECN (use no. from pg. 1): 654458

16. Design Verification Required	17. Cost Impact				18. Schedule Impact (days)		
	ENGINEERING		CONSTRUCTION				
[ ] Yes	Additional	[ ] N/A	Additional	[ ]	Improvement	[ ]	N/A
[x] No	Savings	[ ]	Savings	[ ]	Delay	[ ]	

19. Change Impact Review: Indicate the related documents (other than the engineering documents identified on Side 1) that will be affected by the change described in Block 13. Enter the affected document number in Block 20.

SDD/DD	[] N/A	Seismic/Stress Analysis	[]	Tank Calibration Manual	[]
Functional Design Criteria	[]	Stress/Design Report	[]	Health Physics Procedure	[]
Operating Specification	[]	Interface Control Drawing	[]	Spares Multiple Unit Listing	[]
Criticality Specification	[]	Calibration Procedure	[]	Test Procedures/Specification	[]
Conceptual Design Report	[]	Installation Procedure	[]	Component Index	[]
Equipment Spec.	[]	Maintenance Procedure	[]	ASME Coded Item	[]
Const. Spec.	[]	Engineering Procedure	[]	Human Factor Consideration	[]
Procurement Spec.	[]	Operating Instruction	[]	Computer Software	[]
Vendor Information	[]	Operating Procedure	[]	Electric Circuit Schedule	[]
OM Manual	[]	Operational Safety Requirement	[]	ICRS Procedure	[]
FSAR/SAR	[]	IEFD Drawing	[]	Process Control Manual/Plan	[]
Safety Equipment List	[]	Cell Arrangement Drawing	[]	Process Flow Chart	[]
Radiation Work Permit	[]	Essential Material Specification	[]	Purchase Requisition	[]
Environmental Impact Statement	[]	Fac. Proc. Samp. Schedule	[]	Tickler File	[]
Environmental Report	[]	Inspection Plan	[]		[]
Environmental Permit	[]	Inventory Adjustment Request	[]		[]

20. Other Affected Documents: (NOTE: Documents listed below will not be revised by this ECN.) Signatures below indicate that the signing organization has been notified of other affected documents listed below.

Document Number/Revision	Document Number/Revision	Document Number Revision
	N/A	

21. Approvals

	Signature	Date	Signature	Date
Design Authority S. A. Kreig	S.A. Kreig	7/17/00		
Cog Eng M. J. Klem	M J Klem	7/18/00		
Cog Mgr G. D. Bazinet	by E Fritzsheme	7-12-00		
QA S. S. Moss	Stephen Scott Moss	7-12-2000		
Safety L. J. Garvin	[illegible]	7/12/00		
IS&H A. D. Harrington	[illegible]	7/11/00		
Env J. E. Turnbaugh	J. E. Turnbaugh	7/10/00		

DEPARTMENT OF ENERGY

Signature or a Control Number that tracks the Approval Signature: 00-SFO-134

ADDITIONAL

DISTRIBUTION SHEET

To	From	Page 1 of 1
Distribution	CSB Subproject	Date 10/17/00
Project Title/Work Order		EDT No N/A
HNF-SD-SNF-FRD-010, Rev. 2 Spent Nuclear Fuel Project Canister Storage Building Functions & Requirements		ECN No. 654458

	Name	MSIN	Text With All Attach.	Text Only	Attach./ Appendix Only	EDT/ECN Only
	G. D. Bazinet	S8-06	X			
	L. J. Garvin	S8-07	X			
H	M. J. Klem	R3-86	X			
	S. A. Krieg	S8-05	X			
	S. S. Moss	S8-07	X			
	C. E. Swenson	S8-07	X			
	J. E. Turnbaugh	X3-79	X			
H	CSB Engineering Records (2)	S8-05	X			
H	Central Files (2)	B1-07	X			

HNF-SD-SNF-FRD-010
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Spent Nuclear Fuel Project Canister Storage Building Functions & Requirements

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COGEMA

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Assistant Secretary for Environmental Management

Project Hanford Management Contractor for the
U.S. Department of Energy under Contract DE-AC06-96RL13200

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P.O. Box 1000
Richland, Washington

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RECORD OF REVISION	(1) Document Number HNF-SD-SNF-FRD-010, Rev. 2	Page 1
(2) Title Spent Nuclear Fuel Project Canister Storage Building Functions & Requirements		

CHANGE CONTROL RECORD					
(3) Revision	(4) Description of Change - Replace, Add, and Delete Pages	Authorized for Release			
		(5) Cog. Engr.	Date	(6) Cog. Mgr.	Date
	(7)				
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2 RS	**ECN-654458** *July 2000* *General update of the CSB Functions & Requirements document to reflect deletion of Hot Conditioning and current design baseline.*	M. J. Klem M J Klem 7/18/00		G. D. Bazinet by E Bibbsheimer 7-12-00	

HNF-SD-SNF-FRD-010
Revision 2

Spent Nuclear Fuel Project Canister Storage Building Functions & Requirements

Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management

Project Hanford Management Contractor for the
U.S. Department of Energy under Contract DE-AC06-96RL13200

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Richland, Washington

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Spent Nuclear Fuel Project

Canister Storage Building

Functions & Requirements

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1.0 INTRODUCTION

1.1 BACKGROUND

In 1998, a major change in the technical strategy for managing Multi Canister Overpacks (MCO) while stored within the Canister Storage Building (CSB) occurred. The technical strategy is documented in Baseline Change Request (BCR) No. SNF-98-006, Simplified SNF Project Baseline (MCO Sealing) (FDH 1998). This BCR deleted the hot conditioning process initially adopted for the Spent Nuclear Fuel Project (SNF Project) as documented in WHC-SD-SNF-SP-005, Integrated Process Strategy for K Basins Spent Nuclear Fuel (WHC 1995). In summary, MCOs containing Spent Nuclear Fuel (SNF) from K Basins would be placed in interim storage following processing through the Cold Vacuum Drying (CVD) facility.

With this change, the needs for the Hot Conditioning System (HCS) and inerting/pressure retaining capabilities of the CSB storage tubes and the MCO Handling Machine (MHM) were eliminated. Mechanical seals will be used on the MCOs prior to transport to the CSB. Covers will be welded on the MCOs for the final seal at the CSB.

Approval of BCR No. SNF-98-006, imposed the need to review and update the CSB functions and requirements baseline documented herein including changing the document title to "Spent Nuclear Fuel Project Canister Storage Building Functions and Requirements." This revision aligns the functions and requirements baseline with the CSB Simplified SNF Project Baseline (MCO Sealing).

1.2 PURPOSE AND SCOPE

This document represents the Canister Storage Building (CSB) Subproject technical baseline. It establishes the functions and requirements baseline for the implementation of the CSB Subproject. The document is organized in eight sections. Sections 1.0 Introduction and 2.0 Overview provide brief introductions to the document and the CSB Subproject. Sections 3.0 Functions, 4.0 Requirements, 5.0 Architecture, and 6.0 Interfaces provide the data described by their titles. Section 7.0 Glossary lists the acronyms and defines the terms used in this document. Section 8.0 References lists the references used for this document.

2.0 OVERVIEW

2.1 MISSION AND SCOPE

The mission allocated to the CSB Subproject is to provide safe, environmentally sound staging and interim storage of K Basin SNF until a decision on its final disposition is reached and implemented.

The CSB receives multi-canister overpacks (MCOs), that have been previously dewatered and contain SNF that has been cold-vacuum dried, stages them for transfer to the weld process for sealing, provides interim storage (basis of 40 years extendable to 75 years) of sealed MCOs until their final disposition has been determined and the long-term repository is available, and stages them for transfer to final disposition.

Throughout the operations to stage, seal and interim store SNF, the CSB ensures the integrity of the MCO, and contains, characterizes, classifies, stores, and dispositions any solid, liquid, and gaseous effluent waste.

2.2 CONTEXT

The Stage and Interim Store K Basin SNF in CSB functions fit within the SNF Project functions 2.4.1.1 Provide Canister Storage Building, 4.7.2.1.1 Operate and Maintain Canister Storage Building, 4.7.2.2.1 Administer Operations to Seal MCO, 4.7.2.2.3 Administer Operations to Interim Store MCO, 4.7.2.3 Seal K Basin MCO, 4.7.2.5.1 Interim Store MCO, and 4.1.1.10 Deactivate Facilities used to Seal and Interim Store MCO.

These are sub-functions to SNF Project functions, described in Fiscal Year 2000 Multi Year Work Plan (FH 2000) as follows:

TSD	4.5.1.3.1	Design/construct Canister Storage Building
TSD	4.5.1.3.2	Store Defense Production Reaction SNF
TSD	5.5.1.1	Disposition Defense Production Reaction SNF
TSD	1.2.4.2.3	Maintain Safe and Compliant Canister Storage Building
TSD	2.2.4.2.3	Transition Canister Storage Building
TSD	2.2.5.2.3	Decontaminate and Decommission (D&D) Canister Storage Building

3.0 FUNCTIONS

3.1 FUNCTION HIERARCHY

Systems engineering analyses decomposed and tailored the SNF Project functions identified in Section 2.2 to establish hierarchy and define lower tier functions that need to be performed to accomplish the CSB Subproject mission.

The SNF Canister Storage Building function hierarchy is documented in the function trees shown in:

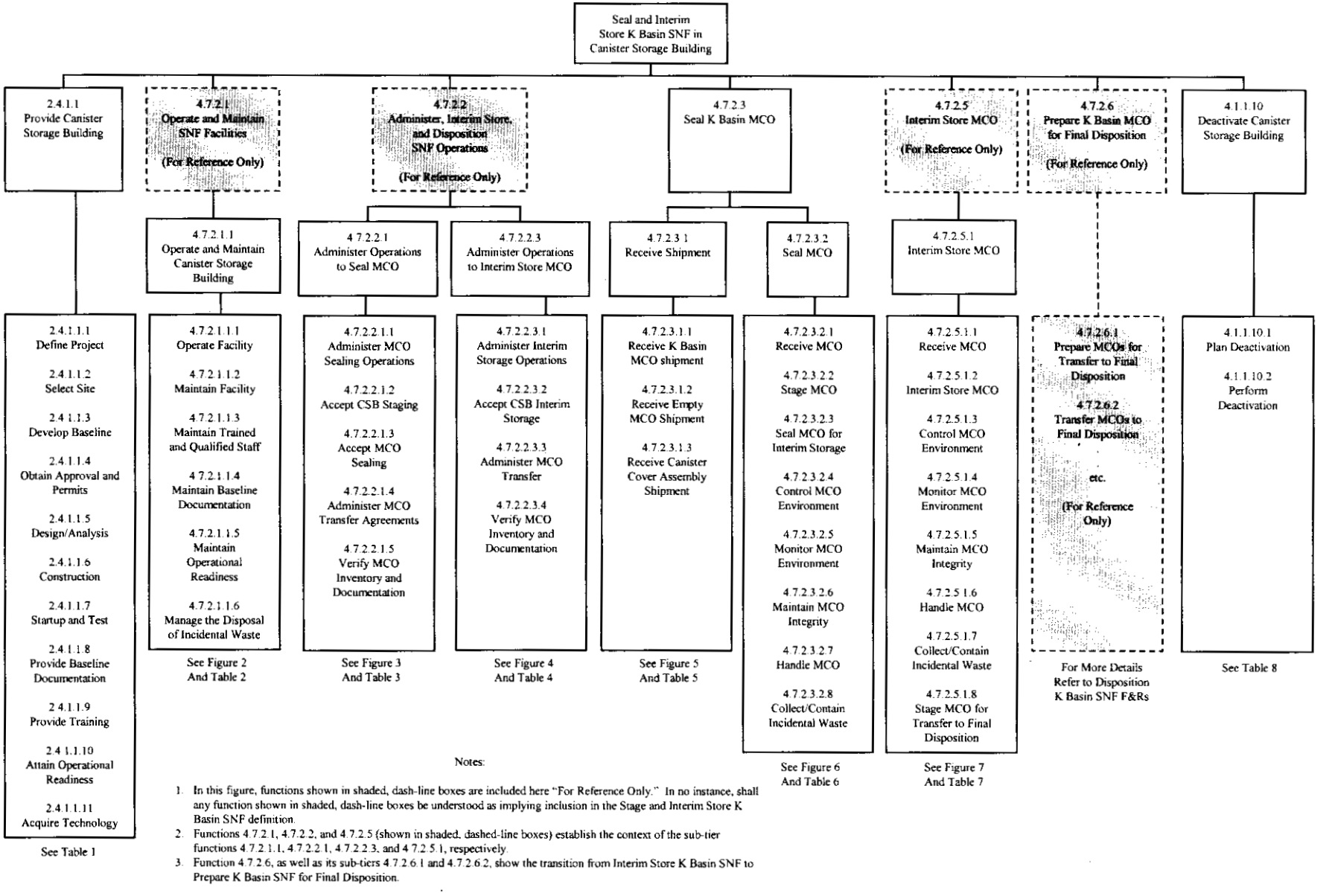
Figure 1, Top-Level Function Hierarchy,
Figure 2, Function 4.7.2.1.1 Hierarchy,
Figure 3, Function 4.7.2.2.1 Hierarchy,
Figure 4, Function 4.7.2.2.3 Hierarchy,
Figure 5, Function 4.7.2.3.1 Hierarchy,
Figure 6, Function 4.7.2.3.2 Hierarchy, and
Figure 7, Function 4.7.2.5.1 Hierarchy.

3.2 FUNCTION DEFINITION

The SNF Canister Storage Building function definition is documented in the function definition tables shown in:

Table 1, Function 2.4.1.1 Definitions,
Table 2, Function 4.7.2.1.1 Definitions,
Table 3, Function 4.7.2.2.1 Definitions,
Table 4, Function 4.7.2.2.3 Definitions,
Table 5, Function 4.7.2.3.1 Definitions,
Table 6, Function 4.7.2.3.2 Definitions,
Table 7, Function 4.7.2.5.1 Definitions, and
Table 8, Function 4.1.1.10 Definitions.

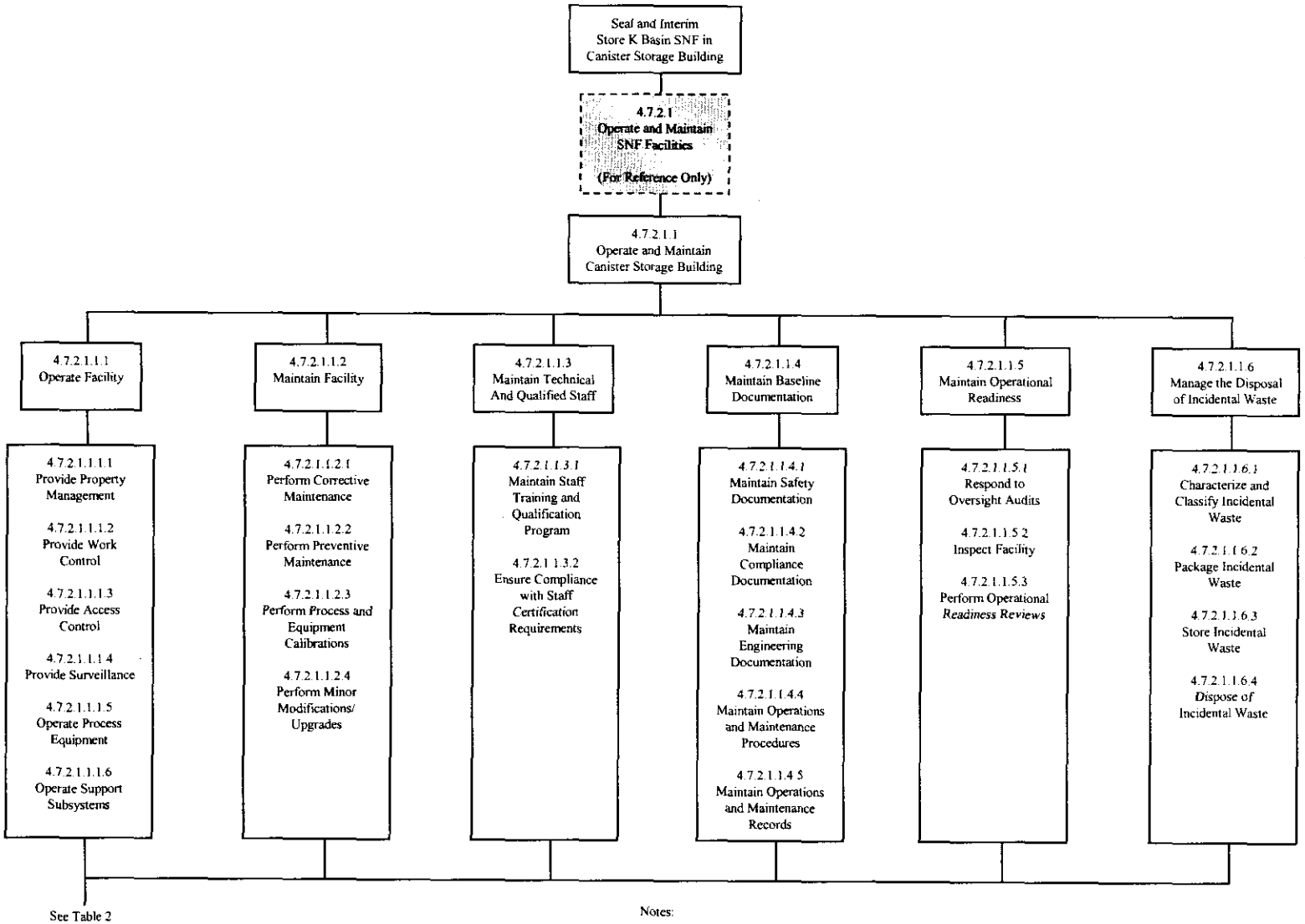
Figure 1. Top-Level Function Hierarchy



Notes:

1. In this figure, functions shown in shaded, dash-line boxes are included here "For Reference Only." In no instance, shall any function shown in shaded, dash-line boxes be understood as implying inclusion in the Stage and Interim Store K Basin SNF definition.
2. Functions 4.7.2.1, 4.7.2.2, and 4.7.2.5 (shown in shaded, dashed-line boxes) establish the context of the sub-tier functions 4.7.2.1.1, 4.7.2.2.1, 4.7.2.2.3, and 4.7.2.5.1, respectively.
3. Function 4.7.2.6, as well as its sub-tiers 4.7.2.6.1 and 4.7.2.6.2, show the transition from Interim Store K Basin SNF to Prepare K Basin SNF for Final Disposition.

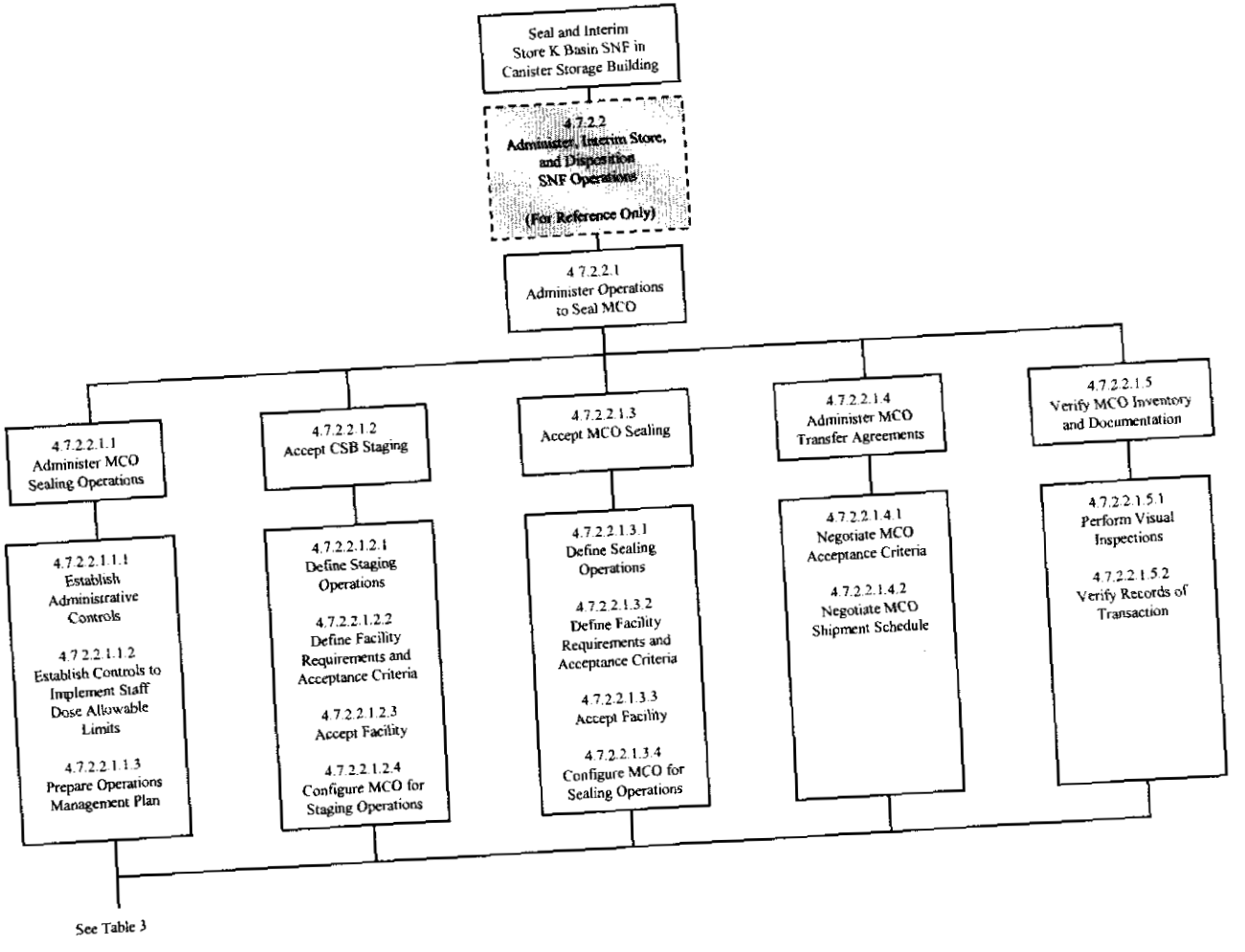
Figure 2. Function 4.7.2.1.1 Hierarchy



Notes:

1. In this figure, functions shown in shaded, dash-line boxes are included here "For Reference Only." In no instance, shall any function shown in shaded, dash-line boxes be understood as implying inclusion in the Seal and Interim Store K Basin SNF definition.
2. Function 4.7.2.1 (shown in shaded, dashed-line box) establishes the context of the sub-tier function 4.7.2.1.1.

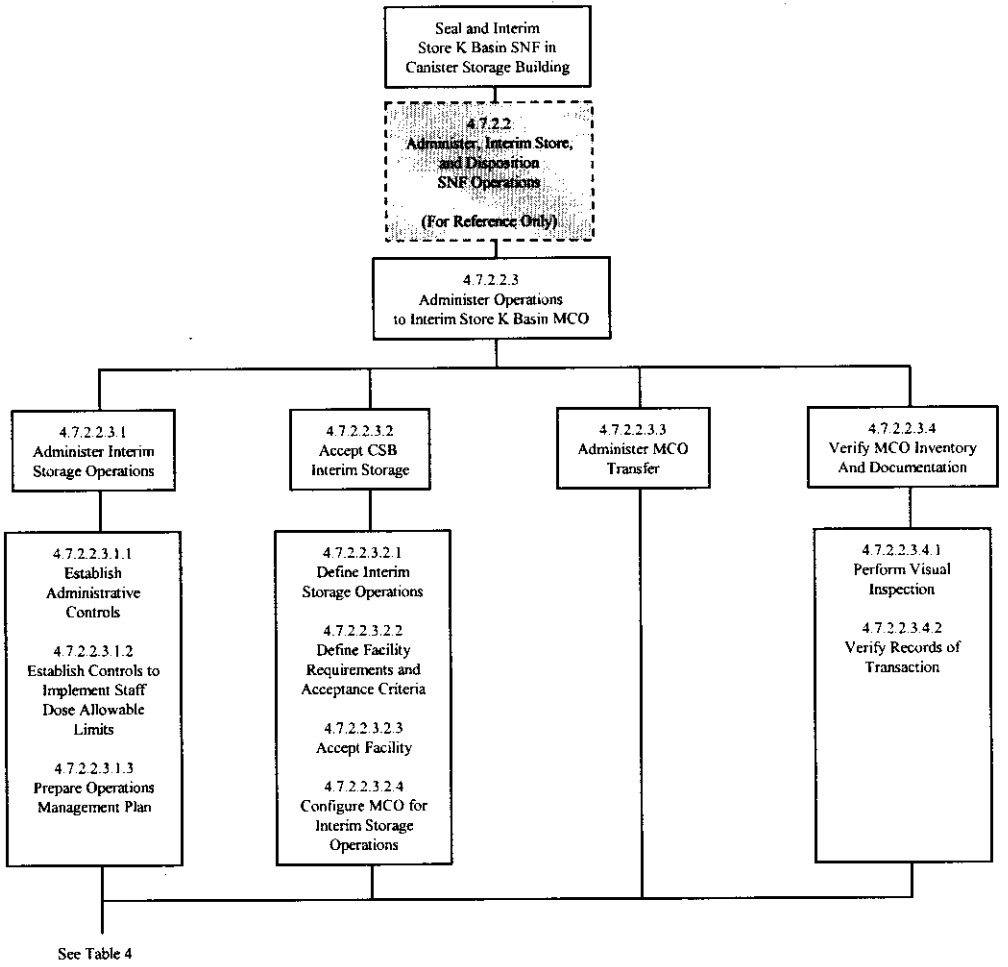
Figure 3. Function 4.7.2.2.1 Hierarchy



Notes:

1. In this figure, functions shown in shaded, dash-line boxes are included here "For Reference Only." In no instance, shall any function shown in shaded, dash-line boxes be understood as implying inclusion in the Seal and Interim Store K Basin SNF definition.
2. Function 4.7.2.2 (shown in shaded, dashed-line box) establishes the context of the sub-tier function 4.7.2.2.1.

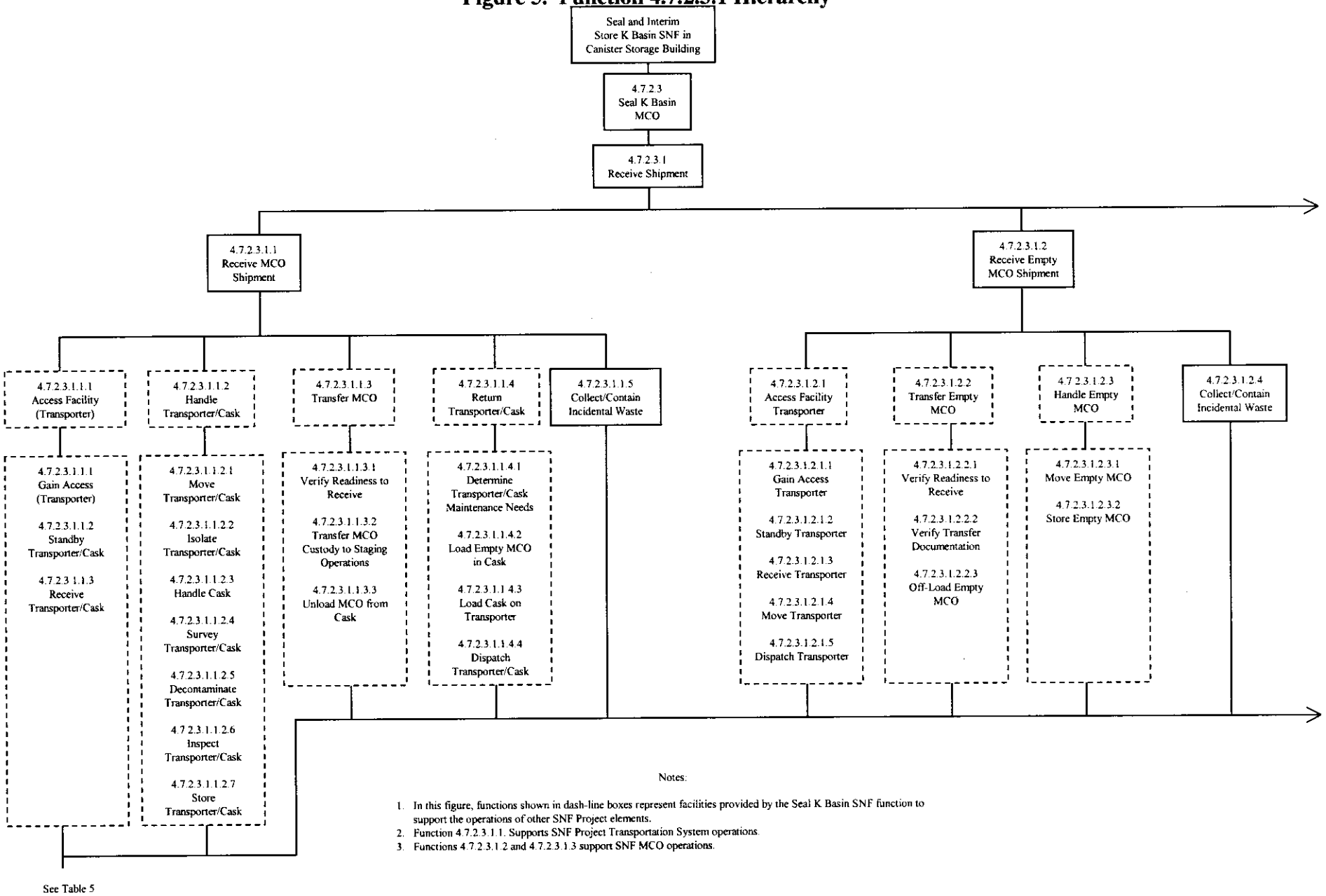
Figure 4. Function 4.7.2.2.3 Hierarchy



Notes:

1. In this figure, functions shown in shaded, dash-line boxes are included here "For Reference Only." In no instance, shall any function shown in shaded, dash-line boxes be understood as implying inclusion in the Seal and Interim Store K Basin SNF definition.
2. Function 4.7.2.2 (shown in shaded, dashed-line box) establishes the context of the sub-tier function 4.7.2.2.3.

Figure 5. Function 4.7.2.3.1 Hierarchy



Notes:

1. In this figure, functions shown in dash-line boxes represent facilities provided by the Seal K Basin SNF function to support the operations of other SNF Project elements.
2. Function 4.7.2.3.1.1. Supports SNF Project Transportation System operations.
3. Functions 4.7.2.3.1.2 and 4.7.2.3.1.3 support SNF MCO operations.

Figure 5. Function 4.7.2.3.1 Hierarchy (Continued)

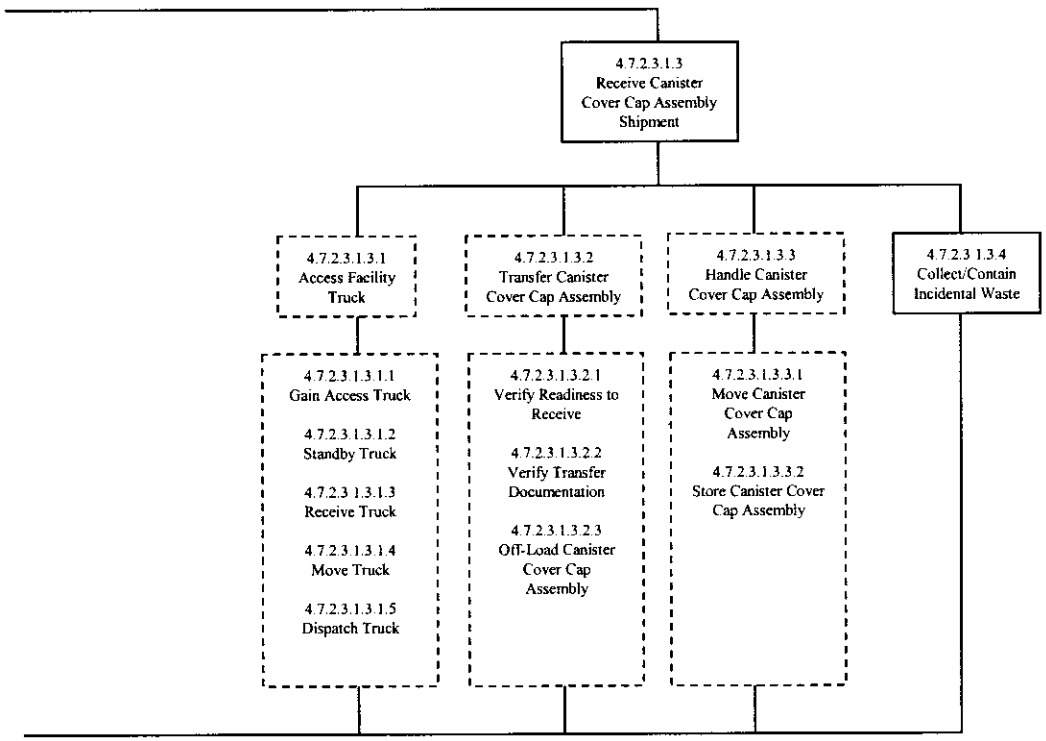


Figure 6. Function 4.7.2.3.2 Hierarchy

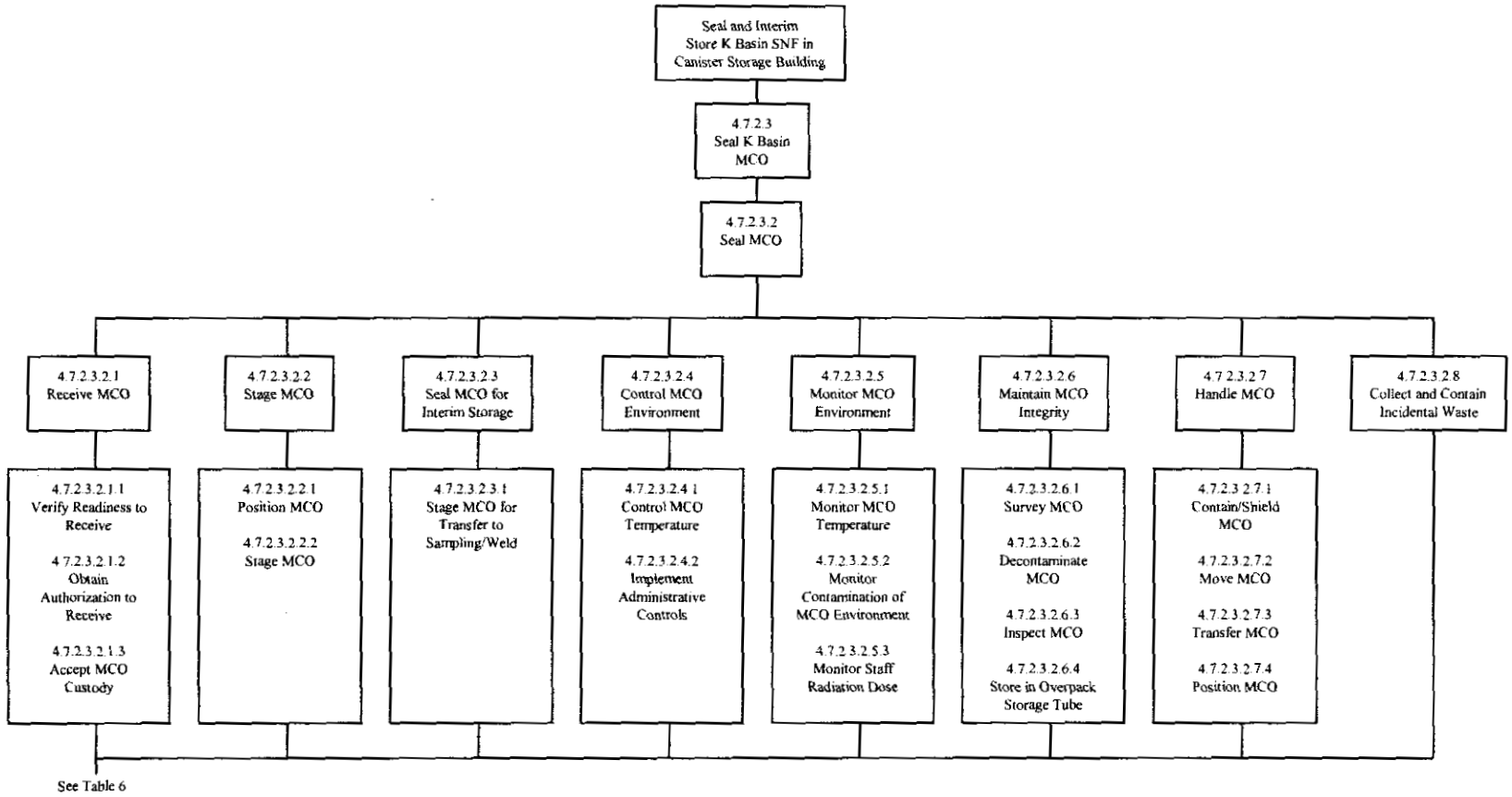
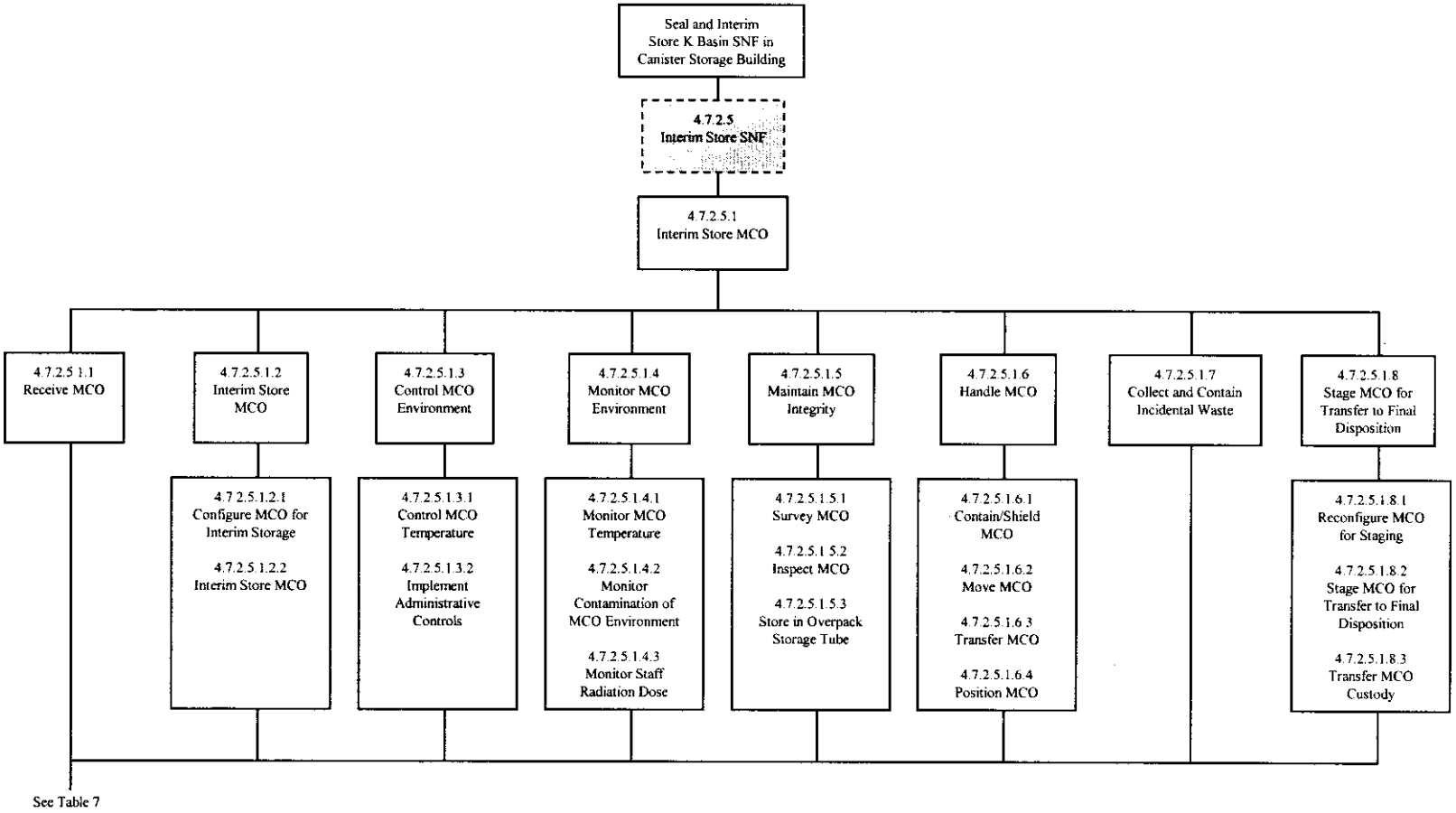


Figure 7. Function 4.7.2.5.1 Hierarchy



Notes:

1. In this figure, functions shown in shaded, dash-line boxes are included here "For Reference Only." In no instance, shall any function shown in shaded, dash-line boxes be understood as implying inclusion in the Seal and Interim Store K Basin SNF definition.
2. Function 4.7.2.5 (shown in shaded, dashed-line box) establishes the context of the sub-tier function 4.7.2.5.1.

Table 1. Function 2.4.1.1 Definition

Function Number	Function Title and Definition
2.4.1.1 (SNF Project Function)	Provide Canister Storage Building. Define project, select site, develop project baseline, obtain approvals and permits, design, construct, startup and test the CSB on an accelerated basis, as a line item project. Provide documentation and staff training. Bring the facility to operational readiness state.
2.4.1.1.1	Define Project. Define the mission and scope of the project. Define project needs. Develop cost/schedule baseline. Define project management approach and roles and responsibilities. Prepare project management plans.
2.4.1.1.2	Select Site. Performs site selection in accordance with DOE regulations.
2.4.1.1.3	Develop Baseline. Develop functions and requirements, maintain F&R database current, and publish F&R documents. Identify, define, document and control key interfaces. Perform studies, and develop and evaluate concepts. Develop performance specifications. Prepare preliminary safety evaluations.
2.4.1.1.4	Obtain Approvals and Permits. Obtain all necessary NEPA, CAA, key decisions, process waivers, PSAR/ FSAR approvals. Request appropriate authorizations from management.
2.4.1.1.5	Design/Analysis. Perform Title I, II, and III designs. This includes preliminary and final design, construction acceptance inspections, and "as-builts."
2.4.1.1.6	Construction. Procure construction materials and equipment, and provide services and expertise to construct the facility.

Table 1. Function 2.4.1.1 Definition

Function Number	Function Title and Definition
2.4.1.1.7	Startup and Test. Perform startup and test to verify compliance with performance requirements, safety, and operability. Conduct component/subsystem/testing to verify compliance with performance and design requirements.
2.4.1.1.8	Provide Baseline Documentation. Provide baseline documentation. Prepare required safety, compliance, and engineering documentation, as well as, operations and maintenance procedures, and administrative and surveillance documents.
2.4.1.1.9	Provide Training. Train staff. Acquire instructors, equipment, and software. Develop curriculum and conduct training.
2.4.1.1.10	Attain Operational Readiness. Prepare facility for acceptance by identifying and correcting deficiencies, cleaning the premises, and demonstrating compliance. Perform operational readiness review. Transfer facility to operations.
2.4.1.1.11	Acquire Technology. Support SNF characterization efforts.

Table 2. Function 4.7.2.1.1 Definition

Function Number	Function Title and Definition
4.7.2.1.1 (SNF Project Function)	Operate and Maintain Canister Storage Building. Operates and maintains CSB in accordance with governing safety codes and regulations. Provides required resources for safe and compliant operations. Maintains baseline documentation and qualified staff. Performs operational readiness reviews to ensure that safety and compliance are maintained.
4.7.2.1.1.1	Operate Facility. Operates infrastructure, buildings, and equipment. Assesses and maintains operations in a safe condition that is compliant with applicable orders, directives, codes, regulations, standards and procedures. Provides property management, work control, access control, surveillance, and disposition of incidental waste.
4.7.2.1.1.1.1	Provide Property Management. Provides property management for the infrastructure, buildings, and equipment in accordance with DOE orders and Project Hanford procedures.
4.7.2.1.1.1.2	Provide Work Control. Provides a job control system.
4.7.2.1.1.1.3	Provide Access Control. Provides access control to and within the facility for safeguards and security, safety, and radiological purposes.
4.7.2.1.1.1.4	Provide Surveillance. Provides surveillance of operations, infrastructure, buildings, and equipment. Develop emergency response plans. Perform TSR surveillance procedures, environmental monitoring, RCRA tracking, and surveillance of safety analysis compliance.
4.7.2.1.1.1.5	Operate Process Equipment. Operates all process equipment to support operations.

Table 2. Function 4.7.2.1.1 Definition

Function Number	Function Title and Definition
4.7.2.1.1.1.6	Operate Support Subsystems. Operates all subsystems that support operations.
4.7.2.1.1.2	Maintain Facility. Maintains infrastructure, buildings, and equipment in the operational safe condition dictated by approved safety and compliance documentation. Performs corrective maintenance, preventive maintenance, systems and equipment calibrations, and planned minor modifications and upgrades.
4.7.2.1.1.2.1	Perform Corrective Maintenance. Performs maintenance actions required to bring processes and equipment back to their safe and compliant operational states after failure.
4.7.2.1.1.2.2	Perform Preventive Maintenance. Performs maintenance actions required to keep processes and equipment in their safe and compliant operational states, and to minimize unplanned events and equipment failures.
4.7.2.1.1.2.3	Perform Process and Equipment Calibrations. Performs processes, equipment, and instrumentation calibrations to ensure safe and compliant operations.
4.7.2.1.1.2.4	Perform Minor Modifications/Upgrades. Performs minor modifications to ensure safe and compliant operations.
4.7.2.1.1.3	Maintain Trained and Qualified Staff. Provides training, student testing, and training records maintenance to ensure staff remains trained, qualified, and certified (as required) in the areas of operations and maintenance, as well as the functions seal and interim store SNF in the CSB.
4.7.2.1.1.3.1	Maintain Staff Training and Qualification Program. Provides all training related to operations and maintenance, as well as the functions seal and interim store SNF in the CSB.

Table 2. Function 4.7.2.1.1 Definition

Function Number	Function Title and Definition
4.7.2.1.1.3.2	Ensures Compliance with Staff Certification Requirements. Provides periodic personnel skills check, assessments, and testing required to maintain necessary qualifications and certifications.
4.7.2.1.1.4	Maintain Baseline Documentation. Maintains all required safety, compliance, and engineering documentation, as well as, operations and maintenance procedures and records.
4.7.2.1.1.4.1	Maintain Safety Documentation. Maintains documentation necessary to ensure safe operations. This includes FSARs, CSERs, TSRs, etc.
4.7.2.1.1.4.2	Maintain Compliance Documentation. Maintains documentation to assure and prove compliance with appropriate environmental and regulatory rules and DOE orders.
4.7.2.1.1.4.2.1	Maintain Environmental Compliance Documentation. Maintains appropriate regulatory files and other related environmental documentation to assure and prove environmental compliance.
4.7.2.1.1.4.2.2	Maintain SNF Inventory Documentation. Maintains SNF documentation in compliance with DOE orders. Receives input from functions 4.7.2.2.1.5.2 and 4.7.2.2.3.4.2.
4.7.2.1.1.4.2.3	Maintain Criticality Documentation. Maintains criticality calculations and other applicable documentation.
4.7.2.1.1.4.3	Maintain Engineering Documentation. Maintains configuration drawings and associated engineering documentation required to operate and maintain the facility in a safe and compliant state.

Table 2. Function 4.7.2.1.1 Definition

Function Number	Function Title and Definition
4.7.2.1.1.4.4	Maintain Operations and Maintenance Procedures. Maintains operations and maintenance procedures and documentation to support safety, and environmental compliance requirements
4.7.2.1.1.4.5	Maintain Operations and Maintenance Records. Maintains operations and maintenance records and documentation necessary for safe, efficient, and compliant operations.
4.7.2.1.1.5	Maintain Operational Readiness. Provide timely response to oversight audits and performs self-assessments of operations.
4.7.2.1.1.5.1	Respond to Oversight Audits. Provide timely response to oversight audits to ensure a safe and compliant state at all times.
4.7.2.1.1.5.2	Inspect Facility. Performs inspections of the facility operations to ensure a safe and compliant state at all times.
4.7.2.1.1.5.3	Perform Operational Readiness Reviews. Performs self-assessments of operations to ensure the facility is in a safe and compliant state at all times. Conducts and documents Operational Readiness Reviews.
4.7.2.1.1.6	Manage the Disposal of Incidental Waste. Disposes of the solid and liquid wastes generated during operations and maintenance activities.
4.7.2.1.1.6.1	Characterize and Classify Incidental Waste. Determine the radioactive and hazardous constituent quantities in the incidental waste to enable sorting, and accountability.
4.7.2.1.1.6.2	Package Incidental Waste. Package incidental waste according to waste classification and waste type (solid, liquid).

Table 2. Function 4.7.2.1.1 Definition

Function Number	Function Title and Definition
4.7.2.1.1.6.3	Store Incidental Waste. Store solid and liquid waste in accordance with environmental regulations and requirements.
4.7.2.1.1.6.4	Dispose of Incidental Waste. Transfer the incidental wastes generated during operations and maintenance activities.

Table 3. Function 4.7.2.2.1 Definition

Function Number	Function Title and Definition
4.7.2.2.1 (SNF Project Function)	Administer Operations to Seal MCO. Administers sealing operations and transfer agreements. Verifies SNF inventories and documentation.
4.7.2.2.1.1	Administer MCO Sealing Operations. Plans and assesses the operations to be conducted for the safe and efficient sealing of K Basin MCOs. Establishes administrative controls to implement staff dose allowable limits. Plans and schedules facility operations. Prepares operations management plan. Directs, supervises, and controls facility operations.
4.7.2.2.1.1.1	Establish Administrative Controls. Establishes administrative controls to ensure that the facility and operations are maintained within the facility authorization basis in order to minimize risk to the staff, public, and the environment.
4.7.2.2.1.1.2	Establish Controls to Implement Staff Dose Allowable Limits. Establishes staff radiation dose limits and ensures compliance. Receives data and reports from function 4.7.2.3.2.5.
4.7.2.2.1.1.3	Prepare Operations Management Plan. Prepares operations management plan that states the mission and objectives, and defines operations, requirements, and resources.
4.7.2.2.1.2	Accept CSB Staging. Defines staging operations, and facility requirements and acceptance criteria. Negotiates requirements implementation with function 2.4.1.1, and supports efforts under this function for CSB Staging. Accepts the facility for staging.
4.7.2.2.1.2.1	Define Staging Operations. Plans and assesses the functions necessary for safe and efficient staging of SNF for transfer to the MCO sampling/weld operation.

Table 3. Function 4.7.2.2.1 Definition

Function Number	Function Title and Definition
4.7.2.2.1.2.2	Define Facility Requirements and Acceptance Criteria. Defines requirements which the completed facility must meet and, based on these requirements, the specific criteria for acceptance of the facility.
4.7.2.2.1.2.3	Accept Facility. Accept the facility for operation, after testing that has verified acceptable performance and any deficiencies have been corrected.
4.7.2.2.1.2.4	Configure MCO for Staging Operations. Perform required operations to prepare for staging.
4.7.2.2.1.3	Accept MCO Sealing. Defines MCO sealing operations and facility requirements and acceptance criteria. Negotiates requirements implementation with function 2.4.1.1 and supports efforts under this function for CSB sealing. Accepts the facility for sealing.
4.7.2.2.1.3.1	Define Sealing Operations. Plans and assesses the functions for safe and efficient sealing of MCOs and transfer to interim storage.
4.7.2.2.1.3.2	Define Facility Requirements and Acceptance Criteria. Defines requirements which the completed facility must meet and based on these requirements, the specific criteria which will be used for acceptance of the facility.
4.7.2.2.1.3.3	Accept Facility. Accept the facility for operation, after testing that has verified acceptable performance and any deficiencies have been corrected.
4.7.2.2.1.3.4	Configure MCO for Sealing Operations. Perform required operations to prepare for MCO sealing.

Table 3. Function 4.7.2.2.1 Definition

Function Number	Function Title and Definition
4.7.2.2.1.4	Administer MCO Transfer Agreements. Administers the transfer of K Basin SNF to the CSB. Negotiates shipment acceptance criteria based on the capability of the facility to receive, stage and seal MCOs. Negotiates the terms and conditions of the transfer. Receives reports and transfer documentation from function 4.7.2.3.2.1. Provides to function 4.7.2.3.2.1 the authorization to receive MCOs containing K Basin SNF.
4.7.2.2.1.4.1	Negotiate MCO Acceptance Criteria. Negotiate specific criteria to accept the MCO based on CSB capability.
4.7.2.2.1.4.2	Negotiate MCO Shipment Schedule. Plans with other organizations in order to develop a mutually agreeable schedule for the shipment of MCO.
4.7.2.2.1.5	Verify MCO Inventory and Documentation. Physically verifies the MCO inventory. In conjunction with function 4.7.2.1.1.4, maintains MCO inventory documentation.
4.7.2.2.1.5.1	Perform Visual Inspections. Performs inspections to assess integrity.
4.7.2.2.1.5.2	Verify Records of Transactions. Ensure that transaction records are consistent with physical inventories of MCO on hand.

Table 4. Function 4.7.2.2.3 Definitions

Function Number	Function Title and Definition
4.7.2.2.3 (SNF Project Function)	Administer Operations to Interim Store MCO. Administers interim storage operations and transfer agreements. Verifies MCO inventories and documentation.
4.7.2.2.3.1	Administer Interim Storage Operations. Plans and assesses the operations to be conducted for the safe and efficient interim storage of sealed MCOs. Establishes administrative controls to implement staff dose allowable limits. Plans and schedules facility operations. Prepares operations management plan. Directs, supervises, and controls facility operations.
4.7.2.2.3.1.1	Establish Administrative Controls. Establishes administrative controls to ensure that the facility and operations are maintained within the facility authorization basis in order to minimize risk to the staff, public, and the environment.
4.7.2.2.3.1.2	Establish Controls to Implement Staff Dose Allowable Limits. Establishes staff radiation dose limits and ensures compliance. Receives data and reports from function 4.7.2.3.2.5.
4.7.2.2.3.1.3	Prepare Operations Management Plan. Prepares operations management plan that states the mission and objectives, and defines operations, requirements, and resources.
4.7.2.2.3.2	Accept CSB Interim Storage. Defines interim storage operations, and facility requirements and acceptance criteria. Negotiates requirements implementation with function 2.4.1.1, and supports efforts under this function for CSB interim Storage. Accepts the facility for interim storage.
4.7.2.2.3.2.1	Define Interim Storage Operations. Plans and assesses the functions necessary for safe and efficient interim storage of sealed MCOs.

Table 4. Function 4.7.2.2.3 Definitions

Function Number	Function Title and Definition
4.7.2.2.3.2.2	Define Facility Requirements and Acceptance Criteria. Defines requirements which the completed facility must meet and, based on these requirements, the specific criteria which will be used to accept the facility.
4.7.2.2.3.2.3	Accept Facility. Accept the facility for operation, after testing that has verified acceptable performance and any deficiencies have been corrected.
4.7.2.2.3.2.4	Configure MCO for Interim Storage Operations. Perform required operations to prepare for interim storing of sealed MCOs.
4.7.2.2.3.3	Administer MCO Transfer. Administers the transfer of sealed MCOs to interim Storage. Receives reports and transfer documentation from function 4.7.2.5.1.1. Provides to function 4.7.2.5.1.1 the authorization to receive sealed MCOs for interim storage.
4.7.2.2.3.4	Verify MCO Inventory and Documentation. Physically verifies the MCO inventory. In conjunction with function 4.7.2.1.1.4, maintains MCO inventory documentation.
4.7.2.2.3.4.1	Perform Visual Inspections. Performs inspections to assess integrity.
4.7.2.2.3.4.2	Verify Records of Transactions. Ensure that transaction records are consistent with physical inventories of MCO on hand.

Table 5. Function 4.7.2.3.1 Definition

Function Number	Function Title and Definition
4.7.2.3 (SNF Project Function)	Seal K Basin MCO. Receives loaded MCOs from K Basin and MCOs from staging for transfer to the weld operation. Receive shipments of empty MCOs and canister cover assemblies for storage.
4.7.2.3.1	Receive Shipment Receives loaded MCO shipments, empty MCO shipments, and canister cover assembly shipments.
4.7.2.3.1.1	Receive K Basin MCO Shipment. Accesses the facility, and receives and returns the transporter/transportation cask. Handles the transporter/cask to support the access, receive, and return functions. Collects and contains incidental waste.
4.7.2.3.1.1.1	Access Facilities (Transporter). Gain access to the facility site, keeps the transporter/cask in standby position, and receives the transporter/cask at the facility.
4.7.2.3.1.1.1.1	Gain Access (Transporter). Attains access to the facility site.
4.7.2.3.1.1.1.2	Standby Transporter/Cask. Keeps the transporter/cask in standby status.
4.7.2.3.1.1.1.3	Receive Transporter/Cask. Receives the transporter/cask at the facility.
4.7.2.3.1.1.2	Handle Transporter/Cask. Handles the transporter/transportation cask to support the access, receive, and return functions. Provides transporter/transportation cask isolation. Opens and closes cask, and surveys, decontaminates, inspects, and stores the transporter/cask. Performs the functions defined in 4.7.2.3.1.1.5.

Table 5. Function 4.7.2.3.1 Definition

Function Number	Function Title and Definition
4.7.2.3.1.1.2.1	Move Transporter/Cask. Moves the transporter/cask within the facility.
4.7.2.3.1.1.2.2	Isolate Transporter/Cask. Isolates the transporter/cask from the environment.
4.7.2.3.1.1.2.3	Handle Cask. Performs required handling operations on the cask. Includes opening and removing the cask lid and installing and closing the cask lid.
4.7.2.3.1.1.2.4	Survey Transporter/Cask. Performs radiological surveys to assess contamination levels. Prescribes the adequate decontamination effort.
4.7.2.3.1.1.2.5	Decontaminate Transporter/Cask. Performs decontamination procedures to reduce MCO contamination to safe, allowable levels.
4.7.2.3.1.1.2.6	Inspect Transporter/Cask. Performs physical inspections to assess the structural integrity of the transporter/cask. Identifies unsafe conditions and prescribes maintenance.
4.7.2.3.1.1.2.7	Store Transporter/Cask. Maintains the transporter/cask in storage.
4.7.2.3.1.1.3	Transfer MCO. Performs the functions defined in 4.7.2.3.1.1.2 as required to prepare the transporter/cask for off-loading the MCO. Verifies readiness to off-load and transfers custody of the MCOs.
4.7.2.3.1.1.3.1	Verify Readiness to Receive. Verifies the readiness of the facility to receive transporter/cask.

Table 5. Function 4.7.2.3.1 Definition

Function Number	Function Title and Definition
4.7.2.3.1.1.3.2	Transfers MCOs Custody to Staging Operations. Obtains the MCO identification numbers. Prepares complete, accurate transfer documentation. Obtains required approvals and signatures. Delivers sender's copy of transfer documentation to function 4.7.2.2.1.
4.7.2.3.1.1.3.3	Unload MCO from Cask. Verifies readiness to unload the MCO from the cask. Handles the transfer package and unloads the MCO from the cask.
4.7.2.3.1.1.4	Return Transporter/Cask. Performs the functions defined in 4.7.2.3.1.1.2 as required to prepare the transporter/cask for the return trip. Determines the transporter/cask maintenance needs, loads an empty MCO into the cask, and dispatches the transporter/cask to the proper facility. Performs the functions defined in 4.7.2.3.1.1.5.
4.7.2.3.1.1.4.1	Determine Transporter/Cask Maintenance Needs. Inspects the transporter/cask and reviews preventive maintenance schedules to determine needs.
4.7.2.3.1.1.4.2	Load Empty MCO in Cask. Retrieves an empty MCO from storage and loads it in the cask.
4.7.2.3.1.1.4.3	Load Cask on Transporter. Places cask with empty MCO on transporter and secures cask to transporter.
4.7.2.3.1.1.4.4	Dispatch Transporter/Cask. Dispatches the transporter.
4.7.2.3.1.1.5	Collect and Contain Incidental Waste. Collects and contains solid, liquid and gaseous effluent waste generated by the receive, return, and handle operations. Transfers waste to function 4.7.2.1.1.6.

Table 5. Function 4.7.2.3.1 Definition

Function Number	Function Title and Definition
4.7.2.3.1.2	Receive Empty MCO Shipment. Accesses the facility, and receives and returns the transporter. Handles the transporter to support the access, receive, off-load MCO, and return functions. Handles the empty MCO. Collects and contains incidental waste.
4.7.2.3.1.2.1	Access Facility Transporter. Gains access to the facility site, keeps the transporter in standby position, and receives the transporter at the facility.
4.7.2.3.1.2.1.1	Gain Access Transporter. Attains access to the facility site.
4.7.2.3.1.2.1.2	Standby Transporter. Keeps the transporter in standby status.
4.7.2.3.1.2.1.3	Receive Transporter. Receives the transporter at the facility.
4.7.2.3.1.2.1.4	Move Transporter. Moves the empty MCO transporter within the facility.
4.7.2.3.1.2.1.5	Dispatch Transporter. Dispatches the empty MCO transporter from the facility.
4.7.2.3.1.2.2	Transfer Empty MCO. Transfer custody of the empty MCO to the Staging Operations.
4.7.2.3.1.2.2.1	Verify Readiness to Receive. Verifies the readiness of the facility to receive transporter.
4.7.2.3.1.2.2.2	Verify Transfer Documentation. Verify that the transfer documentation is complete and accurate.

Table 5. Function 4.7.2.3.1 Definition

Function Number	Function Title and Definition
4.7.2.3.1.2.2.3	Off-Load Empty MCO. Off-loads the empty MCO from the transporter.
4.7.2.3.1.2.3	Handle Empty MCO. Moves and stores the empty MCO.
4.7.2.3.1.2.3.1	Move Empty MCO. Move the empty MCO to/from storage.
4.7.2.3.1.2.3.2	Store Empty MCO. Stores the empty MCO until they are needed.
4.7.2.3.1.2.4	Collect and Contain Incidental Waste. Collects and contains solid, liquid and gaseous effluent waste generated by the receive, return, and handle operations. Transfers waste to function 4.7.2.1.1.6.
4.7.2.3.1.3	Receive Canister Cover Assembly Shipment. Accesses the facility and receives and returns the truck. Handles the truck to support the access, receive, off-load canister cover assembly, and return functions. Handles the canister cover assembly. Collects and contains incidental waste.
4.7.2.3.1.3.1	Access Facility. Gains access to the facility site. Keeps the truck in standby position, and receives the truck at the facility.
4.7.2.3.1.3.1.1	Gain Access Truck. Truck Attains access to the facility site.
4.7.2.3.1.3.1.2	Standby Truck. Keeps the truck in standby status.

Table 5. Function 4.7.2.3.1 Definition

Function Number	Function Title and Definition
4.7.2.3.1.3.1.3	Receive Truck. Receives the truck at the facility.
4.7.2.3.1.3.1.4	Move Truck. Moves the canister cover assembly truck within the facility.
4.7.2.3.1.3.1.5	Dispatch Truck. Dispatches the empty canister cover assembly truck from the facility.
4.7.2.3.1.3.2	Transfer Canister Cover Assembly. Transfer custody of canister cover assembly to welding operations.
4.7.2.3.1.3.2.1	Verify Readiness to Receive. Verifies the readiness at the facility to receive truck.
4.7.2.3.1.3.2.2	Verify Transfer Documentation. Verify the transfer documentation is complete and accurate.
4.7.2.3.1.3.2.3	Off-Load Canister Cover Assembly. Off-loads canister cover assembly from the truck.
4.7.2.3.1.3.3	Handle Canister Cover Assembly. Moves and stores the canister cover assembly.
4.7.2.3.1.3.3.1	Move Canister Cover Assembly. Move the canister cover assembly to/from storage.
4.7.2.3.1.3.3.2	Store Canister Cover Assembly. Stores canister cover assembly until needed.

Table 5. Function 4.7.2.3.1 Definition

Function Number	Function Title and Definition
4.7.2.3.1.3.3.4	Collect and Contain Incidental Waste. Collects and contains solid waste generated by the receive and handle operations. Transfers waste to function 4.7.2.1.1.6.

Table 6. Function 4.7.2.3.2 Definition

Function Number	Function Title and Definition
4.7.2.3 (SNF Project Function)	Seal K Basin MCO. Receives shipments of SNF from K Basin for staging and transfer to the sampling/weld process.
4.7.2.3.2	Seal MCO. Receives MCOs containing K Basin SNF and stages the MCOs for transfer to sampling/weld process. Ensures the safety of operations by controlling and monitoring the MCO environment, and maintaining the integrity of the MCOs. Handles MCOs to support the stage, sampling/weld, and maintain integrity functions. Collects and contains the incidental waste generated by the stage, sampling/weld, maintain integrity, and handle functions.
4.7.2.3.2.1	Receive MCO. Verifies readiness to receive, obtains authorization to receive, and accepts custody of K Basin SNF.
4.7.2.3.2.1.1	Verify Readiness to Receive. Verifies the readiness of the facility to receive SNF, as well as package and transporter conformance with transfer criteria. Reconciles variances with the sender. Reports findings to function 4.7.2.2.1.
4.7.2.3.2.1.2	Obtain Authorization to Receive. Requests and obtains from function 4.7.2.2.1 the authorization to receive MCOs containing K Basin SNF.
4.7.2.3.2.1.3	Accept Custody of MCO. Verifies transfer documentation to ensure that documentation is complete, and accurate, and includes all required approvals and signatures. Matches the MCO identification numbers with those shown in transfer documentation. Accepts custody of the MCOs and delivers transfer documentation to function 4.7.2.2.1.

Table 6. Function 4.7.2.3.2 Definition

Function Number	Function Title and Definition
4.7.2.3.2.2	Stage MCO. Performs the functions defined in 4.7.2.3.2.7 to off-load, transfer, and position the MCOs for staging until the sealing process is completed. Provides MCO containment of received MCOs. Performs the functions defined in 4.7.2.3.2.4, 4.7.2.3.2.5, 4.7.2.3.2.6, and 4.7.2.3.2.8.
4.7.2.3.2.2.1	Position MCO. Position the MCOs for staging.
4.7.2.3.2.2.2	Stage MCO. Provides containment and sustain the MCOs until the seal process is completed.
4.7.2.3.2.3	Seal MCO for Interim Storage. Performs the functions defined in 4.7.2.3.2.7 to retrieve, transfer, and position the MCOs for staging. Stages the MCOs for transfer to sampling/weld. Performs the functions defined in 4.7.2.3.2.4, 4.7.2.3.2.5, 4.7.2.3.2.6, and 4.7.2.3.2.8.
4.7.2.3.2.3.1	Stage MCO for Transfer to Sampling/Weld. Stages the MCOs for transfer to the sampling/weld function.
4.7.2.3.2.4	Control MCO Environment. Controls the temperature of the MCOs. Implements administrative controls.
4.7.2.3.2.4.1	Control MCO Temperature. Maintains the temperature of the MCO cooling media within allowed limits.
4.7.2.3.2.4.2	Implement Administrative Controls. Implements administrative controls to ensure the safety of the worker, public, and the environment.
4.7.2.3.2.5	Monitor MCO Environment. Performs MCO monitoring to ensure that the SNF is kept in its stable condition and ensures the safety of the operations. Monitors the temperature of the MCOs. Monitors contamination. Monitors staff radiation dose. Records and transmits data to functions 4.7.2.1.1, 4.7.2.2.1, and 4.7.2.2.3.

Table 6. Function 4.7.2.3.2 Definition

Function Number	Function Title and Definition
4.7.2.3.2.5.1	Monitor MCO Temperature. Monitors the temperature of the MCO cooling media to ensure that it is kept within allowed limits.
4.7.2.3.2.5.2	Monitor Contamination of MCO Environment. Monitors contamination of the MCO environment and detects MCOs leakage.
4.7.2.3.2.5.3	Monitor Staff Radiation Dose. Monitors staff radiation dose to ensure compliance with allowed limits.
4.7.2.3.2.6	Maintain MCO Integrity. Verifies the integrity of the MCOs. Performs the functions defined in 4.7.2.3.2.7 to transfer and position the MCOs. Surveys, decontaminates, and inspects temporary storage in overpack storage tubes for the MCOs. Performs the functions defined in 4.7.2.3.2.8.
4.7.2.3.2.6.1	Survey MCO. Performs radiological surveys to assess MCO contamination levels. Prescribes the adequate decontamination effort.
4.7.2.3.2.6.2	Decontaminate MCO. Performs decontamination procedures to reduce MCO contamination to safe, allowable levels.
4.7.2.3.2.6.3	Inspect MCO. Performs inspections to assess the integrity of the MCOs. Identifies unsafe conditions and prescribes MCO overpacking and needed service.
4.7.2.3.2.6.4	Store in Overpack Storage Tube. Places the off-normal MCOs into MCO overpack storage tubes.
4.7.2.3.2.7	Handle MCO. Handles MCOs to support the interim storage, seal, and maintain integrity functions. Provides MCO shielding. Off-loads, transfers, and positions MCOs. Performs the functions defined in 4.7.2.3.2.8.

Table 6. Function 4.7.2.3.2 Definition

Function Number	Function Title and Definition
4.7.2.3.2.7.1	Contain/Shield MCO. Provides MCO shielding whenever the MCOs are not contained within shielded enclosures.
4.7.2.3.2.7.2	Move MCO. Move, position, and retrieve the MCO within the facility.
4.7.2.3.2.7.3	Transfer MCO. Transfers the MCOs between functional locations to support the interim storage, seal, and maintain integrity functions.
4.7.2.3.2.7.4	Position MCO. Positions and secures the MCOs in the functional locations to support the interim storage, seal, and maintain integrity functions.
4.7.2.3.2.8	Collect and Contain Incidental Waste. Collects and contains solid, liquid and gaseous effluent waste generated by the stage and interim storage operations. Transfers waste to function 4.7.2.1.1.6.

Table 7. Function 4.7.2.5.1 Definitions

Function Number	Function Title and Definition
4.7.2.5.1 (SNF Project Function)	Interim Store MCO. Receives sealed MCOs from welding, provides interim storage of the sealed MCOs, and stages the MCOs for transfer to final disposition. Ensures the safety of operations by controlling and monitoring the environment, and maintaining the integrity of the MCOs. Handles MCOs to support the interim storage, stage, and maintain integrity functions. Collects and contains the incidental waste generated by the interim store, maintain integrity, handle functions, and stage for final disposition.
4.7.2.5.1.1	Receive MCO. Verifies readiness to receive sealed MCO.
4.7.2.5.1.2	Interim Store MCO. Performs the functions defined in 4.7.2.5.1.7 to transfer, and position the MCOs for interim storage. Configure the MCOs for interim storage, and provides MCO containment during interim storage. Performs the functions defined in 4.7.2.5.1.3, 4.7.2.5.1.4, 4.7.2.5.1.5, and 4.7.2.5.1.7.
4.7.2.5.1.2.1	Configure MCO for Interim Storage. Position the MCOs for interim storage.
4.7.2.5.1.2.2	Interim-Store MCO. Provides containment and sustain the MCOs in interim storage until a decision on the final disposition of SNF is implemented.
4.7.2.5.1.3	Control MCO Environment. Controls the temperature of the MCOs. Implements administrative controls.
4.7.2.5.1.3.1	Control MCO Temperature. Maintains the temperature of the MCO cooling media within allowed limits.
4.7.2.5.1.3.2	Implement Administrative Controls. Implements administrative controls to ensure the safety of the worker, public, and the environment.

Table 7. Function 4.7.2.5.1 Definitions

Function Number	Function Title and Definition
4.7.2.5.1.4	Monitor MCO Environment. Performs monitoring to ensure that the SNF is kept in its stable condition and ensures the safety of the operations. Monitors contamination. Monitors staff radiation dose. Records and transmits data to functions 4.7.2.1.1 and 4.7.2.2.3, and 4.7.2.5.1.5.
4.7.2.5.1.4.1	Monitor MCO Temperature. Monitors the temperature of the MCO cooling media to ensure that it is kept within allowed limits.
4.7.2.5.1.4.2	Monitor Contamination of MCO Environment. Monitors contamination of the MCO environment and detects MCOs leakage.
4.7.2.5.1.4.3	Monitor Staff Radiation Dose. Monitors staff radiation dose to ensure compliance with allowed limits.
4.7.2.5.1.5	Maintain MCO Integrity. Verifies the integrity of the MCOs. Performs the functions defined in 4.7.2.5.1.6 to transfer and position the MCOs. Surveys, decontaminates, and inspects temporary storage in overpack storage tubes for the MCOs. Performs the functions defined in 4.7.2.5.1.7.
4.7.2.5.1.5.1	Survey MCO. Performs radiological surveys to assess MCO contamination levels.
4.7.2.5.1.5.2	Inspect MCO. Performs inspections to assess the integrity of the MCOs. Identifies unsafe conditions and prescribes MCO overpacking.
4.7.2.5.1.5.3	Store in Overpack Storage Tube. Places the off-normal MCOs into MCO overpack storage tubes.
4.7.2.5.1.6	Handle MCO. Handles MCOs to support the storage, final disposition, and maintain integrity functions. Provides MCO shielding. Transfers, and positions MCOs.

Table 7. Function 4.7.2.5.1 Definitions

Function Number	Function Title and Definition
4.7.2.5.1.6.1	Contain/Shield MCO. Provides MCO shielding whenever the MCOs are not contained within shielded enclosures.
4.7.2.5.1.6.2	Move MCO. Move, position, and retrieve the MCO within the facility.
4.7.2.5.1.6.3	Transfer MCO. Transfers the MCOs between functional locations to support the interim storage, final disposition, and maintain integrity functions.
4.7.2.5.1.6.4	Position MCO. Positions and secures the MCOs in the functional locations to support the interim storage, final disposition, and maintain integrity functions.
4.7.2.5.1.7	Collect and Contain Incidental Waste. Collects and contains solid and liquid effluent waste generated by the interim store and staging for final disposition operations. Transfers waste to function 4.7.2.1.1.6.
4.7.2.5.1.8	Stage MCO for Transfer to Final Disposition. Reconfigures MCOs for transfer. Performs the functions defined in 4.7.2.5.1.6 to retrieve, transfer, and position the MCOs for staging. Stages the MCOs for transfer to final disposition. Transfers custody of SNF to final disposition. Performs the functions defined in 4.7.2.5.1.3, 4.7.2.5.1.4, 4.7.2.5.1.5, and 4.7.2.5.1.7.
4.7.2.5.1.8.1	Reconfigure MCO for Staging. Positions the MCOs for staging. Removes and disconnects all lines and devices required for the safe interim storage of the MCOs. Installs protective caps and seals on points of interface.
4.7.2.5.1.8.2	Stage MCO for Transfer to Final Disposition. Stages the MCOs for transfer to the final disposition function.

Table 7. Function 4.7.2.5.1 Definitions

Function Number	Function Title and Definition
4.7.2.5.1.8.3	Transfer MCO Custody. Obtains the MCO identification numbers. Prepares complete, accurate transfer documentation. Obtains required approvals and signatures. Delivers sender's copy of transfer documentation to function 4.7.2.2.3.

Table 8. Function 4.1.1.10 Definition

Function Number	Function Title and Definition
4.1.1.10 (SNF Project Function)	Deactivate Canister Storage Building. Develop and execute plans to deactivate the CSB.
4.1.1.10.1	Plan Deactivation. Plan the eventual deactivation of the CSB. Develop and maintain turnover endpoint specifications.
4.1.1.10.2	Perform Deactivation. Deactivate the CSB after it has attained its mission. Take actions, as required, to minimize staff, public, and environmental hazards.

4.0 REQUIREMENTS

4.1 REQUIREMENT HIERARCHY

Requirements imposed on the CSB Subproject constitute allocations of SNF Project mission requirements. These SNF Project mission requirements represent constraints imposed against the Hanford Site, that are passed on to SNF Project functions, including the SNF Project functions that provide the context for the CSB Subproject: 2.4.1.1 Provide Canister Storage Building, 4.7.2.1.1 Operate and Maintain Canister Storage Building, 4.7.2.2.1 Administer Operations to Seal MCO, 4.7.2.2.3 Administer Operations to Interim Store MCO, 4.7.2.3 Seal MCO, 4.7.2.5.1 Interim Store MCO, and 4.1.1.10 Deactivate Canister Storage Building.

4.2 REQUIREMENT BASIS

Table 9 provides the requirements basis for the CSB Subproject.

Table 9. CSB Subproject Requirements Basis

REQ. NO.	TYPE	REQUIREMENT BASIS
		J.E. Lytle Letter to T.P Grumbly, Approval of Path Forward for N-Reactor Spent Nuclear Fuel Interim Storage; DOE EM-36, 9 Nov 94 Proven, commercially available systems and components would be used to the greatest extent possible. **J.E. Lytle Letter to T.P Grumbly, Approval of Path Forward for N-Reactor Spent Nuclear Fuel Interim Storage; DOE EM-36, 9 Nov 94** While the overall approach is not finalized, the intent is to utilize commercial experience and marketplace competition to achieve best cost and shortest schedule. **J.E. Lytle Letter to T.P Grumbly, Approval of Path Forward for N-Reactor Spent Nuclear Fuel Interim Storage; DOE EM-36, 9 Nov 94** Necessary testing, design and procurement of critical path items would be done in parallel. **J.E. Lytle Letter to T.P Grumbly, Approval of Path Forward for N-Reactor Spent Nuclear Fuel Interim Storage; DOE EM-36, 9 Nov 94** A NEPA implementation plan must be developed, building on the strategy outlined here-in; the K Basins' EIS must be prepared as soon as possible. A Notice of Intent for the K Basins EIS will be issued by December 31, 1994. **J.E. Lytle Letter to T.P Grumbly, Approval of Path Forward for N-Reactor Spent Nuclear Fuel Interim Storage; DOE EM-36, 9 Nov 94** Critical path work such as testing, design and procurement could proceed in parallel with NEPA review without prejudicing the consideration of alternatives to the proposed action, and consistent with applicable regulatory requirements. **J.E. Lytle Letter to T.P Grumbly, Approval of Path Forward for N-Reactor Spent Nuclear Fuel Interim Storage; DOE EM-36, 9 Nov 94** The technical aspects of the proposed approach must be refined. Based on that work, technical requirements, application of NRC regulatory guidelines, procurement specifications, and requests for proposal must be prepared and issued, on an expedited

Table 9. CSB Subproject Requirements Basis

REQ. NO.	TYPE	REQUIREMENT BASIS
		basis. **J.E. Lytle Letter to T.P Grumbly, Approval of Path Forward for N-Reactor Spent Nuclear Fuel Interim Storage; DOE EM-36, 9 Nov 94** The technical basis for conditioning and dry storage would be confirmed via a high priority characterization and test program. **J.E. Lytle Letter to T.P Grumbly, Approval of Path Forward for N-Reactor Spent Nuclear Fuel Interim Storage; DOE EM-36, 9 Nov 94** The conditioning and dry storage would be conducted under the Hanford SNF EIS, for which the ROD is scheduled for issue in June 1996. **DOE 1300.2A - Department of Energy Technical Standards Programs (K)** **DOE 1324.2A - Records Disposition** [This source not in SNF Project Requirements Basis. Source is from D Timmins comments 4/17/95.] **DOE 1360.2B - Unclassified Computer Security Program (K)** **DOE 1540.2 - Hazardous Material Packaging for Transport--Administrative Procedures** [This source not in SNF Project Requirements Basis. Source is from D Timmins comments 4/17/95.] **DOE 1540.3A - Base Technology for Radioactive Materials Transportation Packaging Systems** [This source not in SNF Project Requirements Basis. Source is from D Timmins comments 4/17/95.] **DOE 4330.4B - Maintenance Management Program** **DOE 4700.1 - Project Management System (K)** **DOE 5000.3B - Occurrence Reporting & Processing of Operations Information (K)** **DOE 5300.1C - Telecommunications**

Table 9. CSB Subproject Requirements Basis

REQ. NO.	TYPE	REQUIREMENT BASIS
		DOE 5400.1 - General Environmental Protection Program (K)
		DOE 5400.3 - Hazardous and Radioactive Mixed Waste Program (K) [Challenged in D Timmins comments 4/17/95.]
		DOE 5400.5 - Radiation Protection of the Public & the Environment (K)
		DOE 5440.1E - National Environmental Policy Act Compliance Program [This source not in SNF Project Requirements Basis. Source is from D Timmins comments 4/17/95.]
		DOE 5480.1B - Environment, Safety and Health Program for Department of Energy Operations (K)
		DOE 5480.3 - Safety Requirements for the Packaging and Transportation of Hazardous Materials, Hazardous Substances, and Hazardous Wastes (K)
		DOE 5480.4 - Environmental Protection, Safety & Health Protection Standards (K)
		DOE 5480.7A - Fire Protection
		DOE 5480.8A - Contractor Occupational Medical Program (K)
		DOE 5480.9A - Construction Safety and Health Program
		DOE 5480.10 - Contractor Industrial Hygiene Program (K)
		DOE 5480.11 - Radiation Protection for Occupational Workers
		DOE 5480.18B - Nuclear Facilities Training Accreditation Program [This source not in SNF Project Requirements Basis. Source is from D Timmins comments 4/17/95.]
		DOE 5480.19 - Conduct of Operations Requirements for DOE Facilities (K)

Table 9. CSB Subproject Requirements Basis

REQ. NO.	TYPE	REQUIREMENT BASIS
		DOE 5480.20A - Personnel Selection, Qualification, Training, and Staffing Requirements at DOE Reactor and Non-Reactor Nuclear Facilities
		DOE 5480.21 - Unreviewed Safety Questions (K)
		DOE 5480.22 - Technical Safety Requirements
		DOE 5480.23 - Nuclear Safety Analysis Reports
		DOE 5480.24 - Nuclear Criticality Safety
		DOE 5480.26 - Trending and Analysis of Operations Information Using Performance Indicators
		DOE 5480.28 - Natural Phenomena Hazards Mitigation
		DOE 5480.29 - Employee Concerns Management System (K)
		DOE 5480.31 - Startup and Restart of Nuclear Facilities, Operational Readiness Review and Readiness Assessments (K)
		DOE 5482.1B - Environment, Safety and Health Appraisal Program (K)
		DOE 5483.1A - Occupational Safety and Health Program for DOE Contractor Employees at Government Operated Facilities (K)
		DOE 5484.1 - Environmental Protection, Safety, and Health Protection Information Reporting Requirements (K)
		DOE 5500.2B - Emergency Categories, Classes, and Notification and Reporting Requirements
		DOE 5500.3A - Planning and Preparedness for Operational Emergencies
		DOE 5632.1C - Protection and Control of Safeguards and Security Interests

Table 9. CSB Subproject Requirements Basis

REQ. NO.	TYPE	REQUIREMENT BASIS
		DOE 5633.3B - Control and Accountability of Nuclear Material [This source not in SNF Project Requirements Basis. Source is from D Timmins comments 4/17/95.] **DOE 5820.2A - Radioactive Waste Management** **DOE 6430.1A - General Design Criteria (K)** **DOE-STD-1020-94 - Natural Phenomena Hazard Design and Evaluation Criteria for Department of Energy Facilities** **DOE-STD-1021-93 - Performance Categorization Criteria for Structures, Systems, and Components at DOE Facilities Subject to Natural Phenomena Hazards** **DOE-STD-1022-94 - Natural Phenomena Hazards Site Characterization Criteria** **DOE-STD-1023-95 - Natural Phenomena Hazards Assessment Criteria** **DOE-STD-3009-94 - Preparation Guide for U.S. Department of Energy Non-reactor Nuclear Facilities Safety Analysis Report** **SEN-35-91 - Nuclear Safety Policy** [This source not in SNF Project Requirements Basis. Source is from D Timmins comments 4/17/95.] **U.S. Department of Energy. October 1994. Spent Nuclear Fuel Program Requirements Document, SNF-RD-PM-001, Rev. 0.** *Systems Approach, Section 4.1.1.* A systems approach shall be used to support program integration and to provide a structured, logical, documentable, and defensible approach to planning. A structured, risk-based management approach is required to integrate, coordinate, and optimize the activities necessary for conditioning, handling, and transportation of SNF in the near term, for interim storage, and in preparing the SNF for permanent disposal. **U.S. Department of Energy. October 1994. Spent Nuclear Fuel Program**

Table 9. CSB Subproject Requirements Basis

REQ. NO.	TYPE	REQUIREMENT BASIS
		Requirements Document, SNF-RD-PM-001, Rev. 0. *Performance Assessments, Section 4.1.2.* A comprehensive performance assessment shall be performed for each SNF waste form destined for disposal in a geologic repository. A coordinated systems approach that encompasses storage concepts consistent with the geologic disposal system and activities undertaken by RW shall be used. **U.S. Department of Energy. October 1994. Spent Nuclear Fuel Program Requirements Document, SNF-RD-PM-001, Rev. 0.** *Program Plans, Section 4.1.3.* The SNF program shall prepare and maintain a combined Program Plan, Program Management Plan, and Systems Engineering Management Plan (SNF Program Plan). Included as a subset of this SNF Program Plan are the following planning documents: Technology Integration Plan. The Technology Integration Plan shall document the plans and activities necessary to address technical issues associated with managing existing SNF storage, achieving safe interim storage, and preparing the SNF for permanent disposal. These activities include: . developing technologies for the resolution of existing SNF storage issues, . identifying SNF characterization requirements and criteria, . establishing waste acceptance criteria for SNF interim storage and final disposal, . developing conditioning technologies for SNF interim storage, and . developing conditioning technologies for preparing the SNF for final disposal. Interim Storage Plan. The Interim Storage Plan shall document the plans and activities necessary to safely manage existing SNF facilities and to bring on line new facilities and to bring on line new interim storage activities on a national level and optimizing storage schedules. Included within the Interim Storage Plan effort are specific activities associated with: . undertaking actions necessary to effect an NRC licensability review of an interim

Table 9. CSB Subproject Requirements Basis

REQ. NO.	TYPE	REQUIREMENT BASIS
		storage demonstration project(s), . developing a strategy for the conduct of NRC licensability reviews of site specific interim storage projects, and . developing a transportation strategy for implementing the results of the INEL and FRR Environmental Impact Statements. Stakeholder Involvement Plan. The Stakeholder Involvement Plan shall document the organizations, interrelationships, and procedures established to effect broad and thorough discussions of SNF activities. The Plan shall establish a framework for early and substantive stakeholder involvement in defining the nature of the SNF program and the process for program execution, and shall describe how stakeholder involvement will be sought throughout the decision making process. **U.S. Department of Energy. October 1994. Spent Nuclear Fuel Program Requirements Document, SNF-RD-PM-001, Rev. 0.** *Spent Nuclear Fuel and Facilities Database, Section 4.1.4.* A database of DOE-owned SNF and SNF facilities shall be developed and updated on an annual basis to permit effective decision making in establishing priorities and budgets for resolving existing SNF vulnerabilities, transitioning from existing to interim storage, and preparing SNF for permanent disposal. **U.S. Department of Energy. October 1994. Spent Nuclear Fuel Program Requirements Document, SNF-RD-PM-001, Rev. 0.** *Processing of "At Risk" Spent Fuels, Section 4.1.5.* Processing of "at risk" spent fuels (fuels not expected to maintain a safe and non-hazardous condition in underwater basin storage, prior to movement to interim storage or in extended interim storage) shall be evaluated as an option to assure personnel, facility, and environmental safety. Selection of "at risk" SNF types for processing shall be based upon technical documentation such as technical risk evaluation studies; process studies; cost studies; waste form, volume, and stability studies; and systems engineering studies. The evaluations shall address stakeholder concerns and support of U.S. nonproliferation policies and agreements.

Table 9. CSB Subproject Requirements Basis

REQ. NO.	TYPE	REQUIREMENT BASIS
		U.S. Department of Energy. October 1994. Spent Nuclear Fuel Program Requirements Document, SNF-RD-PM-001, Rev. 0. *General Safety Requirement, Section 4.2.1.* Safety of the public, the worker, and the protection of the environment shall be a primary consideration in program planning and execution, and in the design, construction, startup, and operation of SNF facilities.
		U.S. Department of Energy. October 1994. Spent Nuclear Fuel Program Requirements Document, SNF-RD-PM-001, Rev. 0. *Regulatory Compliance, Section 4.2.2.* SNF facilities shall be designed, constructed, and operated in full compliance with applicable Federal, State and local laws and regulations for the protection of the public and worker health and safety.
		U.S. Department of Energy. October 1994. Spent Nuclear Fuel Program Requirements Document, SNF-RD-PM-001, Rev. 0. *Facilities Authorization Basis, Section 4.2.3.* New SNF facilities shall be sited, designed, constructed, and operated to modern industry standards promulgated for new facilities having equivalent functions within the commercial nuclear industry. Where existing, Nuclear Regulatory Commission (NRC) technical requirements shall be incorporated into the design, construction, and operation of new SNF facilities.
		U.S. Department of Energy. October 1994. Spent Nuclear Fuel Program Requirements Document, SNF-RD-PM-001, Rev. 0. *Demonstration Projects, Section 4.2.4.* Technical and safety bases shall be developed for suitable demonstration projects to support licensability reviews by the NRC and to facilitate procurement of standardized facility designs within the DOE-complex.
		U.S. Department of Energy. October 1994. Spent Nuclear Fuel Program Requirements Document, SNF-RD-PM-001, Rev. 0. *Accident Radioactive Releases, Section 4.2.5.* New SNF facilities shall be designed, constructed, and operated such that after a design basis accident, potential exposure to radiation shall be within regulatory requirements, as specified in applicable sections of Title 10 of the Code of Federal

Table 9. CSB Subproject Requirements Basis

REQ. NO.	TYPE	REQUIREMENT BASIS
		Regulations (CFR). **U.S. Department of Energy. October 1994. Spent Nuclear Fuel Program Requirements Document, SNF-RD-PM-001, Rev. 0.** *Occupational Exposure, Section 4.2.6.* New SNF facilities shall be designed, constructed, and operated such that worker exposures during normal operations and anticipated operational occurrences are within regulatory requirements, as specified in applicable sections of Title 10 of the Code of Federal Regulations. Actions shall be taken to achieve the fundamental goal of reducing worker exposures to as low as reasonably achievable (ALARA). **U.S. Department of Energy. October 1994. Spent Nuclear Fuel Program Requirements Document, SNF-RD-PM-001, Rev. 0.** *Worker Safety and Industrial Hygiene, Section 4.2.7.* New SNF facilities shall be designed, constructed, and operated such that worker exposures to occupational safety hazards are within regulatory requirements, as specified in applicable sections of Titles 40 and 49 of the Code of Federal Regulations (CFR). **U.S. Department of Energy. October 1994. Spent Nuclear Fuel Program Requirements Document, SNF-RD-PM-001, Rev. 0.** *Safety Documentation, Section 4.2.8.* Safety Analysis Reports (SARs) and Technical Safety Requirements (TSRs), or Technical Specifications (per NRC regulations) as appropriate, shall be developed to establish facility safety bases and to control SNF facility operations. **U.S. Department of Energy. October 1994. Spent Nuclear Fuel Program Requirements Document, SNF-RD-PM-001, Rev. 0.** *National Environmental Policy Act (NEPA), Section 4.3.1.* SNF facilities shall be designed, constructed, and operated in full compliance with the NEPA, as specified by implementing regulations in 40 CFR 1500-1508 (on a governmental wide basis) and 10 CFR 1021 (for DOE). **U.S. Department of Energy. October 1994. Spent Nuclear Fuel Program Requirements Document, SNF-RD-PM-001, Rev. 0.** *New Facilities, Section 4.3.2.* New SNF facilities shall be designed, constructed, and operated in full compliance with

Table 9. CSB Subproject Requirements Basis

REQ. NO.	TYPE	REQUIREMENT BASIS
		applicable Federal, State and local laws and regulations for the protection of the environment. **U.S. Department of Energy. October 1994. Spent Nuclear Fuel Program Requirements Document, SNF-RD-PM-001, Rev. 0.** *Existing Facilities, Section 4.3.3.* Modifications and upgrades to existing facilities shall be designed and executed to minimize adverse environmental impact. **U.S. Department of Energy. October 1994. Spent Nuclear Fuel Program Requirements Document, SNF-RD-PM-001, Rev. 0.** *Pollution Prevention and Waste Minimization, Section 4.3.4.* SNF facilities shall be designed, constructed, and operated to integrate the fundamental goals of (1) reducing through source reduction and recycling the total release of hazardous materials to the environment, (2) establishing site-specific goals for the reduction of the generation of all types of wastes and pollutants from site operations, and (3) establishing operational restrictions to meet as low as is reasonably achievable (ALARA) objectives for radioactive materials in effluents. **U.S. Department of Energy. October 1994. Spent Nuclear Fuel Program Requirements Document, SNF-RD-PM-001, Rev. 0.** *Use of Recyclable Materials, Section 4.3.5.* Recyclable materials (i.e. materials (i.e. depleted uranium and contaminated/irradiated metals) shall be incorporated into the design of SNF storage and/or transportation canister, casks, and facilities to the extent practical. **U.S. Department of Energy. October 1994. Spent Nuclear Fuel Program Requirements Document, SNF-RD-PM-001, Rev. 0.** *Quality Assurance Program Description (QAPD), Section 4.4.1.* As an appendix to EM-30's QAPD, the SNF program shall prepare and maintain a QAPP based on the requirement of 10 CFR 830.120. If required, the SNF Quality Assurance Program shall also incorporate the applicable requirements of the civilian high-level radioactive waste program contained in RW-0333P (reference 2). This process will assure the smooth flow of SNF from existing facilities to final disposal.

Table 9. CSB Subproject Requirements Basis

REQ. NO.	TYPE	REQUIREMENT BASIS
		U.S. Department of Energy. October 1994. Spent Nuclear Fuel Program Requirements Document, SNF-RD-PM-001, Rev. 0. *Quality Assurance (QA) Requirements, Section 4.4.2.* Quality Assurance controls shall be applied, using a graded approach, commensurate with the degree of importance of SNF program activities, to the proper conditioning and storage of SNF and to achieve compatibility with the geologic disposal system and related RW activities. **U.S. Department of Energy. October 1994. Spent Nuclear Fuel Program Requirements Document, SNF-RD-PM-001, Rev. 0.** *Configuration Management, Section 4.4.3.* Formal documentation controls shall be used throughout the SNF program, including design and operations activities, to assure that requirements are clearly defined and controlled and that SNF facilities satisfy the technical, safety and operational needs. **U.S. Department of Energy. October 1994. Spent Nuclear Fuel Program Requirements Document, SNF-RD-PM-001, Rev. 0.** *Decision making, Section 4.5.1.* Decisions regarding SNF facilities shall resolve competing interests in a manner which recognizes the following priorities: public and worker health and safety, environmental protection, operations, and cost. **U.S. Department of Energy. October 1994. Spent Nuclear Fuel Program Requirements Document, SNF-RD-PM-001, Rev. 0.** *Technology Development, Section 4.5.2.* The SNF technology development program shall minimize the number and scope of technology demonstration projects for DOE-owned SNF through incorporation of the objectives and results of existing government and industry sponsored technology development programs, and shall reflect the significant lessons learned from the design and operation of commercial spent fuel facilities. Existing and proven commercial facility designs shall be adapted for DOE use, when appropriate. Recognizing that differences exist between commercial and DOE-owned SNF,

Table 9. CSB Subproject Requirements Basis

REQ. NO.	TYPE	REQUIREMENT BASIS
		technology development activities necessary to support viable facility designs and storage concepts for DOE-owned SNF shall be planned, approved in advance, and scheduled to maximize the benefits to design and operation of the facilities. Results from geologic repository performance assessments shall be used to influence the direction and priorities for technology development and the specifications for interim storage, conditioning and disposal systems. **U.S. Department of Energy. October 1994. Spent Nuclear Fuel Program Requirements Document, SNF-RD-PM-001, Rev. 0.** *Inherent and Passive Systems, Section 4.5.3.* New SNF facilities shall incorporate inherent and passive systems and features to preclude the need for active, manpower intensive operations. Designs for new SNF facilities shall be simplified to improve safety, reliability, constructibility, operability, inspectability, and maintainability. **U.S. Department of Energy. October 1994. Spent Nuclear Fuel Program Requirements Document, SNF-RD-PM-001, Rev. 0.** *Defense-in-Depth, Section 4.5.4.* Designs for new SNF facilities shall utilize the fundamental principles of defense-in-depth (i.e., redundancy and diversity) to assure that critical safety functions are achieved and that multiple barriers to the release of radioactivity are provided. Application of this principle shall include specific emphasis on the prevention and/or mitigation of design basis events. **U.S. Department of Energy. October 1994. Spent Nuclear Fuel Program Requirements Document, SNF-RD-PM-001, Rev. 0.** *Site Related Hazards, Section 4.5.5.* SNF facilities shall be designed to commercial industry standards for resistance to seismic events, floods, winds, and other natural phenomena. **U.S. Department of Energy. October 1994. Spent Nuclear Fuel Program Requirements Document, SNF-RD-PM-001, Rev. 0.** *Deterministic and Probabilistic Analysis, Section 4.5.6.* Designs shall be based on conservative deterministic approaches that establish operational and design limits for systems and equipment, considering the

Table 9. CSB Subproject Requirements Basis

REQ. NO.	TYPE	REQUIREMENT BASIS
		most challenging "credible" occurrences. Probabilistic analyses may be used to augment the deterministic analyses. It is recognized that probabilistic analysis techniques have achieved a level of development and acceptance such that they are frequently used today to evaluate facility reliability and availability, to measure safety function reliability, to assist in systems optimization during design, to minimize the potential for operator error, and to characterize and manage risks to the public associated with postulated accidents. However, as the vast majority of design, construction and operations standards remain deterministically based, deterministic design analysis - augmented by probabilistic analysis in appropriate cases - is required. **U.S. Department of Energy. October 1994. Spent Nuclear Fuel Program Requirements Document, SNF-RD-PM-001, Rev. 0.** *Safeguards and Security, Section 4.6.1.* SNF facilities shall incorporate measures necessary to prevent unauthorized access to nuclear materials, theft, diversions, hoaxes, and other malevolent acts intended to release radioactivity or disrupt operations, based upon a specified threat. **U.S. Department of Energy. October 1994. Spent Nuclear Fuel Program Requirements Document, SNF-RD-PM-001, Rev. 0.** *Emergency Planning, Section 4.6.2.* New SNF facilities shall be designed with a goal to eliminate the need for off-site evacuation and sheltering. In addition, SNF features and information necessary to support effective site emergency response actions shall be included in the design and coordinated with the emergency planning of the respective DOE sites. **U.S. Department of Energy. October 1994. Spent Nuclear Fuel Program Requirements Document, SNF-RD-PM-001, Rev. 0.** *Maintenance, Section 4.7.1.* New SNF facilities shall have ready access to equipment, provide support equipment located and sized to facilitate work, assure that systems and components have high reliability, use automation when cost effective and safety enhancing, and provide for mockups and training aimed at reducing radiological exposure and easy repair or replacement of

Table 9. CSB Subproject Requirements Basis

REQ. NO.	TYPE	REQUIREMENT BASIS
		components. Preventative maintenance approaches shall receive primary focus when undertaking facility maintenance planning. **U.S. Department of Energy. October 1994. Spent Nuclear Fuel Program Requirements Document, SNF-RD-PM-001, Rev. 0.** *Pre-Operational Testing, Section 4.7.2.* Restart of existing facilities and pre-operation and startup testing of new SNF facilities shall be planned and conducted to assure proper performance of components and subsystems individually and as part of the overall facility performance. New facilities shall be designed for ease of system and hardware checkouts. **U.S. Department of Energy. October 1994. Spent Nuclear Fuel Program Requirements Document, SNF-RD-PM-001, Rev. 0.** *Staff Training, Section 4.7.3.* A staff training program shall be implemented to meet either DOE or nuclear power industry standards, as appropriate for the particular operation. Retraining and recertification shall be part of the operator training plan. Training of facility staff shall be conducted based on standards consistent with the importance of the function and complexity of operations. **U.S. Department of Energy. October 1994. Spent Nuclear Fuel Program Requirements Document, SNF-RD-PM-001, Rev. 0.** *Instrumentation and Plant Controls, Section 4.7.4.* The design of the man-machine interface for operation and control of new SNF facilities shall incorporate human factors engineering principles and operating experience to promote safety and high operational reliability. Facility designs shall incorporate appropriate instrumentation and controls to provide the operators with diagnostic and mitigation capability. **U.S. Department of Energy. October 1994. Spent Nuclear Fuel Program Requirements Document, SNF-RD-PM-001, Rev. 0.** *Resource Conservation and Recovery Act (RCRA) Applicability, Section 4.8.1.* The SNF program shall undertake a dialogue with the Environmental Protection Agency (EPA) and affected States to determine the applicability of RCRA to DOE-owned SNF, seeking legislative action if required. DOE-owned SNF shall be evaluated for hazardous materials characteristics to

Table 9. CSB Subproject Requirements Basis

REQ. NO.	TYPE	REQUIREMENT BASIS
		provide a technical basis for cooperation with the EPA and affected States in the determination of RCRA applicability, and to establish a basis for contingency actions. **U.S. Department of Energy. October 1994. Spent Nuclear Fuel Program Requirements Document, SNF-RD-PM-001, Rev. 0.** *Federal Facilities Compliance Act (FFCA) Applicability, Section 4.8.2.* The SNF program shall undertake an evaluation of DOE-owned SNF and establish its classification in accordance with requirements specified in the FFCA for preparation of Site Treatment Plans. **U.S. Department of Energy. October 1994. Spent Nuclear Fuel Program Requirements Document, SNF-RD-PM-001, Rev. 0.** *Construction of New Facilities, Section 5.2.1.* Construction and operation of new SNF facilities shall be scheduled to minimize life cycle costs for storage of DOE-owned SNF, subject to satisfying commitments and applicable requirements for worker safety, public health, and environmental protection. An enabling assumption is made that the budget process will support the SNF program schedule and that funding will be made available for individual projects. **U.S. Department of Energy. October 1994. Spent Nuclear Fuel Program Requirements Document, SNF-RD-PM-001, Rev. 0.** *Codes and Standards, Section 5.2.2.* New SNF facilities shall be designed, constructed, and operated to modern commercial industry codes and standards. **U.S. Department of Energy. October 1994. Spent Nuclear Fuel Program Requirements Document, SNF-RD-PM-001, Rev. 0.** *Design Life, Section 5.2.3.* New SNF facilities shall be designed for a minimum of life of 40 years. **U.S. Department of Energy. October 1994. Spent Nuclear Fuel Program Requirements Document, SNF-RD-PM-001, Rev. 0.** *Interfaces, Section 5.2.4.* Systems engineering methods shall be employed in the specification and design of new SNF facilities to ensure the recognition and accommodation of interfaces among major systems, subsystems, support facilities, and external functions and systems, including

Table 9. CSB Subproject Requirements Basis

REQ. NO.	TYPE	REQUIREMENT BASIS
		SNF disposal and facilities decontamination and decommissioning. **U.S. Department of Energy. October 1994. Spent Nuclear Fuel Program Requirements Document, SNF-RD-PM-001, Rev. 0.** *Dry Storage, Section 5.2.5.* New SNF storage facilities shall utilize existing commercial storage technologies to minimize life cycle costs by taking advantage of commercial standards and licensing bases, and shall employ dry storage methods to the maximum extent permitted by environmental, safety, and cost considerations. **U.S. Department of Energy. October 1994. Spent Nuclear Fuel Program Requirements Document, SNF-RD-PM-001, Rev. 0.** *Characterization, Section 5.2.6.* The technology development program shall establish technical bases for interim storage and permanent disposal of DOE-owned SNF, and shall develop criteria and procedures to ensure that the SNF and facilities satisfy the technical bases. **U.S. Department of Energy. October 1994. Spent Nuclear Fuel Program Requirements Document, SNF-RD-PM-001, Rev. 0.** *Conditioning, Section 5.2.7.* SNF shall be conditioned to the extent necessary to ensure its integrity under long-term interim storage conditions. When evaluating conditioning options for interim storage, the waste acceptance criteria (WAC) established for geologic disposal shall be considered. **U.S. Department of Energy. October 1994. Spent Nuclear Fuel Program Requirements Document, SNF-RD-PM-001, Rev. 0.** *Assurance of Storage Viability, Section 5.2.8.* Criteria and methods, appropriate to each fuel form and storage method, shall be established to assure continued safe storage of DOE-owned SNF. Methods may include demonstration, analysis, retrieval for inspection, and utilization of representative samples. **U.S. Department of Energy. October 1994. Spent Nuclear Fuel Program Requirements Document, SNF-RD-PM-001, Rev. 0.** *Environmental Monitoring, Section 5.2.9.* SNF facilities shall utilize real time monitoring of facility effluents as a tool for minimizing environmental impacts.

Table 9. CSB Subproject Requirements Basis

REQ. NO.	TYPE	REQUIREMENT BASIS
		U.S. Department of Energy. October 1994. Spent Nuclear Fuel Program Requirements Document, SNF-RD-PM-001, Rev. 0. *Decontamination and Decommissioning, Section 5.2.10.* New SNF facilities shall be designed, constructed, maintained, and operated to facilitate eventual decontamination and decommissioning.
		U.S. Department of Energy. October 1994. Spent Nuclear Fuel Program Requirements Document, SNF-RD-PM-001, Rev. 0. *Contract for Permanent Disposal, Section 5.3.1.* The SNF program shall draft, in conjunction with RW, a proposed contract for permanent disposal of DOE-owned SNF. This contract shall incorporate the principles and terms established for contracts with commercial nuclear utilities for permanent disposal of commercial SNF.
		U.S. Department of Energy. October 1994. Spent Nuclear Fuel Program Requirements Document, SNF-RD-PM-001, Rev. 0. *Waste Acceptance Criteria (WAC), Section 5.3.2.* The SNF program shall undertake a joint effort with RW to establish the WAC for permanent disposal of DOE-owned SNF in a geologic repository. Development of the WAC shall include evaluation of conditioning and volume reduction alternatives based upon analyses that balance the costs and benefits of such alternatives.
		U.S. Department of Energy. October 1994. Spent Nuclear Fuel Program Requirements Document, SNF-RD-PM-001, Rev. 0. *Criticality Safety, Section 5.3.3.* The SNF program shall undertake a joint effort with RW to address criticality safety criteria for repository disposal of DOE-owned SNF.
		U.S. Department of Energy. October 1994. Spent Nuclear Fuel Program Requirements Document, SNF-RD-PM-001, Rev. 0. *Canisterization, Section 5.3.4.* The SNF program shall undertake a joint effort with RW to utilize a standardized canister, developed by RW, for storing, transporting, and disposing of DOE-owned SNF.
		U.S. Department of Energy. October 1994. Spent Nuclear Fuel Program Requirements Document, SNF-RD-PM-001, Rev. 0. *Joint Technology Programs, Section 5.3.5.* The SNF program shall undertake, where appropriate joint development

Table 9. CSB Subproject Requirements Basis

REQ. NO.	TYPE	REQUIREMENT BASIS
		efforts with RW to resolve technical issues associated with the geologic disposal of DOE-owned SNF. Examples of these issues include: . decay heat removal . radiation shielding . physical integrity . physical dimensions and quantity . standardization of packaging . material incompatibilities . corrosion product control **U.S. Department of Energy. October 1994. Spent Nuclear Fuel Program Requirements Document, SNF-RD-PM-001, Rev. 0** *Conditioning, Section 5.3.6.* SNF shall be conditioned to the extent necessary to meet the WAC for permanent disposal in a geologic repository. **U.S. Department of Energy. October 1994. Spent Nuclear Fuel Program Requirements Document, SNF-RD-PM-001, Rev. 0.** *Accountability, Safeguards, and Security, Section 5.3.7.* The SNF program shall undertake a joint effort with RW to address the accountability, safeguards, and security issues associated with geologic disposal of high enriched and/or classified DOE-owned SNF. **Hanford Mission Plan, Volume 1, Site Guidance, para. 4 (M)** Environmental Restoration includes conducting interim cleanup actions without limiting implementation of the final decision on restoration. **Hanford Mission Plan, Volume 1, Site Guidance, para. 19 (M)** Store SNF destined for off-site disposition at an on-site location until off site locations are prepared to accept SNF. Off-site disposal sites are assumed to not be available until after site restoration is complete. **Hanford Mission Plan, Volume 1, Site Guidance, para. 22 (M)** There is an interface issue with the undesignated program that will be responsible for

Table 9. CSB Subproject Requirements Basis

REQ. NO.	TYPE	REQUIREMENT BASIS
		ultimate disposition of irradiated fuels. **Fiscal Year 1995 Hanford Mission Plan, Volume 1, Site Guidance, September 1994 (M)** It is assumed, subject to the ROD from the Hanford Remedial Action Environmental Impact Statement (HRA-EIS), that the 200 Area and central plateau will be used for the collection and disposal of waste materials that remain on site and for the activities associated with them. Activities that the DOE considers incompatible with waste disposal actions will be excluded from the 200 Area surface, subsurface, and groundwater during waste management operations. Following waste management operations, institutional access control will be identified by performance assessments in accordance with DOE Order 5820.2A. **Fiscal Year 1995 Hanford Mission Plan, Volume 1, Site Guidance, September 1994 (M)** The Systems Engineering process is being applied at the Hanford Site to establish and maintain the integrated Hanford Site Technical Baseline, which is necessary to accomplish the Hanford Site Mission. The Systems Engineering approach, as adapted to Hanford Site cleanup, does the following: . Receives the Site Mission statement from the Strategic Quality Planning process . Identifies functions needed to complete the mission; requirements and constraints to performing those functions; performance criteria for accomplishing the functions; alternative physical solutions for accomplishing the functions given the requirements, constraints, and performance criteria; optimal physical solutions that consider risk factors and stakeholder values; and a technical baseline that is a sequence of activities necessary to implement the selected physical solutions. . Delivers the integrated technical baseline of selected physical solutions to the Site Management System (SMS) process for planning, organizing, scheduling, performing, and managing change. . As an iterative process, receives input from SMS or other processes regarding

Table 9. CSB Subproject Requirements Basis

REQ. NO.	TYPE	REQUIREMENT BASIS
		changes in risk factors or stakeholder values and redefines or identifies the impact on the Site technical baseline. **Fiscal Year 1995 Hanford Mission Plan, Volume 1, Site Guidance, September 1994 (M)** To implement Systems Engineering at the Hanford Site, the programs will have to perform a functional analysis. The functional analysis involves ranking the program functions and associated physical requirements that each function must meet in order of importance. The breakdown will have a number of well-defined process steps ranging from the highest level of mission hierarchy to the lowest level needed. Using functional analysis, the programs will formulate a hierarchy of definitions that describe what needs to be done to transform a given input state to the direct output state. **Fiscal Year 1995 Hanford Mission Plan, Volume 1, Site Guidance, September 1994 (M)** Once the requirements and program functions are sufficiently defined, measures of effectiveness are developed that become the yardsticks for evaluating alternatives that satisfy each functional need and its associated requirements. **Fiscal Year 1995 Hanford Mission Plan, Volume 1, Site Guidance, September 1994 (M)** After being evaluated, the alternatives are put through a selection process, including public input, where an alternative set is chosen. The alternative set becomes a "product" set that, when delivered, completes the mission. This concept is addressed in greater detail in the August 1994 iteration of the Draft *Hanford Site Systems Engineering Manual*. **Fiscal Year 1995 Hanford Mission Plan, Volume 1, Site Guidance, September 1994 (M)** Planning of Hanford Site activity based on implementation of Systems Engineering will begin in Fiscal Year 1995 for Fiscal Year 1996 and beyond.

Table 9. CSB Subproject Requirements Basis

REQ. NO.	TYPE	REQUIREMENT BASIS
		Fiscal Year 1995 Hanford Mission Plan, Volume 1, Site Guidance, September 1994 (M) Nuclear materials will be treated, as necessary, and stored on site in long-term interim safe and secure storage pending development and implementation of a national policy regarding their final disposition. Those nuclear materials for which a beneficial offsite use has been identified will be shipped off site. Uranium and SNM will be converted to a form suitable for storage and transport. Plutonium will be assumed to have no asset value when selecting conversion processes. Irradiated fuel and cesium and strontium capsules will be disposed of as waste; however, safe and secure storage for these materials is assumed to continue at current locations until disposition paths are defined. The Plutonium Finishing Plant (PFP) will continue to store SNM for the foreseeable future until final disposition is determined. The capability to support future stabilization activities and terminal cleanout of the PFP will be maintained. Environmental impact statements will be prepared to finalize the disposition plans for irradiated fuel and special nuclear material as indicated in Section 3.5.1.3.2. **Fiscal Year 1995 Hanford Mission Plan, Volume 1, Site Guidance, September 1994 (M)** The facilities within the 200 Areas that contain radioactive contamination generally will be disposed of in place after deactivation and decontamination of above-ground structures. Because of their configurations, selected 200 Area buildings will require complete demolition. **Fiscal Year 1995 Hanford Mission Plan, Volume 1, Site Guidance, September 1994 (M)** Material Disposition Responsibilities. The Spent Nuclear Fuel Program will define and establish alternative interim storage for spent nuclear fuel on site or transport it off site to support implementation of the pending NEPA decision. In addition, this program will define and establish a spent nuclear fuel waste package qualified for final disposition. **Fiscal Year 1995 Hanford Mission Plan, Volume 1, Site Guidance, September 1994**

Table 9. CSB Subproject Requirements Basis

REQ. NO.	TYPE	REQUIREMENT BASIS
		(M) Facilities within the 200 Areas are assumed to be partially decontaminated after deactivation. These facilities are then assumed to be entombed by razing above-grade structural components to fill below-grade facility regions and covering the rubble with a protective barrier. **Fiscal Year 1995 Hanford Mission Plan, Volume 1, Site Guidance, September 1994 (M)** In concert with federal, state, and public direction, Hanford Site programs are directed to embrace pollution prevention to the maximum extent possible. They will incorporate waste minimization, waste volume reduction, and recycling into their program planning. Site programs are directed to implement waste minimization and pollution prevention activities to prevent pollution from entering the environment; conserve resources and energy; and reduce the quantity and toxicity of hazardous, radioactive, mixed, and sanitary waste generated at the Hanford Site. **Fiscal Year 1995 Hanford Mission Plan, Volume 1, Site Guidance, September 1994 (M)** Site cleanup will be performed in accordance with the Tri-Party Agreement (Ecology et al. 1994), as amended, and other agreements, and in compliance with all applicable federal, state, and local laws and American Indian treaty rights. Hanford Site programs must also comply with DOE policies and directives. The cleanup work will be performed with the intent of transferring a positive legacy to the community through economic diversification activities. **Fiscal Year 1995 Hanford Mission Plan, Volume 1, Site Guidance, September 1994 (M)** Compliance with environmental review requirements of the NEPA is integral to many Hanford Site activities that are major federal actions that could affect the environment. NEPA reviews of Site activities have been occurring since the mid-1970s, before other environmental laws, such as the *Resource Conservation and Recovery Act of 1976*

Table 9. CSB Subproject Requirements Basis

REQ. NO.	TYPE	REQUIREMENT BASIS
		(RCRA) and CERCLA (1980), were enacted. NEPA continues to drive environmental review of actions that are not addressed by other environmental laws. This section summarizes past, pending, and planning environmental impact statements and environmental assessments that affect Hanford Site activities. **Fiscal Year 1995 Hanford Mission Plan, Volume 1, Site Guidance, September 1994 (M)** Irradiated fuel is assumed to be disposed of off site, along with high-level waste without reprocessing to recover contained uranium and plutonium. **DOE-RL 5480.1A Environmental, Safety, and Health Program for Richland Operations, Change I Chapter III (K)** **Hanford Federal Facility Agreement and Consent Order (Tri-Party Agreement), para. 14** The Tri-Party Agreement was entered into to accomplish four general goals: . Investigate past and present activities causing environmental impacts and respond to the impacts to protect health, welfare, and the environment. . Issue and obtain needed permits for facilities, conduct the investigation and response in orderly effective fashion, and avoid litigation. . Comply with the full spectrum of RCRA and state equivalent requirements. . Develop, prioritize, implement, and monitor response actions in accordance with RCRA and CERCLA. **Hanford Federal Facility Agreement and Consent Order (Tri-Party Agreement), para. 15** The TPA commits the parties: . to follow RCRA procedures for TSD units, . to identify interim cleanup actions where appropriate, . to implement selected RCRA and CERCLA interim actions, . to the requirements the TPA establishes for conducting investigations and studies, . to response action schedules incorporated into the TPA,

Table 9. CSB Subproject Requirements Basis

REQ. NO.	TYPE	REQUIREMENT BASIS
		to cleanup levels established by CERCLA or CERCLA ARARs. **Hanford Federal Facility Agreement and Consent Order (Tri-Party Agreement), para. 19** RCRA and CERCLA remedial actions are to protect human health and the environment to an extent that no further actions will be required after actions under the agreement are completed. The actions are to address all aspects of contamination at units included in the actin plan. Remediation of groundwater may be managed either as a remedial and corrective action or as part of permitting and closure of TSD units. **10 CFR 20 - Standards for Protection Against Radiation** **10 CFR 72 - Licensing Requirements for the Independent Storage of Spent Nuclear Fuel and High-Level Radioactive Waste (K)** **10 CFR 435 - Energy Conservation Voluntary Performance Standards for New Buildings; Mandatory for Federal Buildings** **10 CFR 830.120 - Quality Assurance Requirements** **10 CFR 835 - Occupational Radiation Protection** **10 CFR 1021 - National Environmental Policy Act (K)** **29 CFR 1910 - Occupational Safety and Health Standards** **40 CFR 61, Subpart H - "National Emissions Standards for Hazardous Air Pollutants" (K)** **40 CFR 1500-1508 - Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act** **WAC-51-11 - Washington State Energy Code**

Table 9. CSB Subproject Requirements Basis

REQ. NO.	TYPE	REQUIREMENT BASIS
		WAC 173-216 - State Waste Discharge Program (K)
		WAC 246-247 - Radiation Protection -- Air Emissions (K)
		WAC 246-272 - On-Site Sewage Systems (K)
		WAC 246-290 - Public Water Supplies
		WHC-CM-1-5, Section 7.1 - Standard Operating Practices (K)
		WHC-CM-1-6 - WHC Radiological Control Manual (K)
		WHC-CM-1-8 - Work Management (K)
		WHC-CM-2-14 - Hanford Radioactive Solid Waste Packaging, Storage, and Disposal Requirements
		WHC-CM-2-15 - Training Administration Manual (K)
		WHC-CM-3-5, Section 12.7 - Approval Designators (K)
		WHC-CM-4-2 - Quality Assurance Manual (K)
		WHC-CM-4-3 - Industrial Safety Manual (K)
		WHC-CM-4-11 - ALARA Program Manual [Note: This manual has been cancelled and replaced by WHC-IP-1043 - WHC Occupational ALARA Program]
		WHC-CM-4-14 - Applied Radiological Controls (K)
		WHC-CM-4-29 - Nuclear Criticality Safety
		WHC-CM-4-40 - Industrial Hygiene
		WHC-CM-4-46 - Safety Analysis Manual

Table 9. CSB Subproject Requirements Basis

REQ. NO.	TYPE	REQUIREMENT BASIS
		WHC-CM-5-4 - Laboratories Administration (K)
		WHC-CM-5-8 - Plutonium Finishing Plant Administration (K)
		WHC-CM-5-9 - PUREX/U03 Plant Administration (K)
		WHC-CM-5-13 - K Basins Policy Manual (K)
		WHC-CM-5-34 - Solid Waste Disposal Operations Administration (K)
		WHC-CM-6-1 - Standard Engineering Practices (K)
		WHC-CM-6-3 - Drafting Standards Manual (K)
		WHC-CM-7-5 - Environmental Compliance Manual (K)
		WHC-CM-8-10 - Operation Support Services Standard Practices (K)
		WHC-EP-0009 - WHC Reference Guide Acronyms and Abbreviations Vol. 1, pt. 1 (K)
		WHC-IP-0117 - Procedure Development Specification Manual (K)
		WHC-IP-0240 - Plant Operating Procedure Format and Preparation Guide (K)
		WHC-IP-0702 - WHC 100 Area Emergency Response (K)
		WHC-IP-0821 - PUO Plutonium Operation Administration (K)
		WHC-IP-0836 - Order Compliance Administration (K)
		HPS-SDC-4.1 - "Hanford Plant Standards Design Criteria: Standard Arch-Civil Design Criteria, Design Loads for Facilities," September 1993 (K)
		HPS-SDC-5.1 - Heating, Ventilating, and Air-Conditioning

Table 9. CSB Subproject Requirements Basis

REQ. NO.	TYPE	REQUIREMENT BASIS
		HSRCM-1 - Hanford Site Radiological Control Manual
		MRP 1.1 - Managing DOE Directives (K)
		MRP 4.16 - Managing Progressive Discipline (K)
		MRP 4.19 - Overtime/Shift Differentials for Salaried Non-Exempt Employees
		MRP 5.44 - Waste Minimization Program (K)
		MRP 6-1 - Engineering Practices (K)
		Spent Nuclear Fuel Project K Basins Path Forward Acquisition Strategy, WHC-SP-1144, December 1994 (M) The four systems are grouped into two phases that reflect the NEPA compliance strategy.
		Spent Nuclear Fuel Project K Basins Path Forward Acquisition Strategy, WHC-SP-1144, December 1994. (M) The first three systems (SSF, MCOs and Transportation System) are procured under the ROD of the EIS to relocate K Basin SNF prior to completion of the programmatic EIS and the Hanford Spent Nuclear Fuel Management EIS.
		Spent Nuclear Fuel Project K Basins Path Forward Acquisition Strategy, WHC-SP-1144, December 1994. (M) The final design, construction and startup of this facility will be part of the Interim Storage phase, to occur after the Programmatic EIS and Hanford Spent Nuclear Fuel Management EIS Record of Decision are completed.
		Spent Nuclear Fuel Project K Basins Path Forward Acquisition Strategy, WHC-SP-1144, December 1994. (M) The three major systems, including the SSF, MCOs and transportation system will be procured separately.

Table 9. CSB Subproject Requirements Basis

REQ. NO.	TYPE	REQUIREMENT BASIS
		Spent Nuclear Fuel Project K Basins Path Forward Acquisition Strategy, WHC-SP-1144, December 1994. (M) The major systems will be packaged to save time, to meet the intent of DOE funding and contracting policies. Each package will include design, fabrication and startup activities combined within a single contract. **Spent Nuclear Fuel Project K Basins Path Forward Acquisition Strategy, WHC-SP-1144, December 1994. (M)** In addition to packaging major system procurements, the following strategies have also been selected: . Use engineering services contractors to assist WHC in developing performance specifications . Utilize systems engineering principles with WHC as the systems engineer, design authority, and the process engineer . Use an engineering services contractor to provide oversight during design and construction to assure technical adequacy, and Title III inspection . Procure facilities under criteria imposed by DOE Orders and NRC technical requirements where necessary (the schedule will not accommodate NRC review and approval) . Use existing designs and/or systems licensed by NRC for other applications when appropriate in order to have the opportunity for fixed price contracts and accelerated approval facilities . Utilize WHC, DOE, and contractors to review and approve safety documentation prepared by the vendor . Utilize the best method of contracting for the situation **Spent Nuclear Fuel Project K Basins Path Forward Acquisition Strategy, WHC-SP-1144, December 1994. (M)** The acquisition strategy for the FSF is constrained by the NEPA process; the programmatic EIS process, including the Record of Decision and the Hanford SNF EIS must be completed before acquisition can be completed. Design of the FSF will also

Table 9. CSB Subproject Requirements Basis

REQ. NO.	TYPE	REQUIREMENT BASIS
		require considerable fuel characterization data and testing. **Spent Nuclear Fuel Project K Basins Path Forward Acquisition Strategy, WHC-SP-1144, December 1994. (M)** The recommended approach to help meet schedule is to have vendors prepare safety documentation for the facility. WHC, as the safety authority, and DOE will provide review and approval. **Spent Nuclear Fuel Project K Basins Path Forward Acquisition Strategy, WHC-SP-1144, December 1994. (M)** While NRC licensing is not required for DOE facilities, the new facilities to be procured will meet appropriate NRC technical requirements.

5.0 ARCHITECTURE

5.1 ARCHITECTURAL HIERARCHY

The top level architecture hierarchy of the CSB Subproject is shown in Figure 8.

5.2 ARCHITECTURAL DESCRIPTION

The architectural description of the CSB Subproject is shown in Table 10.

Figure 8. Top Level Architecture Hierarchy

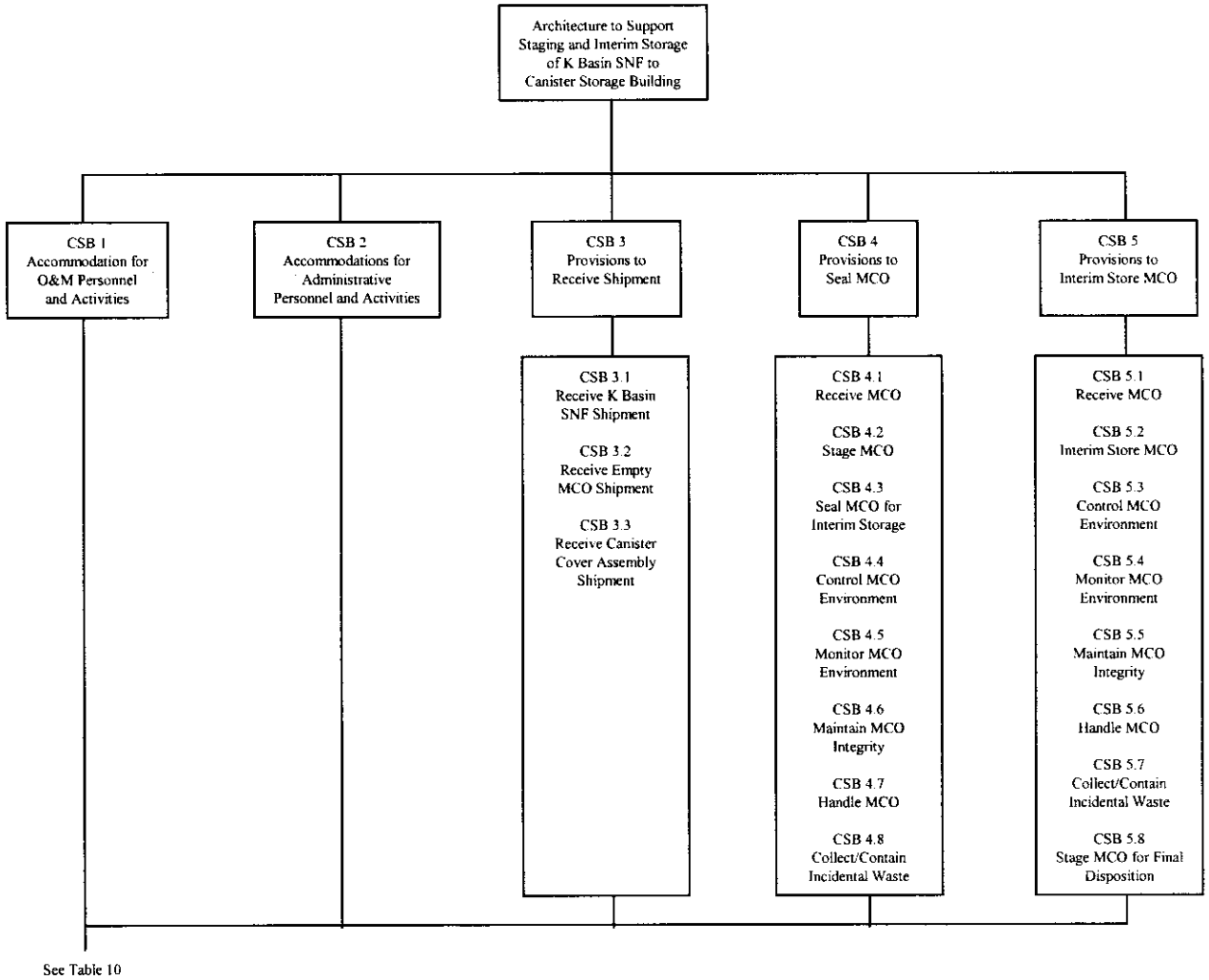


Table 10. Top Level Architecture Descriptions

Architecture Number	Architecture Description
SSF.1	Accommodations for O&M Personnel and Activities. Accommodations for operations and maintenance personnel and activities. Includes access to the facility, parking space, office space, and other services; provisions to perform facility and MCO maintenance; and provisions to maintain training program and to maintain baseline documentation. Also, includes provisions to characterize/classify, store, and dispose of incidental waste.
SSF.2	Accommodations for Administrative Personnel and Activities. Accommodations for administrative personnel and activities. Includes access to the facility, parking space, office space, and other services.
SSF.3	Provisions to Receive Shipment. Subsystems and equipment needed to receive shipments of SNF MCOs as well as to receive shipments of empty MCOs and canister cover assemblies. Includes access to the facility for the transporter/cask and the transport method used to deliver empty MCOs and canister cover assemblies; provisions to standby, arrive, and dispatch the transporter/cask and other transport systems; provisions to isolate, survey/decontaminate, inspect, and store the transporter/cask; provisions to open/close the cask and load/unload the payload; and provisions to move and store the empty MCOs and canister cover assemblies.
SSF.4	Provisions to Seal MCOs. Subsystems and equipment needed to seal MCOs. Includes provisions to receive and stage the MCOs for transfer to sampling/weld; provisions to control and monitor the MCO temperature; provisions to monitor contamination of MCO environment; provisions to transfer the MCOs within the facility and to shield them while in transit; provisions to survey/decontaminate and inspect/overpack the MCOs; and provisions to off-load, position, and transfer and stage the MCOs. Also, includes provisions to collect and contain incidental waste.

Table 10. Top Level Architecture Descriptions

Architecture Number	Architecture Description
SSF.5	Provisions to Interim Store MCO. Subsystems and equipment needed to interim store MCOs after welding. Includes provisions to transfer and position sealed MCOs for interim storage; provisions to stage the MCOs for transfer to final disposition; provisions to control and monitor the temperature of MCO cooling media; provisions to monitor contamination of MCO environment; provisions to transfer the MCOs within the facility and to shield them while in transit; provisions to survey/decontaminate, and inspect/store MCOs temporarily in an overpack storage tube; and provisions to off-load, position, and interim store the MCOs. Also, includes provisions to collect and contain incidental waste.

6.0 INTERFACES

6.1 INTERFACE IDENTIFICATION

The key interfaces of the CSB Subproject are the interfaces with the Hanford Site infrastructure and utilities, and the interfaces with other SNF Project elements. Interfaces with the Hanford Site infrastructure and utilities include security and safeguards, roadways, communications (including telephone), electric power, water and sewage. The interfaces with other SNF Project elements include the transportation system, MCO, and sampling/weld operation.

6.2 INTERFACE DESCRIPTION

The interface description of the CSB Subproject is shown in Table 11.

Table 11. Interface Descriptions

Interface Number	Interface Description
IC-085	Waste for Solid Waste Disposal. Transfer the solid waste generated during the operation and maintenance of the CSB to disposal.
IC-129	Condensate/Waste Water Collection and Disposal. Collect the waste water generated during the operation and maintenance of the CSB and disposition.
IC-131	Power Line Tie Into Hanford Site Electric Power. The Hanford Site electric power grid will provide electric power to the CSB throughout its receive shipment, staging, and storage operations.
IC-135	Hanford Site Communications (Including Telephone). The Hanford Site communications utility will provides telephone and other communications wiring to the CSB throughout its receive shipment, staging, and interim storage operations.
IC-139	Hanford Site Roadways Interlies/Maintenance The Hanford Site roadways group will extend road access to the CSB.
IC-003	K Basin SNF Transportation System. The SNF Transportation System will include provisions to facilitate handling the transporter, opening/closing the cask, loading/unloading the vacuum dried fuel.
IC-006	Empty MCO Loaded into Cask. The CSB will load empty MCOs into the transportation cask for transport to the K Basins.
IC-233	MCO Canister Cover Assembly. The MCO Subproject provides MCO canister cover assemblies to the CSB.
IC-083	Gaseous Effluent Discharge. The CSB gaseous effluent will be discharged from the exhaust stack to the atmosphere.

Table 11. Interface Descriptions

Interface Number	Interface Description
IC-087	New MCO Shell for Loading in Cask. The MCO Subproject provides an empty MCO shell to the CSB for loading into the cask.

7.0 GLOSSARY

7.1 ACRONYMS

ALARA	As Low As Reasonably Achievable
CFR	Code of Federal Regulations
CM	Control Manual
CSB	Canister Storage Building
CSER	Criticality Safety Evaluation Report
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
DOE	Department of Energy
DOE-RL	Department of Energy Richland Operations Office
EIS	Environmental Impact Statement
FFCA	Federal Facilities Compliance Act
FSAR	Final Safety Analysis Report
FSF	Fuel Stabilization Facility
HRA	Hanford Remedial Action
HWVP	Hanford Waste Vitrification Plant
INEL	Idaho National Engineering Laboratories
IC	Interface Control
MCO	Multi-Canister Overpack
MTBF	Mean Time Between Failures
NEPA	National Environmental Policy Act
NRC	Nuclear Regulatory Commission
PFP	Plutonium Finishing Plant
PSAR	Preliminary Safety Analysis Report
PUO	Plutonium Oxide
PUREX	Plutonium-Uranium Extraction
QA	Quality Assurance
QAPD	Quality Assurance Program Description
QAPP	Quality Assurance Program Plan
RCRA	Resource Conservation and Recovery Act
SAR	Safety Analysis Report
SMS	Site Management System
SNF	Spent Nuclear Fuel
SNM	Special Nuclear Material
SSF	Staging and Storage Facility
TPA	Tri-Party Agreement
TSD	Treatment Storage Disposal
TSR	Technical Safety Requirements
WAC	Washington Administrative Code
WHC	Westinghouse Hanford Company

7.2 DEFINITIONS

As Low As Reasonably Achievable (ALARA)	In reference to radiation and chemical exposure, ALARA is defined as performing work in such a way that resulting dose or exposure to personnel is as low as reasonably achievable based upon available technology and economic factors.
Canister	Metal (aluminum or stainless steel) container used to store reactor fuel rods/elements. Canisters containing fuel are configured in a double-barrel shape.
Canister Cover Assembly	Item which closes the MCO at CSB. The assembly is installed by welding to the collar of the MCO and installation is a predecessor to interim storage of MCOs.
Cask	Container which provides shielding, containment, and subcriticality for SNF during transfer/transport.
Configuration	The functional and/or physical characteristics of hardware, firmware, software, or other items as described in technical documentation and achieved as a product.
Constraints	Restrictions or limitations that must be met. Constraints are used to screen alternative strategies and are always nontradable by the designer (as opposed to requirements which are tradable).
Contain	To retain the solid and gaseous forms of radioactive material inside a boundary.
Contamination	Radioactive and/or other hazardous material in any place where it is not desired, particularly where its presence may be harmful.
Criticality	An event that produces a self-sustaining or divergent nuclear chain reaction, resulting in the release of energy.
Facility	Buildings, utilities, structures, and other land improvements associated with an operation or service.
Final Disposition	Off-site final disposal and/or beneficial reuse (use in lieu of "Permanent Disposition" or "Ultimate Disposition").
Function	Specific actions, activities, or processes that achieve or support the achievement of the mission. That which must be achieved by the collective effects of all constituent parts. It is synonymous with "purpose."
Functional Analysis	Identifies the functions that must be performed in order to meet the mission. These functions can then be allocated at increasingly greater levels of detail in order to provide an increasingly explicit depiction of the mission statement.

Interface	System boundary across which material, data, and/or energy passes.
Interim Storage	Post MCO sampling/weld operation storage prior to shipment to federal repository for up to 40 years.
MCO	Item that contains SNF in a configuration which is safe for interim storage. Designed specifically for K Basin SNF only.
Mission	The transformation of a set of unacceptable initial conditions to acceptable final conditions.
Objectives	Discrete, measurable events that, if accomplished, will contribute to achieving a goal.
Path Forward	Integrated activities to achieve a defined strategy for final disposition of SNF.
Performance	A quantitative measure characterizing a physical or functional attribute relating to the execution of a mission or function. Performance attributes include quantity (how many or how much), quality (how well), coverage (how much area, how far), timeliness (how responsive, how frequent), and readiness (availability, mean time between failures [MTBF]). Performance is an attribute for all system personnel, products and processes including those for development, production, verification, deployment, operations, support, training, and disposal.
Requirement	Requirements define how well a function must perform. Requirements set limits on functions and also limits on the outputs from functions. A requirement is a description of a mandatory condition under which a function must be performed. Requirements are documented in technical specifications, statutes, regulations, Secretary of Energy Notices, DOE orders, Department of Energy Richland Operations Office (DOE-RL) Directives, or other official direction from the DOE customer.
Requirements Analysis	Requirements analysis identifies the requirements associated with each function. Requirements are allocated to each functional allocation in order to provide greater detail of the requirements.
Spent Nuclear Fuel	Nuclear fuel that has been withdrawn from a nuclear reactor following irradiation and the constituent elements that have <u>not</u> been separated by reprocessing.
Staging	Holding MCOs prior to weld operation.
Subcritical	Below the criticality level.

Systems Engineering	The systematic approach used to transform technical goals, and objectives into an optimized, operational, physical system that achieves its mission. The iterative technical and management process applied throughout a system life cycle that produces and maintains a well defined and documented system technical baseline.
Technical Baseline	The documented functions, requirements, and configuration from which the program will acquire an operational system. The technical baseline is maintained under configuration control, and is the basis for technical performance measurement.
Trade Study	(1) The process of comparing or trading the strengths and weaknesses of alternative approaches or attributes; (2) a feedback process for resolving inconsistencies between steps or levels; (3) the analysis of the ability of a design solution to meet its stated objectives as inputs are varied.
Transfer	Movement of materials within the confines of a facility on the Hanford site.
Transport	Movement of materials between facilities on the Hanford site.
Transporter	Vehicle designed to move transportation casks.

8.0 REFERENCES

FDH 1998, Baseline Change Request, Simplified SNF Project Baseline (MCO Sealing Strategy), SNF-98-006, Fluor Daniel Hanford, Richland, Washington.

FH 2000, Fiscal Year 2000, Multi Year Work Plan, Fluor Hanford, Richland, Washington.

WHC, 1995, *Integrated Process Strategy for K Basins Spent Nuclear Fuel*, WHC-SD-SNF-SP-005, Westinghouse Hanford Company, Richland, Washington.