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WESF FUNCTION ANALYSIS REPORT

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WASTE ENCAPSULATION AND STORAGE FACILITY FUNCTION ANALYSIS REPORT

September 1995

Prepared for:

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WASTE ENCAPSULATION AND STORAGE FACILITY FUNCTION ANALYSIS REPORT

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1.0 INTRODUCTION

1.1 Objective

This report is the product of one of several steps in the system engineering approach and defines the content and interrelationships of the Hanford Site cleanup effort for the Waste Encapsulation and Storage Facility (WESF). A summary of the steps are listed below:

- Mission Analysis: This step established the problem to be solved and an acceptable end condition. It provides the basis for developing a system to resolve the problem. The mission is basically the purpose of the system which is to transform the initial conditions to final conditions. The product from this step is WHC-SD-WM-MAR-007 WESF Mission Analysis Report.
- Functional Analysis: The functions that WESF must perform are derived in this step. These functions include technical functions that a system must perform, other functions that must be carried out in support of the technical functions (i.e., organizational/management functions), and interdependencies among the functions. The functional analysis effort produces a functional hierarchy with detailed descriptions of all functions and interfaces to the lowest level.
- Requirement Identification: Statutory, regulatory, technical, social, and economic requirements with which a system must comply are identified in this step. These requirements fall into two classes: mission-driven requirements and externally imposed requirements. This step produces a baseline list including requirement sources and their descriptions.
- Requirements Allocation to System Functions: The identified requirements are allocated to the system functions producing a requirements baseline for the systems engineering process.
- Innovation of Alternative Solutions: Based on the products of the systems engineering steps described above different structural, physical and organizational configurations that provide system solutions are developed.

This report contains the product from the second step described above. The sections in this report are: 2.0 WESF Functions, 3.0 Functional Interfaces and Dependencies, and 4.0 Issues. Addenda provide all of the detailed back up information relating to WESF. The addenda are reports generated from RDD-100, a computer program by Ascent Logic.

1.2 Mission Statement

The WESF Mission Statement was developed during mission analysis and is reported in WHC-SD-WM-MAR-007 WESF Mission Analysis Report. It is repeated below:

" The WESF Mission is to maintain and upgrade the facility in order to safely store Cesium (Cs) and Strontium (Sr) capsules while requiring minimal maintenance and surveillance. The WESF and its equipment may need to be improved and modernized to provide this safe storage. Storage will be provided until all of the Cs and Sr capsules have been received and dispositioned for disposal or beneficial uses. Buildings and equipment not required for these activities will be deactivated in preparation for D&D activities. Currently available technologies will be resourcefully applied to maintain and upgrade WESF."

2.0 WESF FUNCTIONS

Identifying WESF's functions and subfunctions creates a functional hierarchy called a tree. The analysis begins with the top level function, "Maintain and Upgrade WESF." It is broken down into a number of major, necessary, and sufficient functions that, when completed in the prescribed logic, will ensure that WESF's mission is accomplished. The functional decomposition process is repeated for successively more detailed functional levels until known (precedented) solutions are available. Each function and subfunction is precisely defined. System function definitions are essential to establish what WESF must do to execute its mission successfully. Formal definitions create understanding of all aspects of the system being engineered (i.e., hardware, software, facility, processes, services, or modifications) and provide a mechanism to insure that all parts of the system contribute to fulfill the WESF mission.

The ultimate function of the WESF system is to perform the operations that satisfy the mission need and correct the problem identified in WHC-SD-WM-MAR-007 WESF Mission Analysis Report repeated below:

" WESF continues to perform surveillance, maintenance, and storage since the completion of its previous operational mission of producing encapsulated Cs and Sr. The past activities left behind an inventory of radioactive and hazardous materials, highly contaminated equipment, and potential contamination of the soil. Cs and Sr capsules produced at WESF are located in the facility, at other government laboratories, and at two private companies where the capsules were utilized for sterilization and irradiation purposes. One of the capsules developed a leak; therefore, all of the capsules are being returned to WESF for disposition. The continuing operations of ensuring the safe storage and maintenance of the facility and materials are expensive. The aging facility is deteriorating, and the existing confinement systems require safety enhancements. The present implementation of the configuration control system is inadequate, and the current documentation and drawings do not reflect the as-built condition. Currently, WESF relies on B Plant for some of its support systems and waste services which will be unavailable as B Plant is deactivated. Beyond the storage of the Cs and Sr capsules, no future mission for the WESF has been identified."

2.1 Relationship to Hanford Site Functional Hierarchy

The WESF mission statement developed during the WESF mission analysis is consistent with the top level (0 Cleanup Hanford) and the first, second and third level functions (4.0 Remedy Unsafe and Unacceptable Conditions, 4.7 Store, Treat, and Disposition SNM/NM/NF Materials and 4.7.3 Store/Treat and Treat/Dispose Cs/Sr first identified in WHC-EP-0722 "Systems Engineering Functions and Requirements for the Hanford Cleanup Mission: First Issue" of January 1994 and later revised and maintained as the Hanford Site Integrated Technical Baseline (HSITB). This function hierarchy is shown in Figure 1. The WESF functions begin with 4.7.3 Store/Treat and Treat/Dispose Cs/Sr.

Figure 1. Hanford Site Function Hierarchy

2.2 Function Hierarchy

The detailed WESF functional hierarchy is presented in Addendum 1. It begins at level three (4.7.3 Store/Treat and Treat/Dispose Cs/Sr) and continues to level five and in some places level six.

2.3 Function Definition Table

The definitions of the WESF functions in the functional hierarchy in Addendum 1 are presented in Addendum 2.

3.0 FUNCTIONAL INTERFACES AND DEPENDENCIES

Another way to describe functions is using functional interface diagrams. They establish the dependencies between the functions defined in the functional hierarchy. By conceptualizing each function as a process where inputs, resources, and controls are transformed into outputs, the relationships between functions can be identified. The outputs of one function become the inputs to other functions. Function inputs (initial-state condition) enter from the left; outputs (end-state condition) exit to the right; controls enter from the top; and resources, sometimes called mechanisms, (both physical and intellectual) enter from the bottom. Inputs, outputs, controls, and resources are all called interfaces and/or products and are defined for each system function.

3.1 IDEF Diagrams

The WESF interface diagrams are provided in the form of ICOM Definition Method, ICOM is Input Controls Output Mechanisms (IDEF) diagrams produced from Ascent Logic's RDD-100 system model and are found in Addendum 3.

3.2 Interface Definitions

The WESF interface definitions, presented in Addendum 4, provide descriptions of all the interfaces found on the IDEF diagrams in Addendum 3. Inputs, outputs, controls and resources are all considered interfaces.

4.0 ISSUES

Listed below are the issues summarized from WHC-SD-WM-MAR-007 WESF Mission Analysis Report. The significant issues will be further refined and clarified and will be associated with specific functions within the RDD-100 model.

- The final disposition of the Cs and Sr materials is required by June 30, 1997. The disposition is needed to determine the need and scope of system upgrades. Delay of this disposition decision may lead to incremental fixes and upgrades which might cost more than one time expenditures.
- Depending on the final disposition of Cs and Sr materials and the potential of capsule failure in storage, the need to repackage more than a few capsules could arise. A reprocessing facility would be needed to repackage the materials and possibly change the chemical or physical form of the material.
- WESF will no longer fund maintenance of inactive hot cells following June 30, 1997. The cells will still be available, but refurbishment will likely require more effort and funding than if regular maintenance had continued. Therefore, any other projects which are interested in using the hot cells will need to confirm their interest so that the most effective maintenance strategy can be used.
- For the purposes of this analysis, the amount of current and future funding was assumed to be adequate to carry out the WESF mission. Funding levels must be established in order to evaluate the WESF mission timing.
- B Plant will be deactivated and WESF mission-essential utilities and services will no longer be available. WESF will identify its needed resources and B Plant will plan, program and provide WESF stand alone capabilities as part of the B Plant deactivation plan.
- Three pool cell projects that are needed to treat a leaking capsule situation are extensions of the existing WESF capabilities. They will be planned, programmed and provided within the WESF operational baseline, because they are believed to be necessary to execute the identified WESF mission.
- The capability to transfer and receive the incoming Cs and Sr is assumed to be available by using existing shipping casks. Other alternatives such as liquid pipelines and vacuum systems are not contained within the WESF mission.
- The packaging medium for received, unencapsulated materials or for Cs/Sr removed from leaking capsules has not been selected. Before a choice can be made, an engineering trade study should be

performed according to the Hanford Sitewide systems engineering process.

- WESF needs analytical laboratory capabilities available elsewhere on Site to sustain its mission. The analytical laboratories must be capable of receiving and handling radioactive samples. Measurements are needed once per week and include chlorides (ppm) and total Beta and total Gamma (rad).

ADDENDUM 1 - FUNCTIONAL HIERARCHY

WHC-SD-WM-FAR-002, Revision 0

ADDENDUM 2 – FUNCTION DEFINITIONS

[4.7.3] Store, Treat, and Transfer for Disposition Cs/Sr Material

Function	Definitions
4.7.3	Store, Treat, and Transfer for Disposition Cs/Sr Material
4.7.3.1	Maintain Safety Envelope For Cs137 and Sr90 <i>Maintain WESF safety envelope to prevent violation of Operating Safety Requirements. Provides all necessary resources to safely operate and maintain the facility. Maintain safe operations, qualified staff, configuration control, and audit to assure compliance. Maintains the physical facility, qualified staff, safe and compliant equipment, documentation and provides assessment of safety and compliant states. Provides all necessary safety and security resources for compliance with all governing safety/security codes and regulations.</i>
4.7.3.1.1	Maintain Safe, Secure, and Compliant Operations (Cs/Sr) <i>Operates the facility and maintains it in operational condition dictated by approved safety and compliance documentation, through self assessments, work control, property management, and independent oversight.</i>
4.7.3.1.1.1	Provide Surveillance (Cs/Sr) <i>Provide surveillance of all facility operations and operating systems, develop acutely unsafe condition action plans, perform OSR surveillance procedures, environmental monitoring, RCRA tracking, and surveillance of safety analysis compliance.</i>
4.7.3.1.1.2	Provide Work Control (Cs/Sr) <i>Provides job control for the preventive and corrective maintenance of WESF systems.</i>
4.7.3.1.1.3	Provide Property Management (Cs/Sr) <i>Provides property management for the facilities in accordance with DOE orders and WHC procedures.</i>
4.7.3.1.1.4	Provide Access Control (Cs/Sr) <i>Provides the facility access control for safety purposes including shipping and receiving.</i>
4.7.3.1.1.6	Dispose of Incidental Waste (Operations Cs/Sr) <i>Arranges for the disposal of solid, liquid, and aqueous wastes generated during the maintenance of the safety and compliance envelope.</i>
4.7.3.1.1.7	Operate WESF (Cs/Sr) <i>Perform operations required to safely receive, store, treat and disposition Cs & Sr materials.</i>
4.7.3.1.2	Maintain Safe and Compliant Systems, Equipment, and Structure (Cs/Sr) <i>Maintain the operational condition of identified safety equipment and systems and update or replace or add to prevent violations of Operating Safety Requirements.</i>
4.7.3.1.2.1	Perform Corrective Maintenance (Cs/Sr) <i>All maintenance that brings systems and equipment back to its operational state after failure.</i>
4.7.3.1.2.2	Perform Preventive Maintenance (Cs/Sr) <i>Preventive maintenance activities to minimize all unplanned evenets, failures and premature equipment failures.</i>
4.7.3.1.2.3	Perform Process Systems and Equipment Calibrations (Cs/Sr) <i>Performs facility equipment, instrumentation and process system calibrations to ensure accuracy.</i>
4.7.3.1.2.4	Perform Facility/Equipment Modifications (Cs/Sr) <i>Performs modifications to WESF systems or structures necessary to ensure safe and compliant operations. Identify, obtain funding, acquire, and implement system which may be required to support ongoing Cs/Sr Storage.</i>

[4.7.3] Store, Treat, and Transfer for Disposition Cs/Sr Material

Function	Definitions
4.7.3.1.2.4.2	Sustain Safety Envelope (Cs/Sr) <i>Identify, obtain funding, acquire, and implement safety systems which may be required to support ongoing Cs/Sr storage.</i>
4.7.3.1.2.4.2.1	Detect Cs/Sr Capsule Leakage (Cs/Sr) <i>Develop a system to detect an individually leaking capsule while stored in the pool cells among other capsules.</i>
4.7.3.1.2.4.2.2	Isolate & Contain Cs & Sr Leakage (Cs/Sr) <i>Build a facility capability or system to contain small numbers of leaking capsules while maintaining the appropriate safety envelopes.</i>
4.7.3.1.2.4.2.3	Decontaminate Site of Cs/Sr Capsule Leakage (Cs/Sr) <i>Develop a system to clean/decontaminate the pool cells after a leaking capsule has been removed.</i>
4.7.3.1.2.5	Dispose of Incidental Waste (Maintenance, Cs/Sr) <i>Arranges for the disposal of the solid, liquid, and aqueous wastes generated during the facility maintenance activities.</i>
4.7.3.1.3	Maintain Safety and Compliance Documentation (Cs/Sr) <i>Maintains all required facility safety, compliance, engineering, inventory and operating documentation. Define configuration control as it applies to WESF, identify specific WESF configuration control issues, establish immediate corrective actions, identify long-term preventative measures, and implement those actions and measures to restore and maintain configuration control.</i>
4.7.3.1.3.1	Maintain Safety Documents (Cs/Sr) <i>Maintains documentation necessary to ensure safe and compliant handling, storage, treatment, and disposition of SNM/NM/NF materials.</i>
4.7.3.1.3.2	Maintain Operations Procedures (Cs/Sr) <i>Maintains operating procedure documentation.</i>
4.7.3.1.3.3	Maintain Engineering Documentation (Cs/Sr) <i>Maintains configuration drawings and associated engineering documentation required to maintain the facility in a safe and compliant status.</i>
4.7.3.1.3.4	Maintain Maintenance Procedures (Cs/Sr) <i>Maintains maintenance procedure documentation necessary for efficient, safe, and compliant operation.</i>
4.7.3.1.3.5	Maintain Compliance Documentation (Cs/Sr) <i>Maintains documentation to assure and prove compliance with appropriate environmental, regulatory and DOE orders.</i>
4.7.3.1.3.6	Maintain Inventory Documentation (Cs/Sr) <i>Performs spare parts, equipment, and other material supply inventories.</i>
4.7.3.1.3.7	Maintain Administrative Procedures (Cs/Sr) <i>Maintains all administrative procedures documentation.</i>

[4.7.3] Store, Treat, and Transfer for Disposition Cs/Sr Material

Function	Definitions
4.7.3.1.4	Maintain Qualified Facility Staff (Cs/Sr) <i>Continue to assure Operations, Engineering, and associated personnel are qualified to meet training requirements and to preclude violations of Operating Safety Requirements. Provides facility specific training, testing, and training records maintenance to ensure the facility staff remain trained, qualified, and certified as required.</i>
4.7.3.1.4.1	Provide Training (Cs/Sr) <i>Provides all training related to the handling, storage, treatment, and disposition of SNM/NM/NF materials and training necessary to safely operate and maintain the facility and facility operating systems.</i>
4.7.3.1.4.2	Maintain Certification and Qualification (Cs/Sr) <i>Provides periodic personnel skills check, assessment, and testing required to maintain the necessary qualification and certification.</i>
4.7.3.1.4.3	Maintain Training Documentation (Cs/Sr) <i>Maintains required worker training documentation. Documentation includes worker safety and competency qualification and certification.</i>
4.7.3.1.5	Assess Safety and Compliance State (Cs/Sr) <i>Assesses the handling, treatment, storage, and disposition of all Cs 137 & Sr 90 to ensure that safety and compliance is maintained.</i>
4.7.3.1.5.1	Support Independent Oversight Audits (Cs/Sr) <i>Assists and responds to independent WESF oversight audits.</i>
4.7.3.1.5.2	Perform Management Assessments (Cs/Sr) <i>Management self assessments of specific areas of responsibility to ensure adequate WESF performance to an established set of criteria.</i>
4.7.3.2	Control Cs137 and Sr90 (Cs/Sr) <i>Plans, coordinates, and schedules all the necessary operations. The function defines the treatment, storage, and transfer needs for the materials; establishes the acceptance criteria; and performs the acceptance or rejection of the material shipping documentation. The function includes the preparation of work packages. The function does not include the physical work to perform the operations.</i>
4.7.3.2.1	Define Treat/Store/Disposition Operations (Cs/Sr) <i>Performs the planning and assessment of necessary material treatment, storage and disposition actions necessary for safe and efficient material receipts, treatment, storage and disposition.</i>
4.7.3.2.1.1	Establish Acceptance Criteria (Cs/Sr) <i>Establishes the criteria necessary to accept the material based on the capability to handle, treat, store and disposition the material.</i>
4.7.3.2.1.1.1	Establish Storage/Disposition Criteria (Cs/Sr) <i>Identifies storage and disposition criteria associated with the proposed receipt of Cs137 & Sr90s materials.</i>
4.7.3.2.1.1.2	Establish Treatment Criteria (Cs/Sr) <i>Identifies the treatment criteria associated with the proposed receipt of Cs137 & Sr90 materials.</i>
4.7.3.2.1.2	Evaluate Generator Requests (Cs/Sr) <i>Evaluates material shipment requests to determine storage capacity needs, treatment options and disposition prospects for all receipts.</i>

[4.7.3] Store, Treat, and Transfer for Disposition Cs/Sr Material

Function	Definitions
4.7.3.2.1.3	Define Capability Needs (Cs/Sr) <i>Defines existing and needed handling, treatment, storage and disposition capabilities.</i>
4.7.3.2.1.3.1	Define Storage Capability (Cs/Sr) <i>Defines the remaining facility storage capability.</i>
4.7.3.2.1.3.2	Define Treatment Capability (Cs/Sr) <i>Defines the existing facility specific treatment capabilities.</i>
4.7.3.2.1.3.3	Define Acceptance Capability (Cs/Sr) <i>Defines the Cs137 & Sr90 material form, type, consistency, and packaging required for acceptance into the facility.</i>
4.7.3.2.1.4	Define Material/Storage/Treatment/Disposition Requirements (Cs/Sr) <i>Defines the material handling, treatment, storage and disposition requirements necessary for a specific material shipment.</i>
4.7.3.2.2	Negotiate Shipper/Receiver Agreement (Cs/Sr) <i>Negotiates acceptance terms and requirements with the material shipper.</i>
4.7.3.2.2.1	Assess Capability to Accept Requested Transfer (Cs/Sr) <i>Examines existing facility handling, treatment, storage, and disposition capabilities to verify capability exists to accept the proposed transfer.</i>
4.7.3.2.2.2	Identify Variances from Acceptance Criteria (Cs/Sr) <i>Compares the facility Cs137 & Sr90 acceptance criteria with the proposed current owner criteria to determine variances.</i>
4.7.3.2.2.3	Accept/Reject Requests (Cs/Sr) <i>Transfer requests are accepted or rejected based upon the facility acceptance capability. If rejected, specifies compliance criteria for current owner which would bring about acceptance of the owner's material.</i>
4.7.3.2.3	Plan and Schedule Operations (Cs/Sr) <i>Plans all work operations for specific material shipment transfers. Plans necessary to receive, treat, store and disposition specific material transfers are performed.</i>
4.7.3.2.3.1	Plan Handling and Receipts (Cs/Sr) <i>Develops plans to receive and handle Cs137 & Sr90 materials.</i>
4.7.3.2.3.2	Plan Storage (Cs/Sr) <i>Develops Cs137 & Sr90 storage plans.</i>
4.7.3.2.3.3	Plan Dispositions (Cs/Sr) <i>Develops the Cs137 & Sr90 disposition or treatment and waste plans.</i>
4.7.3.2.3.4	Plan Safety, Security, and Maintenance (Cs/Sr) <i>Plans all facility safety, security, and maintenance activities.</i>
4.7.3.3	Receive Cs & Sr Inventory (Cs/Sr) <i>Unload, inspect, and transfer custody of capsules to WESF. Dispose of generated waste. Physically handles the material shipping container and packaged material receipt. It is responsible for disposal of the wastes generated during the handling process.</i>
4.7.3.3.1	Receive Shipment (Cs/Sr) <i>The process of receiving the actual shipment of materials. This function ensures readiness to accept material, ensures transfer of custody, verifies manifest and material documentation, and is responsible for obtaining radiological surveys.</i>

[4.7.3] Store, Treat, and Transfer for Disposition Cs/Sr Material

Function	Definitions
4.7.3.3.1.1	Ensure Receipt Readiness (Cs/Sr) <i>Verifies the readiness to receive a specific Cs137 & Sr90 shipment.</i>
4.7.3.3.1.2	Verify Manifest and Materials Documents (Cs/Sr) <i>Examines manifest and material documents for accuracy and completeness.</i>
4.7.3.3.1.3	Transfer Custody (Cs/Sr) <i>Performs the Cs137 & Sr90 material transfer of custody as defined in 5630.11a.</i>
4.7.3.3.1.4	Conduct Radiological Survey (Cs/Sr) <i>Performs radiological surveys to ensure the received shipment shipping containers are not externally radioactively contaminated.</i>
4.7.3.3.2	Handle Shipping Containers ("De-Cask") (Cs/Sr) <i>Performs lag storage, shipping container unloading, shipping container decontamination, and recycling of the shipping containers.</i>
4.7.3.3.2.1	Offload Shipping Containers (Cs/Sr) <i>Performs the unloading of shipping containers from the transporter.</i>
4.7.3.3.2.2	Provide Lag Storage for Containers (Cs/Sr) <i>Provides temporary storage for received shipping containers.</i>
4.7.3.3.2.3	Unload (Primary Package) Material Containers (Cs/Sr) <i>Removes the primary package containing Cs137 & Sr90 materials from the shipping container.</i>
4.7.3.3.2.4	Survey and Release Shipping Containers and Transporters (Cs/Sr) <i>Releases the shipping containers and transporters after radiological surveys are performed to ensure they are not externally radiologically contaminated.</i>
4.7.3.3.2.4.1	Survey Containers (Cs/Sr)
4.7.3.3.2.4.2	Decontaminate Containers (Cs/Sr) <i>Decontaminates shipping containers to levels acceptable for reuse.</i>
4.7.3.3.2.4.3	Recycle Containers (Cs/Sr) <i>Recycles the shipping containers for reuse.</i>
4.7.3.3.3	Handle Packages, Verify & Inspect Material (Cs/Sr) <i>Physically handles the packages containing material. It verifies and inspects the material.</i>
4.7.3.3.3.1	Analyze Material (Cs/Sr) <i>Verify the actual Cs/Sr material matches the associated manifest and material documentation. Visually Verify that the identification number on the exterior of the outercapsule is the same as on the shipping papers.</i>
4.7.3.3.3.2	Reconcile Exceptions (Cs/Sr) <i>Reconciles the differences between the actual material and material noted in the manifest and material documentation.</i>
4.7.3.3.3.3	Transfer Package to Storage (Cs/Sr) <i>Transfers the material package to storage.</i>
4.7.3.3.3.4	Ensure Package Integrity (Cs/Sr) <i>Examines and evaluates the material package condition. Visually inspect capsules for scratches, marks, cracks, or deformation using a go-no-go gauge. Perform radiological survey of Cs/Sr. Inspect outer capsules diameter and clunk test to assure inner capsule is free to move.</i>

[4.7.3] Store, Treat, and Transfer for Disposition Cs/Sr Material

Function	Definitions
4.7.3.3.3.5	Archive Material Documentation and Analysis Data (Cs/Sr) Maintains a database with history, location, and status of Cs137 and Sr90 material. Maintain data base with history, location, and status of capsule (i.e., date of last clunk test, results of clunk test, when shipped out/received from vendor, etc)
4.7.3.3.4	Dispose of Incidental Waste (Shipping) (Cs/Sr) Arranges for the disposal of solid, liquid, and effluent wastes generated during the handling of incoming materials.
4.7.3.3.5	Inform Commerce Agencies (Cs/Sr) Inform state, local, and federal officials of receipt, condition at receipt, and verification of identification of capsules.
4.7.3.4	Store Materials (Cs/Sr) Inventory and monitor Cs137 & Sr90. Prepare material (Cs and Sr) for stabilization and store CS and Sr. Perform periodic inventory and monitor condition of stored material. Assure capability to identify, isolate, recover, and rework failed material. Dispose of generated wasters. Prepares and stabilizes the materials for storage and stores these materials until they are transferred to disposition. It is responsible for disposal of wastes generated during the material storage process.
4.7.3.4.1	Stabilize for Storage (Cs/Sr) Treats the Cs137 & Sr90 material to permit safe storage. Includes rework due to failure during storage. Perform the operations to comply with long-term storage requirements. This includes all inspections and acceptance testing of final storage form.
4.7.3.4.1.1	Verify Package Integrity (Cs/Sr) Examines and evaluates the Cs137 & Sr90 storage packaging condition.
4.7.3.4.1.2	Characterize Material for Treatment Determination (Storage) (Cs/Sr) Examines the material inspection information to determine treatment necessary to store material.
4.7.3.4.1.3	Prepare Cs137 & Sr90 for Storage (Cs/Sr) Prepare capsules that are defective or material which does not meet long-term storage requirements.
4.7.3.4.1.4	Package for Storage (Cs/Sr) Performs the packaging necessary to store Cs137 & Sr90 materials. Also performs rework due to failure during storage.
4.7.3.4.2	Store Stable Materials (Cs/Sr) Place stabilized Cs137 and/or Sr90 into pool cells. Provides all periodic inspections and tests to ensure the safety and security of the materials placed in storage. Verify capsule identification numbers and location by pool cell, rack number, and specific location in rack.
4.7.3.4.2.1	Place & Position Capsules (Cs/Sr) Transfers capsules to the designated pool cell and place it in the designated storage rack and slot.
4.7.3.4.2.2	Document and Report Status (Cs/Sr) Provides information on the status of all stored Cs137 & Sr90 materials and maintains Cs137 & Sr90 inventories.
4.7.3.4.2.3	Monitor Condition of Stored Materials (Cs/Sr) Monitor condition of stored materials. Periodically clunk test capsules to assure free movement of inner capsule.

[4.7.3] Store, Treat, and Transfer for Disposition Cs/Sr Material

Function	Definitions
4.7.3.4.2.4	Retrieve Capsules (Cs/Sr) <i>Remove capsules from the storage location to treat for disposition.</i>
4.7.3.4.3	Dispose of Incidental Waste (Storage) (Cs/Sr) <i>Arranges for the disposal of solid, liquid, and effluent wastes generated during the treatment of material prior to storage and during the actual storage of the material.</i>
4.7.3.5	Transfer Outgoing Materials for Disposition (Cs/Sr) <i>Acquire material transfer capability, prepare material for transfer, load, and transfer. Perform notifications and maintain chain of custody documentation. Dispose of generated waste. Prepares material and documentation, and transfers materials for disposition. It arranges for disposal of incidental wastes generated during the disposition process.</i>
4.7.3.5.1	Prepare for Final Disposition (Cs/Sr) <i>Characterizes material for disposition treatment, treats the material and packages it for disposition.</i>
4.7.3.5.1.1	Characterize Material for Disposition (Cs/Sr) <i>Examines material characterization to determine necessary disposition actions.</i>
4.7.3.5.1.2	Treat for Disposition (Cs/Sr) <i>Performs the necessary operations to comply with disposition criteria.</i>
4.7.3.5.1.2.1	Extract Cs and Sr Materials (Cs/Sr) <i>Transfer capsule from disposition to transfer capability area.</i>
4.7.3.5.1.2.2	Inspect Cs & Sr Materials (Cs/Sr) <i>Unload, inspect and transfer custody of capsules to recipient.</i>
4.7.3.5.1.3	Package for Disposition (Cs/Sr) <i>Provides the necessary packaging to allow for the Cs137 & Sr90 materials disposition. Perform actions required to prepare Cs137 and/or Sr90 for transfer.</i>
4.7.3.5.2	Transfer Dispositioned Materials (Cs/Sr) <i>Loads containers into transfer device. It prepares the necessary shipping documentation, makes the necessary notifications, and ships the material.</i>
4.7.3.5.2.1	Obtain Shipping Container and Transporter (Cs/Sr) <i>Obtain qualified, verified and authorized capability, equipment, facilities and personnel to transfer the Cs137 & Sr90 to final disposition.</i>
4.7.3.5.2.2	Document and Notify Shipment (Cs/Sr) <i>Performs the necessary notification prior to the material shipment and prepares the necessary chain of custody and shipping documentation. Notify parties (recipients, regulators, and stakeholders) and obtain appropriate approvals for when, what route, how transferred, and destination before shipment.</i>
4.7.3.5.2.3	Load/Move Shipment (Cs/Sr) <i>Load Cs137 and/or Sr90 into transfer capability. Transfers the Cs137 & Sr90 materials to disposition.</i>
4.7.3.5.3	Dispose of Incidental Waste (Disposition) (Cs/Sr) <i>Arranges for the disposal of solid, liquid and effluent wastes generated during the treatment and dispositioning of the materials.</i>

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ADDENDUM 3 - IDEFO DIAGRAMS

IDEF0 Diagram
[4.7.3.1] Maintain Safety Envelope For Cs137 and Sr90

IDEF0 Diagram
[4.7.3.2] Control Cs137 and Sr90 (Cs/Sr)

IDEF0 Diagram
[4.7.3.4] Store Materials (Cs/Sr)

ADDENDUM 4 - INTERFACE DEFINITION

[4.7.3] Store, Treat, and Transfer for Disposition Cs/Sr Material

Interface	Constituents
Accepted Cs/Sr Capsules <i>Cs/Sr where WESF has accepted custody.</i>	Accepted Cs/Sr Materials
Accepted Cs/Sr Materials <i>Cs/Sr where WESF has accepted custody.</i>	
Acutely Unsafe Conditions Action Information (Cs/Sr) <i>Information defining the corrective action(s) necessary to remedy acutely unsafe conditions.</i>	
Acutely Unsafe Shipment Conditions Action Information (Cs/Sr) <i>Information defining the corrective action(s) necessary to remedy acutely unsafe shipment conditions.</i>	
Adjusted Systems Information (Cs/Sr) <i>Documentation which records successful preventive maintenance completion.</i>	
Allocated Resources [Cs/Sr Cleanup] <i>Financial resources authorized to the implementing organization for completion of the function</i>	
Aqueous Waste & Technical Information from Cs/Sr Disp	
Aqueous Waste & Technical Information from Cs/Sr Disposition <i>Liquid waste generated due to cleanup of Cs/Sr.</i>	<ul style="list-style-type: none"> • Aqueous Waste & Technical Information from Cs/Sr Disp • Aqueous Waste & Technical Information from Cs/Sr Storage • Aqueous Waste & Technical Information from Receiving Cs or Sr
Aqueous Waste & Technical Information from Cs/Sr Storage <i>Liquid waste generated due to storage of Cs/Sr.</i>	
Aqueous Waste & Technical Information from Receiving Cs or Sr <i>Liquid waste generated during the receipt of Cs/Sr.</i>	
Available Capacity Notice (Cs/Sr)	
Continued Cs/Sr Material Receipts	<ul style="list-style-type: none"> • Continued Cs/Sr Material Receipts (Physical) • Forecast of Continued Cs/Sr Material Receipts • Request to Receive Continued Cs/Sr Materials
Continued Cs/Sr Material Receipts (Physical)	• Cs/Sr Shipment Records from Continued Receipts
Cs/Sr Acceptance Criteria <i>Criteria necessary to accept material based on the existing capability to handle, treat, store, and dispose of the material.</i>	
Cs/Sr Accepted Requests <i>Shipping requests that have been accepted based upon the facility acceptance capability.</i>	

[4.7.3] Store, Treat, and Transfer for Disposition Cs/Sr Material

Interface	Constituents
Cs/Sr Acutely Unsafe Conditions Information <i>Nuclear or chemically unsafe conditions and information, does not include OSHA, for example. These are conditions detected during the cleanup operations which need to be immediately fed back to the program management function for consideration which may result in new direction & control, defined work packages, and/or mission requirements.</i>	
Cs/Sr Administrative Procedures	
Cs/Sr Archive Records	
Cs/Sr Capability Description <i>Information on the existing facility treat, store, handling, and disposition capabilities and personnel readiness.</i>	
Cs/Sr Capsule Placement Information <i>Direction on where to store Cs/Sr, pool cell, rack and slot or hot cell number.</i>	
Cs/Sr Capsules <i>Cs/Sr capsules in storage at Hanford or returned from offsite sources to Hanford.</i>	
Cs/Sr Capsules Requiring Rework <i>Capsules which fail visual inspection, the go-no-go gauge check or clunk test will require effort to be brought into compliance with storage requirements.</i>	
Cs/Sr Capsules/Materials Transferred to Beneficial Uses <i>Cs/Sr transferred for other disposal or predisposal purposes.</i>	• Cs/Sr Materials Transferred To Beneficial Uses
Cs/Sr Clean Shipping Containers	
Cs/Sr Compliance Confirmation <i>Acknowledgement that current facility status and operations meet all safety and compliance criteria.</i>	
Cs/Sr Compliance Documents	
Cs/Sr Compliant Operations	
Cs/Sr Contaminated Shipping Containers	
Cs/Sr Corrected Systems Information <i>Documentation which records successful repair of system.</i>	
Cs/Sr Corrective Action Needs <i>Information on actions required to bring the facility and facility operations back to a safe and compliant state.</i>	
Cs/Sr Corrective Maintenance Need	
Cs/Sr Direction & Control <i>Management guidance based on the status of implementation of the Defined Work Packages</i>	
Cs/Sr Disposition Plan	
Cs/Sr Disposition Treatment Information <i>Data from Cs/Sr characterization for determining disposition treatment.</i>	

[4.7.3] Store, Treat, and Transfer for Disposition Cs/Sr Material

Interface	Constituents
Cs/Sr Documentation <i>Cs and Sr safety and compliance documentation that is provided for internal and external safety and compliance assessments.</i>	<ul style="list-style-type: none"> • Cs/Sr Administrative Procedures • Cs/Sr Compliance Documents • Cs/Sr Facility & Equipment Maintenance Procedures • Cs/Sr Operational Safety Documents • Cs/Sr Operations Procedures • Cs/Sr Technical Configuration Info • WESF Inventory Documentation
Cs/Sr Equipment Corrective Maintenance Need <i>Information obtained from preventive maintenance or calibration on need for repair.</i>	
Cs/Sr Equipment and Structure Information <i>Facility, equipment and maintenance information that must be maintained to ensure that adequate safety and compliance documentation exists.</i>	<ul style="list-style-type: none"> • Adjusted Systems Information (Cs/Sr) • Cs/Sr Corrected Systems Information • Cs/Sr Modified Systems Information • Cs/Sr Storage Calibrated Systems Information • Cs/Sr Storage Modified Systems Info
Cs/Sr Facility & Equipment Maintenance Procedures	
Cs/Sr Identified Leaking Capsules	
Cs/Sr Incidental Waste from Handling <i>Solid, aqueous, and tank waste generated during the handling of shipping containers.</i>	
Cs/Sr Incidental Waste from Radiological Survey <i>Solid, aqueous, and tank waste generated during radiological surveys and analysis of the Cs and Sr material packages.</i>	
Cs/Sr Incidental Waste from Receiving <i>Solid, aqueous, and tank wastes generated during the receipt of Cs and Sr material shipments.</i>	
Cs/Sr Incoming Shipment Authorization <i>The official paperwork giving the authorization or acceptance of an incoming material shipment request.</i>	
Cs/Sr Inspected Primary	
Cs/Sr Inspection and Verification Information <i>Verifies shipping information matches actual Cs/Sr shipped and the inspection data from examining and testing the Cs/Sr.</i>	<ul style="list-style-type: none"> • Inspection Information • Verification Information
Cs/Sr Manifest Information	
Cs/Sr Material Documentation	
Cs/Sr Material Packaging Needs Information <i>Information on what is required to safely package Cs/Sr.</i>	
Cs/Sr Material Relocated Due to Deactivation (Physical)	<ul style="list-style-type: none"> • Cs/Sr Shipment Records from Deactivation
Cs/Sr Materials Inspection Records <i>Cs/Sr data from inspection.</i>	

[4.7.3] Store, Treat, and Transfer for Disposition Cs/Sr Material

Interface	Constituents
Cs/Sr Materials Transferred To Beneficial Uses <i>Nuclear material that is recovered during facility deactivation and transferred to the public or private domains.</i>	
Cs/Sr Materials for Disposition <i>Cs and Sr materials that are being transfer from storage for disposition. These materials may require further treatment prior to transfer to final disposition.</i>	
Cs/Sr Materials for Final Disposition <i>Cs and Sr materials that have undergone treatment and are ready for transfer to final disposition.</i>	
Cs/Sr Needs/Information	
Cs/Sr Offload Authorization, Manifest, and Materials Documents <i>All documentation associated with a specific material shipment.</i>	
Cs/Sr Operational Safety Documents	
Cs/Sr Operations & Capability Needs <i>Capabilities and needs discovered while operating the system.</i>	
Cs/Sr Operations Information <i>Operations information that must be maintained to ensure adequate safety and compliance documentation exists. This information is also used to assist in the development of facility staff training.</i>	
Cs/Sr Operations Plan <i>The plans that define and govern all Cs and Sr storage, handling, treatment, and disposition operations.</i>	<ul style="list-style-type: none"> • Cs/Sr Disposition Plan • Cs/Sr Safety, Security and Maintenance Plan • Cs/Sr Shipment Receiving Plan • Cs/Sr Shipment Storage Plan
Cs/Sr Operations Procedures	
Cs/Sr Outgoing Shipment Authorization <i>Authorization to proceed with outgoing Cs and Sr shipments.</i>	
Cs/Sr Package Handling Needs/Information <i>Information on the status of Cs/Sr package handling and new package handling capability needs.</i>	
Cs/Sr Primary Packages/Manifest/Material Documentation	
Cs/Sr Primary Packages and Material <i>The Cs and Sr material and the associated primary and possible secondary packaging (does not include the shipping container).</i>	
Cs/Sr Qualified & Requalified Staff <i>A fully trained, qualified, and certified (as required) facility work staff.</i>	
Cs/Sr Receipt Needs/Information	<ul style="list-style-type: none"> • Cs/Sr Package Handling Needs/Information
Cs/Sr Received Shipment <i>Cs and Sr material shipment accepted for handling, treatment, storage, and/or disposition.</i>	
Cs/Sr Recycled Containers and Transporters <i>Transporter and shipping containers suitable for reuse.</i>	

[4.7.3] Store, Treat, and Transfer for Disposition Cs/Sr Material

Interface	Constituents
Cs/Sr Relocated Due to Deactivation	<ul style="list-style-type: none"> • Cs/Sr Material Relocated Due to Deactivation (Physical) • Forecast of Cs/Sr Receipts from Deactivation • Request to Receive Cs/Sr from Deactivation
Cs/Sr Request for Final Disposition Shipment <i>Programmatic authorization to initiate Cs and Sr material transfer to final disposition.</i>	
Cs/Sr Retrieval Records <i>Documentation of Cs/Sr transfer from storage to transfer capability.</i>	
Cs/Sr Reworked Capsules <i>Capsules that now meet storage criteria due to work being performed on them.</i>	
Cs/Sr Safe Operating Systems	
Cs/Sr Safe Operations	
Cs/Sr Safe and Compliant Operations	<ul style="list-style-type: none"> • Cs/Sr Compliant Operations • Cs/Sr Safe Operations
Cs/Sr Safety Operating Facility and Systems <i>Systems which operate within safety limits and compliance requirements.</i>	<ul style="list-style-type: none"> • Cs/Sr Safe Operating Systems • Cs/Sr Safe and Compliant Operations • Safe and Compliant Facility • Safety Operating Equipment (Cs/Sr)
Cs/Sr Safety and Security Envelope Constraints <i>Constraints placed on the receipt, handling, storage, treatment, and disposition of Cs and Sr material, facility operations and maintenance activities to ensure safety and compliance are maintained.</i>	
Cs/Sr Safety and Security Needs/Information	
Cs/Sr Safety, Security and Maintenance Plan	
Cs/Sr Safety, Security, and Compliance Needs/Information <i>Information on safety and security status and new safety and security capability needs.</i>	<ul style="list-style-type: none"> • Cs/Sr Safety and Security Needs/Information • Cs/Sr Storage Property Management Info
Cs/Sr Secondary Storage Wastes <i>Incidental solid, aqueous, or tank waste generated during the storage of Cs and Sr materials.</i>	
Cs/Sr Shipment Information <i>Information required in order to ship.</i>	
Cs/Sr Shipment Receipt Forecasts	<ul style="list-style-type: none"> • Forecast of Continued Cs/Sr Receipts • Forecast of On-Site Cs/Sr Receipts [WF]
Cs/Sr Shipment Receiving Plan	
Cs/Sr Shipment Records from Continued Receipts	
Cs/Sr Shipment Records from Deactivation	
Cs/Sr Shipment Storage Plan	
Cs/Sr Shipping Containers	

[4.7.3] Store, Treat, and Transfer for Disposition Cs/Sr Material

Interface	Constituents
Cs/Sr Shipping Containers for Recycling	
Cs/Sr Storage Calibrated Systems Information <i>Documentation of successful calibration.</i>	
Cs/Sr Storage Capacity Needs	
Cs/Sr Storage Facility Access Info <i>Status of personnel accessibility to WESF.</i>	
Cs/Sr Storage Modified Systems Info <i>Documentation which records successful completion and testing of new/modified systems.</i>	
Cs/Sr Storage Needs/Information <i>Information on the status of SNM/NM/NF material storage and new storage capability needs.</i>	
Cs/Sr Storage Property Management Info <i>Information; periodic property audit as capital and non-capital equipment acquisition requests.</i>	
Cs/Sr Storage Treatment Information <i>Information on the existing facility storage treatment capabilities and Cs and Sr material storage capabilities and status.</i>	
Cs/Sr Storage Unrepairable Equipment Info <i>Information obtained from corrective or preventive maintenance operations which states the item is not repairable and recommends a new item be acquired.</i>	
Cs/Sr Survey and Manifest Information <i>Radiological release of the Cs and Sr packaging and the associated Cs and Sr material manifest information.</i>	
Cs/Sr Technical Configuration Info	
Cs/Sr Training Documentation	
Cs/Sr Transfer Information <i>Information regarding the specific transport medium for dispositioning Cs or Sr, the documentation describing Cs/Sr capsule physical attributes (i.e. historical process information), and the validating information which verifies the conformance of individual physical medium device to its physical description</i>	<ul style="list-style-type: none"> • Documents for Receiver (Cs/Sr) • Documents for Shipper (Cs/Sr) • Historical Process Information (Cs/Sr) • Shipment Advance Notification (Cs/Sr) • Transfer Information (Cs/Sr)
Cs/Sr Transfer Needs/Information <i>Information on the status of Cs and Sr transfers and new transfer capability needs.</i>	
Cs/Sr Treated Materials <i>Cs and Sr materials that have been treated to allow for safe, stable, and compliant storage.</i>	
Cs/Sr Treatment Options	
Cs/Sr Wastes Generated During Transfer <i>Incidental solid, aqueous, and tank waste generated during the transfer of Cs and Sr materials to final disposition.</i>	

[4.7.3] Store, Treat, and Transfer for Disposition Cs/Sr Material

Interface	Constituents
Cs/Sr Wastes Generated During Treatment <i>Incidental solid, aqueous, and tank waste generated during Cs and Sr material treatment prior to transfer for final disposition.</i>	<ul style="list-style-type: none"> • Waste Generated During Inspection (Cs/Sr) • Waste Generated During Retrieval (Cs/Sr)
Custody Transfer Acknowledgement of Cs/Sr Records <i>An acknowledgement of custody transfer.</i>	
Defined Work Package (Cs/Sr Cleanup) <i>Material specific project level documentation describing the specific work; work authorization, procedures, resource limits and schedules.</i>	<ul style="list-style-type: none"> • Cs/Sr Operations and Maintenance Work Package • Defined Deactivation Work Package (Cs/Sr)
Definitive Disposition (Cs/Sr) <i>The necessary handling, treatment, storage, and/or disposition actions for a specific shipment of materials.</i>	
Detected Leaking Capsules (Cs/Sr) <i>System required to detect individual leaking capsules.</i>	
Disposition Prospects (Cs/Sr)	
Documents for Receiver (Cs/Sr) <i>Required paperwork in order for a shipment to be received.</i>	
Documents for Shipper (Cs/Sr) <i>Required paperwork needed to authorize a shipment.</i>	
Excess Cs/Sr Facilities <i>The excess facilities and equipment associated with the storage, treatment, and disposition of SNM/NM/NF materials.</i>	<ul style="list-style-type: none"> • Excess Cs/Sr Receiving Facilities • Excess Cs/Sr Storage Facilities
Excess Cs/Sr Receiving Facilities <i>Equipment/facilities no longer needed for Cs/Sr packaging.</i>	
Excess Cs/Sr Storage Facilities <i>Equipment/facilities no longer required for Cs/Sr storage.</i>	
Extracted Cs/Sr Materials <i>Remove Cs/Sr from storage location and place in inspection location.</i>	
Fails-Criteria Notice (Cs/Sr)	
Forecast of Continued Cs/Sr Material Receipts	
Forecast of Cs/Sr Receipts from Deactivation	
Identification of Excess Resources (Cs/Sr Cleanup) <i>Identification of excess resources which consists of excess inventory information</i>	
Infrastructure Support TSD NM/NF/SNF/SNM	
Inspected Cs/Sr Information <i>Material data required to characterize the Cs/Sr.</i>	
Inspected Cs/Sr Materials <i>Cs/Sr that has been unloaded from shipping device, inspected and custody transferred to recipient.</i>	
Insufficient Capability Notice (Cs/Sr)	

[4.7.3] Store, Treat, and Transfer for Disposition Cs/Sr Material

Interface	Constituents
Internal Cs/Sr Safety Operation Constraints Document <i>Document defining Cs and Sr safety and compliant operating constraints.</i>	
Marketing Agreement (Cs/Sr) <i>Marketing Agreements consisting of identification of resources to be used in building the economy which essentially causes transferrable items to be removed from the "disposal" list to the transfer list.</i>	
Materials Requiring Rework (Cs/Sr) <i>Materials in storage that need further treatment to ensure continued storage in safe and compliant manner.</i>	
Meets-Criteria Notice (Cs/Sr)	
Mission Essential Capabilities (Cs/Sr Cleanup) <i>Mission essential capabilities in the form of all physical resources, manpower, technology, infrastructure, expertise required by all the other functions to conduct the "Cs/Sr Cleanup" mission.</i>	
Mission Requirements (Cs/Sr Cleanup) <i>Externally- and internally-imposed product specifications and process constraints derived from all applicable laws, directives, policies, standards, agreements with stakeholders, engineering studies, safety analyses, and findings from surveillances and audits.</i>	
Public Information (Cs/Sr) <i>Information that is issued to the public.</i>	
Request to Receive Continued Cs/Sr Materials	
Request to Receive Cs/Sr from Deactivation	
Secondary Treatment Wastes (Cs/Sr) <i>Incidental solid, aqueous, and tank wastes generated during the treatments of Cs and Sr material to prepare it for storage.</i>	
Shipment Advance Notification (Cs/Sr) <i>Notification before a shipment is made.</i>	
Solid Waste from Cs/Sr Cleanup	<ul style="list-style-type: none"> • Solid Waste from Cs/Sr Disposition • Solid Waste from Cs/Sr Storage • Solid Waste from Receiving Cs or Sr
Solid Waste from Cs/Sr Disposition	
Solid Waste from Cs/Sr Storage <i>Solid waste generated by storing Cs/Sr.</i>	
Solid Waste from Receiving Cs or Sr <i>Solid waste generated during the Cs/Sr receipt process.</i>	
Tank Waste from Cs/Sr Cleanup <i>Tank waste resulting from the cleanup of SNM/NM/NF containing a high level of radioactive, hazardous, or mixed waste.</i>	<ul style="list-style-type: none"> • Tank Waste from Cs/Sr Disposition • Tank Waste from Cs/Sr Storage • Tank Waste from Receipt of Cs/Sr Materials
Tank Waste from Cs/Sr Disposition	
Tank Waste from Cs/Sr Storage <i>Tank waste generated due to storage of Cs/Sr.</i>	

[4.7.3] Store, Treat, and Transfer for Disposition Cs/Sr Material

Interface	Constituents
Tank Waste from Receipt of Cs/Sr Materials <i>Tank waste generated during the receipt of Cs/Sr.</i>	
Trained Cs/Sr Staff	
Transfer Information (Cs/Sr) <i>Information regarding the specific transport medium for dispositioning Cs or Sr, the documentation describing its physical attributes, and the validating information which verifies the conformance of individual physical medium device to its physical description.</i>	
Transferrable Resources from Cs/Sr Cleanup	<ul style="list-style-type: none"> • Cs/Sr Capsules/Materials Transferred to Beneficial Uses • Cs/Sr Recycled Containers and Transporters
Verified Cs/Sr Capsules <i>Cs/Sr that meets and passes storage inspection criteria and testing.</i>	
WESF Inventory Documentation	
Waste Generated During Inspection (Cs/Sr) <i>Waste generated during the inspection of the Cs/Sr.</i>	
Waste Generated During Retrieval (Cs/Sr) <i>Waste generated retrieving Cs/Sr.</i>	
Waste Generated Performing Corrective Maintenance (Cs/Sr)	
Waste Generated Performing Minor Facility/Equipment Modifications (Cs/Sr)	<ul style="list-style-type: none"> • Wastes Generated During Decontamination (Cs/Sr)
Waste Generated Performing Preventive Maintenance (Cs/Sr)	
Waste Generated Performing Systems and Equipment Calibrations (Cs/Sr)	
Wastes Generated During Decontamination (Cs/Sr)	