

Project Baseline Summary Report

Data Source: **EM CDB**

Operations/Field Office: **Rocky Flats**

Site Summary Level: **Rocky Flats Environmental Technology Site**

Project **RF012 / SNM Shipping Project**

Report Number: **GEN-01b**

Print Date: **3/9/2000**

HQ ID: **0347**

General Project Information

Project Description Narratives

Purpose, Scope, and Technical Approach:

Purpose: The purpose of the project is to remove the Special Nuclear Material (SNM) remaining at RFETS from the Cold War Production Operations. It will be shipped to other DOE sites. This material includes pits, enriched uranium, composite parts, metal and oxide, residues and other types of material. Shipping will be accomplished in a time frame that is appropriate for site, complex, and receiver schedules; current schedules are subject to change as new or different receivers become available. This project element supports all activities necessary to ensure availability of off-site shipping containers and procedure development. It also includes crimping and sealing of pits that have tubulation configurations that are not acceptable for long-term storage and the packaging and shipping of a limited amount of equipment to be sent to Los Alamos National Laboratory (LANL) to support the Stockpile Reliability Evaluation Program (SREP). The completion of this work is the necessary first step to allow for the deactivation of Nuclear Facilities and Site Closure.

Completing this project addresses concerns of the stakeholders, Defense Nuclear Facilities Safety Board (DNFSB) 94-1 and 94-3 initiatives, vulnerabilities, risk reduction, mortgage reduction, and SNM stewardship. Removing SNM from the RFETS and shipping it to other DOE sites will lessen the concerns that have been expressed by the stakeholders regarding the inventory of SNM at RFETS. Some of the material is in configurations that are not suitable for long-term storage and will be transferred to other DOE facilities for dismantling into a safe storage condition, thus reducing or eliminating the safety and health vulnerabilities associated with these items. Performing this project will increase some health and safety vulnerabilities associated with handling and transporting radioactive material.

Scope: The SNM Off-site Shipping Project at RFETS involves

1. All activities related to off-site shipment, including identifying receivers and negotiating shipper/receiver agreements, scheduling shipments with receivers, moving material from storage areas to packaging areas, preparation and packaging the material into approved off-site shipping containers, and loading into Safe-Secure Transports (SSTs). The materials involved include ARIES, non-War-Reserve (WR), and WR pits; 4.5% enriched uranium; enriched uranium parts; composite pieces; SREP equipment; Plutonium and Enriched Uranium metals and oxides; residues and other types of material. This scope does not include the shipment of material to the Waste Isolation Pilot Plant.
2. Crimping and sealing of pits to configurations that are acceptable for long-term storage.

Technical Approach: The SNM Shipping Project at the RFETS involves identifying receivers and negotiating shipper/receiver agreements, scheduling shipments with receivers, moving material from the storage areas to packaging areas, packaging the material into DOT-approved offsite shipping containers, loading into SSTs or commercial carriers, and performing the associated testing and verification. The success of the project depends on support of the receiver sites (LANL, LLNL, SRS, ORNL, and Pantex) and the DOE/AL Transportation Safeguards Division (TSD) and Weapons Surety Division (WSD), the availability of certified containers, and the timely supply of SSTs.

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The following is a detailed discussion of the technical approach for each of these elements of the off-site SNM shipping project.

1. Crimp & Seal Pits Shipments - This element includes leak testing and transfer to on-site storage in B371 of former SREP pits and pump-down table units that have tubulation configurations that are not acceptable for long-term storage. The former production crimp-and-seal weld process was being reactivated to seal these units and to remove the tubulation for long-term storage. Reactivation of the pump-down table and leak-test process will also be required to verify that the crimp-and-seal weld is leak-tight. After sealing, the units will be transferred to B371 for storage.

2. Non-WR Pits Shipments - This element includes characterization, packaging, and shipment of Non-WR pits to LANL and LLNL for disassembly. These pits are special-order work and development units that lack characterization due to limited information on how they were manufactured. All available information at RFETS, LANL, and LLNL is being researched to aid in the packaging, shipment, and disassembly of the units. The recovered Pu metal will be sent to another DOE Complex facility if possible.

3. 4.5% Uranium Shipments - This element includes repackaging and shipment of 4.5% eU oxide, a combination of 4.5% U235 and 95.5% U238 oxides, which has been mixed with up to 6% water, compressed into briquette forms, and packaged in machined aluminum containers. Some of this material is stored in B777. The oxide cannot be shipped in the existing containers. Therefore, it will be shipped in the Combustion Engineering UNC-2901 shipping container. RFETS is a certified user of this container and the containers are on-site. The material will be shipped to the Tennessee Valley Authority.

4. Enriched Uranium Shipments - This element includes packaging and shipment of enriched uranium hemishells which consist of components manufactured at Oak Ridge and shipped to RFETS in support of Defense Programs requirements. This material will be packaged in B707 and B777 into certified DT-22 shipping containers for return to Y-12. The material is currently stored in B707 and B776/7. Therefore, the shipments are critical for the closure of B707 and B776/7. Some of this material has some amounts of Plutonium associated with it that cannot be processed at RFETS or sent to Y-12. This material will be packaged and sent to SRS starting in FY02, and will be sent with Metal and Oxide shipments.

5. Composites Shipments - This element includes shipment of composite parts made up of Pu/Be/eU or other material to Savannah River Site. Removal of this material from B777 helps ensure that B776/7 can be closed as scheduled.

6. Packaging Support/Other - This element includes packaging program support which is vital to the continued success of off-site shipping, such as activities relating to the use of shipping containers at the site (certification, procedures, etc.); interpretation of and compliance with the Code of Federal Regulations 10CFR71; implementation and maintenance of a quality assurance plan; oversight of procurement, inspection, assembly maintenance, and use of containers; and implementation of DOE Order 5610.12.

7. SREP Equipment Shipments - This element includes shipment of SREP equipment and tooling being transferred from B707 to LANL to support LANL's SREP and pit-rebuild programs.

8. Pits Shipments - This element includes removing RFETS inventory pits from storage, repacking them in FL off-site shipping containers, leak

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testing, and shipping to Pantex.

9. SNM Shipment Management - This element includes management and administration of the SNM Off-site Shipping Program to assure timely removal of SNM from the site.

10. Metal and Oxides Shipments - This element consists of repackaging and shipment of metal and oxide that consists of solids rendered from the Pu processing and packaging at RFETS. The material, which will be stored in containers in various buildings, will be moved to B371 for storage and then placed into certified shipping containers for shipment to Savannah River Site after Savannah River Site has completed its environmental assessment and received approval to receive this material.

Project Status in FY 2006:

This project will be completed.

Post-2006 Project Scope:

No activities are currently scheduled to occur after 2006 for this project.

Project End State

All significant quantities of SNM removed from the RFETS.

Cost Baseline Comments:

Cost estimates are based on assumptions and data developed by the technical groups that have responsibility for managing the work. To the extent practical, all cost estimates are Activity-Based Costs (ABC) and tied directly to a defined and detailed work scope. The estimates are developed at the activity level and are further divided into line items. Line items represent individual resource contributions to activities and are the lowest level of input to the planning system. Once the cost estimate is developed, each activity is evaluated for cost, technical and schedule risk and the appropriate contingency is determined. Detailed estimates and the basis of estimates (BOEs) for the 2006 Closure Plan are available at the Site.

Safety & Health Hazards:

The principle hazards in the SNM Shipping Project are radiological, criticality, chemical, and other standard industrial hazards commonly found in Pu buildings at RFETS. Most of these hazards will exist throughout the project and are related to SNM material movement, maintenance, surveillance, inspection, characterization, repackaging, packaging, and storage. These hazards will be analyzed and categorized in accordance with the RFETS Safety and Health Program infrastructure policies, manuals, and procedures.

Safety & Health Work Performance:

This project will be completed within the RFETS Safety and Health Program and within the controls and authorization basis documents defined above to ensure the safety and health of the worker, public and the environment. RFETS has implemented an integrated safety management system consisting of the following elements: radiological safety, criticality safety, emergency management, fire safety, industrial hygiene, nuclear safety,

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occupational medicine, occupational safety, safeguards and security, safety integration, performance oversight, and standards management. RFETS provides site wide infrastructure programs for each functional area to establish consistent safety standards and support for this project. Safety and health success results from the efficient and effective implementation of these programs. This project is responsible for ensuring that the necessary elements of the safety and health programs are incorporated into the specific project plans and implementing documents, and that an appropriate Readiness Determination and Safety Evaluation Screen (SES)/Unreviewed Safety Question Determination (USQD) have been performed.

PBS Comments:

The SNM Shipping Project is part of the Nuclear Materials Stewardship Program administered by the Albuquerque Operations Office (ALOO). As such, the activities in this project are coordinated with other activities in the complex to provide an integrated approach to SNM management.

Baseline Validation Narrative:

Although the 2006 Closure Plan has not been officially validated, it has undergone a high level review by Rocky Flats Field Office (RFFO) and Headquarter personnel. Current independent validation efforts include the following: 1) RFFO has contracted an independent firm to perform a baseline confidence review of the 2006 Closure Plan by the end of FY99, and 2) the Office of Field Management (FM) has contracted a big-five accounting firm to validate the 2006 Closure Plan.

In addition to the 2006 Closure Plan validation efforts, results/recommendations from several previous baseline validation efforts were used in the development of the 2006 Closure Plan. These validations included: 1) The U.S. Army Corps of Engineers (USACE) performed a validation of the Rocky Flats Ten Year Plan in FY97/FY98, 2) Kaiser-Hill contracted Price Waterhouse Coopers, LLP to conduct an independent validation effort of the 2010 Closure Project Baseline that concluded in May of FY99, and 3) Kaiser-Hill engaged Arthur Andersen, LLP to conduct a schedule and cost risk review of the 2010 Closure Project Baseline.

General PBS Information

Project Validated?

Date Validated:

Has Headquarters reviewed and approved project?

No

Date Project was Added: 12/1/1997

Baseline Submission Date:

FEDPLAN Project? Yes

Drivers:	CERCLA	RCRA	DNFSB	AEA	UMTRCA	State	DOE Orders	Other
	N	N	Y	N	N	Y	Y	Y

Project Identification Information

DOE Project Manager: Jessie Roberson

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DOE Project Manager Phone Number: 303-966-2263
DOE Project Manager Fax Number: 303-966-4775
DOE Project Manager e-mail address: ten.year.plan@rfets.gov
Is this a High Visibility Project (Y/N): Y

Planning Section

Baseline Costs (in thousands of dollars)

	1997-2006 Total	2007-2070 Total	1997-2070 Total	1997	Actual 1997	1998	Actual 1998	1999	2000	2001	2002	2003	2004	2005	2006	
PBS Baseline (current year dollars)	49,993	0	49,993	3,689	3,689	4,829	4,829	8,354	12,855	15,226	4,812	228	0	0	0	
PBS Baseline (constant 1999 dollars)	48,614	0	48,614	3,689	3,689	4,829	4,829	8,354	12,517	14,521	4,495	209	0	0	0	
PBS EM Baseline (current year dollars)	49,956	0	49,956	3,652	3,652	4,829	4,829	8,354	12,855	15,226	4,812	228	0	0	0	
PBS EM Baseline (constant 1999 dollars)	48,577	0	48,577	3,652	3,652	4,829	4,829	8,354	12,517	14,521	4,495	209	0	0	0	
	2007	2008	2009	2010	2011- 2015	2016- 2020	2021- 2025	2026- 2030	2031- 2035	2036- 2040	2041- 2045	2046- 2050	2051- 2055	2056- 2060	2061- 2065	2066- 2070
PBS Baseline (current year dollars)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PBS Baseline (constant 1999 dollars)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PBS EM Baseline (current year dollars)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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PBS EM Baseline (constant 1999 dollars)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Non-EM Costs included in the Cost Baseline

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Non-EM Category: Other													
Defense Programs	1												
	2010	2011-2015	2016-2020	2021-2025	2026-2030	2031-2035	2036-2040	2041-2045	2046-2050	2051-2055	2056-2060	2061-2065	2066-2070

Non-EM Category: Other
Defense Programs

Baseline Escalation Rates

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
	0.00%	0.00%	0.00%	2.70%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%
	2010	2011-2015	2016-2020	2021-2025	2026-2030	2031-2035	2036-2040	2041-2045	2046-2050	2051-2055	2056-2060	2061-2065	2066-2070
	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%

Project Reconciliation

Project Completion Date Changes:

Previously Projected End Date of Project: 9/30/2004

Current Projected End Date of Project: 9/30/2003

Explanation of Project Completion Date Difference (if applicable):

Scope Deletion

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Project Reconciliation

Efficiencies

Acceleration of SNM shipping to offsite receivers.

New Scope

This change added scope for Leak Testing of Pits prior to shipment to Pantex to ensure a 90% confidence level that the non-beryllium clad pit assemblies will meet the War Reserve leak test criteria. This scope was requested by the Albuquerque Operations of the DOE and directed by RFFO memorandum. This change also changed the scope and technical approach for eU decontamination since the LANL decontamination process was not ready to be implemented in a production environment.

Site required to procure the 9975 containers for shipping (\$14M).

Cost Growth

Science & Technology

Other

The scope of work and end state conditions for the 2006 Plan are similar to the current 2010 Baseline, with a four-year acceleration and a reduction in cost being the two most significant differences. The bottom-up estimate for the 2006 Plan is a \$1.65 billion improvement over the comparable activity-based bottoms-up detail estimate for 2010.

To close the Site four years earlier than the current 2010 Baseline requires a strategically different approach. The two key principles followed in preparing the 2006 Baseline were: 1) safely reducing the urgent risks first, and 2) performing work in a sequence that reduces or eliminates operations, maintenance and security costs (often referred to as - mortgage costs) as early as possible. Key to the 2006 Baseline approach is early closure of the secured Protected Area. Closing the Protected Area as soon as possible means that the high security and maintenance costs for this area can be redeployed to accelerate other closure activities. In addition, D&D and SNM risk reduction activities will be performed simultaneously rather than sequentially, supporting both the risk reduction and mortgage reduction principles. The D&D of non- and lower-contaminated facilities and most environmental remediation work will be deferred until later in the project to allow resources to be focused in the areas that result in the greatest reduction in risks and mortgage costs.

Project Cost Estimates (in thousands of dollars)

Previously Estimated Lifecycle Cost (1997 - 2070, 1998 Dollars):	25,308	Actual 1997 Cost:	3,652	Actual 1998 Cost:	4,829
Previously Estimated Lifecycle Cost of Project (1999 - 2070, 1998 Dollars):	16,827	Inflation Adjustment (2.7% to convert 1998 to 1999 dollars):			454
Previously Estimated Lifecycle Cost (1999 - 2070, 1999 Dollars):	17,281				

Project Cost Changes

Cost Adjustments Reconciliation Narratives

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Project Reconciliation

Cost Change Due to Scope Deletions (-):

Cost Reductions Due to Efficiencies (-):

Cost Associated with New Scope (+): 15,899 Rebaselining due to acceleration. New scope dollar estimate is not of audit quality.

Cost Growth Associated with Scope Previously Reported (+):

Cost Reductions Due to Science & Technology Efficiencies (-):

Subtotal: 33,180

Additional Amount to Reconcile (+): 6,916

Current Estimated Lifecycle Cost (1999 - 2070, 1999 Dollars): **40,096**

Milestones

Milestone/Activity	Field Milestone Code	Original Date	Baseline Date	Legal Date	Forecast Date	Actual Date	EA	DNFSB	Mgmt. Commit.	Key Decision	Intersite
Ship 50% of scrub alloy.			9/30/1999						Y		
Surplus Pu EIS ROD Approval	RF-0015		6/1/1999		6/1/1999				Y		Y
SRS F Area Available for Classified Metals	RF-0016		6/30/1999		6/30/1999				Y		Y
Pits and Misc SNM Shipments Complete	RF-0027		9/30/1999		9/30/1999						
Transfer of Packaged SNM To B371 Cmpl	RF-0043		9/27/2001		9/27/2001						
Metals, Oxides, and Remaining SNM Shipments Comp	RF-0049		9/6/2002		9/6/2002						
FY99-T2 Compl Offsite Shipment of Pits (9/30/99)	RF-0111		3/2/1999	3/2/1999	3/2/1999		Y				
FY00-T1 Compl eU Shipments (9/30/00)	RF-0112		9/30/1999	9/30/1999	9/30/1999		Y				
FY02-T3 Start Offsite Shipment SNM M&O (9/30/02)	RF-0292		7/26/1999	7/26/1999	7/26/1999		Y				
Compl Offsite Shipment of Scrub Alloy (11/30/99)	RF-0294		9/28/1999		9/28/1999						
Complete Offsite Shipping of SNM M&O (9/30/02)	RF-0295		9/6/2002		9/6/2002						
Complete PBD 012 -SNM Shipping Project	RF-OTHE-12		9/30/2003		9/30/2003					Y	
PBD 012 Project Start			10/1/1997								

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Milestones - Part II

Milestone/Activity	Field Milestone Code	Critical Decision	Critical Closure Path	Project Start	Project End	Mission Complete	Tech Risk	Work Scope Risk	Intersite Risk	Cancelled	Milestone Description
Ship 50% of scrub alloy.											
Surplus Pu EIS ROD Approval	RF-0015										Kaiser Hill Internal (KHIs) Milestones
SRS F Area Available for Classified Metals	RF-0016										Kaiser Hill Internal (KHIs) Milestones
Pits and Misc SNM Shipments Complete	RF-0027	Y									Kaiser Hill Internal (KHIs) Milestones
Transfer of Packaged SNM To B371 Cmpl	RF-0043	Y									Kaiser Hill Internal (KHIs) Milestones
Metals, Oxides, and Remaining SNM Shipments Comp	RF-0049	Y									Kaiser Hill Internal (KHIs) Milestones
FY99-T2 Compl Offsite Shipment of Pits (9/30/99)	RF-0111										Rocky Flats Clean-up Agreement (RFCAs) Milestones
FY00-T1 Compl eU Shipments (9/30/00)	RF-0112										Rocky Flats Clean-up Agreement (RFCAs) Milestones
FY02-T3 Start Offsite Shipment SNM M&O (9/30/02)	RF-0292										Rocky Flats Clean-up Agreement (RFCAs) Milestones
Compl Offsite Shipment of Scrub Alloy (11/30/99)	RF-0294	Y									Kaiser Hill Internal (KHIs) Milestones
Complete Offsite Shipping of SNM M&O (9/30/02)	RF-0295	Y									Kaiser Hill Internal (KHIs) Milestones
Complete PBD 012 -SNM Shipping Project	RF-OTHE-12				Y	Y					Kaiser Hill Internal (KHIs) Milestones
PBD 012 Project Start				Y							PBD 012 Project Start