




DEFENSE NUCLEAR FACILITIES SAFETY BOARD
RECOMMENDATION 94-1 IMPLEMENTATION


QUARTERLY REPORT

3rd Report

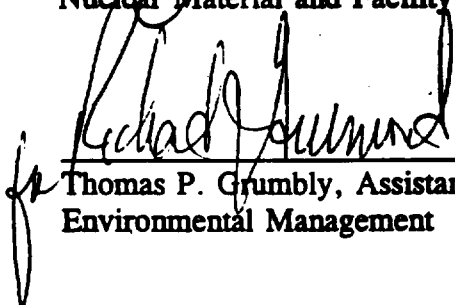
Period Covered:
September 1 - November 30, 1995

Submitted: 
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Date: 12/20/95

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Date: 1/18/96

**DEFENSE NUCLEAR FACILITIES SAFETY BOARD RECOMMENDATION 94-1
IMPLEMENTATION QUARTERLY REPORT****I. GENERAL PROGRAM OVERVIEW****A. Stabilization Progress to Date: Milestones and Actions Completed**

- 152 milestones in Implementation Plan
- 50 milestones completed to date
- 12 milestones scheduled for this quarter (Sept–Nov)
 - 9 completed on or ahead of schedule
 - 3 missed (1 subsequently completed)
- 10 milestones scheduled for next quarter (Dec–Feb)
 - 5 completed this quarter
- 4 milestones at risk

A complete listing of milestones is included as an attachment to this report.

B. Milestone Process Modifications

The following milestone processes have been modified based on a changes in the stabilization technique used at Rocky Flats and the known quantity of material to be stabilized at Los Alamos. These changes do not affect milestone completion dates.

**IP-3.3-040 *Oxidize 50 kg of Corroded Metal Items at Los Alamos National Laboratory
(Completed October 1995)***

This milestone has been completed, however, the scope of the milestone has changed since the 94-1 Implementation Plan was written. It was originally estimated that 50 kg of corroded plutonium metal could be stabilized by the end of October 1995 as an indication of progress toward the stabilization of the entire category. Material characterization has been conducted and the total inventory of materials held by Los Alamos was divided among twelve categories, with the corroded metal items of concern placed in the impure metal category. The corroded metal items, which contain > 50 weight-percent plutonium but less than 100 g plutonium, include 1,158 items with a total estimated plutonium weight of 25 kg, many of which are reactive, high surface area items. These items have a greater inherent risk due to the potential for in situ oxidation, which was confirmed with the first inventory sampling and inspection. The entire impure metal category contains 1548 items, with an estimated weight of 90 kg of plutonium.

LANL will prepare a resource-loaded stabilization and packaging schedule to accomplish all stabilization activities by 2002. The specific workoff schedule

for the impure metals as well as the other material holdings will be included in an update to the LANL Site Integrated Stabilization and Management Plan.

IP-3.5-006 *Begin Blending and Shipping HEUN for Stabilization (May 1996)*

The approach that has been selected to stabilize the highly enriched uranyl nitrate (HEUN) solutions at Rocky Flats has been changed from the originally planned on-site blending to low enriched uranium described in the 94-1 Implementation Plan. The new method will involve bottling the HEUN and shipping the solutions off site using Safe Secure Transports (SSTs). This change was made to reduce the schedule and safety risks associated with blending the solutions on site and shipping in containers. Specifically:

- The bottling option requires less Building 886 preparation than the blending option.
- There is an increase in the safety margin using the bottling option since the material will be shipped in a DOT Type "B" shipping container.

There will be no impacts on meeting the schedule commitments resulting from the change in treatment method.

C. Milestones Missed

IP-3.2-020 *Repackage 256 Items of Plutonium Metal in Contact with Plastic at Rocky Flats (October 1995)*

This activity was completed on November 14, 1995.

IP-3.2-024 *Issue Record of Decision on Interim Management of Nuclear Materials Environmental Impact Statement (July 1995) [Noted in last quarter's report.]*

The Final Interim Management of Nuclear Materials EIS was issued October 20, 1995. The Record of Decision was issued December 12, 1995.

IP-3.3-034 *Develop risk-based, complex-wide categorization and prioritization decision criteria for all stored residues (September 1995)*

The risk-based prioritization decision criteria was not developed by Los Alamos National Laboratory as planned but is an outgrowth of the extensive characterization and prioritization of Los Alamos's vault holdings. Los Alamos is scheduled to complete development of the methodology in draft by December 22, 1995, with a final version used as an adjunct to the Interim Safe Storage Criteria for plutonium-bearing solid materials.

IP-3.6-032 *Begin Mk-31 Target Stabilization (November 1995)*

This milestone was not completed in November 1995. With this report, the new date for beginning stabilization of Mk-31 targets at Savannah River is estimated to be March 1996. The restart of the F-Canyon dissolving, head end and first cycle processing equipment (Phase II Restart) was delayed and is expected to occur at the end of February 1996. Steady progress has occurred in the preparations for F-Canyon Phase II Restart since the last quarterly report. However, in September DOE Savannah River determined that the DOE Operational Readiness Review (ORR) for Phase II Restart could not be conducted until January 1996 (vice December 1995) due to a conflict with the Defense Waste Processing Facility ORR. The same DOE team has conducted all preparations to perform both reviews. As the date for the DWPF review has slipped to overlap the date for the F-Canyon review, it was concluded that the most efficient course of action would be to delay the F-Canyon ORR rather than attempt to assemble and prepare a second team. This milestone schedule change is not expected to affect the completion of stabilization of Mk-31 targets by September 1996 (IP-3.6-002).

D. Milestones at RiskIP-3.6-008 *Issue Foreign Research Reactor EIS ROD (December 1995)*

An assessment of the various elements of the preferred alternative is underway within DOE. This will delay issuing the ROD until February 1996.

IP-3.1-009 *Complete Stabilization of F-Canyon Plutonium Solutions (January 1996)*

The stabilization of the 320,000 liters of solution in F-Canyon will not be completed January 1996 and has been rescheduled for May 1996 as a result of the delayed FB-Line restart, which began on November 13, 1995.

Stabilization can be completed six months after FB-Line restart. Also, stabilization requires five weeks after F-Canyon Phase II restart. Since Phase II restart is planned for the end of February 1996, it is not expected to affect the completion of stabilization.

Delay in restarting FB-Line occurred because of equipment failures, the implementation of more rigorous procedures, and training to strengthen conduct of operations, which have been previously reported. One strategy adopted to accelerate the schedule is to eliminate steps not needed specifically for stabilization. For example, the May 1996 schedule includes benefits gained by eliminating the anion exchange processing in FB-Line.

IP-3.6-010 *Issue "Management of Spent Nuclear Fuel from the K-Basins" EIS ROD (December 1995)*

The Management of Spent Nuclear Fuel from the K-Basins EIS Record of Decision (ROD) for removal of spent nuclear fuel from the K-Basins at Hanford has been delayed from December 1995 to March 1996. Issuing the draft EIS was delayed due to significant rework to achieve consensus on the number of alternatives and comparison among the alternatives, refinement of the path forward (preferred alternative) in parallel with the EIS development, and an ambitious schedule. The draft EIS was approved for public comment on October 27, 1995. Based on the start of the public comment period and on a strategy to accelerate the ROD, the decision is expected to be issued by March 22, 1996. This date is contingent on the expected moderate extent of public comment.

To adjust to the delay in the ROD, work around strategies are being developed to enable completion of the Canister Storage Building (CSB) to receive fuel on schedule beginning December 1997. The strategy includes initiating detailed design of the CSB based on the original schedule without the delay incurred in the ROD.

IP-3.6-037 *Complete Fuel Consolidation to Free Up Approximately 1,250 Additional Storage Spaces at Savannah River's RBOF (December 1995)*

The milestone to complete fuel consolidation to free up approximately 1,250 additional storage spaces in Savannah River's Receiving Basin for Off-site Fuel (RBOF) will be delayed from December 1995 to February 1996. This change is caused by a redirection of personnel resources to support consolidation of all special nuclear material from M-Area to K-Area, and will have no impact on Savannah River's capability to support planned spent fuel receipts (foreign research reactor and other DOE spent fuel). The delay in meeting this milestone will have no impact on the risks associated with the RBOF facility, and the accelerated removal of special nuclear material will in fact result in greatly reduced risks in the de-inventoried M-Area.

II. TRADE STUDIES

A. Disposition of Pyrochemical Salts

The Pyrochemical Salts Trade Study Group concluded its study and presented results on various technical alternatives to stabilizing Rocky Flats residue salts. Of the alternatives assessed, the Trade Study Group identified the four best alternatives for dealing with residue salts which include: 1) direct shipment to the Waste Isolation Pilot Plant using a pipe component system; 2) shipping all of the Rocky Flats salts to Los Alamos National Laboratory for plutonium separation by distillation; 3) a combination of approaches consisting of off-site treatment of salts at Los Alamos National Laboratory (distillation) and

Lawrence Livermore National Laboratory (salt scrub with further processing of the alloy at Savannah River) with some pyrooxidation activities; and 4) pyrooxidation and distillation.

The Trade Study revealed that each of these alternatives contain critical assumptions that, if they do not materialize, can invalidate the alternative. To minimize the schedule and financial risk associated with stabilizing plutonium salts, a multiple option approach will be pursued that does not prematurely exclude viable options and select a single alternative until related critical assumptions have been validated. The Plutonium Salts Trade Study identified several activities (e.g., characterization) that are common to multiple alternatives and will be pursued irrespective of the alternative selected.

Defense Board staff received an overview of study results on November 15, 1995. The Trade Study report will be distributed in December 1995.

B. Scrub Alloy

The scrub alloy trade study is in the process of identifying and evaluating alternative methods for the disposition of existing scrub alloy at Rocky Flats. Scrub alloy was generated as part of the plutonium recovery process and is composed of approximately 70 weight-percent aluminum/magnesium and 30 weight-percent plutonium. Rocky Flats has approximately 275 drums containing scrub alloy with <50 percent Plutonium by weight. The scrub alloy contains americium, which contributes to radiation rates and heat generation that can degrade packaging, as well as corrosive chloride contaminants. This trade study will be completed in December 1995.

III. INTEGRATED FACILITIES PLAN

The Integrated Facilities Plan (IFP) was issued on November 7, 1995. The IFP was prepared to provide a complex-wide overview of 94-1 facility utilization. The IFP is an integral part of the 94-1 Integrated Program Plan.

The plan specifically delineates those facilities needed for remediation of materials identified as being "at-risk" in Recommendation 94-1, preparing them for safe interim storage pending disposition. The plan depicts the boundaries between 94-1 activities and various other programs. As noted in the plan, many of the decisions regarding long-range use of facilities, subsequent to the completion of the 94-1 program, have not been made. The IFP will, therefore, be maintained current via continuing liaison with other programs, both to provide a starting point for their facility planning deliberations and to ensure that any impact emanating from their evolving plans is formally factored into the timely execution of the 94-1 program commitments.

IV. RESEARCH ACTIVITIES**A. Research Plan**

The NMSTG issued a Research and Development Plan prepared by the Research Committee that identifies: (1) technology needs; (2) technology programs already in place; and (3) "gaps" in technologies that should be addressed by R&D initiatives. It also contains an analysis of the technical maturity of each of the programs in place. This analysis identifies areas where the relative immaturity of selected baseline technologies may put program milestones at risk. Los Alamos National Laboratory is the Lead Laboratory for 94-1 Plutonium-related research and is in the process of developing cost and schedule proposals to accomplish baseline research activities identified in the Research and Development Plan.

B. Plutonium Focus Area

The Plutonium Focus Area, reporting to the NMSTG, was chartered on October 2, 1995. It is managed by the Idaho Field Office with participation by Lockheed Martin Idaho Technologies and Argonne National Laboratory. The Focus Area is tasked with identifying, recommending solutions, and monitoring progress in achieving solutions to the technical issues identified in the NMSTG Research and Development Plan, while seeking opportunities for industry participation. The Research and Development Plan will be updated annually by the Focus Area.

The Focus Area replaced the Research Committee whose principal task was accomplished with the completion of the Research and Development Plan. The Focus Area activities will be coordinated with the Office of Technology Development (EM-50) programs and other focus areas to ensure effective use of resources and to prevent duplication of efforts.

V. PROCUREMENT OF STABILIZATION AND PACKAGING PROJECT

The Plutonium Stabilization and Packaging Project was initiated to define and conduct a centralized procurement of equipment needed at Department facilities for stabilizing and packaging plutonium metals and oxides of greater than 50 weight-percent plutonium. Integration goals of the Project include development of a standard stabilization and packaging process for plutonium metal and oxide and development of a common storage package configuration and design to be used throughout the complex.

The Oakland Operations Office will release the Request for Proposal December 1995 for the design and equipment for systems to stabilize and package plutonium metals and oxides. The procurement was announced in the Commerce Business Daily on November 14, 1995. Systems are to be procured for use at Rocky Flats, Richland, and Savannah River. Portions of systems may also be procured for Los Alamos and Lawrence Livermore National Laboratories. The initial (prototype) unit is planned for installation in Building 707 at Rocky Flats for acceptance testing and demonstration and training of operators from all sites. Oakland was selected from four competing field offices to manage this procurement. The

affected sites have participated in the drafting of the technical specifications for the procurement. A contract is expected to be awarded in February 1996.

VI. MILESTONE VERIFICATION PROTOCOL

The NMSTG has issued a milestone verification protocol that establishes a procedure for documenting the completion of 94-1 Milestones. Milestone completion information will be made available to the DNFSB on a monthly basis or as appropriate in accordance with our regular reporting system.

For milestones that involve completion of stabilization activities or activities associated with stabilization, such as demonstration of a process or technology, inspections, commencement of activities, and startup of systems, 'completion' will be documented by a formal transmittal from the responsible contractor to the respective Department of Energy field office describing the work that was accomplished. The DOE 94-1 field office will in turn forward the documentation to the NMSTG through the applicable DOE-HQ program office. Milestones that develop or execute research activities, plans, studies, and NEPA activities are documented by the reports, studies, or plans themselves.