

[DOE LETTERHEAD]

October 28, 1996

The Honorable John T. Conway
Chairman
Defense Nuclear Facilities Safety Board
625 Indiana Avenue, N.W.
Suite 700
Washington, DC 20004

Dear Mr. Chairman:

Enclosed for your information is the [sixth Quarterly Report](#) on the Implementation of Defense Nuclear Facilities Safety Board Recommendation 94-1 by the Nuclear Materials Stabilization Task Group. This report presents the status of actions and milestones associated with the 94-1 Implementation Plan and describes activities underway to address emerging issues associated with nuclear materials stabilization for the period June 1 through August 31, 1996. As per our discussions, my deputy Mr. Ronald Izatt, will be my advocate in the management of these issues to achieve the successful completion of this important recommendation.

It should be noted that actions within the report anticipated for September completion, have now been completed. If you have any questions, please feel free to contact me or have your staff contact Mr. Frank Cole, Acting Director, Nuclear Materials Stabilization Task Group, (202) 586-5266.

Sincerely,

Alvin L. Alm
Assistant Secretary for Environmental Management

Enclosure

**DEFENSE NUCLEAR FACILITIES SAFETY BOARD
RECOMMENDATION 94-1 IMPLEMENTATION**

QUARTERLY REPORT

Covering the period
June 1 - August 31, 1996

Submitted:	[Signed by Frank C. Holmes for] G. Grank Cole Acting Director Nuclear Materials Stabilization Task Group	Date: 09/30/96
Reviewed, Recommending Approval:	[Signed by Ricardo Martinez for] Jill E. Lytle Deputy Assistant Secretary for Nuclear Material and Facility Stabilization	Date: 10/09/96
Approved:	Alvin L. Alm Assistant Secretary for Environmental Management	Date: 10/27/96

I. PROGRAM OUTLOOK

Implementation Plan

The Secretary has submitted to the Chairman, Defense Nuclear Facilities Safety Board (DNFSB), a proposed Implementation Plan change for Rocky Flats. Additional individual site Implementation Plan changes will be prepared in consultation with the DNFSB staff and briefed to the Board. A roll-up of the individual changes to the 94-1 Implementation Plan is planned in early calendar 1997.

Site Specific Program Issues and Major Activities

Rocky Flats

Implementation Plan changes have been submitted to the Board for Rocky Flats, modifying three areas of the plan:

1. Highly-enriched uranium solutions will now be drained directly to bottles vice the original plan to blend down prior to shipment off-site. Because of delay in certifying the shipping containers, shipments of the uranium solutions will be completed by November 1996 instead of September 1996.
2. Schedules for solid residue stabilization have been revised to reflect delays in completion of higher risk salt stabilization by six months, from December 1997 to June 1998, and sand, slag, and crucible stabilization by one year, from May 1997 to May 1998.
3. Schedules for liquid residue stabilization have been revised to reflect a nine-month delay, from December 1997 to September 1998, in completion of stabilization activities in Building 771. Additional interim milestones have been added for Buildings 771 and 371.

Specific milestone changes and additions are included in the attached milestone list.

Savannah River

Over the past quarter, operation of the Savannah River canyons had been limited to stabilizing materials already within the canyons (small numbers of Mk31 target slugs, Pu-238 residues, and actinide solutions) due to recently identified seismic structural concerns. Under Secretary Grumbly, on August 20, 1996, authorized introduction of additional nuclear material into F-Canyon beginning August 26, 1996. A decision for H-Canyon is expected in November 1996. In parallel with examining the impacts of the canyon seismic issue, the Savannah River program managers at the Operations Office and Headquarters continue to examine the impacts of various scenarios for canyon utilization at the site. Any impacts and revisions to IP milestones will be reflected in an IP change.

A laboratory demonstration of the second generation Am/Cm test melter, used to support Am/Cm vitrification process development, was performed with inadequate conduct of operations by the research staff and experienced an equipment failure resulting in the destruction of the melter. The full schedule impact will not be completely evaluated until late October, but it is anticipated that the March 1998 schedule to begin vitrification of the Am and Cm will be significantly affected.

Richland

DOE and contractor management at the Plutonium Finishing Plant (PFP) are implementing breakthrough strategies to integrate stabilization activities with facility deactivation. These strategies include installing stabilization and packaging system equipment in the vault building rather than in PFP. These and other initiatives may result in changes to the methods and locations of stabilization activities. Once finalized, any changes from the breakthrough strategies will be included in an IP change.

Richland is delaying the stabilization of polycubes from the accelerated schedule identified in its June 1996 Site Integrated Stabilization Management Plan. Stabilization of polycubes will still be completed by January 2001, as scheduled in the Implementation Plan. Decelerating polycube stabilization will allow resources to be focused on higher priority solution stabilization and plutonium packaging needs, which are part of the 94-1 program.

Oak Ridge

Oak Ridge has submitted a draft implementation change to the NMSTG for the Molten Salt Reactor (MSRE) Project. In addition to the three original milestones, five new milestones are being proposed to align project progress with CERCLA activities involving the fuel salt and provide for a final stabilized disposition for both the fuel salt and uranium.

The K-25 Enriched Uranium Deposit Removal Program at Oak Ridge is under review at this time and could possibly result in Implementation Plan changes in the near future. Recent criticality assessments indicate that there may exist low enriched deposits in the K-29 Building that exceed risks imposed by the K-25 deposits. DOE is evaluating the K-29 criticality concerns to determine if reprioritizing deposit removal activities will be necessary.

Mound

A program review was conducted at Mound on May 8, 1996, at which the conclusion was reached that plutonium could be shipped to Los Alamos without significant repackaging thereby reducing repackaging costs by over \$500,000 and reducing the schedule by approximately 9 months. During the quarter Mound shipped 1.2 kg of plutonium to Richland and 1.3 kg to Los Alamos. The site is working toward shipment of all plutonium holdings to LANL by the *end* of September. The process of shipping and repackaging at the receiving site will accomplish Mound's milestone of repackaging all plutonium in contact with plastic by September 1996.

Plutonium Residues EIS

The current RFETS baseline path for residues satisfies DNFSB commitments for safe interim storage. However, for approximately 43 metric tons of the residue inventory, implementation of different options, in addition to or in place of those identified in the baseline, may be desirable in order to ensure that the resulting waste forms will meet the new safeguards and security requirements (issued on July 22, 1996, by the Office of Safeguards and Security, NN-51) and provide further advantages with respect to waste minimization and ALARA.

The Department intends to prepare an Environmental Impact Statement (EIS) to evaluate the impacts associated with alternatives to preparing plutonium residues and scrub alloy currently being stored at Rocky Flats for disposition or disposal. The EIS will serve to ensure that the significant effects of the treatment alternatives are identified and decisions are made on safe and cost-effective treatment for disposal of

the affected plutonium residues and scrub alloy. A Notice of Intent (NOI) to conduct the EIS is currently in draft, and is expected to be issued in September 1996. The EIS is currently scheduled for completion in July 1997, and will have minimal impact, if any, to completion of baseline implementation plan milestones.

II. ACTIVITIES

Trade Studies

The following two trade studies have been chartered to determine the preferred method for dealing with certain residue materials located at Rocky Flats, LANL, Hanford, LLNL, and other sites. The objective of each study is to evaluate alternatives for treating a category of residues to an end-state suitable for disposition. An end-state is either plutonium metal or oxide suitable for storage per the standard or a form that meets criteria for disposal as waste. All of the studies evaluate worker risk, public risk, worker exposure, waste generation, discharge to the environment, cost, and timeliness as performance measures for comparison of options.

- Disposition of Ash (planned completion September 1996)
- Disposition of Combustibles (planned completion September 1996)

The completion of these studies has been delayed from their originally scheduled dates (Ash to be completed in June, and Combustibles in July) due to the need to modify the methods used to assess performance measures for the various alternatives being considered in each of the respective studies. The modified methods were needed to provide a more accurate assessment of the relatively new technologies associated with the various stabilization alternatives.

Plutonium Stabilization and Packaging Procurement Project

On March 11, 1996, the Oakland Operations Office awarded a \$54 million contract to BNFL, Inc. to provide the Department with plutonium stabilization and packaging equipment. During this quarter the design of the stabilization and packaging system was reviewed and approved; the System Design and System Specification Documents were approved; and the Quality Assurance Program was approved. Authorization for fabrication of the prototype unit was granted. The prototype is to be delivered to the Rocky Flats Environmental Technology Site by March 21, 1997. Additionally, the plutonium storage package design was given preliminary approval. Prototype storage packages are being fabricated with testing scheduled for September 23-27, 1996. Final approval of the design depends on satisfactory completion of testing and review of the final test reports. The storage package meets the Department's criteria for long-term storage as defined in DOE-STD-3013-94 as well as all modifications presented in the draft DOE-STD-3013-96. The storage package exceeds ASME Boiler and Pressure Vessel Code criteria. Upon final approval of the design the storage package will become the Departmental standard for long-term storage of plutonium.

Research and Development Progress

As the Lead Laboratory for 94-1 plutonium R&D, Los Alamos issued a Technical Program Plan (TPP) outlining the research and development tasks and a work breakdown structure that supports the Research and Development Plan. In FY 1996 there are 180 milestones included in the funded portion of the TPP. 120 R&D milestones were planned through June 1996, with 108 completed as scheduled. The 12 missed milestones were a result of late starts due to personnel availability issues. Plans are in place to retain the appropriate personnel, and make up the missed milestones in the next quarter.

Technical Advisory Panel (TAP) Activities

The Technical Advisory Panel of the PFA is producing the 1996 94-1 R&D Plan scheduled for a September 30 delivery of a draft to the Task Group. This year's plan will narrow the focus of R&D efforts by reducing the alternatives under consideration consistent with results of completed trade studies. Also, traceability to 94-1 Implementation Milestones and derived R&D need dates will be documented formally in the Plan.

Fifteen white papers have been submitted to the PFA for review. Five have been sent by the TAP to the PFA Manager with recommendations, and two have been returned to authors requesting additional information for resubmission. The remaining white papers are under review by the TAP, which will provide recommendations on five papers to the PFA Manager by September 1996.

Additionally, the PFA has completed the first draft of a study investigating the feasibility of using radioactive scrap metal for fabricating the 3013 cans under the Plutonium Stabilization and Packaging System procurement.

III. MILESTONE SUMMARY

Progress to Date: Milestones Completed

- 165 milestones in Implementation Plan
- 69 completed
 - 26 early
 - 31 on time
 - 12 late
- 2 past due
- 8 at risk

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

Milestones Completed Late This Quarter

IP-3.5- *Begin Blending and Shipping HEUN for Stabilization at Rocky Flats* (May

006 1996)

Beginning the bottling of HEN in preparation for shipping the solutions off site began August 1996.

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

Savannah River completed fuel consolidation to free up additional storage space in the Receiving Basin for Offsite Fuel (RBOF) in August 1996.

Milestones Past Due

IP- *Begin Repackaging Material to Meet Metal and Oxide Storage Standard at*
3.2- *Lawrence Livermore National Laboratory* (May 1996)
045

Packaging ***will begin in April 1998***. The original plans anticipated procurement of a full plutonium stabilization and packaging system. However, a full system would be costly relative to the small amount of material at LLNL. Livermore will obtain sufficient stabilization equipment to complete stabilization and packaging by May 2002. The materials will be packaged in the standard storage container to meet DOE-STD-3013. An IP change proposal has been directed to document the modified methodology and revised schedule.

IP- *Complete Trade-off Study to Develop Plans for the Stabilization and Packaging*
3.3- *of Ash/Residues for Long-term Storage for Lawrence Livermore National*
042 *Laboratory* (April 1996).

The Task Group has chartered an Ash Trade Study that addresses ash residues at all applicable sites. The requirements associated with Lawrence Livermore ash will be included in this study, which is scheduled for completion in September 1996. The results of this trade study, applicable to LLNL, will be included in the aforementioned IP change.

Milestones at Risk

Savannah River

The following milestones are at risk as a result of the delay associated with the canyon seismic issue, the review of various canyon utilization strategies or as specifically noted. Revised completion dates are being developed.

- IP- 3.6-002 *Complete stabilization of Mk31 targets via dissolution in F-Canyon (September 1996)*
- IP- 3.6-040 *Complete vacuum consolidation of Savannah River's K-Reactor Disassembly Basin Sludge (September 1996) - earlier water chemistry problems have been controlled through deionization.*
- IP- 3.6-033 *Begin stabilization of Mkl6 and Mk22 HEU SNF (November 1996)*
- IP- 3.6-003 *Complete dissolution of Mkl6 and Mk22 SNF (November 1999)*
- IP- 3.6-004 *Complete stabilization of resultant uranium solutions from dissolution of Mkl6/22 SNF (April 2000)*
- IP- 3.1-011 *Begin processing H-Canyon plutonium solution (February 1999)*
- IP- 3.1-013 *Startup HB-line Phase II (February 1999)*
- IP- 3.1-012 *Complete processing H-Canyon plutonium solution (February 2000)*
- IP- 3.4-015 *Begin Am/Cm stabilization (March 1998) - a modified schedule is being developed to accommodate additional equipment research and development requirements.*
- IP- 3.4-016 *Complete Am/Cm stabilization (September 1998)*