



Department of Energy

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DNF SAFETY BOARD

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

Dear Mr. Chairman:

In early September, we provided you a technical update of the Implementation Plan for Defense Nuclear Facilities Safety Board Recommendation 94-1. It described (in Section 3.1.2) the situation encountered during tap and draining of the first system in Building 771, the additional safety controls being incorporated, and the impact to the current schedule and milestones. We are notifying you that the milestone of "complete removal of all liquids in building 771," which was to be completed in September 1998, has been missed.

As described in Section 3.1.2 of the technical update, Rocky Flats has revised their plans to include removal of piping associated with the systems immediately after draining. Rocky Flats has also proposed revised milestones as a result of the revised work scope.

Enclosed are Sections 3.1.2 (Rocky Flats Plutonium Solutions) and 3.1.5 (Key Milestones, Rocky Flats) submitted by Rocky Flats for your information. These sections describe the site's most recent proposal for the forthcoming Implementation Plan revision. The proposals remain under consideration by the Department. We will incorporate the applicable information from this proposal with required supplemental discussion into the comprehensive Recommendation 94-1 Implementation Plan revision.

We will continue to keep you and your staff apprised of our progress on all Recommendation 94-1 commitments. If you have any further questions, please contact me or have a member of your staff contact John Tseng, Acting Director, Nuclear Materials Stewardship Program Office, at (202) 586-5266.

Sincerely,

James M. Owendoff
Acting Assistant Secretary for
Environmental Management

Enclosure

cc: M. Whitaker, S-3.1



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3.1 Plutonium Solutions Stabilization

3.1.2 Plutonium Solutions at Rocky Flats

Note: The following paragraphs concerning the processing of plutonium solutions at Rocky Flats revise the original plutonium solutions milestone completion dates submitted by the Department on September 30, 1997 and approved by the Board on December 8, 1997. Descriptions of plans and processes for stabilizing the solutions have been updated to reflect current status.

Solutions originally existed in Buildings 371, 559, 771, 776/777, and 779, with the majority being in Buildings 371 and 771. Solutions are no longer being stored in Buildings 776/777 and 779. While the remaining solutions await stabilization, several interim measures have been taken to minimize the risks of continued storage. Solutions stored in plastic bottles have been transferred to gloveboxes and vented to decrease the rate of degradation and inspected to identify incipient failures in time to replace the bottles. Building 771 and Building 371 tanks have been drained and tap and draining of installed systems has been initiated. Access to areas where the potential for leakage from tanks or pipes is strictly controlled. Alarm systems are in place to detect airborne contamination from spills or leaks, and alert personnel. Piping system flanges and valves have been encased in plastic shrink wrap to provide an additional barrier between the solutions and the workers.

All plutonium solutions handling and processing is being done in accordance with a NEPA analysis completed in April 1995. The plutonium in these solutions is surplus to DOE's needs; therefore, Rocky Flats is solidifying as many solutions as possible through cementation. Some higher level solutions will require an additional precipitation step to remove the plutonium from the waste stream in order to meet waste disposal acceptance criteria and waste minimization goals.

The solutions that had been stored in Buildings 559, 776/777 and 779 have been transferred to Building 771 for batching or Building 371 for processing as appropriate. Building 559 continues to generate small quantities of low-level waste solutions. Low-level solutions in Building 771, including holdup drained from piping systems and low-points, are being batched and transferred to Building 774 for cementation. Cementing the low-level solutions began in October 1993 and to date over 6100 liters have been solidified. The high-level uranium and chloride solutions have been processed in Building 771 using a hydroxide precipitation method. The filtrates from that process were cemented in Building 774. The high-level (>6.0 gm/L) plutonium solutions in Building 771 tanks have been drained to bottles. The high level solution bottles have been processed through the Caustic Waste Treatment System in Building 371 which is also a hydroxide precipitation process. The high-level solutions that are compatible with the Caustic Waste Treatment System process will be stabilized with the Building 371 solutions.

Table 3.1-1: Plutonium (Pu-239) Solutions Inventory Summary

Site	Plutonium Content (Kg)	Original Quantity (Liters)	Original Location	Adjusted Inventory (Liters)	Adjusted Plutonium Content	Remaining to be Stabilized	Plutonium Stabilized (Kg)	Remaining Solutions Location
Rocky Flats	143	30,000	Bldgs 371, 559, 771, 776/777, 779	30,000	143 Kg	15,527+ liters (as of 6/01/98)	100	Bldgs 371, 559, 771
Savannah River	Classified	320,000	F-Canyon	--*	--	0	Classified	--
Savannah River	Classified	34,000	H-Canyon	34,000	Classified	34,000 liters	0	H-Canyon
Hanford	358	4,800	Plutonium Finishing Plant	4,690**	341	4,300 Liters	15	PPF
Hanford	9	22,700	PUREX	--	--	0	None***	Tank Farm

* Stabilization of F-Canyon solutions by conversion to metal was completed in April 1996.

** Quantity adjusted from EIS bounding case to reflect correct quantity.

*** Neutralization and transfer of PUREX solutions to the tank farms was completed in April 1995.

3.1.2 (continued)

Delays incurred during tap and draining of the first process system in Building 771 have impacted the original schedules and milestones. Plans have been developed to incorporate additional safety controls (primarily system venting and purging for hydrogen) during further tap and draining activities. Additional work scope has been developed to accelerate removal of process system piping immediately after system draining in Building 771. This change in strategy (1) eliminates the possibility of residual liquid remaining in piping after draining, (2) eliminates re-characterization of piping which would be necessary if there were a significant lapse between draining and removal and (3) accelerates process equipment removal activities supporting overall closure progress of Building 771. While the most significant risks have been alleviated by draining the solution inventory from the process tanks, additional risk reduction progress is being continued and integrated with the Building 771 closure activities. Prioritization of process system piping draining and removal is based on the following risk factors: (1) leaking, (2) hydrogen generation and (3) actinide concentration. Detailed schedules which have been developed with the plan, show that the solutions in process piping will be removed by December 2001.

The solutions in Building 371 and remaining solutions from other buildings are being treated in the Caustic Waste Treatment System. The precipitate is being calcined and placed in temporary storage awaiting safe interim storage. The effluent is being transferred to Building 374 for further liquid waste processing. The solutions in Building 371 which were originally scheduled to be stabilized by June 1999 with the Building 771 solutions, are still expected to be drained from the areas in Building 371 and processed by June 1999. However, the impact of delays in Building 771 tap and draining will result in processing liquids beyond June 1999.

The liquid stabilization program will be integrated with current efforts to meet the safe storage criteria, DOE-STD-3013-96 for oxides in an effort to minimize handling the precipitates. However, the liquid stabilization activities will not be delayed to achieve this integration. The oxide, generated prior to obtaining the capability to meet the criteria in DOE-STD-3013-96 will be packaged to meet site storage requirements.

3.1.5 Key Milestones

The following is list of the key milestones for stabilizing Pu-239 solutions. This is not intended to be an all encompassing list of milestones, but rather milestones that can be used as a rough measure of progress.

For Rocky Flats:	Original Due Date	Milestone/Status
<ul style="list-style-type: none"> • Begin cementing low concentration solutions in B774 	October 1993	Completed October 1993
<ul style="list-style-type: none"> • Complete NEPA process (for solutions) - Actinide Solution Processing Environmental Assessment, dated 4/95) 	April 1995	Completed April 1995
<ul style="list-style-type: none"> • Stabilize all solutions in B771 	September 1998	Deleted
<ul style="list-style-type: none"> • Stabilize all solutions in B371 	June 1999	Deleted
<u>Building 771 Milestones</u>		
<ul style="list-style-type: none"> • Start draining hydroxide tanks and begin processing 	November 1996	Completed November 1996
<ul style="list-style-type: none"> • Complete draining four (4) hydroxide tanks 	January 1997	Completed August 1996
<ul style="list-style-type: none"> • Complete hydroxide precipitation process 	March 1997	Completed March 1997
<ul style="list-style-type: none"> • Start draining four (4) high level tanks* and begin processing <p>* this milestone has been changed from five high level tanks to four high level tanks, since the first tank has been drained, and was less than 6 gm/l.</p>	November 1997	Completed September 1997
<ul style="list-style-type: none"> • Complete draining four (4) high level tanks 	December 1997	Completed in December 1997
<ul style="list-style-type: none"> • Start tap and draining of rooms/system 	January 1998	Completed in January 1998
<ul style="list-style-type: none"> • Drain six actinide systems in B771 	Proposed milestone	Propose September 1999
<ul style="list-style-type: none"> • Drain eight additional actinide systems in B771 	Proposed milestone	Propose September 2000
<ul style="list-style-type: none"> • Complete removal of all* liquids in Building 771 <p>* includes all non-actinide systems</p>	September 1998	Propose December 2001
<ul style="list-style-type: none"> • Complete processing all of the B771 liquids 	Proposed milestone	Propose March 2002

<u>Building 371 Milestones</u>		
• Start draining tanks and begin processing	December 1996	Completed December 1996
• Complete draining six (6) Cat. B tanks	February 1997	Completed February 1997
• Complete draining one (1) criticality line tank	June 1997	Completed May 1997
• Complete processing liquids from seven (7) tanks	June 1997	Completed June 1997
• Complete processing liquids from Building 771 high level tanks and bottles	July 1998	Completed July 1998
• Complete draining B371 and processing all B371 liquids	Proposed revised milestone	June 1999
• Complete draining of remaining criticality line tank	July 1998	Completed February 1998
• Start tap and draining of rooms/systems in B371	June 1998	Completed June 1998