



**The Secretary of Energy**  
Washington, DC 20585

July 11, 2006

The Honorable A.J. Eggenberger  
Chairman  
Defense Nuclear Facilities Safety Board  
625 Indiana Avenue, NW, Suite 700  
Washington, DC 20004-2901

Dear Mr. Chairman:

Enclosed is the Department of Energy's (DOE) revised Implementation Plan (IP) relative to the Defense Nuclear Facilities Safety Board's Recommendation 2001-1, High-Level Waste Management at the Savannah River Site (SRS). This revision reflects delays encountered in implementing Commitment 2.9, Demonstrate the Viability of the Deliquification, Dissolution, and Adjustment (DDA) process. These delays are associated with permits or permit modifications and ongoing discussions with the State of South Carolina. In conjunction with the DDA delay, the program evaluation per Commitment 3.11 has also been revised to allow for evaluation of the initial DDA facility performance.

This IP revision also reflects a change in the approach to Tank 48 material disposition provided to the Board on April 4, 2006, as part of Commitment 3.8. Based on discussions with the State of South Carolina and the principle of minimizing the curies to be dispositioned in the Saltstone vaults, the text of the IP has been modified to reflect organic destruction as the primary option for Tank 48; material disposition and aggregation will become the backup alternative. The proposed commitment date for completing this activity remains January 2010 as specified in the April 4, 2006, deliverable.

If you have any further questions, please call me or Mr. James A. Rispoli, Assistant Secretary for Environmental Management, at (202) 586-7709.

Sincerely,

A handwritten signature in black ink that reads "Samuel W. Bodman".

Samuel W. Bodman

Enclosure



DOE PLAN OF ACTION TO RE-ASSESS  
SAVANNAH RIVER SITE'S HIGH LEVEL WASTE  
MANAGEMENT STRATEGY

DNFSB RECOMMENDATION 2001-1  
IMPLEMENTATION PLAN

REVISION 4

June 2006

## **Executive Summary**

On March 23, 2001, the Defense Nuclear Facilities Safety Board (DNFSB) issued Recommendation 2001-1, *High-Level Waste Management at the Savannah River Site*. The recommendation addressed the need for the Department of Energy (DOE) to ensure that the margin of safety and amount of tank space in the Savannah River Site (SRS) High Level Waste (HLW) system is sufficiently maintained to enable timely stabilization of nuclear materials at SRS.

The DOE accepted this recommendation and found that the DNFSB recommendation appropriately highlighted the need to vigorously address the significant management challenges that SRS faces in accomplishing the strategic mission of waste stabilization in light of the failure of the In-Tank Precipitation (ITP) process, tank leaks, and other equipment problems. These events forced major changes in the overall system plans and additional actions were warranted to identify ways to regain operational flexibility, increase system margins to deal with potential future system upsets, and proceed with an alternative salt disposition process. DOE agreed with the DNFSB that addressing these issues should ensure continued safe storage of wastes, as well as continued stabilization of both high level waste and nuclear materials at SRS.

This original plan outlined the actions that DOE and its contractors were going to take to ensure continued safe storage of waste while maintaining operational flexibility and progress in the stabilization of material currently held in waste storage tanks. Actions included pumping down liquid levels to below the lowest leak sites in two tanks, implementing an alternative salt disposition process, re-evaluating waste treatment and storage options, and conducting an independent assessment of the contractor incentives.

Revision 2 of this Implementation Plan (IP) was submitted to the Board on May 10, 2002 as specified in Commitment 2.6 to provide additional commitments related to the implementation of a revised salt processing program. Six new commitments and the associated background discussion were added to the end of the sub-recommendation 2 section.

Revision 3 of the IP, which was submitted to the Board on January 17, 2006, was generated as a result of delays in meeting Commitments 2.9, Demonstrate the Viability of Low Curie Salt Disposition (LCS), and Commitment 2.10, Demonstrate the Viability of the Actinide Removal Process (ARP). Because of the delays in these activities, the changes in facility conditions, and other changes impacting tank space management, Revision 3 re-evaluated the DNFSB's original concerns and recommendations in light of the circumstances in the early CY 2006 timeframe and set forth a modified strategy to address the issues.

This revision (Revision 4) has been generated to reflect continuing delays in implementing Commitment 2.9, Demonstrate the Viability of the Deliquification, Dissolution, and Adjustment (DDA) process. These delays are the result of ongoing discussions with the State of South Carolina regarding the DOE's January 2006 *Section 3116 Determination for Salt Waste Disposal at the Savannah River Site*. DOE has refined the approach described in DOE's January 2006 Section 3116 Determination for Salt Waste Disposal for treating the SRS salt waste. Under the refined approach, DOE plans to: 1) treat and dispose of less waste with DDA, the least effective of the interim processes; 2) further process some waste with ARP/MCU that was originally planned to be processed

with DDA alone, 3) pursue the treatment and destruction of organic laden material in Tank 48 (originally planned to be processed with DDA); and 4) construct new lag storage vessels for the Saltstone Production Facility, subject to compliance with the National Environmental Policy Act. This refined approach is consistent with the recent NAS recommendation to limit the use of DDA, will decrease the curies disposed of at SRS, and will not affect the conclusions in the 3116 Determination.

The Plan identifies the responsible manager and provides a due date for completion for each commitment. The responsible manager ensures the activity is satisfactorily completed, including seeking necessary funding, and formally closed. Dr. Inés Triay, Chief Operating Officer for Environmental Management, is the overall Responsible Manager and Mr. Jeffrey Allison, Manager, Savannah River Operations Office, is the point-of-contact for site-specific activities.

# Table of Contents

	<u>Page</u>
1. Background	4
2. Underlying Causes	4
3. Summary of Completed and Near-Term Actions	4
4. Recommendation Issue Resolution	
Subrecommendation 1 – Leaking Tanks	5
Subrecommendation 2 – Salt Processing	6
Subrecommendation 3 – Tank Space Management	10
Subrecommendation 4 – Incentives	15
5. Management and Organization	16

## **1. Background**

On March 23, 2001, the Defense Nuclear Facilities Safety Board (DNFSB) issued Recommendation 2001-1, *High-Level Waste Management at the Savannah River Site*. The recommendation addresses the need for the Department of Energy (DOE) to ensure that the margin of safety and amount of tank space at SRS is sufficiently maintained to enable timely stabilization of nuclear materials at SRS. The DOE accepted the recommendation as addressed in the IP provided to the Board on May 18, 2001. On May 24, 2001, the DNFSB responded in a letter in which it found the original IP was not responsive to all elements of the recommendation and provided a suggested course of action for consideration by the DOE during the formulation of a revised IP. The DOE evaluated the concerns described in the DNFSB's May 24, 2001, letter and revision 1 to the original plan incorporated and addressed the DNFSB's expected actions. Revision 2 of this IP was generated as specified in Commitment 2.6 to provide additional commitments related to the implementation of a revised salt processing program. Six new commitments and the associated background discussion were added to the end of the sub-recommendation 2 section. All commitments made in Revision 2 except two were completed. Due to legal and technical issues, delays were experienced in meeting Commitments 2.9, Demonstrate the Viability of Low Curie Salt Disposition (LCS), and Commitment 2.10, Demonstrate the Viability of the Actinide Removal Process (ARP). As a result of these delays, changes in facility conditions, and adjustments in program directions, Revision 3 of this IP was a complete re-evaluation of the original issues in light of circumstances at that time. Neither the text nor the commitment summaries retain all of the original responses and actions and review of Revision 2 is required to understand actions already completed. This revision (Revision 4) reflects the approach refinements associated with DOE's January 2006 *Section 3116 Determination for Salt Waste Disposal at the Savannah River Site* and provides minor updates as appropriate.

## **2. Underlying Causes**

The underlying causes of the matters highlighted in Recommendation 2001-1 were the failure of the ITP process, tank leaks, and other equipment problems within the waste system. These events, along with litigation, have forced major changes in the overall system plans and added a level of complexity to the already challenging mission objectives. The actions identified in this Plan are intended to outline the major objectives and milestones to ensure mission objectives are safely achieved.

## **3. Summary of Completed and Near-Term Actions**

All commitments in Revision 2 of the IP except two [Commitment 2.9, Demonstrate the Viability of Low Curie Salt Disposition (LCS), and Commitment 2.10, Demonstrate the Viability of the Actinide Removal Process (ARP)] have been completed and are not repeated in this revision.

## **4. Recommendation Issue Resolution**

The Board's subrecommendations and the specific actions to address each subrecommendation are discussed below.

**Subrecommendation 1. Initiate actions to remove transferable HLW liquid from Tank 6 to a level below all known leak sites.**

Background: After a January 2001 transfer of low activity waste water into an older style (Type I) tank (Tank 6) that had been essentially empty since 1973, alarms were received in the control room indicating liquid in the annulus area (collection space between the tank wall and the concrete vault that encases the tank). Visual inspections confirmed liquid in the annulus and sampling identified the material as radioactive waste (versus rainwater intrusion). Detailed inspections using a remote crawler and video camera identified 6 leak sites. An initial transfer of 40,000 gallons of liquid from Tank 6 into Tank 8 was completed on March 27, 2001. The direction to lower Tank 6 further was given to the site contractor on May 1, 2001, and the contractor completed lowering the level in Tank 6 to below the lowest known leak site on May 30, 2001.

Re-evaluation: DOE continues to restrict additions into the Type I and Type II style tanks to only those required to facilitate waste removal activities. Typical additions for waste removal activities include liquid needed to slurry/mix the sludge, liquid needed to facilitate transfer of the waste from the tank, liquids required to keep a “wet” sludge from “drying”, liquids for heel removal, liquids for flushing or cleaning equipment/tank structures, and chemicals for corrosion control. Several of these activities may include the addition of liquids above known leak sites. In these cases, precautions are implemented to limit the amount of material at risk for leakage and necessary equipment is available prior to liquid additions.

In addition, Type I and Type II style tanks may be used to facilitate waste or residual heel removal from another older style tank. Specifically, waste from Tanks 4, 5, and 6 is planned to be transferred to Tank 7 before being transferred to Extended Sludge Processing (ESP) due to the existing transfer piping arrangements. Another example includes the use of existing Tank 7 supernate to suspend the Tank 5 sludge. This allows for the beneficial re-use of liquids needed to slurry/mix the sludge from these tanks without creating additional “new” waste volumes.

Tank inspections continue in accordance with visual and ultrasonic inspection plans. No additional leak sites or tank wall cracks have been identified below the waste level in the tanks.

All previous commitments associated with this subrecommendation have been successfully completed and no additional commitments are planned for this issue.

***Subrecommendation 2. Reassess the schedule and priority for selecting a technology for a salt processing capability, and vigorously accelerate the schedule leading to operation of a salt processing facility.***

Background: At the point of Defense Waste Processing Facility (DWPF) startup in 1996, the system plan consisted of two waste pretreatment processes – sludge preparation via the ESP and salt preparation via ITP. Due to initial startup issues with the ITP process (see Board Recommendation 96-1), DWPF began operations processing sludge only. In 1998, due to concerns the ITP process could not cost-effectively meet safety and production objectives, the contractor recommended and the DOE agreed to suspend ITP startup activities and to perform an extensive evaluation of alternative processing options. The alternative evaluation resulted in the selection of a solvent extraction based process for cesium removal in lieu of ITP. A contract has been established to build and operate a Salt Waste Processing Facility (SWPF) based on this solvent extraction process and the project is currently in the design stage.

Originally, DOE expected to begin disposition of lower curie salt in June of 2002 followed by a SWPF in the 2010 timeframe. The Department believed this dual approach would provide short-term tank space relief, a long-term solution for salt disposition, and protect both the public and the environment. Congress, in Section 3116 of the Ronald W. Reagan National Defense Authorization Act for Fiscal Year 2005, clarified the Secretary’s authority to determine, in consultation with the NRC, that certain wastes from reprocessing, including certain waste at SRS, are not high level waste if the provisions of section 3116 are met. DOE issued a “Section 3116 Determination for Salt Waste Disposal at the Savannah River Site (DOE-WD-2005-001)” after consultation with the NRC. The salt disposal strategy discussed in the Section 3116 determination concerns the disposal of 3 to 5 million curies of radioactivity in the Saltstone Facility. The next major step in the process is issuance by the State of South Carolina of a Class 3 Industrial Solid Waste Landfill permit modification. In addition, a modified waste water treatment operating permit for recent saltstone facility changes is also required.

Re-evaluation: DOE’s current salt disposition strategy continues to be a multi-phased approach that disposes limited quantities of lower activity salt waste near-term and then processes the bulk of the salt wastes through the SWPF when it comes online. The first phase of salt disposition is known as Deliquification, Dissolution, and Adjustment (DDA), and is intended to disposition only that volume of salt solution needed to ensure sufficient tank space is available to support: 1) continued sludge waste disposition and other material stabilization activities, and 2) preparation of salt waste feed material for efficient operation of the SWPF. The material to be dispositioned in the first phase must meet the proposed Saltstone Production Facility waste acceptance criteria and the solidified waste will not exceed NRC concentration limits for Class C low level waste in 10 CFR 61.55.

In parallel with the 3116 waste determination process, DOE has readied the Saltstone Facility to safely and efficiently process the low activity salt solutions. In order to process the DDA material, modifications were made to the Saltstone Facility to handle higher activity levels than the original design basis of the Saltstone Facility. The primary modifications were related to operating personnel safety. Changes to the facility include increased equipment shielding to reduce radiation exposure, improvements to increase equipment reliability and reduce hands-on maintenance, and modifications to effectively deal with process upsets.



In addition to the tank space recovered by the DDA process, space is also expected to be recovered via proposed operation of two processes that employ the same technologies as SWPF. These two new processes are known as the Actinide Removal Process (ARP) and Modular Caustic Side Solvent Extraction Unit (MCU). ARP reduces the actinide and strontium content of limited quantities of salt solution via precipitation and filtration and MCU reduces the Cs-137 concentration via a counter-current decantation process using a highly specialized solvent (BoBCalix) developed by the DOE for this purpose. ARP and MCU are planned to be operated on an interim basis and shut down prior to SWPF startup.

The proposed ARP processing will be accomplished by modification of two existing buildings; the 241-96H building (previously known as the ITP stripper building) and the 512-S building (previously known as Late Wash). The 241-96H allows for a chemical strike of monosodium titanate (MST) and the 512-S filters the actinide and strontium laden MST out. MCU is a new structure within the H-Tank Farm. While MCU is not expected to have the same throughput or removal efficiency as the SWPF, it does have the ability to process salt solutions that have higher Cs-137 concentrations, when compared to DDA, and provide early feedback on potential production-level operational issues with SWPF. The ARP and MCU are currently planned to be completed and ready for operations in 2007.

ARP also has the ability to provide additional strontium and actinide removal capability to supplement the capability of the SWPF when it comes on line in 2011. DOE will evaluate the need for the additional strontium and actinide removal capability provided by ARP closer to the time of startup of the SWPF when the expected processing rates for the SWPF are better known.

Several technical, regulatory, and permitting issues are inherent in each of the above project schedules. An overall programmatic risk assessment has been completed and is being maintained for the Salt Program and individual project risk assessments are being maintained for each project. The primary risks with the DDA process are not considered to be technical feasibility risks. Facility modification construction and testing activities are complete. The most significant technical risk in the DDA process is the potential for higher activity salt solutions during salt dissolution than expected. The first batch of dissolved salt waste from Tank 41 has been staged and sample data so far indicates the material meets existing plans for disposal. DOE intends to limit the saltcake waste processed through DDA to the Tank 41 waste.

Saltcake core sampling of Tank 25 has been performed and analysis of the samples is under way to provide advanced indications of the acceptability of that material for interim salt processing (currently planned for ARP/MCU). However, until the salt waste is processed and sampled, the potential remains that Tank 41 or Tank 25 may not meet requirements. Analysis of core samples taken from a third tank (28) is underway in the event the salt waste planned to be disposed can not meet requirements.

As previously discussed, a Saltstone Facility disposal permit change is required from the State of South Carolina. DOE continues to work closely with the State to resolve issues as they are identified, however delays in this process have resulted in additional delays in the start of low activity salt processing and the Department will not be in a position to meet the commitment dates in Revision 3 to this IP. An additional program risk exists relative to the potential for additional legal

actions. Although not required by Section 3116, DOE issued the draft waste determination for public review concurrent with the NRC consultation. The public submitted comments on the draft Section 3116 waste determination and the public will have the opportunity to be involved in the permit process; however, the potential for legal challenges cannot be ruled out. The Revision 4 commitment date to complete processing of 100,000 gallons of salt solution does not include contingency for resolution of potential legal challenges.

Relative to the ARP, modification design work and construction activities are complete and startup testing has begun. By the nature of the process, technical risks are primarily related to achieving throughput and decontamination factors in a production environment. The technical risks for the MCU are much higher than ARP due to the fact MCU is still in the construction phase, the increased complexity of the process, and questions concerning solvent carryover into the DWPF and Saltstone Facility operations. Modifications to the MCU design and downstream facilities are currently being evaluated to address the solvent carryover issue. It should be recognized that ARP and MCU operations are directly dependent on Saltstone Facility operations and a prolonged delay of the Saltstone Facility permits could impact ARP and MCU operations. It is judged to be unlikely that the required facility permits tied to ARP/MCU operations would be unnecessarily delayed.

In addition to their primary functions, both ARP and MCU provide contingency capabilities. In the event DDA samples were to unexpectedly show higher than expected actinide levels, the ARP could be utilized to reduce the actinide levels. Similarly, MCU could be used to reduce cesium levels in waste targeted for DDA.

The SWPF represents the highest technical risks of the salt treatment processes due to its early design stage, higher operational complexity, and multiple interfaces with other facilities. DOE recognizes the importance of this project to the long-term completion of its mission and the short-term impacts on the tank farms. DOE has assigned dedicated resources to manage the design, construction, and initial operation of this facility and has utilized an Engineering, Procurement, and Construction (EPC) contractor outside of the traditional Managing and Operating (M&O) contract strategy for the SWPF. The forecast commitment date for startup of this facility is viewed by DOE as a bounding date at this time. The Department is currently working toward a Critical Decision 2 milestone following completion of preliminary design in late 2006 that will establish a formal project baseline schedule and cost. A more accurate forecast completion date will be available at that time.

In summary, DOE continues to aggressively pursue a multi-phased approach to salt disposition, has identified the project risks, and is working to address the risks identified. DOE continually re-assesses the impacts of issues on program implementation and provides the DNFSB staff periodic updates on program status and timely notification of significant events.

All previous commitments associated with this subrecommendation except two have been successfully completed. The current DOE implementation milestones for this sub-recommendation include the two carryover commitments from Revision 2 of this IP and two new commitments:

- Commitment 2.9: Demonstrate the viability of the Deliquification, Dissolution, and Adjustment (DDA).  
Lead Responsibility: Manager, Savannah River Operations Office  
Deliverable: Complete disposition of 100K gallons of salt solutions in Saltstone.  
Due Date: 90 days after issuance of the low activity Saltstone Facility disposal permit (i.e., Industrial Solid Waste Landfill permit)  
[Demonstration expected by October 2006]
- Commitment 2.10: Demonstrate the viability of the actinide removal process (ARP).  
Lead Responsibility: Manager, Savannah River Operations Office  
Deliverable: Complete the first batch actinide removal process.  
Due Date: November 2007
- Commitment 2.13: Begin Modular CSSX (Caustic Solvent Side Extraction) Unit (MCU) radioactive operations.  
Lead Responsibility: Manager, Savannah River Operations Office  
Deliverable: Radioactive material introduced for processing in MCU.  
Due Date: November 2007
- Commitment 2.14: Begin Salt Waste Processing Facility (SWPF) radioactive operations.  
Lead Responsibility: Manager, Savannah River Operations Office  
Deliverable: Radioactive material introduced for processing in SWPF.  
Due Date: September 2011

***Subrecommendation 3. Develop and implement an integrated plan for HLW tank space management that emphasizes continued safe operation of the Tank Farms throughout its life cycle. This plan should include enough margin to accommodate contingencies and reduce overall programmatic risk. The plan should also restore operating margin to the Tank Farms by including actions to: [see sections a - e below]***

Background: The Tank Farm space management strategy is based on a set of key assumptions involving DWPF canister production rates, influent stream volumes, Tank Farm evaporator performance, and space gain initiative implementation. Tank space management is a subset of the overall integrated System Plan and as such is a life-cycle look at the space available to accommodate contingencies and support site missions.

Due to the delays in starting salt disposition activities and infrastructure issues with the site evaporators, an already challenging task of tank space management has been further complicated. DOE and the operating contractor continue to explore options and develop contingency plans up to and including interim facility shutdown strategies to support the earliest mission completion dates.

Re-evaluation:

***a. reduce or eliminate the DWPF recycle stream***

DWPF is the largest single contributor of waste volume to the tank farms. Several actions were taken to reduce the more than 2 million gallons of DWPF recycle waste sent to the Tank Farms annually. A major reduction effort was implemented in January 2000 to isolate the steam atomized scrubber (SAS) system from the melter off-gas system. This resulted in an annual 700,000-gallon reduction in recycle being sent to the Tank Farm. However recent operational experience has resulted in the need to periodically restore scrubber flow to maintain a nominal operational life of the high efficiency mist elimination filters. Implementation of proposals associated with the frit transfer system and reductions in sample line flushes also resulted in additional water generation reductions.

Additional DWPF recycle reduction proposals (such as the installation of a DWPF acid evaporator and the feasibility of sending some recycle directly to the Saltstone) continue to be evaluated based on factors including the status of interim salt processing, evaporator performance, available tank space, and budget priorities. DWPF recycle is currently intended to be used in salt disposition activities and out-year planning shows the start of a DWPF evaporator project in FY07 with completion tied to start of SWPF operations. The need for a DWPF evaporator is expected to increase once SWPF begins operations due to the volumes of water used to transfer the concentrated cesium waste to DWPF and increased SAS system flow required during combined sludge/salt stabilization. The total DWPF recycle is expected to about double.

*b. recover former ITP tanks for Tank Farm operations*

Tank 49 was returned to service in 2001.

**Tank 50 continues to be in service as a receipt tank for Effluent Treatment Project bottoms and as a feed tank to the Saltstone Facility. As the primary interface tank between the Tank Farms and Saltstone, Tank 50 is a critical resource in salt disposition.** Tank 48, which contains approximately 250,000 gallons of precipitate from the original startup of the ITP process, was evaluated for possible return to the tank farm system. The Department considers recovery of Tank 48 as a critical element in assuring sufficient tank space is available to prepare and feed salt solutions to SWPF in an efficient manner. Technical challenges must be resolved in order to safely return Tank 48 to service including issues with organic levels in facilities downstream of the tank farms. A team was chartered to define an achievable and allowable end state for the Tank 48H Project. The team divided this major activity into three tasks: 1) identify a reasonable range of potassium tetrphenylborate (KTPB) residual quantities to be left in Tank 48H at the end of the project along with the technical basis and assumptions through a parametric evaluation, 2) identify a reasonably conservative KTPB degradation rate based on Savannah River National Laboratory studies, and 3) determine the impact of various residual amounts of KTPB on the downstream processes after Tank 48H is returned to service. Based on the results of these work activities, DOE provided to the Board a technical evaluation of acceptable Tank 48 residual levels on April 4, 2006 and closed Commitment 3.8.

This IP revision (Revision 4) reflects a change in the approach to Tank 48 material disposition provided to the Board on April 4, 2006. Based on discussions with the State of South Carolina and the principle of minimizing the curies to be dispositioned in the Saltstone vaults, organic destruction is now the primary option for Tank 48 material disposition and aggregation will become the backup alternative. The proposed commitment date for completing this activity remains January 2010, as specified in the April 4, 2006 deliverable. Commitment 3.9a has been added in this revision of the IP to reflect this information

*c. assess the desirability of adding an additional HLW evaporator to support Tank Farm operations*

Sufficient evaporator capacity already exists in the Tank Farms. The operational limitations on the existing evaporators are largely support system related. The evaporators are heavily dependent on sufficient tank space for storage of waste after it has been concentrated. Therefore, no additional tank farm evaporators are proposed; however an evaporator at DWPF is planned as a way to minimize generation of new salt waste in the tank farms and reduce DWPF's dependency on Tank Farm evaporator operations – see subrecommendations 3a and 3e.

*d. assess the feasibility of constructing new HLW tanks*

Given the long lead times to permit and construct a new high level waste storage tank and the increased costs for closure of an additional tank, no additional high level waste tanks are

proposed. Although no new high level waste tanks are proposed, recent integrated flow balance projections between DWPF, SWPF, and Saltstone have indicated a need for reassessment for hold tanks to improve process efficiencies. Based on discussions with the State of South Carolina DOE intends to further explore the viability of constructing such tanks through its existing acquisition processes, including performing any appropriate National Environmental Policy Act review.

***e. resolve waste compatibility and equipment degradation problems to allow unconstrained operation of the three existing evaporators***

Attempts to resolve material compatibility issues have been only partially successful to date. While the operating parameters were expanded for each of the evaporators, the need to segregate high silica waste streams from enriched uranium/aluminum waste has not been eliminated. Therefore, the 2H evaporator continues to be dedicated to silica waste streams and the 2F/3H systems continue to handle the traditional waste streams.

Improvements made to the 2F evaporator system during FY 2000 have made that system more reliable, and current performance has met system planning requirements. While the 2F pot is currently beyond its projected life expectancy, recent inspections demonstrate it remains in good physical condition. A spare evaporator pot is available for either the 2F or 2H evaporator in the event one is needed. Modifications are required to the spare pot depending on the needed location. Work packages have been pre-staged to perform these modifications and the activities required to perform a pot replacement have been outlined.

The 3H evaporator system is operating in an extremely limited mode because the concentrate receipt tank (Tank 37) is almost filled with saltcake and there is only a limited amount of space available in the tank. Due to delays in salt disposition, limited saltcake dissolution and removal from Tank 37 is being pursued to restore the ability to operate the 3H evaporator and support timely processing of the large quantity of water produced during sludge washing. The limited volume of saltcake is to be dissolved in Tank 37 and transferred to Tank 35 for temporary storage until it can be transferred to the 2F evaporator and reconcentrated to saltcake.

The 2H evaporator continues to experience mixed performance. The heavily concentrated material in the evaporator system was removed early in FY 2005. Afterward the evaporator ran well with excellent overhead rates. In April 2005, the evaporator began to experience operational problems due to recurrent scale buildup in the piping systems. The evaporator discharge piping was cleaned and an inspection of the evaporator pot itself concluded cleaning could be delayed until 2006. In early 2006, attempts were made to clean the evaporator pot using concentrated caustic solutions. These attempts were of limited success and planning is currently ongoing to perform acid cleaning later this year. Piping systems were successfully cleaned using mechanical methods and the evaporator is currently operational.

Overall DWPF recycle disposition and storage continues to be the major concern in Tank Farm space management relative to immediate impacts to continued missions. As discussed

in subrecommendation 3.a, work continues in this area to implement alternative disposition paths for this material.

DOE continues to monitor tank space utilization at SRS on a routine basis. Performance indicators have been developed to provide management the ability to assess performance against the goals of the interim processing strategy. Projections are officially updated quarterly but individual transfers and receipts are assessed for impacts against plans. An updated system plan that models tank space until mission completion, incorporates the revised salt strategy, and adds the current planning for sludge processing is expected to be issued in the last half of 2006. Any perturbations resulting from delays in the projects noted above or resulting from refinements in approach for 3116 are expected to be incorporated into that planning with contingencies developed to mitigate impacts.

Another integration tool is a proposed program evaluation for interfacing the various processing facilities. The purpose of this evaluation is to take the input and issues from various technical reports, program and project risk reviews, and define a path forward for resolution or mitigation. As an example, full scale testing of CSSX is currently planned to better define the actual expected processing capabilities for SWPF and the results of these tests are a key to determining the needed infrastructure to support an efficient operation. Other activities including detailed modeling of transfer and system operations are underway to determine what, if any, modifications are required to support efficient operations. A specific example being evaluated now is whether additional tank space is needed as a buffer between DWPF and SWPF based on the DWPF SRAT processing capabilities versus planned SWPF outputs. By the fall of 2006, it is expected that sufficient data can be assembled to support the development of a program evaluation that outlines the path forward, decisions needed, and schedules required. The program evaluation is intended to focus and drive decisions, evaluate program progress, and highlight emergent issues either independently or in conjunction with the detailed modeling currently encompassed by the system plan. As a result of delays in the start of DDA, the program evaluation will be delayed several weeks to allow for assessment of the initial DDA operations to be included in the program evaluation. In the event DDA processing is delayed further, the program evaluation will be completed by November 2006 and will reflect the impacts of the delay.

All previous commitments associated with this subrecommendation have been successfully completed. The current DOE implementation milestones for this subrecommendation include new commitments:

Commitment 3.8: Complete technical evaluation of acceptable Tank 48 residual levels.  
Lead Responsibility: Manager, Savannah River Operations Office  
Deliverable: Technical report.  
Due Date: March 2006  
Status: Completed April 2006

Commitment 3.9: Develop plan and schedule for return of Tank 48 to waste service.  
Lead Responsibility: Manager, Savannah River Operations Office  
Deliverable: Commitment date to restore Tank 48 to waste service  
Due Date: March 2006  
Status: Completed April 2006

Commitment 3.9a: Return of Tank 48 to waste service.  
Lead Responsibility: Manager, Savannah River Operations Office  
Deliverable: Disposition of Tank 48 material to residual quantities and authorization to introduce new waste into Tank 48  
Due Date: January 2010

Commitment 3.10: Startup a DWPF evaporator  
Lead Responsibility: Manager, Savannah River Operations Office  
Deliverable: Begin radioactive operations of a DWPF evaporator.  
Due Date: July 2011

Commitment 3.11: Issue a program evaluation for integration of processing facilities.  
Lead Responsibility: Manager, Savannah River Operations Office  
Deliverable: Program Evaluation.  
Due Date: November 2006



***Subrecommendation 4. Reassess contractor incentives to ensure that near-term production at DWPF is not overemphasized at the expense of safety margin in the Tank Farms***

Background: The current contractual arrangements were modified such that the SRS Management and Operations (M&O) contractor is paid based on the value of work completed. DOE evaluated other contract mechanisms and the SWPF contract is a direct contract with DOE, not associated with the SRS M&O. A similar contract arrangement was established for Glass Waste Storage Building #2 design and construction.

Reevaluation: Based on the current contract period through 2006, no additional changes to the contract type are expected on the M&O contract however, specific work scopes may be modified. No additional changes to the contract type are planned for SWPF or Glass Waste Storage Building #2. DOE continues to evaluate various contract mechanisms and plans to heavily emphasize salt disposition and tank space management in a new contract strategy beyond 2006. The request for proposals is expected to be issued in late 2005.

All previous commitments associated with this subrecommendation have been successfully completed and no additional commitments are planned for this issue.

## 5.0 Management and Organization

The Chief Operating Officer for Environmental Management is the Responsible Manager for this IP. She has responsibility to perform all associated planning, response, and implementation activities, consistent with guidance provided in *Interface with the Defense Nuclear Facilities Safety Board* (DOE M 140.1-1B). The Manager for the Savannah River Operations Office is the point of contact for the site-specific actions for this recommendation.

To ensure that the various Departmental implementing elements and the DNFSB remain informed of the status of Plan implementation, DOE's policy is to provide periodic progress reports until IP commitments are completed. For this Plan, the Responsible Manager and/or designee is expected to provide quarterly reports (either in oral briefings or written format) to the DNFSB and/or its staff.

This Plan requires sufficient flexibility to accommodate changes in commitments, actions, or completion dates that may be necessary due to additional information, improvements, or changes in baseline assumptions. DOE's policy is to (1) provide prior, written notification to the DNFSB on the status of any Plan commitment that is not to be completed by the planned milestone date, (2) have the Secretary approve all revisions to the scope and schedule of Plan commitments, and (3) clearly identify and describe the revisions and basis for the revisions. Fundamental changes to the Plan's strategy, scope, or schedule are expected to be provided to the DNFSB through formal revision and re-issuance of the Plan. Other changes to the scope or schedule of planned commitments are expected to be formally submitted in appropriate correspondence approved by the Secretary, along with the basis for the changes and appropriate corrective actions.