Department of Energy
Washington, DC 20585

January 29, 2002

The Honorable John T. Conway
Chairman
Defense Nuclear Facilities Safety Board
625 Indiana Avenue, NW
Suite 700
Washington, D.C. 20004-2901

Dear Mr. Chairman:

The purpose of this letter is to inform you that one action identified in the Implementation Plan for Recommendation 2001-1, High-Level Waste Management at the Savannah River Site, was completed by the Department of Energy (DOE) in January 2002. The completed action is:

> Commitment 4.1 – The Department will conduct an Independent Assessment of the High-Level Waste Performance Based Incentives – January 2002. The Assessment Report was completed on January 15, 2002. A copy of the Assessment Report is enclosed.

EM will review the assessment results with the Savannah River Site, and, as appropriate, work to address the recommendations made by the Assessment Team. If you have any questions, please contact me at (202) 586-7710.

Sincerely,

Paul Golan
Chief of Staff
Office of Environmental Management

Enclosure

cc.
G. Rudy, SRS
M. Whitaker, S-3.1

United States Government **Department of Energy**

memorandum

Idaho Operations Office

Date: January 15, 2002

Subject: Independent Assessment of the Savannah River Site High-Level Waste Performance Based Incentives (EM-INTEC-02-008)

To: Paul M. Golan
Chief of Staff
Office of Assistant Secretary for Environmental Management

The purpose of this memorandum is to transmit, for your consideration, the results of DOE's Independent Assessment of the Savannah River Site High Level Waste Performance Based Incentives. This assessment was performed in response to the Defense Nuclear Facility Safety Board (DNFSB) Recommendation 2001-1, High Level Waste Management at the Savannah River Site.

Recommendation 2001-1 addresses the need for the Department to ensure that the margin of safety and amount of tank space in the SRS HLW system is sufficiently maintained to enable timely stabilization of nuclear materials at SRS. As part of this recommendation, the Board stated that the Department should "Reassess contractor incentives to ensure that near-term production at DWPF is not overemphasized at the expense of safety margins in the Tank Farms". As part of the Department's Implementation Plan to address the recommendation, DOE committed to conduct an independent assessment of the SRS HLW Performance Based Incentives. The deliverable for this commitment is a Team Assessment Report to be completed by January 2002.

An Independent Assessment team was formed and a site visit and assessment was conducted at SRS in December 2001. In summary, the team does not believe that the current incentive structure over-emphasizes near-term production at the expense of safety margin in the Tank Farms. The team's assessment is that the HLW incentive structure is appropriate and in accordance with the SRS mission. The team does recommend that DOE-SRS implement several actions to further enhance and balance management risks associated with DWPF production and Tank Farm space management.

The attached Assessment Report provides details regarding our assessment and recommendations. We would be happy to discuss the review report and any questions you may have. I can be reached at (208) 526-6795. Also, the team would like to express our gratitude to the DOE Savannah River, DOE EM-42, and SRS contractor staff in support of this review.

Joel T. Case
Review Team Lead

Attachment

Department of Energy
Independent Assessment Report
Savannah River High Level Waste Performance Based Incentives
December 2001

Joel T. Case
T. J. Jackson
James Poppiti

Background

On March 23, 2001, the Defense Nuclear Facilities Safety (DNFSB) issued Recommendation 2001-1, High Level Waste (HLW) Management at the Savannah River Site. The recommendation addressed the issue of tank space management in support of stabilization of nuclear material at the Savannah River Site (SRS). The Board recommended the following actions:

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

The Department accepted the Board's recommendation and provided a revised Implementation Plan on September 14, 2001. The plan outlines the actions the Department and contractor will take to ensure continued safe storage of HLW while maintaining operational flexibility and progress in the stabilization of material held in the HLW storage tanks.

The Department committed to conduct an independent assessment of the HLW Performance Based Incentives (PBI) in place at SRS to address Sub-Recommendation 4, "Reassess contract incentives to ensure that near-term production at DWPF is not overemphasized at the expense of safety margins in the tank farm." The purpose of this assessment is to determine if the HLW PBIs provide adequate balance and flexibility to meet mission objectives in a safe and efficient manner. Mission objectives for the SRS HLW system are defined in the HLW System Plan, Revision 12. These objectives include:

- Safely store the existing inventory of DOE high level waste
- Support Nuclear Materials Stabilization and other site missions by providing tank space to receive new waste
- Volume reduce high level waste by evaporation
- Pretreat high level waste for subsequent treatment and disposal
- Immobilize the low level liquid waste resulting from HLW pre-treatment and dispose of it onsite as Saltstone grout
- Immobilize the high level liquid waste as vitrified glass, and store the glass canisters onsite until a Federal Repository is available
- Empty and close HLW tanks and support systems per regulatory-approved approach
- Ensure that risks to the environment and to human health and safety posed by high level waste operations are either eliminated or reduced to acceptable levels.

This assessment was initiated on Dec 10, 2001. The Assessment Team was made up of the following individuals: Joel Case, Director, HLW Programs Division, DOE Idaho Operations Office, T. J. Jackson, Associate Director, Office of Project Completion, DOE West Valley Demonstration Project, and Jim Poppiti, DOE Office of Environmental Management, Office of River Protection (EM-44). These individuals were selected due to their technical and contractual expertise in the area of HLW management.

The Team conducted a site visit on December 19-21, 2001. The purpose of the site visit was to meet with both Department of Energy Savannah River (DOE-SR) and contractor staff to discuss the HLW system, current contract incentive structure, and the 2001-1 implementation status. Attachment 1 provides a list of personnel contacted and interviewed during the site visit. Attachment 2 provides a list of documents reviewed.

As part of this assessment the Team reviewed the events that led to the DNFSB recommendation. These events include poor evaporator performance, the volume addition of recycle liquids to the tank farm from the Defense Waste Processing Facility (DWPF), the unavailability of salt processing, and the transfer of waste to Type I tanks. After reviewing these events, the Team understands DNFSB's concerns expressed in Recommendation 2001-1. The volume in the Tank Farm was increasing because waste receipt rate was greater than evaporator processing performance. The Team observed that the Savannah River Site personnel (both DOE and contractor) are very focused on production of waste through DWPF. The Team does believe that this production focus led to the decision to transfer liquid waste to Tanks 5 and 6 (though it should be noted that contractor staff believed, through inspection and lack of data to the contrary, that these tanks were safe to store waste). Discussions with both DOE-SR and contractor management indicate that the decision to transfer these liquids was made from a risk management perspective. Stabilization of the higher activity tank farm waste resulting in an lower overall risk reduction outweighed the potential low risk of a leak from the low activity liquids transferred into these two tanks.

Through interviews with both DOE/contractor staff and review of numerous documents (procedures, excerpts from the Liquid Radioactive Waste Handling Facilities Safety Analysis Report, contractual documents, etc.) the Team has noted some changes since the Recommendation was issued:

1. Some administrative controls have been put in place that prevent transfer into Type I tanks, however, no formal involvement by DOE in the decision process is evident.
2. The awareness of the DOE and contractor staff to NOT utilize Type I tanks for storage of waste
3. A new Performance Based Incentive, PBI-HLW-05 was put in place to help alleviate storage capacity issues by dispositioning low activity salt waste by sending it to the Saltstone Facility ahead of the Salt Waste Processing Facility schedule.

4. The evaporators that were out of service, or working far below capacity have recently been brought back on line and are currently reducing waste volumes. At the time of the site visit, all three HLW System evaporators were in operation.

Though these changes are positive indicators toward resolving the concerns noted in DNFSB Recommendation 2001-1, the Team acknowledged that, if circumstances arose similar to those last year (e.g. evaporators down, on-going sludge washing, increasing volumes in the tank farms), SRS could find itself in a similar decision-making situation.

Current Incentive Structure

Part II of the current Performance Evaluation and Measurement Plan (PEMP), under the WSRC contract with DOE, identifies the Performance Based Incentives (PBI) and associated fees. These PBIs cover a period of performance through September 30, 2006. The PEMP includes 5 high-level waste performance incentives, HLW-01 through HLW-05, worth a total of $62,175,000. Table 1 provides a brief description and potential fee for each of these PBIs. PBIs 1 through 4 were in place at the time the Board issued its recommendation (i.e. March 2001). Incentive 5 was put in place in October 2001. Two of the 5 incentives are directly applicable to canister production and/or tank farm space management. In addition to the 5 HLW Program specific PBIs, there is also a Comprehensive Performance Special Performance Area PBI (COMP-1), worth $20,500,000, that covers all work scope not specifically covered in the 5 high level waste incentives.

The high-level waste system performance PBI (HLW-01) provides a total available fee of $50,750,00. This fee is split between canister production ($39,250,000) and tank farm space management (11,500,000). The canister production fee provides for a base of $21,250,000 for producing 850 canisters and a stretch of $18,000,000 for an additional 300 canisters, giving a total of 1150 canisters. The space management portion has several requirements. There is $4,500,000 for providing 18 million gallons of tank space, primarily through evaporator operation; $4,000,000 for returning tanks 49 and 50 to service (2.6 million gallons of space); and $3,000,000 for providing 1.5 million gallons of working space in the Type III tanks system at the end of the contract.

Performance incentive 5, Near Term Low Activity Salt Waste Disposition, provides up to $5,175,000 for processing low activity salt waste directly into Saltstone.

Observations:

The High Level Waste Performance Incentives (HLW-01 and HLW-05) attempt to balance canister production with the need for Tank Farm space management. Approximately 77% of HLW-01 is devoted to production and 23% for space management. Throughout the interviews and document reviews the Team conducted, it became apparent that the two goals (canister production and Tank Farm space management) are bound together. That is, Tank Farm space must be managed adequately to allow progress on the production mission. This is a physical limitation of the

processing system. Everyone we spoke to understands this interrelationship and believes the incentives in place strike a reasonable balance between the two. In addition to PBI-HLW-01, PBI HLW-05 was recently negotiated. Successful completion of this PBI will yield up to 1.5 million gallons of additional Type III tank space. This PBI has additional benefits as it:

1. Accelerates final Tank Farm waste disposition (as contained in the current HLW System Plan, Rev. 12) and
2. Dispositions the waste without having to process it through DWPF.

The Team recognizes that it is the responsibility of DOE-SR and WSRC management to evaluate and manage the risks of HLW processing AND tank space management. It is the Team's opinion that both organizations are capable of executing this responsibility. As an example DOE-SR's management of performance incentives, the Team reviewed a contractor performance review done by DOE-SR dated September 5, 2001. This evaluation, related to less than adequate technical direction, performance, and operations associated with Evaporator 2H and leak issues with Tank 5, resulted in a "Reduction of Fee for Comprehensive Performance Special Performance Area." The Team believes DOE-SR sent a strong message to the contractor regarding less than acceptable performance. The Team concluded WSRC's management capability was adequate through review of their implementation of corrective actions, review of plans for preventing recurrence and through discussions of their vision for the remainder of the contract period and beyond.

In summary, the Team recognizes that there is more money placed on disposition of waste through DWPF than there is on space gain initiatives in the Tank Farm. In the Team's opinion, this is appropriate and in accordance with the SRS mission provided management exercises sound judgement in managing associated risks. The Team does NOT believe that the current incentive structure over-emphasizes near-term production at the expense of safety margin in the Tank Farm.

Recommendations:

The Team recommends several actions that DOE-SR should take to further ensure that canister production is not the near-term focus at the expense of tank farm space management. These actions are:

- Development of a new PBI to encourage additional space gain through source reduction. PBI HLW-01 does state that alternative methods such as reduction in Canyon receipts or DWPF recycle can be utilized to obtain space gain. However, the primary focus to meet this PBI is through Tank Farm Evaporator operations. A separate PBI focused on source reduction may be more appropriate.
- Application of negative incentives on the fee allocated for production if the contractor fails to manage Type III space
- Addition of more visible administrative controls (involving DOE decision makers) that explicitly prohibit waste transfer into Type I tanks unless such transfers are used to retrieve the waste contained in those tanks. Furthermore, this requirement may be extended to cover Type II and IV tanks over time.

The Team believes there are additional opportunities for source reduction and an additional incentive should be developed to realize Tank Farm space gain. Application of a negative incentive to the production fee may also be a way to encourage WSRC to manage Type III tank space to preclude the necessity for future transfers into other type tanks. Explicit control on transfers into other type tanks (i.e. Types I, II, and IV) is another method of achieving the same result.

The Team also considered adjustment of fee ratios by lowering the percentage for canister production in favor of Tank Farm space management. It was the opinion of the Team that this approach would not be as effective as the three listed above and is, therefore, not recommended at this time.

Table 1

PBI	Description	Total	Percentage
HLW-01	HLW system performance		
	Canister Production	$39,250,000	63 %
	Space Gain	$4,500,000	8 %
	Tanks 49 & 50	$4,000,000	6 %
	Type III space	$3,000,000	5 %
HLW-05	Low activity salt disposal	$5,175,000	8 %
HLW-02 through –04	Various	$6,250,000	10 %
Total		$62,175,000.00	100 %

Attachment 1

Personnel Interviewed:

Charlie Anderson	DOE-SR, Assistant Manager, High-Level Waste (HLW)
Larry Ling	DOE-SR, HLW Programs Division
Howard Gnann	DOE-SR, Deputy Assistant Manager, Material and Facility Stabilization
Debbie Gonyaw	DOE-SR, HLW Programs Division
Bill Clark	DOE-SR, HLW Salt Processing Project Division
Nick Delaplane	DOE-SR, Director, HLW Programs Division
Tom Reynolds	DOE-SR, Contracting Officer
Mike Mikolanis	DOE-SR, Director, HLW Engineering Division
Mike Smith	DOE-SR, HLW Operations Division
Tom Temple	DOE-SR, HLW Engineering Division
Don Blake	DOE-SR, HLW Engineering Division
Susan Cathey	WSRC, HLW Division Program Manager
Michael Johnson	WSRC, Deputy General Manager (Acting)
Steve Piccolo	WSRC, HLW Division Vice President and General Manager
Dan Ogg	DNFSB Staff

Attachment 2

Documents Reviewed:

- DNFSB Recommendation 2001-1\
- DOE's Plan of Action to Re-assess Savannah River Site's High Level Waste Management Strategy, DNFSB Recommendation 2001-1 Implementation Plan, Revision 1, Dated September 5, 2001
- Revision to the Performance Evaluation and Measurement Plan (PEMP) Parts I and II for WSRC Contract DE-AC09-96SR18500 – Evaluation Period: October 1, 200 through September 30, 2006, Dated September 11, 2001
- Fee related clauses in the WSRC contract
- HLW PBIs (01 through 05)
- Savannah River Site High Level Waste System Plan, Revision 12
- Excerpt from Liquid Radioactive Waste Handling Facilities SAR, WSRC-SA-33, Rev. 5
- Emergency Spare Tank Capacity Program Surveillance Requirements, SW10.6-SVP-2, Rev. 2
- SW11.1-WTS(8-40), "Typical" transfer procedure prerequisite
- WSRC HLW Division Organization Chart
- DOE Assistant Manager – HLW Organization Chart
- Performance Evaluation, CPSPA, Dated September 5, 2001
- Waste Transfer Approvals, SW11.1-WTS, Rev. 0
- F Tank Farm Waste Transfers, SW10.1-WTS, Rev. 6
- Waste Transfer Procedure Guide, WM-AP-3105, Rev. 3