



## Department of Energy

Washington, DC 20585

August 1, 2003

2003 AUG -5 P.112:48

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 provide follow up to my correspondence of June 10, 2003, concerning Sludge Removal at Hanford. In that correspondence I requested a 45-day extension for providing the Defense Nuclear Facilities Safety Board (Board) with "either a path forward for completing sludge removal from the Hanford K-Basins by August 2004, or a revised Implementation Plan with justification for delaying completion of sludge removal beyond this date."

Unfortunately, I cannot provide a reliable path forward at this time. I have taken additional actions since my previous letter including:

- Recalled start up authority from the Site to my Office,
- Augmented the DOE ORR Team by naming a new team lead,
- Provided him with three highly experienced technical experts, and
- Directed that the DOE Plan of Action be revised to include addressing issues raised in the June 2003 Trip Report.

I have included this report as an Attachment. I have also directed the Richland Operations Office to evaluate provisions contained in the contract to hold the contractor accountable.

I will provide the Board an update on this issue no later than August 31, 2003. If you have any questions, please call me at (202) 586-7709 or Paul Golan, Chief Operating Officer at (202) 586-0738.

Sincerely,

*For* Jessie Hill Roberson  
 Assistant Secretary for  
 Environmental Management

Attachment

cc: Mark Whitaker, DR-1  
 Keith Klein, RL



SEPARATION

PAGE

# memorandum

DATE: JUN 20 2003  
REPLY TO:  
ATTN OF: EM-3

SUBJECT: Hanford Sludge Trip Report

TO: Jessie Hill Roberson, Assistant Secretary for Environmental Management

The purpose of this memorandum is to transmit the Hanford Sludge Trip Report from a visit completed at the site June 2<sup>nd</sup> 2003. Our review illuminated an area "Missed Regulatory Commitments" that requires immediate management attention. For example: "Spent Nuclear Fuel Waste Sludge," Tri Party Agreement milestone and the Defense Nuclear Facilities Safety Board milestone were missed. In April 2003, the Environmental Protection Agency (EPA) issued an enforcement action and fined Department of Energy (DOE) \$76,000.00 for missing the milestone through April 2003. Also, the review surfaced weaknesses in both Contractor and DOE nuclear safety awareness, which did not treat the milestone as a safety issue.

The report contains findings and recommendations (attached) that the term believes should be assigned to the Richland Manager for action.



Paul Golan  
Chief Operating Officer  
Office of Environmental Management

Attachment

cc: Keith Klein (RL)  
Mark Frei, EM-30/40

## Hanford Sludge Project

### PURPOSE OF VISIT

The purpose of this visit was to review the Sludge Removal Project at Hanford K-Basins. The drivers that prompted this visit included:

1. An enforceable TPA milestone (M-34-10) that required sludge removal to start not later than December 31, 2002 was missed. In April 2003, the EPA issued an enforcement action and fined Hanford \$76,900 for missing the milestone through April 2003. EPA has left the door open for additional enforcement actions.
2. DNFSB milestone (Recommendation 00-01, Implementation Plan Commitment #119) was missed, which was the same as the TPA milestone. On April 10, 2003, the Board sent a letter to the Secretary of Energy requesting a report on the path forward for sludge using authority under 42USC 2286b(d). The Board's letter stated that they were "not aware of any technical considerations that would justify delaying completion of sludge removal from the K-Basins (Implementation Plan Commitment #120), although, completion of sludge removal scheduled for 8/31/04 is at risk and site schedules do not support this milestone".
3. The contract paused their ORR in April 2003, four days after it started. The earliest date the contractor is planning to restart the ORR is mid-June, meaning it will take at least two calendar months to correct deficiencies after the contractor thought it was ready to start sludge removal operations

### BACKGROUND

There is approximately 50m<sup>3</sup> of sludge in the K-East Basins and 10m<sup>3</sup> in K-West Basins (60m<sup>3</sup> total). The sludge was generated primarily from dirt and sand being blown into the basins from the outside combined with corrosion products (i.e. oxidation) of the spent nuclear fuel stored in the basins. The sludge is considered remote-handled TRU (50-100 REM/hour on contact). The removal process involves using an eductor to vacuum the sludge from the basin and transferring the sludge to large diameter containers (LDC) containing approximately 2m<sup>3</sup> of sludge along with 1.43 m<sup>3</sup> of sludge water on top on the sludge. Hanford will produce 50 or fewer LDC's through the removal process. The LDC's will then be transported to T-Plant where the sludge slurry will be stored in a vented configuration indefinitely (the T-Plant Manager saw this as for the next 30-years).

## OBSERVATIONS

1. There was a clear lack of urgency noted in the planning and preparing for sludge removal operations coupled with the fact that sludge removal was viewed as low risk/low priority work. Although the Site is in enforcement space from the EPA and has missed a DNFSB milestone, during the tour of K-East, the Team observed no actual work or operations being performed. The team was told that a dry-run training evolution that had been scheduled for the morning was cancelled because all required hourly employees were not available. The lack of adequate planning cost the operation at least a half-day worth of planned work. Provisions in the labor agreements affecting jurisdiction seem complicated and require a good deal of management's time to untangle. When asked about who controls work assignment, the Team was told HAMTEC controls jurisdiction, of which contractor management has a seat at the table, but were not in control of the assignment of work process. Both the DNFSB and the EPA milestones are now over 5 months late.
2. Configuration control of both administrative controls (procedures) and engineered systems failed. As examples, operating procedures could not be utilized as written at the job site because of numerous last minute changes to the procedures and systems and there were improperly installed pressure relief valves (set to protect at 135#, system rated at 95#). Lack of adequate configuration control represents a significant vulnerability considering the high on-contact radiation levels of the waste. This was a major cause of the contractor needing to stop the ORR.
3. The systems used by the contractor to establish readiness did not work as planned. None of the processes or indicators used by the contractor to determine readiness worked. This happened shortly after DOE sent a letter to the DNFSB notifying them that Hanford had established and was implementing improved ORR processes (attached).
4. Radiological control procedures were confusing and counter-intuitive at the K-East Basin. This process should be reviewed as there is room for eliminating needless steps and simplifying the process:
  - Frisking out: 4 surveys: 2 alpha and 2 beta/gamma's done in very short (less than 15 feet) proximity to each other,
  - Doffing of anti-C's: removing PPE with an assumed contaminated hand, most other places the Team has visited had the operator remove their outer glove, survey out their hands clean, and then doff their anti-C's assuming their hand is clean.
  - TLD are worn inside the anti-C's, although alpha and beta were considered potential exposure sources. Anti-C clothing effectively shields the TLD from the alpha and beta radiation.
5. The final disposition path forward for sludge has not been well thought through. Several material handling issues impede workflow. For example, the cask and truck system is currently being planned to remain in the loading/unloading dock bay for 5-days to allow for calculations to be performed to ensure the LDC is below the hydrogen LEL, although it will have probably been packed and stored for fewer than 7 days before it is transported to T-Plant. This in effect limits the transfer rate to 1 LDC per

week. SNF canisters can be transferred into the CSB at a rate of 1/day. Additionally, the LDC's are to be stored in a vented configuration to prevent a build up of hydrogen gas caused by the radiolytic decomposition of water. This will require that the LDC's be routinely monitored to ensure no sludge water leakage from the LDC's as well as to ensure there is sufficient water in the LDC to keep the sludge in a slurry form. The sludge is considered remote-handled TRU waste. The real problem here is that the removal of sludge from the K-Basins and storage in T-Plant is only an interim step, meaning that it will need to be re-processed in order to be disposed. Not placing the waste into a final disposition waste is problematic for several reasons including (a) storing a liquid v. solid, (b) the need to handle and process the high-rad waste again, as well as (c) continued operation of T-Plant, the oldest operating nuclear facility in the complex.

6. As to sludge disposition, planned operation plans for T-Plant is disturbing. Instead of getting all unnecessary equipment and people out of the 60-year old facility, cages are being installed so as to better control the consumables being brought into the plant. There are no plans to optimize resources and move people out and minimize the scope of T-Plant operations giving one the sense that there is no operational end point for T-Plant and it will be one of the last facilities brought down at Hanford.
7. There is a disturbing and increasing trend of work place accidents in K-Basins. The OSHA total reportable injury case rate has risen from 1.0 to 4.0, and for FY03 now stands at 5.1 (see attachment).

## CONCLUSIONS

Of major concern is the simultaneous failure of management control starting with work planning and extending to work execution

- a. There was a fundamental and systematic breakdown of ISMS at Hanford in Sludge Removal from high-level strategic planning to on the job work performance (no work being performed, increasing accident rate, etc). This was noted on both the DOE and Contractor side.
- b. The schedule for startup and actual operation of the sludge system could not be determined as the work planning process, discussed above, failed.
- c. There was no recognition from either DOE-RL or Contractor management that sludge removal from the K-Basins was a safety issue and that continued non-compliance with a TPA enforced milestone was unacceptable.

## RECOMMENDATIONS

1. DOE-RL should use terms and conditions of the contract to hold the Contractor accountable for performance failure and the systematic breakdown of the ISMS.
2. Hanford should immediately develop an acceptable waste form that would allow for disposal of sludge at WIPP.
3. Hanford should continue with preparations for removal of sludge from the basins. An ISM assessment should occur of the removal of LDC's from the Basins with the focus on identifying and acceptable waste form. This may avoid many high-risk and needless steps including transportation and storage of sludge in T-Plant.
4. Hanford should review its RADCON practices to ensure they are consistent with industry practices as well as for cost-effectiveness
5. Hanford should reconsider all physical infrastructure upgrades to T-Plant and should consider taking actions to remove people and infrastructure from T-Plant.
6. DOE-RL should conduct an independent evaluation of the contractor's configuration management system, starting at K-East.
7. DOE-EM will conduct an evaluation of Hanford's approach to establishing readiness using the April 2003 letter from EM-1 to the Board as a basis for the assessment as well as conduct an assessment of ISMS implementation at Hanford. This will include an assessment of the DOE oversight provided to the job to date.

SEPARATION

PAGE




# memorandum

DATE: July 21, 2003  
REPLY TO:  
ATTN OF: EM-1  
SUBJECT: K-Basin Sludge Water System Startup Revision

TO: Keith A. Klein, Manager, Richland Operations Office

Reference: Memorandum from Jessie Hill Roberson to Keith A. Klein, "Delegation of Authority," dated February 5, 2003

The purpose of this memorandum is to revise referenced correspondence concerning Sludge Waste System (SWS) Startup at K-Basins. I am delegating startup authority for SWS to Paul Golan, Chief Operating Officer. I expect that the Department of Energy (DOE) Operational Readiness Review (ORR) Plan of Action be reviewed, revised and submitted to Mr. Golan for his approval. Additionally, I have asked him to re-evaluate the ORR plan and the ORR team composition. I have also asked that observations and recommendations made in the June 2003, SWS Trip report be addressed as pre-requisites in the ORR Plan. If you have any questions, please call me or Mr. Paul Golan at 202-586-0738.

  
Jessie Hill Roberson  
Assistant Secretary for  
Environmental Management

cc: Paul Golan, EM-3  
Mark Frei, EM-30