

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

October 18, 2002

MEMORANDUM FOR: J. Kent Fortenberry, Technical Director
J. J. McConnell, Deputy Technical Director

FROM: R. T. Davis/ T. D. Burns

SUBJECT: SRS Report for Week Ending October 18, 2002

Americium/Curium: Over the last four months, WSRC has commenced two full-scope and two partial-scope cold runs to demonstrate the ability to execute an F-Canyon to H-Tank 51 inter-area transfer. Unfortunately, several emergent problems were encountered during these cold runs that precluded their successful completion (site rep weeklies 6/28/02, 7/5/02, 8/2/02, and 8/16/02). On the high-level waste side, problems with both pump performance in F-Pump Tank 2 and level control in H-Pump Tank 7 have been resolved in a practical sense, though a more thorough technical understanding of the dynamics in FPT-2 may be warranted. On the F-Canyon side, the issue of insufficient simulant flow-rate through the waste header remains unresolved.

Initial speculation was that pre-existing pluggage in the waste header (a 3-inch diameter gravity-drain line of ~2,000 ft with 28 elbows and an elevation change of 43 ft) was causing the low flow-rate; however, insufficient simulant flow persisted after successful flushing of the waste header. Subsequently, SRTC began testing the rheological properties of the simulant currently in F-Canyon tanks. It was determined that the F-Canyon simulant flows more than an order of magnitude slower than fresh simulant made according to the same recipe. SRTC is currently developing a test plan to determine the cause of the unexpected rheological changes. Operational data revealed that a heel of lab-waste was inadvertently added to the F-Canyon simulant; however, aging, extended agitation, and elevated temperature are also being investigated as potentially relevant variables. Conclusive results from SRTC will likely not be available until the end of this month.

Upon resolution of the simulant flow-rate issue, WSRC intends to perform an additional full-scope cold run. Though appropriate, this additional evolution coupled with delays associated with issue resolution will likely have significant schedule impacts on preparation of Sludge Batch 3 and may jeopardize the Recommendation 2000-1 Implementation Plan-Revision 2 commitment date of March 2003 for Americium/Curium solution transfer to the high-level waste system.

DWPF: The failed Slurry Mix Evaporator (SME) vessel (site rep weekly 9/27/02) has been de-inventoried, moved to the Radioactive Equipment Decontamination Cell, and is currently undergoing decontamination. WSRC expects to have the SME clean by Sunday, at which time it will be moved to the Contact Decontamination and Maintenance Cell for failure analysis. Results of the failure analysis will indicate if repair is feasible and provide insight into the applicability of this failure mode to other vessels.

Additionally, WSRC and DOE-SR decided on Thursday to initiate replacement of the current melter. Performing the melter replacement evolution in parallel with the unexpected SME outage should minimize over-all facility down-time. However, additional in-situ data on operational parameters relevant to optimization of the new melter's performance will be forgone. SRTC is developing a laboratory test plan to supplant most of the lost in-situ data. The baseline schedule for the replacement outage indicates a six-month duration. WSRC is looking to pull this back to four months.