

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

February 7, 1997

TO: G. W. Cunningham, Technical Director
FROM: R.F. Warther, M.T. Sautman
SUBJECT: RFETS Activity Report for Week Ending February 7, 1997

Recommendation 94-1 Approximately 1380 liters of solution were drained from tank 134C in Building 371. To date, 2419 liters of solution have been processed in the Caustic Waste Treatment System (CWTS). When an additional 1000 liters have been processed, there will be enough room in the receiving tanks to drain the last Category B tank. Since operators continue to process approximately 100 liters of solution per day, they are on track to meet their February 28 milestone. Building personnel continue to work through processing problems, including blockages in the vacuum lines for the clarifier columns and occasional spills contained in the glovebox.

CWTS processing proficiency may become more important because additional solutions may be processed through this system in the future. SSOC forwarded a proposal to K-H this week recommending that the high level solutions in B771 be drained into four liter bottles, transported to B371, blended down to less than six grams/liter Pu and processed through CWTS. If SSOC follows this approach, Building 771 will enter the deactivation phase of its life cycle upon completion of tank draining. Tap and drain or system flush would start near the end of the year. Based on preliminary indications, the proposal appears sound and would accelerate the exit from Building 771. The 50 percent completion mark was also reached this week for hydroxide precipitation.

The Site Reps met with a senior SSOC manager, who is investigating options to accelerate the removal of all Pu metal, oxide, and residues from RFETS. Among the topics discussed were:

- a. Using either the RFETS scrub alloy or LLNL salt scrub processes to treat salts. He is very concerned about the proposal to use salt distillation because of its need for prior oxidation, its technical maturity, its potential to concentrate Am (buttons estimated to have dose rates between 2 and 10 rem), and the need for aqueous dissolution to treat calcium chloride salts.
- b. Eliminating the treatment of wet combustibles because of the high cost (\$80 - 120 million) and the perception that this was being done to treat the NaNO_3 remaining after HNO_3 neutralization. After the Site Reps explained we were concerned with those wet combustibles containing CCl_4 or HNO_3 (especially if it is concentrated or mixed with H_2SO_4), he appreciated the need for stabilizing the material. However, treating only those items found to actually contain CCl_4 or HNO_3 , which had not been rinsed or neutralized adequately, may significantly reduce cost and accelerate treatment of the residues that really need treatment. In addition, if the size of the process can be reduced, there may be space to fit the ash and salt lines in B371.
- c. Allowing RFETS Pu metal and oxide to be shipped to SRS before the APSF is complete and removing the restriction that Pu metal and oxide must be shipped to SRS in welded 3013 containers. The IAEA may open all the containers at SRS anyway. They would like to avoid building a second Plutonium Stabilization and Packaging System by having SRS process some of their material. The Site Reps agreed in principle with this goal, but made it clear that SRS would have to be able to bring the RFETS Pu into compliance with 3013 by May 2002.
- d. Using a revised, more robust glass formulation so they could blend graphite fines and ash together and vitrify the mixture. One tradeoff would be that the off-gas scrubber system would need to be modified since this glass

requires a temperature between 1100 and 1200° C.

The Site Reps also met with RFFO and K-H to discuss ways to avoid residue delays. Both parties agreed that salt oxidation would start in August as currently scheduled. Processing DOR salts first and saving high dose rate salts to later would address ALARA and salt distillation issues. They also agreed to take a harder look at salt liquation to see if it would address safeguards issues.

Recommendations 94-3 and 95-2 As follow-up to the Bamdad/Blackman/Kasdorf trip last week, K-H personnel asked for further clarification of Recommendations 94-3 and 95-2 issues. They sensed the staff's concerns with the adequacy of the control set for B371. The Site Reps highlighted the difference between B371 with a mission of storage and other Pu buildings with a hazard reduction mission. They restated that most of the controls for B371 do not make full use of existing instrumentation and administrative control systems in place at the site, and repeated statements that the ~20 year mission for this facility requires that the engineered controls be demonstrably adequate and routinely surveilled. Furthermore, administrative controls for the building should reference existing instructions and procedures where available and adequate.

Recommendation 93-3 The Site Reps attended a Shift Technical Advisor (STA) Qualification Board for B371. This Board went substantially better than the Shift Manager (SM) Requal Board observed last week. The STA candidate demonstrated a high level of B371 systems knowledge as well as a high degree of self confidence. This was the best Oral Qual Board observed to date by the Site Reps. During a follow-up discussion with the SSOC training manager, he stated that this candidate and Qual Board was the best he had seen to date at RFETS also. He further outlined his long term objective of qualifying additional STAs and eventually requiring them to qualify as SM. Current SMs would be required to requalify to a higher standard or would be replaced. This would be more consistent with the NRC or Navy requirements for SM and Engineering Officers of the Watch.

Glovebox Stripout Glovebox A-110 is a highly-contaminated glovebox in Building 707 that is being manually disassembled in place because it contains a lathe directly mounted to the floor. The staff has discussed our concerns about the work package's hazard assessment and worker safety controls with RFFO and RMRS. Recently while using a nibbler to cut the glovebox walls (reading 400,000 dpm), a periodic check found that the airborne contamination levels had increased from 289 DAC to 1833. This exceeded both the Positive Air Purifying Respirator's protection factor of 1000 DAC and the RWP suspension limit of 500 DAC. Upon exiting the tent, contamination was found on a worker's neck, chest, and forearm. It is believed that hot chips from the nibbler melted holes in his outer layer of Tyveks anti-contamination clothing. The contamination then migrated through his inner layer of cloth anti-Cs and modesty clothing, both drenched with perspiration. Results of smears and a lung count were negative. An additional worker suffered heat stress and had to be evacuated. After a one-week suspension of work, RMRS has recommended restarting the job, but requiring the use of Premaire units with Vortex cooling and a level B garment during size reduction activities. Additional decontamination and contamination fixation will be performed.

Vaults The Site Reps toured the three B771 vaults and the new B371 vault as part of a vault review requested by Dr. Kouts. Findings of this review will appear in a future report.

cc: Board Members