

## DEFENSE NUCLEAR FACILITIES SAFETY BOARD

August 30, 1998

**TO:** G. W. Cunningham, Technical Director

**FROM:** M. T. Sautman, R. F. Warther

**SUBJECT:** RFETS Activity Report for Week Ending August 28, 1998

**Recent Incidents.** Over the last few weeks, the number of incidents involving inadequate conduct of operations and/or radiological controls have been increasing. This concern has been discussed with both RFFO and K-H management. The following occurred last week:

- In B779, workers in Premeire suits were size reducing a glove box inside a tent. While moving a pipe that they had cut off, material spilled out of the pipe causing the airborne levels to reach 892,000 DAC. The material was sucked up and they evacuated at the RCT's direction. The RWP suspension limit was only 50,000 DAC. The glovebox removal crew did not tell the size reduction crew that the pipe was a solution line. Since the size reduction crew believed it was a nitrogen line, additional precautions were not taken.
- In B371, the Facility Manager authorized work on an energized system without adequately reviewing the package. While running a grounding connection to a 480-volt transformer, a 9" arc shot from the transformer to the grounding strap. This tripped a 50-amp breaker and caused molten metal (from the wire) to char the operator's safety glasses. The exact cause of this event is not known. To make matters worse, the operators did not notify anyone about the arc; it was only discovered when a Fac Rep stopped by 30 minutes later.
- Because nuclear material handlers were occupied with another job, the B707 Environmental Coordinator (EC) was assigned to receive several drums of residue samples from B559. The EC received and moved the drums without completing a surveillance beforehand to ensure this operation would comply with all applicable criticality limits. This was an OSR violation. In addition, there was no pre-evolutionary brief conducted and the wrong radiological work permit was used.
- During a 3 day period, 11 glovebox gloves had to be replaced in B707 Module A due to holes or excessive wear. Respirators have had to be worn almost continuously because of airborne contamination. This is a much higher failure rate than normal. In 4 cases, a hole was caused by trying to remove salt that had accumulated on the furnaces with files. Recent pyro-oxidation runs for scrub alloy spent dicesium salt have encountered a lot of foaming. However, no cause is obvious in the other cases. B707 will try to reduce the failure rate by using leather gloves over the glovebox gloves.

**Recommendation 94-1/Readiness Reviews.** K-H conducted a Readiness Assessment to evaluate the process for planning and executing the removal of liquids from 35 process and reagent systems. This evaluation was accomplished by assessing how the process was applied to the high-level dissolution system, which uses the portable vacuum liquid transfer system (PVLTS). There were 4

broad findings, some containing a dozen or more pre- and post-start elements. The findings were:

1. Performance did not demonstrate preparation to conduct some key aspects of this activity (i.e., needed more dry runs, the 3 work instructions were not integrated).
2. Preparation processes were not sufficiently applied to ensure objective review/verification of work instructions and supporting documents (e.g., criticality evaluations, hazards analyses) such that they could be successfully implemented (i.e., there were lots of problems with the procedures).
3. Readiness was prematurely declared without documented recognition of some open elements necessary to start the activity (i.e., could not have started even if a RA was not required).
4. The process for certification of operators and supervisors conducting system draining activities was not fully implemented.

The RA team also concluded that it would be necessary for K-H to provide augmented oversight of this activity for an indefinite period.

Overall, the K-H team was qualified and did a very thorough review. In addition, the RFFO oversight team lead's persistence ensured that some questionable training practices were addressed. The one disappointing area was that the RA team agreed to a dry run that had excessive amounts of simulation. For example, the PVLTS was not even turned on or operated with surrogate solutions although one objective of the RA was to demonstrate its operation.

The Site Reps are concerned about the RA team's findings. Although B771 management and a SSOC review team concluded that the activity was ready to proceed, the RA team found many indications that readiness was prematurely declared. If this occurred when B771 knew there was going to be a RA, the Site Reps are concerned what the state of readiness will be for future systems that will not be formally reviewed. Resolving the pre-start findings for the high-level dissolution system will be relatively easy compared to fixing the process for the remaining systems.

SSOC conducted a management review (MR) for repacking ash and graphite residues in B707 Module E. This MR went much smoother than other readiness reviews. The two pre-start findings addressed minor corrections to the procedure and that the team was not familiar with the radiological conditions of the residues to be handled. The Site Reps identified issues with the use and format of the form used to track plutonium inventories inside the glovebox, the potential material at risk implications from the Am in some containers, and the characterization status of residues to be repacked. The residue category that was to be repacked first was a high risk residue whose characterization had not been completed to a 95/5 confidence level. Another high risk residue category authorized to be repacked had its characterization completed, but the results had not been analyzed yet. The Site Reps are working with the contractor to make sure that residues still classified as high risk are not prematurely repacked without affecting the repacking of low risk residues.

cc: Board members