

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

September 11, 1998

TO: G. W. Cunningham, Technical Director

FROM: M. T. Sautman

SUBJECT: RFETS Activity Report for Week Ending September 11, 1998

Recommendation 94-1/Readiness Reviews. SSOC conducted a management review (MR) for the removal of process piping. The MR examined the preparations for the oxalic acid system as well as the process to be used for the other 36 systems. The pre-start findings were:

- ALARA review requirements not reflected in work instructions
- Some hazard controls not in job hazards analysis nor reflected in work instructions
- Inconsistent team response to an acid spill
- Work instruction deficiencies

It appears that the meetings RFFO and the Site Rep had with the MR team lead last week resulted in a more rigorous and less simulated review than originally planned. The Site Rep identified additional issues with the work instructions, incorporation of controls, and the pre-evolutionary brief. The RFFO oversight team again did a very thorough review, identified these additional issues on their own, and may make them additional pre-start issues. For both the recent RA and this MR, the RFFO oversight team has made sure all issues get identified and properly closed. SSOC, K-H, and RFFO agree that piping removal can begin for oxalic acid once the pre-starts are completed. However, each believes that some level of additional review is warranted for future systems although the specifics are still being worked out. The Site Rep agrees with this.

One unresolved issue was the use of respirators during pipe cutting. Building radiological personnel believed that it was not necessary to use respirators when cutting pipes because a vacuum would be drawn on the pipes, the ends may be taped, and solutions previously drained had low Pu concentrations. Respirators would only be used when surveys found high contamination levels although they could not define "high" and no air monitoring is planned other than room air monitors. The Site Rep believes that using respirators would be prudent until the actual contamination levels inside the pipe are known. When large pieces of pipe are being size reduced, operators will not tape at least half the pipe ends and no vacuum will be available to contain contamination. Furthermore, the solution data only addresses two small areas of the system and does not tell how much solution dried in the pipe. In addition, Pu may also be mixed with pipe corrosion products or in the material blocking part of the pipe. This issue was discussed with the K-H RadCon Manager, who agreed with the Site Rep and is investigating the situation.

The Site Rep has been concerned with the rate of progress for the B371 Tap and Drain Project. The Implementation Plan milestone requires that 12 areas be drained by June 1999. So far, it will likely take approximately 2½ months to complete the first area. K-H's admittedly aggressive schedule

assumed that a second draining team would start on October 1. However, K-H stated that these positions have just been posted. Because of a shortage of qualified process specialists, most of the workers will go through the entire training process. This takes about 4 months, assuming they are cleared. When asked why the workers were not hired in time to support their commitment, K-H stated that their hiring was delayed until FY99 because of FY98 budget constraints. Because of this delay, it is very unlikely that K-H can meet the June 1999 milestone even if all their assumed "unknown efficiencies gained" materialize. There are similar concerns for staffing B771 tap and drain teams. These potential delays increase the importance of properly prioritizing the systems/areas to ensure that systems that are leaking, may contain hydrogen, or have high actinide contents are addressed sooner rather than later.

The Site Reps have been encouraging a variety of methods to increase the efficiency of the B371 hydrogen purging process. A more realistic model that takes into account the effect of the boundary layer has resulted in shorter diffusion times between purges. In addition, engineers are pursuing the Site Rep's suggestions about possibly measuring the actual hydrogen concentrations in the piping rather than just assuming it is there. The Site Reps are still concerned that operators continue to work around high Pu loading drums. High Pu loading drums were moved to B371 because it is the most robust building at RFETS. However, this has caused B371 to become congested with residue drums and increase the dose rates for many rooms where work is being performed. SSOC has identified possible portable shielding for the drums that is a gamma reflector, but a neutron absorber.

After a false start last week, limited repacking of ash residues began this week.

The tanks in B774 have been excluded from the Recommendation 94-1 Implementation Plan. Last week, improved holdup scans determined that one tank contained 331 grams of actinides. It is not clear why this tank, and possibly other similar ones, are not part of the tap and drain programs. This issue is being pursued with RFFO and the contractors.

Although a draft characterization report for another salt residue has been completed, the characterization of other residue categories may be impacted by a recently discovered issue. An error in the software used to transform raw differential thermal analysis data into heats of reaction was significantly underestimating the values. This only affects those samples that had an exotherm below 150°C. Fortunately, none of the characterization reports completed to date are affected.

Recommendation 97-2. In the last 3 weeks, there have been at least 5 events in B707 that have resulted in 2 criticality program OSR violations and a couple of criticality infractions. Most of them could have been avoided if an adequate surveillance had been performed. Surveillances are performed to ensure that the planned activity complies with all applicable criticality limits and that the current configuration complies with revised limits

cc: Board members