

## DEFENSE NUCLEAR FACILITIES SAFETY BOARD

July 18, 2008

**TO:** T. J. Dwyer, Technical Director  
**FROM:** M. P. Duncan and M. T. Sautman, Site Representatives  
**SUBJECT:** Savannah River Site Weekly Report for Week Ending July 18, 2008

**H-Area Old Manufacturing:** At the Inert Metallography Laboratory (IML), pyrophoric fines were generated while sectioning a component with a lathe inside an inerted glovebox. The sectioned component was placed inside a plastic vial without any attempt to remove the fines. The vial was moved to an open hood where the component was transferred to a second vial. After this transfer, residual pyrophoric material in the first vial began to spark in the air atmosphere. This sparking led to the melting of the plastic vial and the ignition (~6" flames) of four alcohol-saturated rags that had been staged to clean the component. Nearby personnel extinguished the fire by reaching into a contamination area and flinging MetalX through an opening in the hood that was around the corner. The Fire Department gave the all clear after arrival and the material was placed in a stable configuration. There was no injury to personnel, damage to the hood, or release of material into the room. While the procedure warns against allowing pyrophoric material to contact air and keeping alcohol away from sparks, the procedure steps call for the transfer of components possibly containing pyrophoric fines to an air atmosphere and then using alcohol to clean the component. Personnel will be reviewing all activities potentially involving pyrophoric material and their controls because the Assisted Hazard Analysis for this procedure did not mention any pyrophoricity hazards. The Site Reps also questioned the handling and disposal of these potentially pyrophoric fines because some of these were still visible on the glovebox floor when the Site Reps inspected the lathe. Another concern was that combustible controls for the hood were violated when alcohol was squeezed out of the rags and into the second vial (thus creating a free standing liquid) in order to clean the component. Personnel will evaluate the use of flammable liquids inside all process areas. The Site Reps also provided information to Engineering about a non-ignitable solvent which began to be used for similar purposes at another DOE site after alcohol flash fire events at that site and at the Savannah River National Laboratory. A number of corrective actions pertain to the proper response to a confirmed fire that is visibly extinguished, but whose extinguishment has not been confirmed by the Fire Department yet. These issues include the minimal use of the emergency operating procedure (EOP), communications with the SRS Operations Center, the need to actuate a pull station (shown in the EOP, but not physically present), and the non-emergent dispatch of the Fire Department. The fact that radios could not be used between the control room and the IML also highlighted a long-standing problem with the encrypted radio system.

**H-Canyon:** The Site Rep observed the receipt and loading of the first cans of Los Alamos National Laboratory highly enriched uranium oxide into charging bundles. The operators spent 2+ hours dressed or partially dressed in anti-contamination clothing waiting for the cans to arrive from HB-Line. When the cans arrived, it was discovered that none of the bundle caps in two large bags would easily slide onto the new charging bundles because the diameters were too similar. However, operators were eventually able to get the caps on and load the bundles. Delays were also encountered while the Site Rep watched control room activities during the start-up of First Cycle for the first Super Kukla material. After troubleshooting why a mixer-settler bank impeller would not start, it was determined that the controller button needed to be pushed in for awhile to recognize the command. While trying to start the process with cold streams, the process was automatically shut down when the counts on a neutron monitor exceeded the interlock set point. This increase was not confirmed by a second monitor and work was allowed to resume.