

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

TO: Steven Stokes, Technical Director
FROM: William Linzau and Rory Rauch, Site Representatives
SUBJECT: Oak Ridge Activity Report for Week Ending April 24, 2015

Building 9204-2: In April 2013, an operator was injured after being exposed to lithium hydride (LiH) dust while conducting maintenance on dust processing equipment. Since that event, the equipment has been shut down (see 4/5/13 report). On April 2, 2015, operators were conducting a work activity to remove the residual LiH from the equipment by using a nitrogen purge to flow dust into a glovebag, but had to stop when the high oxygen level alarm activated. In response, the Shift Manager made an unplanned entry into the appropriate limiting condition of operation (LCO), which called for suspending dust producing processes and securing the area. During the next several days, operators took action to reduce the oxygen level in the equipment and glovebag by increasing nitrogen flow and the Shift Manager exited the LCO. The equipment was placed in warm standby mode (no processing allowed) as activities to lower the oxygen level continued. Late last week, Fire Protection Engineering and Development personnel identified additional risk because the oxygen level was still above the lower flammability limit and they determined that the potential for hydrogen generation, static electricity discharge, and suspended LiH dust in the glovebag presented a fire/explosive hazard. CNS management implemented the site's emergency maintenance procedure and, over the next several days, personnel were able to safely remove the glovebag and eliminate the hazard.

Last week, in a separate event, a small fire occurred in a salt (LiH)-contaminated waste container in a processing area of Building 9204-2. Operators had placed a salt-contaminated cheese cloth in the container and were preparing to depart the area when they smelled an acrid odor and discovered the small fire. One operator applied an extinguishing agent (coke powder) while the other notified the area supervisor, who in turn notified the Shift Manager. The Shift Manager contacted the Fire Department Organization, which responded to the scene and made a final determination that the fire had been extinguished. Special Materials Operations (SMO) personnel believe the cause of the fire was a reaction between residual LiH powder and water, likely from perspiration on salt-contaminated gloves that had been placed in the container without being given time to dry. During the fact-finding meeting for the event, SMO management committed to review, evaluate, and revise training as needed to clearly communicate the prohibition of moisture in salt-contaminated waste containers. SMO management also plans to provide an immediate refresher briefing on the same prohibition and post all salt-contaminated waste containers with a sign to communicate the moisture-related hazard.

Buildings 9212 and 9215/Conduct of Operations: Last week, a process engineer discovered that the documented post-machining weight of an enriched uranium part was greater than its documented pre-machining weight. Nuclear Material Control and Accountability (NMC&A) custodians traced the source of the discrepancy to a documentation error in which a Building 9212 operator inadvertently logged the part assay as the part weight. Special Nuclear Materials Operations personnel missed several opportunities to identify the discrepancy, including a procedurally-directed check to verify that the weight of the item, as measured upon receipt in Building 9215, matched the weight of the item recorded in Building 9212. The responsible Production management teams are evaluating potential error rate reduction methods (e.g., repeat-back protocols, sign-offs) to prevent recurrence.