DEFENSE NUCLEAR FACILITIES SAFETY BOARD

June 18, 2010

TO: T. J. Dwyer, Technical Director
FROM: M. T. Sautman and D. L. Burnfield, Site Representatives
SUBJECT: Savannah River Site Weekly Report for Week Ending June 18, 2010

F-Canyon: Operators must puncture sealed cans taken from transuranic waste drums. In order to allow real time radiography technicians to later verify these cans are punctured, operators insert a small survey flag through the punctured hole and then bend the pole around the outside of the can. Rather than simply inserting a flag into a can this week, an operator bent the metal pole in half before inserting it. As he inserted the bent pole into the hole, the bottom of the metal pole (now sticking up) punctured his leather glove, 20-mil glovebox glove, 3 layers of latex surgeon's gloves, cotton glove liners, and his index finger. Because this remediation occurs in a glovebox-like enclosure, any item inside becomes highly contaminated with Pu-238, Pu-239, and Am-241. Initial frisking of the wound and blood indicated that the wound was contaminated. Medical professionals decontaminated the wound and chelated the worker prior to sending the worker to have the wound counted. They then excised the surrounding tissue twice. The site placed the worker on daily intravenous chelations and a strict bioassay regimen. No initial dose estimates are available at this time.

After a similar puncture in April 2006, operators began handling sharp waste items with tools, but these flags were handled by hand since they were considered to be tools, not waste. The work manager is reviewing how he authorized the use of the flags, but it will be hard to anticipate and prevent the misuse of all tools. The operator stated that he had started bending the poles to prevent them from falling out. The operator inserted the two previous flags per his training so it is clear he understood the approved technique. The bottom of the pole is not pointed and it requires a significant amount of force to puncture the multiple layers of gloves. As past events have demonstrated (see 8/25/06 and 10/26/07 reports), all waste remediation workers need to stay vigilant to detect and eliminate the use of any unapproved techniques during waste remediation.

Emergency Preparedness (EP): The Site Rep reviewed natural phenomena drills conducted since 1999. In general, the number of these drills dropped off considerably across SRS after 2003. The tornado and hurricane drills conducted currently focus primarily on taking shelter and evacuating the site rather than recovering from a strike. Although the H-Tank Farm Documented Safety Analysis requires operators to take several actions after an earthquake, those actions have not been tested in a seismic drill since 2002. The last time operators demonstrated the manual deployment of the portable ventilation system (to prevent flammable gas concentrations in tanks) was in 2003. A significant Pu-238 source term remains in 235-F and it is located extremely close to the Mixed Oxide Fuel Fabrication Facility and the Waste Solidification Building construction sites. Because of the lack of operations, SRNS stopped conducting drills at 235-F. Resuming these drills appears warranted since some of the postulated accidents scenarios are independent of operations. Furthermore, as a result of F-Area consolidation, staff unfamiliar with 235-F may need to respond during an accident. The last drill involving multiple plumes was in 2000, but SRNS is developing a joint H-Canyon/HB-Line seismic drill scenario. Although there are now 2 operations and 3 construction contractors at SRS, drill scenarios have not focused on the interfaces between contractors during an event that affects multiple facilities. (See 5/14/10 and 6/11/10 reports).

Safety Analysis Documentation: The site identified a gap in the hazard analysis for a small set of accidents involving receipts and shipments of materials at K-Area and F/H Lab. The site reviewed the new information and concluded that a Potential Inadequacy in the Safety Analysis (PISA) exists for both facilities. At F/H Lab, non-spill events involving containerized liquid samples and TRU drums during loading and unloading pose the problem. The F/H Lab has set up a barricade during loading and unloading operations of radiological materials to exclude unanalyzed hazards from entering the area. At K-Area, the hazards during transportation outside the building, but inside the fence have not been adequately analyzed. The site will escort all shipments of affected radiological materials between the building and the fence line until this issue is resolved.