DEFENSE NUCLEAR FACILITIES SAFETY BOARD

December 27, 2013

TO: S. A. Stokes, Technical Director
FROM: M. T. Sautman and D. L. Burnfield, Site Representatives
SUBJECT: Savannah River Site Weekly Report for Week Ending December 27, 2013

HB-Line: Plutonium solution will be stored in two column feed tanks (located inside a glovebox) until it is transferred through piping to the anion exchange columns located on another floor. In October, workers removed and reinstalled orifices in the piping. Last Friday, workers recirculated solution (7 M nitric acid, but contaminated from prior activities) as part of post-maintenance testing. As soon as the pump started, solution began spraying from the orifice flange. The spraying solution not only dripped down the inside of the glovebox, but also wetted a sump conductivity probe. This tripped an interlock which shut down the pump. Approximately two liters of solution sprayed over eleven seconds. Shortly thereafter, workers noticed that solution had wicked through a neoprene glovebox gasket and dripped down the exterior wall of the glovebox, forming a small puddle on the floor. The workers safely evacuated the room. Over the next several days, workers entered the room wearing plastic suits to wipe up the spill and decontaminate the floor and glovebox wall. Monitoring did not detect any nitric acid fumes or airborne radioactivity. However, solution continued to wick through the glovebox gaskets over the weekend. These gaskets line the seams created when this glovebox was cut into three pieces to facilitate installation. Contamination levels were as high as 20 million dpm α/100 cm^2. At this time, SRNS does not know if the cause of the spray was a loose flange or a problem with the flange's gasket. Because it is difficult to use torque wrenches inside a glovebox, the maintenance work package only required the bolts to be "snug tight." Normally workers torque the bolts of this type of flange to 28 ft-lbs. Considering how fast the solution wicked through the glovebox gaskets, the site rep questioned whether the glovebox is adequately protecting workers from glovebox spills. The contamination levels could have been much higher if this had been dissolved plutonium solution from H-Canyon rather than simulant.

Waste Solidification Building (WSB): In light of the anticipated start-up date, NNSA issued direction to SRNS that the WSB will be placed in lay-up for a period of not less than five years following acceptance and startup testing of components and systems. Balance of plant construction is to be completed, but portable equipment not required for acceptance or startup testing, cementation glovebox windows, fiber optic cables, and capital spares will not be installed nor will additional equipment be purchased. The contractor is to develop the safety basis documents, submit them to NNSA, and maintain their configuration, but NNSA will not formally approve them during this lay-up period.

2013 Year in Review Part One: SRNS's accomplishments this year included the following:

- H-Canyon dissolved 31 used fuel bundles and twenty plutonium bundles.
- H-Canyon remediated 125 containers of legacy transuranic waste.
- HB-Line blended four containers of highly-enriched uranium/Np and loaded this into pipe overpack containers for eventual shipment to the Waste Isolation Pilot Plant (WIPP).
- HB-Line became a conditionally qualified supplier for the Mixed Oxide Fuel Fabrication Facility.
- E Area completed 149 shipments (1035 m^3) of transuranic waste to WIPP.
- E-Area disposed 4700 m^3 of low-level waste.
- K-Area completed the design for the Final Storage/Presentation vault and began construction.
- L-Area processed three fuel casks containing 24 fuel assemblies and shipped 4 fuel casks to H-Canyon.
- The Waste Solidification Building is more than 95% construction complete.
- The tritium facilities completed all required loading, packaging, and shipping of reservoirs.
- The Tritium Extraction Facility completed extraction of the Cycle 10B target rods.
- SRNL completed a ventilation upgrade that addressed seven Recommendation 2004-2 gaps.