

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

December 28, 2012

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 December 28, 2012

Nuclear Safety: A URS team focusing on new approaches for developing safety bases for liquid waste facilities in the DOE complex decided to pursue three recommendations:

- Select a few hardware controls and safety management program elements and perform hazard analyses assuming they exist. The desire is for a minimal set of preselected controls to overwhelm the hazards and bound many operations activities.
- Develop a consistent set of modes with step in/out criteria based on risk and associated with a safe harbor to enable current and future liquid waste lifecycle operations.
- Redefine chemical hazards and controls by reducing/eliminating nuclear grade hazard controls when the contractor believes commercial industry controls are appropriate. A corporate standard would be developed to implement this process.

A potential concern with the first approach is that performing “unmitigated” analyses that actually credit a mitigative control (i.e., sand filter) could cause certain accident scenarios to screen out from further analysis. This might preclude the possibility of crediting other controls that may actually prevent the accident or which may provide additional layers of defense. One potential problem with relying on commercial chemical industry controls is if the analyst does not consider the potential for the chemical hazard to impact nearby nuclear operations or if the material at risk is actually a combination of chemical(s) and nuclear material.

2012 Year in Review Part One: SRNS’s accomplishments this year included the following:

- H-Canyon dissolved 24 used fuel bundles and 10 plutonium bundles.
- HB-Line blended nearly 75 kgs of plutonium oxide and loaded it into pipe overpack containers. E-Area shipped 33 containers of this material to the Waste Isolation Pilot Plant (WIPP).
- H-Canyon remediated 36 large containers of legacy transuranic (TRU) waste.
- F-Canyon remediated 613 TRU waste containers, including high fissile gram equivalent and high dose rate containers. Last personnel contamination or injury was more than 2 years ago.
- E-Area completed 184 shipments (1271 m³) of contact/remote handled TRU waste to WIPP.
- E-Area certified an additional 551 m³ of TRU waste for future shipment to WIPP.
- E-Area determined that an additional 577 m³ of legacy TRU waste was actually low level waste (LLW). SRNS disposed this waste onsite or shipped it to offsite mixed LLW facilities.
- E-Area disposed of 12,900 m³ of LLW, including 49 legacy reactor heat exchangers.
- The Waste Solidification Building is more than 78% facility construction complete.
- K-Area completed 9 destructive evaluation surveillances of plutonium cans, completed heavy water sampling, and supported the LLNL de-inventory effort.
- L-Area processed 13 fuel casks containing 205 fuel assemblies and shipped fuel to H-Canyon.
- The tritium facilities completed all reservoir shipments and stockpile stewardship program requirements.
- The Tritium Extraction Facility completed extraction of the Cycle 10A target rods.
- SRNS evaporated the water in the C Reactor disassembly basin and then grouted the basin.
- SRNL retrieved plutonium from two legacy boxes, characterized a high activity waste tank trailer, and removed 43 kg of legacy high level waste sludge and glass from the shielded cells.
- SRNS has not had an ORPS reportable personnel contamination event since October 2010.