

## DEFENSE NUCLEAR FACILITIES SAFETY BOARD

January 30, 2015

**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 January 30, 2015

**Board Visit:** The full Board visited the Savannah River Site this week to visit several defense nuclear facilities and discuss safety issues.

**Tritium:** Inside an H-Area New Manufacturing glovebox, a worker used a metal tool (similar to a dental pick) to remove an O-ring from reservoir unloading equipment that he was holding in his other hand. The hand with the pick slipped and the pick punctured the 30 mil butyl rubber glove, the nitrile glove, the cotton liner and the skin on his palm. Emergency responders washed the wound with soap and water and brought the worker to medical. Surveys found contamination on all the gloves including 2791 dpm tritium/100 cm<sup>2</sup> on the nitrile glove. Preliminary bioassay results are encouraging. SRNS replaced the damaged glovebox glove, temporarily suspended all tritium work until workers could be briefed on the event, and suspended unloading operations. A number of factors contributed to this event. The assisted hazards analysis (AHA) and procedure required that workers wear 20 mil polyurethane-Hypalon™ over gloves on top of glovebox gloves when exposed to potential sharps, but neither worker was wearing these when the puncture occurred. That being said, the procedure warnings about sharps were focused on two other tasks and the workers stated that they did not consider the tools they were using to be sharps. Even if the worker had been wearing the puncture resistant over gloves, they might not have prevented the puncture. Despite extensive testing, SRNS has had difficulty finding a glove that prevents cuts and punctures, minimizes permeation of tritium and oxygen, and does not inhibit the worker's dexterity. The procedure also stated that needle nose pliers were to be used to remove O-rings and this tool is what the AHA analyzed. While needle nose pliers can be used to remove other O-rings used during unloading activities, this specific O-ring would be very difficult to remove considering the relative size of the pliers and the dovetail groove for the O-ring. As a result, these and other workers used an O-ring extractor kit whose tools had not been evaluated by safety. This might have been identified earlier except that there was not an operator on the AHA team and the procedure approver and validator were the same person. SRNS had tried to incorporate lessons learned from a previous puncture (see 6/18/10 report) and reduce the reliance on skill-of-the-craft in the procedure, but workers were not briefed on the changes with regards to tools and personnel protective equipment (PPE). The pre-job briefing was vague (use proper PPE) and it was left up to the workers to determine when they needed additional hand protection. SRNS is currently investigating the use of different tools and/or a vise (versus holding equipment in a hand). SRNS is also investigating the use of a program to control sharps and tools like F-Area did after their puncture.

**Building 235-F:** Last week the site rep identified that several lighting circuits had been left on inside the shielded cells of Building 235-F and that additional evaluation was required regarding the control panels inside room 1002. This week DOE personnel and the site rep discussed potential actions that could be taken to provide assurance that the additional defense in depth protection that the Board desired will be met.