

## DEFENSE NUCLEAR FACILITIES SAFETY BOARD

April 16, 2010

**TO:** T. J. Dwyer, Technical Director  
**FROM:** D. L. Burnfield and M. T. Sautman, Site Representatives  
**SUBJECT:** Savannah River Site Weekly Report for Week Ending April 16, 2010

**Solid Waste Management Facility:** After unloading a drum from a culvert, inspectors measured unexpectedly high neutron radiation (>500 mrem/hr). In the resulting confusion, a worker inadvertently entered an area requiring a respirator. Furthermore, the opening of a potentially high plutonium curie drum required a Limiting Condition for Operation be entered. While workers tried to place the operation in a safe condition, the site rep noted that the guard for the unposted high radiation area could have been positioned better. Facility personnel took prompt action to improve the control of the high radiation area.

The site rep also observed the resumption of the Functional Area Manager assessment of computer-aided radiography of large containers in the Low Activity Waste Vault (see 4/9/2010 report). Similar to last week, procedure corrections were required to conduct the activity. In addition, the site rep observed the placing of steel boxes containing waste that resulted in high radiation areas in a slit trench in E-Area.

**F-Canyon:** A Specific Administrative Control (SAC) requires an engineering evaluation be performed prior to opening a sealed inner container inside a transuranic waste drum. This calculation determined that a shielded puncturing device be used (see 3/12/10 report) when opening sealed containers (diameters > 5") to protect the worker from a potential hydrogen explosion. The repackaging procedure requires that all crimped, pressed, or welded sealed containers be punctured using this device. This week, a work crew violated the procedure when they opened a small paint can using a screw driver rather than the puncturing device. The crew did not realize a paint can was a pressed sealed container. The site rep questioned the wording of the SAC because it only requires the calculation be performed, not that the shielded puncturing device actually be used. SRNS agreed to revise the SAC to ensure it reflected their intent.

**ARRA:** The 293-F stack is adjacent to building 235-F, a former <sup>238</sup>Pu heat sources production facility. A contaminated ventilation duct runs across the 235-F roof. The toppling of the stack onto the ventilation duct poses a significant hazard to the collocated work force. SRNS plans to reduce the hazard by removing the top portion of the stack to eliminate the possibility of it striking the ventilation duct. The site rep reviewed the contractor plans for this work scope and reviewed how the contractor would ensure their equipment did not inadvertently fall and strike the ventilation duct while working on the stack.

**Tank 48:** SRR is updating the Preliminary Consolidated Hazards Analysis for steam reforming. Two of the main hazards are explosions caused by coal dust or hydrogen gas. SRR is considering establishing a safety significant dust management program modeled after National Fire Protection Association 654: *Standard for the Prevention of Fire and Dust Explosion* with the piping and secondary confinement ventilation system providing additional defense. SRR is also questioning whether a deflagration in the off-gas system (OGS) outside the process enclosure is actually credible. Draft analyses indicate that in order for a flammable concentration of hydrogen to be reached, carbon would have to build up in the denitration and mineralization reformer (DMR) for several hours while accompanied by a loss of feed material to the DMR and simultaneous low temperatures/oxygen in the carbon reduction reformer (CRR). Oxygen would still need to be introduced by a breach in the OGS downstream of the CRR.

**Radiological Protection:** A SRNS causal analysis of recent radiological events (see 2/26/2010 report) did not discover any unexpected causal factors. Recommended corrective actions included increased management field observation of routine events, increased supervisory watches and self-assessments, improved work planning and control, and better capturing of feedback and improvement for activities.