

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

February 15, 2013

TO: S. A. Stokes, Acting Technical Director
FROM: M. T. Sautman and D. L. Burnfield, Site Representatives
SUBJECT: Savannah River Site Weekly Report for Week Ending February 15, 2013

H-Canyon: SRNS is investigating an event where dissolved Sodium Reactor Experiment fuel apparently was sucked out of a tank's dip tube and into a hose on the second level. A few hours earlier, operators had declared the tank's specific gravity transmitter to be out-of-service due to a plugged dip tube. When a maintenance worker was unable to dislodge the plug with pressurized plant air, he used a portable steam cart to clear the plug with 150 psi steam. After steam is used, the standard practice is for workers to purge the lines with air for twenty minutes to cool them. This prevents steam from condensing in the dip tube, creating a vacuum, and pulling material from the tank through the dip tube and into the work area. During this air purge, a nearby plant air header developed a pinhole leak. The worker's response to this leak and the resumption of work on the steam cart led to a still unknown sequence of actions that caused the dissolved fuel to flow into the hose that connected the steam cart to the dip tube's wall nozzle. SRNS is also investigating the delay in the discovery of the high radiation in the hose (22 rem/hr contact, 6 rem/hr at 30 cm) and contamination on the end of the hose and on the floor. Although SRNS did not detect any increase in airborne radioactivity, they pulled the dosimeters of all workers in the vicinity of the event and placed the workers on a 24-hour bioassay. Preliminary results are encouraging. SRNS is currently trying to determine what happened and how to safely handle the acidic and highly radioactive solution currently in the cart's disconnected hose. Elsewhere, SRNS transferred the solution from the dissolver with the apparent cooling coil leak and will be conducting an integrity test next week. (See 2/1 and 2/8/13 weekly reports).

HB-Line: DOE-SR approved the new Documented Safety Analysis. DOE also directed SRNS to maintain and operate the HB-Line diesel generator and vessel vent system piping as safety significant (SS) and to formally upgrade them to SS within six months. This addresses two of the staff's concerns with the proposed explosion prevention strategy. (See 2/8/13 weekly report).

Recommendation 2012-1: SRNS is proposing removing the existing fire alarm panel, Halon control panels, and smoke/heat detectors and installing a new fire alarm panel along with new addressable smoke detectors, heat detection wire in cable trays, horns, and strobes. The new system would be installed in areas containing material at risk (MAR) and those areas that will support the future removal of this MAR. However, funding for this new system and additional planned field work this calendar year needs to be provided since existing funds will run out next month.

F-Tank Farms: Last week SRR attempted to move a submersible mixing pump (SMP) from tank 5 to tank 8. Once they lowered it into the tank, it encountered interference and SRR used a double clamp arrangement to support the pump. (See 2/8/13 weekly report). The preferred alternative of F-Tank Farm personnel is to obtain another crane and attempt to lower the pump into the tank past the interference. To accomplish this, they will allow more of the pump weight to be used as a motive force to help it slide in. Should they not be able to fully insert the SMP into the tank, they will use jacks to lift the pump until it is past the interference. Then they will use the crane to lift the pump out the rest of the way and insert it into a storage box. They want to avoid using the crane for the full removal in case the pump becomes slightly stuck by the interference and there is the possibility of it suddenly jerking free. F-Tank Farm personnel believe that once the pump is placed in the box, it will no longer be usable. F-Tank farm personnel will present the alternatives to senior management late next week. Until a final determination is made, the pump will remain clamped in place.