DEFENSE NUCLEAR FACILITIES SAFETY BOARD

October 12, 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 October 12, 2012

HB-Line/H-Canyon: DOE authorized the start of plutonium dissolution. Preparations for plutonium oxide production for the Mixed Oxide Fuel Fabrication Facility continue.

The site rep met with DOE and SRNS to discuss the issues identified during last week's review of the HB-Line Documented Safety Analysis. The fifth and sixth level fire detection and alarm system will remain safety significant to protect the facility worker. The Limiting Condition for Operation for vessel purge flows will be revised to make it clearer what operations are allowed after a low flow alarm, what alternate methods are acceptable, and what performance criteria these alternate methods must satisfy. SRNS clarified that the low flow alarm and the piping from the rotameter to the tank is safety significant, but the functional classification of the air supply itself is still under discussion. The site rep also reviewed the design and operation of the ion exchange columns to see where radiolytically generated hydrogen could accumulate and the potential impact to the column rupture disc and vent line tubing if an explosion occurred. The site rep also discussed the design of existing safety systems to understand what additional modifications and analysis would be required to upgrade them.

H-Tank Farms: Based upon the Specific Administrative Controls review SRR completed at the Defense Waste Processing Facility (see 9/21/2012 report) they are currently reviewing the implementation of all safety basis controls at tank farms. The team identified an issue with a recirculation steam jet that was installed in pump tank 3 during the 1960s, but which has not been used for at least three decades. Since this jet is not described in the documented safety analysis (DSA), there are no credited design features to prevent its operation. Because this operation could aerosolize the waste, an unanalyzed hazard, SRR declared a Potential Inadequacies in the Safety Analysis (PISA). Even though SRR did not find any procedures that operate this jet, they went ahead and administratively locked close the manual isolation valve and verified the installation of a blank spectacle flange to ensure the jet would not be operated. As part of the extent of condition review for the PISA, SRR discovered that Tank 42 has spargers (not used since the 1980s) that also do not have adequate controls to prevent their operation. SRR placed an administrative lock on the steam isolation valve for the spargers and is in the process of determining if a blank flange has also been installed.

Savannah River National Laboratory (SRNL): As part of an experiment examining the transport of contamination through soil, SRNL spiked a piece of simulated Saltstone grout with contamination. During the experiment, rain water was allowed to fall on the top of the apparatus, which was later collected after it drained to the bottom of the apparatus. This water sample was then analyzed by radiological protection (RP) personnel as if it were a routine environmental sample. The team running the experiment failed to perform a hazards analysis for the testing of the water sample, which involved drying the 5 ml sample on a hot plate. Both the RP personnel and the principle investigator were surprised when they found 40,000 dpm/ml beta-gamma. This concern was discussed with their management, but they continued to count additional samples in the same manner. These samples had 100,000 dpm/ml beta-gamma. Only at this point did they declare a time out and stop counting. Later, more senior management determined that they did not have adequate controls in place. While the actual hazard was small in this case, this event illustrates weaknesses in the SRNL work planning and control process.

F-Canyon: SRNS completed their mission for the transuranic (TRU) waste drum repacking line this week. The few remaining legacy TRU waste drums will be repacked elsewhere.