DEFENSE NUCLEAR FACILITIES SAFETY BOARD

January 9, 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 9, 2015

H-Area: Wind blew a loose ground wire onto one phase of an electrical feeder and caused a short to ground. This resulted in the loss of two transformers supplying H-Canyon and HB-Line. Two of the three H-Canyon exhaust fans lost power. Although the H-Canyon and HB-Line diesel generators started and picked up their loads, the H-Canyon exhaust tunnel vacuum low-low alarm activated briefly when the tunnel pressure dipped below the Technical Safety Requirement (TSR) minimum. At HB-Line, the standby glovebox exhaust fans started and a portable air compressor maintained purge air to the vessels. SRNS posted portions of HB-Line as a contamination area/airborne radioactivity area until air monitoring was restored and surveys confirmed that there was no spread of contamination.

Defense Waste Processing Facility: The chemical process cell primary purge system flow rate briefly dipped below the TSR minimum, actuating a safety significant interlock to isolate steam to the Sludge Receipt and Adjustment Tank (the only vessel in operation mode). Although the safety grade nitrogen purge system started, it was not fast enough to prevent the spike. Engineers reviewing system data identified that a number of similar instances in the last week where both the primary purge system flow rate dipped and the bulk backup nitrogen system increased flow without triggering the interlock. The interesting thing is that each occurrence happened at nearly the same time of day. SRR continues to investigate the reason for the system instability.

SRR will begin tracking when vessels are not being agitated to ensure that the vessel does not exceed the maximum agitation shutdown period, which they have recently calculated. Furthermore, SRR will monitor agitation for the two tanks that are subject to catalytic hydrogen production during/after acid additions. If agitation is lost, an operator will isolate steam and turn on cooling water until engineering develops a recovery plan (see December 19 and 24, 2014 weekly reports).

F-Area: Last month, SRNS performed maintenance on a battery charger circuit breaker that supports a diesel generator and placed a lockout on the operator (switch) of the circuit breaker case. When the maintenance was complete, a worker removed the lock and put the switch in the closed (normal) position. However, a misalignment with the switch prevented the circuit breaker from actually closing. Although a close examination would have revealed the problem, two operators signed off that the switch was in the closed position and a nearby mechanic agreed. Because the circuit breaker was not actually closed, DC voltage was unavailable to the diesel generator between December 11 and 30 and thus the diesel generator would not have started in the event of a loss of power. There are at least seven other circuit breaker handles of similar design and one of those had previously been repaired because of a similar problem. SRNS is taking action now to prevent another misalignment.

Tank Farms: A Potential Inadequacy in the Safety Analysis (PISA) was declared when ~6 liters of mercury was found in the overheads from the 3-H Evaporator. Mercury is a normal by product of the sludge batches and in periodically collected from the evaporator. However, normally only a few hundred milliliters are collected. Currently, it is unclear why this amount of mercury was present.