

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

January 10, 2014

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 10, 2014

Cold Weather: The temperature on the site began to fall sharply Monday evening and by early Tuesday morning reached the low teens and did not rise above freezing until Wednesday afternoon. Shortly after midnight Tuesday, freezing instrument lines caused both boilers at the biomass cogeneration facility to shut down cutting off steam to F, H, and S Areas. The loss of steam heat caused temperatures to drop in the nuclear facilities in those areas, especially F/H Laboratory and H-Area Old Manufacturing (HAOM). Interior equipment and piping was not heat traced because they relied on steam heat instead. In order to minimize the risk of freezing, many facilities shut down supply fans, went to the minimum required number of exhaust fans, recirculated water in pipes and tanks, used portable heaters, and/or drained fire suppression headers and air handling unit coils. Some of these actions required entry into Limiting Conditions for Operations and fire patrols. At tank farms, SRR shut down tank ventilation systems to avoid moisture accumulation on high efficiency particulate air filters, which can allow contamination to wick through the filter. SRNS and SRR shut down nuclear operations in affected facilities. Despite these efforts, several air handling units had ruptured coils and many systems developed leaks (mostly water). At HAOM, fire sprinkler heads ruptured and frozen fire suppression system drop legs fell. At Saltstone, when a pressurized rubber ball was launched into the grout transfer line to clean the line out, a coupling ruptured and ~50 gallons of contaminated flush water spilled on the ground. SRR is investigating whether the cold weather contributed to this failure.

Steam started reaching the local area shut off valves Thursday and restoration of facility steam systems is ongoing. However, major repairs will be needed to restore the steam plant, as well as affected facility systems, to full capability. Work crews will work through the weekend and next week repressurizing systems and fixing leaks. Some facilities may need to develop Technical Safety Requirement response plans because of the expected time to restore their fire suppression systems.

Conduct of Maintenance: The SRNS investigation into a HB-Line glovebox acid spray leak (see last two weekly reports) identified several troubling issues. First, when the mechanic dropped the NT-11 orifice plate, he did not notify his supervisor and relied on touch (through several layers of gloves) versus a visual inspection to determine if the gasket was still attached. The mechanic did not realize that a gasket had fallen off. Second, when SRNS inspected the NT-12 orifice plate this week, they found all four bolts on the flange loose (i.e., finger tight at best). Third, when SRNS inspected the seams of the glovebox, about one-third of the bolts used to tighten the seal were loose. Fourth, the work package did not require an examination as required by ASME 31.3 Section 15060. Fifth, the mechanic installed 1/16" thick gaskets. Nobody noticed that while the bill of materials incorrectly stated 1/16" gaskets, the work instructions and drawing required 1/8" gaskets. Sixth, the day shift crew bagged in the gaskets and other equipment. The night shift first line manager signed off a step in the work package without verifying the gaskets in the glovebox were the correct size. There are additional issues with the lack of sharing previous lessons learned and the mechanic's response to the leak. SRNS had a stand down for the H-Area maintenance workforce this week and will be conducting a stand down for HB-Line on Monday. SRNS management appreciates the significance of the above issues and has been widely communicating the lessons learned to other maintenance and facility managers. Engineers are also looking at installing a flange guard to protect against future leaks and are looking at ways to better seal the glovebox seams.