

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

April 10, 2015

TO: S. A. Stokes, Technical Director
FROM: D. L. Burnfield, Site Representative
SUBJECT: Savannah River Site Weekly Report for Week Ending April 10, 2015

Tank Farms: Tank 50 serves as the feed tank for Saltstone. SRR samples Tank 50 for mercury as part of the sampling for the Saltstone waste acceptance criteria. The samples for the last couple of years have shown increased levels of Hg and for the last six months to a year, the levels appear to be rising. SRR has also observed increased Hg in the 3-H evaporator mercury removal tank. (See 1/9/15 and 1/16/15 reports.) In February 2015, SRR employed an integrated liquid waste team to explore the causes of the increased mercury in the liquid waste system. The analysis activities characterize the forms of mercury (organic vs. inorganic) as well as the specific compounds present. An offsite laboratory takes several months to analyze the sample and the sample from January, which SRR received on 4/1/15, showed higher levels of an organic mercury compound than expected. Past sample analysis has shown mercury to be primarily inorganic. In tank farms, this is primarily a worker safety issue since the current personal protective equipment has not been evaluated for permeation from this organic compound. Saltstone is expected to declare a potential inadequacy in the safety analysis (PISA). Saltstone personnel state there are several accident scenarios that exceed the acceptable threshold after applying 2-sigma uncertainty to the analysis results. SRR has put transfers to Saltstone on hold until they resolve this issue.

Tank 15 is a Type II tank constructed from ASTM-285-B carbon steel with non-stress relieved welds. Because Tank 15 has known leak sites, no liquid waste additions have been allowed into the tank since 1982. Thus, the upper layer of supernate has completely evaporated leaving a layer of sludge that is directly exposed to the tank vapor space. The primary tank sits in an annulus pan 90 feet in diameter and five feet high. The sludge in the bottom of the tank must be rewetted in order to allow for sludge removal. Rewetting the sludge requires adding 40 weight % sodium nitrite solution and water inhibited with sodium hydroxide above the known leak sites. SRR expects that some level of material will travel through the leak sites, and some material may leak into the pan. SRR will make the additions in discrete levels, will monitor the annulus level, and will perform periodic remote viewing. The contingency transfer system will be available to transfer material from the annulus back into the tank should an appreciable amount of waste leak into the annulus.

Salt Waste Processing Facility (SWPF): While inspecting the radiographs that had been retaken because the originals were either lost or unacceptable quality, foreign material was found. The material was located in piping where the flushes have not yet been performed. In addition, in some piping where the flushes have been performed, minor levels of liquid was also found. According to Parsons, neither the foreign material nor the water that has been found to date will cause a problem during operation. In addition, an inspection of non-safety related motors received from a vendor revealed wiring that did not meet the appropriate consensus standard. The extent of condition of these deficiencies has yet to be determined.