DEFENSE NUCLEAR FACILITIES SAFETY BOARD

January 29, 2016

TO: S. A. Stokes, Technical Director
FROM: M. T. Sautman, D. L. Burnfield, and Z. C. McCabe Site Representatives
SUBJECT: Savannah River Site Weekly Report for Week Ending January 29, 2016

Criticality Safety: SRNS is pursuing several actions in response to problems identified with the analysis of a HB-Line flush sample (see 1/22/16 report). In order to address the data entry error, SRNS will have two technicians separately input the data and analyze each set of split samples. Second, SRNS will run blanks at the beginning and end of each of these sample batches plus compare the results of the split samples automatically to ensure they are consistent. Third, SRNS is examining software flags and other related sample results that can help identify abnormal results. Fourth, SRNS will review why their formal assessment of the analytical methods used to support the HB-Line plutonium (Pu) oxide production process did not identify that the acid molarity and Pu concentration of samples could be outside the instrument calibration ranges specified in the procedure. Fifth, SRNS is looking at their analytical procedures to identify implied controls that may not be verified in the performance section of the procedure. Sixth, in order to better quantify the uncertainty and instrument bias, SRNS is comparing previously reported Pu concentrations for five tanks with samples taken for accountability purposes that were analyzed with a more accurate (and time consuming) method. Seventh, SRNS is reviewing all past transfers from HB-Line to H-Canyon to identify if the plutonium concentration of any of those transfers would challenge the criticality safety limit or criticality safety operating limit, taking into account the increased bias/uncertainty. Eighth, SRNS is taking a hard look at data quality across the board and looking for similar issues with other analytical methods. Other ongoing actions involve procedure revisions, briefings to technicians, and reviews of their Conduct of Analytical Measurements Manual.

H-Canyon: Earlier this month, SRNS identified leaks on the safety significant (SS) rotameters which measure the purge airflow used to maintain hydrogen concentrations below 25% of the lower flammability limit inside the vessel (see 1/8/16 weekly report). Afterwards, H-Canyon personnel conducted leak checks on the additional 175 SS and general service rotameters for the remaining canyon vessels. SRNS found leaks on 35 rotameters, twelve of which are SS. Typically, a canyon vessel will have a minimum of three instrument air lines, each with a separate rotameter, purging the vessel. Per the H-Canyon safety documentation, only two of the three or more rotameters on a canyon vessel need to be operable to ensure an adequate purge. SRNS found that two separate canyon vessels each had two leaking SS rotameters and established alternative means of purging them. Maintenance personnel investigated these leaks and determined they were insignificant and that sufficient air was flowing into the tanks. However, the current safety documentation does not allow for any leakage. The current path forward prioritizes repairing the two sets of two rotameters on the canyon vessels with an alternate purge followed by the additional eight SS rotameters.

Recommendation 2012-1, *Savannah River Site Building 235-F Safety:* The risk reduction team previously identified cracked windows and other potential problems that could affect the removal of material from shielded cells 6-9 (see 12/18/15 weekly report). Further review of the maintenance window of cell 6 (the most highly contaminated cell of this group) revealed that there is only one window pane between the inside of the cell and the west maintenance room and that this window pane has a wire that penetrates the window. This opening is apparently the source for the minor loose surface contamination that is found in the room. SRNS has developed a procedure to seal the hole and reinforce the rest of this window.