

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

June 30, 2017

TO: S. A. Stokes, Technical Director
FROM: M. T. Sautman and Z. C. McCabe, Resident Inspectors
SUBJECT: Savannah River Site Resident Inspector Report for Week Ending June 30, 2017

H-Canyon Exhaust (HCAEX) Tunnel: In a letter dated 12/16/15, the Board described multiple concerns with the ability of the degraded HCAEX Tunnel to perform its safety class (SC) function after a design basis earthquake (DBE). Specifically, one of the Board's concerns was the lack of justification for the SRNS assumption that degradation was limited to the exposed surface of the concrete. In response, DOE directed SRNS to take concrete samples from a part of the H-Canyon Facility that shares a wall that is also exposed to HCAEX environment (see 3/10/17 report). SRNS personnel declared a potential inadequacy in the safety analysis (PISA) which resulted in a positive unreviewed safety question based on preliminary test results from Savannah River National Laboratory (SRNL). In addition to the degradation already accounted for in the existing analysis, the SRNL test results suggest that an additional portion of concrete closest to the surface exposed to the HCAEX environment may be degraded to an extent that would affect the concrete strength. Therefore, the ability of the HCAEX tunnel to perform its SC safety function is indeterminate. SRNL plans to perform additional tests that will provide more information on the concrete exposed to the HCAEX environment. The final SRNL report is scheduled to be issued in September. SRNS is also planning to perform a non-linear structural analysis to determine if the HCAEX Tunnel is able to perform its safety function.

The scope of the PISA is limited to the ability of the HCAEX Tunnel to function during and following a DBE. SRNS engineers have determined that the tunnel can continue to provide its safety function under normal static loading conditions. In response to the PISA, H-Canyon personnel have identified multiple compensatory measures to reduce the risk after a seismic event if the tunnel failed concurrent with a radiological release. H-Canyon and HB-Line have halted all receipts of nuclear material in order to limit the material at risk. Additionally, because a significant contributor to the calculated dose consequence comes from a release from a ruptured transfer line during an active transfer, an operator will be positioned to manually shut down future transfers if the HCAEX Ventilation system fails. HB-Line personnel have limited the amount of concurrent resin column operations and now require an inspection to limit transient combustibles prior to performing plutonium oxide packaging activities.

Defense Waste Processing Facility (DWPF): While in Deliberate Operations (see 6/23/17 report) a mechanic found 51 volts of direct current (DC) after a lockout (L/O) was established on a pressure switch. The L/O work package did not specify that the power supply on the panel was 48 volts. The L/O writers, reviewers, mechanics, and work releaser assumed the power supply was 24 volts. The L/O work package referenced a single drawing that didn't specify the voltage of the power supply. During a fact finding meeting, the mechanic noted that when they were determining the L/O, they checked to confirm a safe energy state, but only noted that the current was DC and removed the leads before the voltage reading stabilized. After the shift operations manager released the work, the mechanic performed an additional safe energy state check, which was when they noticed the higher than expected voltage and took the appropriate actions.