DEFENSE NUCLEAR FACILITIES SAFETY BOARD

May 23, 2016

TO: Steven Stokes, Technical Director
FROM: William Linzau and Rory Rauch, Site Representatives
SUBJECT: Oak Ridge Activity Report for Week Ending May 20, 2016

Staff members R. Arnold and R. Oberreuter were on site supporting a review of NPO oversight.

Building 9212/Nuclear Criticality Safety (NCS)/Aging Infrastructure: In preparation for production-scale processing of briquettes in the Holden Gas Furnace (HGF) (see 1/8/16 report), CNS management directed Non-Destructive Assay (NDA) personnel to conduct additional surveys to confirm the amount of hold-up of fissile material in HGF ventilation exhaust ducts. These surveys identified that the duct system that supports operation of several systems (including the HGF) has accumulated fissile particulate hold-up above NCS administrative limits. Last week, in response to these survey results, the Building 9212 Shift Manager placed operations in the HGF on hold as various CNS organizations work to determine a path forward. This week, maintenance personnel cleaned a flame arrester-type filter to reduce the fissile loading in the system, but that effort was only partially successful in restoring the system to below NCS limits. CNS engineering personnel are evaluating near- and long-term solutions to address the build-up of material in the exhaust ducts prior to resuming HGF operations. These ducts have hold-up from roughly 50 years of HGF operations and are not known to have required cleaning to reduce loading until these recent NDA results.

Building 9212/Oxide Conversion Facility (OCF): NPO approved a safety basis change that modifies the frequency of surveillances on OCF safety systems from quarterly to annually. The OCF surveillances include functional testing of safety instrumented systems (SIS), which are credited controls in the Building 9212 Technical Safety Requirements. To develop the basis for this change, CNS engineering personnel reviewed seven years of data associated with these surveillances and noted that the quarterly surveillances passed each time with no degradation in performance. During the review, the engineers only noted one anomaly, which was associated with a valve that automatically opens in response to an earthquake. During a test in 2010, the seismic isolation valve for the hydrogen supply line closed in the appropriate amount of time but a valve that bleeds off pressure in the line was slow to operate and was repaired. In addition to the review of data, engineers evaluated the proposed change in periodicity using methodologies in DOE Standard 1195 to understand the reliability requirements for the SIS. This evaluation confirmed that an annual test interval is adequate based on the calculated probability of failure.

Building 9215/Conduct of Operations: Last week, an operator inadvertently secured the flow of coolant used for enriched uranium machining while a machinist was still turning a part. A chemical operator secured the coolant system believing that machining operations had ended for the day but this operator did not confirm this with a floor supervisor prior to turning off the coolant pump. The coolant was only secured for a short period time and the machinist, supported by their supervisor, was able to maintain adequate coolant flow to the part using hand-held bottles of coolant and by reducing the speed of the machine. As a corrective action, the CNS Machining Operations manager is evaluating ways to formalize initiation of the coolant shut down process, such as adding a step to confirm with a supervisor prior to securing coolant.

Building 9204-2: CNS senior management held a Management Review Board (MRB) to review work plans to clean out clogged lines in the Dust Mold Loading Station. The MRB team determined that additional review of the package was required to ensure that the controls in the work package will prevent a similar event as occurred in April 2013 when a worker was injured from inhaling lithium hydride dust (see 4/5/13 report).