

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

September 5, 2017

TO: Steven Stokes, Technical Director
FROM: Jennifer Meszaros and Rory Rauch, Resident Inspectors
SUBJECT: Oak Ridge Activity Report for Week Ending September 1, 2017

Building 9212: The resident inspectors recently observed work in the Building 9212 reduction operations area. The primary purpose of the observations was to evaluate operational performance following the recent nuclear criticality safety (NCS) issue involving unexpected quantities of uranium holdup in the sand separator and to evaluate a recent procedure change to bypass the sand separator altogether (see 8/11/17 report). The resident inspectors found that workers adhered to the NCS controls identified in applicable procedures, but identified some opportunities to improve overall procedure quality. In particular, the procedure governing reactor knockout operations appeared to be challenging to execute, given the number of conditional steps with complex arrangements of logic terms. Some of these steps appeared to be the result of an attempt to remain faithful to the specific wording of an NCS control as captured in the NCS evaluation. The resident inspectors provided this feedback to production and engineering management. NCS engineering, process engineering, and production personnel plan to evaluate the procedure for usability improvements at the start of next fiscal year.

Material-at-Risk (MAR) Reduction: CNS recently updated the metrics it uses to track progress towards site MAR reduction goals. Overall, the MAR quantity in Area 5 facilities (Buildings 9212, 9215, and 9204-2E) decreased from September 2016 to March 2017. Building 9212, the source of the majority of the MAR reduction over this period, showed a decrease during the evaluation period of approximately 15 percent by mass of the total MAR reduction sought by Y-12's two year plan to "expand and accelerate" MAR reduction activities (see 8/15/14 report). Challenges processing enriched uranium briquettes have placed Y-12 approximately 18 months behind the milestones defined by this plan. CNS personnel believe that a 40 percent reduction in the allowable NCS mass loading limits for briquette casting operations instituted in 2014 was a key contributor to the site failing to meet these milestones. In response to recent briquette exothermic reaction events (see 8/18/17 report), CNS management is evaluating opportunities to increase the rate at which briquettes are processed into more stable forms. Such actions would also aid MAR reduction efforts.

Building 9204-2E: Last week, production personnel were removing items from a glovebox via an airlock when they noticed the loss of glovebox exhaust ventilation. Workers immediately suspended work and evacuated the area. Subsequent investigation revealed that maintenance workers shut down the exhaust fan that services the glovebox in order to perform preventive maintenance on it. Although responsible parties discussed the maintenance activity in various work planning meetings and the maintenance crew received work-start approval from the responsible shift manager, no one proactively identified that the preventive maintenance work directly conflicted with the production work. CNS held a critique this week to further discuss this issue. During the critique, attendees identified a corrective action to develop tools that will help shift managers deconflict planned work activities. Additionally, they agreed to form a team that will review the work control process, including work planning meetings, and suggest improvements. Concurrently, the resident inspectors reviewed a 2015 CNS report on a plan to improve the site work control process (see 4/17/15 report). CNS developed the plan in response to several events which were caused, in part, by poor integration of production and maintenance activities. The resident inspectors note that several weaknesses identified in the report (e.g., ineffective communication of equipment status and activities requiring work start approval) were also exhibited during last week's event. They plan to monitor the effectiveness of corrective actions identified during this week's critique.