

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

October 4, 2019

TO: Christopher J. Roscetti, Technical Director
FROM: Matthew Duncan and Brandon Weathers, Resident Inspectors
SUBJECT: Oak Ridge Activity Report for Week Ending October 4, 2019

Board Visit: Board Chairman B. Hamilton, Board members J. Roberson and J. Connery, staff members C. Roscetti, T. Davis, and J. Gilman, and the resident inspectors met with federal and contractor personnel at the Y-12 National Security Complex and Oak Ridge National Laboratory. In a letter to NNSA on August 23, the Board requested a detailed briefing regarding nuclear criticality safety at Y-12. During the visit, the Board walked down and observed operations in Buildings 9215 and 9212. In Building 9215, the walk down included machining operations, enriched uranium chip collection, and areas where equipment will be installed for the electrorefining and direct chip melt projects. In Building 9212, the Board walked down the reduction, casting, ultrasonic chip cleaning, and Holden gas furnace processes. Briefings covered federal oversight of the Y-12 nuclear criticality safety program and the contractor's response to the unexpected uranium accumulation events. The Board also received a briefing on the Oak Ridge National Laboratory U-233 disposition project from OREM and the project's contractor, Isotek Systems, LLC (see 6/28/19 and 9/27/19 reports). Following the briefing, the Board walked down Building 2026 including the new gloveboxes that will be used for the first U-233 disposition campaign in which thorium will be extracted.

Building 9212: Following the unexpected uranium accumulation discoveries in the casting area of Building 9212, CNS has been performing walk downs and updating Inadvertent Accumulation Prevention Program (IAPP) reports for areas covered by the program. The updated IAPP report associated with ductwork on the roof of Building 9212 identified a new recommendation to address a known and monitored area of uranium holdup in the air emission control system. Previous efforts going back to 2016 to address this holdup had not been implemented. This week, the uranium holdup was removed and two access doors were installed in this section of ductwork to make the area accessible for future inspection. Other measures are being implemented to reduce the potential for uranium to accumulate in this area of the ductwork. As out-of-service equipment was isolated during execution of the Building 9212 exit strategy, these isolations could have increased the suction on the remaining operating equipment that the air emission control system services. In response, the air emission control system dampers are being repositioned.

When the maintenance personnel initially cut into the ductwork, there appeared to be standing water inside. The ductwork carries wet exhaust and some condensation was expected, but the amount of standing water that the personnel reported seeing was not expected. The workers backed off and made the appropriate notifications. After assessing the situation, nuclear criticality safety personnel provided guidance for operators to enter the work area to remove a piece of metal that had fallen into the ductwork. While removing the scrap metal, the operators determined that there was no standing water in the ductwork. The damp material in the bottom of the ductwork was reflective and had a sheen which originally appeared to be standing water. Nuclear criticality safety rescinded the administratively controlled boundary and cleanout work resumed. On Thursday, all material was successfully cleaned out of the ductwork.