

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

June 8, 2018

TO: S. A. Stokes, Technical Director
FROM: D. K. Andersen and C. M. Berg, Acting Resident Inspectors
SUBJECT: Oak Ridge Activity Report for Week Ending June 8, 2018

DNFSB Staff Activity: D. Andersen was onsite to attend the NNSA Office of Safety, Infrastructure, and Operations (NA-50) Master Asset Plan infrastructure deep dive, as well as support resident inspector coverage.

Worker Contamination: As part of activities to resume casting operations following identification of accumulations of enriched uranium holdup (see 3/30/18 and 5/4/18 reports), CNS replaced a number of water lines within Building 9212. During these activities this week, radiological control technicians identified contamination on the stomach area of a worker. The contamination likely transferred from the dangling air hose of the worker's respirator to their stomach area during the personal protective equipment (PPE) doffing process. Radiological control technicians identified the contamination levels as below reportable limits and successfully decontaminated the individual. In response to this event, CNS personnel conducted a pre-job briefing the following day highlighting expectations during the PPE doffing process. To further strengthen worker knowledge in PPE doffing expectations, CNS personnel are considering other best practices (e.g., providing additional specification in the radiological work permit and/or pre-job briefings).

Highly Enriched Uranium Materials Facility (HEUMF): The resident inspectors accompanied NPO and CNS personnel on a nuclear criticality safety walkdown of HEUMF. In addition to discussing actions that resulted from the discovery of stored materials that were not considered in the facility's documented safety analysis (see 5/4/18, 5/11/18, and 5/18/18 reports), the resident inspectors inquired into recent potential nuclear criticality safety issues (PNI) associated with fire scenarios. In December 2017, CNS declared a PNI associated with a design basis fire within open floor storage areas. Specifically, a potential criticality concern existed with fire damaging fissile material containers and activating the facility sprinkler system (i.e., introducing a neutron moderator). Due to operational restrictions and controls on combustible materials and ignition sources within these areas, CNS determined this concern to not be credible. In May 2018, CNS declared a second PNI for potential fires within HEUMF working areas. Due to the different restrictions in this area (e.g., combustible loading), the disposition from the previous PNI may not apply. CNS plans to characterize credible fire intensities and frequencies, as well as the resulting potential container damage.

Building 9204-2E: While performing walkdowns, the resident inspectors examined a segment of ductwork that had recently failed along its base due to corrosion. The falling debris did not impact any special nuclear material but was near a location utilized to store such material. The resident inspectors also examined other locations of past ductwork failure caused by uncontained leakage of condensate and corrosive liquid desiccant from air handling units. In one past instance, the liquid mixture had contacted a special nuclear material storage cage and some of its contents. In response to this event, CNS plans to modify condensate drainage of the air handling units to mitigate further leaks and to enhance surveillances of ductwork integrity.