

## DEFENSE NUCLEAR FACILITIES SAFETY BOARD

March 19, 2021

**TO:** Christopher J. Roscetti, Technical Director  
**FROM:** Matthew Duncan and Brandon Weathers, Resident Inspectors  
**SUBJECT:** Oak Ridge Activity Report for Week Ending March 19, 2021

**DNFSB Staff Activity:** R. Jackson traveled to Y-12 to review Uranium Processing Facility construction activities and meet with project personnel.

**Nuclear Criticality Safety:** Last week, CNS reported two similar nuclear criticality safety infractions due to personnel discovering that a layer of material had settled in the bottom of safe bottles. The loading limits for safe bottles prohibit uranium-bearing solids except for trace quantities. In the first event, personnel were developing a plan to sample the contents of nine safe bottles in Building 9215. These safe bottles were generated when CNS drained out-of-service tanks last year in response to an active leak in one of the tanks (see 12/11/20 report). Personnel discovered that three of the safe bottles had a settled layer of material at the bottom with visible solids. Non-destructive assay measurements confirmed that higher masses of uranium were present in the three affected safe bottles relative to the other six safe bottles. Nuclear criticality safety personnel provided guidance for the affected safe bottles to remain under administrative control until further guidance is developed. In the second event, Building 9206 operators noticed solids in a safe bottle and established administrative control of the area. Personnel inspected other safe bottles in the area and identified several that appear to have a separated phase at the bottom. Nuclear criticality safety personnel plan to develop additional guidance to process the affected safe bottles.

Separately, CNS personnel identified numerous legacy items in Building 9212 that were not labeled as non-fissile and had indications that they contain fissile material. These items were not stored within an approved fissile material storage location. The items included an out-of-service centrifuge that was located on a cart and four legacy vacuums. A shift manager and nuclear criticality safety personnel visually inspected the centrifuge and saw loose rusted metal and bright yellow material inside the centrifuge base. The four vacuums appear to have been used in fissile work and were all marked as contaminated. Nuclear criticality safety personnel provided guidance for handling the items to perform non-destructive assay measurements. Those measurements confirmed bulk fissile material was in the centrifuge.

There have been several instances over the past year where CNS discovered legacy items that were not properly identified and stored. For example, CNS has updated an infraction from last spring multiple times to account for additional items discovered during follow-up walkdowns (see 6/19/20 report) and recently discovered several other legacy vacuums (see 2/26/21 report).

**Building 9212:** CNS determined that the potential inadequacy of the safety analysis that NPO identified last month was a positive unreviewed safety question based on identification of a new accident (see 2/19/21 report). NPO recently issued a safety evaluation report approving the evaluation of the safety of the situation and associated documents to update the safety basis. NPO did not impose any conditions of approval and CNS will file an occurrence report for this issue.