

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

August 23, 2024

TO: Timothy J. Dwyer, Technical Director
FROM: Frank Harshman and Clinton Jones, Resident Inspectors
SUBJECT: Oak Ridge Activity Report for Week Ending August 23, 2024

Building 9212: A resident inspector (RI) attended an event investigation for a drum containing fissile material that was transferred above the economic discard limit (EDL) from Building 9212 to an onsite waste processing building. The EDL determines the fissile material residual concentrations below which production of new fissile material is more economic than recovery. The EDL is utilized as a basis for discard decisions. Although above the EDL limits, the drum fissile content falls below nuclear criticality safety limits. Operators use a formula on a form to calculate the percentages of fissile material contained within a drum. During this step, the operator miscalculated the fissile material percentage while completing the drum disposal form which allowed the drum to be discarded as waste. The operator was provided an obsolete revision of the form that required an additional calculation step which was not listed on the form. The missing step contributed to the error although the operator was aware of the requirement for the additional calculation step at the time. The updated form was not provided to the operator due to a previously identified technical issue with the forms database. In the RI's opinion, although the technical issue was previously identified prior to this event, the issue was not well communicated to site personnel based on the number of individuals in the event investigation unaware of the issue. In addition, there is no procedural requirement to verify the manual calculations after completing the drum discharge form. A worker discovered the error two weeks later and notified their supervisor. CNS is currently evaluating the path forward for final disposition of the drum as recovery of the fissile material has been complicated due to the material being solidified in concrete and the quantity of fissile material exceeds the EDL to dispose of as waste.

Site Water Supply: CNS determined that a potential inadequacy of the safety analysis (PISA) exists in the Y-12 site safety analysis report due to the automated features of the water towers being non-operational. In addition to the automated features being non-operational, one of the two towers is drained for refurbishment. CNS created three operational restrictions based on these conditions to ensure safety. The first established a frequency for utilities operators to document the water levels with a minimum level of water required or the level shall be continuously monitored. The second covered notification of the operations center and subsequent notification of the nuclear facilities at levels that would cause the site to fall below the required minimum water capacity for analyzed fire scenarios and identifies manual actions to isolate the water supply. The third addresses supplying water to the Oak Ridge National Laboratory from the towers, ensuring the minimum capacity remains for fire water supply at the Y-12 site. CNS revised the operational restrictions, and therefore the PISA, twice based on feedback from YFO due to not covering manual actions that are required to be performed based on the automated system being non-functional. The RI originally brought these concerns to YFO after a walkthrough of the towers and discussion with utilities personnel (see 7/12/2024 report). CNS is currently working through the unreviewed safety question determination process for the affected nuclear facilities.