

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

June 11, 2021

TO: Christopher J. Roscetti, Technical Director
FROM: Matthew Duncan and Brandon Weathers, Resident Inspectors
SUBJECT: Oak Ridge Activity Report for Week Ending June 11, 2021

Nuclear Criticality Safety: In May, CNS identified five containers in Building 9212 that had visible indications of corrosion (see 5/28/21 report). Initially, CNS determined that four of the containers were generated from work performed in 2020 to isolate and clean out the out-of-service carbon burners and destructive distillation units. That isolation and cleanout project was performed in four separate activities (see 10/9/20 report). Through further investigation, CNS learned that the fifth container was created by consolidating material from the final cleanout activity. CNS also attempted to find containers of material collected during the other cleanout activities but could not locate the containers or records associated with one of the cleanout phases. CNS discovered that the vacuum cleaner used during the second cleanout phase had not been emptied and still contained material in it. This condition violated a nuclear criticality safety requirement in the technical deviation and procedure for the cleanout activities. Nuclear criticality safety personnel provided guidance to collapse the administrative boundary to the affected vacuum cleaner and to empty it as required in the technical deviation. The event was classified as a nuclear criticality safety deficiency.

Separately, CNS has continued to make progress on developing a procedure and revising a nuclear criticality safety posting to allow the contents of the corroding containers to be transferred to a new container with a plastic liner. The resident inspectors discussed with CNS how lessons learned from this event may apply to future material cleanout activities. CNS plans to review the processing/operating history of systems that will be isolated and cleaned out to better identify potential corrosion issues prior to performing the material cleanout.

Regarding another event, Building 9212 operators identified material that resembled pellets on two separate occasions during recanning operations. Pelletized material is not an approved material form for the glovebox operations and violated a nuclear criticality safety requirement. The containers were assigned a material form code for oxide but while processing the material, operators recognized that the material was not an oxide form. The operators established administrative control of the area and notified nuclear criticality safety personnel in both events. The material from the first event was from an external entity and the material from the second event was generated at Y-12. CNS is investigating where additional materials received from the external entity are stored to determine whether they are compliant in their current containers and location. So far, CNS has identified eight cans in the Highly Enriched Uranium Materials Facility (HEUMF) that may contain pellets. The production procedure for the recanning operation utilizes nuclear material control and accountability identification designators (material form codes) to implement the nuclear criticality safety requirement for allowed uranium material forms. Y-12 has a history of similar events where the actual material form does not correspond to the most appropriate or specific material form code possible. The resident inspectors have previously reported on the history of similar events for this Building 9212 glovebox (see 8/2/19 report) and unallowed material forms that were discovered at HEUMF (see 3/12/21 report).