

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

November 30, 2018

TO: Christopher J. Roscetti, Technical Director
FROM: Matthew Duncan and Brandon Weathers, Resident Inspectors
SUBJECT: Oak Ridge Activity Report for Week Ending November 30, 2018

Highly Enriched Uranium Materials Facility (HEUMF): NPO transmitted a Safety Evaluation Report to CNS documenting the review and basis of approval for resolution of the Justification for Continued Operation (JCO) for HEUMF positive unreviewed safety questions involving materials not previously evaluated in the facility (see 5/4/18, 5/11/18, 5/18/18, 6/8/18 and 10/12/18 reports). NPO approved changes to the HEUMF documented safety analysis and technical safety requirements (TSRs) that allow storage of two new material types that were previously unanalyzed and found to already be stored in HEUMF. The material types were classified as ignitable-water reactive and ignitable-expandable. The revised HEUMF safety basis accounts for receipt of additional amounts of the ignitable-expandable material that CNS expects to receive in the future. CNS does not plan to receive additional quantities of the ignitable-water reactive material type. CNS added a defense-in-depth administrative control that requires the two new material types to be stored within a drum that contains an inner containment vessel. The use of the inner containment vessel will help prevent a fire from spreading. As a result of a new accident scenario during recontainerization of the inner can containing the ignitable-water reactive material, a safety significant directive action specific administrative control was put in to the TSRs to prohibit opening containers with this material type in HEUMF. This control protects the ignitable-water reactive material from an inadvertent sprinkler activation. Upon implementation of the changes to the HEUMF safety basis, the JCO may be retired.

Building 9202: On 11/14/2018, two operators encountered difficulty removing a metal melt crucible containing un-melted depleted uranium alloy and oxide from the uranium alloy atomizer. One of the operators attempted to dislodge the crucible, resulting in the ejection of oxide particles. That operator then used a paper towel in an attempt to spit out any potential debris that may have entered their mouth. The same operator was then able to break the crucible free and recover the residual metal. While performing a radiation contamination survey to exit the area, the operator who suspected material entered their mouth detected facial contamination. Radiological control personnel responded and confirmed radiological contamination in the beard of that operator and detectable results from nasal smears. The contaminated operator was decontaminated by radiological control personnel. The results of a lung radiation count did not detect a significant uptake by either of the two operators. During the fact finding meeting, it was noted that ventilation was not in operation during the activity as required by the work authorization document and the radiological work permit. Atomizer operations were suspended after the event and corrective actions are being put in place to prevent reoccurrence. The actions required to resume operations include: (1) evaluation of the ventilation to determine its adequacy; (2) performance of a pre-job brief to discuss the response to abnormal occurrences. The crucible design is also being re-evaluated, but is not a pre-start action.

Building 9212: The resident inspector attended a fact finding meeting for the uranium organic solution spill from a safe bottle (see 11/23/18 report). CNS plans to evaluate options for testing the failed safe bottle to determine if the vented lid functioned properly.