

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

August 2, 2019

TO: Christopher J. Roscetti, Technical Director
FROM: Matthew Duncan and Brandon Weathers, Resident Inspectors
SUBJECT: Oak Ridge Activity Report for Week Ending August 2, 2019

Building 9212: Two nuclear criticality safety back-offs have occurred within slightly over a month of each other during glovebox operations with uranium oxide (see 6/28/19 report). In both cases, metal fines were found among the uranium oxide in the container. The container documentation reviewed by the operators prior to loading the material into the glovebox did not indicate the presence of metal fines. The criticality safety evaluation for this glovebox does not allow metal fines to be in it. Upon noticing the metal fines, operators stopped work and made the appropriate notifications. Similar violations of this glovebox's criticality safety evaluation have occurred in the past. A nearly identical situation occurred in January 2017 (see 1/30/17 report). Many of the actions proposed at the fact finding for the July 2019 event were previously noted as lessons learned and measures to prevent recurrence from the 2017 event. The resident inspectors identified additional examples going back to 2016 of prior criticality safety violations related to use of this material form code. The metal fines identified in July 2019 were previously stored in the Highly Enriched Uranium Materials Facility (HEUMF). In 2018, HEUMF underwent an extent of condition review of material records to identify metal fines (and other material forms) that were stored in HEUMF (see 4/20/18 report). It is not known at this time whether the material of the July 2019 event was noted to contain metal fines as part of the HEUMF extent of condition review.

Nuclear Criticality Safety: CNS issued a standing order this week to formalize the direction communicated by CNS Production Operations to require a fact finding and a causal analysis for all nuclear criticality safety deficiencies (see 7/19/19 report).

Building 9212: In early June, CNS submitted a change to the safety analysis report and technical safety requirements for Building 9212 to NPO for approval. NPO approved the change this week with no conditions of approval. The change relates to hazards associated with potential red oil or fume-off reactions downstream of the secondary extraction process. It removes an operational restriction that limited concurrent operation of the secondary extraction process with the intermediate evaporators and wiped film evaporator—a similar restriction affecting the high capacity evaporator had been lifted last October (see 10/12/18 report). A limiting condition for operation currently implements pre-run and post-run density checks to ensure proper functionality of phase separators. The safety basis change removes the requirement for post-run density checks based on evidence of satisfactory performance of the phase separators after implementation of the pre-run density checks for more than seven years. It then replaces the limiting condition for operation with a simpler directive action specific administrative control. This change was made in part due to a post-implementation finding discovered during an implementation verification review performed by the previous contractor in 2010. That review team noted that the surveillance requirements for the limiting condition of operation did not comply with DOE Guide 423.1-1, *Implementation Guide for Use in Developing Technical Safety Requirements*. A review of the issues management system found nine other open issues that have been open longer than five years.