

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

December 12, 2016

TO: Steven Stokes, Technical Director
FROM: Jennifer Meszaros and Rory Rauch, Site Representatives
SUBJECT: Oak Ridge Activity Report for Week Ending December 9, 2016

Building 9212: This week, operators were loading enriched uranium briquettes into a crucible in preparation for casting operations when the batch of briquettes unexpectedly ignited and began to oxidize. Crucible loading operations take place in a ventilated enclosure similar in makeup to an adjacent glovebox where briquettes are intentionally oxidized. As such, the operators (who were wearing respiratory protection) determined the best immediate action was to move the crucible farther into the enclosure. The operators then contacted their supervisor who appropriately notified the shift manager and fire department. With concurrence from fire department personnel who responded to the scene, the shift manager directed the operators to move the crucible into an adjacent tunnel where the oxidation reaction continued to completion.

CNS held a fact-finding meeting following the event and the work team could not identify any unusual action or condition that caused the briquettes to ignite. The team believes the reaction may have been induced by mechanical friction between briquettes. Several years ago, Building 9212 personnel encountered similar unexpected thermal reactions involving briquettes (see 3/28/08 and 5/2/08 reports). A follow-on investigation team identified additional risk mitigation measures for briquette handling and storage and concluded that a significant reaction associated with this material is unlikely and would be localized. The current Building 9212 management team believes this is still the case noting that, although this week's reaction was unexpected, its hazards were adequately controlled in the crucible loading area. The fact-finding participants deemed the operators' actions in response to the event noteworthy. Building 9212 management intends to review applicable procedures for the most appropriate place to document these response actions.

Conduct of Operations/Hoisting and Rigging: This week, a glovebox component fell approximately six feet during a maintenance activity in Building 9204-2E. Prior to the event, workers successfully lifted the component using an overhead crane and placed it into position. They removed tension on the component and left the maintenance area to retrieve additional tools for the job; while away from the area, the workers heard a noise and, upon returning, observed that the component had fallen. After CNS personnel from several disciplines inspected the component, they re-lifted it and continued work. Later, a maintenance manager arrived on the scene in response to a call about the event and directed workers to place the component in a staging area and suspend work. During fact-finding and critique activities, CNS personnel noted that work should have been suspended immediately, per site procedures, after the component fell. Additionally, they discussed the mechanics of this non-critical lift (e.g., what lifting fixtures were used and whether pre-engineered lifting points were available) and committed to a review of requirements in the site manual on hoisting and rigging.

Building 9206: While responding to a spill of fissile solution in Building 9206 this week, CNS personnel failed to follow a site procedure governing abnormal conditions involving fissile material. In this case, the responsible managers erroneously determined the spill was a "field correctable condition" as described in the procedure and chose to clean it up rather than establish control of the area and contact nuclear criticality safety (NCS) engineering. This is the second time in recent months that CNS personnel failed to follow requirements in the abnormal response procedure; in September, laboratory management failed to notify NCS engineering after a drum in Building 9995 was found to exceed its mass limit (see 9/23/16 report).