

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

July 30, 2021

TO: Christopher J. Roscetti, Technical Director
FROM: Matthew Duncan and Brandon Weathers, Resident Inspectors
SUBJECT: Oak Ridge Activity Report for Week Ending July 30, 2021

Nuclear Criticality Safety: In May, uranium trioxide powder was released into the denitrator enclosure as a result of a shaft seal leak (see 5/14/21 report). Operators cleaned up the uranium trioxide, but a small amount of residual material remained. In July, maintenance personnel identified a small amount of water in the Building 9212 denitrator enclosure. The source of water was determined to be a water line that began leaking during maintenance activities. The water mixed with a small amount of the residual uranium trioxide. Nuclear criticality safety personnel provided guidance to clean up the material and requested that maintenance be performed on the water line fittings to prevent further leaks. Before performing the maintenance activities, production personnel did not isolate all of the liquid lines to the denitrator enclosure as required by the nuclear criticality safety guidance. Neither the maintenance nor production organizations screened this event in the CNS event reporting system to determine whether an investigation was necessary. Nuclear criticality safety personnel documented the event and their response to it in a revision to the deficiency associated with the uranium trioxide leak. However, the resident inspectors have noticed instances where production personnel have not entered the event reporting and investigation process to screen an event until after nuclear criticality safety personnel have determined whether the event is a nuclear criticality safety deficiency. CNS has a standing order that requires most nuclear criticality safety deficiencies to have an event investigation and critique. That standing order has been in effect for two years (see 8/2/19 report). Instances of organizations not screening some events until determining whether the nuclear criticality safety focused standing order requires an investigation may indicate underutilization of the CNS event reporting system and event investigation process.

A resident inspector observed workers install an outer layer of insulation around the denitrator vent line to correct a prior issue related to oversized insulation that had been installed (see 7/9/21 report). No issues occurred during the installation. Nuclear criticality safety personnel and the system engineer observed the activity to verify the installed dimensions met the requirements.

Building 9212: Last week, CNS performed annual surveillances for several wet vacuum system level detection systems. The surveillance involved demonstrating that the isolation valve closed in five seconds or less upon sensing material in the trap. Chemical operators found that one of the systems did not meet the required response time. The shift manager entered the applicable limiting condition of operation. CNS conducted an event investigation and critique for this event due to several past failures of the monthly surveillance (see 5/22/20, 4/16/21, and 6/25/21 reports). The previous failures were a result of the isolation valve unexpectedly re-opening during the monthly surveillances. The response time is only required to be measured during the annual surveillance. After the most recent failure, CNS will perform the annual surveillance (record the isolation valve response time) on a monthly basis to improve their understanding of the systems' performance. CNS will also conduct an engineering reliability study of the active components subject to degradation on the wet vacuum system.