

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

November 24, 2023

TO: Timothy J. Dwyer, Acting Technical Director
FROM: Frank Harshman and Clinton Jones, Resident Inspectors
SUBJECT: Oak Ridge Activity Report for Week Ending November 24, 2023

Building 9212: A NPO facility representative (FR) observed an operation where a flange lid was left off a system, exposing a potential pathway for fissile solution to exit during an overflow condition. The flange on the system is removed to allow hot water to be added as part of the normal operation. Upon further investigation, the FR discovered the flange being left off of the system was not accounted for in the criticality safety evaluation (CSE). CNS entered their abnormal operating procedure for an abnormal condition involving fissile material and established an administrative boundary. The following day, CNS entered their process for a potential nuclear criticality safety issue due to the potential inadequacy in the CSE. CNS confirmed the inadequacy in the CSE and issued an occurrence report. The inadequacy originated in 2006 when a temporary modification was issued to allow removal of the flange to add hot water for the denitrator and wiped film evaporator operation. The additional contingency for an overhead leak scenario was missed for this change. In 2009, the temporary modification was made permanent, and the procedure did not give clear direction to replace the removed flange after water was added to the system. CNS committed to revising the CSE to include an evaluation for the removal of the flange. Current compensatory measures have the flange reinstalled on the denitrator with a posting added to it and the wiped film evaporator operations are on hold.

Building 2026: Isotek reported an occurrence for a personnel contamination event after a worker alarmed a personnel contamination monitor (PCM). The worker was monitoring in the PCM after the completion of planned maintenance activities in one of the hot cells in the building where U-233 is processed. The hot cell did not contain any material of concern at the time of the event. The worker was wearing two Tyvek suits as their primary anti-contamination clothing and a third acid resistant suit worn backwards as a “smock” to protect against additional hazards. The same maintenance activity had been performed previously in another hot cell successfully, however, the outer layer of personal protective equipment (PPE) had been changed for this maintenance activity. The change was initiated to alleviate heat stress concerns associated with the multiple layers of PPE. The worker alarmed the PCM and notified a radiological control technician (RCT). The RCT confirmed contamination on the worker’s inner right arm of approximately 71,000 disintegrations per minute (dpm) alpha and 7400 dpm beta. Multiple methods of decontamination were required to remove the contamination from the worker’s skin before being able to successfully pass through a PCM. Isotek convened a critique of the event to ascertain the cause. Several candidate corrective actions were discussed as possible solutions to prevent reoccurrence. The resident inspectors attended the critique and will continue to shadow the corrective actions going forward.

Wildfire Prevention: The sites across the Oak Ridge Reservation are in a very high fire risk due to the lack of precipitation and the wildfires burning in Anderson County. Due to the risk level, outdoor hot work has been curtailed across Y-12 National Security Complex, Oak Ridge National Laboratory, and the Transuranic Waste Processing Center per the Oak Ridge Reservation Wildland Fire Implementation Plan.