

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

May 3, 2019

TO: Christopher J. Roscetti, Technical Director
FROM: Matthew Duncan and Brandon Weathers, Resident Inspectors
SUBJECT: Oak Ridge Activity Report for Week Ending May 3, 2019

Transuranic Waste Processing Center: On April 22, NorthWind Solutions transmitted an evaluation of the safety of the situation and negative unreviewed safety question determination to the DOE Oak Ridge Office of Environmental Management. This concerned a potential inadequacy in the documented safety analysis for a filtration device (Micro-Trap Filtration Unit) that was not analyzed in the criticality safety evaluation of HEPA ventilation systems. The Micro-Trap Filtration Unit is occasionally used as a local filtration device for radiological control to reduce airborne particulate during waste size reducing operations in the box breakdown area. The Micro-Trap Filtration Unit has a pre-filter and HEPA filter which exhausts back into the box breakdown area and does not connect with the safety significant Process Building Ventilation System.

After discovering that the Micro-Trap Filtration Unit was not evaluated in a criticality safety evaluation, initial characterization measurements were taken by NorthWind personnel to estimate the plutonium-239 fissile gram equivalent (FGE) associated with it. The adequacy of the instrument used to take the characterization measurements was later questioned due to its intended use for gross characterization rather than detailed characterization. NorthWind personnel then took an initial analytical approach that assigned 3% of the plutonium-239 FGE for all waste processed in the box breakdown area since January 2005, to the Micro-Trap Filtration Unit. The Micro-Trap Filtration Unit was installed in December 2005 but has not been in continuous use since being installed.

The work pause on operations in the box breakdown area was lifted last week. The justification to do so was based on being below the inventory limit for the area after combining the fissile material contained in the two drums present in the box breakdown area with the initial estimate of plutonium-239 FGE that could have been captured by the Micro-Trap Filtration Unit since 2005. This will allow NorthWind personnel to enter the box breakdown area to retrieve a hose from the Micro-Trap Filtration Unit and take a coupon sample to more definitively establish the actual amount of fissile material in the Micro-Trap Filtration Unit.

Safety Basis: At NPO's request, CNS implemented a new formal process for evaluating and dispositioning potential inadequacies in technical safety requirements (PITSRs) this month. It will be used when technical safety requirements potentially may be deficient, inadequate, or invalid. This procedure does not apply when a potential inadequacy of the documented safety analysis is suspected. CNS keeps NPO informed of these PITSRs as they become suspected or determined, much like the process for new information and potential inadequacies of the documented safety analysis. As of this week, there were six active PITSRs for the Y-12 National Security Complex, informally determined between November 2016 and February 2019. Operations managers have already taken any compensatory measures deemed necessary. CNS intends to submit changes to the technical safety requirements that address all currently known PITSRs for NPO approval by June 2020.