

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

November 17, 2023

TO: Timothy J. Dwyer, Acting Technical Director
FROM: D. Gutowski, Resident Inspector
SUBJECT: Los Alamos Activity Report for the Week Ending November 17, 2023

Staff Activity: M. Bradisse was on site this week providing resident inspector support. A. Boussouf was on site Thursday supporting Mr. Bradisse's visit.

Plutonium Facility–Glovebox Safety: On Monday, workers were preparing to package materials in a glovebox in a laboratory room. While attempting to open an empty container in the glovebox, a worker lost control of the container, which impacted the window between the glovebox gloves they were using. The impact cracked the inner laminated safety glass confinement window and shattered the outer leaded glass window used as radiation shielding. Because of the presence of glass shards, the worker chose to remain in the gloves while another worker sought assistance from radiation control personnel. Upon arrival, radiation control personnel surveyed the cracked window and the glass shards and discovered contamination. Surveys of the surrounding area showed no contamination spread outside the immediate vicinity of the glovebox, so workers were able to package the contaminated shards, affix tape to the cracked glovebox window, and release the room for work later that day. Nasal swabs of the worker in question indicated potential radiological intake, and that individual was placed on special bioassay. At the fact-finding meeting, participants noted that the worker did not use a prying tool to assist with opening the container. Using this tool is an encouraged practice, which workers are trained on, but it is not required. Participants also noted that there is no standard response for a glovebox window breach, like there is for a glovebox glove breach. Potential corrective actions from this event include clarification of the guidance, requirements, and training for pry tools, and clarification and documentation of the expected response to glovebox window breaches.

Plutonium Facility–Safety Basis: On Tuesday, Triad safety basis personnel briefed NNSA Field Office management on the preliminary results of a parametric study of leak path factor during certain accident conditions. The leak path factor describes the amount of radioactive material that escapes the building during accidents and is one of the factors used to calculate the potential dose consequences to members of the public following hypothetical accident scenarios. Once finalized, the results of this report will be used to inform the selection of appropriate leak path factor values for the new documented safety analysis for the Plutonium Facility, which is being developed per DOE-STD-3009-2014, *Preparation of Nonreactor Nuclear Facility Documented Safety Analysis*. For this study, Triad safety basis personnel created a computer model of the entire Plutonium Facility and simulated one of the current design basis accidents, a fire in a single laboratory room. They then perturbed several conditions, including: the specific room where the accident takes place, the amount of material at risk, the duration of material release, the cumulative time that outer confinement doors and inner laboratory room doors are open, the timing of when those doors are open, the activation of fire suppression systems, and the presence of active ventilation. Triad personnel stated that the preliminary values aligned with expectations and with leak path factor values used in the current documented safety analysis.