

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

January 13, 2023

TO: Katherine R. Herrera, Acting Technical Director
FROM: A. Boussouf and D. Gutowski, Resident Inspectors
SUBJECT: Los Alamos Activity Report for the Week Ending January 13, 2023

Staff Activity: R. Eul was onsite to observe the assist visit from the Criticality Safety Support Group.

Criticality Safety: A six-member team from the Criticality Safety Support Group (CSSG) was onsite to perform an assist visit. The NNSA Field Office requested the CSSG review the nuclear criticality safety program as implemented at the Plutonium Facility to evaluate the program's ability to support the no less than 30 pit per year production mission. The tasking asked the review to include: looking at criticality safety limits at the plutonium facility to enhance operational flexibility; recovery from deviations and infractions; the roles, responsibilities, authorities, and accountability within the nuclear criticality safety program; and adjudication of differing technical opinions. The team split into three groups focusing on: the pit process flow and field observations; the development of criticality safety evaluation documents and controls; and line management support of nuclear criticality safety. The team briefed field office and Triad management on their initial observations at the end of the week and plan to develop recommendations and issue a final report by the end of March.

Plutonium Facility–Operations: On Monday, a grit paper disk auto-ignited while a worker was transferring it between gloveboxes. A small flame traveled along the path where the grinding surface had been in contact with plutonium and then self-extinguished. The involved worker paused the operation and contacted facility operations. Management subsequently paused all facility grinding, cutting, and polishing operations. A fact-finding meeting was held on Wednesday to discuss the event. Meeting personnel could not identify any change to the process which could cause a fire. However, plutonium fines have known pyrophoric properties. They noted that this is the first occurrence of a fire on a grinding disk in this frequent operation. Facility personnel are evaluating potential causes. Additionally, a breakdown in communication occurred as the fire department was not notified of the incident. Facility management is evaluating ways to ensure workers understand the importance of taking proper actions in response to fire including activating the dropbox fire alarm or pulling a manual pull station and calling 911.

On Monday, workers repackaging a legacy item for disposal observed a few seconds of 'sparking' while pouring material from a can into a tray. The reaction occurred in a glovebox and was limited to sparks with no visible flame. The workers paused and reported the incident. The material was a free-flowing powder of electrorefining salt and plutonium. The cause was likely luminous oxidation of plutonium metal powder in the air atmosphere of the glovebox; however, this was not expected given the age of the material and its packaging conditions. The material was originally processed under an inert atmosphere; however, it was not packaged under inert conditions. As a corrective action from the 2021 titanium event (see 5/14/2021 report), Triad developed procedures to address moving materials from inert to air boxes. In response to this event, personnel are developing a path forward for safely repackaging this material and are evaluating feed lists to determine if additional controls are needed for similar materials slated to be repackaged for disposal.