

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

December 3, 2021

TO: Christopher J. Roscetti, Technical Director
FROM: Daniel B. Bullen, Ph.D., P.E., Cognizant Engineer
SUBJECT: Lawrence Livermore National Laboratory (LLNL) Report for November 2021

Defense Nuclear Facilities Safety Board (Board) Staff Interactions at LLNL: The Board's cognizant engineer for LLNL and the Board's team lead for the Recovery Glovebox Line (RGL) safety basis review were on-site at LLNL on November 8–12, 2021, to observe the RGL contractor readiness assessment (CRA), observe the Building 332 annual criticality emergency drill, and complete other nuclear safety oversight activities.

Building 332 – RGL CRA: Lawrence Livermore National Security, LLC, (LLNS) completed a CRA for the RGL in Building 332 during November 8–19, 2021. The Board's staff team observed CRA presentations, demonstrations, and interviews. The RGL includes three newly installed glovebox lines consisting of gloveboxes, entry hoods, and interconnected liquid transfer lines. The RGL will recover and purify material using aqueous chemical processes. RGL operations include dissolution of compounds in acid, purification, precipitation of material from solution, and calcination of the final product. The RGL also solidifies waste solutions from aqueous processing and recovers pyrochemical salts by washing and dissolving the salts. During the CRA, RGL operators demonstrated dissolution of oxide, anion exchange, precipitation, entry hood operations, operation of the reagent transfer devices, liquid transfer (between glovebox lines), and chemical handling. The RGL operators also demonstrated oxide washing (using the Russian Institute of Atomic Research oxide washer), waste treatment and solidification, and bag-out procedures for the vertical drum port. The CRA team completed their report on November 19. The Federal Readiness Assessment for the RGL is scheduled for January 2022.

Building 332 – Annual Criticality Emergency Drill: LLNS completed the annual criticality drill in the LLNL Superblock on November 10, 2021. The SB Emergency Manager developed the drill scenario which initiated with a simulated 7.9 magnitude earthquake. The simulated earthquake initiated a fire alarm in Building 332 and shortly thereafter a criticality alarm sounded (initiating immediate evacuation of the building). During the evacuation, two plutonium handlers suffered simulated injuries. In addition to the injuries, the earthquake caused damage to an eye-wash station in the hallway of the Radioactive Materials Area. Finally, after all personnel reached the muster area, the drill included the simulation of an unknown smoke plume, initiated off-site, moving toward the Superblock area. Emergency management personnel relocated all persons in the Building 332 muster area to avoid exposure to the simulated plume. The LLNS and Alameda County Fire Department responders quickly identified, recovered, and treated the workers with simulated injuries. The criticality safety engineers evaluated the Building 332 systems and determined that there was no criticality or fire. The Superblock Emergency Manager will complete an after-action report for this drill.

First Quarter Fiscal Year 2022 Startup Notification Report (SNR): On November 23, 2021, the Livermore Field Office (LFO) approved the First Quarter Fiscal Year 2022 SNR in accordance with Department of Energy Order 425.1D, *Verification of Readiness to Start Up or Restart Nuclear Facilities*. LFO approved the startup/restart activity and schedule for the Hazard Category (HC) 2 Recovery Glovebox Line, HC 2 Hydrogen Gas System, and HC 2 Centralized Waste Processing Line. Each of these facilities is located in Building 332.