

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

July 8, 2022

TO: Christopher J. Roscetti, Technical Director
FROM: Daniel B. Bullen, Ph.D., P.E., Cognizant Engineer
SUBJECT: Lawrence Livermore National Laboratory (LLNL) Report for June 2022

Defense Nuclear Facilities Safety Board (Board) Staff Interaction: On June 1–2, 2022, a Board’s technical staff review team completed the on-site portion of a review of the Recovery Glovebox Line (RGL) safety basis. The RGL recovers and purifies plutonium material using aqueous chemical processes including dissolution of plutonium compounds in acid, purification using ion exchange resin, precipitation of the purified material from solution, and calcination of the final product. The RGL also includes workstations to solidify waste solutions from aqueous processing and to recover pyrochemical salts by washing and dissolving the salts. The review team walked down the RGL facility and the associated stand-alone fire suppression system. On May 31–June 2, 2022, the Board’s cognizant engineer for LLNL was on site to observe the Centralized Waste Processing Line (CWPL) Contractor Readiness Assessment (CRA), support the RGL safety basis review, and conduct oversight activities. As part of routine oversight activities, the cognizant engineer walked down the Superblock and the waste storage facilities in Building 696 and Building 625. The cognizant engineer also met individually with the Livermore Field Office (LFO) Manager and the Acting Weapons & Complex Integration Principal Deputy Associate Director for Operations.

RGL Potential Inadequacies of the Safety Analysis (PISA): On May 27, 2022, the Building 332 (Plutonium Facility) Manager determined a PISA existed after receipt of new information that the quality assurance program and material certificates for the fabricator of RGL glovebox anchor brackets are in question. Lawrence Livermore National Security, LLC, (LLNS) staff reanalyzed the response of these brackets using mechanical properties for off-the-shelf steel and determined that the brackets still provided the required minimum factor of safety. LLNS plans to have a glovebox anchor bracket fabricated from the correct material, remove one of the brackets, and conduct destructive testing on the bracket to determine its alloy composition. If the alloy composition is verified to be correct, LLNS plans no further actions. If the alloy composition is not correct, LLNS will replace all RGL glovebox anchor brackets. LLNS completed the Unreviewed Safety Question Determination, which was negative, so no justification for continued operation was required.

Building 332 – CWPL CRA: On May 31–June 3, 2022, LLNS conducted a CRA for the restart of operations in the CWPL (see LLNL Monthly Report for May 2022). The CRA team evaluated CWPL operations including handling transuranic (TRU) waste containers, bagging waste into and out of the glovebox, visually examining, sorting, and segregating waste, repackaging TRU waste, and performing standard glovebox maintenance. The CRA team identified three pre-start findings. LLNS staff corrected two of the findings related to quarterly interlock tests of the rotary lift table limit switches not being performed per the required schedule and quarterly review of the CWPL logbook by the Responsible Individual prior to the completion of the CRA. LLNS closed two findings during the assessment. In response to the third finding, LLNS updated the CWPL startup plan to address personnel qualification by positions (e.g., Certified Fissile Material Handler, Associate Fissile Material Handler), not by the names of specific personnel. On June 20, 2022, LLNS communicated to LFO its readiness to proceed with the CWPL Federal Readiness Assessment (FRA). LFO plans to begin the CWPL FRA on July 12, 2022.