

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

April 5, 2024

TO: Timothy J. Dwyer, Technical Director
FROM: Daniel B. Bullen, Ph.D., P.E., Cognizant Engineer
SUBJECT: Lawrence Livermore National Laboratory (LLNL) Report for March 2024

LLNL Plutonium Facility (Building 332) - Justification for Continued Operations (JCO) for Fire Suppression System: Lawrence Livermore National Security, LLC (LLNS) submitted a revision to the Evaluation of the Safety of the Situation (ESS) and a JCO related to the activation temperature for a fusible plug in the Building 332 fire suppression system on January 12, 2024. On February 28, 2024, the Livermore Field Office (LFO) approved the JCO but disagreed with the calculation identified in the safety assessment of the revised ESS, which was intended to demonstrate adequate high-efficiency particulate air (HEPA) filter performance for a mitigated fire. LFO noted that the calculation of maximum air temperature at the HEPA filter stages, and the assumption of HEPA filter performance based on Underwriters Laboratory testing, may not be conservative. LFO stated that the calculation necessitates further evaluation, as noted in the JCO. LLNS established three compensatory measures following the identification of the potential inadequacy of the safety analysis for this system. LFO agreed that the existing Building 332 controls, coupled with the compensatory measures and path forward, are adequate to ensure a sufficient level of safety to workers, the public, and the environment for the operations and events allowed for Building 332. LFO provided a safety evaluation report (SER) delineating the basis for JCO approval and required LLNS to add the LFO correspondence and the SER to the Building 332 safety basis, effective immediately. LFO approved the JCO for one year, or until closure of the JCO (if closed in less than one year).

Building 332 - Approval to Remove Emergency Diesel Generator from Service: On March 6, 2024, LFO approved an LLNS request to remove generator GDE07 from service for the purpose of replacing the generator. LFO evaluated LLNS's February 22, 2024, request and concluded that the information provided in the request was sufficient to show that an acceptable level of safety will be maintained during the limited window of time that the work will be performed, and a reasonable schedule has been developed. LFO approved removing the generator from service for up to 12 months.

LLNL Tritium Facility (Building 331) - Documented Safety Analyses (DSA) and Technical Safety Requirements (TSR) for Safety Significant Tritium Process Station Internal Chilled Air Lines: On March 13, 2024, LLNS requested approval for page changes to the Building 331 DSA and TSRs in response to a condition of approval (COA) for the ESS related to potential contamination of the uranium bed chilled air lines in the Tritium Processing Station (TPS) in Building 331. (See LLNL Monthly Reports for December 2023 and July 2023). The COA required designating the chilled air line within the TPS glovebox as part of the safety significant boundary and updated in the Building 331 DSA and TSRs. LLNS noted that it would update the standard review plan requiring annual visual inspection of the glovebox to include the internal chilled air lines. LLNS also noted that there will be no physical changes to the system.

Building 332 DSA and TSRs Annual Update: On March 15, 2024, LLNS submitted the annual update to the Building 332 DSA and TSRs. The annual update addresses unreviewed safety question determinations from June 1, 2021, through October 1, 2023. LFO approved the previous Building 332 DSA and TSRs annual update with three COAs. (See LLNL Monthly Report for March 2023). The COAs addressed requirements for passive-active neutron (PAN) drum shuffler door closure, combustible loading in the PAN shuffler room, and the development of a new design feature or acceptable alternate TSR control to protect the PAN shuffler housing. LLNS noted that the updated Building 332 DSA and TSRs address these COAs.