

## DEFENSE NUCLEAR FACILITIES SAFETY BOARD

February 2, 2024

**TO:** Katherine R. Herrera, Acting Technical Director  
**FROM:** Daniel B. Bullen, Ph.D., P.E., Cognizant Engineer  
**SUBJECT:** Lawrence Livermore National Laboratory (LLNL) Report for January 2024

### **Justification for Continued Operations (JCO) for the Plutonium Facility Room Ventilation**

**System:** On January 2, 2024, the Livermore Field Office (LFO) approved the JCO following a Potential Inadequacy in the Safety Analysis (PISA) related to the Building 332 room ventilation exhaust dampers (see LLNL Monthly Report for August 2023). LFO provided a Safety Evaluation Report (SER) with the basis for approval of the JCO. LFO agreed that the existing controls, coupled with the compensatory measure and corrective action, 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 noted that the JCO will remain in effect until completion of technical evaluations, LFO acceptance of the evaluations, and LFO approval of safety basis changes, as well as implementation of the changes, or for a period of one year from JCO approval.

### **Evaluation of the Safety of the Situation (ESS) and JCO Related to the Loss of Building 332**

**Increment 3 Room-to-Corridor Differential Pressure:** On January 19, 2024, Lawrence Livermore National Security, LLC (LLNS) provided the ESS and JCO related to the loss of Building 332 Increment 3 room-to-corridor differential pressure due to the failure of ACU-08 motor (see LLNL Monthly Report for November 2023). LLNS initially provided a negative confirmatory process form for this scenario on November 6, 2023, which was rejected by LFO. On November 30, 2023, the Plutonium Facility Manager declared a PISA on the Increment 3 room ventilation system room-to-corridor pressure requirement. On January 9, 2024, LLNS completed a backwards looking unreviewed safety question determination, which was determined to be positive. The ESS included compensatory measures to be implemented to support continued operation of Building 332 until all required technical evaluations are developed by LLNS and approved by LFO. LLNS noted that the path forward for closing the PISA and the JCO includes completion of an evaluation of the ACU-08 issue to determine the most appropriate corrective action. The evaluation will consider the following: 1) redesigning or replacing components, 2) modification of the configuration of the system and its settings, 3) revising the derivation of the performance criteria in the Documented Safety Analysis, or 4) some combination of these changes.

### **Superblock Annual Emergency Planning Hazards Assessment (EPHA) Facility-Level Operational**

**Criticality Drill:** On January 17, 2024, LLNS issued a critique of the 2023 EPHA criticality operational drill conducted on November 1, 2023, in the Superblock. LLNS conducted the operational drill in accordance with the requirements in the American National Standards Institute/American Nuclear Society (ANSI/ANS) Standard 8.23, *Nuclear Criticality Accident, Emergency Planning, and Response*. LLNS noted that the purpose of the drill was to evaluate a “hands-on” training session with facility personnel based on a criticality exercise scenario. In its critique, LLNS noted that the exercise was effectively executed with a criticality scenario involving the Superblock Buildings 332, 335, 3340, and limited participation from Building 331 and Building 334. The scenario included a fire alarm and the successful recovery of an injured person. When facility emergency responders entered Building 332, the criticality horns initiated moments later, an immediate evacuation was performed, and all personnel reported to the designated Zone 8 Assembly Point in accordance with the Building 332 Facility Safety Plan. The critique noted that the performance of Security, Alameda County Emergency Response, Valley Care Hospital, Environment Safety & Health, and Superblock residents was extremely professional. The critique concluded that all operational drill objectives were met.