

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

February 7, 2025

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

Approval of the Extension for Three Evaluations of the Safety of the Situation (ESS) and Justifications for Continued Operation (JCOs) for Building 332: On December 30, 2024, the Livermore Field Office (LFO) approved the Lawrence Livermore National Security, LLC (LLNS) request for extensions to three JCOs. LFO approved a six-month extension for the JCO related to the new failure mode of the Building 332 Increment 3 room ventilation system (RVS) air conditioning unit 08 (ACU-08) involving the split-pin linkage. LFO approved a three-month extension for the JCO related to the loss of Building 332 Increment 3 room-to-corridor differential pressure due to failure of the ACU-08 motor. In addition, LFO approved a twelve-month extension for the JCO related to soot build-up on the Building 332 Increments 1 and 3 glovebox exhaust ventilation system and RVS final stage, high-efficiency particulate air (HEPA) filters. LFO concluded that the paths forward described for the three JCOs are appropriate to facilitate closure of the potential inadequacy in the safety analysis (PISA) for each item. LFO required LLNS to add the approval letter to the Building 332 Safety Basis immediately.

ESS and the JCO for the Building 332 Increment 1 RVS Exhaust Variable Inlet Vane (VIV) Dampers: On January 2, 2025, LFO approved the LLNS proposed path forward for closing out the ESS and the JCO for the Building 332 Increment 1 RVS exhaust VIV dampers. LLNS issued the ESS and JCO in response to a PISA noting a discrepant issue with the Safety Class Increment 1 RVS VIV dampers. LLNS discovered that under certain circumstances the Increment 1 RVS VIV dampers could be locked in position, thereby potentially interfering with the operation of the safety significant compressed air switching panels. LLNS staff identified that the actuator controlling the VIV damper has a lockout feature that can lock the vanes in a fixed position upon loss of lab air. The ESS affirmed that the setpoint of the locking feature on the actuator was adjusted such that the credited compressed air-switching panels perform their safety significant function before the actuator lockout function initiates. LLNL proposed a JCO to codify the operational restriction and identify proposed Documented Safety Analysis and/or Structures, Systems, and Components (SSC) changes to resolve the positive Unreviewed Safety Question Determination (USQD) associated with the PISA. LFO noted that the path forward to address this issue will be implemented by March 10, 2025.

Hazard Categorization of the National Ignition Facility (NIF): On January 10, 2025, LFO approved the LLNS request to categorize NIF as a Less-Than-Hazard-Category-3 facility for experimental operations including deployment of experimental diagnostics with small amounts of transuranic material. In accordance with DOE-STD-1104-2016, *Review and Approval of Nuclear Facility Safety Basis and Safety Design Basis Documents*, LFO approved calculations to increase the inventory limits for isotopes $z=93$ to $z=96$ (plutonium and associated transuranic isotopes) associated with the use of experimental diagnostics. Additionally, LFO authorized NIF to use the Hazard Category 3 mass thresholds from National Nuclear Security Administration (NNSA) Supplemental Directive NNSA SD G 1027, *Guidance on Using Release Fraction and Modern Dosimetric Information Consistently with DOE-STD-1027-92, Hazard Categorization and Accident Analysis Techniques for Compliance with Order 5480.23, Nuclear Safety Analysis Reports, Change No. 1*, for evaluating activation products and fission products generated by shot operations.