

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

March 3, 2017

TO: Steven A. Stokes, Technical Director
FROM: Daniel B. Bullen, Cognizant Engineer (Incoming)
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SUBJECT: Lawrence Livermore National Laboratory Report for February 2017

Staff Activity: On February 22, 2017, B. Caleca, D. Andersen, and D. Bullen held a teleconference with Lawrence Livermore National Laboratory (LLNL) scientists and engineers to discuss a draft Statement of Work (SOW) prepared for the Seismic Evaluation of the Building 332 (B332) Facility Structure. This discussion was part of the general review of the facility condition assessments at LLNL following its recent Probabilistic Seismic Hazard Analysis (PSHA) update. The project's approach was described as using nonlinear methods combining commercial and nuclear codes to evaluate the seismic adequacy of the facility at either the new facility design basis ground motion (2,500 year return period) or the reduced, existing facility spectrum (1,250 year return period). The Defense Nuclear Facilities Safety Board's (Board) staff review team is evaluating whether the current approach is consistent with the intent of DOE-STD-1020, *Natural Phenomena Hazards Analysis and Design Criteria for Department of Energy Facilities*. The team will continue to evaluate this as LLNL and its contractor perform the analysis.

Oxidation Study Approved: On February 15, 2017, the National Nuclear Security Administration's Livermore Field Office (LFO) approved a request to conduct oxidation studies of a plutonium compound in B332. The Safety Evaluation Report (SER) for this action concluded that the consequences of accidents associated with the proposed oxidation studies are bounded by accidents analyzed in the approved Documented Safety Analysis (DSA) for B332. The SER reviewers considered a breach of the glovebox from the proposed oxidation studies to be beyond extremely unlikely. In addition, the SER concluded that the set of controls for the B332 safety basis are sufficient to ensure the safe operation of the facility from the proposed experiment, and no conditions of approval are necessary.

Independent Verification Review (IVR) of Unattended Overnight Operations: LLNL staff completed an IVR for unattended off-hours operation for the high-temperature sintering furnace and ion milling operations in the Plutonium Facility. This review evaluated changes to the DSA and Technical Safety Requirements (TSRs). The IVR reviewers concluded that LLNL personnel clearly demonstrated knowledge of the changes to the B332 DSA and TSRs and to the applicable Operational Safety Plans. Details regarding specific changes to the Building 332 DSA/TSRs in support of these operations were provided in the May 2016, June 2016, and January 2017 monthly reports. The IVR was completed on February 22, 2017.

Periodic Issues Report (PIR): LFO provided a PIR to LLNL on February 21, 2017. The PIR provided notification of issues that LFO is managing in the LLNL Issues Tracking System that are ready for action. This PIR included three deficiencies and three observations. All of the deficiencies were identified as nuclear safety deficiencies. These deficiencies, which included design description issues with glovebox exhaust systems and inconsistent documentation in piping and instrumentation drawings, are currently being addressed by LLNL.