

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

August 5, 2016

TO: Steven A. Stokes, Technical Director
FROM: Matthew P. Duncan, Cognizant Engineer
SUBJECT: Lawrence Livermore National Laboratory Report for July 2016

Plutonium Facility: The Glovebox Nitrogen Supply System is credited as safety significant in the Building 332 Documented Safety Analysis and Technical Safety Requirements. The system's liquid nitrogen storage tank has been operating at a higher pressure than in the past. After a discussion with personnel from the Livermore Field Office, the Facility Manager requested that the cognizant system engineer perform a formal operability determination. The cognizant system engineer determined that the system remains operable and that no compensatory measures are required. However, system troubleshooting efforts are ongoing.

Radiography Facility: On April 1, 2016, the contractor submitted the annual update to the Radiography Facility's Documented Safety Analysis and Technical Safety Requirements to the Livermore Field Office for review and approval. During the review, a fire protection engineer questioned some of the assumptions in a safety basis calculation that evaluates the peak temperature at the surface of the metal barrier of a component containing plutonium due to a postulated fire. The calculation uses Consolidated Model of Fire and Smoke Transport (CFAST), which is listed on the Department of Energy's Safety Software Central Registry as an approved toolbox code. One key assumption in question is that the calculation models the room where the postulated fire occurs as almost entirely sealed with a specified ventilation rate. The calculation asserts that this is a conservative assumption. The fire protection engineer questioned whether this was truly the case, as these conditions could choke the fire. On July 7, 2016, the Facility Manager determined that the calculation did not adequately explain the assumption and declared a potential inadequacy of the documented safety analysis. As a compensatory measure, the Facility Manager issued a timely order that limited the amount of plutonium allowed in the building, though there was not any present in the facility at the time. A few days later, the contractor determined this situation constituted a positive unreviewed safety question as it revealed a currently existing inadequacy in the documented safety analysis.

Headquarters Oversight: A review team for the National Nuclear Security Administration's Chief of Defense Nuclear Safety started the biennial review of the Livermore Field Office. The review is expected to be completed in September.