DEFENSE NUCLEAR FACILITIES SAFETY BOARD

July 8, 2016

MEMORANDUM FOR: S.A. Stokes, Technical Director
FROM: R.K. Verhaagen and J.W. Plaue
SUBJECT: Los Alamos Report for Week Ending July 8, 2016

DNFSB Staff Activity: On Wednesday and Thursday, Deputy Technical Director R.E. Tontodonato observed the activities of the Site Representatives. Observations included discussions with senior LANL management, attending the Plutonium Facility fact-findings described below, and walk-downs of multiple defense nuclear facilities.

Plutonium Facility–Criticality Safety: On Wednesday, Plutonium Facility personnel recognized that they had mistakenly moved a container of plutonium oxide into a glovebox with a criticality safety evaluation that allowed only metal. Following discovery of this error, operators declared a process deviation, paused operations, isolated the area and made appropriate notifications as required. During a fact-finding for the event, management noted that a recent process deviation (see 6/24/26 weekly) had occurred using the same general nuclear material movement procedure that was used during this operation. In response to this earlier event, management initiated a causal analysis to include evaluation of the general move procedure and its contribution to the event. For the more recent process deviation, management will evaluate the results of the causal analysis against the findings from this event in an attempt to identify systemic issues with material movement operations. Additionally, management is seeking opportunities to improve the pre-job brief process to place more emphasis on criticality safety.

Plutonium Facility–Operations: On Wednesday, Plutonium Facility personnel conducted a fact-finding after the NNSA Facility Representatives identified several items in a glovebox that appeared potentially melted and charred. The items were located in a glovebox that is associated with the bench-scale recovery line, an aqueous operation that uses several multi-liter open top vessels to purify heat-source plutonium (i.e., material enriched in plutonium-238). Personnel presented pictures of several degraded items including a plastic graduated cylinder, a ground fault interrupt electrical cord, a pipettor, and a slip-lid container full of acid-soaked cellulosic rags. Operations personnel described two recent spills—one that occurred during processing of plutonium-238 rich solution and one that occurred as part of moving acid reagent. The consensus of the LANL personnel at the critique was that the degradation was caused by the harsh environmental conditions resulting from the spills of nitric and hydrofluoric acids, along with the high alpha radiation from the plutonium-238. The notable corrective actions are to have a fire protection engineer walk-down the glovebox and have the waste management coordinator review the acceptability of cellulosic rags soaked with a plutonium-238 containing nitric acid solution. The Site Representatives note that issues with similar rags contributed to the August 5, 2003, radioactive material uptake event that was subject to a DOE Type B Accident Investigation.

Area G–Inappropriately Remediated Nitrate Salts (RNS): On Tuesday, Area G management declared implemented revision 5 of the Evaluation of the Safety of the Situation (ESS) for the RNS waste. Last Thursday, they also issued a standing order to implement compensatory actions, directed actions, and conditions of approval that are not embodied by existing procedures. Notably, this standing order includes a provision to ensure the defensible space with respect to vegetation is maintained around the Dome 375 Permacon, as required by ESS revision 6 (which was previously submitted, but is now under additional revision). The defensible space control is one of two key input assumptions used in the wildland fire model to demonstrate temperatures do not threaten the RNS wastes. The other control, additional combustible loading limits within the dome, is not yet implemented pending further study.