DEFENSE NUCLEAR FACILITIES SAFETY BOARD

January 15, 2010

MEMORANDUM FOR: T. J. Dwyer, Technical Director
FROM: B.P. Broderick and R.T. Davis
SUBJECT: Los Alamos Report for Week Ending January 15, 2010

Technical Area-35 (TA-35): Recently, LANL completed an investigation of two events involving the eruption of nitric acid waste solutions at Materials Science and Technology Division TA-35 facilities (site rep weeklies 7/10/09 and 7/24/09). The first event involved a student discarding acetone waste into a gas-tight acid waste container that resulted in an over-pressurization breaching both primary and secondary containers. The second event occurred when a worker discarded a mixture of nitric acid and sodium hydroxide solution into a shipping container that resulted in a rapid reaction and expulsion of solution. The investigation team concluded that separate causal analysis was warranted for these events because the causes were sufficiently different.

For the first event, the team concluded that the root cause was a lack of hazards assessment as a part of work planning for the waste disposal activity. Contributing causes included a lack of student training and knowledge and inadequate communication between the student and mentor. Five specific Judgments of Need were identified for this event.

For the second event, the root cause was identified as inadequate Integrated Work Management implementation (work planning), including use of subject matter experts during work planning, and appropriate use of stop work authority. Contributing causes included waste management issues, weaknesses in worker knowledge, training and qualification and inadequate communications. Nine Judgments of Need were identified for this event. For both events, the team identified several management concerns related to Integrated Work Management development, implementation and institutional requirements and identified suggested improvements for emergency response.

Technical Area-48 (TA-48): Late last week, a post-doctoral researcher began a chemical synthesis activity in a TA-48 laboratory facility that required the operation of an unattended oven over the weekend. When personnel returned on Monday morning they discovered that an energetic chemical reaction had breached the reaction vessel, damaged the oven and released chemicals into the room. This event exhibits similarities with the TA-35 events discussed above, including inadequacies in the work planning and control associated with this activity.

Chemistry and Metallurgy Research Building: This week, LANL submitted a revised Documented Safety Analysis and Technical Safety Requirements to support post-2010 operations at CMR. This safety analysis updates the previous January 2009 submittal based on comments from the site office and includes updated identification of facility hazards. The analysis supports continued analytical chemistry and material characterization activities in Wings 5 and 7, confinement vessel disposition activities in Wing 9 and deactivation activities in the other CMR wings. The scenario with the highest mitigated offsite dose consequence and only mitigated consequence that exceeds the DOE evaluation guideline is for a seismic collapse and fire, with an offsite dose of approximately 36 rem (Wing 9 material-at-risk to support confinement vessel disposition contributes approximately 12 rem to this scenario). LANL plans to implement safety basis controls by the end of December 2010 (except confinement vessel disposition activity, which will be implemented prior to execution).