

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

August 7, 2009

MEMORANDUM FOR: T. J. Dwyer, Technical Director
FROM: B. Broderick and R.T. Davis
SUBJECT: Los Alamos Report for Week Ending August 7, 2009

Transuranic Waste Operations: Last week, LANL declared a Potential Inadequacy of the Safety Analysis at the RANT shipping facility based on the discovery of smoke and heat detectors that do not comply with National Fire Protection Association (NFPA) Standard 72 requirements. The issue was identified during a site office safety system oversight review of the RANT safety significant fire suppression system. The current location of smoke and heat detectors on the bottom of facility beams and detector coverage reduction based on ceiling height are not in compliance with NFPA 72. This standard is specifically cited in the RANT safety basis for the fire detection system. This week, LANL submitted a Justification for Continued Operation (JCO) that includes a compensatory measure for a fire observer, specifically trained to perform a periodic walk-through (once every 30 minutes), to be present whenever MAR is inside RANT (excluding MAR inside a Type B container).

LANL also recently submitted safety basis changes for Area G that support Sort, Segregate, Size Reduction and Repackaging (SSSR) activities involving transuranic waste at Area G. The change allows up to five structures (e.g., the TA-54-412 building and dome structures) to be used with individual MAR limits of 2.5 PE-Ci equivalent combustible waste (previously limited to 0.47 PE-Ci) and an overall Area G MAR limit of 12.5 PE-Ci. LANL estimates that approximately 90% of the roughly 14,000 remaining above ground containers contain less than 2.5 PE-Ci. Existing radiation protection program requirements specify methods for minimizing contamination spread during SSSR activities (e.g., use of a Perma-Con or other containment control enclosure). LANL plans to submit an implementation plan that includes details for MAR tracking within 30 days of site office approval.

Radiological Work Control: Several weeks ago, an irradiated target from the Los Alamos Neutron Science Center (LANSCE) was transferred to the Radiochemistry Facility (RC-1) and chemically processed in an RC-1 hot cell to create a sample of radioactive arsenic (As-73 and As-74) needed for an activity back at LANSCE. The radiation work permit (RWP) used for handling the As sample assumed hazards would be dominated by gamma radiation, so dose rate limits and controls were gamma-based. When the As sample was removed from the RC-1 hot cell, an RCT took several dose rate measurements. Gamma measurements were below the RWP limit of 5 rad/hr at 30 cm, but a measurement that accounted for both gamma and beta radiation indicated a combined dose rate of about 30 rad/hr at 30 cm. Since the gamma-based RWP limit was not exceeded, work continued to handle and package the sample for shipment to LANSCE. Some attempt was made to communicate the radiation levels between RC-1 and LANSCE. However, when the sample was received at LANSCE, the researcher who unpackaged the sample was unaware of the high beta dose rate. As a result, the researcher manually handled the sample, putting his gloved hands in proximity to the highly radioactive As for roughly 30 seconds. The researcher was not wearing a wrist dosimeter because it was not required by the RWP. This week, the facility operations directors for LANSCE and RC-1 became aware of these events and initiated follow-up investigation, including a dose reconstruction for the LANSCE researcher's extremities. Among other things, this event appears to highlight opportunities for improvement in the identification of hazards during the work planning and RWP development processes, as well as, personnel responses upon discovery of new or unexpected hazards.