DEFENSE NUCLEAR FACILITIES SAFETY BOARD

MEMO TO: J. Kent Fortenberry, Technical Director
FROM: Timothy Hunt and Rory Rauch, Pantex Site Representatives
DATE: 2 May 2008
SUBJECT: Pantex Plant Weekly Report

W76 Operational Suspension: W76 operations were suspended this week when a process walkdown identified an ESD concern associated with tooling configurations that had not been previously considered as potential ESD threats. All W76 units have been staged in approved transportation configurations until further notice. The B&W Pantex authorization basis department and Los Alamos National Laboratory will perform a comprehensive crosswalk of all W76 processes and the applicable documented safety analysis to identify all discrepancies. A path forward will be determined once the full extent of the problem has been captured.

Code Management System (CMS) Nuclear Explosive Safety Study (NESS): NNSA recently approved the final report of the CMS NESS. The CMS will replace current permissive action link operations using new hardware, software, and testers. Two of the three pre-start findings—the operational response in the event of CMS anomalies and NES review of CMS data files—have NESS-endorsed corrective actions. The other pre-start finding recommends identifying and handling the CMS system, as a whole, as Category 1 electrical equipment—defined as making an electrical circuit with a nuclear explosive—although some components are electrically isolated from the nuclear explosive. The single post-start finding deals with the compatibility of the CMS power source with weapon components. NNSA has requested that possible safety improvements to test equipment design be examined as part of the post-start finding resolution.

Continuous Air Monitors (CAMs): B&W Pantex is proposing that the number of currently installed CAMs be reduced from 185 (88 alpha and 97 tritium) to 65 (43 alpha and 22 tritium) to save on limited resources. The goal is to remove the CAMs from facilities where radiological release hazards do not presently exist. Alpha CAMs would be removed from areas involving physics package work and pit staging and would be used only for bare plutonium pit handling operations. Tritium CAMs would only be required where reservoirs are removed from assemblies and handled, not where they are staged or tested (as currently required). Only one facility takes credit for the CAMs in the authorization basis. In the past, the union and workers have been a significant barrier to implementing this change.

Lightning and Electrostatic Discharge (ESD) Safety: Last week, the electromagnetic environmental effects committee, consisting of lightning and ESD subject matter experts (SMEs) from throughout the nuclear weapons complex, gathered to discuss several lightning safety concerns and the ESD environment for Pantex facilities. In an effort to evaluate a potential bond wire inductance hazard, the lightning SMEs performed a proof-of-concept experiment to determine whether time domain reflectometry (TDR) can be used to demonstrate intrinsic bonding of facility penetrations to the faraday cage. The TDR apparatus was able to differentiate between intrinsically bonded and unbonded penetrations on a small-scale mockup of a facility wall segment. Based on these results, B&W Pantex will likely purchase the TDR equipment and begin to prove-in the TDR methodology on more complex full-scale facility environments.

The ESD SMEs discussed different approaches to defining the Pantex ESD environment for the B53 SS-21 process. The committee could not come to a consensus on an appropriately conservative environment, but agreed that the refined voltage distribution developed by B&W Pantex could be used provided the committee as a whole validates the distribution by walking down the final B53 SS-21 process.