

## **DEFENSE NUCLEAR FACILITIES SAFETY BOARD**

**MEMO TO:** Timothy Dwyer, Technical Director  
**FROM:** Matthew Duncan and Rory Rauch, Pantex Site Representatives  
**SUBJECT:** Pantex Plant Report for Week Ending March 26, 2010

**Lightning Safety:** The Nuclear Security Enterprise Electromagnetic Committee met this week to discuss several unresolved lightning safety concerns. Lawrence Livermore National Laboratory (LLNL) is finalizing the last of several analyses that demonstrate its weapon programs screen from the hazard posed by the time-varying electric and magnetic fields (i.e., indirect effects) generated in Pantex nuclear explosive facilities following a design basis lightning event. LLNL expects to formally transmit the results of these analyses to Pantex within the next 30 days, at which time the committee will close this issue. As part of the committee's effort to disposition the postulated bond wire inductance hazard, B&W presented the data it had collected using a new method of intrinsic bond verification (see 3/12/10 report). The committee believes the new protocol will be able to establish intrinsic bonding of facility penetrations to the Faraday cage with the level of assurance required to support nuclear safety applications, but would like to observe the new protocol firsthand before passing final judgment. B&W will demonstrate the new protocol when the committee reconvenes on April 20.

**W88 Operations:** Perceptive technicians noticed a minor anomaly with a canned subassembly and suspended the operation. At this stage in the process a component is suspended by a vacuum fixture. While the configuration was initially considered safe and stable, engineers later determined that tooling could be installed that would provide additional defense in depth in the unlikely event of vacuum fixture failure.

**Procedures:** Two events this week are driving procedure enhancements. In the first event, technicians discovered that a recently assembled pit shipping container was missing several protective caps that are required by the container's product definition. Since these caps are prone to falling out the process engineer will revise the procedure to ensure proper cap installation.

The second event involved pit gas sampling. A sample bottle had made it to the laboratory, but technicians discovered it was empty. While the exact cause is unknown, corrective actions for the most likely causes are being implemented. The gas sampling procedure will be revised to require independent verification of the position of a valve. The formality of sample bottle handling and tracking will also be increased.

**Joint Test Assembly (JTA) Operations:** Technicians inadvertently caused minor damage to a detonator cable assembly on a high fidelity JTA during a relatively difficult series of continuously performed steps involving a hoist. While all current nuclear explosive operations have benefited from SS-21 upgrades, some JTA operations (like this one) continue to use an old process and tooling. In this case, no SS-21 assembly process or tooling exists as the weapon program does not currently have a mission need to perform any assembly operations. JTA operations by their nature have minimal nuclear safety impact—when live main charge explosives are used a dummy pit is also used—except for the potential impacts of an explosion on nearby nuclear operations (which is controlled by technical safety requirements). PXSO and B&W are discussing what, if any, improvements should be made to these processes to reduce the likelihood of similar component damage in the future.