

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 December 31, 2010

Tooling Modernization Plan: All non-satellite nuclear explosive operations at Pantex have received tooling and process upgrades that satisfy Seamless Safety for the 21st Century (SS-21) principles. However, the latest SS-21 processes utilize design concepts that yield an improved margin of safety relative to the earlier SS-21 process designs. Recently, B&W defined the strategy it will use to close this gap by issuing the tooling modernization plan. According to the plan, cross-functional teams will evaluate two categories of operations for tooling and process improvements: older SS-21 processes (e.g., W78, W76-0) and operations that never received SS-21 upgrades (e.g., explosive-only operations, certain satellite facilities). These teams will prioritize candidate operations and recommend a set of improvements to be completed during a nominal three year period for each candidate. These recommendations should be completed by March 2011, at which time B&W program management will develop a strategy to fund the recommended improvements.

Ultra-violet (UV) Detection: Technicians were preparing a battery-powered drill for use in a B53 non-nuclear operation when a UV detector in the facility alarmed. The technicians immediately stopped work, set down the drill, and evacuated the facility. The deluge fire suppression system never activated because the system operates using a voting arrangement that requires two UV detector heads to simultaneously sense UV light for 10 seconds continuously. Fire protection engineers had evaluated the drill for use in an area with active UV detection and determined that operating the drill would not cause a UV detector to alarm if the technicians maintained the drill at a minimum of 10 feet from the nearest detector head. The technicians indicated that they were at least 14 feet from the nearest detector head in the facility. Fire protection engineers plan to reevaluate the drill and reexamine the process they use to approve equipment for use in areas with an active UV detection system. B53 program personnel are considering several process changes to prevent recurrence. It should be noted that this drill has only been approved for this specific B53 non-nuclear operation.

Nickel-63 Contamination: Technicians were installing a new electron capture detector (ECD) containing 10 mCi of nickel-63 in a laboratory. The ECD is considered a sealed source and requires periodic leak tests. A radiation safety technician (RST) supporting the operation surveyed the source for removable contamination prior to installation. After technicians completed the installation, the RST surveyed the equipment and the area and brought the samples to the laboratory. The results indicated 15,680 dpm beta removable contamination on the ECD. With assistance from the RST, the technicians uninstalled the ECD and double bagged it. The RST confirmed the contamination was limited to the ECD with additional surveys of the area. B&W held a critique and plans to meet to analyze the causes of this event and develop corrective actions. Based on the results of a more complete analysis of the contamination levels (9,700 dpm beta/10 cm²), B&W reported this event in DOE's Occurrence Reporting and Processing System. Later, PXSO and B&W decided this decision had been too conservative and B&W retracted it. Regardless, it may be appropriate for B&W to develop and share any lessons learned throughout DOE.