

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 April 13, 2012

DNFSB Staff Activity: D. Kupferer was at Pantex to complete several training courses.

Hoist Malfunction: This week, a safety class hoist malfunctioned while technicians were using it to transfer a nuclear explosive (NE) to a workstand. The technicians were using the hoist to raise the NE to the height required for installation in the workstand when the hoist stopped responding. The hoist failed to respond a second time after the technicians turned the pneumatic power supply off and back on. After lowering the hoist slightly, the technicians were finally able to raise the hoist to the height needed to install the NE in the workstand when they heard a popping noise. Given the proximity of the unit to the workstand, the technicians determined the best course of action was to install the NE in the workstand and disconnect the hoist. The technicians immediately contacted their supervisor, who in turn contacted nuclear explosive safety, safety basis, and system engineering representatives. The subject matter experts collectively determined that it was safe to continue operations once the hoist had been taken out of service (the hoist was not needed for the remainder of this operation). This is a new, seismically qualified hoist. System engineers plan to perform a complete evaluation of the hoist malfunction when the technicians finish processing the NE. They believe this issue may be similar to the problems previously experienced with the new hoists (see 9/2/11 report).

Fire Suppression System Operability: This week, B&W fire protection engineers issued a formal evaluation of the cause of the deluge fire suppression system that failed to flow water when activated by the manual-electric trip switch (see 3/30/12 report). The evaluation concludes that the deluge solenoid valve failed to activate because of interference created by calcification in the body of the solenoid valve. The evaluation postulates the calcification was introduced by two extended high pressure fire loop system outages (a five month outage in 2006 and a two month outage in 2012), which introduced air into the system piping, creating a corrosion environment that resulted in calcification that prevented a small push pin in the solenoid valve body from fully retracting. B&W fire protection engineers then performed an extent-of-condition review and determined that any system that had experienced an extended outage had since received testing to verify operability of the solenoid valve. The evaluation recommends three corrective actions. The immediate corrective actions involve an increase in the frequency of solenoid valve inspections from annual to quarterly and an evaluation of the process for returning safety-class fire suppression systems to service following an extended system outage. The long-term corrective action is to install redundant solenoid valves as part of a future fire detection system replacement project.

Flood Mitigation Study: As requested by PXSO (and incentivized in the fiscal year 2012 performance evaluation plan), B&W completed and submitted its risk based flood mitigation and prevention master plan. The report describes recommended modifications to enhance Pantex's storm water management system to meet performance category-1 (PC-1). A PC-1 storm is defined as a 500 year return period storm producing 9.4 inches in 24 hours; Pantex was originally designed to meet the 25 year return period storm (the July 2010 flood event exceeded both). In addition to identifying and prioritizing specific projects, the report identifies rough order of magnitude total project costs for each zone of the Pantex Plant. For the entire site, B&W estimated that it would cost between \$57.5M and \$118.5M. For the areas of the plant site where defense nuclear facilities are located, the upgrades would cost between \$23M and \$47M.