

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 November 18, 2011

DNFSB Staff Activity: J. Anderson and R. Rosen observed the first week of the nuclear explosive safety study of the enhanced B83 SS-21 process.

High Pressure Fire Loop (HPFL): Last Friday, B&W inadvertently interrupted the HPFL water supply to Zone 11 high explosive synthesis, storage, and non-destructive evaluation facilities for approximately 8 hours. The event occurred when utilities personnel locked out a section of the HPFL on the north side of Zone 11 (to support HPFL replacement project activities) without realizing that the HPFL water supply from the south side of Zone 11 had already been blocked by a damaged valve. Utilities personnel and the HPFL system engineer were aware of the damaged valve (the condition had been present for approximately 14 months), but their evaluation of the configuration of the HPFL system prior to performing this lockout activity did not extend beyond a relatively small portion of the system around the target work area. Utilities personnel have acknowledged that their process for tracking the configuration of the HPFL system and identifying the facility fire suppression systems that would be impaired by a lockout of a section of the HPFL was too informal. As an immediate corrective action, the utilities department is now using a map of the entire HPFL system that has been marked with the latest valve positions to identify which fire suppression systems would be impaired by an HPFL lockout activity.

After utilities personnel restored the HPFL water supply to Zone 11, the fire suppression system lead-ins for two Zone 11 facilities ruptured over the span of three days. B&W fire protection engineers believe these ruptures were primarily caused by corrosion of the ductile iron lead-in piping, which marks 21 corrosion-induced leaks of the HPFL lead-ins since 1995.

Tripping Man Analysis: B&W plans to revise the tripping man analysis to address design agency and Board concerns that the analysis may not accurately represent the hazard presented by a human impact to a nuclear explosive. Last week, in support of this effort, human factors experts from Texas Tech University visited Pantex to meet with B&W engineers and human factors experts and weapon responders from Sandia National Laboratories and Los Alamos National Laboratory. The objective of the meeting was to provide the Texas Tech experts an understanding of the nature of Pantex operations so they can begin designing experiments that would provide an empirical foundation for the update to the tripping man analysis.

Pit Tube Deformation: Following last week's pit tube deformation event, tooling design personnel inspected the Laser Gas Sampling System (LGSS) and found that the surface roughness of the gas sample chamber was much greater than that specified in the design definition for the system. They found serrations along the opening of the chamber, an indication that pit tubes from previous surveillance samples had caught on the surface and nearly been deformed. To prevent recurrence of last week's event, Special Nuclear Materials Division personnel plan to use a micro-finishing process to smooth the surface of the chamber to within design specifications and revise the LGSS procedure to require two technicians to verify proper insertion of the pit tube into the chamber.