DEFENSE NUCLEAR FACILITIES SAFETY BOARD

MEMO TO: J. Kent Fortenberry, Technical Director
FROM: Timothy Hunt and Dave Kupferer, Pantex Site Representatives
DATE: 17 March 2006
SUBJECT: Pantex Plant Weekly Report

DNFSB Staff Activity: W. Von Holle was onsite to observe the opening week of the Nuclear Explosive Safety Study for the B61 SS-21 disassembly and inspection and rebuild operations.

Robotic System Malfunction: During automated operations to remove a pit from a container for analysis, a robot performed in an unanticipated manner. After removing the top layers of insulating/packaging material and exposing the pit in its fixture, the robot should have changed its tooling from a vacuum to a gripping adapter to remove the pit fixture from the container. Instead, the robot attempted to bypass that step and remove the insulation that was below the pit fixture. The robot sensed that the weight it was trying to lift was heavier than expected and it automatically stopped operations before potential damage to the pit. BWXT is evaluating whether a software quality issue exists with respect to the Sandia National Laboratories developed computer program.

Nearby Explosion (NBE): Lawrence Livermore National Laboratory personnel presented information to the W87 Nuclear Explosive Safety (NES) study team this week that fragments from a donor unit explosion are incapable of detonating the main charge high explosives (HE) in a receptor unit. The LLNL analysis concluded that the probability of a fragment generated at six feet from the receptor and setting off an inadvertent nuclear detonation is infinitesimally remote; thus, barriers are not needed for W87 multi-unit operations. This probability was deduced based on the assumption that a certain number of fragments of adequate size and speed need to impact the HE in the right places coincidentally and have stray neutrons available to initiate fission.

Multi-Unit Operations: PXSO and BWXT are pursuing authorization that would allow two units in a bay – either for staging or production operations, depending on the program – for all conventional HE weapon systems. Compared to single unit operations, dual unit bay operations would marginally increase efficiency and could also slightly reduce the number of technicians required to support production. The facility availability situation – the primary driver for multi-unit operations – could be more dire if the upgrade project for the 17 bays of 12-64 is not approved and completed within a couple years. BWXT also presented evidence that special purpose bays would not be the limiting factor in production throughput.

Documented Safety Analyses (DSAs): PXSO has formally communicated its expectations for BWXT DSA submittals. PXSO expectations for the initial submittal of a weapon program Hazard Analysis Report include approved procedures, completed tooling design and validation, approved engineering evaluations, and developed controls can be implemented as written. In addition, PXSO expects BWXT to conduct a process walk down (including the final tooling and procedures) with the NNSA Safety Basis Review Team prior to submittal of the HAR. PXSO is hoping that improved DSA submittals will allow for standardization of PXSO DSA review times, which will help to improve schedule adherence during weapon program implementation.

W56 Spinner Process Reviews: NNSA plans to perform two concurrent Nuclear Explosive Safety change evaluations (NCEs) in late-March to assess the pinning and bonding issues associated with separating spinner units. BWXT is proposing that previously approved contractor and NNSA readiness assessments (RAs) of the process be canceled since no safety basis changes have been made or additional controls implemented. BWXT believes it is conceivable to get approval to resume dismantlement of spinner units in early-April and complete dismantlement of non-spinners later next month.