DEFENSE NUCLEAR FACILITIES SAFETY BOARD

MEMO TO: J. Kent Fortenberry, Technical Director
FROM: Timothy Hunt and Dave Kupferer, Pantex Site Representatives
DATE: 14 December 2007
SUBJECT: Pantex Plant Weekly Report

DNFSB Staff Activity: B. Laake, A. Matteucci, and J. Shackelford were onsite to discuss the B53 SS-21 project with cognizant Pantex personnel.

Lightning Bond Wires: There are approximately 6000 engineered bonds in nuclear explosive facilities. There are currently two in-service inspections (ISIs) required by the Technical Safety Requirements (TSRs): (1) visually inspect the bonds for damage or loose connections every two years and (2) perform a continuity check (resistance less than 1.5 Ohms) every five years. More than a year ago, PXSO questioned B&W as to whether visually inspecting (2-year ISI) the bonds—as opposed to physically touching the bonds—is sufficient to determine if a connection is loose and requested that B&W evaluate the acceptability of the bond failure rate during the continuity check (5-year ISI). Earlier this year, B&W completed an engineering evaluation that determined the failure rate of the bonds during the visual inspection is less than 0.1 percent and the failure rate of the bonds during the continuity check is greater than 4 percent. The evaluation recommended that, because a minimal number of failures are detected during the 2-year ISI, the visual inspection be eliminated. B&W submitted a safety basis change package to eliminate the visual inspection from the TSRs and leave the 5-year ISI as is. It does not appear that B&W has thoroughly assessed the adequacy and effectiveness of the ISIs.

Work Stand Improvements: Two weeks ago, production technicians encountered difficulty raising and lowering a W76 unit due to binding that was likely caused by the belt mechanism of the work stand. A recovery procedure was developed and executed to remove the unit from the work stand in order to switch out the stand. This is not a unique occurrence. In January 2006, after production technicians repeatedly encountered difficulties operating similar work stands (utilized during W76 and W78 operations), B&W committed to redesign the work stand to utilize a chain rather than belt drive. The work stand design modifications were finalized about 9 months ago; however, to date, only 10 of the 19 work stands have been physically modified. Part of the reason for the delay is that the procedures specify an exact revision of the work stand to be utilized in each process. So, prior to physically modifying all of the stands, B&W needs to analyze the potential impact of the new design on the various processes and, if the impacts are determined to be minor, formally change the procedures to specify the upgraded work stands.

B53 SS-21 Project: Four months ago, the B53 federal project team briefed PXSO on its preference to pursue SS-21 dismantlement in bays instead of cells. At that time, the project team contended that it would be very difficult to move a full-up unit into a cell and the current hoist capabilities in the various cells would not be sufficient to meet operational needs. It appears that subsequent analysis has alleviated both of these potential concerns. PXSO expects the project team to develop a white paper that justifies the rationale for the decision to pursue bay only operations. In addition, B&W is in the process of developing a safety basis change package that will increase bay high explosive (HE) limits and eliminate restrictions on uncased HE.

Interactive Electronic Procedures (IEP): Despite that a significant investment of time and resources has been made during the past five years to implement IEP, B&W has formally notified NNSA that it has canceled the IEP project. The primary reason given for terminating the project is unacceptable performance of the software vendor. B&W contends that the paper process remains the most efficient and effective method to support nuclear explosive operations.