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 February 10, 2012

Weapon Processing Difficulties: B&W successfully processed two units with stuck detonator cable assemblies (DCAs) this week following PXSO approval of a justification for continued operations (JCO) for the recovery operations (see 1/20/12, 1/27/12, and 2/3/12 reports). Just prior to executing these operations, technicians encountered another unit with a stuck DCA. Design agency (DA) personnel were on site this week as part of continuing efforts to develop generic weapon response information for the operation used to recover from units with stuck DCAs. Until the DA can develop and transmit such information, B&W, when it encounters units with stuck DCAs, must request unit-specific weapon response information and develop unit-specific JCOs.

Pit Retrieval Anomaly: Technicians encountered a process anomaly during pit retrieval operations in a pit staging facility. The operation in question utilizes a robot to retrieve a pit (packaged in a non-sealed insert container) from a storage array in the facility and place the container on a conveyor pan approximately two feet above the facility floor. The robot is classified as important-to-safety in the safety basis because it provides some protection against the drop of the pit container and subsequent mechanical breach of the pit. In this instance, the robot had placed the container on the conveyor pan and had started to pull away without retracting its arms. Technicians observing the operation from the control area immediately pushed the emergency stop button. The robot came to rest after leaving 0.25 in. dents on the container. The container was resting approximately 15 degrees from its upright position, so the technicians immediately pulled the container from the robot arms and placed it in a stable upright position on the conveyor. Special Nuclear Material Division personnel have since powered down the robot and tagged it out. The responsible system engineers plan to perform an evaluation of the robot before returning it to service.

Bay Blast Door Interlock (BDI) System: On September 15, 2011, PXSO approved a safety basis change upgrading the functional classification of the Bay BDI System from safety-significant to safety-class (see 10/7/11 report). B&W personnel recently completed the implementation plan for this safety basis change. The most significant action in the implementation plan was for system engineering personnel to perform a design adequacy evaluation of the Bay BDI System. The B&W procedure used to complete the evaluation is based primarily on a guidance paper developed in 2004 by the Energy Facilities Contractors Group (EFCOG) titled, "*Safety System Design Adequacy*." Consistent with the EFCOG guidance, the design adequacy evaluation identified several differences between the existing design of the system and a system designed to current safety-class standards. The most significant difference was that the current design of the system does not meet the single-failure criterion of Institute of Electrical and Electronics Engineers Standard 379. The design adequacy evaluation addressed the difference in reliability between the existing design and one meeting safety-class standards (the safety-class design would contain an independent pneumatic power supply) by performing failure modes and effects analyses (FMEAs). Based on these FMEAs and an estimate of the cost to implement a new design, the design adequacy evaluation recommended that the existing design continue to be maintained and be supplemented by the existing safety-class administrative control that requires personnel to ensure at least one set of blast doors is closed at all times.