

# **Pantex** INFO

## ***Nuclear Explosive Operations Safety***

**T**he DOE/NNSA and B&W Pantex place the highest priority on safety of nuclear explosive operations at the Pantex Plant.

### **Pantex Workers**

The principal layer in the nuclear explosive safety process is people. Pantex technicians are enrolled in a comprehensive human reliability program. They receive continuous technical and safety training, and perform work to a rigorous “reader/worker/check-off” standard where two or more trained and certified people perform weapons operations in strict compliance with established procedures. One technician reads the task to be accomplished from a procedure manual. One or more technicians complete the task that was read. The reader then checks off this one task as complete. This system is followed until all tasks have been completed. Requiring a minimum of two trained and certified workers also prevents any unauthorized tampering and provides additional safety and security for the weapon.

### **Safety Approach**

Employee input is crucial in Pantex’s proactive approach to safety. If a worker has a procedural or safety question or concern, he or she has the authority and responsibility to stop work. Any occurrence that could result in a reduced state of safety is reported and thoroughly investigated by site and national laboratory weapon experts. Deficiencies are corrected prior to resuming operations.

Plant-wide safety incentive and awareness programs encourage employees to work safely. B&W Pantex employs a staff of about 300 safety, health and environmental professionals in areas such as industrial safety/hygiene, nuclear explosive safety, and radiation safety.

### **Nuclear Explosive Safety**

Contractors must ensure that all nuclear explosive operations meet qualitative nuclear explosive safety

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standards. Standards are very high levels of performance that prevent inadvertent acts or unauthorized activities that could lead to high explosive or nuclear detonation. These standards are accomplished through the use of highly restrictive nuclear explosive safety rules, detailed procedures, one-point safety certification, control of energy sources, control of electrical energy, and documentation of these controls.

### **Two-Person Concept**

No single, lone individual is allowed access to a nuclear weapon/nuclear explosive. Two trained and authorized people are present when nuclear explosives are not protected by a dual-lock system. No single individual can gain both keys to the dual-lock system.

Engineers from the national laboratories work with Pantex staff to develop the safe operating envelope for facilities and operations. Engineering procedures are designed and analyzed to control hazards and reduce or eliminate risks. Administrative controls may also be implemented to support safety in operations.

The configuration and condition of each weapon or component is determined before any work is performed.

### **Oversight and Review**

Oversight and review of nuclear weapon operations at Pantex are extraordinarily comprehensive. The following is a partial list of organizations that provide oversight, review or input regarding Plant operations.

- The DOE/NNSA Pantex Site Office and DOE/NNSA Headquarters have oversight responsibility through line management and safety organizations.
- The Defense Nuclear Facilities Safety Board, which reports to Congress, assigns permanent representatives to Pantex.
- The national laboratories (Los Alamos, Lawrence Livermore and Sandia) support weapons processes and

procedures, and provide an independent review of readiness.

- The Metal Trades Council (the labor union representing production and maintenance workers at Pantex) maintains three full-time safety representatives for the Plant.
- B&W Pantex's Nuclear Explosive Safety Program is charged with ensuring the continuation of a safe operating environment in compliance with DOE/NNSA requirements.
- B&W Pantex's participation in the NNSA Contractor Assurance Program further enhances nuclear explosive safety through its quality and self-assessment processes.

Readiness Reviews. Formal, comprehensive, and documented readiness reviews evaluate possible hazards and any associated risks, along with the methods for eliminating or mitigating those risks, before a new nuclear facility is opened and before a new nuclear process is implemented. Deficiencies identified during a review must be resolved before start up.

Nuclear Explosive Safety Study. Before operations can begin on a nuclear explosive, a thorough review is

performed by experts in nuclear explosive safety. Proposed procedures, tooling, test equipment and facility interface is reviewed using high fidelity training devices in the proposed environment. A detailed report is presented to senior NNSA management for action. Deficiencies must be addressed before operations are authorized.

Ongoing Reviews. Workers complete a detailed pre-operational checklist at the beginning of each working day to confirm that safety systems are fully functional. Failure to satisfy any element of the pre-operational check curtails operations until the deficiency has been corrected. More detailed checks of safety systems are included as periodic surveillances within the preventive maintenance system.

Continuing Oversight. Programmatic self-assessments and independent reviews, conducted frequently by Pantex and outside agency safety organizations, verify compliance with the operational procedures and ensure that material and safety conditions are within specifications.

### **Nuclear Explosive Safety Assured**

The end result of Pantex's safety approach is a layered system of safeguards that helps assure that Pantex nuclear explosive operations are conducted at the highest possible level of safety.

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