

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

August 13, 2004

MEMORANDUM FOR: J. K. Fortenberry, Technical Director
FROM: T. Hunt and W. White, Pantex Site Representatives
SUBJECT: Pantex Plant Activity Report for Week Ending August 13, 2004

DNFSB Activity Summary. W. White completed his assignment as the Pantex site representative this week and has been recalled to headquarters.

Tooling Design. A lifting eye on a strongback used in hoisting and rigging operations on various programs was found to have a yield strength design factor less than the 3:1 required by a technical safety requirement (TSR) and documented in several program Hazards Analysis Reports.

During a BWXT review and re-analysis of general use handling equipment in support of the TSR integrated implementation plan, a sub-contractor analysis raised questions regarding the capacity of this tooling (rated at 4000 lbs) to withstand the 2:1 load test. BWXT Tooling Engineers questioned the contractors assumptions because 2:1 load tests having been repeatedly passed by this tooling. Upon closer analysis using advanced computer modeling techniques, the BWXT Tooling Engineers discovered the design factor was below the 3:1 required by the TSR. The sub-contractor modeled the lifting eye assuming a point load at the top of the hole where the hoist hook/shackle would be contacting the lifting eye. When BWXT initially designed the lifting eye in 1975, it was assumed that the diameter of the hole and outer diameter of the rigging equipment were more closely equal, thus distributing the load over a larger area. The point load model created an unanalyzed bending stress, in addition to the tension and shear stresses previously analyzed.

Three groups of strongbacks of similar design, in addition to other load-bearing tools, are being evaluated against the same criteria. One group, consisting of eight different designs (more than 100 copies) of the same lifting configuration, has been identified to have similar issues. BWXT is currently testing and redesigning inadequate lifting fixtures. It is expected that BWXT will replace the subject lifting eyes. In the meantime, Manufacturing Division has suspended all lifting operations at Pantex. BWXT is considering requesting an independent contractor review a representative sample of old tooling designs and challenge any assumptions that are no longer acceptable or appropriately conservative. [I, E4]

Pressure Safety. The Pantex Site Office Safety, Health & Quality Assurance organization conducted a pressure safety assessment this week. The last program level assessment in this area was in 2001. The scope included pressure and vacuum systems and focused on design, inspection, and maintenance activities impacting these systems. Some of the preliminary conclusions of the review team were that (1) inspection reports were informal, lacked detail, and failed to identify disposition of previously noted deficiencies; (2) some of the pressure relief valves had not been inspected on the required periodicity; (3) required calculations and design drawings documenting adequacy of relief devices were not available; and (4) recognized pressure safety standards and requirements were not incorporated into program documents. [IV, NA]