

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

September 20, 2002

MEMORANDUM FOR: J. K. Fortenberry, Technical Director
FROM: W. White, Pantex Site Representative
SUBJECT: Pantex Plant Activity Report for Week Ending September 20, 2002

DNFSB Activity Summary: W. White was at Los Alamos National Laboratory from Monday until Thursday and was on site Friday. A. Matteucci was on site all week to receive site-specific training and to provide coverage for the site office.

Lightning Protection for Building 12-84: On September 13, BWXT received information from Sandia National Laboratories that the bonded lightning voltage (the maximum voltage possible in a design basis lightning strike) for bays 16 and 18 in the 12-84 Building might be significantly higher than the 13 kV noted in the current *Lightning Basis for Interim Operation*. For the bays in building 12-84 west (Bays 9 - 20), the dominant voltage mechanism is the discontinuity between the rebar in the wall and rebar in the ceiling. For bays 16 and 18, the discontinuity was bonded and the bonded facility voltage was calculated to have been significantly reduced, from 115 kV to 13 kV. Low voltage testing conducted by Sandia National Laboratories earlier this year, however, indicates that the actual voltage in a design basis lightning strike might be as high as 47.5 kV in these two bays. The bonding of the discontinuity between the walls and the ceiling appears to have been less effective than anticipated.

As a result of the new information, BWXT identified an inadequacy in the safety analysis for these two facilities. BWXT personnel verified that a stand-off distance appropriate for the higher facility voltage was in place where applicable. BWXT is currently evaluating the voltage isolation characteristics of qualified isolation devices in the facilities and is re-taping the lightning stand-off markings in the facilities. Revision of safety basis documentation for the facilities will also be required. [II.A]

Deluge Fire Suppression System Testing. As a result of test anomalies for the deluge fire suppression system in Building 12-44, OASO identified the need for a justification for continued operations (JCO) for other facilities which rely on deluge fire suppression. Of particular concern are those facilities similar to Building 12-44 where no strainers are in place to prevent debris from obstructing deluge nozzles. A JCO was submitted to OASO this week. The JCO identifies several compensatory actions and a path forward for resolving open concerns. These include the following:

- For facilities with deluge fire suppression systems, but without strainers already installed, nuclear explosive operations involving conventional high explosives will no longer be allowed, except as required to reach an assembly condition appropriate for transportation. For these facilities, strainers will be installed and the deluge system tested and flushed prior to resumption of operations involving conventional high explosives.
- For facilities with deluge fire suppression systems, but without strainers already installed, nuclear explosive operations involving insensitive high explosives will be allowed to continue, and strainers will be installed according to an implementation plan to be approved by OASO.
- All deluge fire suppression systems, including those with strainers already installed, will be tested and flushed according to an implementation plan to be approved by OASO. Except as indicated above, this will not be required prior to resumption of operations.

Of note, a Board letter to NNSA in June 2001 commented on the need to require periodic demonstrations of water flow in Pantex Plant deluge systems where possible. [II.A]