

## DEFENSE NUCLEAR FACILITIES SAFETY BOARD

November 22, 2002

**MEMORANDUM FOR:** J. K. Fortenberry, Technical Director  
**FROM:** W. White, Pantex Site Representative  
**SUBJECT:** Pantex Plant Activity Report for Week Ending November 22, 2002

**DNFSB Activity Summary:** W. White was on site all week.

**Lightning Protection for LINAC Bays:** Late last week, BWXT received a draft report from Sandia National Laboratories which indicated that the maximum voltage from a direct lightning strike to certain LINAC facilities might be somewhat higher than previously expected. The current maximum voltage identified in safety basis documents is 120 kV. The draft report from Sandia indicated the voltage might be as high as 149 kV. BWXT identified a potential inadequacy in its safety basis and adopted compensatory measures to account for the higher voltage. These measures included increasing the standoff distance and suspending hoisting operations during lightning warnings where the existing hoist isolators can not be qualified for the new voltage. In subsequent discussions with BWXT, Sandia personnel indicated a revised draft might be available next week which would reduce the maximum voltage below that in the current safety basis and allow BWXT to lift the compensatory measures currently in place. [II.A]

**Procedural Adherence.** On Wednesday, production technicians on the W87 program placed a weapon component in a work stand incorrectly. The error was subsequently identified and production technicians, appropriately, stopped work until an engineering instruction could be approved providing written direction on the steps necessary to correct the problem. This event was not characterized as a reportable occurrence, but was instead captured through the Pantex Plant non-conformance reporting system. Potential corrective actions involve marking the tooling to make alignment easier or increasing the specificity of the operating procedure.

Also on Wednesday, production technicians inadvertently overexposed a weapon during a LINAC shot. Not realizing the settings on the LINAC equipment were on a x10 scale, the technician setting up the equipment dialed in an 1100 Rad machine setting for a unit radiograph when he intended to set the machine for a 110 Rad exposure. Another technician, realizing the shot was taking much longer than normal, halted the equipment during the shot. BWXT was unable to determine how long the shot went. Assuming the machine applied the full 1100 Rad exposure at the specified distance, the unit in question would have received slightly more than 50 Rad. The requirement in the general instructions of the weapon-specific operating procedure and in the weapon safety specification (WSS) is that the "total dose for all shots taken during any one setting is not to exceed 50 Rad at the surface of the unit 50 inches from the nose and aft."

Several potential concerns were identified during a critique of this occurrence. The general use procedure for operating the LINAC equipment requires an independent verification of the exposure settings. General use procedures are required to be available in the facility but are not required to be open and in use during the operation. Technicians indicated that this independent verification of the LINAC exposure setting is not normally done. Discussions between process engineering and production personnel also indicated a lack of clear understanding with respect to the intent of the exposure limit in the WSS. The meaning of the term 'setting' and the application of the requirement to certain shots on another modification of the same weapon system remained as open questions following the critique.

Immediate corrective actions included having the production section manager verify the exposure setting for future LINAC shots and putting the potentially overexposed unit in a hold status pending evaluation by the design agency. BWXT might also wish to reconsider the utilization of general use procedures where independent verification of settings is required. [II.A]