

**Title:** YELLOW - Charged Capacitor Bank Shorted by Terminal Block Failure

**Lesson ID:** 2012-PTX-LL-1001 (*Source: User Submitted*)

**Originating Organization or Contracting Company:** B&W Pantex

**Date:** 4/9/2012

**Statement:** The physical condition of components within a piece of equipment should be a part of the hazard analysis prior to starting work and during the course of troubleshooting. If you are dealing with damaged parts, you should evaluate the risk of exposing yourself to a higher hazard. Stabilize or replace the damaged part before you proceed.

**Discussion:** An approved troubleshooting task was being executed by an Electronic Technician in a Pulse Laser control cabinet. The unit had been in service for several years. The technician was attempting to take voltage readings on the output terminal block of a bank of capacitors located within a congested area, approximately 10" above the bottom of the control cabinet. The technician was directed to take the voltage reading at this specific point by a factory certified field technician via telephone communication. The technician noticed that the terminal block was broken where he was going to take the voltage reading, but proceeded to take the measurement. A catastrophic failure of the terminal block holding the output leads of the capacitor bank was experienced. The event resulted in complete destruction of the terminal block and exposed the technician to a violent discharge of the charged capacitor bank. The technician was wearing the required personal protective equipment (PPE) for this task.

**Analysis:** An investigation determined that the broken terminal block allowed inadvertent movement of the positive terminal when touched with the voltmeter probe, moving it close enough to the negative terminal to short together.

**Actions:** A Standing Order was issued to Qualified Electrical Workers stating, "Whenever connecting meters to a capacitor or capacitor bank for voltage measurement, it is a best practice to de-energize the equipment, ground the capacitor to relieve residual charge, then place (clip-on) meter leads on the capacitor, locate the meter away from the capacitor, then power up for measurement. Then

remove the meter by reverse sequence."

**Savings:** N/A

**Keywords:** capacitor, METER, DAMAGE, RISK, EXPOSING, voltage, troubleshooting, ELECTRONIC, PULSE LASER

**Hazard(s):** Electrical / NEC

**ISM Code(s):** Perform Work

**Work Function(s):** Maintenance - Electrical

**References :** Pantex PER-2011-0669; ORPS-2011-0056

**Priority Descriptor:** Yellow / Caution