Integrated Safety Management

Electrical Safety

DANGER - DO NOT ENTER

Red and white striped barricade tape = electrical hazard.

DANGER DANGER DANGER

At Jefferson Lab an electrical hazard work area is denoted with red and white stripped barrier tape and cones.

These barriers are established during work planning for the shock or arc-flash boundary, whichever distance is greater, for the electric work taking place.

Only qualified electrical workers, wearing the proper personal protective equipment (PPE), are permitted to enter an area that is established with the red/white tape. Non-qualified employees/users are not permitted to enter the “limited approach area” without a qualified escort.

Questions on establishing or obtaining boundary markings for your work area, or any other questions, contact Tim Fitzgerald, Electrical Safety, at extension 7052.

Safety Saying:
Electrical Safety is not Shocking


The Federal Register has published a Technical Amendment to 10 CFR 851, Worker Safety and Health Program, on December 18, 2017. This amendment addresses longstanding comments from across the DOE complex regarding outdated consensus standards within the rule. The technical amendment, which goes into effect January 17, 2019, has updated industry consensus standards and deletes obsolete standards and directives incorporated by reference into 10 CFR 851.23.

Two consensus standards updated are NFPA 70 (National Electrical Code) and NFPA70E (Standard for Electrical Safety in the Workplace). NFPA70 was updated from referencing the 2005 edition to the 2017 edition and NFPA70E was updated from referencing the 2004 edition to the 2015 edition.

JLab analyzed our electrical safety program to identify any gaps involving these two updated standard references. Corrective actions have been submitted. If you are receiving this message it is because your SRL shows you as requiring SAF603A (Electrical Safety Awareness, Classes & Modes) and one or more of these actions may be involved in your work.

Therefore, you are required to read this document in its entirety and then acknowledge you have done so at the end. If you have any questions/comments to the material within, contact Todd Kujawa at kujawa@jlab.org.

**NFPA 70 changes that involve electrical safety and/or work practices:**

- Any subcontracted work and/or new equipment purchases/builds shall reference the 2017 edition of the National Electrical Code in their accompanied specifications/scope of work documents.

- Where a tightening torque is indicated as a numeric value on equipment or in installation instructions provided by the manufacturer, a calibrated torque tool shall be used to achieve the indicated torque value, unless the equipment manufacturer has provided installation instructions for an alternative method of achieving the required torque.

- If a disconnecting means is required to be lockable open, the provisions for locking shall remain in place with or without the lock installed.

- Doors that would provide unqualified persons access to high-voltage energized parts shall be locked. Permanent signs shall be installed on panels or doors that provide access to live parts over 1000 volts and shall read DANGER — HIGH VOLTAGE — KEEP OUT.
NFPA 70E changes that involve electrical safety and/or work practices:

- Employees exposed to shock hazards shall be trained in methods of safe release of victims from contact with exposed energized electrical conductors or circuit parts. Refresher training shall occur annually.
  - A training module is currently under development and will be available in 2019 (2nd quarter). The SRL will be changed also to reflect the new annual requirement.

- The employer (supervisors/group leaders) shall document that each employee has received equipment specific training (General Electrical Safety training is documented in the lab’s SRL database.) This documentation shall be made when the employee demonstrates proficiency in the work practices involved and shall be maintained for the duration of the employee’s employment.
  - This documentation has been requested from supervisors/group leaders and is being collected by the ES&H department. The longer range plan is to work with the IT department and to input all the information collected into a live database.

- When adequately rated test instruments are used for testing the absence of voltage on conductors or circuit parts operating at 50 volts or more, test each phase conductor or circuit part both phase-to-phase and phase-to-ground. Before and after each test, determine that the test instrument is operating satisfactorily through verification on a known voltage source.
  - Many of the lab’s existing Voltage Verification Units (VVUs) do not satisfy all of the requirements above; particularly the after test on a known voltage source. Refer to the VVU equivalency - [https://jlabdoc.jlab.org/docushare/dsweb/Get/Document-153676/VVU_10_19_2018_final.pdf](https://jlabdoc.jlab.org/docushare/dsweb/Get/Document-153676/VVU_10_19_2018_final.pdf) which both grants the lab permission to continue with the use of a certain style VVU and gives guidance on the VVUs that do not qualify for the equivalency.

- When arc-rated clothing is cleaned, manufacturer’s instructions shall be followed to avoid loss of protection.
  - Guidance on laundering of arc flash clothing is being added to ES&H manual chapter 6200T2 “Electrical Personal Protective Equipment (PPE).

- Electrical equipment shall be maintained in accordance with manufacturers’ instructions or industry consensus standards to reduce the risk associated with failure. The equipment owner or the owner’s designated representative shall be responsible for maintenance of the electrical equipment and documentation.