

# Take 5 for Safety

*E. Lessard*

*February 16, 2016*

**BROOKHAVEN**  
NATIONAL LABORATORY

*a passion for discovery*



# Recent Electrical Safety Events

- 2-9-16, during an inspection of an electrical panel in Building 463, it was found that a grounding wire was connected to line voltage. No one was exposed to hazardous voltage. There were no injuries or equipment damage. The electrical panel was taken out of service and an investigation commenced
- 2-4-16, NSLS II became aware of a loss of control of electrical energy at a beamline. The event occurred when cables thought to be connecting a vacuum gauge to its power supply rack were energized. In fact, what was connected and energized was a set of cables that were “spares.” These were coiled up within the hutch and found arcing. There was no electrical shock to personnel and no injuries. An investigation has been initiated

# Grounding

- The National Electrical Code (NEC) specifies certain color codes to be used for designation of grounded, grounding, and ungrounded wires in AC power systems
- Grounded (neutral) = White or grey
- Grounding = Bare (uninsulated), green, or green with a yellow stripe
- Ungrounded = Colors other than white, grey, or green
- It is unwise to rely on color coding as an indication of hazard. There will always be mistakes made from time to time in wire installation, and in older systems where someone might have re-connected wires in incorrect ways. Always use a voltmeter to check for the presence of hazardous voltage.

# C-AD Cable Termination Policy

- All conductors are considered energized unless properly secured. Working hot is not permitted unless a valid permit is in force
- The status of the conductor must be verified by appropriate means such as a properly rated meter
- An exposed conductor on cable ends must be insulated for its voltage class. Both ends of the unused cable must be properly terminated (i.e., covered or capped) to prevent personnel injury or shock hazard. Means such as shrink tubing or electrical tape are acceptable
- Disconnected cables must be completely removed or clearly labeled at both ends until removed
- C-AD tags are green and bear the warning: “Disconnected Cable”



# Picture of the Week – Can You Spot the Hazards?