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INCIDENT ALERT

An electrician was tasked with checking phase rotation on a recently installed 480 volt 3 phase system. He was using a specialized phase rotation verification tool equipped with three electrical leads. At the end of each lead was a metal spring clip ("alligator" clip) that was protected with an insulating jacket. The particular connection he was checking was at a circuit breaker. The cables were connected to the top of the circuit breaker at connecting lugs, which were approximately 1 inch wide. The gap between the lugs was approximately ¼ inch. When performing this diagnostic test it is necessary for the circuit to be energized.

The electrician was in the process of connecting the electrical leads when one came loose. The metal portion of the clip contacted an adjacent lug. This created an arc flash that resulted in burns to the workers hands and forearms. He was transported to a medical facility for burn treatment, and was unable to return to work for a week.

LESSONS LEARNED

Several issues were identified during the incident investigation. First, it is a best practice when working with live electrical equipment to wear the appropriate protective gloves, non-flammable long sleeved shirts, and face protection. These were not in use at the time. Second, each job should be examined for its unique issues. In this particular case the electrical system could have been turned off while the clips were being attached, then re-energized for the test. Third, other test equipment with larger and less cumbersome alligator clips may have been available. Using a test instrument so equipped may have prevented the clip from slipping and thus prevented the incident.

ACTION ITEMS

1. Talk with your general contractor about how live testing of electrical equipment is managed. Ask particularly about phase rotation, what PPE is mandated for the task, and how they manage the task specific planning necessary when conducting these types of hazardous activities.

2. Make a particular effort to visit areas on your job where diagnostic tests are being performed. Watch for appropriate work techniques and what you may see as risky behavior. Ask questions about the work, the particular hazards, and how their task planning has addressed them.

3. Encourage your contractors to share and discuss this incident alert with their workers.

Distribution:
All CPO Staff