

INCIDENT FACTS

REPORT #:

71-209-2021

REPORT DATE:

September 13, 2021

INCIDENT DATE:

February 27, 2019

WORKER:

45 years old

INDUSTRY:

Electrical contractors

OCCUPATION:

Apprentice electrician

SCENE:

600amp/480volt electrical panel

EVENT TYPE:

Arc flash



Service panel breakers after the arc flash explosion.

Apprentice Electrician Suffers Arc Flash Burns

SUMMARY

An apprentice electrician suffered severe arc flash burns to his hands and face while attempting to install a breaker into an energized electrical panel.

The apprentice had worked for his employer, an electrical contractor, for three years.

The plan was for the apprentice to install the breaker into the 600amp/480volt main distribution panel (MDP) while his journey-level electrician coworker stood behind him supervising.

They did not de-energize the panel before starting the job because they believed it was not required. Also, the customer was not required to have a disconnect ahead of the panel. The nearest disconnect was off-site at the public utility transformer. They had done similar jobs in the past, and this panel had been previously inspected and approved by an electrical inspector.

The apprentice was in the process of removing the heat shrink from the panel hardware when his side cutters slipped and contacted the b and c phases simultaneously, causing the line to fault. He suffered severe arc flash burns to his face and hands. He was not wearing arc flash protective clothing, gloves, or a face shield and his side cutters were not insulated. His coworker rushed him to the hospital.

Investigators found: **1)** A hazard assessment had not been done prior to starting the task. **2)** The employer was unaware of the requirement to de-energize the panel before working on it. **3)** The employer did not provide and ensure the apprentice used the proper personal protective equipment (PPE). **4)** The employer had their electrical installations inspected several times previously but had never been inspected for safe work practices.

REQUIREMENTS

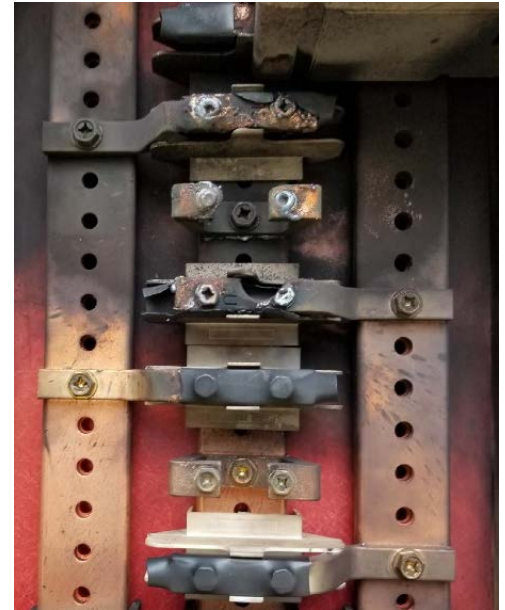
Employers must:

- Not permit an employee to work in such proximity to any part of an electric power circuit that the employee could contact the electric power circuit in the course of work, unless the employee is protected against electric shock by de-energizing the circuit and grounding it or by guarding it effectively by insulation or other means. See [WAC 296-155-428\(1\)\(a\)](#)
- Do a hazard assessment to identify hazards on the job. See [WAC 296-800-16005](#)
- Provide and ensure workers use appropriate PPE for electrical work. See [WAC 296-24-980](#)
- Train electricians in the electrical safety work practices for construction and general industry. See [WAC 296-155-428\(f\)](#) and [WAC 296-24-965](#)

RECOMMENDATIONS

FACE investigators concluded that, to help prevent similar occurrences:

- Before beginning a job, take steps to control hazardous energy instead of relying on work experience to protect workers. Always de-energize equipment and panels when possible before starting work.
- Always use appropriate tools and PPE when working on electrical equipment, even when systems are de-energized.



Service panel after the arc flash explosion.