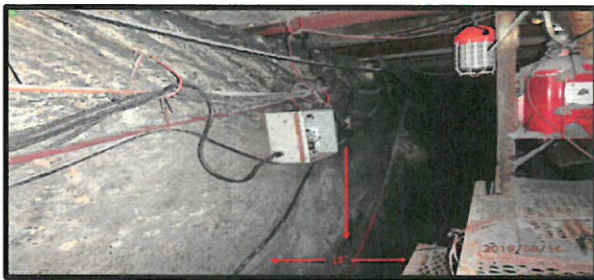


ELECTRICAL ACCIDENTS

The mining industry has experienced three electrical fatalities since August 7, 2019. The first fatal accident occurred when a 42-year-old electrician with 15 years of mining experience contacted an energized component of a 4,160 VAC electrical circuit. The victim was in the preparation plant's Motor Control Center (MCC) adjusting the linkage between the disconnect lever and the internal components of the 4,160 VAC panel that supplied power to the plant feed belt motors. The second fatal occurred on August 15, 2019, when a 44-year-old contract electrician, with 10 weeks of mining experience, was working inside a fire suppression system's electrical panel and contacted an energized 120 VAC conductor. The most recent fatal accident occurred on September 17, 2019. The preliminary investigation indicates that a miner was electrocuted while troubleshooting the electrical circuit for a scrubber on a 995 VAC continuous mining machine.



Best Practices

- Lock-out and tag-out the circuit before working on electrical equipment with your lock and tag.
- Never get in a hurry! Never work alone! Always think, plan, and communicate your intentions to others in the area to ensure the task can be completed without creating hazards.
- Train all miners including electricians on equipment they will work on or troubleshoot. It is important for miners to know how the electrical system and equipment in the mine is energized and where disconnecting devices are located.
- Always identify and control all hazardous energy sources before conducting any task and follow safe work procedures.
- Never troubleshoot energized high voltage circuits over 1,000 V. Always troubleshoot without power first. When it is necessary to troubleshoot an energized circuit, employ safeguarding measures to prevent hazards.
- After identifying the problem and entering an electrical enclosure or before performing electrical work make sure to: Locate the circuit breaker or load break switch and open it to de-energize the incoming power cable(s) or conductors. Locate the visual disconnect and open it to provide evidence that incoming power has been de-energized. Lock-out and tag-out the visual disconnect. Ground the de-energized conductors.
- Use properly rated personal protective equipment (PPE) when troubleshooting or testing energized circuits. This includes electrically rated gloves, meters with proper settings, non-contact voltage testers, insulated blankets or mats, and polycarbonate barriers to eliminate personnel exposure to hazardous energy during troubleshooting.

Talking Points for Walk and Talk

- 25 non-fatal electrical accidents occurred in the mining industry since October 1, 2018.
- Always lock-out and tag-out the electrical circuit yourself prior to conducting any electrical work and never rely on others to do this for you.
- Never get in a hurry when electricity is involved. Slow down and never take short cuts!
- Perform electrical tasks safely. Always protect yourself from hazardous energy.
- Train all miners including electricians on safe work practices and procedures to de-energize, lock-out and tag-out, and verify. Provide a safe means to control hazardous energy.
- Use Lock-Tag-Try whenever:
 - Placing any body part into an electrical energy zone or hazardous zone
 - Removing or bypassing a guard or other device for maintenance, repair, cleaning, or clearing
 - Placing any body part where it could be injured by moving parts or release of stored energy
- Identify and eliminate hazardous energy sources such as electrical, mechanical, hydraulic, pneumatic, gravity, chemical, and thermal before conducting any task.
- Identify proper lock-out locations for all electrical equipment on mine property. To safely service equipment, install and maintain disconnecting devices located at readily accessible points that are capable of disconnecting all ungrounded conductors from the circuit.
- Follow the steps below before entering an electrical enclosure or performing electrical work:
 - Locate the circuit breaker or load break switch away from the enclosure and open it to de-energize the incoming power cable(s) or conductors.
 - Locate the visual disconnect away from the enclosure and open it to provide evidence that the incoming power cable(s) or conductors have been de-energized.
 - Lock-out and tag-out the visual disconnect.
 - Ground the de-energized conductors.
- Before performing troubleshooting or electrical work, develop a plan and discuss the plan with others to ensure the task can be completed without creating hazards.
- Train and equip all miners to perform safely each task they are expected to perform. This includes electrical tasks. Train miners to understand the difference between electrical troubleshooting and electrical work to enable them to perform each task safely.
- During troubleshooting it is critical that all hazardous energy be controlled. Troubleshooting consists of **gathering information, understanding the malfunction, understanding how the equipment is supposed to work, identifying what would help evaluate the source of the problem, isolating components, and identifying the problem.**
- Clearly and specifically outline techniques to be utilized to control hazardous energy.
- Develop and use procedural steps for shutting down, isolating, blocking, securing machines or equipment to control hazardous energy
- Develop and use procedural steps for responsible placement and removal of lockout devices
- Develop and use procedural steps for testing and verifying effectiveness of lockout devices, and other energy control measures. For example, energy control measures may include electrical insulating roll blankets, protective insulating covers, arc protection blankets, clamp pins, non-conductive polycarbonate barriers, electrically rated gloves and other electrically rated equipment to eliminate personnel exposure to hazardous energy during troubleshooting.