



Significant Incident Report No. 275

Subject: Electrician received 1000V electric shock and burns

Date: 17 May 2019

Summary of incident

Note: The Department of Mines, Industry Regulation and Safety's investigation is ongoing. The information contained in this significant incident report is based on materials received, knowledge and understanding at the time of writing.

In March 2019, an electrician was fault-finding on his own in a vent fan control panel during night shift. He was wearing 1000V Class 0 rubber gloves and attempted to remove a plastic cover to access control relays. The cover fell to the floor of the panel and adjacent to a control transformer (1000V/110V). He reached down to retrieve the cover and his glove caught on the sharp edges of exposed terminal lugs of the control transformer which punctured the rubber glove.

He received a 1000V electric shock through his wrist when the current arced between two exposed cable terminals through the puncture holes in the gloves. He was able to remove himself from the panel and drove to the workshop. Another worker drove him to a regional hospital. He was transported to Perth and has undergone multiple surgeries.



Left: Control transformer with exposed 1000V terminals. Centre: Tiny hole in glove. Right: Wrist of injured worker.

Direct causes

The electrician placed his hand between live 1000V terminals of a control transformer.

Contributory causes

- The electrician was working near energised electrical equipment.
- The electrician did not isolate or test before working on the equipment.
- There was no protective shroud over the 1000V control transformer terminals.
- The rubber insulating glove was punctured when pushed past sharp edges of the terminals.
- Inadequate personal protective equipment (PPE) was being used.

Actions required

The Department recommends mining operations:

- design, install and maintain electrical installations and equipment in accordance with Australian Standard AS/NZS 3000 *Electrical installations* and other relevant standards
- ensure all workers are aware of and comply with emergency procedures
- ensure personnel qualified in first aid and a vehicle equipped to transport injured or sick workers is available at the mine site at all times when workers are on site
- determine whether there is a requirement to work or fault find on or near the installation or equipment while energised. If workers are required to work on or near energised electrical equipment, duty holders are to:
 - undertake a written risk assessment performed by a competent person
 - prepare a written safe work method statement
 - select and use suitable safety equipment and PPE
- ensure a competent safety observer is present when work is carried out on or near an energised electrical installation unless the risk assessment has determined no observer is required for the proposed work.

Further information

Department of Mines, Industry Regulation and Safety, www.dmirs.wa.gov.au

Energy Safety, www.commerce.wa.gov.au/publications

Persons working on or near energised electrical installations – code of practice

Mining safety publications, www.dmp.wa.gov.au/Safety/Safety-335.aspx

Mines Safety Bulletin No. 138 *Electrical arc flash hazards in mining*

Standards Australia, www.standards.org.au

AS/NZS 3000 *Electrical Installations* (Australian/New Zealand Wiring Rules)

This Significant Incident Report was approved for release by the State Mining Engineer on 17 May 2019