



# SAFETY ALERT

## Electric shock from a high-voltage test set

### INCIDENT

An electrical worker received an electric shock while carrying out insulation testing of an 11kV cable network. The electrical worker reached for the voltage control knob to make a fine adjustment of the output voltage of a high-voltage battery-powered test set when an electrical discharge occurred from the test unit to the worker. The test voltage at the time was 10kV direct current.

The injured person was transported to hospital for medical testing and was given a 12 lead ECG test and four hours of observation, before being discharged and resuming normal duties.

The area was made safe by erecting a barrier pending an investigation.

### CIRCUMSTANCES

- The test set had recently been delivered to the mine and had been inspected and commissioned
- The test set was being used for the first time to test the mine's 11kV network
- The electric shock victim is a qualified high-voltage level two worker with extensive testing experience
- The electrical worker connected the test set in reverse to the operating instructions and did not use the earth connection on the test set.

### INVESTIGATION

- The test set manual was not specific to the test set supplied and contained information that was intended for a different model of test set
- The test set was placed into use without the benefit of product training from the supplier
- The marking and colour of leads was different to convention used on other types of test set
- The test set had reached a stable voltage and the cables under test were charged with stored energy that discharged through the victim to earth. The stored energy was capable of inflicting a lethal electric shock.

## RECOMMENDATIONS

- Mines should conduct a risk assessment to identify hazards associated with the use of high-voltage test sets. The control measures should be determined in consultation with test set suppliers and competent persons
- Manufacturer's information relating to the safe use of any high-voltage test set should be supplemented by activity-based safe work practices and procedures developed on site in consultation with the test set users and supplier. Particular attention should be placed on basics, for example:
  - ✓ Electrical workers should be trained and authorised to use each type of high-voltage test set at the mine
  - ✓ Connection diagrams should form part of training and user documentation
  - ✓ Leads and earth terminals should be clearly identified
  - ✓ Earth connections to the test set should be applied first and removed last
  - ✓ Security provisions should be applied for the storage and transport of each test set to prevent unauthorised access.
- *Coal Mine Health and Safety Regulation 2006* Clause 19, Electrical Engineering Management Plan requires that a coal operation must make specific procedures for the use of electrical test instruments
- ALL mines that reticulate high-voltage electricity should develop, implement and review specific procedures for the use of electrical test instruments on high-voltage equipment.

Acts and Regulations can be accessed online at [www.legislation.nsw.gov.au](http://www.legislation.nsw.gov.au)

**NOTE:** Please ensure all relevant people in your organisation receive a copy of this Safety Alert, and are informed of its content and recommendations. This Safety Alert should be processed in a systematic manner through the mine's information and communication processes. It should also be placed on the mine's notice board.

**Signed**



**Rob Regan**  
**DIRECTOR**  
**MINE SAFETY OPERATIONS BRANCH**  
**NSW DEPARTMENT OF PRIMARY INDUSTRIES**

View more safety alerts at [www.dpi.nsw.gov.au/minerals/safety/safety-alerts](http://www.dpi.nsw.gov.au/minerals/safety/safety-alerts). If you would like to receive safety alerts by email, send your contact details to [mine.safetyalert@dpi.nsw.gov.au](mailto:mine.safetyalert@dpi.nsw.gov.au)