



Industry &
Investment

MINE SAFETY

INVESTIGATION UNIT

Electric shock injury involving 3.3kV electrical
equipment at coal mine preparation plant

15 November 2007

Electric shock 3.3kV installation

- 15 November 2007 – Hunter Valley, NSW
- Coal handling preparation plant
- Electrical switch room – 3.3kV electrical equipment
- Plant technician/electrician
- 27 years experience at the plant

Overview

- Electric shock and burns from 3.3kV switchgear in a High Voltage switch room
- Plant technician looking for a possible loose connection on the 3.3kV wiring
- Access to switch enclosure without effective isolation

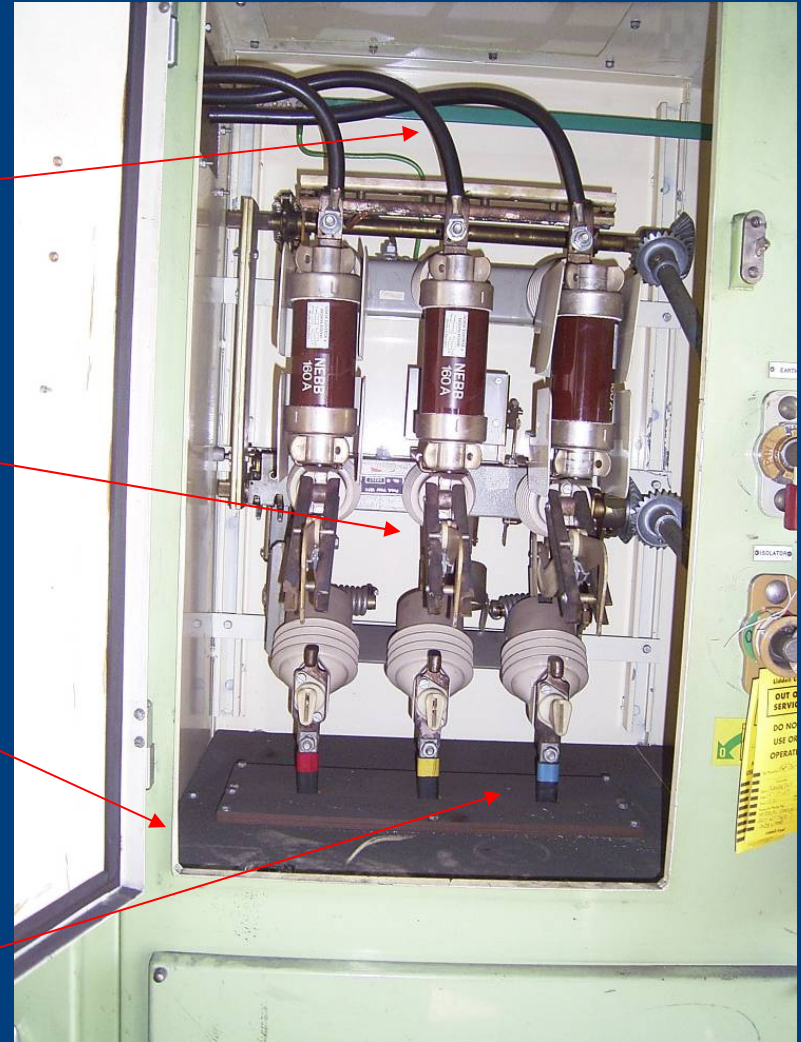
3.3kV switchboard

- Locks fitted after the incident
- Castell key and earth switch
- Main incomer and the correct isolation point for access to UTL 3.3/3 cabinet
- Conveyor motor starter panel supplied from UTL 3/3.3



Incident

- Outgoing side to conveyor motor
- Live 3.3.kV terminals
- Technician's left hand position
- Supply side where contact was made with the blue terminal



Casual factors

- Absence of engineered controls to prevent the access to live conductors in 3.3kV electrical installations
- Inadequate documented procedures for high voltage work
- No formal training in high voltage work
- Absence of high voltage testing equipment in switch room.

Best practice

Prevention of High Voltage electric shock by:

- Fit for purpose electrical installations that comply with AS/NZS 3000 and AS 3007
- Skilled High Voltage workers with formal training, assessment and authorisation
- Detailed information and instruction for all high voltage work noting all sources of supply, job steps and required risk controls

Best practice

- Compliance audits of electrical installations to identify inadequate barriers for prevention of direct and indirect contact with live equipment
- Appropriate signage providing advice on isolation points and warning of electrical hazards
- Test equipment is readily available at each high voltage installation
- Strict ‘test before you touch’ policy.

Related published resources

- I&I NSW Safety Alerts:
 - SA8-02 Electric shock direct contact with high-voltage electricity*
 - SA 05-11 Electric shock from 11kV bus tie*
 - SA 05-06 Serious electric shock incident*

<http://www.dpi.nsw.gov.au/minerals/safety/safety-alerts>
- Department's investigation reports of electrical incidents:
 - Electrical isolation, Dartbrook Colliery

<http://www.dpi.nsw.gov.au/minerals/safety/major-investigations/investigation-reports>
- Information and advice published by the Department on electrical engineering safety at:

<http://www.dpi.nsw.gov.au/minerals/safety/resources/electrical-engineering>