

SAFETY ALERT



ELECTRIC SHOCK FROM MOBILE LIGHTING PLANT #1

INCIDENT

An operator received an electric shock from a mobile lighting tower in an open cut mine. The operator pressed the remote start button for the auxiliary hydraulic pump motor while preparing to relocate the lighting tower. The start button became live causing severe electric shock to the operator.

CIRCUMSTANCES

Mobile lighting towers are used extensively in open cut operations to provide area lighting for night time operation. These may be wheel or skid mounted, and are powered by a diesel engine driving a 415 V three phase alternator. Hydraulic controls are used to raise and lower the tower for transport.

An additional start button had been fitted remote from the main electrical enclosure, to allow start control of the hydraulic pump motor adjacent to the hydraulic valve bank. The start button was mounted in the cover of a pvc adaptable junction box installed for the purpose.

During a period of wet weather water had entered the box and allowed tracking to occur from the 240V control circuit to the metal collar of the start button.

The operator pressed the button making contact with the live metal collar. His other hand was on the valve bank completing a circuit across his chest..

INVESTIGATION

The lighting plant was not in compliance with AS 3007.

Exposed metal parts surrounding the start button were not connected to earth (frame).

There was no RCD installed on this equipment, and the fuse protecting this circuit was not capable of detecting and disconnecting this faulty situation.

The mounting of the start button on the lid of the adaptable enclosure did not maintain the IP integrity of the enclosure.

The lid of the junction box was incorrectly fitted, also compromising the IP integrity.

RECOMMENDATION(S)

- An assessment of all mobile lighting towers should be made to ensure that the measures described in AS 3007 for the prevention of electric shock are in place and effective.
- In particular, all exposed conductive parts of electrical equipment must be connected to a protective earth conductor.
- Protective devices must be provided that will automatically disconnect supply if the touch voltage cannot be maintained below extra low voltage.
- Electrical equipment must be maintained in its fit for purpose condition. This includes the IP properties of enclosures for the environment in which they are operated.

SIGNED OFF

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