

SAFETY ALERT



ELECTRIC SHOCK FROM MOBILE LIGHTING PLANT #2

INCIDENT

A mine technician received an electric shock from a mobile lighting tower in an open cut mine. The technician was adjusting wiring in an electrical enclosure when he contacted a 240 V conductor.

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.

Two electrical enclosures, similar in appearance, contained the electrical control equipment. One was for 415 / 240 V circuits, the other was for 12 V DC (extra low voltage[ELV]) circuits. The 12 V DC circuits were for engine management and monitoring, and included a 12 V powered programmable logic controller (PLC).

The mine technician was a mechanical tradesperson with auto-electrical skills, and authorised to work on ELV circuits only. He was trying to diagnose a fuel level monitoring fault, and attempted to re-seat the input plug to the PLC.

Unknown to him, a 240 V conductor had been wired to the PLC to notify the PLC that the alternator had built up voltage. This conductor was exposed for a short length at the back of the plug, allowing the technician to make inadvertent direct contact with his thumb. His other hand was on the door of the enclosure, completing a circuit across his chest.

INVESTIGATION

The 12 V DC enclosure was not lockable, did not require special tools for access, and was not fitted with signage warning of electricity. The 12 V DC enclosure is regarded as an operating area as defined in AS 3007, and as such it is not permissible to have exposed conductors at a voltage above ELV inside the enclosure.

RECOMMENDATION(S)

- Owners of the same or similar apparatus should immediately determine whether exposed or unprotected conductors above ELV are present in enclosures that are regarded as "operating areas".
- Mines should check that electrical apparatus complies with AS 3007 where appropriate. Regard must be had for the classification of operating areas, including enclosures of electrical equipment.
- Where complete protection by insulation or barriers cannot be achieved, enclosures must be secured by a key or special tool, and accessed only by skilled persons. Signs warning of the danger of electricity must be fitted to such enclosures.

SIGNED OFF

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