SAFETY ALERT

MINERAL RESOURCES NEW SOUTH WALES

MINE SAFETY & ENVIRONMENT

ELECTRIC SHOCK FROM DAMAGED CIRCUIT BREAKER

INCIDENT

An electrician received an electric shock while opening a damaged moulded case circuit breaker in the switch room of a declared coal preparation plant.

CIRCUMSTANCES

The electrician had been deployed to carry out maintenance in the switch room, which included attending to a moulded case circuit breaker that had a broken operating toggle. The toggle consisted of an internal metal structure covered by a moulded plastic outer casing. The internal metal was exposed through the broken toggle. The electrician attempted to open the circuit breaker by grasping the broken toggle and metal part with one hand, while bracing against the metal switchboard with the other. An electric shock was received from hand to hand, with the current path being across the chest. Fortunately no serious injury resulted.

The internal metal parts of the operating mechanism in many moulded case circuit breakers are electrically connected to one phase of the load side of the breaker. In circumstances where the front cover of the breaker is removed, cracked or broken, or the operating toggle is broken, then there is a risk of making contact with metal parts at phase potential.

INVESTIGATION

It was found that the Electrical Maintenance Engineer and the electrical staff generally were not aware of this hazard, even though it was reported in previous safety alerts.

RECOMMENDATION(S)

Managers of DCPPs and Mine Electrical Engineers of mines should:

- Immediately undertake to make electrical maintenance personnel aware of hazards associated with moulded case circuit breakers.
- Develop systems for alerting contract maintenance personnel to the above hazards.
- Incorporate into Standards of Electrical Engineering Practice provisions designed to ensure that defective moulded case circuit breakers are immediately isolated and removed from service.
- Carry out a pre-job risk and hazard assessment prior to any maintenance work being undertaken.

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