

Safety Alert

Date: October 2025

<https://www.youtube.com/watch?v=tAm4cgsW43Q>

Amputation injury highlights risks with line-of-fire positioning and using improvised electrical equipment

This safety alert provides safety advice for the NSW mining industry.

Incident

During maintenance on a water cart, a worker suffered serious hand injuries while using an improvised battery source to energise a hydraulic solenoid. The tank was being lowered after a torque converter seal replacement. As the solenoid activated, the hydraulic ram retracted, resulting in the partial amputation of 3 fingers. The task was performed beneath the machine while it was running.

Figure 1: The water cart at the mine site



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Figure 2: Close-up image depicting the incident location

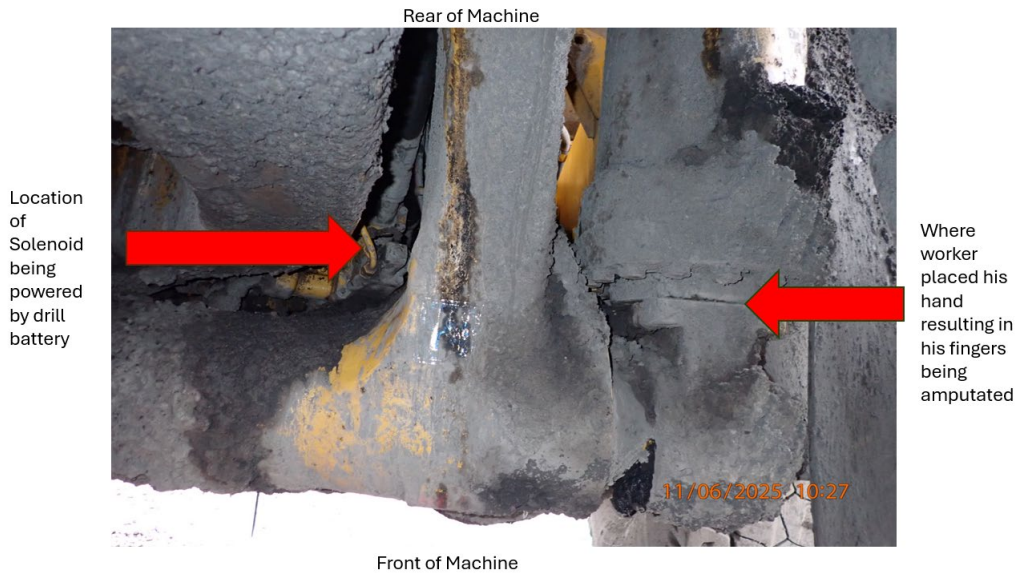
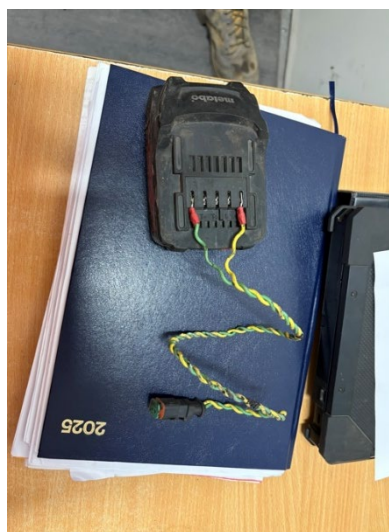


Figure 3: Side view of the incident site



Figure 4: Battery used to energise the solenoid to lower the water tank



The mine had previously experienced a serious incident in which a water cart tipped over backwards while the tank was raised and full of water. In response to the previous incident the following actions were taken:

- The tank lift function was electronically disabled.
- A physical lock isolating the tank raise function was installed in the cab.

At time of the incident, the tank level sensor was faulty, causing the system to falsely indicate the tank was full and preventing the function even if it was re-enabled in the control system.

To complete the required repair, the tank needed to be raised. Workers bypassed these systems by manually powering the solenoid, which is beneath the machine, using a drill battery and short wires. The hydraulic circuit was power-raise/power-lower, which meant the machine had to be running for the tank to be lowered. The method employed to complete this task placed the worker directly under the hoist mechanism with no means of remote activation.

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Key issues

1. Line-of-fire exposure during powered testing and inspection

- The worker was beneath raised mobile plant with active hydraulic energy.
- No engineered method was in place to allow energisation from a safe location.
- Risk assessments failed to address exclusion zones, stored energy, or unplanned movement.

2. Using improvised battery power supplies

- A non-compliant battery set-up was used without approval from a qualified electrical engineer.
- The configuration lacked design documentation, electrical protection, or task-specific safety controls.
- The system effectively bypassed a previously installed safety isolation intended to prevent tank movement.

Contributing factors

- Historical incident controls created new access barriers, which workers bypassed unsafely. The impact of these changes on the task was not effectively considered.
- The defective tank level sensor was a known issue for several months.
- Safer alternatives (such as long cables with switches or pre-positioned activation systems) were not considered.
- Supervisory oversight did not intervene in task setup or equipment choices.
- Risk management documentation was minimal and failed to eliminate foreseeable hazards

Regulator actions

Prohibition notices issued:

- Banning the use of portable power supplies unless approved by the site's statutory electrical engineer.
- Prohibiting workers from entering within the footprint of live mobile plant during testing or inspection unless the:
 - activity is carried out under a documented procedure
 - risk assessment has been reviewed and approved by the responsible supervisor, with evidence of hierarchy of control consideration.

Recommendations

- **Machine under test procedures** (power on test procedures) are systematic approaches to completing tasks that would otherwise be prohibited on site. Workers and supervisors need to understand the significant risks associated with such tasks and site supervisory practices should reflect this.

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- Eliminate uncontrolled powered testing setups by formalising procedures and using approved, engineered tools only.
- Design out line-of-fire exposures by:
 - using remote activation systems
 - establishing physical exclusion zones
 - mandating machine isolation for all component energisation unless task-specific, risk-based exceptions are in place.
- Ensure electrical safety compliance for all portable energy systems are:
 - designed and used only by competent people
 - approved by the site's statutory electrical engineer
 - clearly documented using cases and limitations.
- Update maintenance systems to promptly resolve critical equipment defects that impact operational safety or force workarounds.
- Reinforce supervisor accountability in overseeing task planning, electrical safety, and risk control validation.

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 process. It should also be placed on the mine's common area, such as your notice board where appropriate.

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