

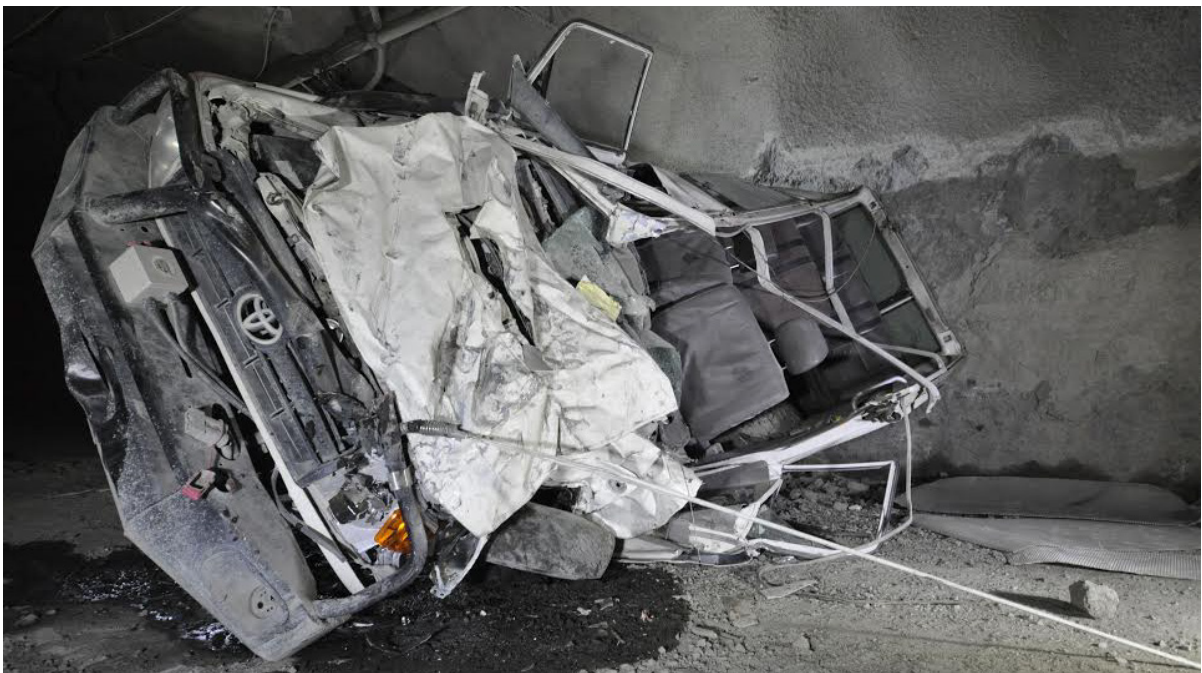
SAFETY ALERT

Serious potential incident: underground loader collides with light vehicle

INCIDENT

An underground loader (LHD) operating between an ore pass and a crusher tippie collided with a light vehicle.

The two occupants of the light vehicle suffered minor injuries however there was a potential for serious or fatal injuries to occur. The light vehicle sustained extensive damage.



CIRCUMSTANCES

The driver of the light vehicle was tasked with collecting and transporting loader operators from two different work places to the crib room. Contact with the loader operator did not take place before the light vehicle entered the tramming tunnel where the loader was operating. The loader operator failed to see the light vehicle in the tunnel ahead of him and consequently collided with the light vehicle.

INVESTIGATION

- All three personnel involved were trained and experienced loader operators familiar with the workplace.
- Operational conditions and visibility were good.
- The light vehicle driver did not attempt to contact the loader operator as the driver believed the radio in the light vehicle could receive but not transmit (this was possibly due to a low vehicle battery voltage. The radio was tested after the incident and found to be fully functional).
- The rotating beacon light on the light vehicle was most likely not working. The switch for the beacon was found to be in the 'off' position after the incident, or it was ineffective possibly due to a low vehicle battery voltage.
- The red "bogging-in-process" warning light (which requires positive contact with the loader operator before advancing) at the entrance to the workplace, was not in use. There was no hard barrier at this point of entry to the workplace.
- The passenger of the light vehicle was not using a seatbelt at the time of the incident. The driver did not enforce the requirement to wear a seatbelt.
- The light vehicle driver saw that the crusher light was red (which means that loaders should not tip – unless the light turns to green). The driver could not hear the loader operating. The driver then assumed that the loader was parked and that the loader operator was waiting for collection. In the time taken to drive around the tippie and into the tramming tunnel, the crusher light turned to green. The loader operator resumed tramming and was unaware of the presence of the light vehicle.
- The light vehicle driver and passenger did not follow written safe work procedures (SWP) when accessing the incident area nor did the driver follow safe work procedures when collecting the light vehicle passenger from the other workplace immediately before the incident.
- The written procedures, and training material, did not clarify a course of action to be taken in the event of a radio malfunction. The light vehicle pre-start procedure required the light vehicle driver to test the effective operation of the radio.
- In terms of hazard and risk perception, workers in the area appeared to be assessing risks and then deciding how and what to apply from written safe work procedures because they perceived the incident area as a lower risk underground area. There is an inference that this resulted in lower compliance with SWPs in the incident area compared to other areas on site.
- Supervisors had not effectively monitored the compliance with SWPs associated with the risk of vehicle interactions in the incident area.
- There appears to have been a 'disconnect' between mine management's perception of procedural compliance with SWPs and on-the-job reality in the incident area.

RECOMMENDATIONS

The risk associated with earth moving machinery is a prescribed hazard in the *NSW Mine Health & Safety Regulations 2007*. Clause 39 requires the mine risk assessment takes into consideration (without limitation) ... *'the conditions under which plant is used, including conformance to design parameters and interaction between heavy and light mobile plant'*

The risk assessment should consider the failure of systems that are critical to safety and should establish effective controls (using the hierarchy of controls) for all possible scenarios that could result in injury or harm to personnel.

- Mine management should review risk assessments, operating procedures and training material for suitability of fit-for-purpose controls relating to the interaction between mobile machinery (heavy and light) and personnel.

The review should consider, among others:

- all foreseeable contingencies (e.g. failure of communication systems, human error, failed indication lights and loss of electrical power)
 - limiting and/or restricting access to certain areas while activities that present elevated levels of risk are being undertaken (e.g. barriers at entry points, 'No-Go' zones)
 - fit-for-purpose hazard warning equipment (e.g. the effectiveness of rotating beacon lights for specific areas having varying levels of background illumination)
 - the results of visibility surveys on mobile plant.
- Where there is potential for hazardous interaction of plant, vehicles and/or personnel, risk control should be applied in accordance with the hierarchy of risk controls, refer to *Work Health and Safety Regulations 2011* Clause 36. This should include, as far as reasonably practicable:
 - consideration to the elimination or minimisation of interaction between heavy and light vehicles
 - use of engineering controls that do not rely on human intervention
 - controls that rely on human intervention.
 - Mine management should investigate and consider proximity detection/collision avoidance systems appropriate to the level of identified residual risk, where reasonably practicable. MDG 2007 provides guidance on selection and implementation of different proximity detection and awareness technologies.
 - Engineering control measures should be applied using the principles of functional safety, where appropriate.
 - Management systems should provide for supervisors to conduct regular workplace inspections and task observations of critical activities in order to monitor and enforce compliance with the correct safe operating procedures and standards. Where non-compliances are identified, they should be corrected.
 - Mine management should consider undertaking a safety culture survey in order to understand, quantify and assess workers' perceptions and attitudes towards risk taking behaviour and the subsequent management thereof.

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 notice board.

Signed

A handwritten signature in black ink, appearing to read 'Rob Regan', written in a cursive style.

**Rob Regan
DIRECTOR
MINE SAFETY OPERATIONS BRANCH
NSW TRADE & INVESTMENT**

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