



Mines Safety Significant Incident Report No. 153 (amended)

Truck driver fell from deck of Caterpillar 777D haul truck

Incident

During normal haul truck operations at an open pit mine, a female operator was found on the ground at a location directly below the access ladder to the driver's deck of a Caterpillar 777D haul truck.

Although there was no direct witness, the circumstances revealed by the investigation indicate that the operator was cleaning the windscreen of the truck and fell from the driver's deck. It could not be ascertained whether a medical condition of the operator was a contributing factor to the incident.

The investigation revealed that a fall hazard existed with the truck.

Risk factors in design and use

- The deck plates on the driver's platform in front of the windscreen did not extend the full width of the cabin.
- The arrangement of the deck plates and ladder access create an open area over the ladder stairwell.
- An employee could inadvertently step into this area and fall directly to the ground.
- The handrails on the standard Caterpillar deck do not extend the full length of the windscreen and ladder access.
- A flexible safety chain was positioned across the grab rails from left to right across the access stairwell.
- One of the methods used by employees to clean the windscreen was to straddle the stairwell void with a leg on each side of the ladder.
- In this position the safety chain could form a pivot point for an employee to tip backwards and fall to the ground.
- There was no written procedure for cleaning the windscreens on the Caterpillar 777D haul truck.
- The other trucks in the mining fleet were Caterpillar 789 and 793 haul trucks, which have an enclosed walkway around the driver's cabin and an inclined stairway for access to the trucks.

Design factors identified from the investigation

- The Caterpillar 777 range of haul trucks has been used around the world for several decades.
- The older A, B, C and D series of trucks have similar driver access arrangements to the truck involved.
- Design variations to the driver's deck layout, the step arrangement and the positioning of guard rails were noted in follow-up observations at a number of mine sites.
- The general layout of the ladder access to the deck plates creates an open area that presents a risk of a fall to persons working or moving in front of the windscreen of the driver's cabin.
- The latest truck in the series, the Caterpillar 777F, has undergone a significant redesign that includes an angled stairway instead of a steeply inclined ladder. Handrails are also provided on the full length of the stairway to the driver's cabin.

- Other observations show that a number of older Caterpillar 777 models have been modified with inclined stairways mounted to the front of the truck
- This type of modification appears to be useful when trucks are used in ancillary roles such as on run-of-mine (ROM) pads and as water carts.
- Two Australian Standards provide guidance for truck access systems, ladders, stairways, elevated platforms and handrails:
 - AS 3868:1991 *Earth moving machinery – Design guide for access systems*; and
 - AS 1657:1992 *Fixed platforms, walkways, stairways and ladders – Design, construction and installation*.
- A consultant's report was commissioned to review ergonomic and safety factors relevant to the cabin access and work arrangements on the truck. The review made suggestions that could significantly reduce the risk of a fall from the cabin deck.

Comments and preventative actions

- All mine operators using the early series of Caterpillar 777 haul trucks should urgently review all the tasks involved in truck operator access and work from the decks around the driver's cabin.
- Safe work practices should be developed for all tasks that pose the risk of a fall from a height.
- These procedures should involve maintaining three-point contact on ladder ways and working decks.
- Employees should be trained in any changes to existing procedures.
- The access ladder, deck arrangement and handrail provisions should be assessed and modified in conjunction with the original equipment manufacturer (OEM) using Australian Standards AS 3868 and AS 1657 for guidance.
- Where practicable, consider replacing older plant models with later models employing the most up-to-date safety measures. Also consider the employer's legal position when an OEM has modified equipment provided for the safety of operators and others.
- A continuous deck with proper handrails should be provided around the cabin.



Simon Ridge

STATE MINING ENGINEER

5 August 2010