



Significant Incident Report No. 277

Subject: Haul truck over open pit wall edge - fatal accident

Date: 22 August 2019

Summary of incident

Note: The Department of Mines, Industry Regulation and Safety's investigation is ongoing. Information contained in the significant incident report is based on findings at the time of writing.

A fatality occurred on 20 June 2019 when a 110 tonne haul truck crossed a windrow and fell down a pit wall. At this stage of the investigation, the following is evident: the loaded truck entered a single lane section of roadway with two narrow points. When it reached the second narrow point, the truck's right side wheels rode up and over the windrow. As it straddled the windrow, its forward movement was initially arrested with the right side wheels over the crest edge, but the truck then slid over the edge falling 15 metres to the lower bench.



The truck fell 15m over a pit wall.

Direct causes

The truck was exiting the pit when it failed to negotiate a narrowing section of roadway on the ramp. The right wheels rode up over the crest edge windrow leading to the truck straddling the windrow before it teetered and fell over the edge.



Narrowing section of roadway. Note the deviation in the pit wall profile resulting in a 'step in' on the wall reducing the running width of the ramp.

Contributory causes

- A 'step in' on the crest side reduced the bench width by over 20% along a 25 metre section.
- The 'step in' was on the driver's offside which has restricted visibility.
- The crest (drop-off) edge windrows were located along the immediate edge of the bench.
- The size and shape of the windrow, as well as adjacent material buildup, assisted the truck's wheels to ride up over the windrow.
- There was no demarcation or signage in the near area.
- The truck did not change the angle of approach to avoid the 'step in'.
- The incident occurred between dawn and sunrise when the light is changing, affecting visibility.



The right hand side wheel tracks can be seen leading to where the truck contacted the windrow.

Actions required

The following actions are recommended to manage elevated haul roads.

Haul roads should be designed to make it easier for truck to navigate safely. Blasting and excavating should be planned so as to avoid introducing hazards.

Consider the following:

- Analyse the haul route to identify if there are any areas or features, not limited to narrow sections and curves, that may pose a higher risk and adjust windrows and other controls in those areas accordingly. For example, the curve along a haul road should have the largest possible radius and the curvature should be smooth and consistent.
- Design and construct adequate windrows to control operational hazards considering dimensions (shape, batter angle, height), location and construction material. High risk areas require larger barriers to prevent a vehicle from going over the edge.
- The windrow should delineate where the truck should be on the haul road and be an adequate distance from the edge.
- Design of windrows and traffic management of vehicles operating around windrows should take into account the angle at which equipment operates and any vehicle blind spots in relation to the windrow.
- Regularly inspect and maintain windrows and remove any build up of material that would reduce effective windrow height or provide an intermediate ramp up onto the windrow.
- Ensure adequate signage and demarcation with increased frequency of demarcation placement in areas of higher risk.
- Make use of cameras and sensors on equipment to reduce the potential for blind spots

Further information

- Guidance about traffic management
www.dmp.wa.gov.au/Safety/Guidance-about-traffic-6268.aspx
- Traffic management audit - guide
www.dmp.wa.gov.au/Documents/Safety/MSH_AuditGuide_TrafficManagement.pdf
- Significant Incident Report No 230 Dump truck roll-over - fatal accident
www.dmp.wa.gov.au/Documents/Safety/MSH_SIR_230.pdf

The recently released Queensland DNRME 'Recognised standard 19 design and construction of mine roads' may assist with windrow design.

www.dnrme.qld.gov.au/__data/assets/pdf_file/0008/1453175/recognised-standard-19-mine-roads.pdf

This Significant Incident Report was approved for release by the State Mining Engineer on 22 August 2019