



Significant Incident Report No. 260

Subject: Autonomous truck significantly damaged by lightning strike

Date: 02 May 2018

Summary of incident

In January 2018, an unloaded autonomous truck was ascending a ramp when it was struck by lightning. The strike caused the position 2 tyre (front right) to explode, resulting in extensive damage to the upper structure of the truck including the deck, autonomy cabinet, engine and cab.

An exclusion zone was maintained until it was ascertained that the area was safe for inspection and recovery planning. No workers were injured.

Note: Preliminary findings from a tyre specialist concluded that the explosion was caused by extensive pyrolysis (chemical decomposition by heat). There was no pre-existing tyre damage that contributed to the event.



Autonomous truck struck by lightning. A. Exterior and structural damage. B. Extensive damage to deck and associated equipment. C. Interior of truck's cabin.

Direct causes

- Lightning struck the truck, causing pyrolysis of the tyre (resulting in an explosion).

Contributory causes

- The hazards associated with lightning were not identified (e.g. working during periods of likely lightning activity, the potential effects of a lightning strike on a vehicle).

Actions required

- Review the risk assessments for the use of all vehicles (manned and autonomous) during storms, or where there is a possibility of lightning strikes, and confirm they identify the hazards and risks to workers and equipment from lightning strikes.
- Adequately control the hazards and risks relating to lightning strikes, to reduce the exposure of workers to potential harm.
- Review the work procedures relating to working when there is a potential for exposure to lightning, to confirm the procedures are in line with the outcomes of risk assessments.

Further information

- Department of Mines, Industry Regulation and Safety, Mining safety publications, www.dmp.wa.gov.au/Safety/Mining-Safety-publications-16162.aspx

Tyre safety for earth-moving machinery on Western Australian mining operations – guideline

Mines Safety Bulletin No. 046 Lightning – hazards and safeguards

This Significant Incident Report was approved for release by the State Mining Engineer on 02 May 2018