



Off-highway haul truck tyre blowout in workshop injures workers

Background

In February 2020, a haul truck arrived at a workshop for maintenance with no tyres fitted in position 4 or 5. The position 6 tyre casing blew out 15 days later. Four workers were working on the haul truck in close proximity to the tyre. One worker was thrown backwards by the percussive shock wave and knocked unconscious. Two other workers received minor injuries (ringing in ears and light bruises). The workshop walls were damaged and projectile shrapnel was found up to 17 metres from the position 6 tyre.

During the 15 days, the truck had not moved and the tyres were cold. The tyre casing that failed was a 46/90R57 size, of steel radial construction and with only 2,000 hours of recorded service.

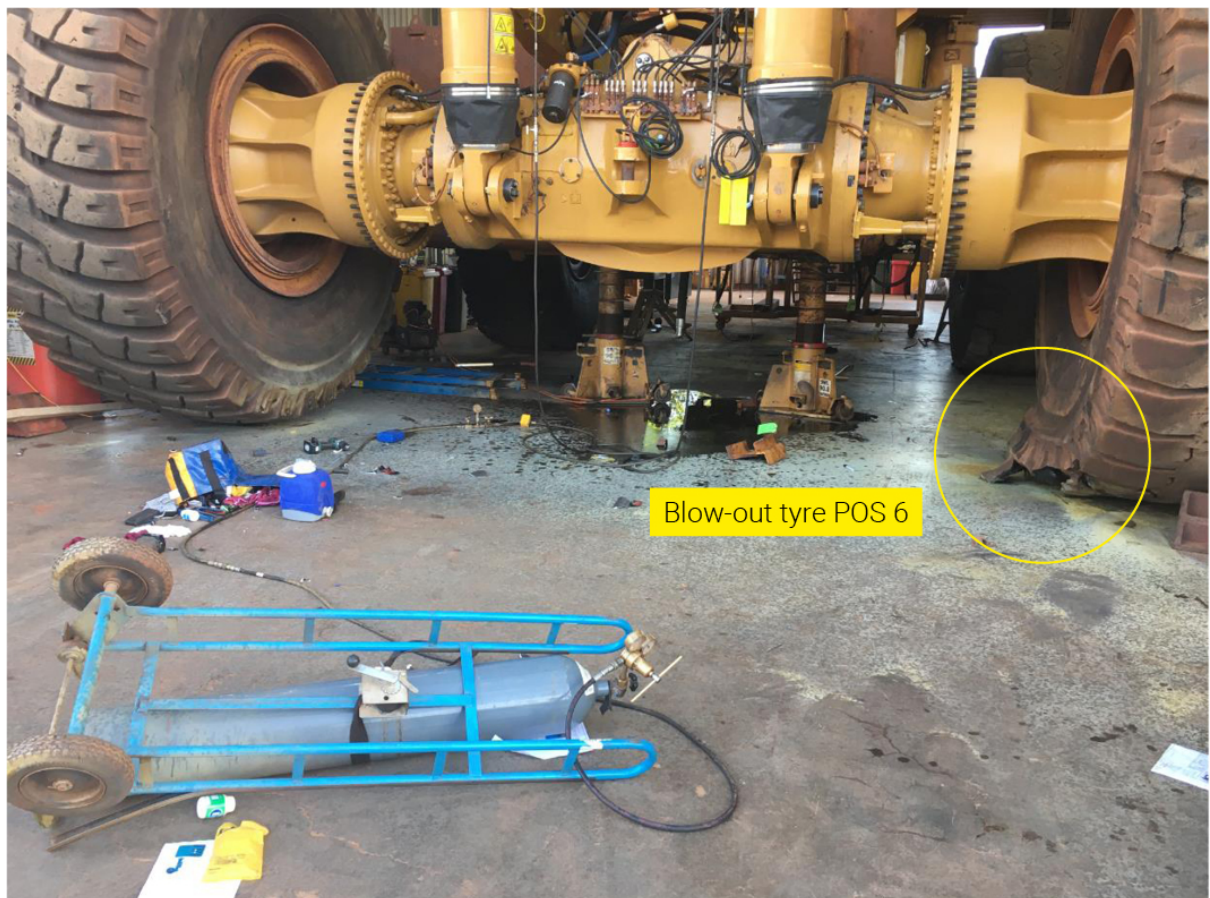


Photo of the haul truck showing the blown out tyre fitted in position 6. Tools and equipment are in their original positions.

Direct causes

The direct (physical) cause was cut damage on the outside edge of a tread lug of the tyre. This exposed the steel reinforcing layers to air and moisture resulting in progressive corrosion and separation damage that reduced the integrity of the tyre casing to resist internal pressure.

Contributory causes

- The tyre was not disposed of when it was removed from service in October 2018. It had a large cut caused by a rock during operation which, over time, allowed moisture to enter the steel cord area causing corrosion.
- The tyre was stored in the elements for 16 months before being fitted to transport the truck to the workshop.
- The decision to return the discarded defective tyre to service was not based on an inspection and assessment by a suitably competent person.
- The site did not have a safe system of work for the inspection of tyres used for transportation purposes.
- The damage to the tyre was not obvious due to the steel cord corrosion being internal.
- Persons in the workshop were working in close proximity to fully inflated tyres.

Actions required

The following actions will assist in preventing similar incidents occurring.

1. Tyres that are known or suspected of being defective are not fit-for-purpose and must not be returned to service unless they have been inspected and assessed as fit-for-purpose by a competent person (r. 4.38 Occupational Safety and Health Regulations 1996).
2. Persons who inspect and assess tyres must be competent, having an appropriate combination of knowledge, experience and qualifications (Section 19(1)(b) *Occupational Safety and Health Act 1984*).
3. As part of a comprehensive tyre management plan, mining operations should have established safe working procedures for the inspection and assessment of tyres that are known or suspected of being damaged.
4. To reduce the hazardous energy, tyres in workshops may be deflated to a lower pressure if persons are working in close proximity. A risk assessment should be conducted to determine if the tyre pressure should be lowered. Because the tyres are not carrying as much load (just the empty weight of the truck), the pressure may be reduced to a lower value as advised by a competent person.

Further information

- AS 4457.2-2008 Earth-moving machinery – Off-the-road wheels, rims and tyres – Maintenance and repair – Tyres
- Department of Mines, Industry Regulation and Safety (2015), *Tyre safety for earth-moving machinery on Western Australian mining operations – Guideline*
- www.dmp.wa.gov.au/Safety/Guidance-about-tyre-management-6550.aspx

The Department thanks WesTrac for providing the investigation report on which this safety alert is based.

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