



Mines Safety Bulletin No. 113

Subject: Reducing the potential for fall-back arrester arms on tyre handlers to become projectiles

Date: 15 August 2014

Summary of hazard

Tyre handlers are commonly used to assist with the repair and replacement of tyres on earth-moving equipment. Over the last three years, four tyre handler incidents have been reported that involved failed components on fall-back arrester arms. Stored energy is released when the arrester arm fails and components may become projectiles. The trajectories and distances travelled by the components are unpredictable, and workers can be harmed and plant damaged several hundred metres away.



Example of fall-back arrester arm showing components that can become projectiles

Contributory factors

Investigations into these incidents have identified a number of issues.

Equipment

- Poor design (e.g. positioning of fall-back arrester arms).
- Equipment not certified or rated.
- Poor material selection (e.g. material strength insufficient for task demands).
- Lack of quality control during fabrication leading to unpredictable weld penetration.
- Lack of measures (e.g. cable lanyard) to eliminate or reduce the risk of arrester arm components becoming projectiles following failure.

Working procedures and practices

- Instructions of original equipment manufacturer (OEM) not followed with respect to use and maintenance of the tyre handler, leading to localised structural damage and accelerated wear of fall-back arrester arm components and joints. Improper use of tyre handlers includes:
 - allowing tyres to fall back onto the grip release
 - using grip plates or arms to break the bead seal or manoeuvre tyres.
- Visual inspection alone is not sufficient to identify the potential for component failure.
- Lack of awareness of the hazard of stored energy associated with tyre handlers.

Actions required

Mine operators and maintenance supervisors are reminded of the importance of developing safe systems of work and appropriate maintenance and inspection regimes based on OEM guidance and a risk assessment.

The following measures are recommended:

- Ensure tyre handlers are fit for purpose.
- Define load ratings that reflect the risk assessment and site requirements.
- Follow OEM guidance for the use, maintenance and inspection of tyre handlers.
- Establish an inspection regime that includes non-destructive tests of welded attachments.
- Review tyre handler operating procedures and training requirements to ensure workers:
 - can recognise the hazard of stored energy
 - are competent to undertake assigned tasks safely.

Further information

Visit www.dmp.wa.gov.au/ResourcesSafety for further information on occupational safety and health in the resources sector, including the following mining safety alerts:

- Mines Safety Significant Incident Report No. 175 *Tyre handler's fall-back arms become projectiles*
- Mines Safety Significant Incident Report No. 124 *Tyre inflation fatal accident*
- Mines Safety Bulletin No. 89 *Earth moving tyres and use of tyre handling machinery*
- Mines Safety Bulletin No. 9 *Off-highway mobile earth moving equipment - tyre maintenance practices*

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