



Significant Incident Report No. 252

Subject: Fitter struck in chest by packing plate released under pressure

Date: 12 May 2017

Summary of incident

In December 2016, a cone crusher became bogged following a power outage, requiring the lifting of the crusher bowl (via the spring packs) to clear the blockage. To achieve this a hydraulic ram (lifting jack), with two steel packing plates placed beneath its base, was positioned on the countershaft ledge. Another steel packing plate was placed between the extension arm of the ram and the retaining plate of the spring pack above.

While a fitter was using a flogging spanner to release tension on a nut under the spring pack in front of him, a packing plate beneath the ram dislodged under pressure. The fitter, who was straddling the crusher's countershaft took the full-force of the plate to his sternum, receiving a significant chest injury.



1. Countershaft the fitter was straddling. 2. Nut that was being un-tensioned. 3. Countershaft ledge on which the ram and steel plates was positioned.

Note: The cone crusher's internal hydraulic clearing system had been inoperable for over twelve months. At the time of the incident, seven of the twelve hydraulic cylinders were leaking. Repair of the leaking cylinders was planned for a November 2016 shutdown, but due to a delay in receiving parts, did not happen.

Direct causes

- The fitter was in the line-of-fire of the steel packing plate when it dislodged under pressure.

- The lifting of the crusher bowl was conducted manually.

Contributory causes

Incorrect hydraulic jacking method

- The countershaft ledge on which the hydraulic ram was positioned was covered in mud and oil, not level and installed out of alignment with the spring pack.

Note: The countershaft ledge was not identified in the original design drawings and is considered a modification.

- The steel packing plates were contaminated by oil (reducing the friction on the packing plate surface) and positioned offset to the hydraulic ram, increasing the potential for release during equipment movements.

Safe systems of work

- The hazards posed by the long-term inoperability of the hydraulic clearing system and the offset countershaft ledge were not effectively identified, evaluated or adequately addressed.
- There was no safe system of work for jacking activities.
- The job hazard analysis (JHA) developed for the task failed to recognise the potential for the release of stored energy and workers being in the line-of-fire.

Actions required

Mine operators are reminded of the importance of providing and maintaining, so far as is practicable, a working environment in which workers are not exposed to hazards. To support this, the following actions are recommended.

- Undertake a documented risk assessment of all plant in the workplace to identify, assess, evaluate, control, monitor and review all hazards to which workers are likely to be exposed.
- Implement a robust maintenance system that ensures:
 - availability of critical plant components
 - a timely response to loss of serviceability of plant components
 - regular inspection of plant by a competent person
 - plant is maintained in a safe condition.
- Promote hazard reporting and appropriate response to reduce the potential for inaction and sub-standard conditions to be tolerated.

Further information

- Department of Mines and Petroleum, Mining safety guidelines, www.dmp.wa.gov.au/Safety/Guidelines-16146.aspx

Isolation of hazardous energies associated with plant in Western Australian mining operations – guideline

This Significant Incident Report was approved for release by the State Mining Engineer on 12 May 2017