



Mines Safety Significant Incident Report No. 162

Fitter struck by roller shutter support bracket

Incident

During the removal of a roller shutter assembly from a workshop at a Western Australian mine site, a fitter working from an elevated work platform (EWP) sustained serious head injuries when he was struck by a support bracket for the roller shutter.

The roller shutter assembly consisted of a roller curtain attached to a drum casing. The drum casing was connected to an internal shaft by springs designed to counterbalance the weight of the curtain, thereby assisting an electric motor to raise the curtain. The roller shutter was secured to the building by support brackets attached to each end of the shaft. The brackets were bolted to mounting plates welded to the workshop steel structure (see photographs). The roller shutter was 6 m wide by 5 m high, and the roller shutter assembly weighed 800 kg.



View of non-drive end of roller shutter



Close-up view of support bracket after incident

When the fitter removed the final bolt from the support bracket on the non-drive end, the bracket spun and struck the fitter in the head. The fitter was wearing a safety helmet and safety glasses. The glasses were hit by the bracket and may have mitigated the extent of the injuries sustained by the fitter.

There have been previous serious and fatal accidents involving roller shutters in industrial and domestic applications.

Immediate cause and contributory factors

- The bracket rotated suddenly due to the release of stored spring (mechanical) energy upon removal of the last bolt from the support bracket.
- Before undertaking the task, work permits were issued based on a task hazard analysis. The hazard of electrical energy was recognized by the work team and appropriate electrical isolation performed. However, the work team, including supervisory personnel, failed to identify the hazard of stored mechanical energy.
- No signage was available warning personnel of the hazard.
- The task of removing the roller shutter was non-routine.
- Personnel in the work team had not performed this specific task before, nor were they formally trained or instructed in the task.

- The manufacturer's safety information was not available on site.
- There were no procedures for the task of removing the roller shutter.
- There were no maintenance records for the roller shutters on site.
- Mechanical inspection of the roller shutter after the incident revealed that it was in a poor condition, indicating a lack of preventative maintenance and inspection of the equipment.
- Inspection of the support bracket indicated incorrect alignment of the locking pin at the non-drive end. Although this may not have contributed directly to the incident, it does indicate that the installation may not have been in accordance with manufacturer's recommendations.

Comments and preventative actions

To avoid a recurrence of this type of incident, the following preventative actions should be considered.

- Develop and implement procedures for the installation, maintenance and removal of roller shutters on site, based on a risk assessment and the manufacturer's instructions.
- Persons performing work on roller shutters must be suitably experienced, trained and competent to perform the task.
- Ensure that the site change management processes are effective in identifying tasks that are non-routine.
- Responsible persons should conduct an on-site audit of plant with stored energy hazards and assess the adequacy of control measures.
- Install warning signage on roller shutters and other installations to identify the hazard of stored mechanical energy.
- Consider installing later model roller shutters with improved engineering controls to minimise the risk of stored mechanical energy to personnel.



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16 March 2010