



Mines Safety Bulletin No. 91

Date: 28 May 2010

Subject: Use of wooden blocks to support earthmoving equipment

Summary of hazard

The inappropriate use of wooden blocks to chock and support earthmoving equipment off the ground creates a serious hazard for people working under or near heavy equipment. This situation has resulted in serious crush injuries and deaths in Australia when jacks and other supporting structures have collapsed and vehicles have fallen onto individuals working underneath. Most deaths and injuries have occurred in general industry and home mechanic work. State Coroners have attributed the deaths and injuries to poor quality support stands and unsafe usage.

Resources Safety has previously advised of the hazards presented by improvised methods such as this through the MineSafe magazine and various presentations. In March 2008, the Queensland Department of Mines and Energy issued Safety Alert 187 *Vehicle/mobile plant support stands*, which identified the problems associated with support stands that do not comply with Australian Standards.

For the mining industry, the task of raising and supporting earthmoving equipment and vehicles is inherently dangerous due to the weight of the equipment and vehicles, and the lack of stability when raised. Resources Safety has issued this safety bulletin because unsafe practices continue to be identified at some Western Australian mining operations.



Figure 1 Example of inappropriate use of wooden blocks to support earthmoving equipment

Contributory factors

- Lack of appropriate workshop facilities and equipment.
- Poor selection and use of equipment that is not fit for purpose.
- A lack of appropriate safe systems of work.
- A lack of inspection and testing of workshop equipment.
- Failure to recognise the hazard.
- Poor risk assessment and control measures.

Action required

- The recommended approach is for sites to purchase specifically designed stands that are fit for purpose, with the provision of suitable equipment being the responsibility of manufacturers and suppliers.
- Where stands are fabricated to perform the function of supporting machinery, the stands must be certified and rated as meeting the requirements of the relevant Australian Standards.
- Work requiring the raising and support of earthmoving equipment should be undertaken in workshops or on designated concrete slab areas suitable for the purpose. Improvisation of repairs on rough or uneven ground and unconsolidated ground in general operating areas creates an unacceptable risk.
- Wooden blocks might be considered, following a risk assessment, when:
 - there is a need for support of components that could be damaged if the full weight is supported on steel stands;
 - the tasks rely on machine or equipment movement to align component assembly (e.g. track alignment or joining);
 - the only point available to place a stand creates an unstable balance point, such as raised casting nipples; or
 - vibrations, possible lateral movement or other accidental contact with the supported equipment could shift the load.

Suitably shaped timber sections designed to be contained within and fully supported by steel stands may have a place in such applications, provided there is proper and appropriate engineering design.

The timber used should be of adequate dimensions and suitable strength and toughness to transfer the load to the steel supports without damage or deformation. Strapping must be used across the natural wood grain to minimise splitting.



Figure 2 Example of fit-for-purpose jack that can be raised and locked in position to support earthmoving equipment

Further information

The relevant Australian Standards are AS/NZS 2538:2004 *Vehicle support stands* and, where applicable, Appendix A of AS 4457.1:2007 *Earth-moving machinery – Off-the-road wheels, rims and tyres – Maintenance and repairs – Wheel assemblies and rim assemblies*.

Manufacturers, importers and suppliers should also be aware of their obligations, as specified in Part 14 of the *Mines Safety and Inspection Act 1994* and Part 6 of the *Mines Safety and Inspection Regulations 1995*.

A handwritten signature in black ink, appearing to read 'S. Ridge'.

Simon Ridge

STATE MINING ENGINEER