



# SAFETY BULLETIN

## Operator protective devices on mobile plant in underground coal mines

### BACKGROUND

There appears to be industry confusion with respect to the provision, use and maintenance of operator protective devices (including rollover protective structures, falling object protective structures, operator restraining devices and seat belts) on mobile plant that operate in underground mines at a coal workplace.

This Safety Bulletin clarifies provisions in the *Occupational Health and Safety Regulation 2001* and the *Coal Mine Health and Safety Regulation 2006*.

### LEGISLATION

The *Occupational Health and Safety Act 2000* imposes obligations on designers, manufacturers, suppliers and employers to ensure plant is safe and without risk to health when properly used. The OHS Act 2000 is supported by specific provisions for mobile plant in the OHS Regulation 2001 and the CMHS Regulation 2006.

#### ***Designers' obligations***

Clause 93(2) of the *OHS Regulation 2001* imposes specific obligations on designers to ensure that powered mobile plant is designed to incorporate an appropriate combination of operator protective devices on mobile plant, where there is a risk of:

- (i) the mobile plant overturning,
- (ii) objects falling on the operator, or
- (iii) the operator being ejected.

#### ***Employers' obligations***

Clause 141(2) of the *OHS Regulation 2001* imposes specific obligations on employers' to ensure that an appropriate combination of operator protective devices are provided, used and maintained if there is a risk of:

- a) powered mobile plant overturning,
- b) an object falling on the operator, or

- c) an operator being ejected from the seat.

Clause 20(d) of the *CMHS Regulation 2006* supplements the *OHS Regulation 2001* by imposing obligations for the mine's mechanical engineering management plan (MEMP) to make provisions for the fitting of mechanical operator protective devices to protect from the above risks and the risk of:

- 'objects coming into contact with the operator'.

Clause 141(9) of the *OHS Regulation 2001* imposes specific obligations on employers to ensure that powered mobile plant is fitted with appropriate seat restraints if:

- a) the plant is fitted with a rollover protective structure or a falling object protective structure, and
- b) attachment points for the seat restraints have been incorporated in the original design of the plant.

Subclause 141(10) (b) of the *OHS Regulation 2001* imposes specific obligations on employers' to ensure that powered mobile plant is not used to carry, lift or lower a person other than the operator unless:

- (i) the plant was specifically designed to carry persons, and
- (ii) if the plant includes a specifically designed seat for carrying a passenger, the person is seated in the seat,
- (iii) the seat is fitted with appropriate seat restraints, and
- (iv) the seat is located within a zone of protection afforded by the operator protective device.

### ***Earth moving machinery***

In addition to the above, the *OHS Regulation 2001* specifically requires earthmoving machinery with a mass between 700kg and 100,000kg to be designed with an operator protective structure that conforms to the series of Australian Standards AS 2294 *Earth-moving machinery – Protective structures*. Obligations are imposed on designers, manufacturers, hirers, employers through clauses 93(3)(b), 104(b), 121(3), 130(2), and 141(6).

'Earth moving machinery' means an operator-controlled item of plant used to excavate, load, transport, compact or spread earth, overburden, rubble, spoil, aggregate or similar material but does not include an industrial tractor or industrial lift truck.

### ***Alternative duties***

Clause 6 of the *OHS Regulation 2001* provides a mechanism for a 'primary duty' to be replaced by an 'alternative duty' where it can be established that 'it is not reasonably practicable to comply with the primary duty'.

## ADVICE TO INDUSTRY

1. Where a risk is established operator/passenger protective structures and seat restraints must be fitted to all mobile plant.
2. The operator protective structure must be fit for purpose and must also consider ergonomic needs of the operator.
3. The operator protective structure should be designed and tested:
  - to protect against the risk (loading criteria which the mobile plant may be subject to during an incident),
  - by a qualified engineer, and
  - in accordance with a recognised standard for the type of mobile plant.

In the absence of a recognised standard the structure should be designed having regards to the relevant performance requirements of the AS 2294 series of standards.
4. Load haul dump (LHD) and other similar type mobile plant is considered by NSW DPI as earth moving machinery. Rollover protective/falling object protective structures must be provided having regards to the requirements of the AS 2294 series of standards.
5. Any person altering or removing operator protective devices from mobile plant must comply with designer's obligation under Chapter 5 of the *OHS Regulation 2001*.
6. Where provided operator protective structures and seat restraints must be used and maintained.
7. The following table identifies NSW DPI recommended minimum requirements for operator protection of generic types of mobile plant.

Note: Additional risks may be present. A risk assessment must be undertaken with appropriate methods to control the risk being implemented in accordance with clause 5 of the *OHS Regulation 2001*.

Mobile Plant type	Prescribed Operator / Passenger Risks			
	Mobile plant overturning	Objects falling on operator	Operator ejected from seat	Objects coming into contact with operator
Personnel transporters	Possible	Possible	Likely	Likely
Articulated multipurpose/utility vehicles (LHD)	Possible	Possible	Likely	Likely
Rigid multipurpose/utility type vehicles	Possible	Possible	Likely	Likely
Skid steer loaders	Possible	Possible	Likely	Likely
Shuttle cars	Unlikely	Possible	Likely	Likely

<b>Prescribed Operator / Passenger Risks</b>				
<b>Mobile Plant type</b>	<b>Mobile plant overturning</b>	<b>Objects falling on operator</b>	<b>Operator ejected from seat</b>	<b>Objects coming into contact with operator</b>
Support carriers, RAM cars, etc	Possible (surface)	Possible	Likely	Likely
Graders / road making machines	Possible (surface)	Possible	Likely	Likely
Dozers	Possible (surface)	Possible	Likely	Likely
Continuous miners with seated operators	Unlikely	Likely	Unlikely	Likely
Self propelled drilling/bolting machines & feeder breakers with seated operators	Unlikely	Possible	Possible	Possible

**Note:**

1. Mobile plant overturning (ROPS) may include; tip over on side, rollover on roof underground, rollover on roof on surface, multiple rollovers on surface.
2. Objects falling (FOPS) on operator may include; falling material from roof, roof fall, material falling from other overhead plant, e.g. conveyor belts, underpasses, structures, pipes, etc.
3. Objects coming into contact with operator may include; running into fixed objects (from roof, rib, fixed plant or otherwise), ingress of material into operators cabin (from floor, rib, side, implement or otherwise).
4. Passengers should be afforded the same level of protection as the operator.
5. The speed of the mobile plant increases the risk.

NSW DPI does not consider supported roof as a fit-for-purpose measure to protect against falling objects. Appropriate FOPS structures should be provided to protect against the risk.

## **RECOMMENDATIONS**

To meet statutory obligations, all mobile plant in use (where a risk is established) must comply with one of the following:

1. Be fitted with appropriate operator/passenger protective structures and seat restraints. This is considered mandatory for newly designed and manufactured mobile plant.
2. For mobile plant in use and not previously fitted with operator protective structures nor seat restraints, the MEMP must make provision to install appropriate operator protective devices as soon as reasonably practicable.

Interim risk control measures must be established during the transitional arrangements. Risk control measures should include consideration to roadway conditions, speed, seam height, operator restraints, roof and rib support, machine stability, etc.

Transitional arrangements and interim risk control measures should be documented and available for review by the NSW DPI inspectorate. There should be a fixed date when operator protective devices will be fitted to all mobile plant as applicable. This date should be as soon as reasonably practicable.

3. Where it can be established that the installation of an operator protective structure is not reasonably practicable, under the provisions of clause 6 of the *OHS Regulation 2001*, then the reason and the alternative measures must be documented.

Periodic reviews should be undertaken to substantiate the installation of an operator protective structure being not reasonably practicable. Where older equipment cannot comply, consideration should be given to using newer fit-for-purpose equipment which does comply.

**NOTE:** Please ensure all relevant people in your organisation receive a copy of this Safety Bulletin, and are informed of its content and recommendations. This Safety Bulletin should be processed in a systematic manner through the mine's information and communication process. It should also be placed on the mine's notice board.

**Signed**



**Rob Regan**  
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**MINE SAFETY OPERATIONS BRANCH**  
**NSW DEPARTMENT OF PRIMARY INDUSTRIES**

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