



Significant Incident Report No. 213

Subject: Maintenance worker pinned by bulldozer belly plate - fatal accident

Date: 11 February 2015

Summary of incident

Note: The Department of Mines and Petroleum's investigation is ongoing. The information contained in this significant incident report is based on materials received, knowledge and understanding at the time of writing.

A maintenance worker was fatally injured by the uncontrolled release of stored energy when working in the field on a belly plate (also known as a bottom guard or under guard) fitted to a bulldozer. No energy isolation mechanism was installed between the belly plate and the ground during the work.

Before removal of the belly plate's fastening bolts, a "come-a-long" device (hand-operated ratchet lever hoist) had been attached to the flange on the right-hand (non-hinged) side of the plate. The worker then lay on the ground beneath the belly plate to access the fastening bolts on the left-hand side. When the fastening bolts were removed, that side of the belly plate fell and pinned the worker to the ground. The plate and accumulated material weighed more than 400 kilograms and the worker was fatally injured.



The underneath of the bulldozer showing the belly plate. Note: The come-a-long device has been moved from its position at the time of the accident.

Direct causes

- A stored energy hazard was left uncontrolled as no support was installed between the ground and the belly plate.
- The worker was beneath the belly plate when it fell.

Contributory causes

- The belly plate was not attached in accordance with the specifications of the original equipment manufacturer (OEM) — the hinge was not attached to the frame of the bulldozer and was later found to have pre-existing damage.



Damaged hinge on left-hand side of belly plate shown after cleaning.

- The belly plate had non-OEM modifications, including a shackle welded to its flange and non-standard fasteners.



View from below showing non-OEM modifications to the right-hand side of the belly plate.

- The accumulation of material on the belly plate would have increased its weight and may have obscured critical components, such as the hinge point and missing fasteners.
- No job hazard analysis (JHA) or job safety analysis (JSA) was performed for this task.

Actions required

Employers

Implement safe systems of work such that:

- when plant is damaged, a competent person assesses the damage and advises the employer regarding:
 - the nature of the damage
 - whether the plant can be repaired
 - what repairs are necessary to reduce exposure to hazards associated with the plant.
- when plant is to be modified, competent persons:
 - assess the amended design for potential exposure to hazards
 - inspect and test the modified plant before it is returned to service to verify it has been altered in accordance with the design specifications.

Managers and supervisors

- Provide detailed safe work instructions (SWIs) or safe work procedures (SWPs) that identify the hazards and controls for each job step, and the potential for hazards to be masked.
- Ensure practicable measures are available to reduce the exposure of workers to hazards (e.g. capacity to relocate maintenance tasks from the field to the workshop).
- Ensure workers are trained to:
 - recognise sources of stored energy, and understand and have access to suitable energy control measures
 - report damaged equipment promptly so it may be assessed and repaired as necessary, and returned to service in a safe condition.
- Instil safe work practices such that workers do not place themselves under suspended loads or in the line of fire.
- Ensure workers complete a JHA or JSA and have it assessed as adequate for the task by the supervisor before work is allowed to commence.
- Ensure anyone working on a task contributes to the development of the JHA or JSA, and reads and acknowledges its contents.

Workers

- Always follow the approved safe system of work when performing any task.
- Ensure a JHA or JSA is completed and assessed as adequate by the supervisor, and that you understand its contents before starting the work.

Further information

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

- Mines Safety Bulletin No. 93 *Lowering and raising of bottom guards on dozers – fatal accidents*

This Significant Incident Report was approved for release by the State Mining Engineer on 11 February 2015