

MINE SAFETY INVESTIGATION UNIT

INFORMATION RELEASE

Fatality

Incident date	21 May 2014
Event	Worker crushed while using mobile elevated work platform
Location	Boggabri Coal Mine, Boggabri NSW

At a glance

A construction worker was using a mobile elevated work platform (MEWP) within a steel structure when his head was crushed between the protective rail of the MEWP work basket and an overhead steel beam about 14 metres above ground level. Investigations into the incident are continuing.



Steel structure with MEWP in approximate position (after recovery of worker) - *Photograph by Investigation Unit*

The mine

Boggabri Coal Mine is a large open cut coal mine about 17 kilometres northeast of Boggabri in the Gunnedah Coalfields of NSW.

Coal is mined using trucks and shovels before being crushed on site and transported by trucks to a rail load out facility. It is then carried by rail to the Port of Newcastle for export.

The mine operator, Boggabri Coal Pty Ltd, had commissioned the design and construction of a new coal handling plant in support of its coal expansion project. The construction project was started by a Theiss Sedgman Joint Venture and is due for completion in 2015.

The incident site

The incident occurred at about 8.45 am on 21 May 2014. The incident site was within a partly constructed fabricated steel building intended to house a coal screening plant.

A crew of workers was deployed in various locations around the building to progress construction.

The building is three floors comprising structural steel, steel mesh, steel stairways and conveyor gantries. Hand rails were mostly in position but in some cases were still being installed.

The deceased was using a mobile articulated boom MEWP (rough terrain diesel knuckle boom). The MEWP was rated for an 18.3 metre lift and maximum load of 230 kg.



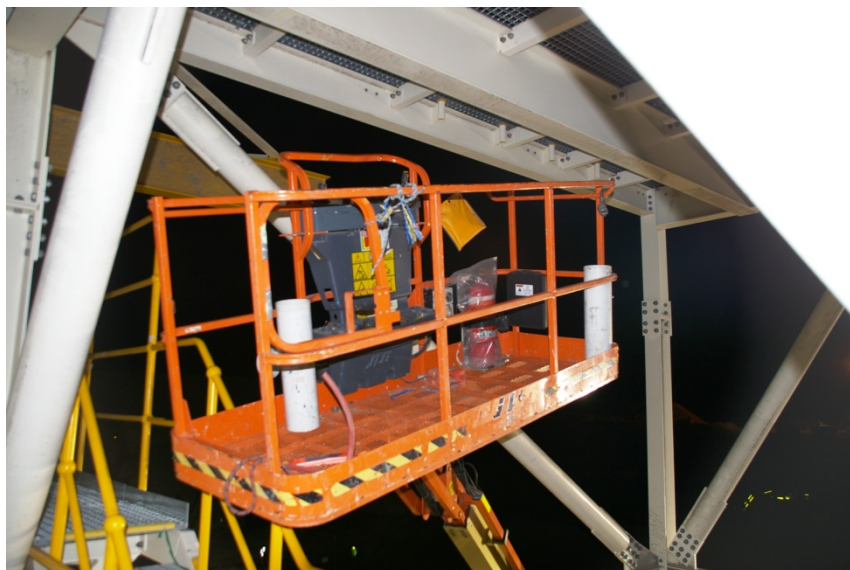
Position of MEWP basket (after recovery of worker) - *Photograph by Investigation Unit*

This type of MEWP does not rely on outriggers or stabilising jacks. It sat upon its four tyres, and the base could be moved by the operator from within the basket.

The base of the mobile MEWP was on a concrete pad at the base of the building. The basket had been positioned centrally within the building, and underneath the upper floor level. The articulated boom had been manoeuvred to reach in between the structural elements of the building.

The upper floor, immediately above the MEWP basket, consisted of open steel mesh grating supported on a steel frame, which consisted of four main beams and interconnecting floor trimmer steel to support the steel mesh grating. The outermost beams were about 300 mm in depth, and the two inner beams were about 600 mm in depth.

The beam directly above the MEWP basket projected 600 mm into the space below the top floor, and 300 mm deeper than the next beam forward of the position of the operator.



600 mm beams directly above MEWP basket (after recovery of worker) - *Photograph by Investigation Unit*

The task being carried out

The deceased worker, who has been identified as a rigger/dogman, was tasked with tightening bolts that were installed in the steel structure. A mobile compressor was at ground level, with air hoses running up through the building framework to the landing below the work location. From there, flexible hoses were conveyed to the workbasket to power a heavy duty pneumatic impact wrench.

The task required the MEWP to be operated to position the worker within arm's reach of the bolts that required tightening.

The MEWP basket

The basket was rated to carry two workers. On this occasion it was being used by the deceased worker. The basket was equipped with handrails on all sides, and a latched hinged access gate. The deceased worker was wearing fall arrest equipment at the time of the incident.

Within the basket was an operator's control panel consisting of a joystick control for movement of the basket in all directions, and another joystick control for propulsion and steering of the base of the machine. In each case, the joystick had an interlocking mechanism that was required to be held up before the joystick could move. This was intended to prevent inadvertent operation.

On the floor of the basket was a safety foot control. No movement of the MEWP basket was possible unless the foot control was continuously activated by the operator.



Control console on a similar MEWP basket - *Photograph by Investigation Unit*

A guard rail was positioned above the operator's console, intended to safeguard the console and control levers from being struck by any obstructions in the work zone. This can be seen at the extreme upper edge of the above photo.

The incident

The deceased worker held a national licence to perform high risk work and held competencies in the operation of the MEWP being used. Before the incident a MEWP prestart inspection was conducted by the deceased worker. Mine risk assessment documents required the presence of a spotter to control the identified risk of being trapped between the MEWP and fixed structures.

At the time of the incident the deceased worker was observed standing alone in the MEWP basket. When last observed by a worker, there was only a small distance between the worker's safety helmet and an overhead 600 mm steel beam.

Shortly afterwards, the deceased worker was seen with his head caught between the steel beam and the safety rail protecting the operator's console.

Workers immediately lowered the basket using the controls on the base of the machine at ground level. Efforts to revive the worker were unsuccessful. A second MEWP was brought in from nearby on the worksite to recover the deceased worker to the ground level.

NSW Trade & Investment inspectors and investigators and the NSW Police Force responded to the incident.

The following photograph depicts a ground level simulation of the approximate positioning of the deceased worker in the MEWP as observed by a worker at the time of the incident.



Simulation showing position of the worker in the MEWP at time of incident- *Photograph by Investigation Unit*

Investigators are working to identify the cause and circumstance of the incident.

Crush injuries involving MEWPs, including fatalities, have previously occurred in the construction industry.

Published best practice guidance documents identify ways in which the risk of being crushed against overhead obstructions can arise, including, but not limited to:

- lack of operator situational awareness
- operator error, inattention
- spotter not present or inattention by the spotter
- uneven or unstable conditions at ground level
- operator leaning over guard rails to obtain sight lines for manoeuvring
- operator being trapped against control levers
- operator disorientation
- lighting, visual cues
- distractions affecting operator concentration
- whipping or oscillating action of the boom at beginning and end of movement
- malfunction of equipment
- incorrect selection of equipment
- MEWP being struck by other machinery at ground level.

Industry, supervisors and workers that use MEWPs are urged to inform themselves of up-to-date knowledge of hazards, risks and control measures associated with the use of this type of equipment, and ensure that this information is incorporated into the processes used at the workplace.

In response to this incident, Mine Safety inspectors issued the mine operator with a notice requiring a full risk assessment to be undertaken in relation to all MEWPs at the site. The notice also requires the mine operator to consider the use of engineering controls that provide overhead protection for operators working in MEWP baskets.

Observations

Articulated knuckle boom type MEWPs are common on construction work sites. Use of a knuckle boom MEWP, where the length of the boom is over 11 m, is considered to be high risk work requiring a high risk work licence.

The need for hazard identification and preparation of a safe work method is well documented.

A 2013 UK HSE report notes that there are significant numbers of accidents where operators are trapped or crushed between an elevated work platform and nearby obstructions.¹ and the 2010 guide '*Avoiding Trapping / Crushing Injuries to People in the Platform*' published by the UK Strategic Forum for Construction - Plant Safety Group contains advice on a range of safeguards.²

An investigation report will be prepared for the Secretary of NSW Trade & Investment.

About this information release

The Mine Safety Investigation Unit has issued this information to draw attention to the occurrence of a serious incident in the mining industry. The investigation is ongoing. Further information may be published as it becomes available.

The information contained in this publication is based on knowledge and understanding at the time of writing. However, because of advances in knowledge, users are reminded of the need to ensure that the information upon which they rely is up to date and to check the currency of the information with the appropriate officer of the Department of Trade and Investment, Regional Infrastructure and Services or the user's independent adviser.

Information about the Investigation Unit and its publications can be found at: www.resourcesandenergy.nsw.gov.au/miners-and-explorers/safety-and-health/major-investigations

For information about health and safety regulation on mine sites contact a mines inspector at one of our local offices www.resourcesandenergy.nsw.gov.au/miners-and-explorers/safety-and-health/mine-safety-offices

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¹ < www.hse.gov.uk/research/rrpdf/rr961.pdf>

² < www.ipaf.org/fileadmin/user_upload/documents/en/Best%20Practice%20Guidance%20for%20MEWPs.pdf>