



Significant Incident Report No. 251

Subject: Worker seriously injured while operating a block-making machine

Date: 24 February 2017

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.

In January 2017, an operator was in the process of setting up a block-making machine to manufacture limestone blocks. The machine was switched on and set to operate in auto mode.

The operator noticed a large rock in the machine's feed tray and opened a safety guard on the side of the machine, entering an area between the tamper head and feed tray. While attempting to remove the rock, the machine began operating, trapping him between the moving tamper head and feed tray.

Note: In auto mode, a signal from the level sensor (located at the feed tray area of the machine) will start the block-making process.

Another worker walking towards the machine noticed the guard in the open position and the injured operator. The worker switched the machine from auto mode to manual mode (disabling the sensors) and raised the tamper head to free the operator. After receiving emergency medical treatment, the operator was transferred by helicopter to hospital with very serious, multiple injuries.



Left: Block-making machine showing the safety guard that was opened. Right: Area between the feed tray and tamper head, dashed arrows indicate direction of movement. Captive key in guard's interlock unit.

The original equipment manufacturer included an interlock unit and captive key system for isolation purposes. A key is required to start the machine's hydraulic system using the start switch located in the operator's cabin. The same key should be used to open any of the machine's guards. However, the key must be turned to the off position (shutting down the hydraulics) before it can be removed. In the same way, the guard must be in the closed position before the key can be removed and used

to restart the machine.

The scene examination identified that two captive keys were actually in place on the machine at the time of the incident. One of these was located in the safety guard locking arrangement (interlock unit), which was used to open the guard, while the other was in the start switch, which left the machine operating in auto mode.

Direct causes

- The operator entered the guarded area of the block-making machine while the machine was not isolated and set to operate in auto mode.

Contributory causes

- The block-making machine had been set up prior to the incident to operate in auto mode.
- The machine's main electrical isolation switch was not functional.
- Both captive keys were in interlock units at the time of the incident, allowing access to the guarded area while the machine remained under power in auto mode.

Actions required

Mine managers are reminded of the importance of maintaining a safe system of work and verifying the competency of the workers responsible for operating plant and mobile equipment on their sites.

Safe systems of work

- Implement and enforce suitable isolation procedures for plant and machinery.
- Implement and enforce a suitable system of control for captive keys and confirm access to the second key is adequately controlled.
- Undertake a documented risk assessment of all mobile plant in the workplace to identify, assess and control all hazards to which workers are likely to be exposed.
- Implement a suitable maintenance system, including periodic inspections by competent persons, to ensure plant are maintained and are in a safe condition.

Training and supervision

- Confirm workers, such as operators and workers conducting cleaning and maintenance, are adequately instructed, trained and assessed in the use of plant, including its safety features.
- Confirm workers receive adequate supervision in the performance of their duties while operating and maintaining plant.

Further information

- Department of Mines and Petroleum, www.dmp.wa.gov.au/Safety/Guidelines-16146.aspx

Isolation of hazardous energies associated with plant in Western Australian mining operations – guideline

This Significant Incident Report was approved for release by the State Mining Engineer on 24 February 2017