

SAFETY ALERT

Drill rig incident causes severe disabling injuries to operator

INCIDENT

An operator sustained permanent disabling injuries while operating a drill rig when severe forces violently lifted the blooie line and driller's platform.

CIRCUMSTANCES

A contractor was drilling a services borehole of about 600mm diameter from the surface of a mine to intersect underground coal workings. The contractor was using air hammer drilling techniques.

The borehole conductor casing was grouted from the surface into ground, which may have been unconsolidated. There was no other casing in the borehole. A non-rotating diverter fitted to the conductor casing directed fluids to the blooie line.

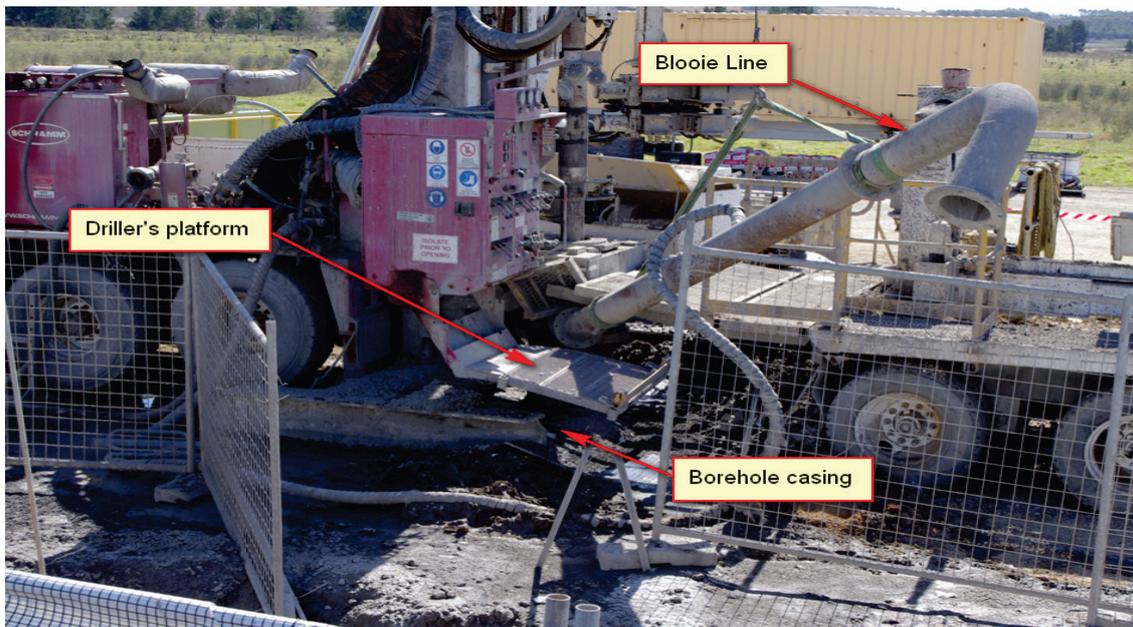
A blooie line directed fluids (air, water and cuttings) to a sump located a short distance from the drill-rig. This line was fitted with a 90° discharge elbow and was routed under the driller's platform.

Water was encountered during the drilling process affecting hole clearing ability. There were multiple delays to the drilling process while the sump was being emptied as hole conditions were severely restricting vertical movement of the drill string.

A foaming compound was used with compressed air in an attempt to clear the borehole of water and cuttings and subsequently free the drill string. The compressed air was potentially greater than 2,400 kPa (350psi).

A pressure event occurred causing the blooie line to lift and partially separate from the diverter flange. The driller's platform was struck violently. The casing and diverter also lifted but to a lesser degree.

The driller received severe and permanent disabling injuries and became trapped by the blooie line and driller's platform.



The drill rig after the incident

INVESTIGATION

The incident is being investigated by the Mine Safety Investigation Unit.

RECOMMENDATIONS

Persons conducting a business or undertaking (PCBUs) involved in air drilling operations should review their drilling activities in light of this accident. Consideration should be given to:

1. Identifying and controlling risks from stored energy build-up when the drill hole is blocked and circulation is lost or restricted, while compressors continue to pressurise the hole.
2. Ensuring borehole casings are suitably grouted and assessed by a competent person so they can withstand the maximum fluid pressure available, allowing for potential dynamic impacts.

Note: Where possible grout to a suitable depth into competent rock to effectively anchor the casing.

3. Ensuring discharge blooie lines are:
 - straight
 - of sufficient length to discharge fluids a safe distance from the rig and operators
 - supported and restrained to withstand any potential dynamic force from the pressurised fluid
 - not positioned under the operator's platform while using compressed air in the drilling process

4. Safe systems of work for managing and handling water influx and tight hole conditions. These systems should give consideration to recognising formations and conditions that are not suitable for air drilling and trigger a change to other fluids.
5. Competent people identify hazards and assess control methods on planned drilling activities.
6. Ensuring an effective change management process is in place.

All PCBUs are reminded of their obligations under the *Work Health and Safety Act 2011*, particularly Sections 18 and 19.

NOTE: Please ensure all relevant people in your organisation receive a copy of this Safety Alert, and are informed of its content and recommendations. This Safety Alert 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
DIRECTOR
MINE SAFETY OPERATIONS
NSW TRADE & INVESTMENT

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