

SAFETY ALERT

Gas outburst on longwall face

INCIDENT

Two gas outbursts occurred on the longwall face at Metropolitan Colliery, south of Sydney, on 23 December 2016 and again on 4 January 2017. The first event resulted in the release of a volume of carbon dioxide, and evidence of a small gas outburst cavity high in the longwall face.

The second event resulted in the release of a large volume of carbon dioxide and the violent ejection of coal from the longwall face resulting in the obstruction of the passage across the face.

No injuries were reported in either incident.

Figure 1: Maingate view of gas outburst. Supplied by Metropolitan Colliery.



Figure 2: Tailgate view of gas outburst. Supplied by Metropolitan Colliery.



CIRCUMSTANCES

At the time of the second incident, the longwall was on production and the shearer was mining toward the maingate. A slip-strike fault had been intersected and was present in the face at support 63. Face conditions were reported as good, with no evidence of weighting on the face. The shearer had just passed the faulted zone when operators reported hearing a loud noise and there was a subsequent ejection of coal and carbon dioxide from the longwall face directly over the shearer.

The shearer driver and support operator were positioned on support 38 and were covered in fine coal dust. The gas detector units they were carrying alarmed due to the carbon dioxide.

A minor gas outburst event was reported to the NSW Resources Regulator on 23 December 2016. The NSW Resources Regulator directed Metropolitan Colliery to undertake a review of the control measures associated with gas outburst hazards and, subsequent to the review the mine implemented additional control measures to limit worker exposure to any potential gas outburst risk. This included:

- applying an exclusion zone that extended 20 m on the maingate side of the shearer and all points inbye including the return roadways that supported the longwall ventilation split;
- the carrying of gas detectors by face workers; and
- a restriction on the number of workers accessing the longwall face.

INVESTIGATION

Following the second incident the NSW Resources Regulator issued a S195 notice prohibiting longwall production at Metropolitan Colliery. Metropolitan Colliery is undertaking several activities to comply with the directions in this notice.

Evidence indicates the gas outburst travelled about 35 m towards the maingate, which went beyond the previously determined exclusion zone.

RECOMMENDATIONS

A gas outburst is a well understood hazard in underground coal mines. Although gas outbursts on longwall faces are rare, there was a previously recorded event at West Cliff Colliery in 1998 (see [Safety Alert SA98-02](#) on the Resources Regulator website) and the phenomenon has been reported at longwall operations overseas.

Mine operators are required under the Work Health and Safety Regulation 2011 Part 3.1 to identify hazards and control measures taking into consideration the hierarchy of controls and then implement those control measures.

In managing the risk of a gas outburst, the following principles should be considered:

- prediction
 - core sampling and geotechnical assessment of potential structures should be undertaken to identify the gas outburst potential
- prevention
 - gas drainage of the seam to below a gas outburst threshold limits should be undertaken before extraction.

Underground coal operations should assess the potential for gas outburst on the longwall face. This assessment should include:

- a geological assessment of the longwall block
- taking core samples to determine the gas content of the longwall blocks to be mined
- the assessment of the appropriate and effective methods required to reduce gas content to below gas outburst threshold limits
- the methods of testing required to ensure that gas drainage has been effective, particularly in and around geological structures.

Where the gas outburst risk cannot be eliminated mine operators should isolate workers from the hazard, that is, remove workers from the area of risk. This has been achieved through the implementation of remote mining methods.

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.

Issued by

Garvin Burns

Acting Chief Inspector of Mines

Appointed pursuant to Work Health & Safety (Mines and Petroleum Sites) Act 2013

View more safety alerts and search our safety database at <http://www.resourcesandenergy.nsw.gov.au/miners-and-explorers/safety-and-health/incidents>. If you would like to receive safety alerts by email, enter your contact details on our [signup page](#).

Disclaimer

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 information on which they rely is up to date and to check the currency of the information with the appropriate officer of NSW Department of Industry or the user's independent advisor.