

Dangerous incident

Incident date: 23 January 2018

Event: Ignition of methane at continuous miner working face

Location: Chain Valley Colliery – Vales Point NSW

Overview

A frictional ignition of methane occurred at an underground coal mine in January this year, in which a continuous miner intersected a projected structure during production in a development panel. Workers on the machine tried to extinguish the fire using water hoses, but this was unsuccessful. The fire was eventually extinguished using a fire extinguisher. No workers were injured.

The mine

Chain Valley Colliery is an underground coal mine at the southern end of Lake Macquarie about 40 km south of Newcastle. It is operated by Lake Coal Pty Ltd. Chain Valley Colliery and the adjacent Mannering Colliery (also operated by Lake Coal Pty Ltd) are linked through underground workings.

Mining employs the use of miniwall mining (a similar process but narrower face width when compared to longwall mining), and the use of continuous miners for development.

The incident

An ignition of methane occurred at the coal face during production at the North Mains development panel about 7pm on 23 January 2018. Continuous miner CM01 was cutting towards a known geological fault when the ignition occurred. The flame was reported to be about half the width of the miner (about 2.5m) and came back 2 - 2.5m over the cutter head of machine, fuelled by two methane gas blowers from the surrounding strata (points where methane gas is expelled from the coal and strata in the area being mined). The four workers on the machine responded to the ignition, initially with water hoses to control the fire and subsequently with chemical powder fire extinguishers.

The investigation

Resources Regulator inspectors and investigators attended the mine immediately when notified of the incident and began an investigation to determine the cause and circumstances of the incident.

Among other issues, the investigation identified:

- The mine did not have a documented procedure(s) for managing the frictional ignition risk, however an examination of the continuous miner picks and testing of the sprays as part of the investigation revealed no issues regarding the condition and number of the picks damaged or missing and the correct operation of the sprays.

- The ventilation system in the panel was not adequately maintained. The investigation team identified a large number of ventilation tubes in service that had some form of damage, with rubber seals missing between sections of ventilation tube. The combined effect of these defects was to reduce the effectiveness of the ventilation system in diluting potential accumulations of gas at the mining face.
- The mine ventilation control plan did not stipulate requirements for supervisors to verify that ventilation standards at the production face were being adequately maintained.
- The location of gas monitoring equipment on the continuous miner was not positioned to maximise the likelihood of detecting potential layering of gas and therefore shut down the continuous miner. It was noted in the investigation that background methane levels at the face were low, however off-scale layering was detected in an adjacent stub heading.
- The mine's change management process was not applied when the sequence of mining to determine the location of the known geological fault was changed from the way the fault had been intersected previously from a different direction.

As a result of the investigation, the following actions were taken by the Resources Regulator:

- Three section 195 prohibition notices were placed on mine activities in North Mains panel until the mine operator demonstrated the mine had remedied the findings from the investigation.
- One section 191 improvement notice was issued to ensure that the mine's ventilation control plan addressed the need to verify the ventilation standards at the production face.

The mine operator fully complied with the directions in the issued notices, resulting in extensive changes to management systems and procedures related to the management of frictional ignition risk and ventilation.

Safety observations

Mine and petroleum site operators have a duty to identify hazards and manage risks to health and safety, and to provide safe work environment, plant and equipment in accordance with the provisions of the *Work Health and Safety Act 2011* and *Work Health and Safety (Mines and Petroleum Sites) Act 2013* and Regulation.

In particular, control measures associated with frictional ignition must form part of the mine and petroleum sites' principal hazard management plan for fire and explosion. This includes the assessment of potential fuel sources, ignition sources and appropriate emergency response for fire as detailed in Schedule 1 clause 6 of the *Work Health and Safety (Mines and Petroleum Sites) Regulation 2014*.

Further, mine and petroleum site operators must ensure that methane monitoring plant provided at the mine has detection heads at points most likely to detect the presence of methane in accordance with clause 72 (3) of the *Work Health and Safety (Mines and Petroleum Sites) Regulation 2014*.

Further information

Please refer to the following guidance materials:

- [Fact sheet - October 2017 – Fire and explosion](#)
- [SB18-04 – Crew withdrawn from coal face after frictional ignition](#)
- [SB17-07 – Minimum air quantities for diesel engines in underground coal mines](#)
- [SA11-12 – Ignition of gas leads to underground fire](#)

About this information release

The Resources Regulator has issued this information to draw attention to the occurrence of a serious injury in the mining industry. Investigations are ongoing and 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 Planning and Environment or the user's independent adviser. All photographs were taken by the Resources Regulator.

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