Health and Safety Bulletin No. 4

Managing drilling breakthroughs in underground mining

Date: 27 September 2022

Background

WorkSafe Mines Safety has received a number of notifications reporting potentially serious incidents involving breakthroughs into areas or headings that have not been barricaded. Recent incidents include:

- An exploration hole being bored by a diamond drill rig broke through into the level above.
- A blast hole being bored by a long hole drill rig broke through to the level above where cavity monitoring was being conducted.
- A pilot hole broke through to where a mobile refuge chamber, a live 1000 V distribution board and a refuge chamber charging station were located.
- A blast hole broke through to the level above 30 m from where a jumbo was working.
- A blast hole broke through into the side wall of the level above where a charge-up operator was checking the catchment bund.

No injury occurred as a result of these incidents.

View of long drilling up holes.

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Summary of hazard

When in operation, drill rods contain a large amount of kinetic energy and may cause significant damage to any vehicle, equipment, infrastructure or person that is in an exposed situation.

Inadvertent contact with any fixed or mobile equipment underground also increases the risk from the inherent hazards associated with that equipment, such as drilling into live electrical boards and substations, or vehicle damage that may result in a fire or explosion.

Contributory factors

In a number of instances, the contributing factors included:

- Breakthrough procedures, inclusive of checks and approvals, were not followed.
- Breakthrough hazard was not included in the daily shift plan.
- Some workers potentially exposed and working in the potential breakthrough areas, such as surveyors, were not regularly attending daily pre-shift meetings, and were not aware of what activities were being carried out underground.
- Long hole drillers were not fully competent in all elements of breakthrough training.
- Supervision of the required barricades was not adequate in the breakthrough area.
- Incorrect identification of the heading where the breakthrough was to occur resulted in the installation of barricades in the wrong heading.

Actions required

- Mines are required to have a risk-based procedure in place for managing breakthroughs when workings being developed and long holes or exploration holes being bored are approaching an area where other work may be occurring.
- A drilling procedure checklist should be developed with input and scrutiny from all management departments. Develop the required safety instructions, including the breakthrough control requirements and any plan showing the drilling location and all the underground drives in the vicinity which need to be isolated or barricaded.
- Surveyors must check the current and historic underground plans for the mine to identify all potential breakthrough areas and carry out any check surveys needed to confirm the position of all areas and locations where a breakthrough is likely to occur.
- All potential breakthrough areas should be barricaded, checked at the start of each shift to ensure they are correctly placed, and form part of the underground supervisor's inspections before drilling operations commence

References and further information

Visit www.worksafe.wa.gov.au for more information on workplace health and safety.

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