Working under a stope bridge

Mines safety alert no. 328 | 28 June 2016 | Version 1

What happened?

Production blasting to extract ore from an underground mine leaves behind an open space or stope. In this incident, following a production blast, material was left bridging the stope. The drawpoint is an opening at the bottom of a stope through which broken ore is extracted. Loader mucking operations took place in the drawpoint access drive, located beneath this bridging material (see diagram below).

No disturbance from the production blast was visible in the meshed and rock-bolted extraction level (refer to photo) where mucking was occurring.

Comments

The hazard in this case was possible fall of ground, with the potential for people to be fatally injured.

A bridge can form in a stope due to:

- Incomplete initiation of blast holes
- Insufficient expansion void
- Incorrect blasting initiation sequence

In this incident several direct causes were determined:

- During the production blast parts of the blasting downholes above the extraction level failed to initiate causing a bridge to occur. The firing lines may have been cut at a clay band during firing.
- There were no markings to indicate where the intended brow positon would be following the firing so personnel didn't recognise the brow was in the wrong place.
- Prior to the incident, a risk assessment had been completed recommending delineation of the last ring fired on all levels of a stope. The resulting procedure however did not clearly specify this delineation - so it was not done.

Recommendations

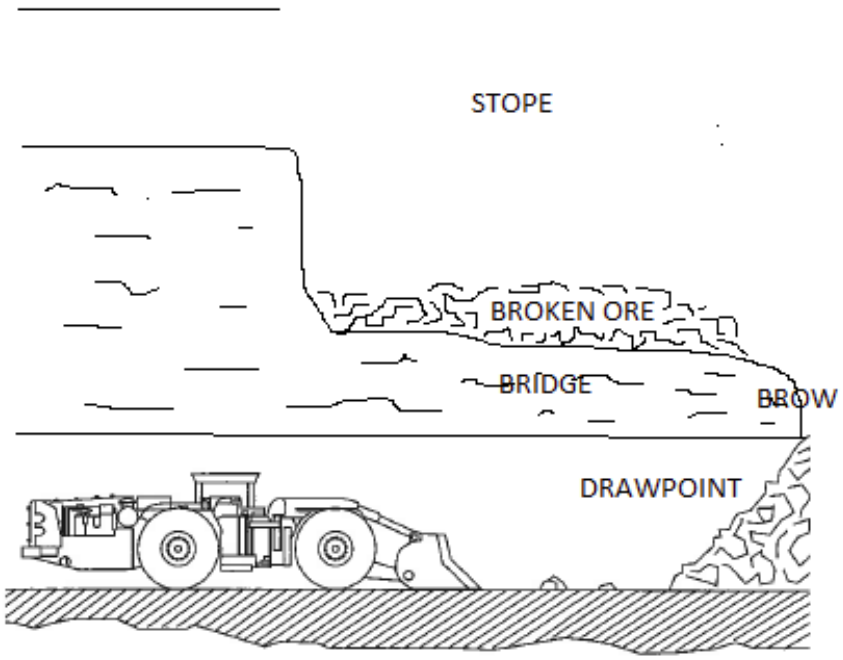
Review stope extraction risk assessments and associated procedures to ensure that:

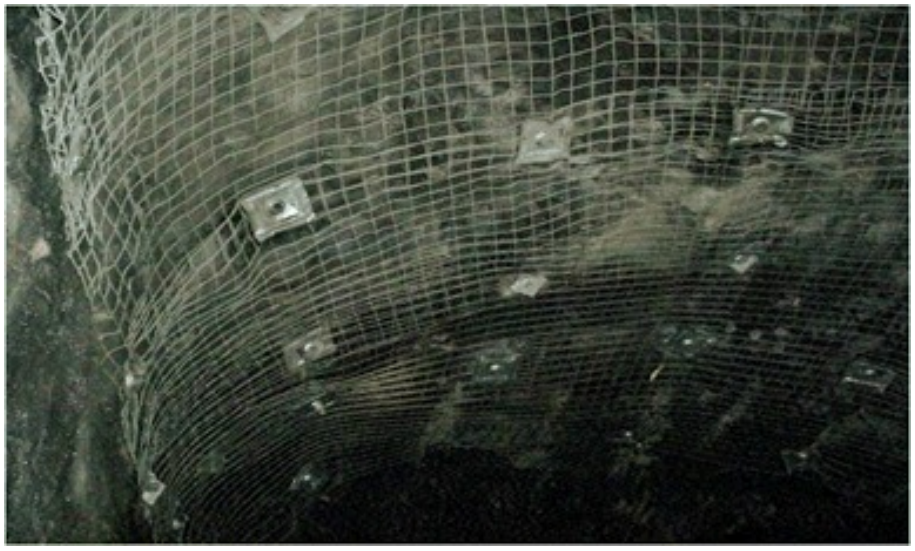
- the risk of a bridge forming during a blast is reduced to an acceptable level, and
- adequate controls are in place to identify and manage a bridge should one occur. This should include consideration of the following:
  - Prior to firing include an appropriate method to identify the last ring fired on all levels, both on blast plans and at the actual locations underground.
  - Post-firing inspection by appropriate persons to confirm the blast has come out as planned, including confirming the locations of the various brow positions relative to their planned positions.

Where a bridge is suspected, prevent unauthorised access until the nature and location of the bridge is confirmed using appropriate methods such as by inspection, Cavity Monitoring System (CMS) survey or probe drilling, and the
- bridge is dealt with.

References and further information

Refer to Guidance Note QGN13 Safe Work near Drawpoints in Underground Metalliferous Mines (PDF, 386KB) for further information.





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