

# Geology and Mining Conditions – Ground Control for Underground Gold Mines



## Best Practice Series BP-71

Due to varying geological and mining conditions, ground hazards can change from mine to mine and face to face. Therefore, each miner should become familiar with conditions related to their work place. Miners and operators should:

### **Look for –**

- adverse conditions in the back and ribs.
- geologic features – such as faults, joints, slips and dikes – which affect ground conditions.
- intersecting features that can create unstable wedges or blocks.
- frequently occurring or closely spaced geologic features.
- any changes in geology – changes in rock type or rock quality can affect ground stability.
- water inflow and damp conditions which can weaken rock or indicate fractured ground.
- practices which may contribute to the creation of ground control hazards – such as excessive width of openings, overbreak during blasting, undersized pillars, or incomplete backfill.

- signs of unstable ground – such as heaving of the mine floor, excessive rock bolt plate deformation, spalling or cracking ribs, roof fracturing or potting.

## **Listen for –**

- rock noise which can indicate movement in the back, ribs, or floor.
- noise from timbers indicating they are taking on load and the ground is moving.
- noise from rock bolts indicating rock movement and increased stress in the supports.

## **Communicate –**

- your observations of adverse or changing conditions to your coworkers.
- your findings of loose or unscaled back to your coworkers and foreman.
- changing or uncorrected ground conditions to workers on other shifts.
- information from management such as changes in terrain, assay, structural features, or mine design that can affect ground stability.

***Arrive Home Alive***

**U.S. Department of Labor  
Mine Safety and Health Administration  
Visit our Web site at [www.msha.gov](http://www.msha.gov)**

*February 2002*