

MNMF Fatal 2011-04

- Fall of Roof Accident
- April 15, 2011 (Idaho)
- Underground Silver Operation
- Miner
- 53 years old
- 26 years of experience

Overview

The victim was killed while watering down a muck pile in a stope. A rock fall approximately 90 feet long, 20 feet wide, and 30 feet high struck him.

The accident occurred because management did not have policies and procedures that provided for the safe mining of split stopes in a multi-vein deposit. Management failed to design, install, and maintain a support system to control the ground in places where miners worked and traveled. Additionally, management failed to ensure that appropriate supervisors or other designated persons examined or tested the ground conditions where the fall occurred.

Note:
Roof supports were
installed during the
recovery effort.



Root Causes

Root Cause: Management did not conduct an evaluation, engineering analysis, or risk assessment to determine the structural integrity of the stope back. The back that struck the victim was comprised of a combination of paste fill and waste pillar. As shown on projection maps, geologic structure in the form of joints, faults, and fractures intersected the waste pillar at various angles. These intersecting discontinuities cut the pillar rock mass into angular blocks and wedges which facilitated gravity failure. The large blocks and wedges observed in the fall rubble were not sufficiently supported by the 6-foot long rock bolts installed in the undercut surface of the waste pillar.

Corrective Action: Management developed and implemented new ground control standards that prohibit mining under intervening waste pillars and also established a maximum stope width. Management trained miners regarding these new standards.

Root Cause: Management policies, procedures, and controls failed to ensure appropriate supervisors or other designated persons examined and tested ground conditions to determine if additional ground control measures needed to be taken to ensure the safety of miners prior to commencing work in the stope.

Corrective Action: Management developed and implemented new ground control standards that include guidance on who is responsible for examining and testing the ground conditions. Management trained miners regarding these new standards.

Best Practices

- Design, install, and maintain a support system to control the ground in places where persons work or travel.
- Examine and test ground conditions in areas where work is to be performed prior to work commencing and as ground conditions warrant during the shift.
- When ground conditions create a hazard to persons, install additional ground support before other work is permitted in the affected area.
- Analyze extraction ratios and backfill methods and characteristics to improve stability.
- Be alert to any change of ground conditions.