

Safety in Mines Research Advisory Committee

Project Summary: GAP851

Project Title: Trial training in strata control for underground workers.	
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Category: Gold & Platinum	Applied research
	Rock engineering

Summary

In-depth assessments of accident records in gold and platinum mines indicate that an improved understanding of rock mechanics among production and service personnel will improve worker safety in relation to the rockburst and rockfall hazard. Workers' lack of competence with respect to certain aspects of strata control increases their, and their fellow workers', exposure to such strata control risks.

To date, however, rock engineering related courses have been mainly aimed at rock engineering personnel, mine management and senior production personnel. It is, therefore, desirable that a course suited to less senior production and service personnel, up to shift supervisor level, be implemented. An appropriate course for this audience is one that focuses on essential strata control and hazard identification information. At the mine where trial training was done courses for team leaders, shift supervisors and miners had been implemented and these courses were used to further enhance training as part of this project.

Recently completed SIMRAC projects GAP609a and GAP609b provide a sound framework (in terms of material and methods respectively) to perform effective training at the required level in gold and platinum mines. However, the results of the research need to be tested and proven, and effectively communicated before they can be generally accepted.

This project, therefore, undertook a trial implementation of purpose-developed training content according to guidelines drawn up under the previous GAP609 projects. To achieve this, a champion mine was selected that had a desire to implement a different approach to training than that currently being pursued. A further requirement was that a flexible organisational structure and work environment existed that could accommodate the, albeit relatively minor, level of intrusion and disruption caused by the implementation and monitoring process. Topics for instruction were chosen, for their relevance and importance, by the project team in consultation with personnel on the selected mine.

A process was then undertaken to 'model' (i.e. identify and describe) the knowledge/expertise necessary for a stope team to achieve the desired level of strata control and hazard identification effectiveness. The experimental training intervention consisted of a selected stope team on the mine being trained and evaluated by a trained facilitator/trainer in respect of the assimilation and application of this knowledge/expertise. A 'control' stope team was also evaluated for comparative purposes.

The following conclusions are drawn from the project work:

- The introduction of basic strata control knowledge to the team leaders directly and to the rest of the workers indirectly made a significant improvement in terms of hazard recognition and the method of coping with the bad ground conditions.
- Positive results are recorded from the implemented training intervention exercise, and the positive impact of this method is evident (Figure 1).
- Topics selected were appropriately focused and targeted the needs well.
- A certain amount of knowledge sustainability was obtained, despite a change of leadership in the tested team.

- Greater significance can be attached to the findings if the trial method is compared with similar measures of conventional training. The comparison with the control

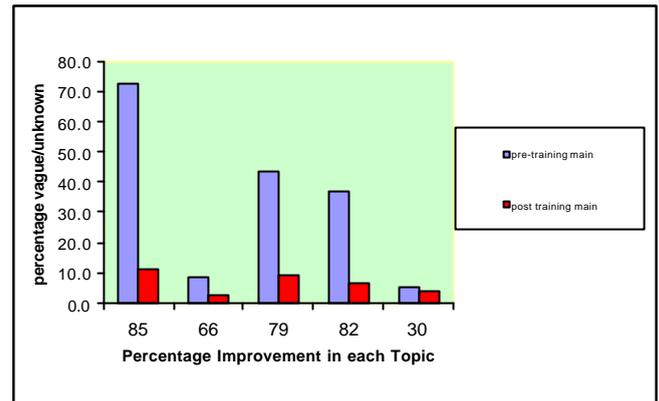


Figure 1 Improvement in five topics after training. Number of vague or "don't know" answers were reduced in all cases.

stope provided this.

- Setting up a more tightly controlled research project would be difficult to achieve because of the constantly changing work and team environment in underground mining.
- Training alone (even using an appropriate methodology) is not sufficient for success; positive organisational influences are also required.

Taking into account the results of this project, it is highly recommended that:

- similar focused methods of training be implemented on a wide scale (the practicalities of doing so may seem onerous, but since the training is delivered through the team leader, and is based in the working environment, this would not require a great deal of additional personnel); and
- work is done alongside this training to ensure that the team leader has adequate resources and authority to implement what has been learnt.

Additional research in the following areas could supplement the contribution made by the current project work:

- The impact of safe work procedures on production output over the medium to long term.
- The impact of management visibility on safe work.
- The impact and efficiency of initial induction and post leave refresher training currently used.