

ABSTRACT

It is a mandatory for a mine company to have a management plan for ground control either a surface or underground mine. Underground Mine Kencana owned by PT. Nusa Halmahera Minerals realizes this needs and benefit and has established this management plan since 2005.

The problem that occurs is weak rock mass and impacted to cycle time to mine. With the ongoing issues, the advance of mining plan, physical production requirement including cut-off grade value have resulted the imperative of reviewing the application of GCMP (Ground Control Management Plan). GCMP consists of a ground support guideline, requirement, role and responsibility, geotechnical condition, data collection, risk assessment and excavation stability, etc. The purpose of this study is to evaluate the application of GCMP and see any opportunities to improve production performance better by having shorter mining cycle time safely, without compromising safety. This will be a benefit for long term mine stability.

Two points reviewed happened in rock type 3 and 4 and focusing on reducing shotcrete thickness in rock type 3 and consolidating two passes of shotcrete spraying with 50 mm thickness each layer in rock type 4 into single pass shotcrete spraying with 100 mm thickness. Research methodology covers mix design review, data collection on mining cycle time and shotcrete early strength.

Based on the result obtained, significant cycle time improvement appears to happened in both rock type by having 28 % and 29 % faster in cycle time compare to condition before review happened and consistently achieving 60 minutes on early strength to gain 1 MPa.

This good result need to be maintained and reviewed regularly and it is important to supervise the ground support standard and application by implementing GCMP properly to achieve safe production. However, in the result of this evaluation, there is still opportunity to have more productive work in mining by follow up and reduce waiting time identified in mining cycle time.