

Real Savings Delivered Through Development Optimisation



Project Summary

REGAIN CONTROL OF YOUR OPERATION

With over break in development mining running at approximately 18% at this underground mine, improvements were required to increase the efficiency of the development cycle and reduce costs.

Dyno Nobel together with the mine undertook a development optimisation project with the aim of reducing the over break to levels as low as possible whilst optimising blast design and timing for development faces. By using Dyno Nobel's string loading technology with TITAN[®] 7000, as well as SmartShot[®] electronic detonators, over break was successfully reduced by 75%. In doing so, drive integrity and pillar stability were improved, making for a safer working environment.

Furthermore, optimised drill and charge designs were trialled, with a 15% decrease in holes drilled per face leading to cost savings and improved cycle times.



Project Goals

SAFER AND MORE EFFICIENT WORK ENVIRONMENT

The key objectives of this project were to lower the overall development costs and improve pillar stability through perimeter control and design optimisation. The nature of over break results in the unplanned removal of mostly waste material from the mine, whilst incurring additional load and haul and ground support costs in the process. It was understood that the direct benefits associated with a reduction in over break could be measured in millions of dollars, whilst the indirect benefits could be significantly higher.

Furthermore, additional savings and efficiencies could be realised through the optimisation of drill and charge designs, together with customised precision timing using SmartShot electronic detonators. Benefits include:

1. Hole reduction
2. Square faces (elimination of dishing)
3. Improved fragmentation (decrease in bogging cycle times)
4. Enhanced pillar stability
5. Further scope to investigate a ground support review given an increase in profile integrity

Technology Applied

STRING LOADING AND SMARTSHOT DELIVER

The combination of string loaded TITAN 7000 bulk emulsion delivered via a customer operated DynoMiner[™] Profile and SmartShot electronic detonators proved smooth perimeter blasting outcomes are simple to achieve.

String loading involves loading a decoupled charge of TITAN 7000 bulk emulsion in the perimeter blast holes, thereby lowering the total explosive energy in the hole, which is an advantage where perimeter control is required.

SmartShot electronic detonators provided the required accuracy to ensure all perimeter holes fired at the same time in order to produce a smooth perimeter finish. The robust connectors, simple daisy chain connection and minimum training requirements allowed for an uninterrupted changeover to electronic initiation.

The application of digital photogrammetry using the 3DM Analyst Mine Mapping Suite from Adam Technology provided crucial data and valuable visuals in analysing the quantum of over break.

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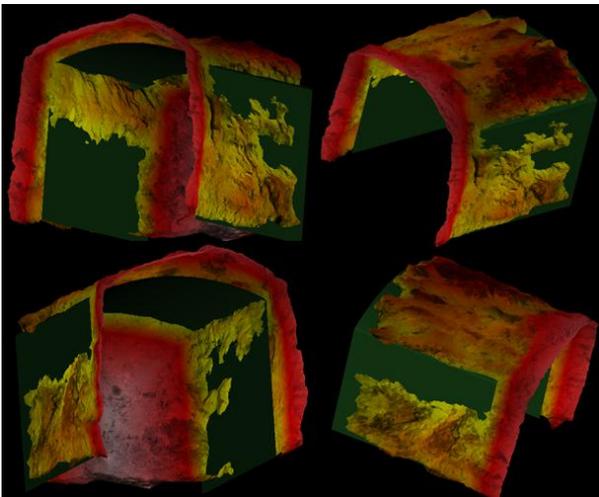


Value Added

HALF BARREL HEAVEN

The results afforded through perimeter control were immediate. Over break was successfully reduced to repeatable, low levels of just over 4% whilst maintaining advance. Associated cost savings in development mining were substantial and valued at several millions of dollars per annum based on the mine's development plan. With smoother perimeter profiles becoming the standard, safer working conditions will ensue, as well as decreases in development cycle times.

Continued close collaboration with the customer ensured this project was successfully completed.



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