

Development Tunnelling Key Performance Indicators, an often-overlooked part of underground mining

E Wargem¹, D Tozer²

1.Senior Technical Consultant, Dyno Nobel Asia Pacific, Perth WA 6000.

Edward.wargem@ap.dynonobel.com :

2.Technical Manager, Dyno Nobel Asia Pacific, Perth WA 6000. david.tozer@ap.dynonobel.com

Keywords: underground drilling, underground blasting, development tunnelling,

ABSTRACT

As near surface ore deposits are being depleted globally, the decision to employ underground mining methods to extract material are becoming the most feasible method of ore extraction. The ability to access these underground ore deposits for production relies on the development of underground tunnels. An often-overlooked part of the mining cycle is understanding and tracking of mine development tunnelling key performance indicators. Key performance indicators measure the success of a project or organisation. Key performance indicators for underground mining vary for each part of the mining process, from drilling, blasting, loading, hauling, and backfilling (for mines that employ backfill). This paper focuses on development tunnelling key performance indicators. The two main key performance indicators for development tunnelling are overbreak/underbreak control and development advance rate efficiency. As the development tunnelling process for mining is a fast-paced cycle, these two main objectives are often overlooked leading to downstream issues such as excessive overbreak/underbreak and or below average effective advance rates. This can lead to poor tunnelling operations in terms of excess material movement, longer-term excavation stability, poor drive profiles, and an increase in secondary drilling and charging. All of which have negative effects on cost profiles and mine scheduling. This paper discusses development tunnelling theoretical design methodologies and industry best practice of achieving and maintaining development tunnelling key performance indicators.