

## ABSTRACT

PT. Freeport Indonesia (PTFI) is a copper and gold mining company. Grasberg Block Cave (GBC) is one of the underground mine site located at PT. Freeport Indonesia. The mining method in underground mines Grasberg Block Cave using Caving method.

The Extraction Level 2830 GBC is a level where ore will be mucking after caving process. Blasting is used to rock excavation during development. The location rock type is Tgdfa (andesit) with average density  $2.72 \text{ ton/m}^3$ . Tunnel dimension that planned is  $4.4 \times 4 \text{ m}$ . PTFI applies same geometry for all blasting in the Extraction Level, using 59 blast holes.

Overbreak often occur at Extraction Level. There are three factors that cause overbreak : rock mass condition, blasting, and scaling. Overbreak will make rock mass around the tunnel more unstable so it's dangerous. This Research was done to know the influence of rock mass condition (RMR), blasting, and scaling method to overbreak in the extraction level.

Based on research, known that the reduction of RMR value will increasing the overbreak, obtained the formula for determining the value is  $overbreak = 0,45 - 0,006 \times (RMR)$ . Increasing the PPV value will increasing overbreak. Jumbo scaling method will increasing overbreak and RQD have contribution when jumbo scaling is used. Based on Jimeno (1995), known that number of blast holes should use is 38 holes. Rock mass condition (RMR) and blasting (PPV) make some influences to overbreak. The obtained formula to determine overbreak is  $y = 0,06 x_2 - 0,005 x_1$ . This formula is suitable for fair-good rock (RMR 41-79).