

WEST ANGELAS BLAST OPTIMISATION

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This thesis has been undertaken to determine optimum blast procedures in the hard capped geological zones of the West Angelas deposit. The hard capped material, otherwise known as hydrated mineralisation, at West Angelas has differing geological properties than other West Angelas rock types. The hard capped material is a stronger than the traditional mineralised zones, and also contains a number of cavities within the rock mass.

Velocity of detonation and crater testing was undertaken within hard capped material at West Angelas to determine optimum blasting agents, and blast parameters. Previous to trial blast, standard blast practices were employed throughout the entire West Angelas pit.

From the testing it was determined that increasing stemming heights from the standard three metres used across site to 3.8 metres for ANFO and 4.5 for heavy ANFO blends improved the quality of blasting within the hard capped material. Velocity of detonation testing also demonstrated a relationship between ammonium nitrate prill sizing and detonation velocities. The results showed an inversely proportional relationship, hence by decreasing ammonium nitrate prill sizing, the velocity of detonation is increased.