CHANGING POWDER DISTRIBUTION IN THE HIGHWALL HOLES REDUCES OVERBREAK AND ROCKFALL HAZARDS

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Reference to specific brand names is made for identification only and does not imply endorsement by the Bureau of Mines.

ABSTRACT

The Bureau of Mines conducted a series of tests to develop a blasting method that would reduce overbreak and rockfall hazards at a limestone quarry in northeastern Wisconsin. Reductions in overbreak were achieved by shortening the main explosive column and reducing the explosive load in shortened stemming zones in shotholes which were to form the highwalls. Two blasthole diameters, 3 and 4 inches, were used with 7 by 7 foot and 9 by 12 foot burdens and spacings respectively. ANFO, Comsol 300, or PowerAN were used in the body of the shots and Gelmax or 40 pct extra dynamite cartridges were used in the reduced load zones. Smoother highwalls were visually apparent, however further analysis by seismic refraction techniques were performed as an aid to studying overbreak within the rock mass.