



# Case Study

## Blast Improvement

Improved time & safety by limiting time on the face.

An increase of \$48K product goes out the door per shift.

Reduced man hours but maintained the amount of tons to the plant.

Digging is very good and fragmentation is uniform.

### The Blast - Before

- Shots averaged 100 holes, 30 ft (9 m) deep and 3 rows
- Timing was erratic between rows: 18 ms between holes and down rows

### Areas of Concern

- Oversize issues & digging was difficult
- No movement of rock
- PPV & Air overpressure issues

### Our Service

- Installed one (1) Minimate Pro6 seismograph behind the blast and recorded a signature hole in with a production blast.
- Sped up the timing from 18ms between holes and rows to 9ms, with some holes firing at 3ms apart.
- Changed where the initial hole fires and where subsequent rows detonate.
- Expanded the pattern and dropped six (6) holes.
- Recommended the stemming be increased by one (1) foot due to too much vertical ejection.

**\$128,039 per year**  
Total Savings

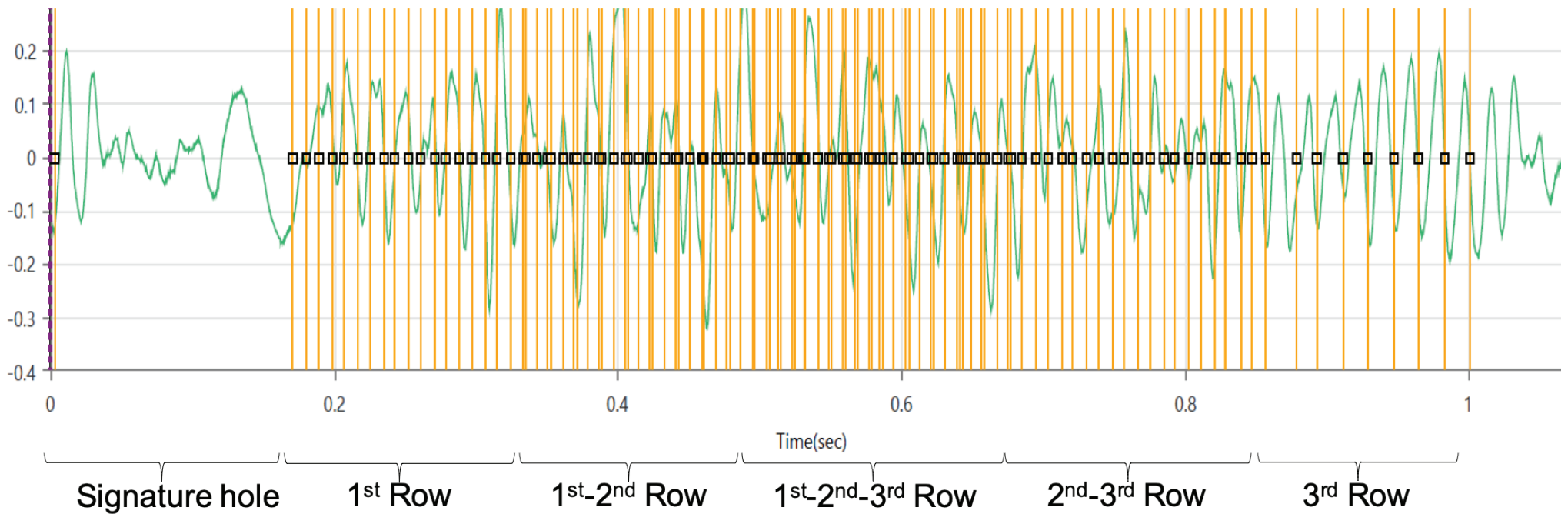
---

**\$25,920:** Expanded the blasting pattern, reduced the holes by 6 and maintained the same tons.

**\$38,819:** Cost of powder saved from removing holes.

**\$6,840:** Cost of detonators saved from removing holes.

**\$56,460:** Increased the stemming by one foot. Saved cost of additional powder.



## The Data Analysis

With the timing overlaid on the waveform, IGS can see:

- A build up of energy as each row fires which indicates that the rock is not moving as it should. IGS suggested that they change the way they initiated the blast, which reduced the PPV and provided better fragmentation.
- Cancellation of vibration energy with holes detonating sub 8ms apart.
- Identify the single hole where the peak reading occurred.