

CASE STUDY

EXPANSION OF QUARRY USING TITAN® 1000 LD AND DIGISHOT® PLUS

PROJECT SUMMARY

EXPANSION OF QUARRY #6

Surrounded by numerous communities, the Graymont Marbleton Quarry was looking to expand its quarry number six. It was important to the quarry that this expansion did not disturb the surrounding communities with blasting vibrations and noise. The quarry cares for the communities and works hard to cause little impact. Along with being respectful of its neighbors, the quarry was also looking to obtain the best possible fragmentation for production.



BACKGROUND

LIME PRODUCTION AND COMMUNITY RELATIONS

The Graymont Marbleton Quarry, one of the oldest lime production facilities in North America, is located in Quebec's eastern townships, approximately 40km northeast of Sherbrooke Quebec. This site has a total of six pits that have been quarried since 1824. On the same property, Graymont also runs a lime processing plant with an annual production capacity of 330,000 tonnes.

Adjacent to the Marbleton site are numerous communities that rely on it for construction aggregates. The plant is also a major producer of lime used for agricultural purposes.

The expansion of Quarry number six required blasting to be done on areas of severely uneven terrain and within the regulated vibration and noise control levels. DigiShot Plus was the electronic initiation system the quarry chose to go with because it felt this system by Dyno Nobel would best meet its needs.

PROJECT GOALS

EXPANDING PRODUCTION WHILE RESPECTING THE COMMUNITY

The DigiShot Plus electronic initiation system was the best system for this expansion because it was able to deliver the results needed for this expansion to be a success. Graymont Marbleton Quarry was aiming to obtain desired fragmentation results while adhering to vibration and noise levels. It wanted to get the most out of each blast to meet the recommended maximum amount of explosive pounds/delays while fully utilizing the electronic initiation system's adequate capacity and timing versatility.

TECHNOLOGY APPLIED

DIGISHOT PLUS AND TITAN 1000 LD

Dyno Nobel's DigiShot Plus system was used because of its ability to synchronize blasts from multiple bench boxes improving safety and timing. The synchronized timing also helped with vibration and noise control. Along with timing, having the ability to test each detonator to ensure communication gave extra assurance to the blaster that the blast would take place. Being able to set millisecond timing between holes and decks ensured the pounds of

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explosives/delay were met. The auto-tagging features and robust connectors made the tie-in quick and easy, saving time on the bench. DigiShot Plus provided the vibration and noise control with the accurate timing that was needed for this expansion.

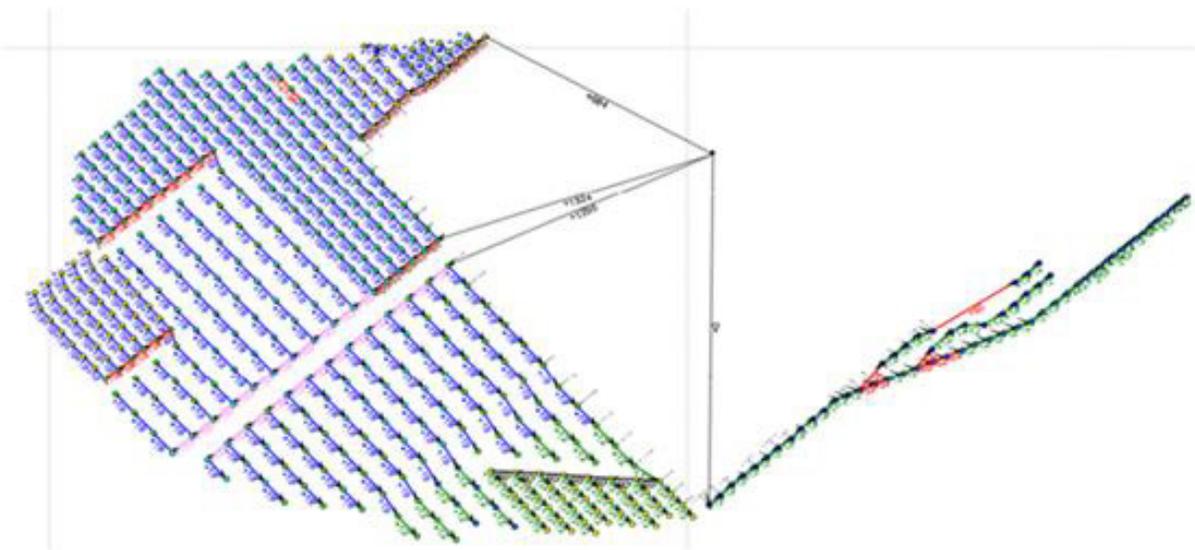
Along with DigiShot Plus it was decided to use TITAN 1000 LD emulsion with a 1.25 density. The sensitized bulk emulsion has excellent water resistance and provides superior blasting performance in nearly all open pit applications. Using the bulk emulsion also eliminated the requirement to manually handle packaged explosives and significantly facilitated the loading tasks as well as minimized the time required to load blast holes.

VALUE ADDED

RESULTS BY THE NUMBER

Value added benefits realized:

- Vibrations 30% below allowable limits.
- 250% greater tonnage compared to yearly average blast.
- Zero holes or decks initiating at the same time ensuring limit of pound of explosives/delay were met.
- Qualitative feedback from the customer indicates actual loading and tie-in time was 18 hours less than



expected.

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