

CASE STUDY

Blast Movement Modelling with OREPro™ 3D

Touquoy Mine, St. Barbara Limited, Atlantic Operations

Site Profile

Touquoy Mine is located approximately 80km north-east of Halifax, Nova Scotia Canada, and is operated by St. Barbara Limited Atlantic Operations.

The mine is a small open-pit with an average ore grade of 0.90g/t. The orebody is structurally controlled and often discontinuous over short distances; because of these small ore zones, blasting ore and waste separately was often impossible or impractical. Ore loss and dilution have a massive impact on the quantity and quality of ore delivered to the mill, as such it is critical that mining is conducted as accurately as possible.



Figure 1: Touquoy Mine, St. Barbara Limited, Atlantic Operations.

The Situation

In 2019 the mine operation moved from blasting 5m benches to 10m benches, mining 2x5m flitches which reduced blasting costs by approximately 30%. Due to the inability to customize blast shapes according to the ore formations on each flitch, this also led to increased ore loss and dilution. Despite best efforts by the team at St. Barbara to track blast movement, dilution increased from 6.5% to 8.7%.

Technical Solutions

To improve their understanding of blast movement, the team at St. Barbara was keen to start exploring available technologies. In response, Orica Digital

Solutions proposed to implement OREPro™ 3D and held several demonstrations to illustrate how the software could assist operations.

“We compared the pros and cons of OREPro 3D against our current processes, such as drone videos, surveys, blast movement indicators or visual inspection of muck piles, and other commercially available solutions. We determined that OREPro 3D could lead to a substantial improvement in our mining accuracy, and the technology was safer, faster and substantially less expensive than its competitors.”

Drew Pelley, Superintendent Mine Geology.

In addition to providing the software, St Barbara were also given customized training, access to the OREPro™ 3D Edu training modules, and on-demand support.

The Result

St. Barbara Operations reported the benefits of OREPro™ 3D as being two-fold: a significant reduction in dilution and ore loss.

“We used OREPro 3D on 33 blasts over the first 12 months, for those blasts we increased grade by 7% and decreased dilution by 6.5% when compared to our previous systems. As a result, we increased revenue by \$1million from these blasts. These numbers are even more impressive if you consider that we are a mill limited operation. By reducing waste through the crusher by 6.5% we were able to feed additional material from the stockpile, increasing revenue by another \$1.1million.”

Drew Pelley, Superintendent Mine Geology.

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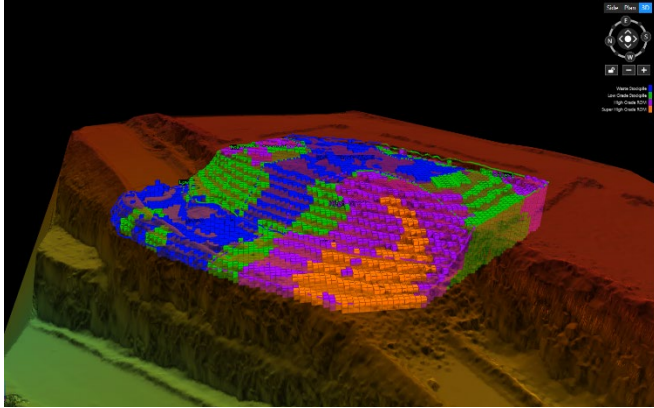


Figure 2: 3D grade control with flitch modelling using OREPro™ 3D, preventing 8.124t of ore loss and generating \$131,569 in value.

Testimonial

“Blasting and mining ore and waste separately will always be the gold standard for minimizing ore loss and dilution, however it’s not always practical to do so. For those situations, OREPro 3D is by far the best solution, and I would recommend it to anyone working in an open-pit environment”.

Drew Pelley, Superintendent Mine Geology.

Acknowledgements

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