

CASE STUDY

BLAST MOVEMENT MODELLING WITH OREPRO™ 3D

TOUQUOY MINE, ST BARBARA LIMITED, ATLANTIC OPERATIONS

“
**IN THE FIRST 12 MONTHS
OREPRO 3D INCREASED OUR
TOTAL REVENUE BY \$2.1M.”**

SITE PROFILE

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

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



Figure 1 - Aerial view of Touquoy Mine, operated by St Barbara Ltd.

THE SITUATION

In 2019 the mine operation moved from blasting 5m benches to 10m benches, mining 2 x 5m flitches which reduced blasting costs by approximately 30%. However, without the ability to customise blast shapes according to the ore formations on each flitch, there was an increase of 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%.

“
Blasting ore and waste separately will always be the gold standard for minimising 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**

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 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 customised training, access to the OREPro™ 3D Edu learning 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.

ACKNOWLEDGEMENTS

Orica Digital Solutions wishes to thank St Barbara Ltd, Atlantic Operations for their support and permission to publish this case study.

Author: Enzo Angeles

Date: October 2023

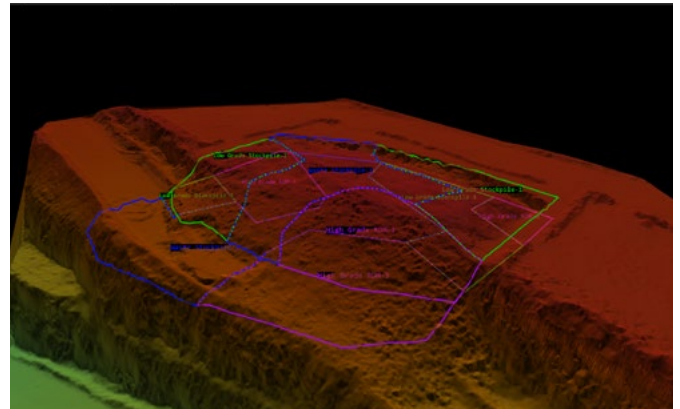
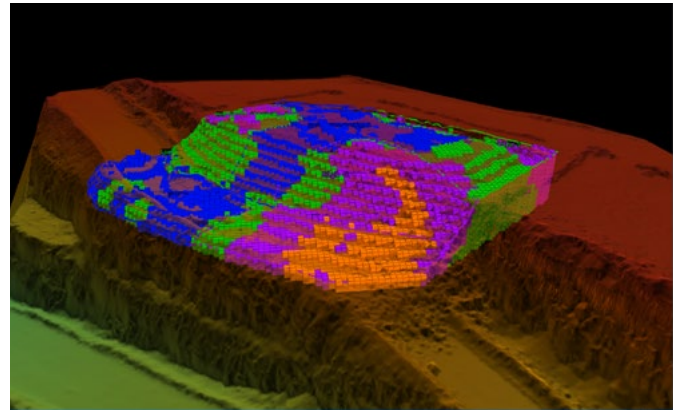


Figure 2 & 3 - 3D grade control fitch modelling using OREPro™ 3D, preventing 8,124t of ore loss and generating \$131,569 in value.

For more information on how OREPro™ 3D can support your operations, please contact your local Orica Representative or visit [orepro3d](https://www.orepro3d.com)



©2023 Orica Group. All rights reserved. All information contained in this document is provided for informational purposes only and is subject to change without notice. Since the Orica Group cannot anticipate or control the conditions under which this information and its products may be used, each user should review the information in the specific context of the intended application. To the maximum extent permitted by law, the Orica Group specifically disclaims all warranties express or implied in law, including accuracy, non-infringement, and implied warranties of merchantability or fitness for a particular purpose. The Orica Group specifically disclaims, and will not be responsible for, any liability or damages resulting from the use or reliance upon the information in this document.

The word Orica and the Ring device are trademarks of the Orica Group.