



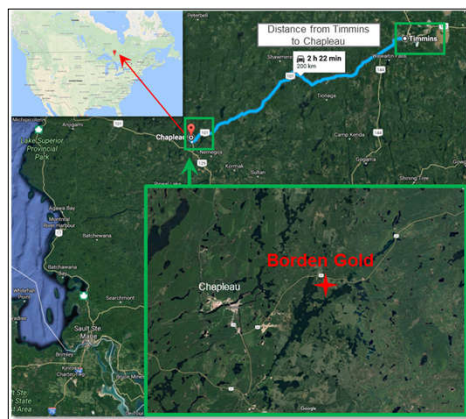
BEV Pioneering Partnership at Borden – Celebrate the wins, face the challenges

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MDEC October 2019



Geographic Overview of Borden Site



Borden location

The Borden Project is located near Chapleau in Ontario

- Approximately 180 kilometers west of the company's Porcupine complex in Timmins, where the ore will be processed

Vision for the Project

- Safe
- Simple
- Green
- Inclusive
- Invisible
- Silent

Borden: 'Mine of the Future'

Safer. Quieter. No diesel underground, reduced risk of fires.

More environmentally friendly. Smaller carbon footprint, reduced risk of hydrocarbon spills, lower site footprint, reduced noise pollution.

Better community partner. Smaller impact on the community improves relations. Reduction or elimination of exhaust fog in winter keeps the project out of sight.

Disruptive. Electric, eliminated compressed air lines, 1000V, connected, VoD, 17% ramp, 6m rounds.

More economic. When incorporated into the design, electric mine can be lower capital and lower operating cost mine.



Borden aerial photograph, June 2018

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Borden Key Technologies: Air

Borden has no compressed air network

- Pumps are 100% electric including face pumps
- All doors will be electric hydraulic (no use of air cylinder)
- Drills which often use compressed air will have onboard air compressor when needed as opposed to a centralized system
- Compressed air is often a use in emergency measure to feed underground refuge with a second source of air, in our case each refuge is totally autonomous with compressed air cylinders and CO₂ scrubber

Use of compressed natural gas to heat the mine air

- Natural gas is abundant in Canada, cost effective and reduces GHG emissions by approximately 20-30% compared to propane

The all electric mine allows to reduce the power consumption substantially



Underground autonomous refuge with compressed air cylinders and CO₂ scrubber

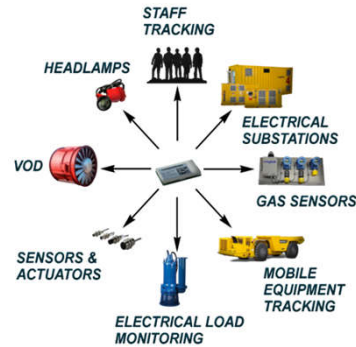
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Borden Key Technologies: Ventilation on Demand (VOD)

Borden's VOD system allows for connection to the mine, the workers and the equipment

- The same tagging solution also provides a collision awareness system and brow alert
- Can be used to launch the emergency signals (a signal from surface can get all of the workers lamps to start flashing to indicate an emergency)
- One chip, one system



Source: Meglab mining solutions, visual representation of VOD system

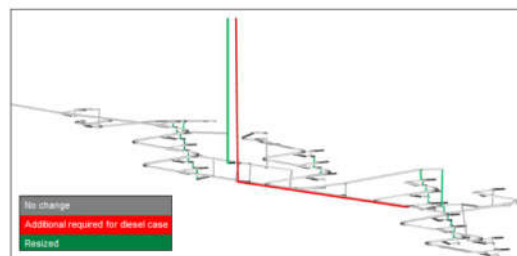
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Capital at Borden

At Borden, capital is reduced by:

- Lateral development – size of the drifts can be reduced due to reduction in ventilation quanta and associated ventilation ducting.
- Reduced sizing and number of the ventilation fans and all associated infrastructure.
- Fresh Air Raise reduced from 5m to 4m (effective) diameter and Return Air Raise eliminated.
- Reduction of electrical infrastructure sizing.
- Elimination of compressed air network and centralized compressor
- Elimination of underground fuel distribution



Sketch outlining the excavation savings

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Conversion to Electric Equipment

Working with key partners/suppliers, a host of new equipment has now been converted to electric.

Moving to electric equipment is expected to eliminate:

- The use of diesel fuel, fuel distribution and storage expenses
- Diesel engine service and scheduled maintenance expenses
- Potential source of ignition, as a result of no diesel exhaust components of shielding
- All noise, vibration and heat generation traditionally associated with diesel engines
- Air quality issues associated with dust generation and diesel exhaust porting
- Overall reduction of energy required to heat ventilation air



Converted CAT grader. Credit: MacLean Engineering



MacLean SLT3 scissor lift. Credit: MacLean Engineering

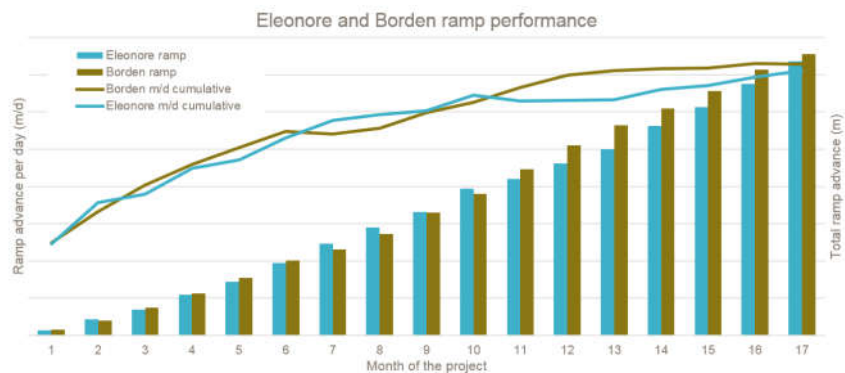


MacLean CS3 battery operated carrier. Credit: MacLean Engineering

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Electric gear can achieve excellence



Note: linear ramp advance only excluding all other excavations such as remucks, safety bays, intersections or any equivalency allowances.

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Partnerships matter and add real value

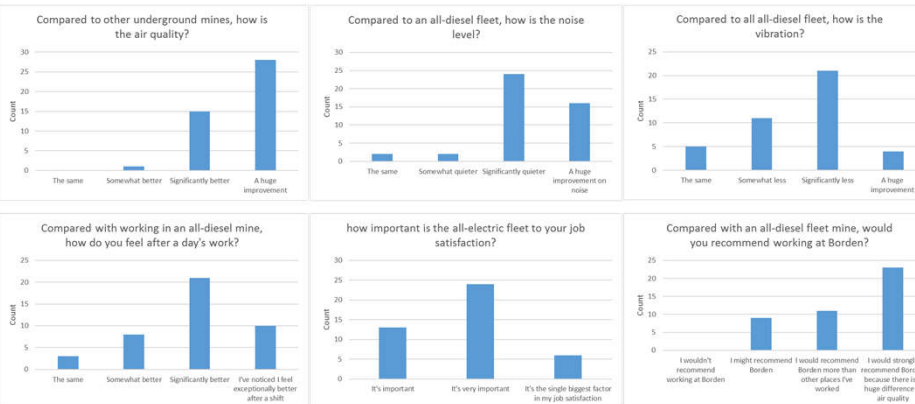
- Mining companies around the world
- FN communities
 - Brunswick House
 - Chapleau Cree
 - Chapleau Ojibwe
 - Michipicoten
- Permitting timelines
- Federal and provincial government funding partners
- Provincial utility operator – IESO



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What do people working at Borden think?



Note: Results of survey conducted of 44 miners at Borden

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