VCNA St-Mary's cement plant

Community liaison committee meeting

June 10, 2022

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Presentation outline

- Introduction
- What is a blast
- Process of preparing a blast
- Ragulatory requirements
- Blast monitoring
- Questions

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Introductions

- **Ryan Copeland**
  - Area sales manager
- **Dustin Donais**
  - Blaster in charge
- **Paul P. Kuznik, P.Eng.**
  - DynoConsult manager – Eastern Canada

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What is a blast

- **A blast is a controlled event that places a designed amount of energy into rock to fragment it for processing**
- **Noise and vibration from a blast is energy that was not consumed in the fragmentation of the rock**
  - Wasted energy, which results in wasted money and potential environmental impacts
- **Designing a blast is about balancing the need to adequately fragment the bedrock with the need to minimize environmental impacts**

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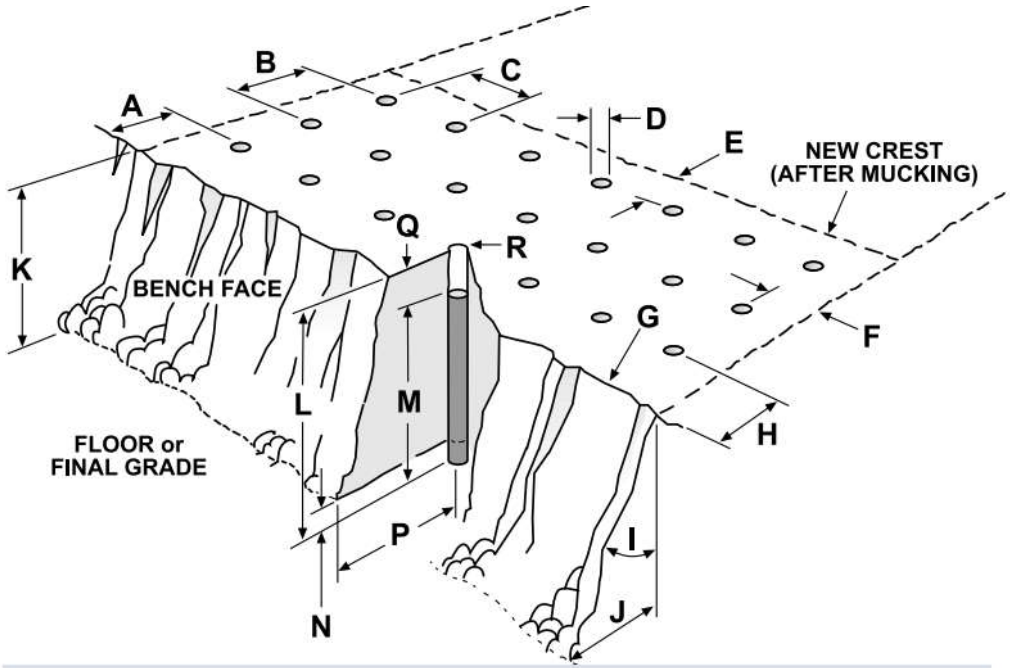
Process of preparing a blast

- **A blast begins with the design**
  - Plan of the drill hole pattern identifies
    - Size of the holes
    - Number of holes
    - Spacing between the holes
    - Size of the burden
    - Sequence in which the holes detonate in the blast



A	Hole - to - Crest	G	Crest	M	Explosive Column Height
B	Apparent Burden*	H	Crest Burden	N	Subdrilling
C	Apparent Spacing*	I	Bank Angle	P	Toe Burden
D	Hole Diameter	J	Toe	Q	Stemming
E	Back Break	K	Bench Height	R	Drill Hole Collar
F	Side Break	L	Hole Depth		

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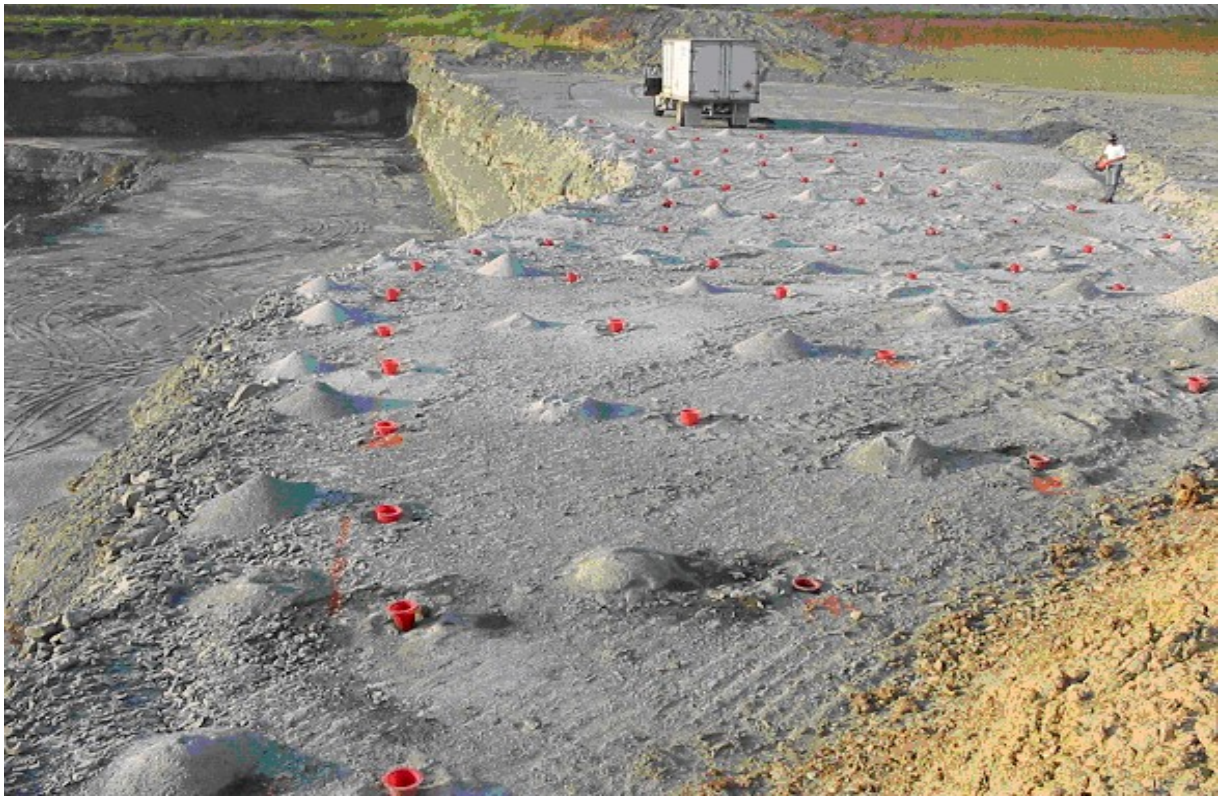
Process of preparing a blast

- **Hole placement**



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Process of preparing a blast

- **Hole drilling**

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Process of preparing a blast

- **Borehole loading**

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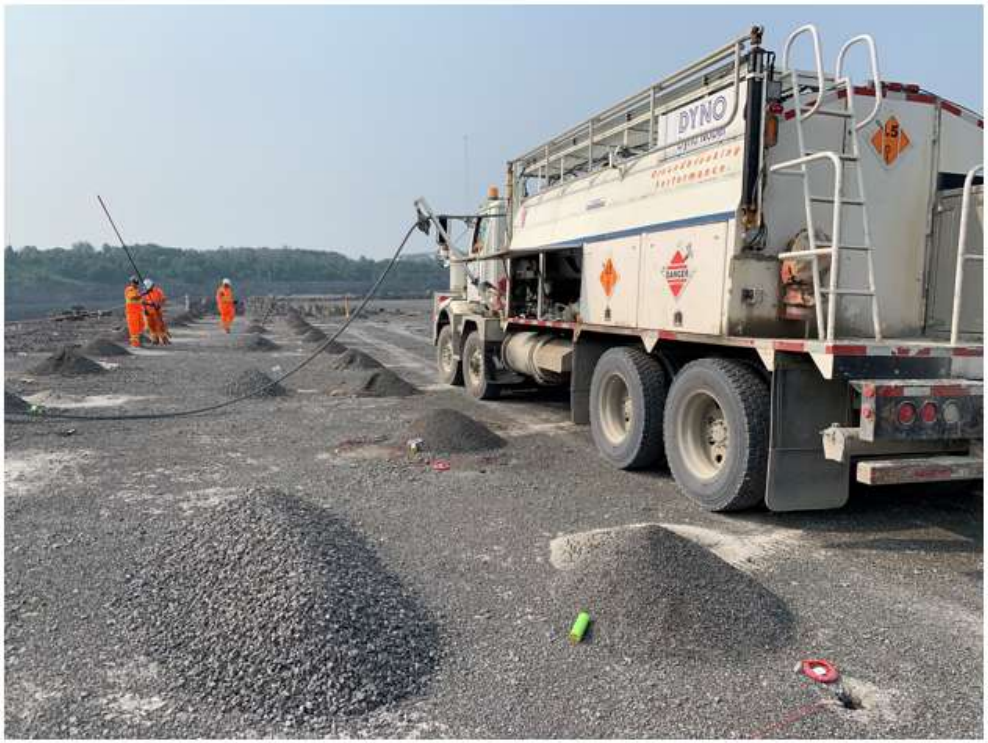
Process of preparing a blast

- **Borehole loading**



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Process of preparing a blast

- **Borehole loading**

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Blast initiation – videos

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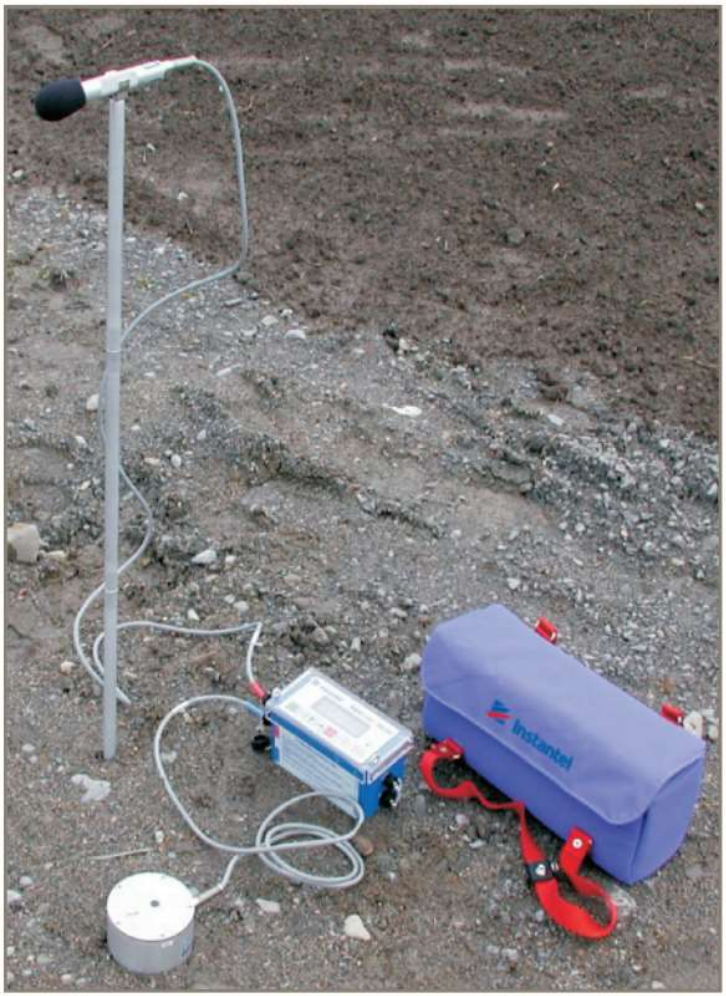
Regulatory requirements

- **The Ministry of the Environment and Climate Change has established guideline limits for both ground vibrations and air overpressure**
  - Noise Pollution Control (NPC) publication 119
    - Model Municipal Noise Control By-Law
- **Air overpressure is determined by measuring the peak pressure level**
  - 128 dB(L)
- **The ground vibration is determined by measuring the vibration velocity**
  - 12.5 mm/s



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Structural response to ground vibrations

Peak Particle Velocity (mm/s)	Ground vibration effect
635	Microcracks start developing in rock
100 - 150	Limit often set for concrete
50	Ontario limit for construction blasting
30-50	Vibration uncomfortable for humans
12.5	**Ontario limit for quarries**
0.2 - 0.5	Ground vibrations become perceptible to humans

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Structural response to air overpressure

Air Overpressure (dB(L))	Air overpressure effect
181	Conventional structures severely damaged
171	Most windows break
151	Some windows may break
140	Some large, poorly set plate glass windows may break/crack
129 - 134	USBM interim limit for allowable air overpressure
128	Ontario limit for Quarries (NCP 119)
117	Dishes and windows may rattle
65	Ordinary conversation

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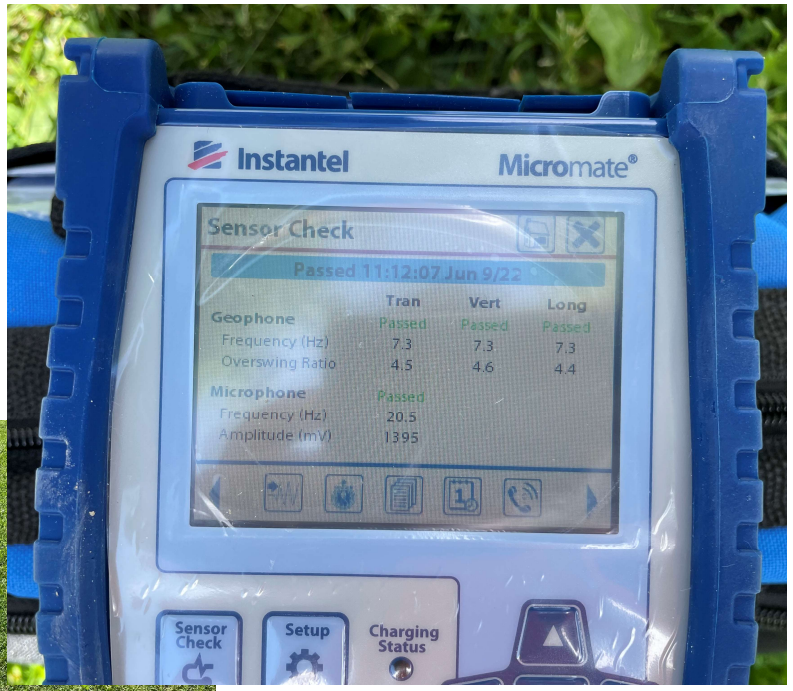
Blast monitoring



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Blast monitoring

Date/Time	Vert At 14:08:05 May 24, 2022
Trigger Source	Geo: 1.500 mm/s
Range	Geo: 254.0 mm/s
Sample Rate	6.0 sec. At 1024 Sps
Job Number	1
Notes	
Location:	11_St.Marys Bowmanville_CedarCrest
Client:	S.Marys Cement
User Name:	Golder
General:	Bowmanville, ON.

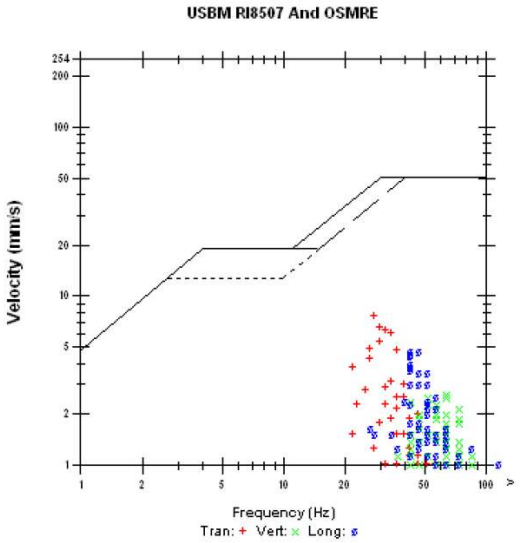
Microphone	Linear Weighting
PSPL	105.5 dB(L) at 2.199 sec.
ZC Freq	2.5 Hz.
Channel Test	Passed (Freq = 20.1 Hz. Amp = 571 mv)

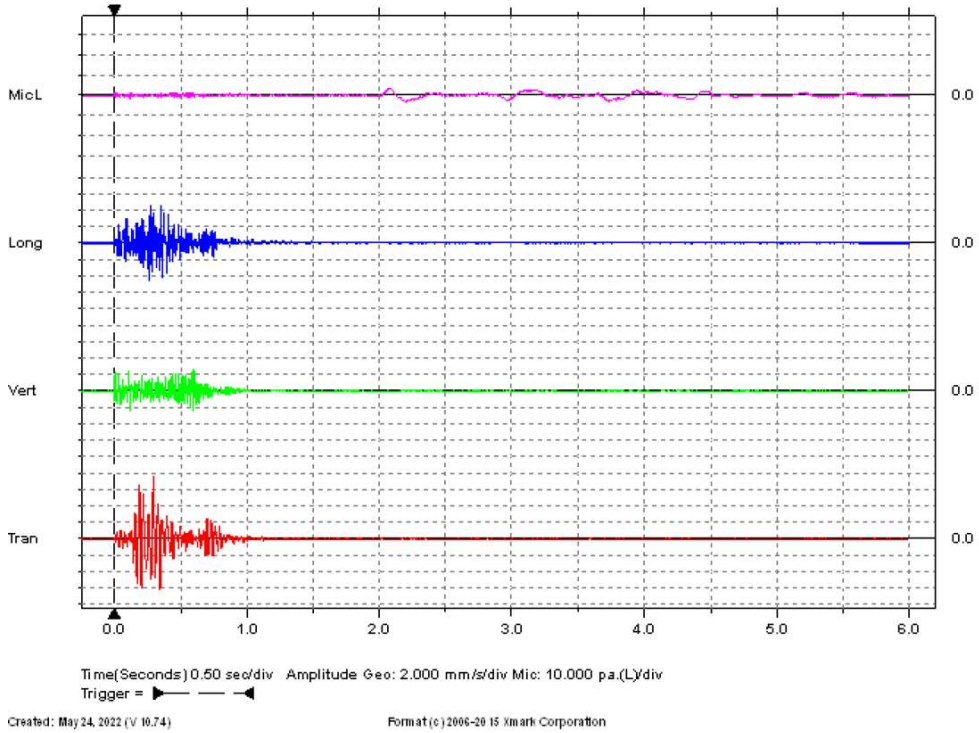
	Tran	Vert	Long	
PPV	7.747	2.667	4.699	mm/s
ZC Freq	28	64	47	Hz
Time (Rel. to Trig)	0.292	0.598	0.269	sec
Peak Acceleration	0.146	0.133	0.146	g
Peak Displacement	0.040	0.009	0.017	mm
Sensor Check	Passed	Passed	Passed	

Peak Vector Sum 8.283 mm/s At 0.292 sec.

Serial Number	BE8719 V 10.72-8.17 MiniMate Plus
Battery Level	6.8 Volts
Unit Calibration	November 27, 2020 by Instantel
File Name	J719JIJT.XHOW

Post Event Notes





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Questions?

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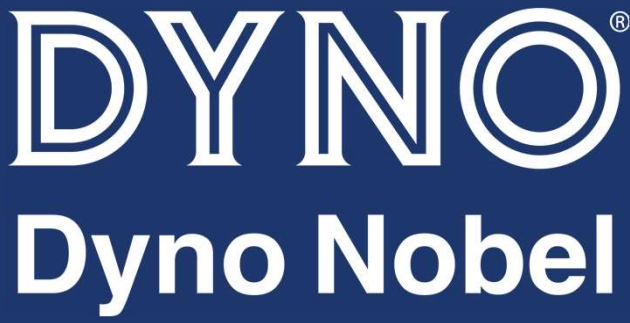
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