

BLAST MONITORING REPORT

HM26 Hard Stone Quarry at Tal-Mačina, Nigret, l/o Żurrieq

16th November 2015

Details

Date	16-11-2015
Quarry number	HM26 – Tal-Mačina, Nigret, l/o Żurrieq
Quarry operator	C J C Camilleri Bros. Ltd.
ANFO Supplier	Framegrip Ltd.
Police escort	PC 1277 – H Spiteri

Location and Time of Blasting

Two blasts were carried out at 12:34 and 12:35 at the points as approximately indicated on the attached site diagram.

Summary of Blasting Conditions

Maximum charge per delay: 50Kg

Vibration limits: 4 mm/s (20 to 40Hz) at the nearest sensitive point within 200m.

Air overpressure limit: 120 dB (L).

Site Specific Permit

Holes were within quarry boundaries and within the permitted depths. Blasts were carried out according to the site specific conditions, and no blast exceeded the maximum permitted charge of 50Kg per delay.

Weather Conditions

Humidity ^[1]	Wind ^[1]	Temperature ^[1]	Atm. Pressure ^[1]	Cloud Cover ^[2]
59%	8 Knots NW	21C	1019 hPa	Clear

[1] As reported by weather.maltairport.com on 16 November 2015 at 11:50 at Luqa Airport [2] Our observation

Comments

All holes are at the middle shelf of the quarry in their respective location.

Notes

Seismograph was placed in front of the Nigret booster which is also close to the water reservoir.

Seismograph was set to trigger at 0.50 mm/s. Seismograph used is MiniMate Plus s/n BE9488.

Readings

Blast number	1	2
Time	12:34	12:35
No. of holes	9	14
No. of delays	9	14
Depth of holes (m)	12	9
Max. Charge per delay (kg)	38.5	25
Total charge (kg)	344	350
Dist. From Seismograph (m)	180	210
PPV (mm/s)	1.94	3.14
Frequency (Hz)	45	46
Air Overpressure (dB)	101.9	109.5
Scaled Distance (m kg^{-1/2})	29.0	42.0

Burden is an average of 2 metres, and distance between holes is an average of 2.5 metres.

Weights in kilograms are rounded-up to the nearest half-unit, and depth in metres is rounded to the nearest ½ unit. Displacement between holes and the seismograph is measured using the online version of MEPA's Map Server and is accurate to the nearest 10 metres. Number of holes, their depth, burden, and the amount of ANFO used are as given by the quarry operator. Scaled distance and maximum charge per delay are calculated from the primary data. Weights are rounded-up to the nearest kilogram and the depth is rounded to the nearest ½ meter.

Observations

There was no flyrock outside quarry boundaries. No damage to the surroundings was observed after the blast.

Anthony Cini B.Sc.

DATA COLLECTION SHEET

Date:	16-11-15		MIC for HM26 is 50Kg
Quarry Name & Number:	HM26 - Tal-Macina, Nigret, I/o Zurriq	Quarry Operator:	C J C Camilleri Bros. Ltd.
Police Escort:	No: <u>PS1277</u> Name: <u>HERMANN SPITERI.</u>		
Blasting carried out by:	Company: <u>Framegrip Ltd.</u>	Name:	<u>MARIO CALLEJA</u>
Seismograph readings by:	<u>A CINI, RAPHAEL MICALIEF</u>		


Blast	Time	Holes	Delays	Dist. (m)	Depth		Total charge		Max. Chrg.	PPV mm/s	Freq. (Hz)	Air (dB)
					(ft)	(m)	Bags	(kg)				
1	12-34-23	9	9	180	40	12	13 ^{3/4}	243 ^{3/4}	38.5	1.94	45	101.9
2	12-35-04	14	14	210	30	9	14	350	25	3.14	46	109.5
3		23					27 ^{3/4}	693 ^{3/4}				
4												
5												
6												
7												
8												
9												
10												
11												

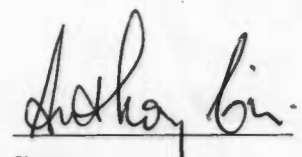
Location of Seismograph	<input checked="" type="checkbox"/> Front of the WSC Nigret booster (this is also next to water reservoir)	<input type="checkbox"/> Other location: _____
Burden	Distance between boreholes: <u>2.5</u> m	Distance from rock face (burden): <u>2</u> m
Notes	<p>Any horizontal holes? <u>No</u> Any blast made up of holes of different-depth? <u>No</u> Why? <u>!</u></p> <p>Any blasts grouped together and detonated using multiple (almost simultaneous) short-circuit exploders? <u>No</u> Why? <u>!</u></p> <p>Any visitors before/during/after blast? <u>Nobody</u> (note names and organizations)</p> <p>Any complaints from neighbours? <u>None Reported to us</u> (note names, number of persons/households?)</p> <p>Note levels of holes: <u>(1,2) Middle Shift</u></p> <p>Flyrock observation: <u>None Outside</u> Any damage to quarry surroundings? <u>None Observed</u></p>	
Further Comments	<u>* Cloud Cover - Clear.</u>	

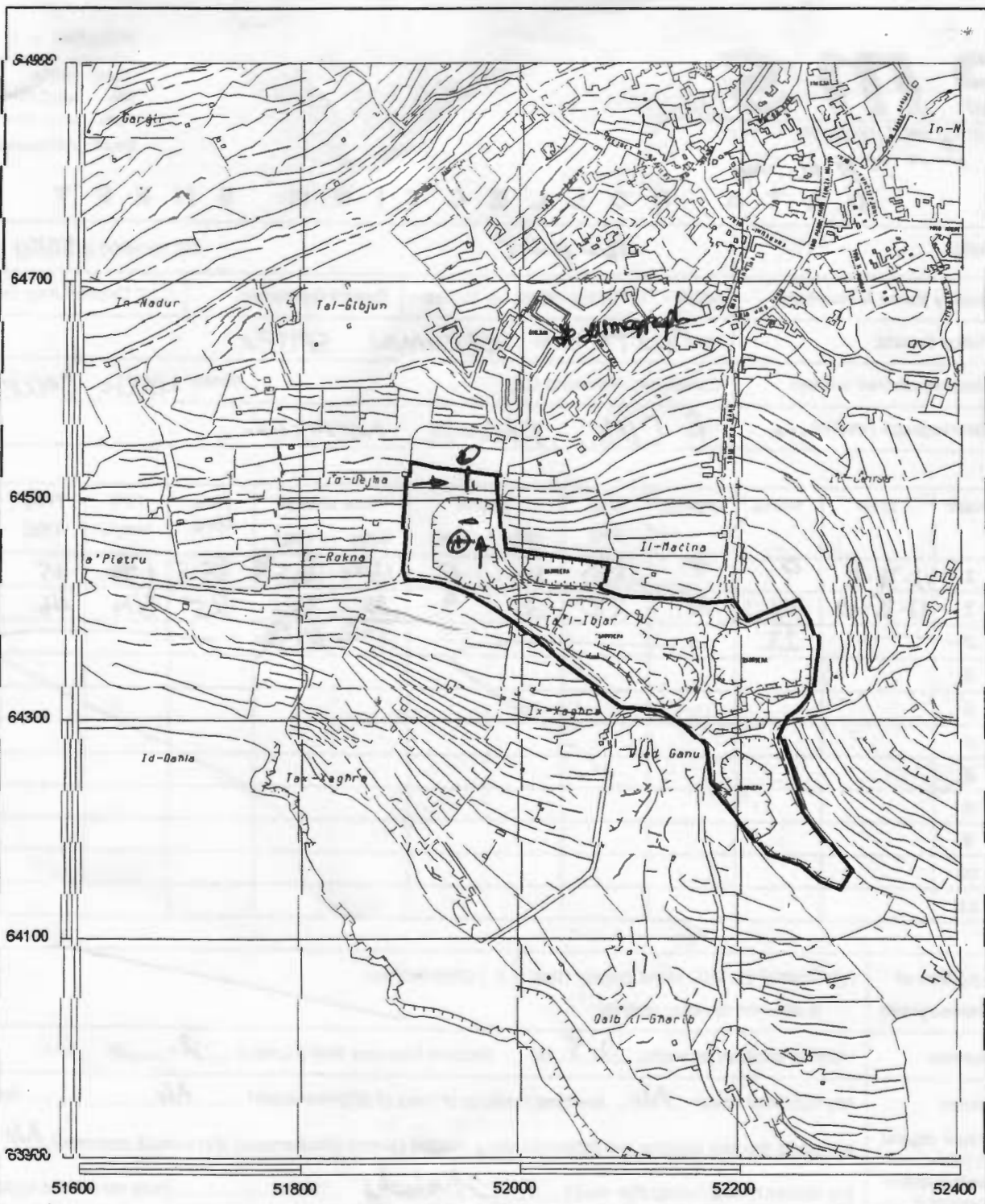
(use overleaf if more space is required)

Signatures

PS1277 
Police escort


f/ Quarry operator


f/ ems



Malta Environment & Planning Authority

Hardstone (LC) Quarry Site Plan

St. Francis Ravelin
 Floriana
 PO Box 200, Valletta
 Tel:240976 Fax:224846



Quarry No. :-

HM 26

Location :- Tal-Macina, Nigret, l/o Zurrieq

Permitted Quarry Area :- 47605.41 sqm

Scale :- 1:5000

Permitted Quarry Depth :- 80 m amsl

Part of Survey Sheet(s): 5063 5064 5263 5264

Date :- 6/5/03

Date/Time Vert at 12:34:03 November 16, 2015
Trigger Source Geo: 0.510 mm/s
Range Geo: 31.7 mm/s
Record Time 2.0 sec at 4096 sps

Serial Number BE9488 V 10.72-8.17 MiniMate Plus
Battery Level 5.9 Volts
Unit Calibration August 20, 2015 by Datum Monitoring
File Name K488G42G.8R0

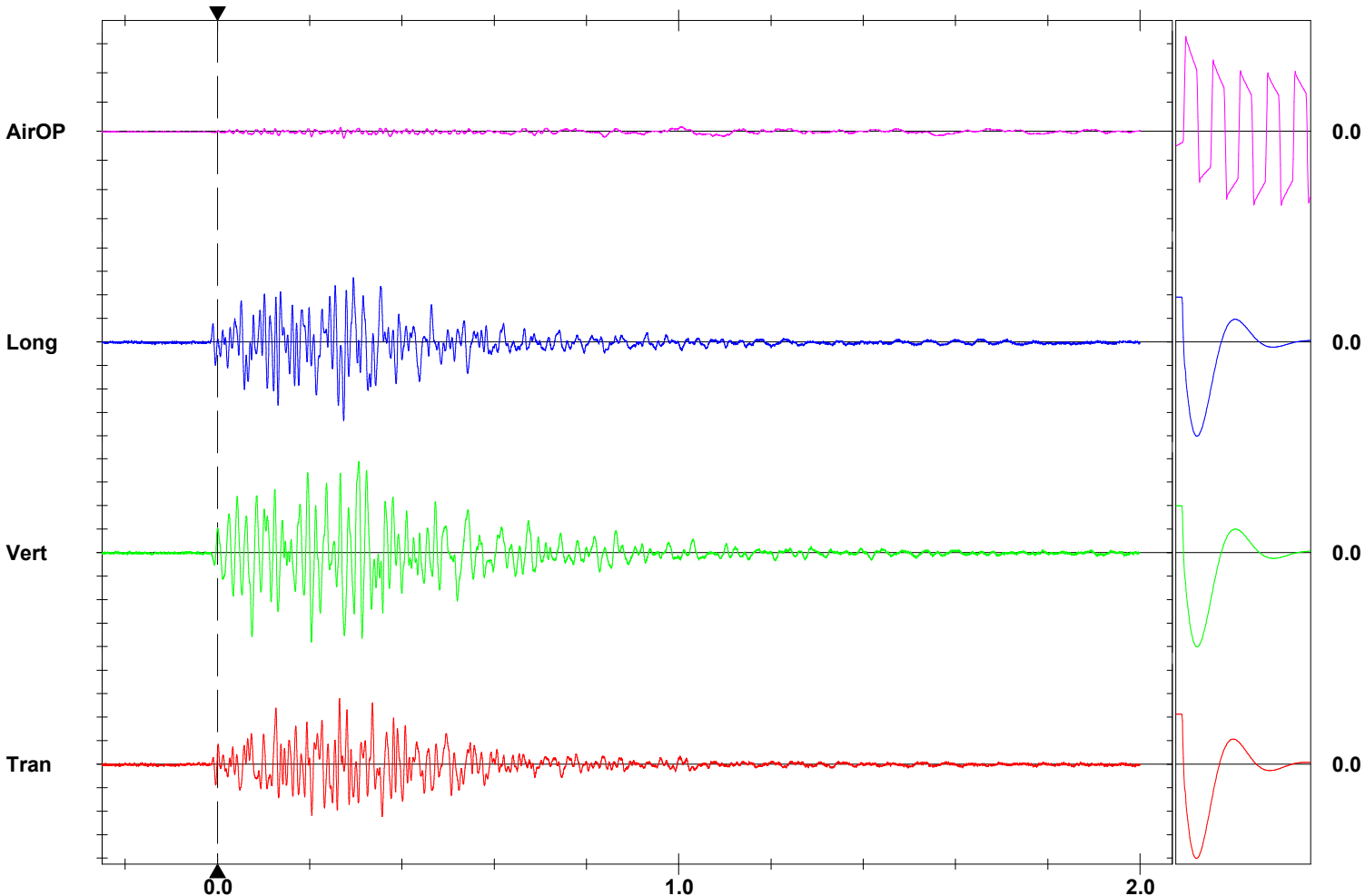
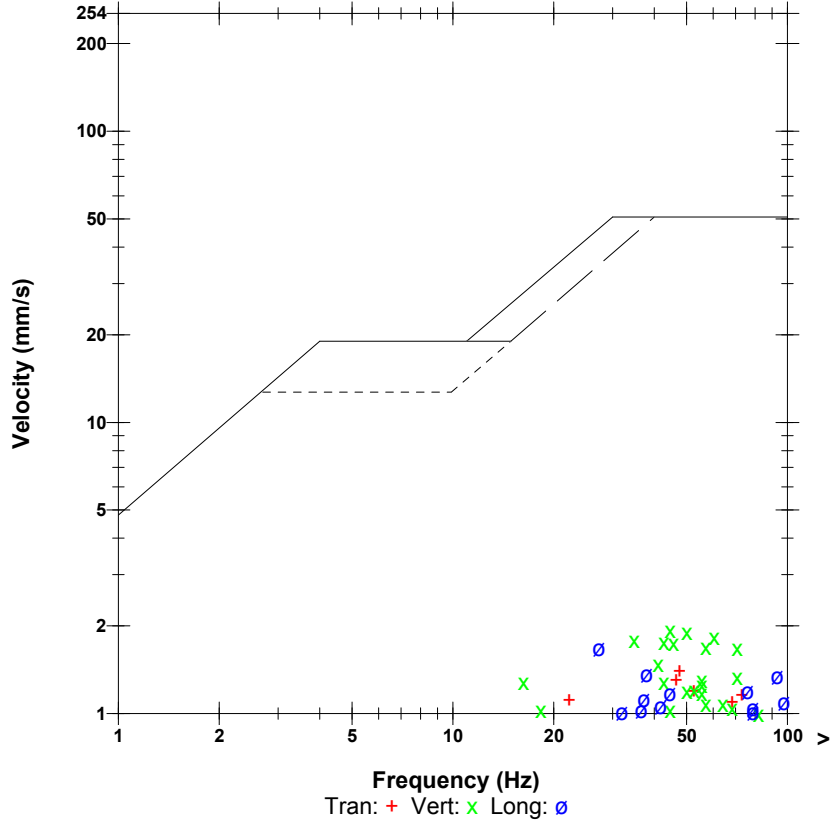
Notes
 Location: Quarry Blasting
 Client:
 User Name: ems
 General:

Microphone Linear Weighting
PSPL 101.9 dB(L) 2.50 pa.(L) at 0.274 sec
ZC Freq 55 Hz
Channel Test Passed (Freq = 20.1 Hz Amp = 577 mv)

	Tran	Vert	Long	
PPV	1.40	1.94	1.68	mm/s
ZC Freq	48	45	27.3	Hz
Time (Rel. to Trig)	0.265	0.306	0.273	sec
Peak Acceleration	0.0928	0.106	0.0862	g
Peak Displacement	0.00460	0.00838	0.00712	mm
Sensor Check	Passed	Passed	Passed	
Frequency	7.6	7.3	7.3	Hz
Overswing Ratio	3.8	4.0	4.2	

Peak Vector Sum 2.34 mm/s at 0.274 sec

USBM RI8507 And OSMRE



Time Scale: 0.20 sec/div **Amplitude Scale:** Geo: 0.500 mm/s/div Mic: 10.00 pa.(L)/div
Trigger =

Sensor Check

Date/Time Vert at 12:35:04 November 16, 2015
Trigger Source Geo: 0.510 mm/s
Range Geo: 31.7 mm/s
Record Time 2.0 sec at 4096 sps

Serial Number BE9488 V 10.72-8.17 MiniMate Plus
Battery Level 5.9 Volts
Unit Calibration August 20, 2015 by Datum Monitoring
File Name K488G42G.AG0

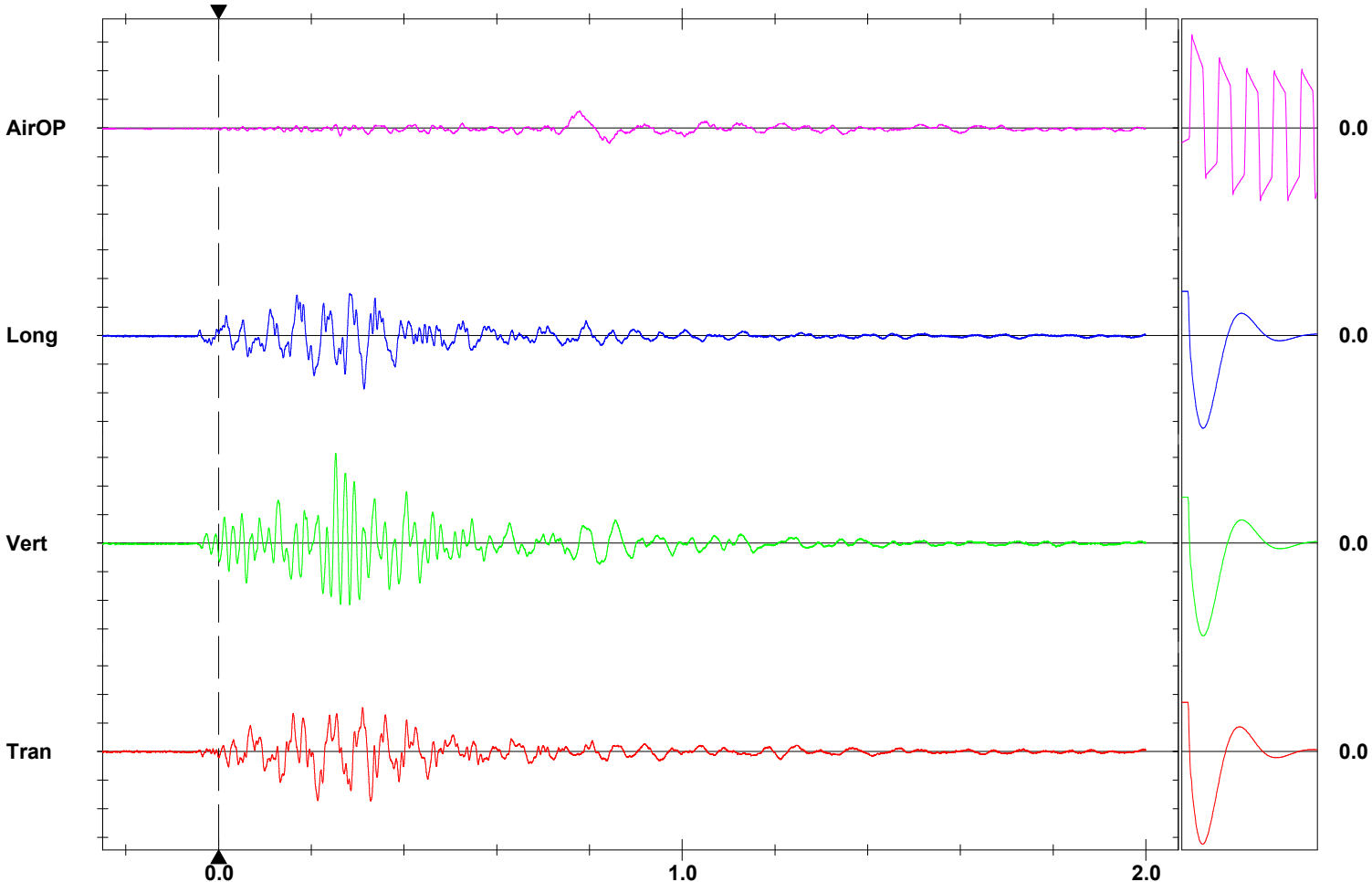
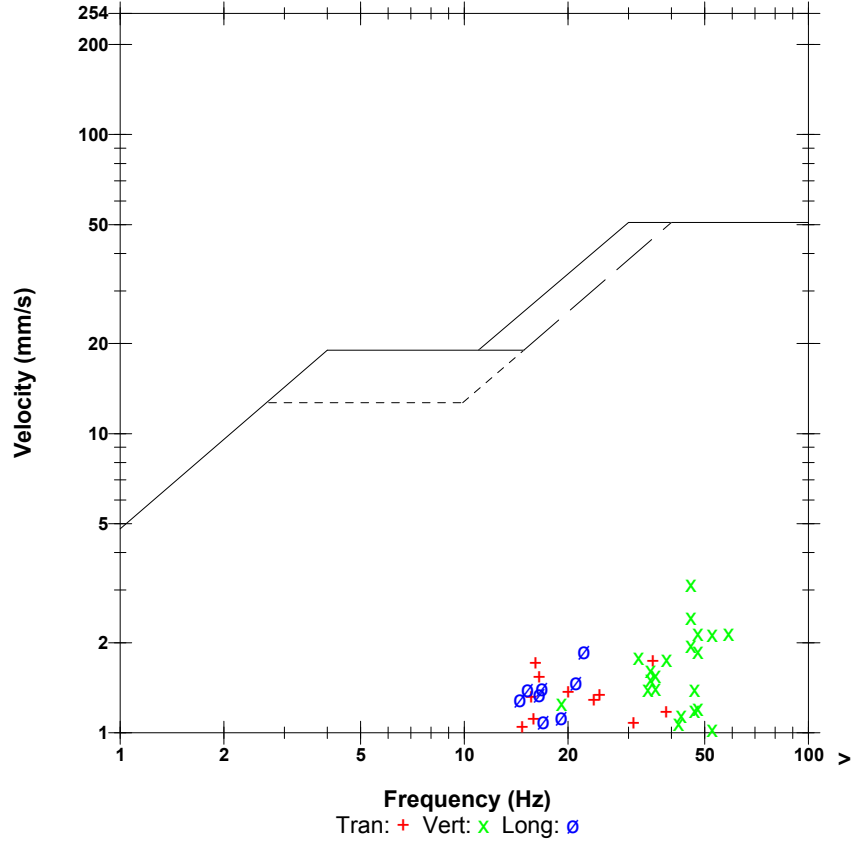
Notes
 Location: Quarry Blasting
 Client:
 User Name: ems
 General:

Microphone Linear Weighting
PSPL 109.5 dB(L) 6.00 pa.(L) at 0.778 sec
ZC Freq 8.4 Hz
Channel Test Passed (Freq = 20.1 Hz Amp = 577 mv)

	Tran	Vert	Long	
PPV	1.73	3.14	1.87	mm/s
ZC Freq	35.3	46	22.3	Hz
Time (Rel. to Trig)	0.328	0.252	0.314	sec
Peak Acceleration	0.0597	0.0994	0.0530	g
Peak Displacement	0.0125	0.0107	0.0125	mm
Sensor Check	Passed	Passed	Passed	
Frequency	7.6	7.3	7.3	Hz
Overswing Ratio	3.8	4.0	4.2	

Peak Vector Sum 3.47 mm/s at 0.253 sec

USBM R18507 And OSMRE



Time Scale: 0.20 sec/div **Amplitude Scale:** Geo: 1.000 mm/s/div Mic: 10.00 pa.(L)/div
Trigger =

Sensor Check