

BLAST MONITORING REPORT

HM22 Hard Stone Quarry at Wied Filep, l/o Naxxar

18th March 2013

Details

Date	18-03-2013
Quarry number	HM22 – Victoria Lines l/o Naxxar
Quarry operator	Ballut Blocks Ltd.
ANFO Supplier	Framegrip Ltd.
Police escort	PC 818 – J Farrugia

Location and Time of Blasting

Four blasts were carried out between 09:30 and 09:42 at the points as approximately indicated on the attached site diagram.

Summary of Blasting Conditions

Maximum charge per delay: upper area: 12.5 Kg, lower area: 25 Kg

Vibration limit: 4 mm/s (20 to 40Hz) at the nearest residential areas within 200 metres.

Air overpressure limit: 120 dB(L).

Site Specific Permit

All holes were within quarry boundaries and within the maximum depth allowed. Maximum charge per delay was not exceeded. Blasting is carried out according to site specifications.

Weather Conditions

Humidity ^[1]	Wind ^[1]	Temp. ^[1]	Atm. Pressure	Cloud Cover ^[2]
79%	15 Knots, S	16 C	1010 hPa	50% low cloud

[1] As reported by weather.maltairport.com on 18th March 2013 at 08:45 at Luqa Airport [2] Our observation

Comments

All holes are at various middle shelves of the quarry in their respective locations.

Blasts number 3 and 4 were grouped as a pair and detonated by means of two short-circuit-exploders in very quick sequence and captured as one event by our instrument.

Notes about Monitoring

The seismograph was placed at the front of No. 7, Triq in-Nahal, Naxxar. It was placed here upon request from MEPA after they have received complaints from this area. Instrument used is MiniMate Plus, serial number BE9488. Blast number 1 was not strong enough to trigger the instrument.

Readings

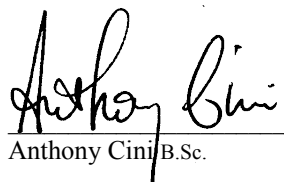
Blast Number	1	2	3	4
Time	09:30	09:37	09:42	
No. of Holes	5	6	6	6
No. of Delays	5	6	6	6
Depth of Holes (m)	7.5	9	9	9
Max. Charge/Delay (kg)	17.5	15	17	17
Total Charge (kg)	87.5	87.5	100	100
Dist. from Seismograph (m)	260	230	220	220
PPV (mm/s)	<0.50	0.90	1.73	
Frequency (Hz)	N/a	19.1	40	
Air Overpressure (dB L)	N/a	100.0	112.6	
Scaled Distance (m kg ^{-1/2})	62.2	59.4	53.4	53.4

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 ½ 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 the quarry boundaries. No damage to the surroundings was observed after the blast. The ground vibration and air overpressure measured for all blasts are within the limits.


Anthony Cini B.Sc.

D A T A C O L L E C T I O N S H E E T

BLASTING SESSION DETAILS

Quarry Name & Number:	HM22 - Wied Filep, l/o Naxxar	Quarry Operator:	Ballut Blocks Services Ltd.
Date:	18-3-13	MIC for HM22 is 25Kg	
Quarry personnel charging:	DAVID MUSCAT.		
Police Escort:	No: PC 818 Name:	JOSEPH FARRUGIA	
ANFO suppliers:	Company: FRAMEGRIP LTD.	Chief on site: MARIO CALLEJA	
Seismograph readings by:	RAPHAEL MICHALLEF		

BLAST DETAILS

Blast No.	Time	Holes	Delays	Dist. (m)	Depth		Total charge		Max. Chrg.	PPV mm/s	Freq. (Hz)	Air (dB)
					(ft)	(m)	Bags	(kg)				
1	09-30-33	5	5	260	25	7.5	3 1/2	87 1/2	17 1/2	0.5	NA	NA
2	09-37-10	6	6	230	30	9	3 1/2	87 1/2	15	0.90	19.1	100.0
3	09-42-46	6	6	220	30	9	4	100	17	1.73	40	112.6
4	—	6	6	220	30	9	4	100	17	—	—	—
5							15	375.				
6												
7												
8												
9												
10												
11												
12												
13												
14												
15												

BLAST CHARACTERISTICS

Burden	Distance between boreholes: ...2.5... m	Distance from rock face (burden):2..... m
Levels of holes: (top/mid/low shelves)	(1-4) Middle shelf	
Any horizontal holes?	No	[if yes, which? why?]
Any blast has holes of varying depths?	No	[if yes, which? Why?]
Any grouping of blasts?	Yes as indicated, to reduce blasts and speed up work	
Notes		

[expand on any of the above]

WEATHER CONDITIONS

Weather conditions observation:	[50] % cloud cover	[High / Low] Cloud	Rain: [no / light / medium / heavy] showers
	Wind [calm / light breeze / strong wind]	Approx. direction: [N / S / E / W]	

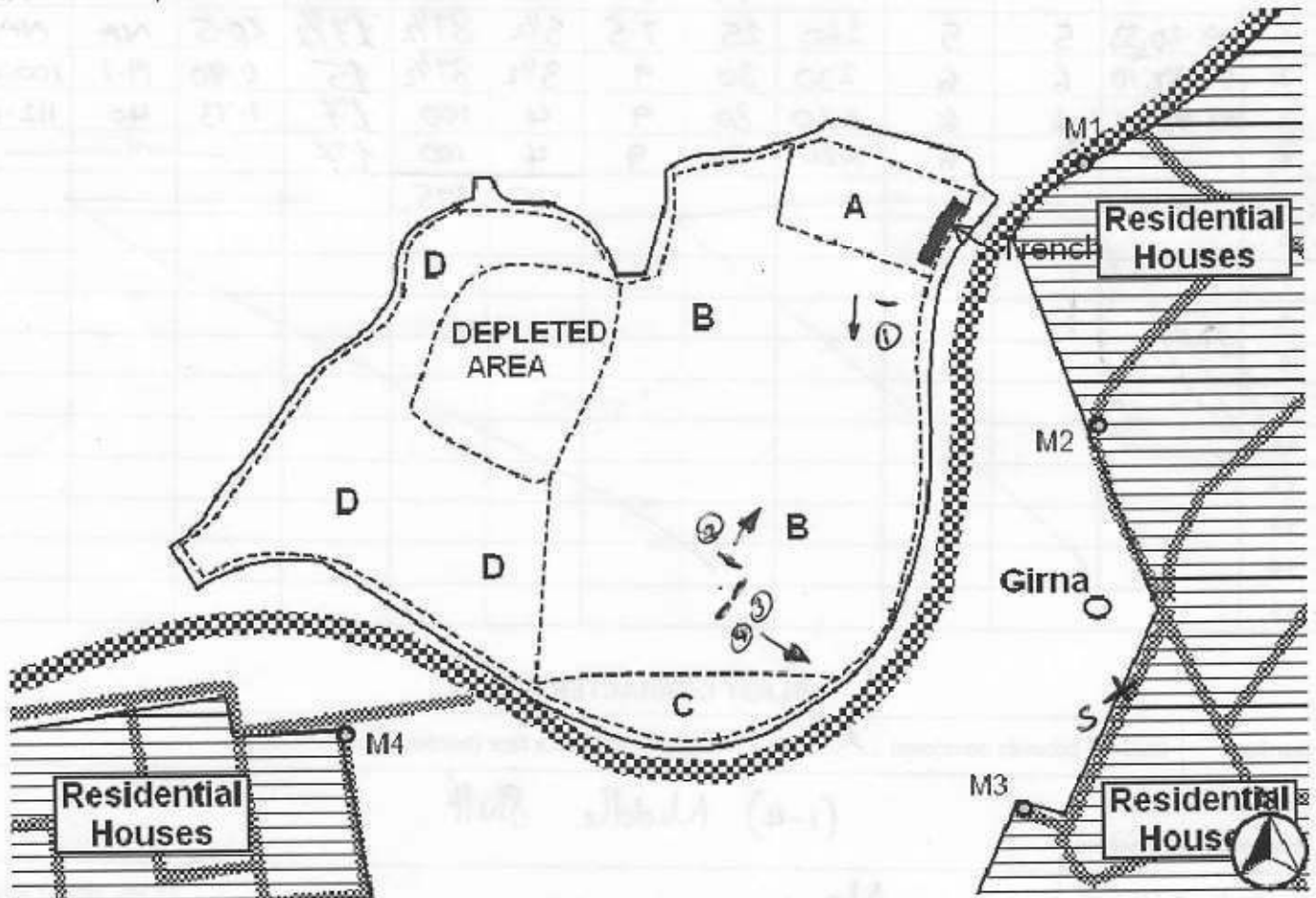
OTHER

Any visitors before/during/after blasts?	Nobody	[if yes, who? Why?]
Any complaints from neighbours?	None	[names/organizations]

MONITORING DETAILS

Location of Seismograph	<input type="checkbox"/> M1: Front of Villa Nordani, Triq id-Difiza Civili	<input type="checkbox"/> M2: Corner of Triq Brydone
	<input type="checkbox"/> M3: Front of No. 7, Melitta hse, Triq Sir Arturo Mercieca	<input type="checkbox"/> M4: Triq l-Imsaqfin

Indicate location of blasts on the diagram below after having observed their location in relation to the quarry boundaries. Number them in the order that they will be detonated. Indicate the location of the instrument at any of the four points indicated as M1, M2, M3, or M4.



Observations after blast:	No damage	[Flyrock/damage to surroundings]
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Signatures – By signing here you are agreeing with the information given by you above. Please check the information again before signing.


 Police escort
 
 f/ Quarry operator
 
 Blast monitoring agent

Date/Time Long at 09:37:10 March 18, 2013
Trigger Source Geo: 0.510 mm/s, Mic: 119 dB(L)
Range Geo: 31.7 mm/s
Record Time 2.0 sec at 4096 sps

Serial Number BE9488 V 8.01-8.0 MiniMate Plus
Battery Level 6.0 Volts
Unit Calibration September 3, 2012 by Datum Monitoring
File Name K488EQ0D.DY0

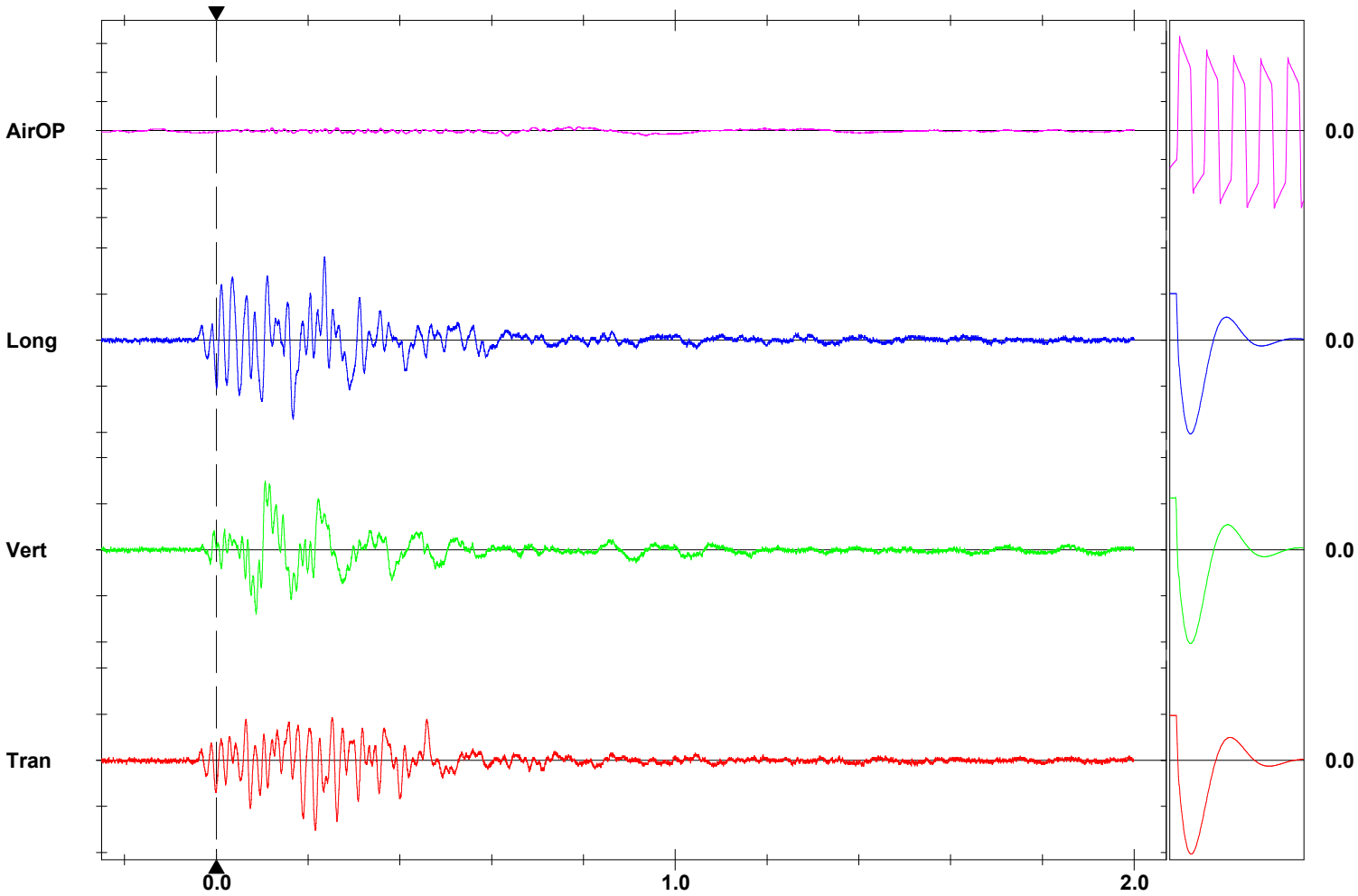
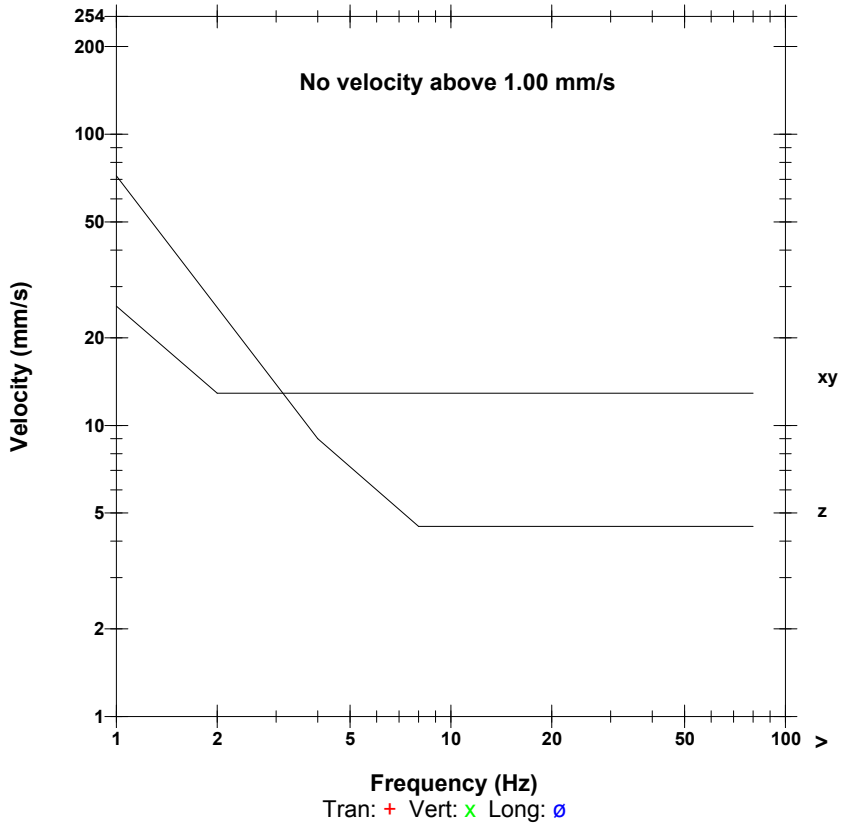
Notes
 Location: Quarry Blasting
 Client:
 User Name: ems
 General:

Microphone Linear Weighting
PSPL 100.0 dB(L) at 0.635 sec
ZC Freq 21.3 Hz
Channel Test Passed (Freq = 20.1 Hz Amp = 597 mv)

	Tran	Vert	Long	
PPV	0.762	0.746	0.905	mm/s
ZC Freq	40	13.8	19.1	Hz
Time (Rel. to Trig)	0.216	0.106	0.236	sec
Peak Acceleration	0.0331	0.0331	0.0331	g
Peak Displacement	0.00305	0.00776	0.00531	mm
Sensor Check	Passed	Passed	Passed	
Frequency	7.1	7.5	7.6	Hz
Overswing Ratio	4.1	3.8	4.1	

Peak Vector Sum 1.02 mm/s at 0.236 sec

BS 6472:1992 CURVE 32



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 09:42:26 March 18, 2013
Trigger Source Geo: 0.510 mm/s, Mic: 119 dB(L)
Range Geo: 31.7 mm/s
Record Time 2.0 sec at 4096 sps

Serial Number BE9488 V 8.01-8.0 MiniMate Plus
Battery Level 6.1 Volts
Unit Calibration September 3, 2012 by Datum Monitoring
File Name K488EQ0D.MQ0

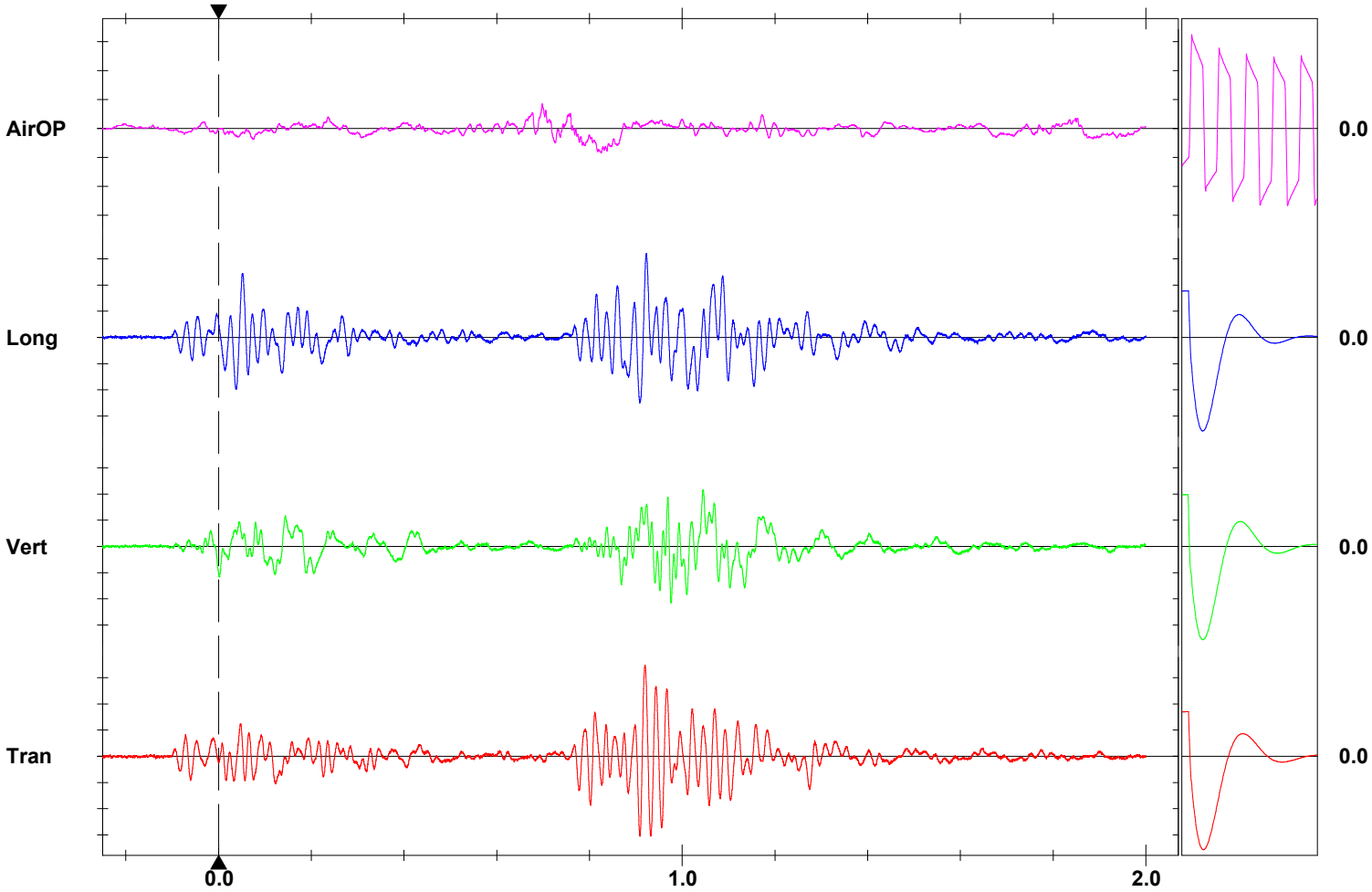
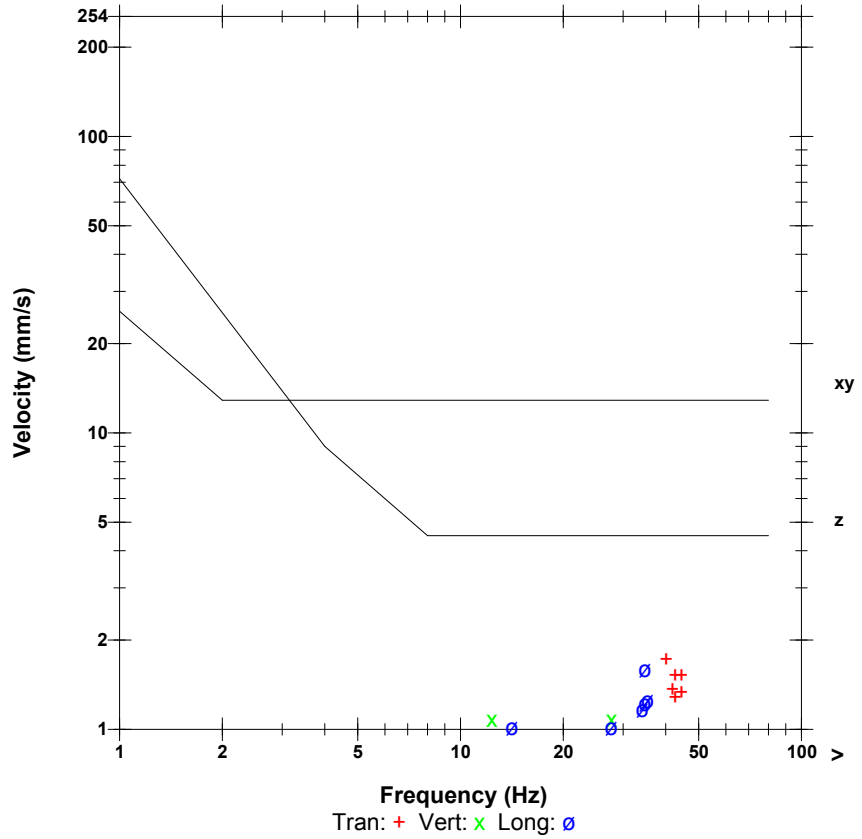
Notes
 Location: Quarry Blasting
 Client:
 User Name: ems
 General:

Microphone Linear Weighting
PSPL 112.6 dB(L) at 0.698 sec
ZC Freq 17.1 Hz
Channel Test Passed (Freq = 20.1 Hz Amp = 597 mv)

	Tran	Vert	Long	
PPV	1.73	1.08	1.60	mm/s
ZC Freq	40	27.7	34.7	Hz
Time (Rel. to Trig)	0.919	0.976	0.923	sec
Peak Acceleration	0.0597	0.0530	0.0398	g
Peak Displacement	0.00695	0.0108	0.0104	mm
Sensor Check	Passed	Passed	Passed	
Frequency	7.1	7.5	7.6	Hz
Overswing Ratio	4.1	3.8	4.1	

Peak Vector Sum 2.33 mm/s at 0.922 sec

BS 6472:1992 CURVE 32



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

Sensor Check