ems
environmental monitoring services

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BLAST MONITORING REPORT

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

2nd January 2013

Details

Date	02-01-2013
Quarry number	HM22 – Victoria Lines l/o Naxxar
Quarry operator	Ballut Blocks Ltd.
ANFO Supplier	Framegrip Ltd.
Police escort	PC 1127 – F Bonello

Location and Time of Blasting

Nine blasts were carried out between 11:31 and 12:02 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]
74%	6 Knots, SW	15 C	1023 hPa	100% high cloud

[1] As reported by weather.maltairport.com on 2 January 2013 at 11:20 at Luqa Airport [2] Our observation

Comments

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

Blasts 1 to 4 and then 6 to 9 were grouped as four pairs and each pair was 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 monitoring point M2, at the corner of Triq Brydone. The seismograph was set to trigger at 0.51 mm/s. Instrument used is MiniMate Plus, serial number BE9488.

The seismograph failed to record blasts beyond the first pair. Upon closer examination of the results (later on the same day) it was noticed that the battery level was very low (5.7V) and this is lower than the specified operating voltage of 6V. When the voltage problem became apparent the instrument was recharged for one hour and tested successfully and it does not appear to need to be sent out for repair. In conclusion, one may say that the instrument's electronics failed due to low battery voltage which may be attributed to human error: failure to keep instrument at full charge. The undersigned apologises for the mistake and steps are being taken to avoid this from happening again.

Readings

Blast Number	1	2	3	4	5	6	7	8	9
Time	11:31		11:35		11:40	11:50		12:02	
No. of Holes	7	6	6	6	6	7	7	8	8
No. of Delays	7	6	6	6	6	7	7	8	8
Depth of Holes (m)	6.5	6.5	6.5	6.5	6.5	10.5	10.5	6	6
Max. Chrg./Delay (kg)	14.5	12.5	12.5	12.5	12.5	20	20	12.5	12.5
Total Charge (kg)	100	75	75	75	75	138	138	100	100
Dist. from Seismo. (m)	150	150	140	140	130	170	170	170	170
PPV (mm/s)	1.40		N/a		N/a	N/a		N/a	
Frequency (Hz)	19.7		N/a		N/a	N/a		N/a	
Air Overpress. (dB L)	109.9		N/a		N/a	N/a		N/a	
Scaled Dist. (m kg$^{-½}$)	39.4	42.4	39.6	39.6	36.8	38.0	38.0	48.1	48.1

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. In the absence of instrument readings for the last four blasts the impression of the person on site is that the blasts were of regular strength: neither weaker than usual nor noticeably stronger.

Anthony Cini

Anthony Cini B.Sc.

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DATA COLLECTION SHEET

BLASTING SESSION DETAILS

Quarry Name & Number:	HM22 – Wied Filep, l/o Naxxar	**Quarry Operator:**	Ballut Blocks Services Ltd.
Date:	2-1-13	MIC for HM22 is **25Kg**	
Quarry personnel charging:	DAVID MUSCAT.		
Police Escort:	No: PC 1127 Name: FRANKIE BONELLO.		
ANFO suppliers:	Company: FRAMEGRIP LTD	Chief on site: MARIO CALLEJA	
Seismograph readings by:	RAPHAEL MICALLEF		

BLAST DETAILS

Blast No.	Time	Holes	Delays	Dist. (m)	Depth (ft)	Depth (m)	Total charge Bags	Total charge (kg)	Max. Chrg.	PPV mm/s	Freq. (Hz)	Air (dB)
1	11:31	7	7	150	22	6·5	4	100	14·5	1·40	19·7	109·9
2	—"—	6	6	150	22	6·5	3	75	12·5	—"—	—"—	—"—
3	11:35	6	6	140	22	6·5	3	75	12·5	N/A	N/A	N/A
4	—"—	6	6	140	22	6·5	3	75	12·5	—"—	—"—	—"—
5	11:40	6	6	130	22	6·5	3	75	12·5	N/A	N/A	N/A
6	11:50	7	7	170	35	10·5	5½	137½	20	N/A	N/A	N/A
7	—"—	7	7	170	35	10·5	5½	137½	20	—"—	—"—	—"—
8	12:02	8	8	170	20	6	4	100	12·5	N/A	N/A	N/A
9	—"—	8	8	170	20	6	4	100	12·5	—"—	—"—	—"—
10		61					35	875				
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)	(1-9) 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.	[if yes, which? Why?]
Notes	The instrument stopped recording blasts after the first blast and reported a "memory full error". It is believed that this is due to a system malfunction due to low battery level.	[expand on any of the above]

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WEATHER CONDITIONS

Weather conditions observation:	[100] % cloud cover [High / Low] Cloud Rain: [no / light / medium / heavy] showers Wind [calm / light breeze / strong wind] Approx. direction: [N / S / E / W]

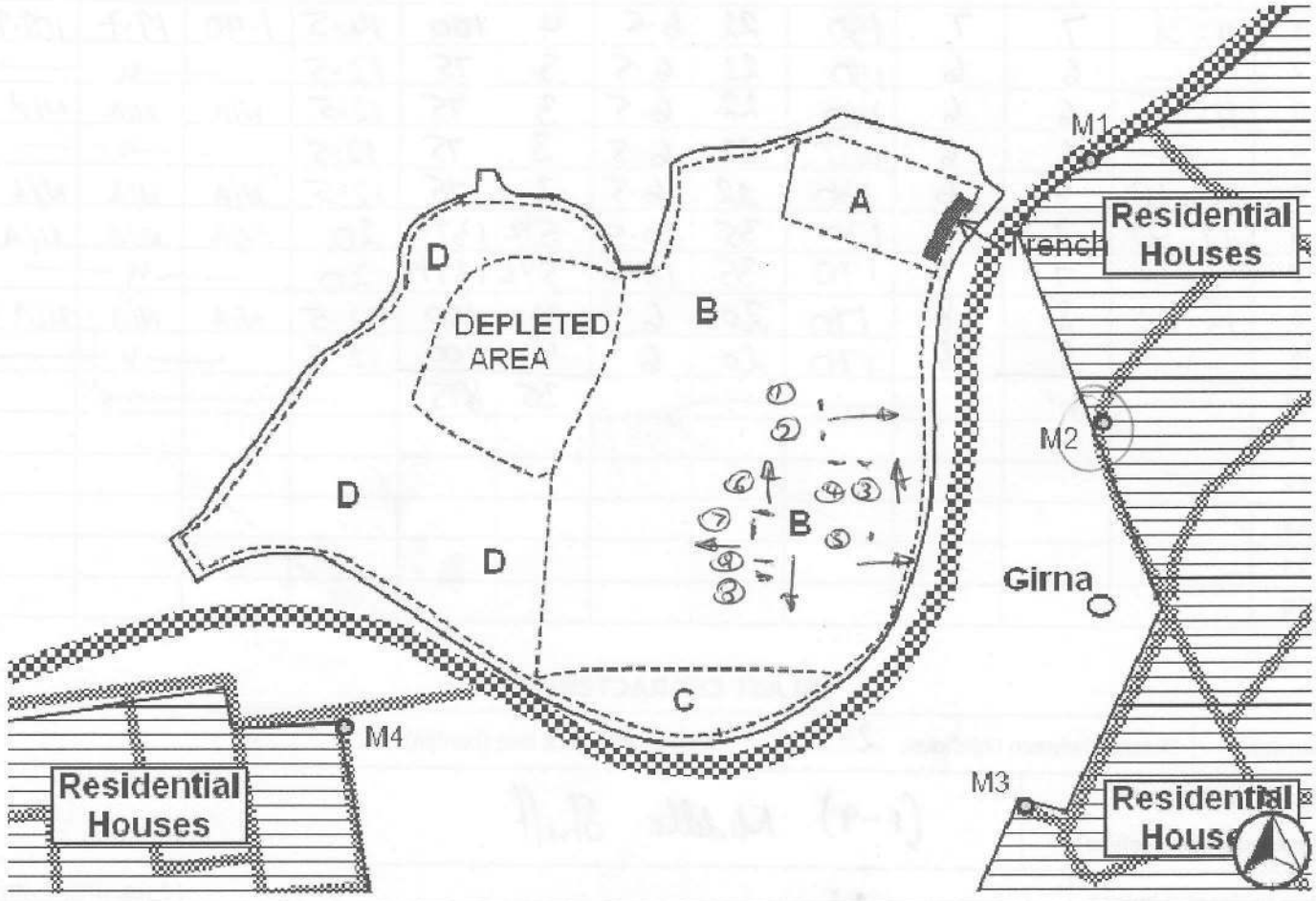
OTHER

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

MONITORING DETAILS

Location of Seismograph	( ) M1: Front of Villa Nordani, Triq id-Difiza Civili	(✓) M2: Corner of Triq Brydone	
	( ) M3: Front of No. 7, Melitta hse, Triq Sir Arturo Mercieca	( ) M4: Triq l-Imsaqqfin	( ) Other:

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:	[Flyrock/damage to surroundings]

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

Event Report

Date/Time	Long at 11:31:35 January 2, 2013	**Serial Number**	BE9488 V 8.01-8.0 MiniMate Plus
Trigger Source	Geo: 0.510 mm/s	**Battery Level**	5.7 Volts (Battery Very Low)
	Mic: 118 dB(L)	**Calibration**	September 3, 2012 by Datum Monitoring
Range	Geo :31.7 mm/s	**File Name**	K488EM5M.ON0
Record Time	2.0 sec at 4096 sps		

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

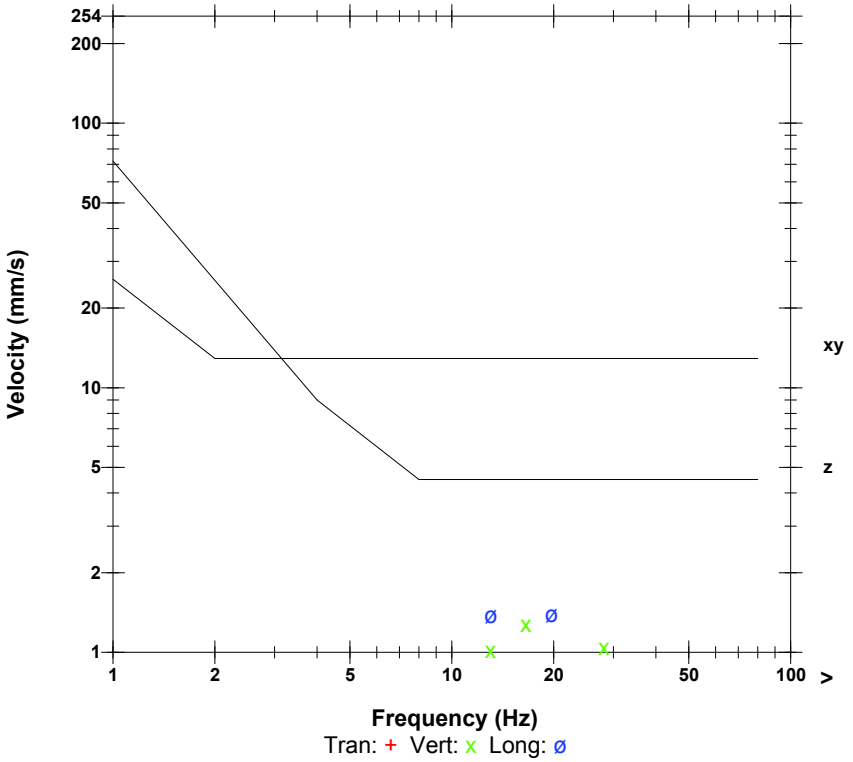
Post Event Notes

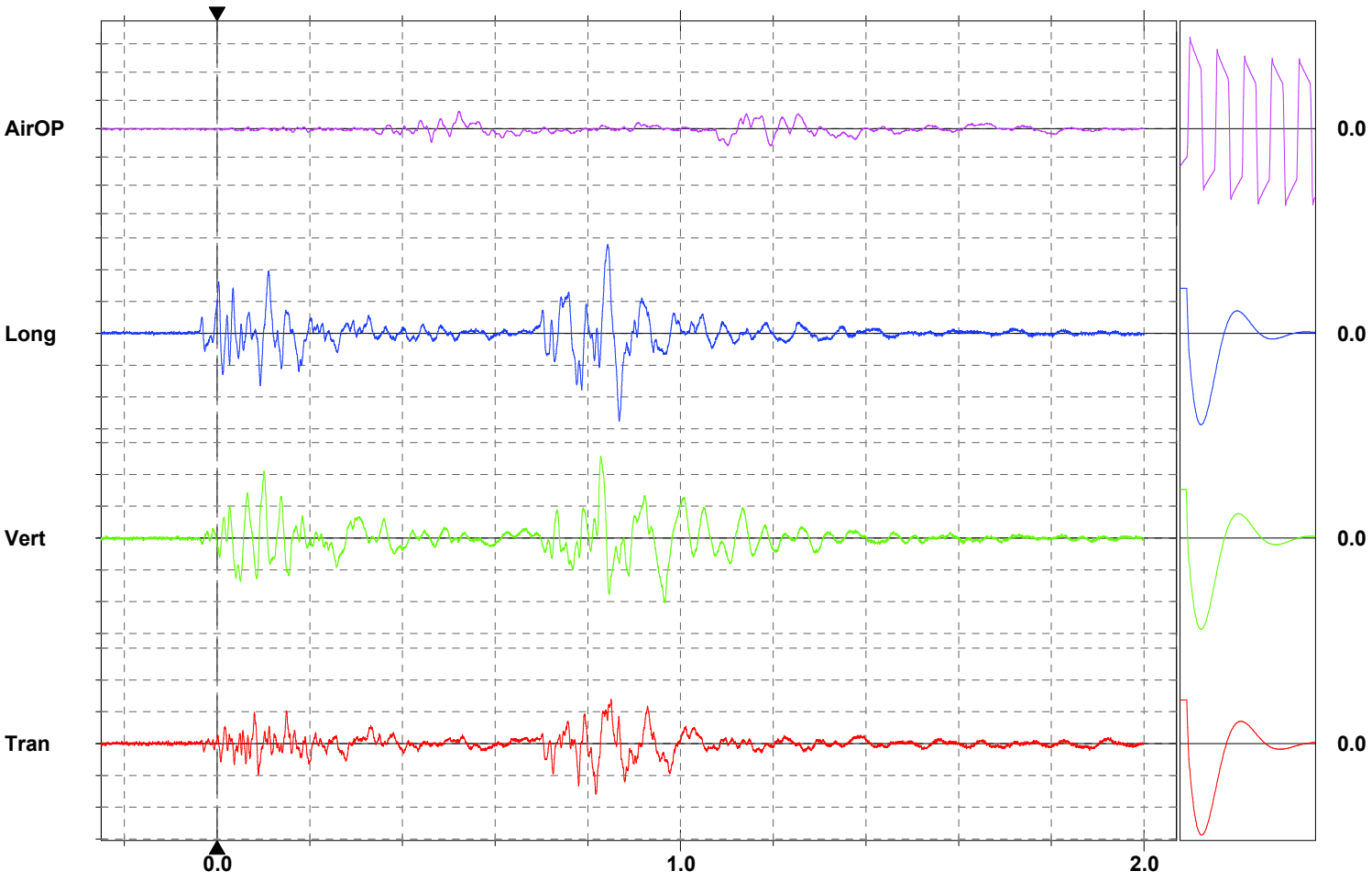
Microphone Linear Weighting
PSPL 109.9 dB(L) 6.25 pa.(L) at 0.522 sec
ZC Freq 7.9 Hz
Channel Test Passed (Freq = 20.1 Hz Amp = 589 mv)

	Tran	Vert	Long	
PPV	0.794	1.29	1.40	mm/s
ZC Freq	17.8	16.5	19.7	Hz
Time (Rel. to Trig)	0.817	0.828	0.843	sec
Peak Acceleration	0.0265	0.0331	0.0398	g
Peak Displacement	0.00660	0.0101	0.0104	mm
Sensorcheck	Passed	Passed	Passed	
Frequency	7.1	7.5	7.6	Hz
Overswing Ratio	4.1	3.8	4.1	

Peak Vector Sum 1.70 mm/s at 0.844 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 Sensorcheck
Trigger =