

BLAST MONITORING REPORT

HM33 Hard Stone Quarry at Ta' Bellula, l/o Siggiewi

4th December 2012

Details

Date	04-12-2012
Quarry number	HM33 – Hard Stone Quarry at Ta' Bellula, Ghar Lapsi, l/o Siggiewi
Quarry operator	Polidano Bros. Ltd.
ANFO Supplier	Framegrip Ltd
Police escort	PC 1150 – M Schembri

Location and time of blasting

Four blasts were carried out all at 12:06 at approximately the points as indicated on the attached site diagram.

Summary of blasting conditions

Maximum charge per delay: 25 Kg

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

Air overpressure limit: 120dB (L)

Site Specific Permit

All holes were within quarry boundaries and within maximum depth.

Maximum charge per delay of 25Kg was not exceeded.

Weather Conditions

Humidity ^[1]	Wind ^[1]	Temp. ^[1]	Atm. Pressure	Cloud Cover ^[2]
67%	8 Knots, NW by W	17 C	1016 hPa	c. 100% high cloud

[1] As reported by weather.maltairport.com on 4 December 2012 at 12:15 at Luqa Airport [2] Our observation

Comments

All holes are at the middle shelf of the quarry.

The four blasts were organised as one group and detonated by means of two short-circuit exploders in very quick sequence and captured as one event by our seismograph.

Notes

Seismograph was placed in front of the nearest residential area marked as "Ta' Skallec" (or E. Scicluna) on the way down to Ghar Lapsi Bay.

Seismograph was set to trigger at 0.50 mm/s. Seismograph used is a MiniMate+ serial number BE9488.

Readings

Blast number	1	2	3	4
Time	12:06			
No. of holes	14	14	11	11
No. of delays	14	14	11	11
Depth of holes (m)	12	12	12	12
Max. Charge per delay (kg)	25	25	25	25
Total charge (kg)	350	350	275	275
Dist. from seismograph (m)	350	350	275	275
PPV (mm/s)	2.51			
Frequency (Hz)	14.4			
Air Overpressure (dB)	115.9			
Scaled Distance (m kg ^{-1/2})	70.0	70.0	55.0	55.0


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

Weights in kilograms are rounded-up to the nearest 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 of the quarry was observed during a brief inspection after the blasting. The four blasts do not show as four distinct wave-forms on the instrument printout. This means that they were detonated too close to one another.



Anthony Cini B.Sc.

DATA COLLECTION SHEET

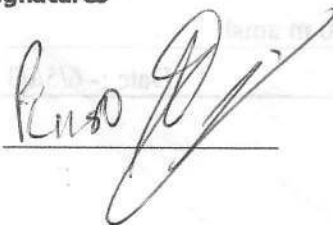
Date:	4-12-12		MIC for HM33 is 25Kg
Quarry Name & Number:	HM33 - Ta' Bellula, l/o Siggiewi	Quarry Operator:	Polidano Bros. Ltd.
Police Escort:	No: PC 1150	Name:	MARCO SCHEMBRI
Blasting carried out by:	Company: FrameGrip Ltd.	Name:	MARIO CALLEJA
Seismograph readings by:	RAPHAEL MICALLEF		

Blast	Time	Holes	Delays	Dist.		Depth		Total charge		Max. Chrg.	PPV mm/s	Freq. (Hz)	Air (dB)
				(m)	(ft)	(m)	Bags	(kg)					
1	12-06-19	14	14	340	40	12	14	350	25	2.51	14.4	115.9	
2	—	14	14	340	40	12	14	350	25	—	—	—	
3	—	11	11	330	40	12	11	275	25	—	—	—	
4	—	11	11	330	40	12	11	275	25	—	—	—	
5		50					50	1250					
6													
7													
8													
9													
10													
11													
12													

Location of Seismograph	<input checked="" type="checkbox"/> In front of nearest residential area marked as "E. Scicluna" on the way down to Ghar Lapsi Bay	<input type="checkbox"/> Garage Area of Dar Tal-Providenza (hospital)	<input type="checkbox"/> Other: /
Burden	Distance between boreholes: 2.5 m Distance from rock face (burden): 2 m		
Notes	Any horizontal holes? No. Any blast made up of holes of different-depth? No. Why? / Any blasts grouped together and detonated using multiple (almost simultaneous) short-circuit exploders? Yes. Why? * Any visitors before/during/after blast? Nobody (note names and organizations) Any complaints from neighbours? No (note names, number of persons/households) Note levels of holes: (1-4) Middle Shelf Flyrock observation: None Outside Any damage to quarry surroundings? None Observed		
Further Comments	* Yes as indicated, to reduce blasts and speed up work * Cloud Cover - 100% high clouds		

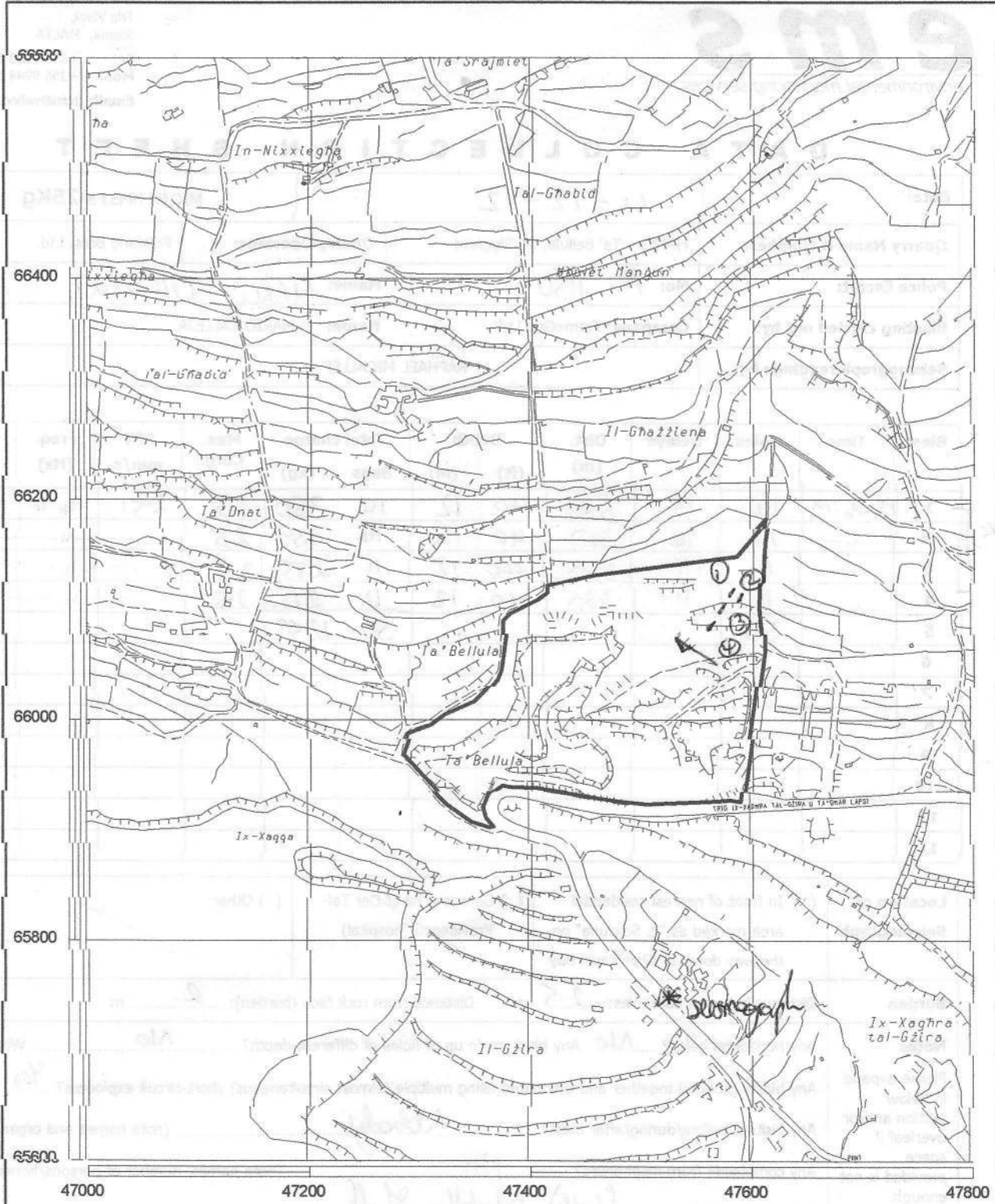
(use overleaf if more space is required)



Signatures









Malta Environment & Planning Authority Hardstone (LC) Quarry Site Plan		St. Francis Ravelin Floriana PO Box 200, Valletta Tel:240976 Fax:224846	
Quarry No. :- HM 33	Location :- Ta' Bellula, Siggiewi	<i>4-12-12</i> 	
Scale :- 1:5000	Permitted Quarry Area :- 53851.47 sqm		
	Permitted Quarry Depth :- 40 m amsl		
Part of Survey Sheet(s): 4665 4666		Date :- 6/5/03	

Date/Time Vert at 12:06:19 December 4, 2012
Trigger Source Geo: 0.510 mm/s
 Mic: 118 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 5.8 Volts (Battery Low)
Calibration September 3, 2012 by Datum Monitoring
File Name K488EKNY.YJ0

Notes

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

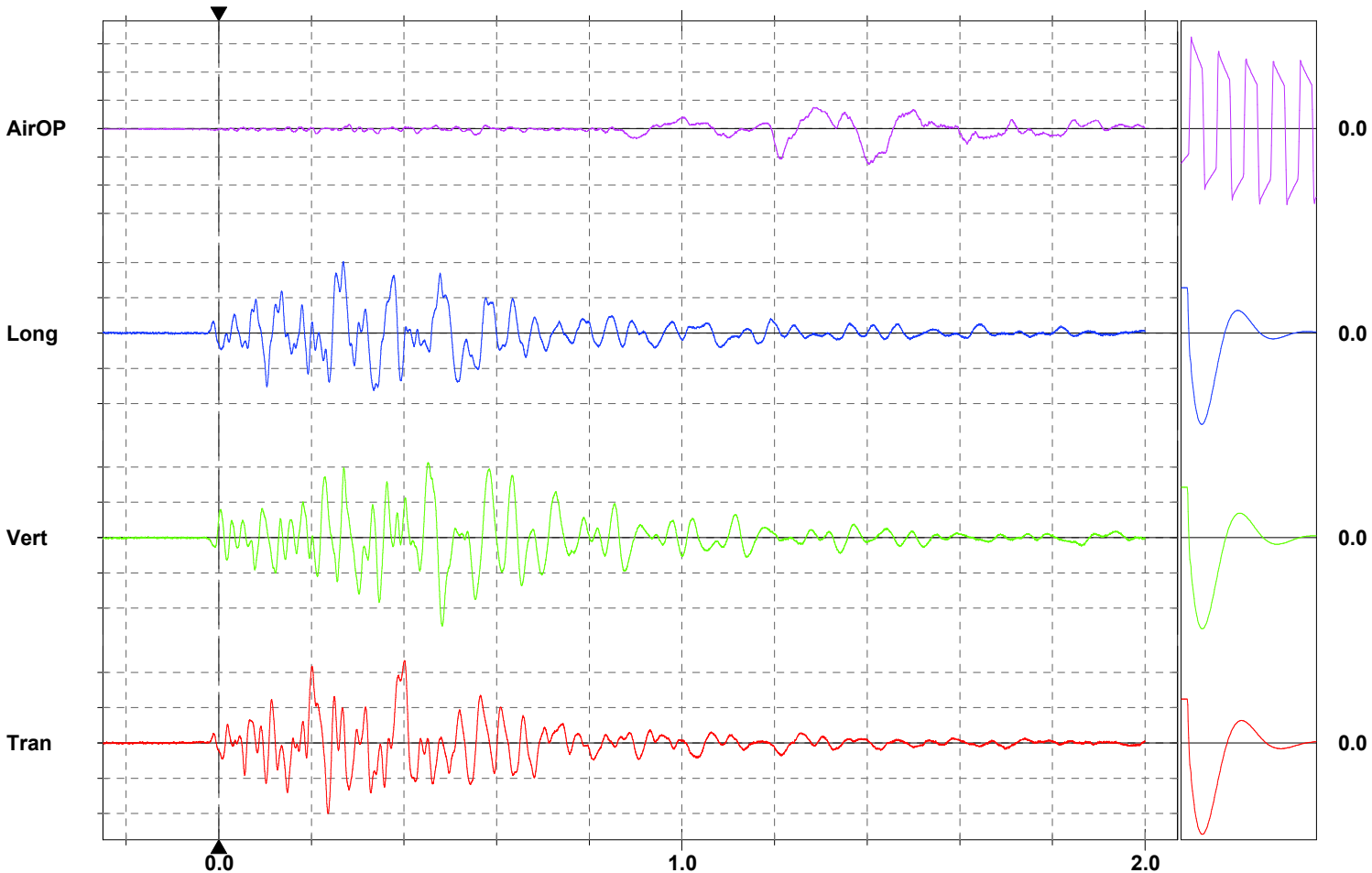
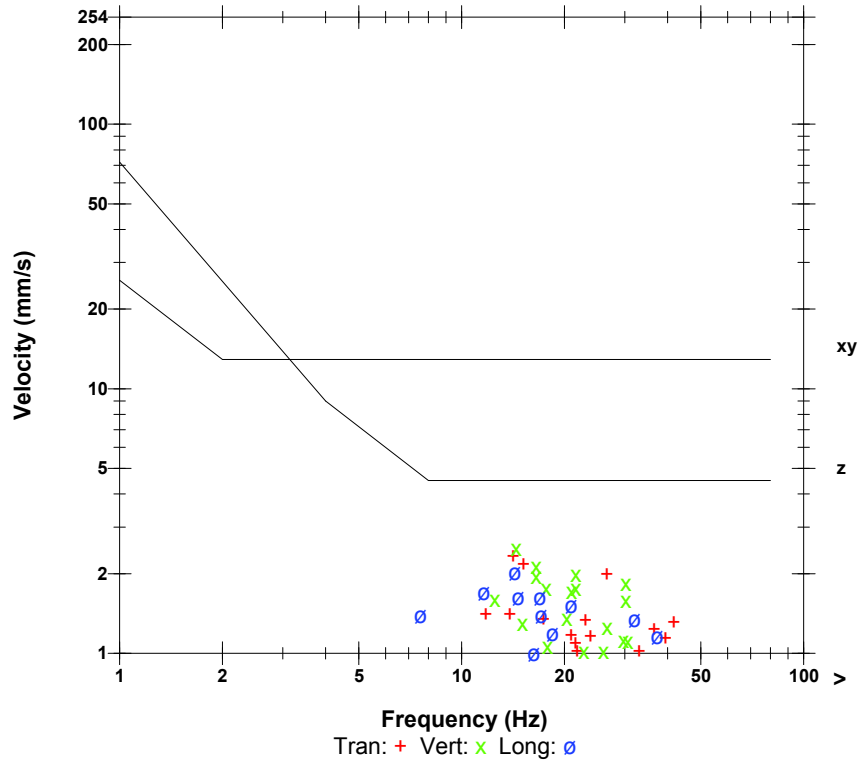
Post Event Notes

Microphone Linear Weighting
PSPL 115.9 dB(L) 12.5 pa.(L) at 1.403 sec
ZC Freq 6.4 Hz
Channel Test Passed (Freq = 20.1 Hz Amp = 630 mv)

	Tran	Vert	Long	
PPV	2.33	2.51	2.03	mm/s
ZC Freq	14.1	14.4	14.3	Hz
Time (Rel. to Trig)	0.401	0.482	0.269	sec
Peak Acceleration	0.0597	0.0464	0.0464	g
Peak Displacement	0.0267	0.0221	0.0252	mm
Sensorcheck	Passed	Passed	Passed	
Frequency	7.2	7.4	7.6	Hz
Overswing Ratio	4.1	3.8	4.1	

Peak Vector Sum 2.90 mm/s at 0.269 sec

BS 6472:1992 CURVE 32



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

Sensorcheck