

BLAST MONITORING REPORT

HG12 Hard Stone Quarry at Ta' Klement, I/o Qala Gozo

3rd April 2012

Details

Date	03-04-2012
Quarry number	HG12 – Hard stone Quarry at Ta' Klement, I/o Qala Gozo
Quarry operator	Road Constructions Ltd.
ANFO Supplier	Framegrip Ltd.
Police escort	PC 1127 – F Bonello

Location and Time of Blasting

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

Summary of Blasting Conditions

Maximum charge per delay: 70-90m: 13Kg; 90-110m: 21Kg; 110-130m: 32Kg, 139-150m: 45Kg; 150m+: 60Kg. These distances are to be measured from the "slipway" and the "girna".

Recommended vibration limit: <4 mm/s at the nearest *girna* or natural arch near the "slipway".

Site Specific Permit

Holes were within quarry boundaries and within the permitted depths.

The maximum charge per delay was not exceeded.

Weather Conditions

The current weather conditions as reported on www.maltaweather.com on 3 April 2012 at 11:30 in Victoria Gozo is the following:- humidity 86%, wind: 14.6 Km/h ENE, temperature 16.5C, cloud cover: mostly clear.

Comments

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

All holes are at the top shelf of the quarry.

Notes

Seismograph was placed at the entrance to the *girna*.

Seismograph was set to trigger at 0.51 mm/s. Instrument used was MiniMate Plus s/n BE9488.

Readings

Blast number	1	2
Time	12:35	
No. of holes	16	16
No. of delays	16	16
Depth of holes (m)	15	15
Max. Charge per delay (Kg)	40	40
MIC Permitted (Kg) *	45	45
Total charge (Kg)	638	638
Dist. from seismograph (m)	145	145
PPV (mm/s)	10.1	
Frequency (Hz)	53	
Air Overpressure (dB L)	128.5	
Scaled Distance (m kg^{-1/2})	159.5	159.5

*MIC = Maximum Instantaneous Charge

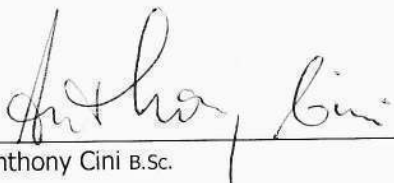
Burden is 1.5 metres and distance between holes is between 1.5 and 2 metres.

Weights in kilograms are rounded to the nearest unit, and depths in metres are rounded to the nearest ½ unit. Distances are accurate to the nearest 10 metres. Depth of holes and amount of explosive used in holes are reported as given by quarry personnel, and shot-firer.

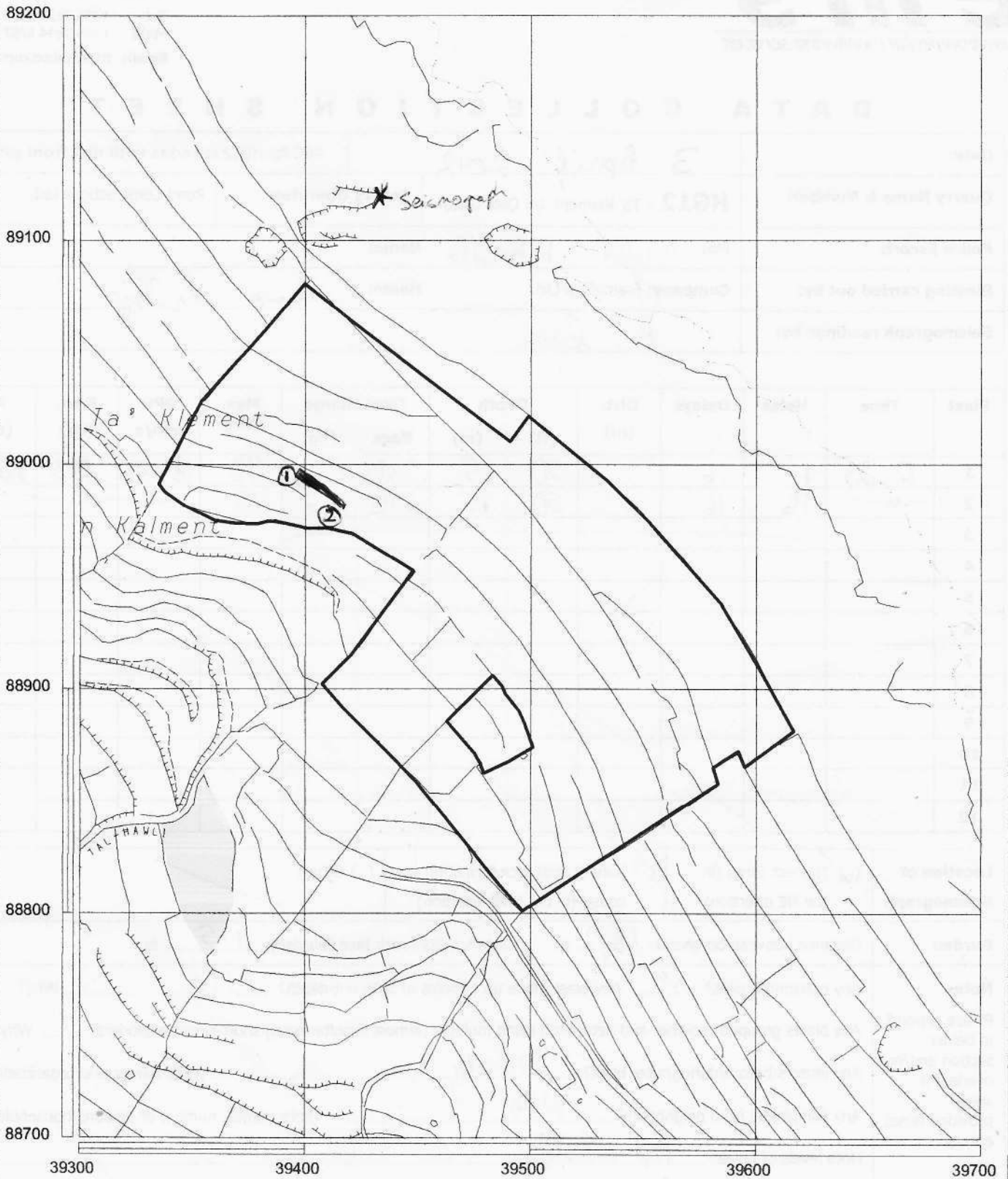
Observations

No damage to the surroundings of the quarry was observed during a brief visual inspection after the blast.

The blast caused vibration and air overpressure far beyond the allowed limits of 4mm/s and 115dB L respectively. The data plot on the attached report suggests that the two blasts, although planned to be detonated in quick sequence, were probably detonated together so that the effective maximum instantaneous charge would work out as 80Kg not 40Kg as reported to us. We suggest that when two short-circuit exploders are used they are distinctly detonated in sequence and when this is the case then it should be evident in the data plotted on the event report.



Anthony Cini B.Sc.



Malta Environment & Planning Authority

Hardstone Quarry Site Plan

St. Francis Ravelin
 Floriana
 PO Box 200, Valletta
 Tel:22900000 Fax:21224846



Quarry No. :- HG 12	Location :- Ta' Klement <i>Anthony Bin</i>
Scale :- 1:2500	Permitted Quarry Area :- 34010 sqm <i>3/4/2012</i> Permitted Quarry Depth :- 5 m amsl
Part of Survey Sheet(s): 3888 3889 Date :- 11/9/06	

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

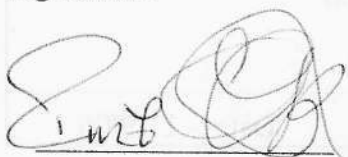
Date:	3 April 2012	MIC for HG12 is varies with dist. from girna
Quarry Name & Number:	HG12 - Ta' Klement, I/o Qala Gozo	Quarry Operator: Road Constructions Ltd.
Police Escort:	No: PC1127 F Bonello	Name:
Blasting carried out by:	Company: FrameGrip Ltd.	Name: Mario Kallija
Seismograph readings by:	A Bini	

Blast	Time	Holes	Delays	Dist. (m)	Depth		Total charge		Max. Chrg.	PPV mm/s	Freq. (Hz)	Air (dB)	MIC
					(ft)	(m)	Bags	(kg)					
1	12:35	16	16		50	15	25 1/2	638	40	10-1	53	128-7	45
2	14	16	16		50	15	25 1/2	638	40	"	"	"	45
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													

Location of Seismograph	<input checked="" type="checkbox"/> Nearest Girna (in the NE direction)	<input type="checkbox"/> Natural arch rock formation on coast (in the NNE direction)	<input type="checkbox"/> Other: _____
Burden	Distance between boreholes: 15.72 m Distance from rock face (burden): 1.5 m		
Notes <small>Please expand in below section and/or overleaf if space provided is not enough.</small>	Any horizontal holes? <u>NO</u> Any blast made up of holes of different-depth? <u>NO</u> Why?		
	Any blasts grouped together and detonated using multiple (almost simultaneous) short-circuit exploders? <u>Y</u> Why?		
	Any visitors before/during/after blast? <u>Nobody</u> (note names and organizations)		
	Any complaints from neighbours? <u>None</u> (note names, number of persons/households?)		
	Note levels of holes: <u>top shelf</u>		
	Flyrock observation: <u>None</u> Any damage to quarry surroundings? <u>None observed.</u>		
Further Comments	+ Spent the two blasts were detonated by means of two short-circuit exploders to save the second blast from damage caused by the first.		

(use overleaf if more space is required)

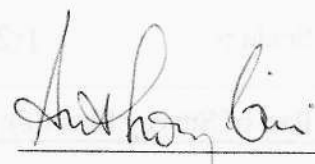
Signatures



Police escort



f/ Quarry operator



f/ ems

Date/Time Long at 12:35:41 April 3, 2012
Trigger Source Geo: 0.510 mm/s
 Mic: 113 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
Calibration September 9, 2011 by Datum Monitoring
File Name K488E82A.ZHO

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

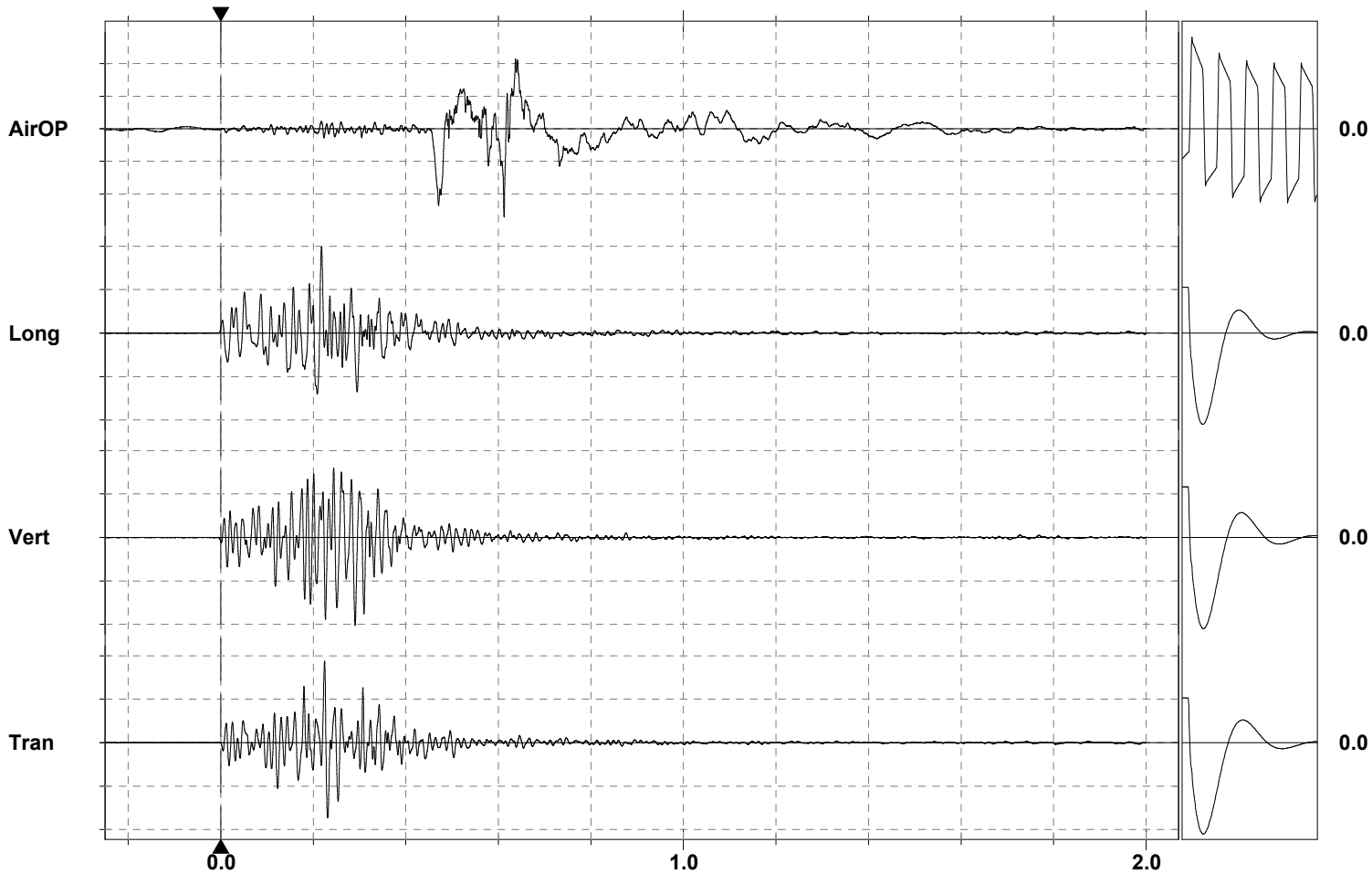
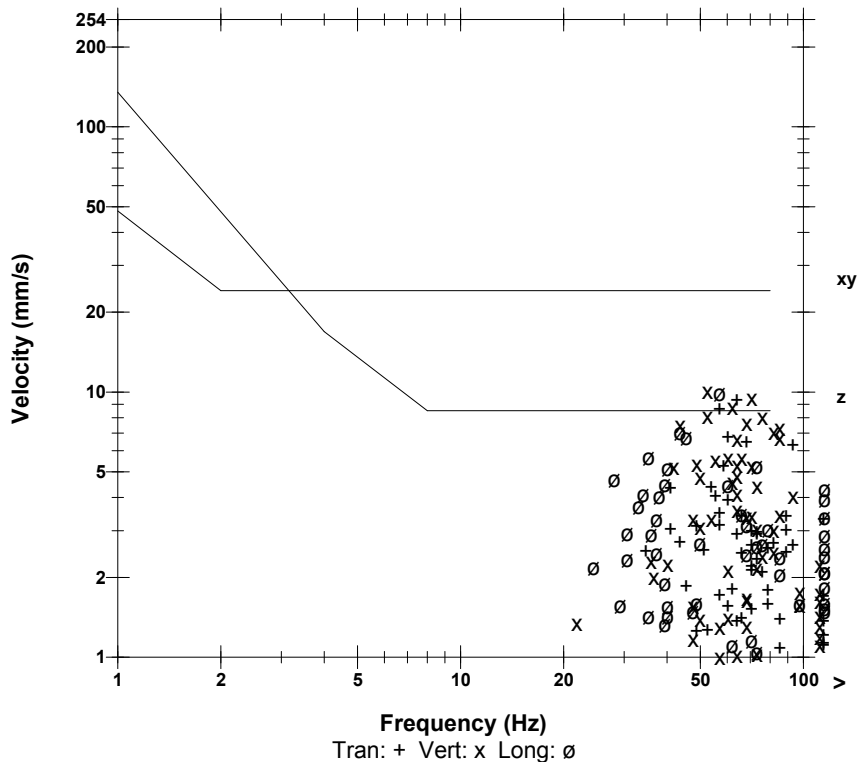
Post Event Notes

Microphone Linear Weighting
PSPL 128.7 dB(L) at 0.612 sec
ZC Freq 23.5 Hz
Channel Test Passed (Freq = 20.1 Hz Amp = 508 mv)

	Tran	Vert	Long	
PPV	9.38	10.1	9.91	mm/s
ZC Freq	64	53	57	Hz
Time (Rel. to Trig)	0.224	0.290	0.218	sec
Peak Acceleration	0.497	0.471	0.378	g
Peak Displacement	0.0239	0.0277	0.0295	mm
Sensor Check	Passed	Passed	Passed	
Frequency	7.2	7.4	7.6	Hz
Overswing Ratio	4.0	3.7	4.0	

Peak Vector Sum 11.8 mm/s at 0.225 sec

BS 6472:1992 CURVE 60



Time Scale: 0.20 sec/div **Amplitude Scale:** Geo: 5.00 mm/s/div Mic: 20.0 pa.(L)/div
Trigger =

Sensor Check