

SAN RAFAEL ROCK QUARRY VIBRATION REPORT

BLAST INFORMATION

Location: PB-7 Max. Charge Weight: 320 Date of Blast: 8-18-11
 Northing: 37°59'12.1 N Blast Duration: 351 ms Time of Blast: 12:20
 Easting: 122°27'18.1 W Blast Number: 1553

SEISMOGRAPH INFORMATION

Seismograph Model	2000	Micro	micro	Micro
Serial Number	29101	1547	1547	1547
Last Calibration Date	5-24-11	5-26-11	5-26-11	5-26-11

LOCATION INFORMATION

Location	Via Montebello	Small Station	M. Messer Point
Northing	37°59'18.1 N	37°59'31.1 W	37°59'30.1 N
Easting	122°27'22.1 W	122°27'30.1 W	122°27'16.1 W
Distance from Blast	898	2957	1954
Scaled Distance	60	199	153

VIBRATION INFORMATION

Longitudinal Peak Particle Velocity (ips)	.09	.05	
Longitudinal Peak Frequency (Hz)	35.7	35.7	
Transverse Peak Particle Velocity (ips)	.07	.05	
Transverse Peak Frequency (Hz)	12.8	16.1	
Vertical Peak Particle Velocity (ips)	.09	.06	
Vertical Peak Frequency (Hz)	20.8	11.3	
Peak Vector Sum (ips)	.11	.08	
Peak Air Overpressure (db)	109	106	

GENERAL COMMENTS

Deck loaded

Seismograph Operator: Deron Lopes

Signature: Deron Lopes

SAN RAFAEL ROCK QUARRY BLAST REPORT

BASE DATA:

Location: PB-7 Designed Bench Height (ft): 40 Date: 8-18-11
 Northing: 37° 59' 12 N Rock Density (lb/ft³): 2.7 Time: 12:20
 Easting: 122° 20' 18 W Relative Rock Hardness: 7 Blast Number: 1553

DESIGN DATA:

Number of Holes Shot: 19 Hole Dia. (in.): 6 3/4 Stemming (ft): 15 Loading Time Required (man hrs): 8 Deck Type: 44' Stone
 Ave. Hole Depth (ft): 43 Burden (ft): 15 Stem Type: N Staggered Pattern (y or n): N Length (ft): 5
 Relative Confinement: Spacing (ft): Subdrill (ft): Number of Lost Holes: 0 Tons Shot: 18,240

EXPLOSIVES DATA:

Bulk Explosive	Weight	Boosters	Units	Delays	Units	Misc.	Units	Max (lb/hole):	Blast Duration (sec):
<u> </u>	<u>6700</u>	<u>150 gms</u>	<u>30</u>	<u>50 E2</u>	<u>19</u>	<u> </u>	<u> </u>	<u>380</u>	<u>35.1 ms</u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u>42 ms E27</u>	<u>4</u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>

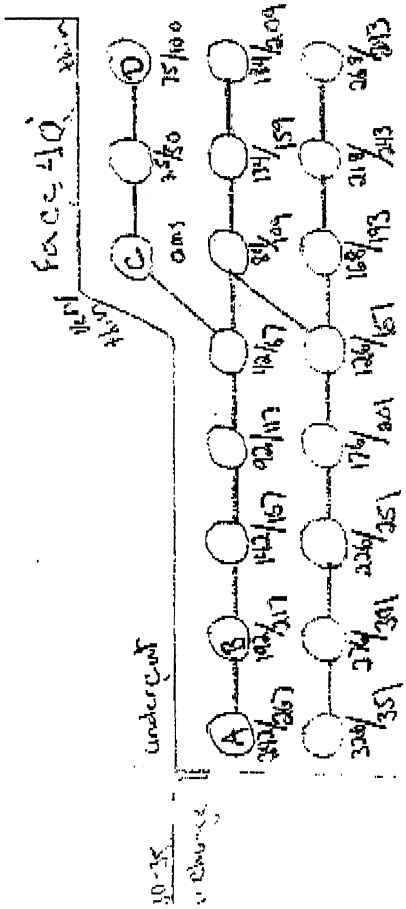
VIBRATION DATA:

Nearest Structure: Malibu ag Seismograph Loc.: 50ms Temperature: 77° Max. Chrg. (lb/8ms): 300 Total Charge Wt.: 6958
 Northing: 37° 59' 19 N Northing: Sky Condition: Clear RPPV: 11
 Easting: 122° 20' 22 W Easting: Wind Direction: East Frequency: 35.7
 Distance Away: 878 Distance Away: Wind Speed: 0.3 Airblast: 101

PERFORMANCE DATA:

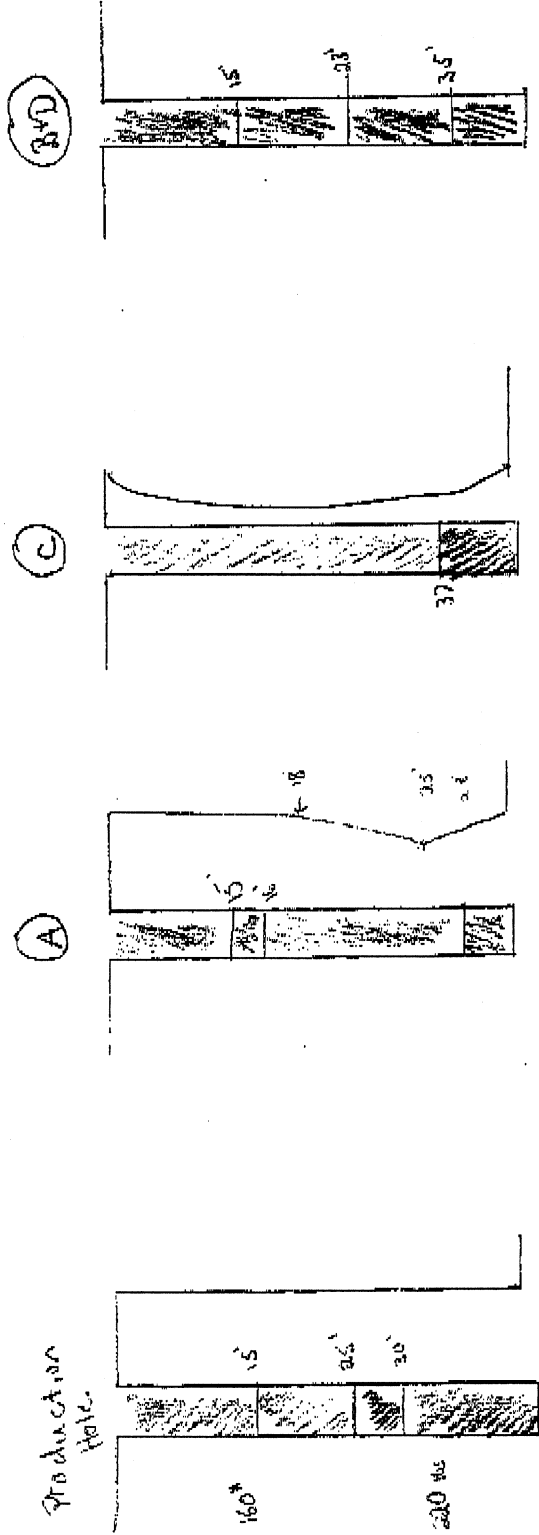
Powder Factor (lb/ton): 1.3 Displacement: good Crushability:
 Lb/yd³: 1.06 Vibration: Great Fines:
 Fragmentation: Fair Dig ability:
 Comments: Decked Blaster in Charge: [Signature]

8/18/11
P.B.7
#1553



15 X 16

19' Hole
19' 80' E2 det
19' 50' E2 det
4' 90' MS E2 TL
6' 20' 16.5 titan
depth 43ft
main 898
V. on mount 2957
Sol. M 2270
W.W 1954
37' 59' 12.W
122' 37' 18.W



Production

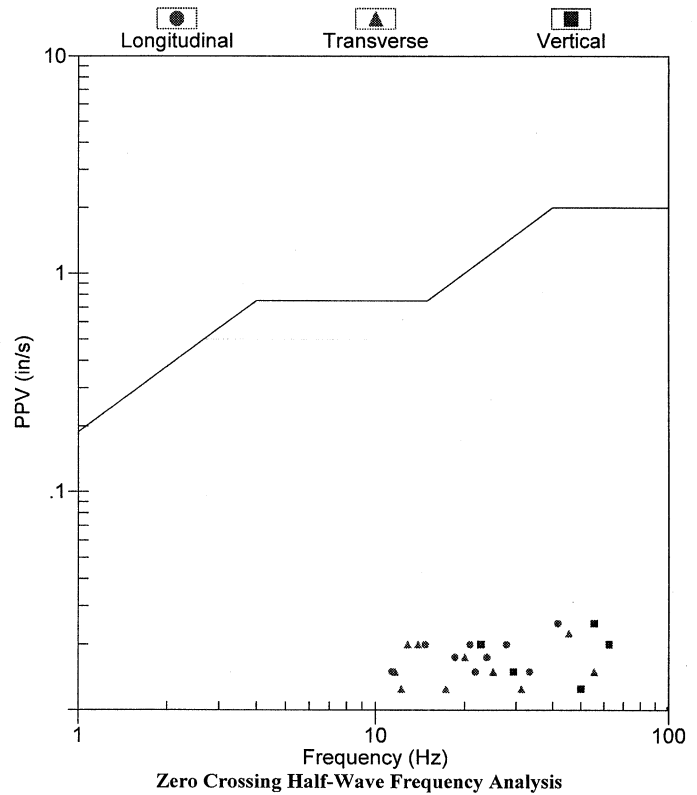
Seismic Analysis

Velocity Waveform Analysis

Serial No: 7155 v3.23
Date: 08/18/2011 12:21:20 (UTC-7)
Event No: 4
Record Time: 5.0 s
Client: COUNTY OF MARIN
Operation: SAN RAFAEL ROCK QUARRY
Location: 16 MARIN BAY PARK CT.
Distance:
Operator: VIBRA-TECH GSM
Comment: WILLIAM HOSKEN RESIDENC
Seismic Trigger: 0.030 in/s

USBM Safe Blasting Levels

SN: 7155 Event: 4



Summary Data

	L	T	V
PPV (in/s)	0.025	0.023	0.033
FREQ (Hz)	41.7	45.5	29.4
PD (.001")	0.20	0.19	0.20
PPA (g)	0.020	0.020	0.026
Peak Vector Sum :	0.035 in/s		
Peak Air Pressure:	103 db		
	0.00045 PSI @ 3.3 Hz		

Additional Info:

j-GEO-01252
N37 59.524, W122 27.373

Shaketable Calibrated: 01/26/2011

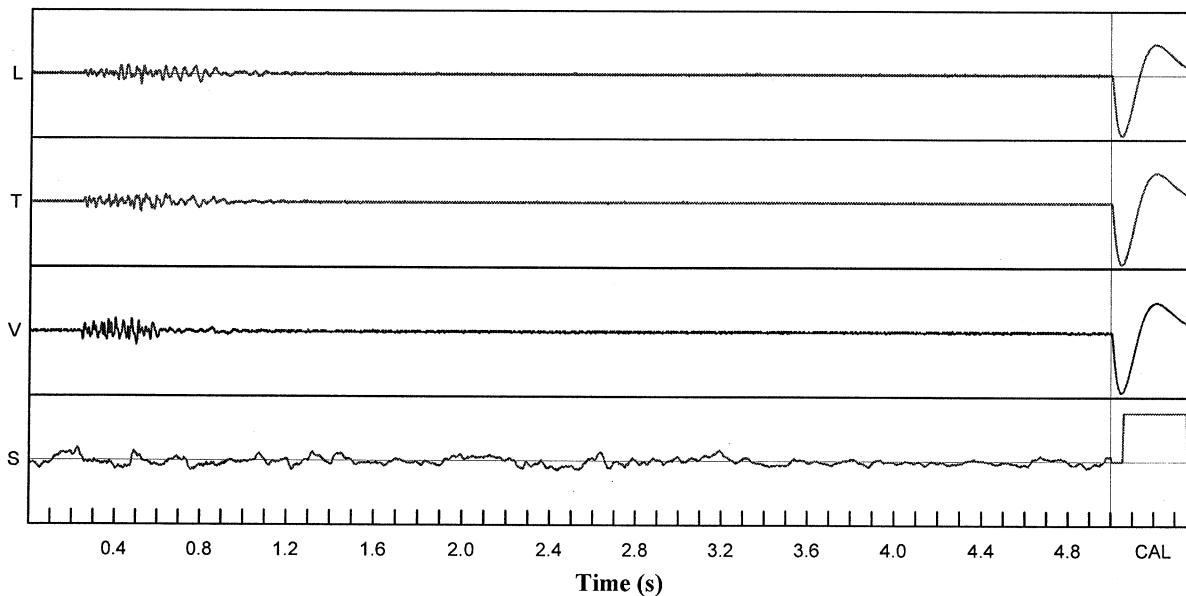
By: Vibra-Tech, Inc.
2700 Holloway Road - Suite 113
Louisville, KY 40299 U.S.A.
TEL: 502.240.9900 FAX: 502.240.9902

Velocity Waveform Graph Scale

Time Scale: 0.100 s
Seismic Scale: +/- 0.160 in/s
Sound Scale: +/- 0.0023 PSI

Velocity Waveform

SN: 7155 Event: 4



GeoSonics Inc. Seismic Analysis

Stop Event Report

Serial No: 9856 v3.23
Client: COUNTY MARIN
Operation: SAN RAFAEL ROCK QUARRY
Location: ON QUARRY PROPERTY
Distance:
Operator: VIBRA-TECH GSM
Comment:

Begin Date: 08/18/2011 06:00:50 (UTC-7)
End Date: 08/18/2011 13:22:22 (UTC-7)
Events over Trigger: 0 (4-3)
Record Time: 5.0 s
Seismic Trigger: 0.030 in/s
Sound Trigger: N/A
Battery Level: 8.8

Additional Info:

j-GEO-01253
N37 59.481, W122 27.256

Shaketable Calibrated: 01/27/2011
By: Vibra-Tech, Inc.
2700 Holloway Road - Suite 113
Louisville, KY 40299 U.S.A.
TEL: 502.240.9900 FAX: 502.240.9902

Dynamic Calibration Graph:



Cal Test Results:

Longitudinal: Pass
Transverse: Pass
Vertical: Pass
Sound: Pass

The seismograph on Quarry Property (S/N 9856) did not trigger during the shot on August 18, 2011 at approximately 12:21 indicating the ground vibrations produced were below the ground trigger level of 0.030 in/sec.

GeoSonics Inc. Seismic Analysis

Stop Event Report

Serial No: 9669 v3.23
Client: COUNTY MARIN
Operation: SAN RAFAEL ROCK QUARRY
Location: 114 SAN MARINO DRIVE
Distance:
Operator: VIBRA-TECH GSM
Comment: VERONIQUE RASKIN

Begin Date: 08/18/2011 07:00:50 (UTC-7)
End Date: 08/18/2011 13:25:40 (UTC-7)
Events over Trigger: 0 (2-1)
Record Time: 5.0 s
Seismic Trigger: 0.030 in/s
Sound Trigger: N/A
Battery Level: 8.9

Additional Info:

j-GEO-01254
N37 59.395, W122 27.700

Shaketable Calibrated: 01/26/2011
By: Vibra-Tech, Inc.
2700 Holloway Road - Suite 113
Louisville, KY 40299 U.S.A.
TEL: 502.240.9900 FAX: 502.240.9902

Dynamic Calibration Graph:



Cal Test Results:

Longitudinal: Pass
Transverse: Pass
Vertical: Pass
Sound: Pass

The seismograph at 114 San Marino Drive (S/N 9669) did not trigger during the shot on August 18, 2011 at approximately 12:21 indicating the ground vibrations produced were below the ground trigger level of 0.030 in/sec.