

SAN RAFAEL ROCK QUARRY VIBRATION REPORT

Location: PB-1 Max. Charge Weight: 444 Date of Blast: 5 7 12
 Northing: 37° 59' 19 N Time of Blast: 11:30
 Easting: 122° 27' 10 W Blast Duration: 235ms Blast Number: 1574

SEISMOGRAPH INFORMATION		UNIT #1	UNIT #2	UNIT #3	UNIT #4	UNIT #5
Seismograph Model	2000	01010	01010	01010	01010	01010
Serial Number	2487	4550	4567	4570	4570	4570
Last Calibration Date	5 24 11	5 26 11	5 26 11	5 26 11	5 26 11	5 26 11

LOCATION INFORMATION		UNIT #1	UNIT #2	UNIT #3	UNIT #4	UNIT #5
Location	Malaga, CA	Vic. Merced Is. Rd	San Rafael	Mc Neal Park		
Northing	37° 59' 19 N	37° 59' 18 N	37° 59' 31 N	37° 59' 30 N		
Easting	122° 27' 22 W	122° 27' 53 W	122° 27' 30 W	122° 27' 16 W		
Distance from Blast	950	3430	2006	1181		
Scaled Distance	45	162	95	56		

VIBRATION INFORMATION		UNIT #1	UNIT #2	UNIT #3	UNIT #4	UNIT #5
Longitudinal Peak Particle Velocity (ips)	.13		.07	.16		
Longitudinal Peak Frequency (Hz)	8.1		0.4	17.2		
Transverse Peak Particle Velocity (ips)	.09		.08	.08		
Transverse Peak Frequency (Hz)	10.8		0.5	9.0		
Vertical Peak Particle Velocity (ips)	.07		.07	.05		
Vertical Peak Frequency (Hz)	10.8		10.8	11.3		
Peak Vector Sum (ips)	.14	0	.10	.17		
Peak Air Overpressure (db)	118		109	116		

GENERAL COMMENTS:
 Brown Rock
 Seismograph Operator: De car Lopes Signature: [Signature]

SAN RAFAEL ROCK QUARRY BLAST REPORT

BASE DATA:

Location: PB-1 Designed Bench Height (ft): 50 Date: 5.7.12
 Northing: 37° 59' 19 N Rock Density (tyd³): 2.23 Time: 11:30
 Easting: 122° 27' 22 W Relative Rock Hardness: 7 Blast Number: 1574

DESIGN DATA:

Number of Holes Shot: 15 Hole Dia. (in.): 6 3/4 Stemming (ft): 24 Loading Time Required (man hrs): 6 Deck Type: -
 Ave. Hole Depth (ft): 56 Burden (ft): 16 Stem Type: 3/4" diameter Staggered Pattern (y or n): A Length (ft): -
 Relative Confinement: - Spacing (ft): 17 Subdrill (ft): 0 Number of Lost Holes: 0 Tons Shot: 16,848

EXPLOSIVES DATA:

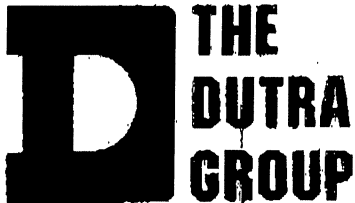
Bulk Explosive	Weight	Boosters	Units	Delays	Units	Misc.	Units	Max (lb/hole)	Blast Duration (sec)
<u>ICAG Max</u>	<u>5760</u>	<u>450</u>	<u>30</u>	<u>80.87</u>	<u>15</u>			<u>444</u>	
<u>Chub 5' x 30'</u>	<u>900</u>			<u>50.87</u>	<u>15</u>				<u>235ms</u>
				<u>40ms</u>	<u>5</u>				
				<u>12ms</u>	<u>1</u>				
									<u>Total Charge Wt: 6690</u>

VIBRATION DATA:

Nearest Structure: Max in 65 Seismograph Loc.: SGMC Temperature: 78° Max. Chrg. (lb/8ms): 444
 Northing: 37° 59' 19 N Easting: - Sky Condition: Clear RPPV: .14
 Distance Away: 950 Distance Away: - Wind Direction: W Frequency: 10.76
 Easting: 122° 27' 22 W Wind Speed: 0-1 Airblast: 118

PERFORMANCE DATA:

Powder Factor (lb/ton): 3 Displacement: good Crushability: -
 Lib/tyd³: .8 Vibration: Good Fines: -
 Fragmentation: Good Dig ability: -
 Comments: 5 wet holes Blaster in Charge: R. Am. J.P.



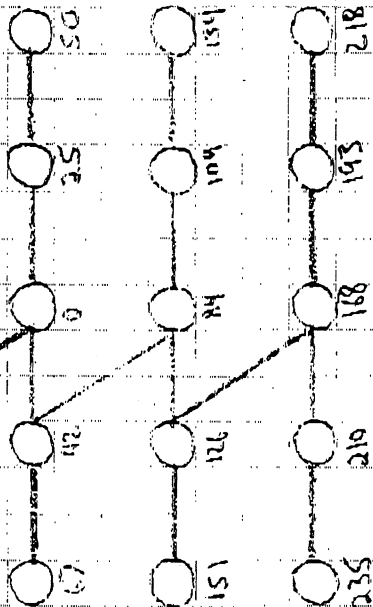
JOB _____ BID ITEM _____
 ITEM _____ SHEET _____ OF _____
 DATE _____
 SPEC. _____ BY _____

5.7.12
 PB-1
 *1574

Pit

*POI

Face 50



Ramp Down

Depth: 50

31' stemming
 4' 4" Hooper

5 Holes West

15 holes
 15' 80' EZ
 15' 50' EZ
 5' 42' ms
 1' 17' ms

30' 450gpm Blower

30' 6' x 30" Chub
 5760 Frag Max

Main 950
 Vic Mont. 3432
 San M 2006
 MNT 1181

37° 59' 19" N
 122° 27' 10" W

Seismic Analysis Velocity Waveform Analysis

Serial Number: 7179
Firmware Version: 08-03.23
Event Date: 05/07/2012 11:31:13 (UTC -07:00)
Event number: 11
Recording Time: 5 s
Client: COUNTY OF MARIN
Operation: SAN RAFAEL ROCK QUARRY
Location: ON QUARRY PROPERTY
Distance:
Operator: VIBRA-TECH GSM
Comment:
Seismic Trigger: 0.03 in/s
Sound Trigger: 75.9 DB

Additional Info:
 j-GEO-01253
 N37 59.481, W122 27.256

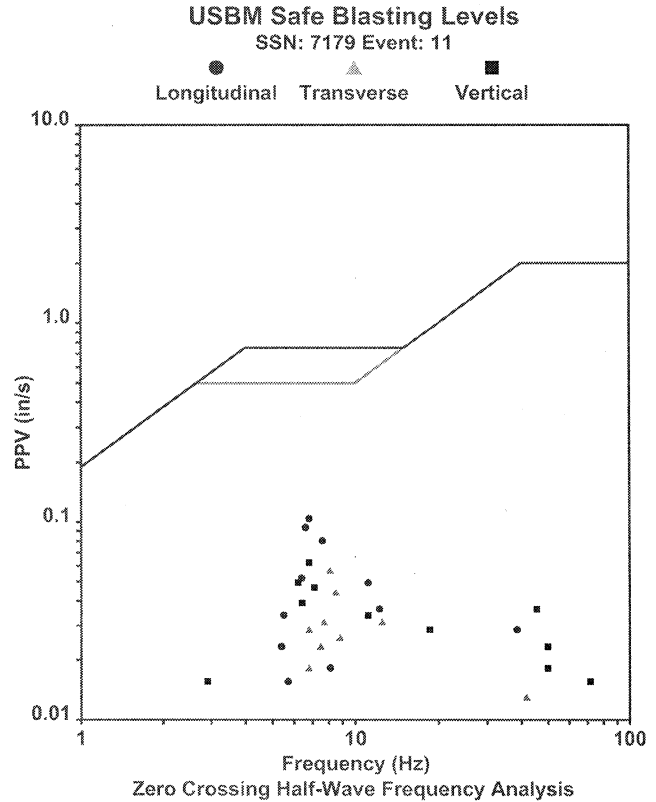
Summary Data

	L	T	V
PPV (in/s):	0.1	0.055	0.06
FREQ (HZ):	6.7	7.5	6.8
PD (.001"):	2.232	0.985	1.31
PPA (g):	0.03906	0.01302	0.03255

Peak Vector Sum: 0.1 in/s
Peak Air Pressure: 119.6 DB
 0.002976 psi @ 2.8 HZ

Shaketable Calibrated

On: 01/13/2012 (UTC -07:00)
By: Vibra-Tech, Inc.
 2700 Holloway Road - Suite 113
 Louisville, KY 40203 U.S.A.

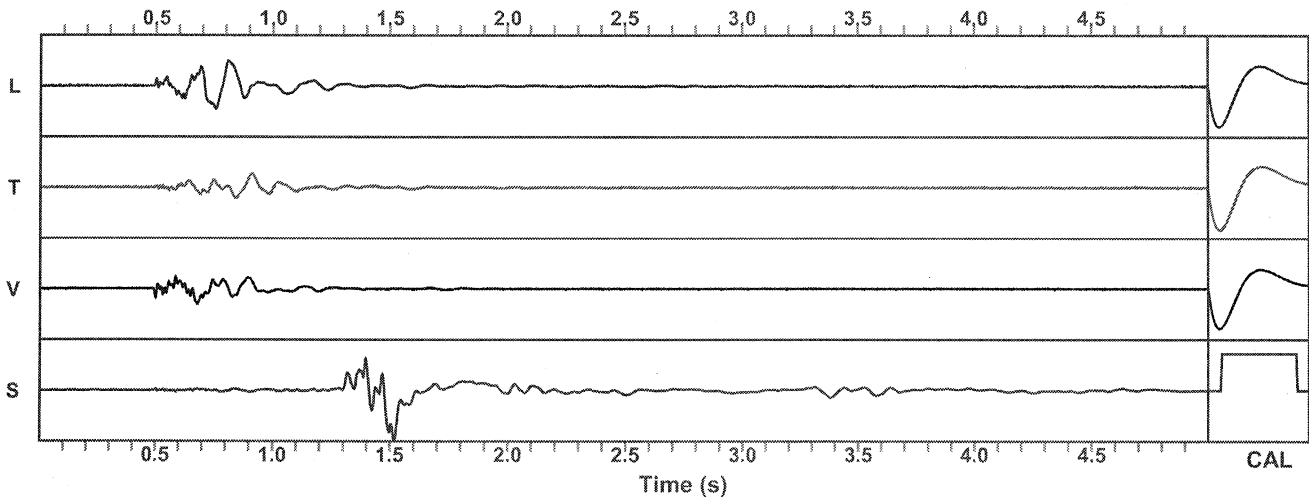


Waveform Graph Scale

Time Scale: 0.1 s
Seismic Scale: +/- 0.2 in/s
Sound Scale: +/- 0.002976 psi

Velocity Waveform

SSN: 7179 Event: 11



Seismic Analysis Velocity Waveform Analysis

Serial Number: 7257
Firmware Version: 08-03.23
Event Date: 05/07/2012 11:31:15 (UTC -07:00)
Event number: 11
Recording Time: 5 s
Client: COUNTY OF MARIN
Operation: SAN RAFAEL ROCK QUARRY
Location: 16 MARIN BAY PARK CT.
Distance:
Operator: VIBRA-TECH GSM
Comment: William Hosken Residence
Seismic Trigger: 0.03 in/s
Sound Trigger: 75.9 DB

Additional Info:
 j-GEO-01252
 N37 59.524, W122 27.373

Summary Data

	L	T	V
PPV (in/s):	0.0575	0.04	0.03
FREQ (HZ):	8.1	6.5	6
PD (.001"):	1.135	0.875	0.7925
PPA (g):	0.01302	0.01302	0.02604

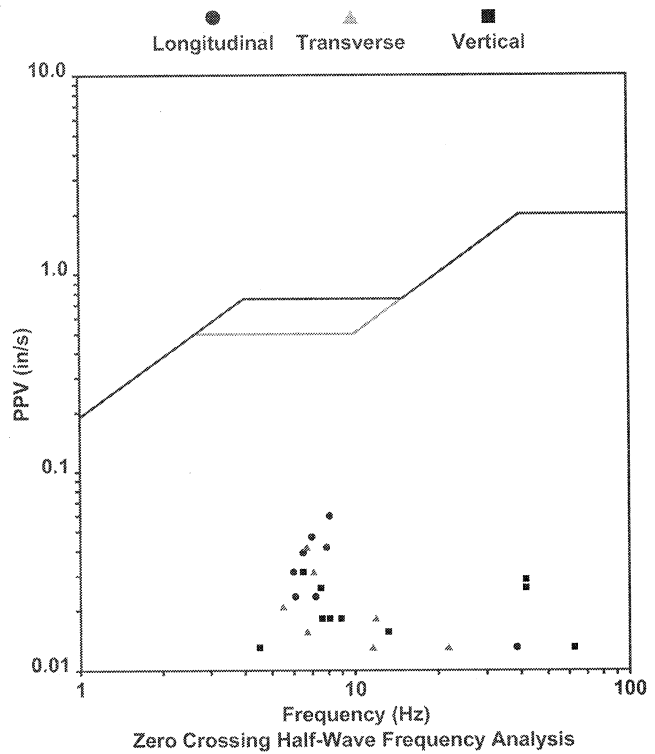
Peak Vector Sum: 0.07 in/s
Peak Air Pressure: 115.3 DB
 0.001782 psi @ 2.3 HZ

Shaketable Calibrated

On: 01/13/2012 (UTC -07:00)
By: Vibra-Tech, Inc.
 2700 Holloway Road - Suite 113
 Louisville, KY 40203 U.S.A.

USBM Safe Blasting Levels

SSN: 7257 Event: 11

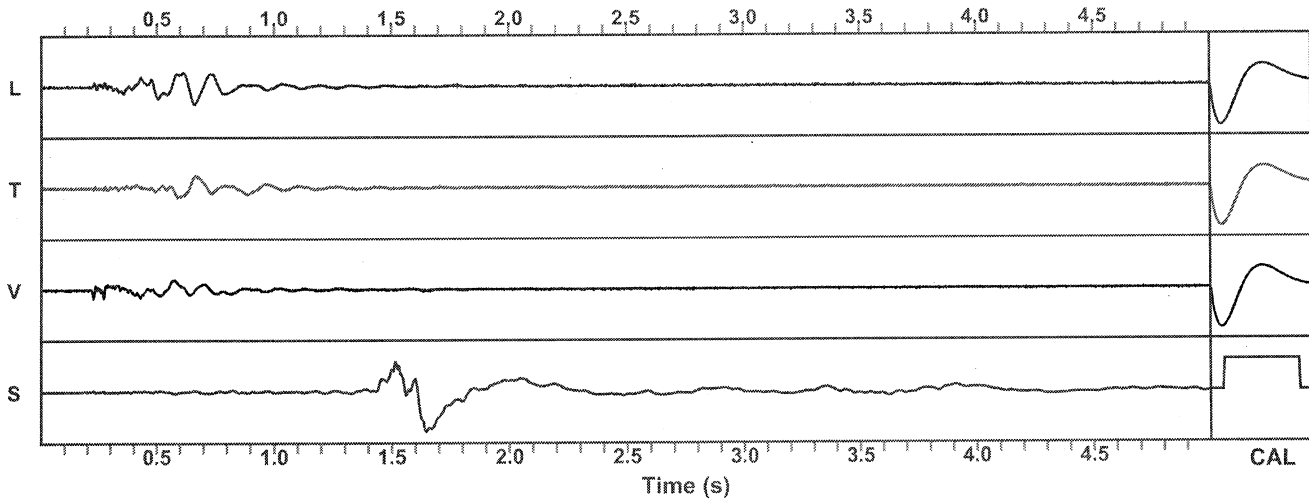


Waveform Graph Scale

Time Scale: 0.1 s
Seismic Scale: +/- 0.16 in/s
Sound Scale: +/- 0.0023 psi

Velocity Waveform

SSN: 7257 Event: 11



GeoSonics Inc. Seismic Analysis

Stop Event Report

Serial No: 7178 v3.23
Client: COUNTY OF MARIN
Operation: SAN RAFAEL ROCK QUARRY
Location: 114 SAN MARINO DRIVE
Distance:
Operator: VIBRA-TECH GSM
Comment: VERONIQUE RASKIN

Begin Date: 05/07/2012 06:13:41 (UTC-7)
End Date: 05/07/2012 12:27:13 (UTC-7)
Events over Trigger: 0 (5-4)
Record Time: 5.0 s
Seismic Trigger: 0.030 in/s
Sound Trigger: N/A
Battery Level: 9

Additional Info:
RESIDENCE
j-GEO-01254
N37 59.395, W122 27.700

Shaketable Calibrated: 01/16/2012
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 7178) did not trigger during the shot on May 7, 2012 at approximately 11:31 indicating the ground vibrations produced were below the ground trigger level of 0.030 in/sec.