

SAN RAFAEL ROCK QUARRY VIBRATION REPORT

Location: PB-7 Max. Charge Weight: 420 Date of Blast: 6/5/12
 Northing: 37° 59' 12" N Time of Blast: 11:31
 Easting: 122° 27' 12" W Blast Duration: 260 ms Blast Number: 1579

Seismograph Model	2000	Micro	Micro	Micro
Serial Number	2481	4550	4567	4570
Last Calibration Date	5/17/12	5/17/12	5/17/12	5/17/12
Location	Marin Co	Via Montebello	San Marin	Off Near Park
Northing	37° 59' 12" 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	1109	3273	2429	1848
Scaled Distance	54	159	118	90

Longitudinal Peak Particle Velocity (ips)	.12	.07	.09
Longitudinal Peak Frequency (Hz)	21.7	9.0	20.0
Transverse Peak Particle Velocity (ips)	.11	.09	.06
Transverse Peak Frequency (Hz)	16.6	4.2	23.8
Vertical Peak Particle Velocity (ips)	.10	.08	.11
Vertical Peak Frequency (Hz)	16.1	21.7	35.7
Peak Vector Sum (ips)	.17	.12	.12
Peak Air Overpressure (db)	121	116	112

Seismograph Operator: Deron Lopez Signature: [Signature]

SAN RAFAEL ROCK QUARRY BLAST REPORT

BASE DATA

Location: PB-7 Designed Bench Height (ft): 40 Date: 6/15/12
 Northing: 37° 59' 12 N Rock Density (Lb/Yd³): 2.7 Time: 11:31
 Easting: 122° 27' 12 W Relative Rock Hardness: 7 Blast Number: 1579

DESIGN DATA

Number of Holes Shot: 21 Hole Dia. (in.): 6 3/4 Stemming (ft): 18 Loading Time Required (man hrs): 5 Deck Type: -
 Ave. Hole Depth (ft): 43 Burden (ft): 15 Stem Type: 3/4" x 1/2" mix Staggered Pattern (y or n): N Length (ft): -
 Relative Confinement: - Spacing (ft): 15 Subdrill (ft): 3 Number of Lost Holes: 0 Tons Shot: 15,610

EXPLOSIVES DATA

Bulk Explosive	Weight	Boosters	Units	Delays	Units	Misc	Units
Titan 1000	8780	450 gram	37	80E2	21		
		350 gram	5	50E2	21		
				42ms	5		
				17ms	1		

Max (lb/hole): 420 Blast Duration (sec): 260ms

VIBRATION DATA

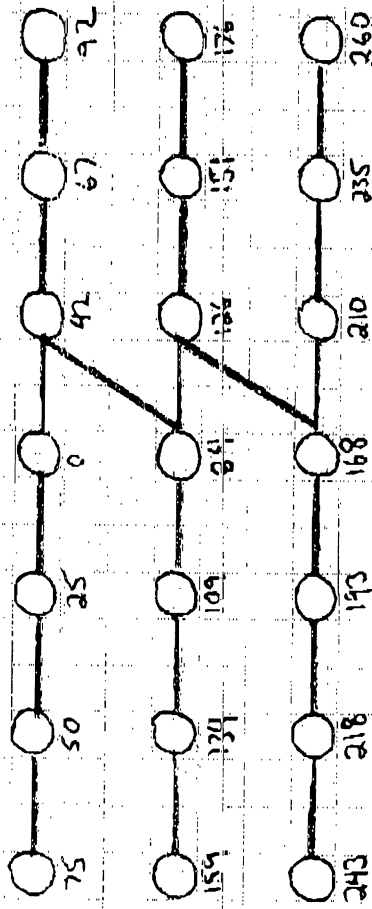
Nearest Structure: Main Ag Seismograph Loc.: SAME Temperature: 82° Max. Chrg. (lb/8ms): 420
 Northing: 37° 59' 19 N Easting: 122° 27' 22 W Sky Condition: Clear RPPV: .17
 Distance Away: 1109 Distance Away: - Wind Direction: SE Frequency: 21.7
 Wind Speed: 0-2 Airblast: 121

PERFORMANCE DATA

Powder Factor (lb/ton): 1.5 Displacement: 6 cent Crushability: -
 Lb/yrd³: 1.2 Vibration: 6 cent Fines: -
 Fragmentation: 6 cent Dig ability: -
 Comments: used up last of 350 gram Boosters getting old Blaster in Charge: [Signature]

6.15.12
PB-7
1579

face 40' 15x15



21 Holes
21=80 EZ-det
21=50 EZ-det
5=42ms
1=17ms
37=450 gram
5=350 gram
8,780 lbs titan

Depth 43
420 lbs per
18' stem

Main 1109
Viam 3273
Samm 2429
M#N 1848
37° 59' 12 N
122° 27' 12 W

GeoSonics Inc. Seismic Analysis

Stop Event Report

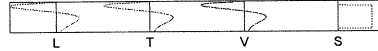
Serial No: 8021 v3.23
Client: COUNTY OF MARIN
Operation: SAN RAFAEL ROCK QUARRY
Location: 114 SAN MARINO DRIVE
Distance:
Operator: VIBRA-TECH GSM
Comment: VERONIQUE RASKIN*

Begin Date: 06/15/2012 06:00:50 (UTC-7)
End Date: 06/15/2012 12:13:04 (UTC-7)
Events over Trigger: 0 (15-14)
Record Time: 5.0 s
Seismic Trigger: 0.030 in/s
Sound Trigger: N/A
Battery Level: 8.7

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

Shaketable Calibrated: 05/11/2012
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 8021) did not trigger during the shot on June 15, 2012 at approximately 11:31 indicating the ground vibrations produced were below the ground trigger level of 0.030 in/sec.

Seismic Analysis Velocity Waveform Analysis

Serial Number: 8030
Firmware Version: 08-03.23
Event Date: 06/15/2012 11:31:00 (UTC -07:00)
Event number: 2
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

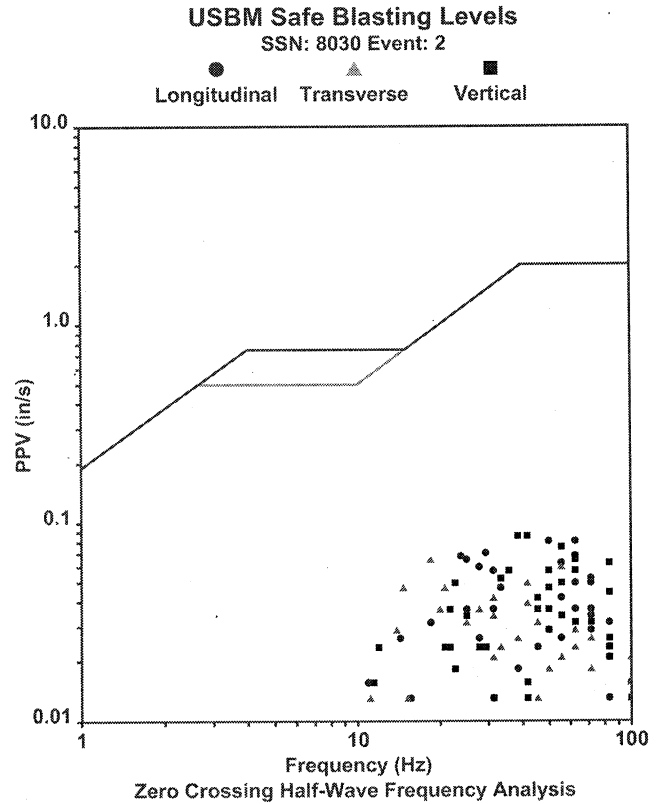
Summary Data

	L	T	V
PPV (in/s):	0.0775	0.0625	0.0825
FREQ (HZ):	50	18.5	38.5
PD (.001"):	0.4675	0.7525	0.545
PPA (g):	0.09766	0.04557	0.08464

Peak Vector Sum: 0.115 in/s
Peak Air Pressure: 113.2 DB
 0.001444 psi @ 3.1 HZ

Shaketable Calibrated

On: 05/14/2012 (UTC -07:00)
By: Vibra-Tech, Inc.
 2700 Holloway Road - Suite 113
 Louisville, KY 40203 U.S.A.

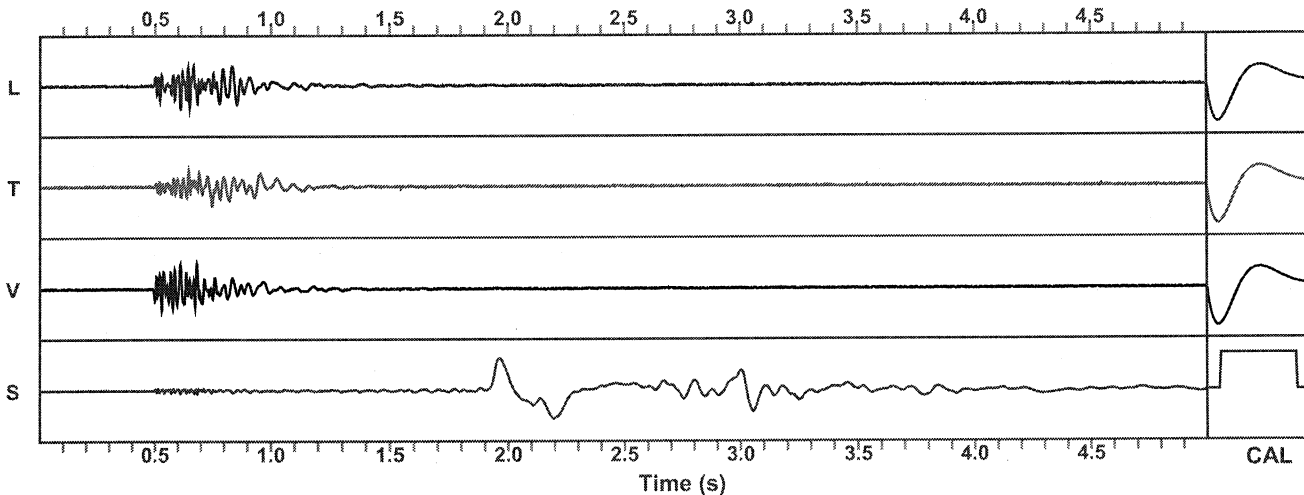


Waveform Graph Scale

Time Scale: 0.1 s
Seismic Scale: +/- 0.165 in/s
Sound Scale: +/- 0.0023 psi

Velocity Waveform

SSN: 8030 Event: 2



Seismic Analysis Velocity Waveform Analysis

Serial Number: 8056
Firmware Version: 08-03.23
Event Date: 06/15/2012 11:31:01 (UTC -07:00)
Event number: 2
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 RES.
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):	0.0325	0.0275	0.075
FREQ (HZ):	23.8	20.8	23.8
PD (.001"):	0.3725	0.3825	0.335
PPA (g):	0.01953	0.01953	0.05859

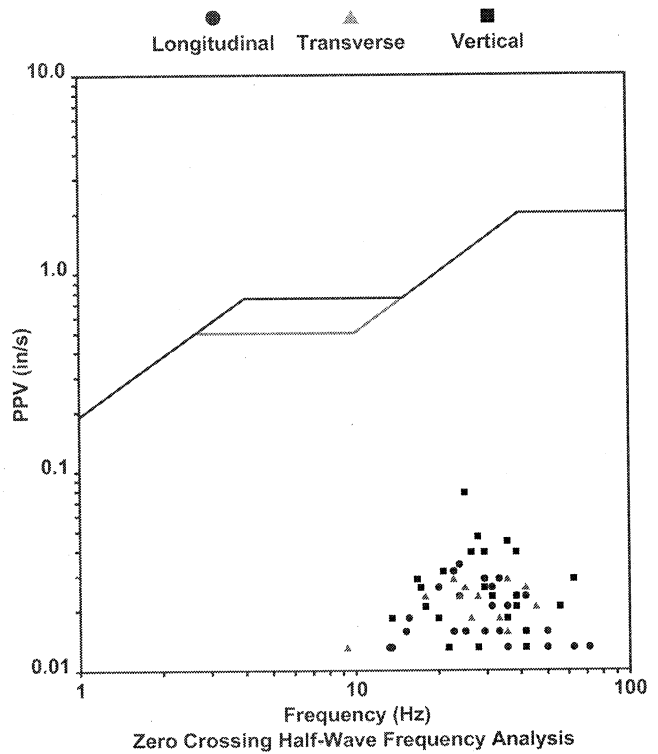
Peak Vector Sum: 0.075 in/s
Peak Air Pressure: 112 DB
 0.001248 psi @ 4.6 HZ

Shaketable Calibrated

On: 05/16/2012 (UTC -07:00)
By: Vibra-Tech, Inc.
 2700 Holloway Road - Suite 113
 Louisville, KY 40203 U.S.A.

USBM Safe Blasting Levels

SSN: 8056 Event: 2



Waveform Graph Scale

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

Velocity Waveform

SSN: 8056 Event: 2

