

# SAN RAFAEL ROCK QUARRY VIBRATION REPORT

Location: South Hill      Max. Charge Weight: 240      Date of Blast: 6.5.12  
 Northing: 37° 59' 19" N      Blast Duration: 529 ms      Time of Blast: 11:32  
 Easting: 122° 27' 22" W      Blast Number: \* 1578

Seismograph Model	2000	Micro	Micro	Micro
Serial Number	2481	4550	4507	4570
Last Calibration Date	5 17 12	5 17 12	5 17 12	5 17 12
Location				
Location	Maxim Cog	Via Mantabellio	San Marino	St. Near Park
Northing	37° 59' 19" N	37° 59' 31" N	37° 59' 30" 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	1742	3009	3062	2851
Scaled Distance	112	194	197	184

VIBRATION INFORMATION	
Longitudinal Peak Particle Velocity (ips)	/
Longitudinal Peak Frequency (Hz)	/
Transverse Peak Particle Velocity (ips)	/
Transverse Peak Frequency (Hz)	/
Vertical Peak Particle Velocity (ips)	0
Vertical Peak Frequency (Hz)	-
Peak Vector Sum (ips)	0
Peak Air Overpressure (db)	-

Seismographs back from Calibration. Nothing triggered  
 Seismograph Operator: [Signature]      Signature: [Signature]

# SAN RAFAEL ROCK QUARRY BLAST REPORT

**BASE DATA:**

Location: SOLATA Hill      Designed Bench Height (ft): 26      Date: 6.5.12  
 Northing: 37° 59' 02" N      Rock Density (t/yd<sup>3</sup>): 2.23      Time: 11:32  
 Easting: 122° 27' 21" W      Relative Rock Hardness: 7      Blast Number: 1578

**DESIGN DATA:**

Number of Holes Shot: 36      Hole Dia. (in.): 6 3/4"      Steaming (ft): 15      Loading Time Required (man hrs): 6      Deck Type: —  
 Ave. Hole Depth (ft): 29      Burden (ft): 14      Stem Type: 3/4" Stone      Staggered Pattern (y or n): N      Length (ft): —  
 Relative Confinement: —      Spacing (ft): 4      Subdrill (ft): 3      Number of Lost Holes: 0      Tons Shot: 552

**EXPLOSIVES DATA:**

Bulk Explosive	Weight	Boosters	Units	Delays	Units	Misc.	Units	Max (lb/hole):	Blast Duration (sec):	Total Charge Wt:
Titan 1000G	8020	450g	72	80E2	36	—	—	240	5.89 ms	8092
				50E2	36	—	—			
				42ms	10	—	—			
				17ms	1	—	—			

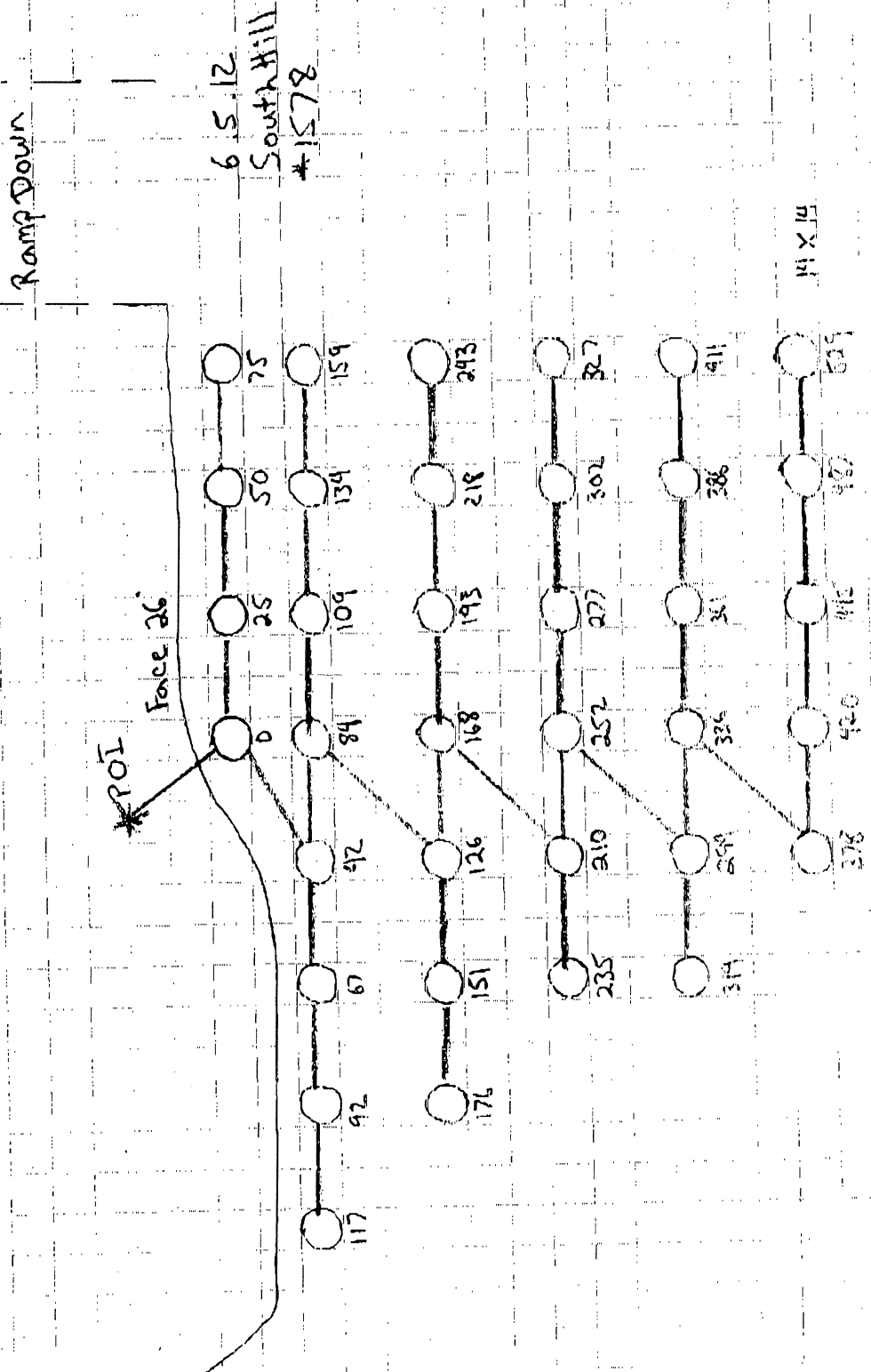
**VIBRATION DATA:**

Nearest Structure: Mar. 21g      Seismograph loc.: 50m      Temperature: 72°      Max Chrg. (lb/8ms): 240  
 Northing: 37° 59' 19" N      Sky Condition: Clear      RPPV: 0  
 Easting: 122° 27' 22" W      Wind Direction: S.E.      Frequency: 0  
 Distance Away: 1742      Wind Speed: 4-6      Airblast: 0

**PERFORMANCE DATA:**

Powder Factor (lb/ton): 5      Displacement: Great      Crushability: —  
 Lb/yd<sup>3</sup>: 1.2      Vibration: Great      Fines: —  
 Fragmentation: Great      Dig ability: —  
 Comments: NO Trigger      Blaster in Charge: R. [Signature]

JOB \_\_\_\_\_  
 ITEM \_\_\_\_\_  
 DATE \_\_\_\_\_  
 SHEET \_\_\_\_\_ OF \_\_\_\_\_  
 BY \_\_\_\_\_  
 SPEC. \_\_\_\_\_



36 holes  
 36=80 E2 def  
 36=50 E2 def  
 10=42 ms E2 TL  
 1=17 ms E2 TL  
 72=450 gram

Depth 265  
 15 stems  
 240 lbs max

Map 1742  
 V. Point 3009  
 Survey 3062  
 M. P. 2851

37° S 90° E N  
 122° 27' 21" W



# GeoSonics Inc. Seismic Analysis

## Stop Event Report

**Serial No:** 8030 v3.23  
**Client:** COUNTY OF MARIN  
**Operation:** SAN RAFAEL ROCK QUARRY  
**Location:** ON QUARRY PROPERTY  
**Distance:**  
**Operator:** VIBRA-TECH GSM  
**Comment:**

**Begin Date:** 06/05/2012 06:00:50 (UTC-7)  
**End Date:** 06/05/2012 20:00:00 (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:** 9.1

**Additional Info:**

j-GEO-01253  
N37 59.481, W122 27.256

**Shaketable Calibrated:** 05/14/2012  
**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:**

<b>Longitudinal:</b>	<b>Pass</b>
<b>Transverse:</b>	<b>Pass</b>
<b>Vertical:</b>	<b>Pass</b>
<b>Sound:</b>	<b>Pass</b>

The seismograph on Quarry Property (S/N 8030) did not trigger during the shot on June 5, 2012 at approximately 11:32 indicating the ground vibrations produced were below the ground trigger level of 0.030 in/sec.

# GeoSonics Inc. Seismic Analysis

## Stop Event Report

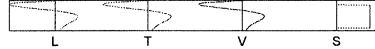
**Serial No:** 8021 v3.23  
**Client:** COUNTY OF MARIN  
**Operation:** SAN RAFAEL ROCK QUARRY  
**Location:** 114 SAN MARINO DRIVE  
**Distance:**  
**Operator:** VIBRA-TECH GSM  
**Comment:** VERONIQUE RASKIN\*

**Begin Date:** 06/05/2012 06:00:50 (UTC-7)  
**End Date:** 06/05/2012 20:00:00 (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 5, 2012 at approximately 11:32 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:** 8056 v3.23  
**Client:** COUNTY OF MARIN  
**Operation:** SAN RAFAEL ROCK QUARRY  
**Location:** 16 MARIN BAY PARK CT.  
**Distance:**  
**Operator:** VIBRA-TECH GSM  
**Comment:** WILLIAM HOSKEN RES.

**Begin Date:** 06/05/2012 07:00:50 (UTC-7)  
**End Date:** 06/05/2012 20:00:00 (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:** 9.1

### Additional Info:

j-GEO-01252  
N37 59.524, W122 27 373

**Shaketable Calibrated:** 05/16/2012  
**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 located across the street from 16 Marin Bay Park Court (S/N 8056) did not trigger during the blast on June 5, 2012 at approximately 11:32 indicating the ground vibrations produced were below the ground trigger level of 0.030 in/sec.