

SAN RAFAEL ROCK QUARRY VIBRATION REPORT

Location: South Hill Max. Charge Weight: 240 Date of Blast: 6.19.12
 Northing: 37° 59' 02" N Blast Duration: 428 ms Time of Blast: 11:32
 Easting: 122° 27' 23" W Blast Number: 1580

Seismograph Model	2000	Micro	Micro
Serial Number	2481	4550	4570
Last Calibration Date	5/17/12	5/17/12	5/17/12

Location	Marina Cms	Via Montebello	San Marino	McNevan Park
Northing	37° 59' 19" N	37° 59' 18" N	37° 59' 31" N	38° 59' 30" N
Easting	122° 27' 22" W	122° 27' 53" W	122° 27' 30" W	122° 27' 16" W
Distance from Blast	1690	2851	3010	2851
Scaled Distance	109	184	194	189

VIBRATION INFORMATION	
Longitudinal Peak Particle Velocity (ips)	/
Longitudinal Peak Frequency (Hz)	.05
Transverse Peak Particle Velocity (ips)	/
Transverse Peak Frequency (Hz)	.04
Vertical Peak Particle Velocity (ips)	/
Vertical Peak Frequency (Hz)	.08
Peak Vector Sum (ips)	/
Peak Air Overpressure (db)	/

Seismograph Operator: Devin Lopez Signature: [Signature]

SAN RAFAEL ROCK QUARRY BLAST REPORT

BASE DATA:

Location: Southern Hill Date: 6/19/12
 Northing: 37° 59' 02" N Time: 11:37
 Easting: 122° 27' 23" W Blast Number: 1580
 Designed Bench Height (ft): 26
 Rock Density (t/yard³): 7
 Relative Rock Hardness: 2.23

DESIGN DATA:

Number of Holes Shot: 31 Hole Dia. (in.): 6 3/4 Loading Time Required (man hrs): 5 Deck Type: -
 Ave. Hole Depth (ft): 26 Burden (ft): 14 Stem Type: 3/4" STD Slaggered Pattern (y or n): N Length (ft): -
 Relative Confinement: - Spacing (ft): 14 Subdrill (ft): 3 Number of Lost Holes: 0 Tons Shot: 13,047

EXPLOSIVES DATA:

Bulk Explosive	Weight	Boosters	Units	Delays	Units	Misc.	Units	Max (lb/hole):
Titanium 1000G	7220	450g	31	80ms	31			240
				42ms	9			Blast Duration (sec): <u>428ms</u>
				17ms	2			Total Charge Wt.: <u>725</u>

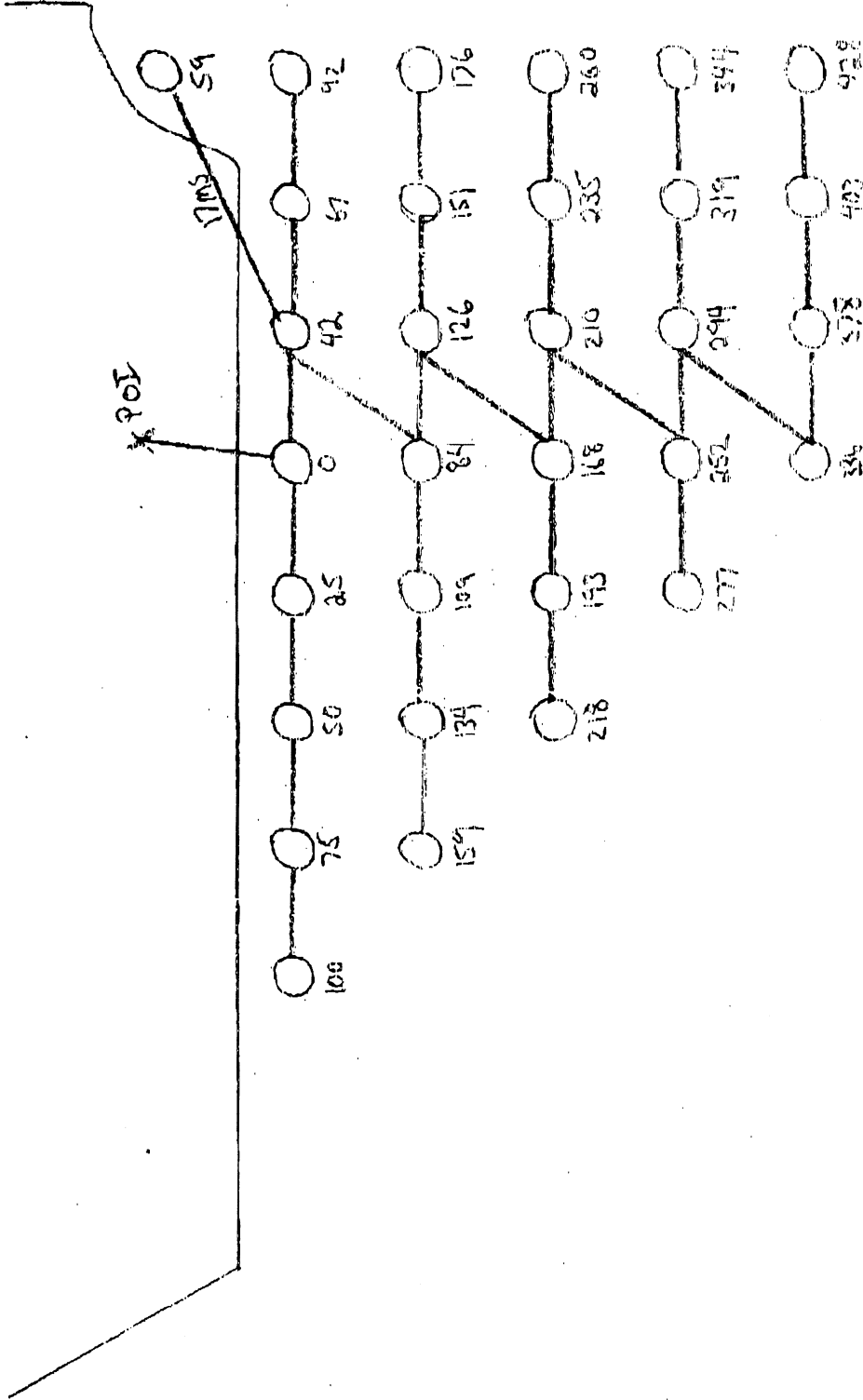
VIBRATION DATA:

Seismograph Loc: Southern Hill Temperature: 78 Max. Chrg. (lb/3ms): 240
 Northing: 37° 59' 14" N Naming: - Sky Condition: CLD RPPV: 0.03
 Easting: 122° 27' 23" W Bearing: - Wind Direction: 0-6 Frequency: 35.7
 Distance Away: 1510 Distance Away: - Wind Speed: 0-3 Airblast: 112

PERFORMANCE DATA:

Powder Factor (lb/ton): 5 Displacement: Great Crushability: -
 Lb/yard³: 1.2 Vibration: Great Fines: -
 Fragmentation: Great Dig ability: -
 Comments: - Blaster in Charge: [Signature]

6.19.12
 South Hill
 #1580



31' Holes
 31' 80' 52' det
 9=42ms
 Z=17ms
 31' +150 gram

Depth 29
 15' stem
 240 lbs per

Main 1690
 Vain 2851
 Sam 3010
 WNP 2251

7220 lbs

37° 59' 02" N
 122° 27' 23" W

14.5M

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: 06/19/2012 07:00:50 (UTC-7)
End Date: 06/19/2012 11:44:52 (UTC-7)
Events over Trigger: 0 (3-2)
Record Time: 5.0 s
Seismic Trigger: 0.030 in/s
Sound Trigger: N/A
Battery Level: 9

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 19, 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

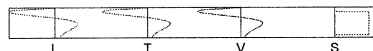
Serial No: 8021 v3.23
Client: COUNTY OF MARIN
Operation: SAN RAFAEL ROCK QUARRY
Location: 114 SAN MARINO DRIVE
Distance:
Operator: VIBRA-TECH GSM
Comment: VERONIQUE RASKIN*

Begin Date: 06/19/2012 06:00:50 (UTC-7)
End Date: 06/19/2012 11:47:52 (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: 8.8

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 19, 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: 8030 v3.23
Client: COUNTY OF MARIN
Operation: SAN RAFAEL ROCK QUARRY
Location: ON QUARRY PROPERTY
Distance:
Operator: VIBRA-TECH GSM
Comment:

Begin Date: 06/19/2012 06:00:50 (UTC-7)
End Date: 06/19/2012 11:47:43 (UTC-7)
Events over Trigger: 0 (3-2)
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:

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

The seismograph on Quarry Property (S/N 8030) did not trigger during the shot on June 19, 2012 at approximately 11:32 indicating the ground vibrations produced were below the ground trigger level of 0.030 in/sec.