

SAN RAFAEL ROCK QUARRY VIBRATION REPORT

Location: South Hill E-175
 Northing: 37° 59' 02" N
 Easting: 122° 27' 23" W

Max. Charge Weight: 240
 Blast Duration: 504ms

Date of Blast: 4-12-11
 Time of Blast: 12:02
 Blast Number: 1547

SEISMOGRAPH INFORMATION		UNIT #1	UNIT #2	UNIT #3	UNIT #4	UNIT #5
Seismograph Model	8000	micro	micro	micro	micro	
Serial Number	3481	4550	4562	4570		
Last Calibration Date	5 10 10	5 17 10	5 17 10	5 17 10		

LOCATION INFORMATION		UNIT #1	UNIT #2	UNIT #3	UNIT #4	UNIT #5
Location	Marin Co	Via Mont	San Marino	McNear 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	1742	2904	3010	2851		
Scaled Distance	112	187	194	184		

VIBRATION INFORMATION		UNIT #1	UNIT #2	UNIT #3	UNIT #4	UNIT #5
Longitudinal Peak Particle Velocity (ips)						
Longitudinal Peak Frequency (Hz)						
Transverse Peak Particle Velocity (ips)						
Transverse Peak Frequency (Hz)						
Vertical Peak Particle Velocity (ips)						
Vertical Peak Frequency (Hz)						
Peak Vector Sum (ips)						
Peak Air Overpressure (db)						

GENERAL COMMENTS:
Nothing triggered

Seismograph Operator: Deon Lopes Signature: [Signature]

SAN RAFAEL ROCK QUARRY BLAST REPORT

BASE DATA:

Location: South Hill E-28
 Northing: 37° 59' 02" N
 Easting: 122° 27' 23" W

Designed Bench Height (ft): 25'
 Rock Density (lb/ft³): 2.7
 Relative Rock Hardness: 7

Date: 4-12-11
 Time: 12:02
 Blast Number: 1547

DESIGN DATA:

Number of Holes Shot: 30 Hole Dia. (in.): 6 3/4
 Ave. Hole Depth (ft): 29 Burden (ft): 13
 Relative Confinement: - Spacing (ft): 13

Stemming (ft): 14 Avg Loading Time Required (man hrs): 5
 Stem Type: 3/4" stone Staggered Pattern (y or n): N
 Subdrill (ft): 4 Number of Lost Holes: 0

EXPLOSIVES DATA:

Bulk Explosive	Weight	Boosters	Units	Delays	Units	Misc.	Units
<u>Titan 1000 g</u>	<u>6,840</u>	<u>450 g</u>	<u>60</u>	<u>30</u>	<u>micron</u>	<u>60</u>	

Deck Type: -
 Length (ft): -
 Tons Shot: 12,675
 Max (lb/hole): 240
 Blast Duration (sec): 504ms

VIBRATION DATA:

Nearest Structure: Reflex
 Northing: 37° 59' 19" N
 Easting: 122° 27' 23" W
 Distance Away: 1742

Seismograph Loc.: SARAC
 Northing: -
 Easting: -
 Distance Away: -

Temperature: 64 Max. Chrg. (lb/8ms): 240
 Sky Condition: Clear RPPV: -
 Wind Direction: NW Frequency: -
 Wind Speed: St Airblast: -

PERFORMANCE DATA:

Powder Factor (lb/ton): 5
 Lib/yard³: 1.5
 Fragmentation: good
 Comments: -

Displacement: - Crushability: -
 Vibration: great Fines: -
 Dig ability: -

Blaster in Charge: Rempe

Total Charge Wt.: 6900

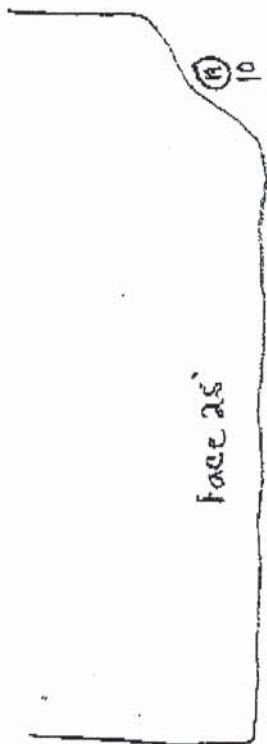
4.12.11
SMM
1547

depth - 25'
HI stemming
5 holes kt. load
240# max per

30 Holes
30 - 30' uniton
60 - 450 gram
6,840 lbs filling

37° 59' 02" N
122° 27' 23" W

Main 1742
Via M 2904
Camp 3010
M-N 2861



Face 25'



13 x 13

30'

30'

High Water

(in notes)

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: 04/12/2011 06:04:52 (UTC-7)
End Date: 04/12/2011 12:29:42 (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: 8.7

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 April 12, 2011 at approximately 12:02 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: 7155 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 RESIDENC

Begin Date: 04/12/2011 07:00:50 (UTC-7)
End Date: 04/12/2011 12:28:58 (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: 8.8

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

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 7155) did not trigger during the blast on April 12, 2011 at approximately 12:02 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: 04/12/2011 07:00:50 (UTC-7)
End Date: 04/12/2011 12:28:58 (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 April 12, 2011 at approximately 12:02 indicating the ground vibrations produced were below the ground trigger level of 0.030 in/sec.