

SAN RAFAEL ROCK QUARRY VIBRATION REPORT

Blast Information	Date of Blast: <u>42814</u>	Max. Charge Weight: <u>120</u>	Blast Number: <u>1608</u>
	Time of Blast: <u>11:40</u>	Blast Duration: <u>5% ms</u>	

Location: PB-7
 Northing: 37° 59' 08 N
 Easting: 122° 27' 11 W

SEISMOGRAPH INFORMATION		UNIT #	
Seismograph Model	2000	MICRO	MICRO
Serial Number	2481	4567	4570
Last Calibration Date	5 3 13	5 3 13	5 3 13

LOCATION INFORMATION		UNIT #	
Location	Marin Ag	Via Montabello	San Marino
Northing	37° 59' 19 N	37° 59' 18 N	37° 59' 31 N
Easting	122° 27' 22 W	122° 27' 53 W	122° 27' 30 W
Distance from Blast	1956	3484	2756
Scaled Distance	178	318	251
			197

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)	/
Vertical Peak Frequency (Hz)	/
Peak Vector Sum (ips)	
Peak Air Overpressure (db)	

GENERAL COMMENTS

Seismograph Operator: Dean Lopez Signature: [Signature]

SAN RAFAEL ROCK QUARRY BLAST REPORT

BASE DATA:

Location: PB-7 Designed Bench Height (ft): 18 Date: A 28 14
 Northing: 37°59'08N Rock Density (lb/ft³): 2.23 Time: 11:40
 Easting: 122°27'11W Relative Rock Hardness: 7 Blast Number: 608

DESIGN DATA:

Number of Holes Shot: 35 Hole Dia. (in.): 6 3/4 Stemming (ft): 13 Loading Time Required (man hrs): 6 Deck Type: -
 Ave. Hole Depth (ft): 21 Burden (ft): 13 Stem Type: Stem Staggered Pattern (y or n): N Length (ft): -
 Relative Confinement: - Spacing (ft): 14 Subdrill (ft): 3 Number of Lost Holes: 2 Tons Shot: 9470

EXPLOSIVES DATA:

Bulk Explosive	Weight	Boosters	Units	Delays	Misc.	Units	Max (lb/hole):
titan 1000g	3880	450g	35	50.82		35	120
				42ms		13	596
				17ms		1	

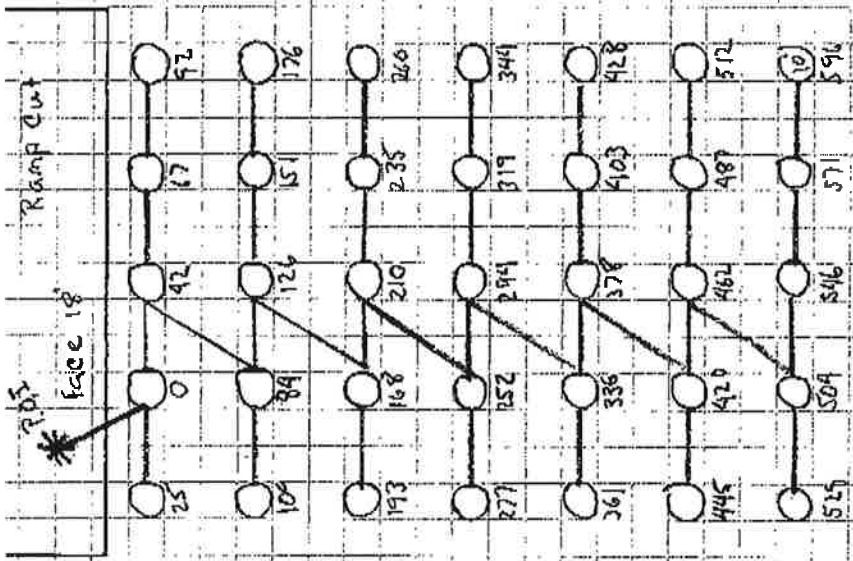
VIBRATION DATA:

Nearest Structure: San Diego Seismograph Loc.: - Temperature: 53° Max. Chrg. (lb/ft³): 120
 Northing: 37°59'19N Northing: - Sky Condition: Clear RPPV: -
 Easting: 122°27'22W Easting: - Wind Direction: N Frequency: -
 Distance Away: 1956 Distance Away: - Wind Speed: 0-2 Airblast: -

PERFORMANCE DATA:

Powder Factor (lb/ton): 4 Displacement: good Crushability: -
 Lb/ft³: 9 Vibration: Best Fines: -
 Fragmentation: good Dig ability: -
 Comments: Blaster in Charge: P. Sanchez

Total Charge Wt. 3915



4:28.14
P.B.7
1608

13X19

Main 1956
W²N 3484
S²W 2756
M²N 2164

37° 59' 08" N
122° 27' 11" W

depth .21

120 lbs per

13 stems

35 Holds
3550 lb
13:42 ms
1:17 ms
35450 gram
3,880 lbs T₁ gain

○ = depth 10'
Hole Collapsed
opened up kept
Collapsing
used Webster 10'



Vibra-Tech Inc. Seismic Analysis

Stop Event Report

Serial No: 8154 v5.11
Client: COUNTY OF MARIN
Operation: SAN RAFAEL ROCK QUARRY
Location: 16 MARIN BAY PARK CT.
Distance:
Operator: VIBRA-TECH IP2
Comment: WILLIAM HOSKEN RES.

Begin Date: 04/28/2014 07:39:42 (UTC-7)
End Date: 04/28/2014 12:31:54 (UTC-7)
Events over Trigger: 0 (0--1)
Record Time: 5.0 s
Seismic Trigger: 0.030 in/s
Sound Trigger: N/A
Battery Level: 8.3

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

Shaketable Calibrated: 01/23/2014
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 at 16 Marin Bay Park Court (S/N 8154) did not trigger during the shot on April 28, 2014 at approximately 11:40 indicating the ground vibrations produced were below the ground trigger level of 0.030 in/sec.



Vibra-Tech Inc. Seismic Analysis

Stop Event Report

Serial No: 9668 v5.18
Client: COUNTY OF MARIN
Operation: SAN RAFAEL ROCK QUARRY
Location: ON QUARRY PROPERTY
Distance:
Operator: VIBRA-TECH IP2
Comment:

Begin Date: 04/28/2014 12:50:52 (UTC-7)
End Date: 04/28/2014 13:22:01 (UTC-7)
Events over Trigger: 0 (0--1)
Record Time: 5.0 s
Seismic Trigger: 0.030 in/s
Sound Trigger: N/A
Battery Level: 8.1

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

Shaketable Calibrated: 01/29/2014
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 9668) did not trigger during the shot on April 28, 2014 at approximately 11:40 indicating the ground vibrations produced were below the ground trigger level of 0.030 in/sec.