

SAN RAFAEL ROCK QUARRY VIBRATION REPORT

Location: South Hill
 Northing: 37° 59' 02 N
 Easting: 122° 27' 22 W

Max. Charge Weight: 200 lbs per hole
400 lbs per delay
 Blast Duration: 226 ms

Date of Blast: 4/1/11
 Time of Blast: 11:51
 Blast Number: 1546

SEISMOGRAPH INFORMATION		UNIT #1	UNIT #2	UNIT #3	UNIT #4
Seismograph Model	2000	micro	micro	micro	micro
Serial Number	2481	4550	4567	4570	4570
Last Calibration Date	5 10 10	5 17 10	5 17 10	5 17 10	5 17 10

LOCATION INFORMATION		UNIT #1	UNIT #2	UNIT #3	UNIT #4
Location	Main Ag	Vis Mont	San Marino	Mansels	
Northing	37° 59' 19 N	37° 59' 18 N	37° 59' 31 W	37° 59' 30 N	
Easting	122° 27' 22 W	122° 27' 53 W	122° 27' 30 W	122° 27' 15 W	
Distance from Blast	1742	2557	3062	2851	
Scaled Distance	87	147	153	142	

VIBRATION INFORMATION		UNIT #1	UNIT #2	UNIT #3	UNIT #4
Longitudinal Peak Particle Velocity (ips)	.07	.02	.04		
Longitudinal Peak Frequency (Hz)	9.0	9.0	9.0		
Transverse Peak Particle Velocity (ips)	.05	.02	.05		
Transverse Peak Frequency (Hz)	35.7	35.7	35.7		
Vertical Peak Particle Velocity (ips)	.03	.02	.04		
Vertical Peak Frequency (Hz)	45.4	45.4	45.4		
Peak Vector Sum (ips)	.08	.03	.08	0	
Peak Air Overpressure (db)	112	112	112		

REMARKS:

Seismograph Operator: Deion Lopes Signature: [Signature]

SAN RAFAEL ROCK QUARRY BLAST REPORT

BASE DATA:

Location: South Hill E1-75 Designed Bench Height (ft): 25 Date: 4.1.11
 Northing: 37° 59' 02 N Rock Density (lb/ft³): 2.7 Time: 11:51
 Easting: 122° 27' 22 W Relative Rock Hardness: 7 Blast Number: 1546

DESIGN DATA:

Number of Holes Shot: 39 Hole Dia. (in.): 6 3/4" Stemming (ft): 14 + 15 Loading Time Required (man hrs): 5 Deck Type: -
 Ave. Hole Depth (ft): 28 Burden (ft): 13 Stem Type: 3/4" STORM Slaggered Pattern (y or n): N Length (ft): -
 Relative Confinement: - Spacing (ft): 13 Subdrill (ft): 3 Number of Lost Holes: 0 Tons Shot: 16,562

EXPLOSIVES DATA:

Bulk Explosive	Weight	Boosters	Units	Delays	Units	Misc.	Units
<u>titan</u>	<u>7680</u>	<u>450g</u>	<u>78</u>	<u>36</u>	<u>uniton</u>	<u>78</u>	

Max (lb/ftole): 200

VIBRATION DATA:

Nearest Structure: MGM (Cg) Scismograph Loc.: S.C.M.C. Temperature: 78° Max. Chrg. (lb/8rms): 400
 Northing: 37° 59' 19 N Northing: _____ Sky Condition: Clear RPPV: .08
 Easting: 122° 27' 22 W Easting: _____ Wind Direction: NE Frequency: 35.7
 Distance Away: 1742 Distance Away: _____ Wind Speed: 0 Airblast: 117

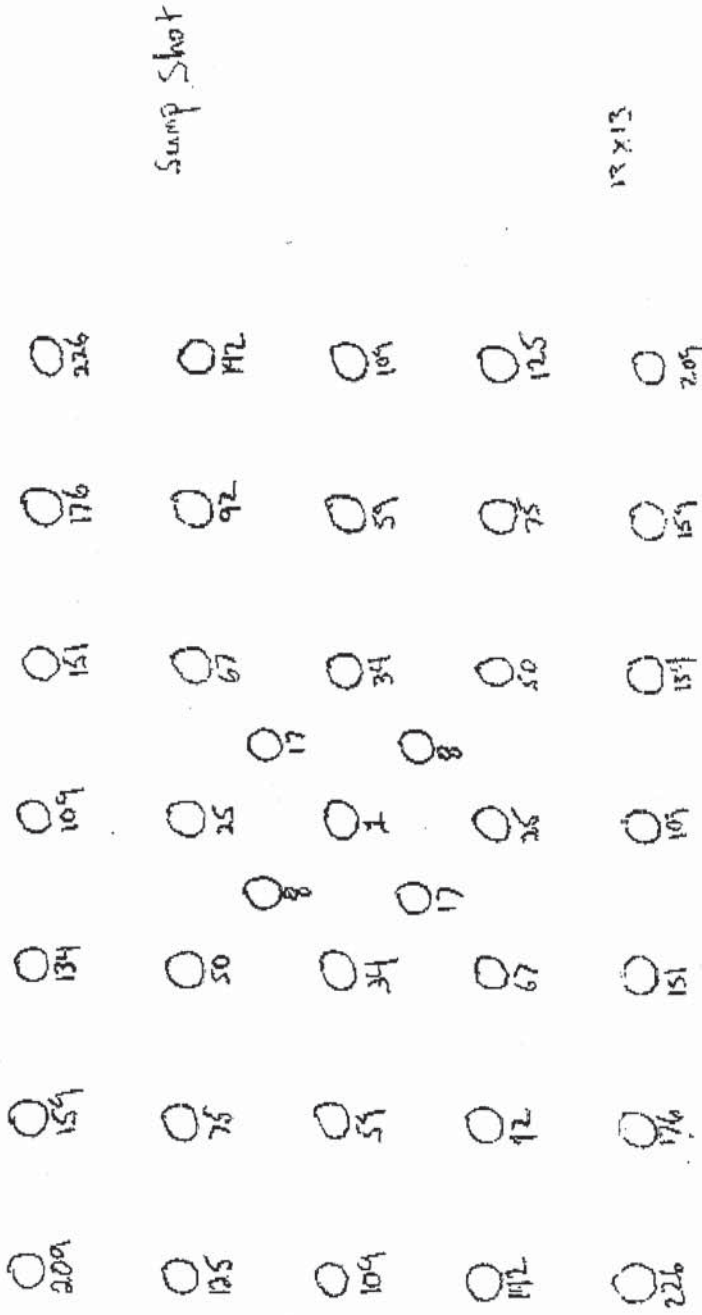
PERFORMANCE DATA:

Powder Factor (lb/ton): .4 Displacement: _____ Crushability: _____
 Lb/ft³: 1.1 Vibration: Great Fines: _____
 Fragmentation: Great Dig ability: _____
 Comments: Sample shot Blaster in Charge: R. Dan [Signature]

Blast Duration (sec): 22.6

Total Charge Wt.: _____

4.1.15
SM E175
1546



39 Holes

78: 30' unitron det

78: 450 gram

7680 lbs titan

depth 28'

15.14' stem

200 lbs per

main 1792
Via Mont 2957
SM 3062
MN 3851
37° 51' 02" N
122° 27' 22" W

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: 04/01/2011 06:05:03 (UTC-7)
End Date: 04/01/2011 12:29:53 (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-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 1, 2011 at approximately 11:51 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: 04/01/2011 07:00:50 (UTC-7)
End Date: 04/01/2011 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-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 1, 2011 at approximately 11:51 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: 04/01/2011 07:00:50 (UTC-7)
End Date: 04/01/2011 12:28:49 (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: 8.6

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 1, 2011 at approximately 11:51 indicating the ground vibrations produced were below the ground trigger level of 0.030 in/sec.