

SAN RAFAEL ROCK QUARRY VIBRATION REPORT

Location: P.B-7 Max. Charge Weight: 160 Date of Blast: 8-10-11
 Northing: 37°59'10"N Blast Duration: 335 MS Time of Blast: 12:40
 Easting: 122°27'17"W Blast Number: 1552

SEISMOGRAPH INFORMATION		UNIT		UNIT	
Seismograph Model	2000	Micro	Micro	Micro	Micro
Serial Number	2481	4550	4567	4570	
Last Calibration Date	5-24-11	5-26-11	5-26-11	5-26-11	

LOCATION INFORMATION		UNIT		UNIT	
Location	Main Oag	Via Montebello	Sea Marine	M. Near Park	
Northing	37°59'18"N	37°59'31"N	37°59'30"N	37°59'30"N	
Easting	122°27'22"W	122°27'53"W	122°59'30"W	122°27'16"W	
Distance from Blast	1056	3009	2429	2059	
Scaled Distance	83	237	192	162	

VIBRATION INFORMATION		UNIT		UNIT	
Longitudinal Peak Particle Velocity (ips)	.09	/			
Longitudinal Peak Frequency (Hz)	17.2				
Transverse Peak Particle Velocity (ips)	.08				
Transverse Peak Frequency (Hz)	16.6				
Vertical Peak Particle Velocity (ips)	.09				
Vertical Peak Frequency (Hz)	29.4	/			
Peak Vector Sum (ips)	.11				
Peak Air Overpressure (db)	109	/			

GENERAL COMMENTS: Deck loaded

Seismograph Operator: [Signature] Signature: [Signature]

SAN RAFAEL ROCK QUARRY BLAST REPORT

BASE DATA:

Location: PB-7 Designed Bench Height (ft): 37-40 Date: 8-10-11
 Northing: 37°59'10N Rock Density (lb/ft³): 2.7 Time: 12:40
 Easting: 122°27'17W Relative Rock Hardness: 7 Blast Number: 1552

DESIGN DATA:

Number of Holes Shot: 15 Hole Dia. (in.): 6 3/4 Stemming (ft): 15 Loading Time Required (man hrs): 8 Deck Type: 3/4" Stone
 Ave. Hole Depth (ft): 40.43 Burden (ft): 15 Stem Type: 3/4" Stone Staggered Pattern (y or n): N Length (ft): 5.11
 Relative Confinement: - Spacing (ft): 16 Subdrill (ft): 0 Number of Lost Holes: 0 Tons Shot: 14,400

EXPLOSIVES DATA:

Bulk Explosive	Weight	Boosters	Units	Delays	Units	Misc.	Units	Max (lb/hole):
<u>Pitran 1000G</u>	<u>4520</u>	<u>450 g.c.f.</u>	<u>30</u>	<u>80.22</u>	<u>15</u>			<u>340</u>
				<u>50.22</u>	<u>15</u>			<u>Blast Duration (sec): 355 ms</u>
				<u>40.22</u>	<u>5</u>			<u>Total Charge Wt.: 4950</u>

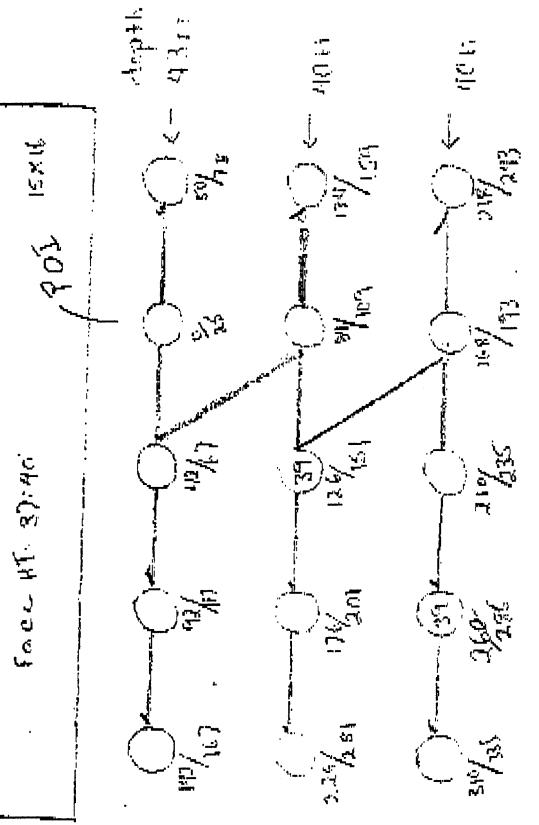
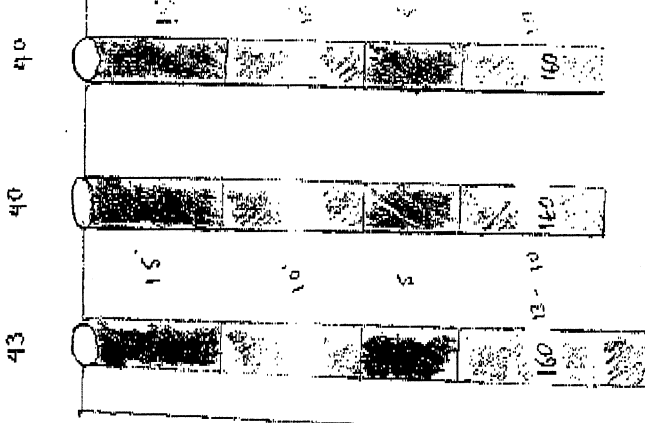
VIBRATION DATA:

Nearest Structure: Highway Seismograph Loc.: 5000 Temperature: 76 Max. Chrg (lb/ftms): 160
 Northing: 37°59'19N Northing: _____ Sky Condition: Clear RPPV: .11
 Easting: 122°27'22W Easting: _____ Wind Direction: SW Frequency: 33.9
 Distance Away: 105ft Distance Away: _____ Wind Speed: 0-8 Airblast: 109

PERFORMANCE DATA:

Powder Factor (lb/ton): 3 Displacement: Fair Crushability: _____
 Lb/yd³: 9 Vibration: Great Fines: _____
 Fragmentation: Good Dig ability: _____
 Comments: _____ Blaster in Charge: R.M. Agate

8:10:11
 78.7
 #1552



depth: 43-40

16 holes
 face HT. 37:40
 15x16 F.L.
 40 MS F.V.L.
 40:40:40

1600 60910

depth: 43-40
 face HT. 37:40
 15x16 F.L.
 40 MS F.V.L.
 40:40:40

37° 54' 10" N
 122° 37' 17" 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:

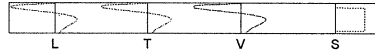
Begin Date: 08/10/2011 06:02:36 (UTC-7)
End Date: 08/10/2011 20:00:00 (UTC-7)
Events over Trigger: 0 (4-3)
Record Time: 5.0 s
Seismic Trigger: 0.030 in/s
Sound Trigger: N/A
Battery Level: 8.7

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 August 10, 2011 at approximately 12:40 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

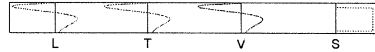
Begin Date: 08/10/2011 07:00:50 (UTC-7)
End Date: 08/10/2011 20:00:00 (UTC-7)
Events over Trigger: 0 (4-3)
Record Time: 5.0 s
Seismic Trigger: 0.030 in/s
Sound Trigger: N/A
Battery Level: 8.8

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 August 10, 2011 at approximately 12:40 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

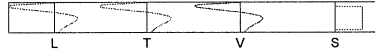
Begin Date: 08/10/2011 07:00:50 (UTC-7)
End Date: 08/10/2011 19:00:00 (UTC-7)
Events over Trigger: 0 (2-1)
Record Time: 5.0 s
Seismic Trigger: 0.030 in/s
Sound Trigger: N/A
Battery Level: 8.9

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 August 10, 2011 at approximately 12:40 indicating the ground vibrations produced were below the ground trigger level of 0.030 in/sec.