

SAN RAFAEL ROCK QUARRY VIBRATION REPORT

Location: PB-7 **Max. Charge Weight:** 220 **Date of Blast:** 11-9-11
Northing: 37° 59' 11" N **Blast Duration:** 335 ms **Time of Blast:** 11:55
Easting: 122° 27' 17" W **Blast Number:** 1562

SEISMOGRAPH INFORMATION	UNIT	UNIT	UNIT
Seismograph Model	2000	Misco	Misco
Serial Number	2481	4855	1570
Last Calibration Date	5-24-11	5-26-11	5-26-11

LOCATION INFORMATION			
Location	Placer	See Plans	W/S of Unit
Northing	37° 59' 11" N	37° 59' 31" N	37° 59' 30" N
Easting	122° 27' 17" W	122° 27' 30" W	122° 27' 16" W
Distance from Blast	950	2325	2006
Scaled Distance	64	182	135

VIBRATION INFORMATION			
Longitudinal Peak Particle Velocity (ips)	.16	/	.06
Longitudinal Peak Frequency (Hz)	33.3	/	9.0
Transverse Peak Particle Velocity (ips)	.11	/	.07
Transverse Peak Frequency (Hz)	33.3	/	20.0
Vertical Peak Particle Velocity (ips)	.17	/	.06
Vertical Peak Frequency (Hz)	100	/	10.8
Peak Vector Sum (ips)	.18	0	.08
Peak Air Overpressure (db)	112	-	106

GENERAL COMMENTS:

Seismograph Operator: David Lopez Signature: [Signature]

SAN RAFAEL ROCK QUARRY BLAST REPORT

BASE DATA:

Location: PB-7 Designed Bench Height (ft): 40 Date: 11-9-11
 Northing: 37° 59' 14" N Rock Density (lb/ft³): 2.7 Time: 11:55
 Easting: 127 27 19 W Relative Rock Hardness: 7 Blast Number: 1564

DESIGN DATA:

Number of Holes Shot: 18 Hole Dia. (in.): 3 1/4 Loading Time Required (man hrs): 7 Deck Type: 3/4" Stone
 Ave. Hole Depth (ft): 40 Burden (ft): 15 Stem Type: 3/4" Stone Staggered Pattern (y or n): N Length (ft): 5
 Relative Confinement: _____ Spacing (ft): 15 Subdrill (ft): _____ Number of Lost Holes: 0 Tons Shot: 1400

EXPLOSIVES DATA:

Bulk Explosive	Weight	Boosters	Units	Delays	Units	Misc.	Units	Max (lb/hole)
<u>ANFO</u>	<u>7300</u>	<u>0</u>	<u>30</u>	<u>0022</u>	<u>19</u>			<u>100</u>
<u>ANFO</u>	<u>4205</u>	<u>0</u>	<u>5082</u>	<u>5082</u>	<u>18</u>			<u>334 m/s</u>
<u>ANFO</u>	<u>1205</u>	<u>0</u>	<u>4205</u>	<u>4205</u>	<u>5</u>			
<u>ANFO</u>	<u>1205</u>	<u>0</u>	<u>1205</u>	<u>1205</u>	<u>1</u>			<u>Total Charge Wt.: 7877</u>

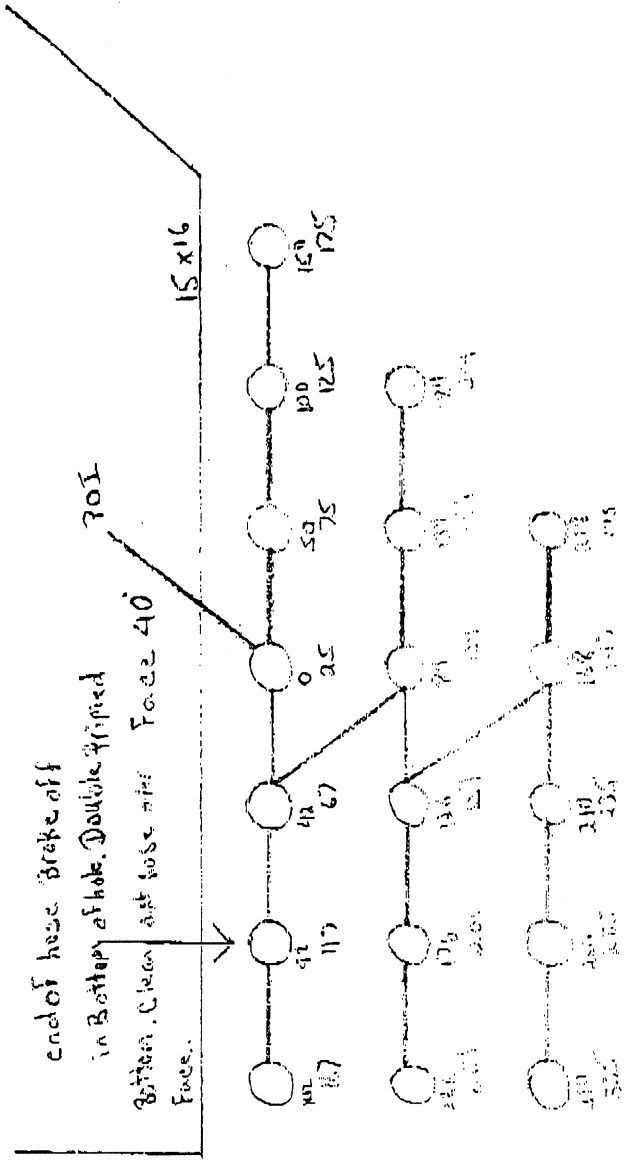
VIBRATION DATA:

Nearest Structure: Highway Seismograph Loc.: SWAY Temperature: 51° Max. Chrg. (lb/Rms): 360
 Northing: 37° 59' 14" N Northing: _____ Sky Condition: Clear RPPV: 18
 Easting: 127 27 22 W Easting: _____ Wind Direction: SE Frequency: 100
 Distance Away: _____ Distance Away: _____ Wind Speed: 8 Airblast: 112

PERFORMANCE DATA:

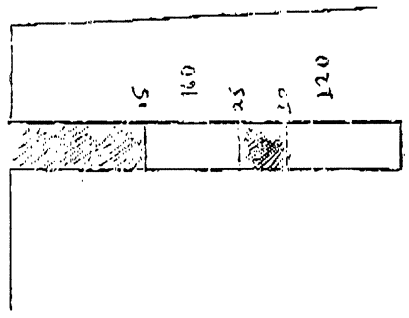
Powder Factor (lb/ton): 5 Displacement: Correct Crushability: _____
 Lb/yard³: 1.12 Vibration: Correct Fines: _____
 Fragmentation: Correct Dig ability: _____
 Comments: Double Primed Hole at 12 M Blaster in Charge: [Signature]

11.9.11
PB-7
#1562



main = 950'
TAM = 2798'
SM = 2323'
M = 2006'
37° S 91° W
120° 00' 19W

Depth 43



18 Holes
19: 80 EZ
18: 50 EZ
S: 40 MS
P: 17 MS
37: 450 grams
7, 840

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

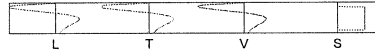
Begin Date: 11/09/2011 07:00:50 (UTC-8)
End Date: 11/09/2011 12:22:40 (UTC-8)
Events over Trigger: 0 (2-1)
Record Time: 5.0 s
Seismic Trigger: 0.030 in/s
Sound Trigger: N/A
Battery Level: 8.9

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 November 9, 2011 at approximately 11:56 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: 11/09/2011 07:00:50 (UTC-8)
End Date: 11/09/2011 12:22:58 (UTC-8)
Events over Trigger: 0 (10-9)
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 November 9, 2011 at approximately 11:56 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: 9856 v3.23
Client: COUNTY MARIN
Operation: SAN RAFAEL ROCK QUARRY
Location: ON QUARRY PROPERTY
Distance:
Operator: VIBRA-TECH GSM
Comment:

Begin Date: 11/09/2011 06:00:50 (UTC-8)
End Date: 11/09/2011 12:25:40 (UTC-8)
Events over Trigger: 0 (9-8)
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 November 9, 2011 at approximately 11:56 indicating the ground vibrations produced were below the ground trigger level of 0.030 in/sec.