

SAN RAFAEL ROCK QUARRY VIBRATION REPORT

BLAST INFORMATION

Location: PB-7 Max. Charge Weight: 260 Date of Blast: 4-23-77
 Northing: 37° 59' 10.0 W Time of Blast: 5:18
 Easting: 22 27 29 W Blast Duration: 5.7 Blast Number: 107

SEISMOGRAPH INFORMATION

SEISMOGRAPH MODEL	UNIT #1	UNIT #2	UNIT #3	UNIT #4	UNIT #5
Seismograph Model	M 371	6710	6710	6710	6710
Serial Number	4320	4327	4327	4327	4327
Last Calibration Date	5313	5310	5310	5310	5310

LOCATION INFORMATION

Location	W. W. Condit	San Rafael	M. 1000 151A
Northing	37° 59' 10.0 W	37° 59' 31.0 N	37° 59' 30.0 N
Easting	22 27 22 W	22 27 53 W	22 27 16 W
Distance from Blast	1376	3590	2745
Scaled Distance	86	160	170

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)	0	0	0	0
Peak Air Overpressure (db)				

GENERAL COMMENTS

NOTES

Seismograph Operator: Deon Lopes Signature: Deon Lopes

SAN RAFAEL ROCK QUARRY BLAST REPORT

BASE DATA:

Location: 030 Designed Bench Height (ft): 18 Date: 4.22.14
 Northing: 375410M Rock Density (lb/ft³): 2.23 Time: 12:19
 Easting: 122522W Relative Rock Hardness: 7 Blast Number: 105

DESIGN DATA:

Number of Holes Shot: 36 Hole Dia. (in.): 1.25 Stemming (ft): 15 Loading Time Required (min hrs): 7 Deck Type: -
 Ave. Hole Depth (ft): 25.3 Burden (ft): 10 Stem Type: W Staggered Pattern (y or n): Y Length (ft): -
 Relative Confinement: - Spacing (ft): 10 Subdrill (ft): 0 Number of Lost Holes: 0 Tons Shot: 4150

EXPLOSIVES DATA:

Bulk Explosive	Weight	Boosters	Units	Delays	Units	Misc.	Units	Max (lb/hole)	Blast Duration (sec)
<u>ANFO</u>	<u>9120</u>	<u>500</u>	<u>72</u>	<u>500</u>	<u>36</u>			<u>210</u>	<u>596</u>
				<u>42ms</u>	<u>10</u>				

VIBRATION DATA:

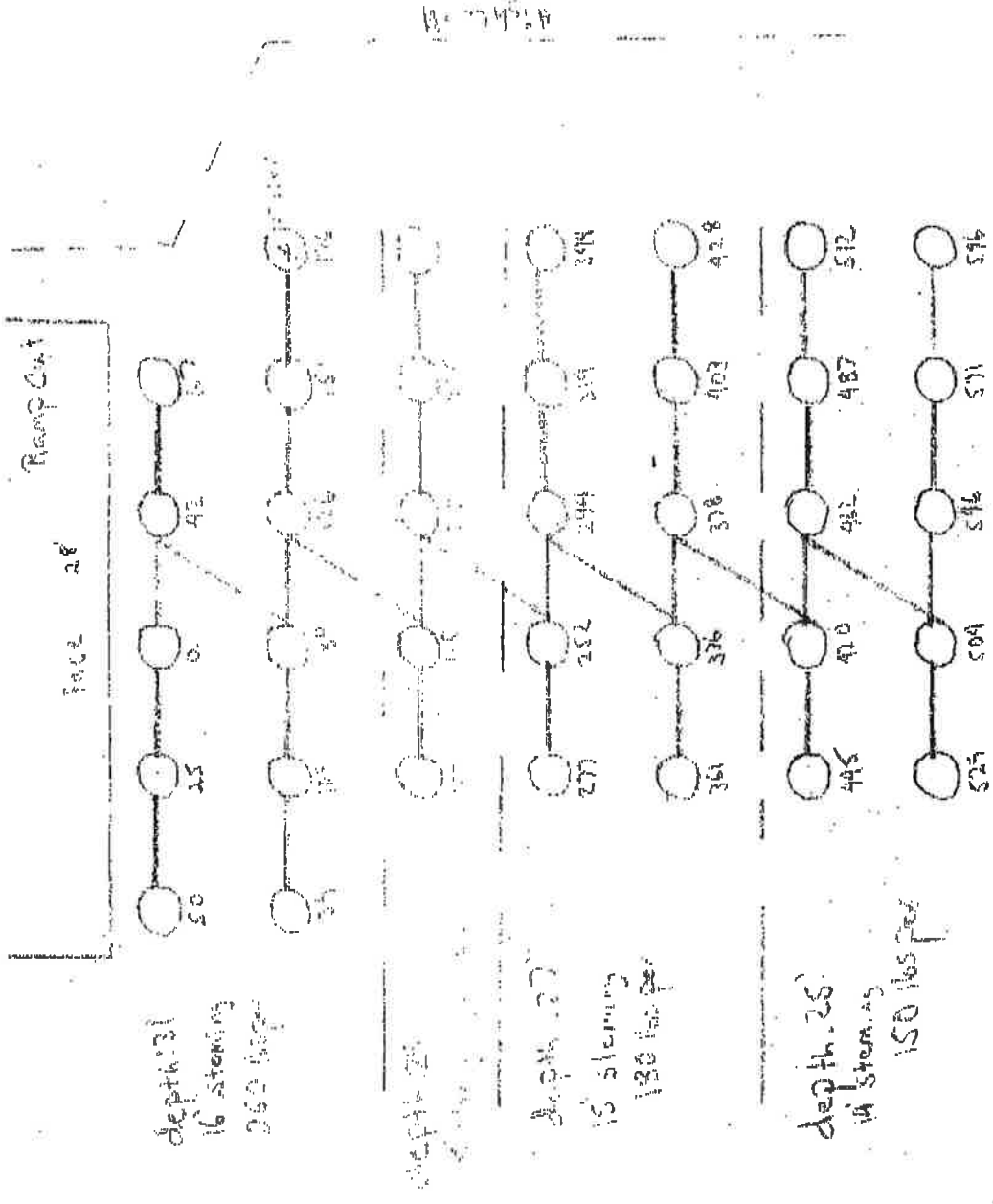
Seismograph Loc.: 6.4.1.2 Temperature: 18° Max. Chrg. (lb/ft³): 2.23
 Northing: 375419M Sky Condition: Clear RPPV: X
 Easting: 122522W Wind Direction: NE Frequency: X
 Distance Away: 1372 Wind Speed: 0 mph Airblast: X

PERFORMANCE DATA:

Powder Factor (lb/ton): 5 Displacement: Good Crushability: -
 lb/ft³: 1.2 Vibration: Great Fines: -
 Fragmentation: Good Dig ability: -
 Comments: Bluffs Subject in Charge: Bluffs

Total Charge Wt.: 6792

A.22.14
PB
#1607



MAX 1372
VIA M 3590
SOM 2745
M 11 2112

33° 59' 10N
102° 27' 09W

36 Holes
36 80 EZ det
36 50 EZ det
13 42 m
72 = 450 gram

6,720 lbs titan



Vibra-Tech Inc. Seismic Analysis

Stop Event Report

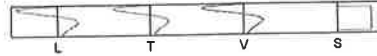
Serial No: 8154 v5.11
Client: COUNTY OF MARIN
Operation: SAN RAFAEL ROCK QUARRY
Location: 16 MARIN BAY PARK CT.
Distance:
Operator: VIBRA-TECH IP2
Comment: WILLIAM HOSKEN RES.

Begin Date: 04/22/2014 07:01:54 (UTC-7)
End Date: 04/22/2014 13:52:27 (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 22, 2014 at approximately 12:18 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:

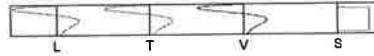
Begin Date: 04/22/2014 06:00:45 (UTC-7)
End Date: 04/22/2014 20:00:00 (UTC-7)
Events over Trigger: 0 (2-1)
Record Time: 5.0 s
Seismic Trigger: 0.030 in/s
Sound Trigger: N/A
Battery Level: 8.3

Additional Info:

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 22, 2014 at approximately 12:18 indicating the ground vibrations produced were below the ground trigger level of 0.030 in/sec.