

SAN RAFAEL ROCK QUARRY VIBRATION REPORT

BLAST INFORMATION
 Location: 7B-7 Max. Charge Weight: 480 Date of Blast: 11/27/13
 Northing: 37°59'12N Blast Duration: 269 ms Time of Blast: 11:39
 Easting: 122°27'02W Blast Number: 1602

SEISMOGRAPH INFORMATION		UNIT #1	UNIT #2	UNIT #3	UNIT #4	UNIT #5
Seismograph Model	2003	M-010	M-002	M-002	M-010	
Serial Number	2481	4550	4567	4570		
Last Calibration Date	5/3/13	5/3/13	5/3/13	5/3/13		

LOCATION INFORMATION		MOUNTING DATA		BLAST DATA	
Location	Mountain Ave	Mounting Station	Seal Point	Shot Point	Shot Point
Northing	37°59'12N	37°59'13N	37°59'31N	37°59'30N	37°59'30N
Easting	122°27'02W	122°27'53W	122°27'30W	122°27'51W	122°27'51W
Distance from Blast	1742	4065	2956	2112	
Scaled Distance	79	185	134	96	

VIBRATION INFORMATION		UNIT #1		UNIT #2		UNIT #3		UNIT #4		UNIT #5	
Longitudinal Peak Particle Velocity (ips)	.03										
Longitudinal Peak Frequency (Hz)	17.2										
Transverse Peak Particle Velocity (ips)	.05										
Transverse Peak Frequency (Hz)	16.5										
Vertical Peak Particle Velocity (ips)	.04										
Vertical Peak Frequency (Hz)	21.0										
Peak Vector Sum (ips)	.06										
Peak Air Overpressure (db)	117										

GENERAL COMMENTS
 Seismograph Operator: [Signature] Signature: [Signature]

SAN RAFAEL ROCK QUARRY BLAST REPORT

BASE DATA:

Location: PB-7 Designed Bench Height (ft): 40-48 Date: 11.22.13
 Northing: 37° 59' 12N Rock Density (t/yard³): 2.7 Time: 11:39
 Easting: 122° 27' 02W Relative Rock Hardness: 7 Blast Number: 1602

DESIGN DATA:

Number of Holes Shot: 18 Hole Dia. (in.): 6 3/4 Stemming (ft): 23 Loading Time Required (man hrs): 5 Deck Type: -
 Ave. Hole Depth (ft): 43.5 Burden (ft): 18 Stem Type: 3/4" Stone Staggered Pattern (y or n): Y Length (ft): -
 Relative Confinement: - Spacing (ft): 19 Subdrill (ft): 3 Number of Lost Holes: 0 Tons Shot: 22371

EXPLOSIVES DATA:

Bulk Explosive	Weight	Boosters	Units	Delays	Misc.	Units	Max (lb./hole)
<u>Fitox 1000</u>	<u>7020</u>	<u>450g</u>	<u>36</u>	<u>80.82</u>		<u>18</u>	<u>480</u>
				<u>50.82</u>		<u>18</u>	
				<u>42.05</u>		<u>5</u>	
				<u>17.15</u>		<u>0</u>	
							Blast Duration (sec): <u>26.9 ms</u>
							Total Charge Wt. <u>7056</u>

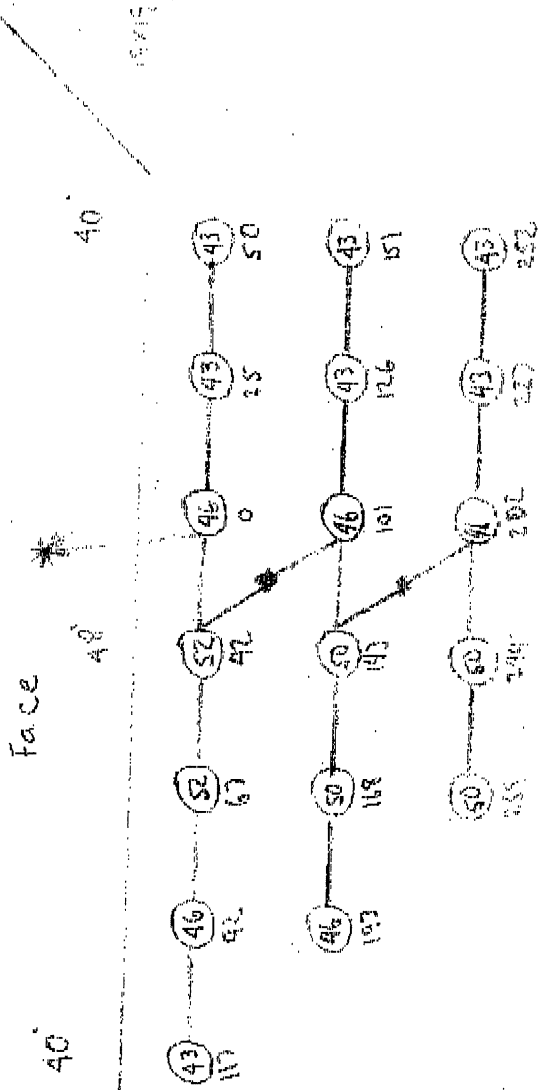
VIBRATION DATA:

Nearest Structure: Plant in Sg Seismograph Loc.: Sg # 2 Temperature: 56° Max. Chg. (lb/ft²): 480
 Northing: 37° 59' 12N Working: - Sky Condition: Partly RPPV: 0.2
 Easting: 122° 27' 02W Easting: - Wind Direction: N Frequency: 10
 Distance Away: 1746 Distance Away: - Wind Speed: 15 mph Abrast: 17

PERFORMANCE DATA:

Powder Factor (lb/ton): 1 Displacement: 2.1 Crushability: -
 Lb/yard³: 18 Vibration: 2.1 Finest: -
 Fragmentation: good Dig ability: -
 Comments: - Blaster in Charge: Thompson

11.27.13
 PR-7
 #1602



15719

DATE: 1742
 TIME: 4045
 LOCATION: 2000
 NAME: 4112
 275512W
 100° 11' 20" E

Depth: 40.52

11' 40"
 46' 48"
 52' 45"

10 11020
 18 20 27
 18 50 23
 5 40 16
 25 17 12
 50 45 10
 7020 162

Seismic Analysis

Velocity Waveform Analysis

Serial Number: 9591
 Firmware Version: 08-03.23
 Event Date: 11/22/2013 11:38:05 (UTC -08:00)
 Event number: 5
 Recording Time: 5 s
 Client: COUNTY OF MARIN
 Operation: SAN RAFAEL ROCK QRY
 Location: 16 MARIN BAY PARK CT.
 Distance:
 Operator: VIBRA-TECH GSM
 Comment: WILLIAM HOSKEN RES.
 Seismic Trigger: 0.03 in/s
 Sound Trigger: 75.9 DB

Additional Info:

j-GEO-01252
 N37 59.524, W122 27.373

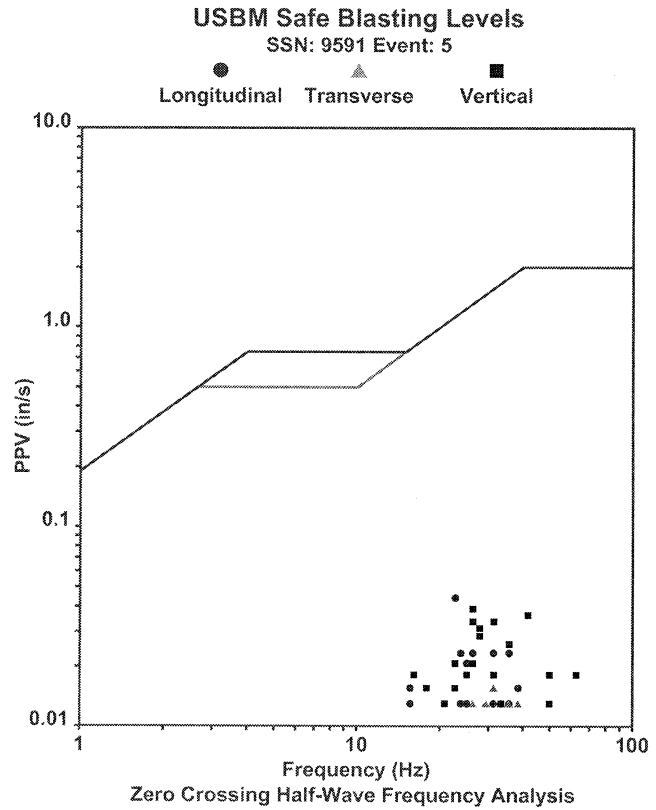
Summary Data

	L	T	V
PPV (in/s):	0.0425	0.015	0.0375
FREQ (HZ):	22.7	31.3	25
PD (.001"):	0.285	0.0975	0.23
PPA (g):	0.01953	0.01302	0.02604

Peak Vector Sum: 0.045 in/s
 Peak Air Pressure: 109 DB
 0.0008376 psi @ 2.8 HZ

Shaketable Calibrated

On: 02/20/2013 (UTC -08:00)
 By: Vibra-Tech, Inc.
 2700 Holloway Road - Suite 113
 Louisville, KY 40203 U.S.A.

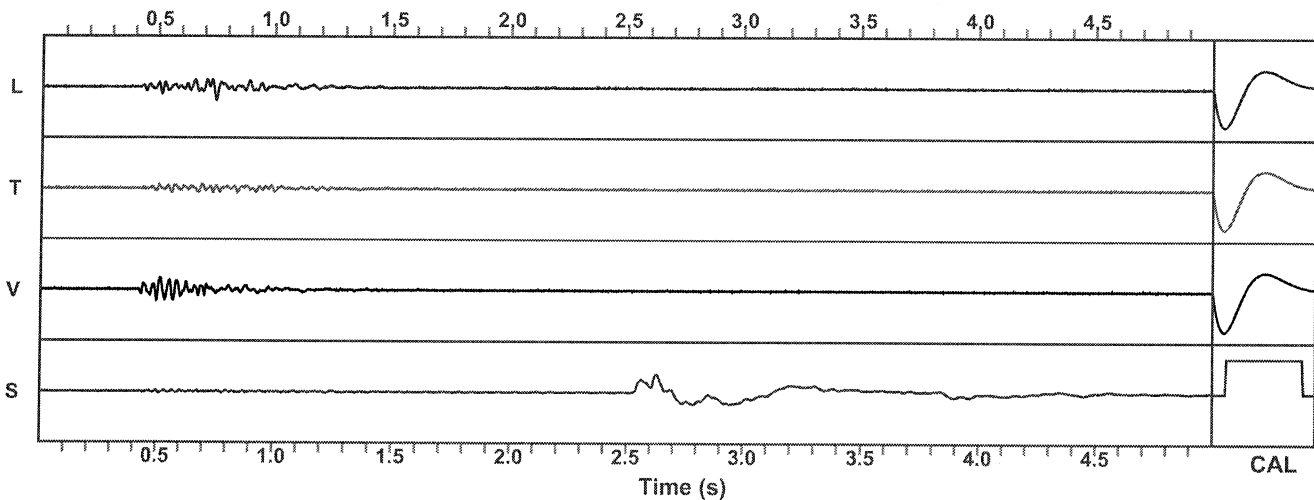


Waveform Graph Scale

Time Scale: 0.1 s
 Seismic Scale: +/- 0.16 in/s
 Sound Scale: +/- 0.0023 psi

Velocity Waveform

SSN: 9591 Event: 5



Seismic Analysis

Velocity Waveform Analysis

Serial Number: 9808
 Firmware Version: 08-03.23
 Event Date: 11/22/2013 11:38:05 (UTC -08:00)
 Event number: 24
 Recording Time: 5 s
 Client: COUNTY OF MARIN
 Operation: SAN RAFAEL ROCK QRY
 Location: ON QUARRY PROPERTY
 Distance:
 Operator: VIBRA-TECH GSM
 Comment:
 Seismic Trigger: 0.03 in/s
 Sound Trigger: 75.9 DB

Additional Info:

j-GEO-01253
 N37 59.481, W122 27.256

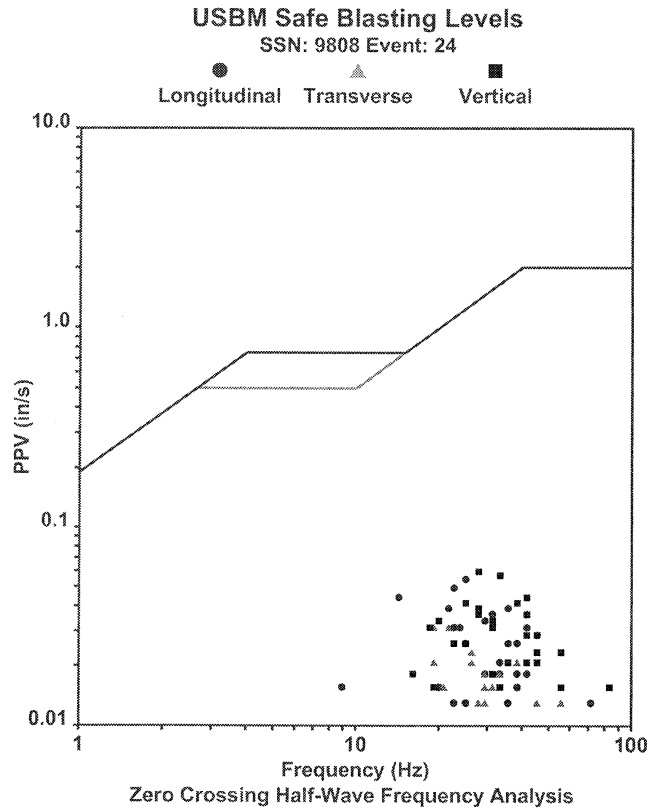
Summary Data

	L	T	V
PPV (in/s):	0.0525	0.03	0.0575
FREQ (HZ):	23.8	21.7	27.8
PD (.001"):	0.5	0.265	0.3825
PPA (g):	0.03255	0.01953	0.04557

Peak Vector Sum: 0.0775 in/s
 Peak Air Pressure: 110.3 DB
 0.0009624 psi @ 15.2 HZ

Shaketable Calibrated

On: 02/20/2013 (UTC -08:00)
 By: Vibra-Tech, Inc.
 2700 Holloway Road - Suite 113
 Louisville, KY 40203 U.S.A.



Waveform Graph Scale

Time Scale: 0.1 s
 Seismic Scale: +/- 0.16 in/s
 Sound Scale: +/- 0.0023 psi

Velocity Waveform

SSN: 9808 Event: 24

