

Seismic Analysis Velocity Waveform Analysis

Serial Number: 8056
 Firmware Version: 08-03.23
 Event Date: 05/30/2012 11:30:44 (UTC -07:00)
 Event number: 1
 Recording Time: 5 s
 Client: COUNTY OF MARIN
 Operation: SAN RAFAEL ROCK QUARRY
 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):	0.04	0.0375	0.065
FREQ (HZ):	27.8	50	50
PD (.001"):	0.345	0.3475	0.3425
PPA (g):	0.02604	0.03255	0.05859

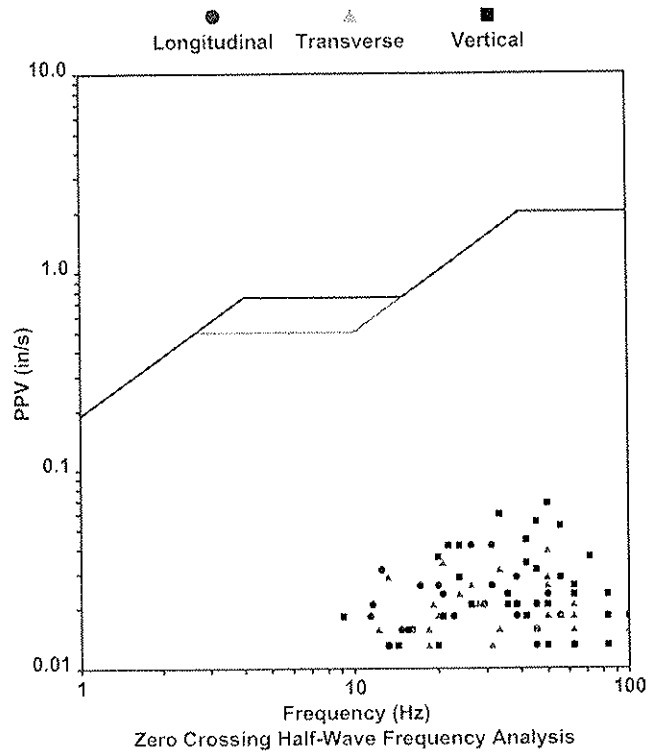
Peak Vector Sum: 0.0675 in/s
 Peak Air Pressure: 105.5 DB
 0.0006238 psi @ 3.8 HZ

Shaketable Calibrated

On: 05/16/2012 (UTC -07:00)
 By: Vibra-Tech, Inc.
 2700 Holloway Road - Suite 113
 Louisville, KY 40203 U.S.A.

USBM Safe Blasting Levels

SSN: 8056 Event: 1

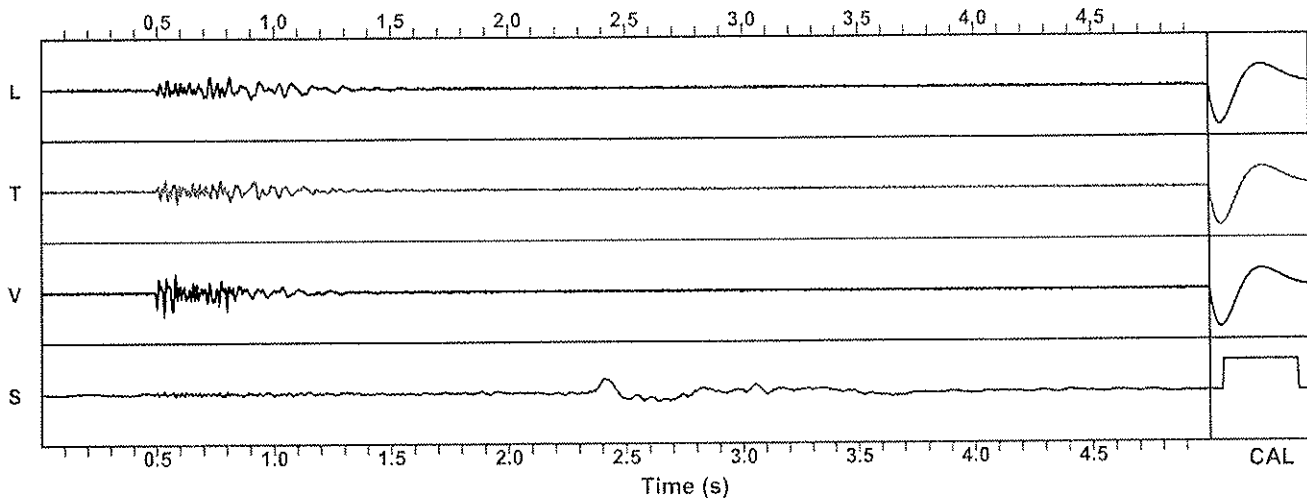


Waveform Graph Scale

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

Velocity Waveform

SSN: 8056 Event: 1



Seismic Analysis

Velocity Waveform Analysis

Serial Number: 8030
 Firmware Version: 08-03.23
 Event Date: 05/30/2012 11:30:44 (UTC -07:00)
 Event number: 1
 Recording Time: 5 s
 Client: COUNTY OF MARIN
 Operation: SAN RAFAEL ROCK QUARRY
 Location: ON QUARRY PROPERTY
 Distance:
 Operator: VIBRA-TECH GSM
 Comment:
 Seismic Trigger: 0.03 in/s
 Sound Trigger: 75.9 DB

Additional Info:

j-GHQ-01253
 N37 59.481, W122 27.256

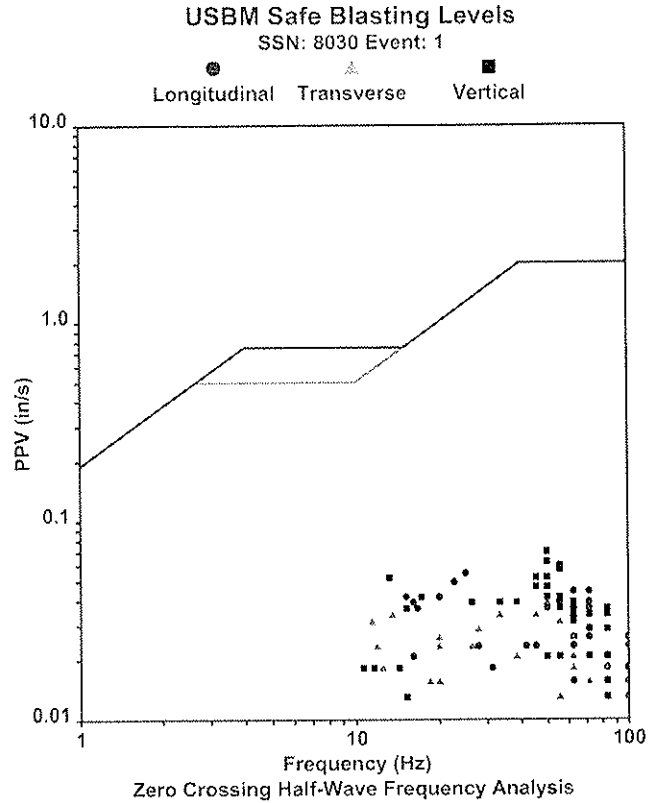
Summary Data

	L	T	V
PPV (in/s):	0.055	0.0375	0.0675
FREQ (HZ):	55.6	50	50
PD (.001"):	0.4175	0.355	0.5075
PPA (g):	0.05208	0.03255	0.0651

Peak Vector Sum: 0.0775 in/s
 Peak Air Pressure: 111.3 DB
 0.001123 psi @ 3.6 HZ

Shaketable Calibrated

On: 05/14/2012 (UTC -07:00)
 By: Vibra-Tech, Inc.
 2700 Holloway Road - Suite 113
 Louisville, KY 40203 U.S.A.

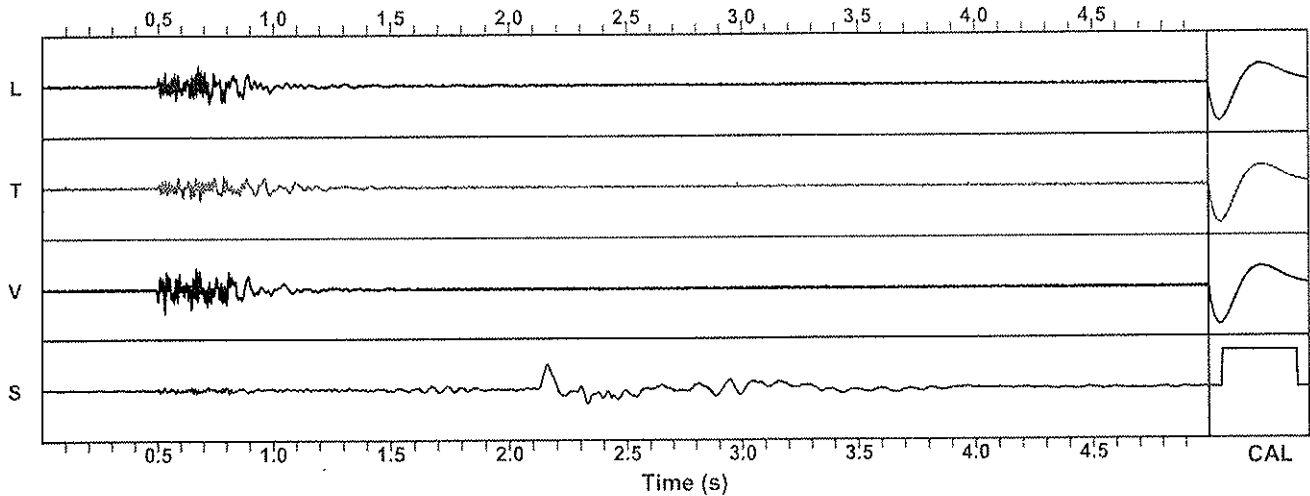


Waveform Graph Scale

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

Velocity Waveform

SSN: 8030 Event: 1



Seismic Analysis Velocity Waveform Analysis

Serial Number: 8021
 Firmware Version: 08-03.23
 Event Date: 05/30/2012 11:30:44 (UTC -07:00)
 Event number: 14
 Recording Time: 5 s
 Client: COUNTY OF MARIN
 Operation: SAN RAFAEL ROCK QUARRY
 Location: 114 SAN MARINO DRIVE
 Distance:
 Operator: VIBRA-TECH GSM
 Comment: VERONIQUE RASKIN*
 Seismic Trigger: 0.03 in/s
 Sound Trigger: 75.9 DB

Additional Info: *RESIDENCE
 j-GEO-01254
 N37 59.395, W122 27.700

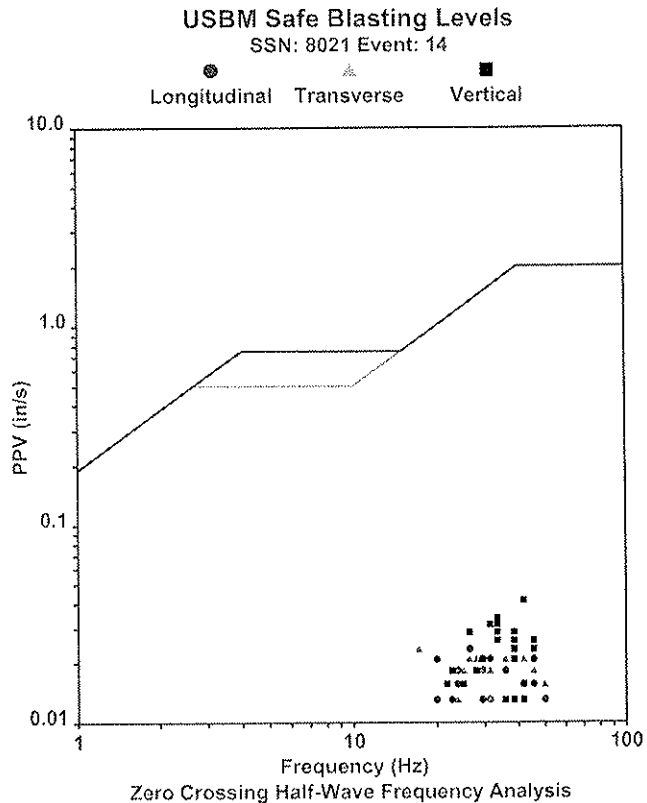
Summary Data

	L	T	V
PPV (in/s):	0.0225	0.0275	0.04
FREQ (HZ):	26.3	31.3	41.7
PD (.001"):	0.195	0.2275	0.2775
PPA (g):	0.01953	0.01953	0.02604

Peak Vector Sum: 0.0425 in/s
 Peak Air Pressure: 104.3 DB
 0.0005525 psi @ 1.3 HZ

Shaketable Calibrated

On: 05/11/2012 (UTC -07:00)
 By: Vibra-Tech, Inc.
 2700 Holloway Road - Suite 113
 Louisville, KY 40203 U.S.A.

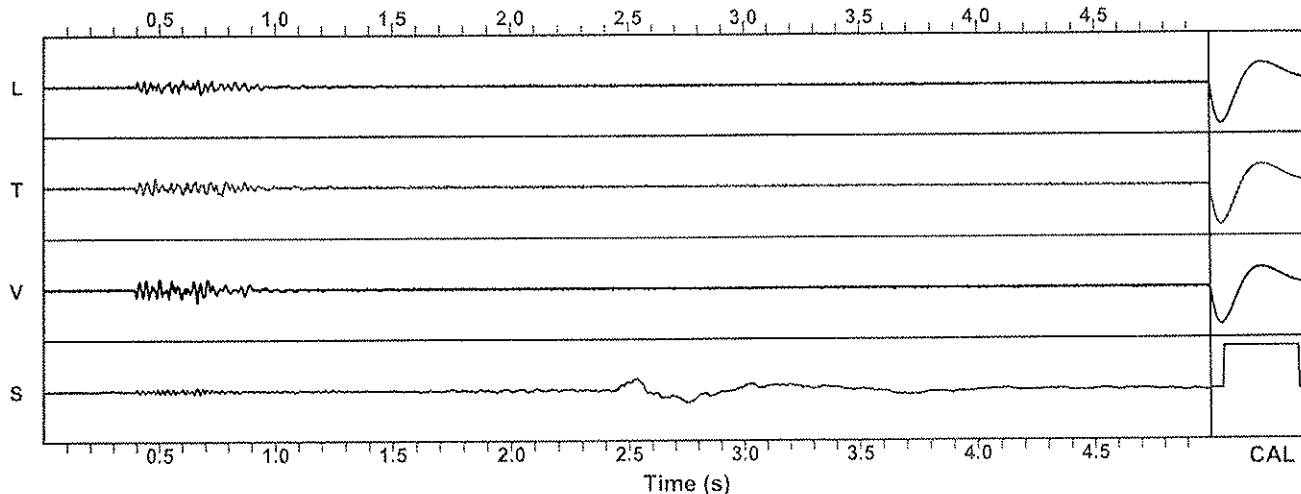


Waveform Graph Scale

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

Velocity Waveform

SSN: 8021 Event: 14



SAN RAFAEL ROCK QUARRY VIBRATION REPORT

Location: PB-8
 Northing: 37°59'10N
 Easting: 122°27'16W

Max. Charge Weight: 500
 Blast Duration: 344ms

Date of Blast: 5.20.12
 Time of Blast: 11:31
 Blast Number: 1577

SEISMOGRAPH INFORMATION		SERIAL #		UNITS	
Seismograph Model	2000	2000	2000	2000	2000
Serial Number	2609	2198	2474	2348	
Last Calibration Date	4.27.12	4.27.12	4.27.12	4.27.12	

LOCATION INFORMATION		SERIAL #		UNITS	
Location	MONA AG	W. Montabell	San Rafael	MT. PEAR PAIR	
Northing	37°59'10N	37°59'13N	37°59'31N	37°59'30W	
Easting	122°27'16W	122°27'30W	122°27'30W	122°27'16W	
Distance from Blast	1056	2957	2428	2060	
Scaled Distance	47	132	108	92	

VIBRATION INFORMATION		SERIAL #		UNITS	
Longitudinal Peak Particle Velocity (ips)	.18		10		.07
Longitudinal Peak Frequency (Hz)	26.3		16.1		13.5
Transverse Peak Particle Velocity (ips)	.25		.06		.05
Transverse Peak Frequency (Hz)	19.2		19.2		25.0
Vertical Peak Particle Velocity (ips)	.27		.08		.08
Vertical Peak Frequency (Hz)	33.0		20.8		38.4
Peak Vector Sum (ips)	.33		.11		.08
Peak Air Overpressure (db)	112		109		106

GENERAL COMMENTS

SAN RAFAEL ROCK QUARRY BLAST REPORT

BASE DATA:

Location: PS 3 Designed Bench Height (ft): 45 Date: 5.30.12
 Northing: 32° 54' 10 N Rock Density (lbyd³): 2.23 Time: 11.31
 Easting: 122° 27' 16 W Relative Rock Hardness: 7 Blast Number: 1577

DESIGN DATA:

Number of Holes Shot: 19 Hole Dia (in.): 6 3/4 Loading Time Required (man hrs): 6 Deck Type: -
 Ave Hole Depth (ft): 47 Burden (ft): 15 Stem Type: 3/4" Stems Staggered Pattern (y or n): N Length (ft): -
 Relative Confinement: - Spacing (ft): 15 Subdrill (ft): 2 Number of Lost Holes: 0 Tons Shot: 15.922

EXPLOSIVES DATA:

Disk Explosive	Weight	Boosters	Units	Delays	Units	Misc.	Units	Max (lb/hole)
<u>Titan 1000G</u>	<u>2780</u>	<u>450 gms</u>	<u>38</u>	<u>80ms</u>	<u>19</u>			<u>500</u>
				<u>50ms</u>	<u>19</u>			<u>344ms</u>
				<u>42ms</u>	<u>7</u>			
				<u>17ms</u>	<u>1</u>			
								<u>Total Charge Wt.: 3812</u>

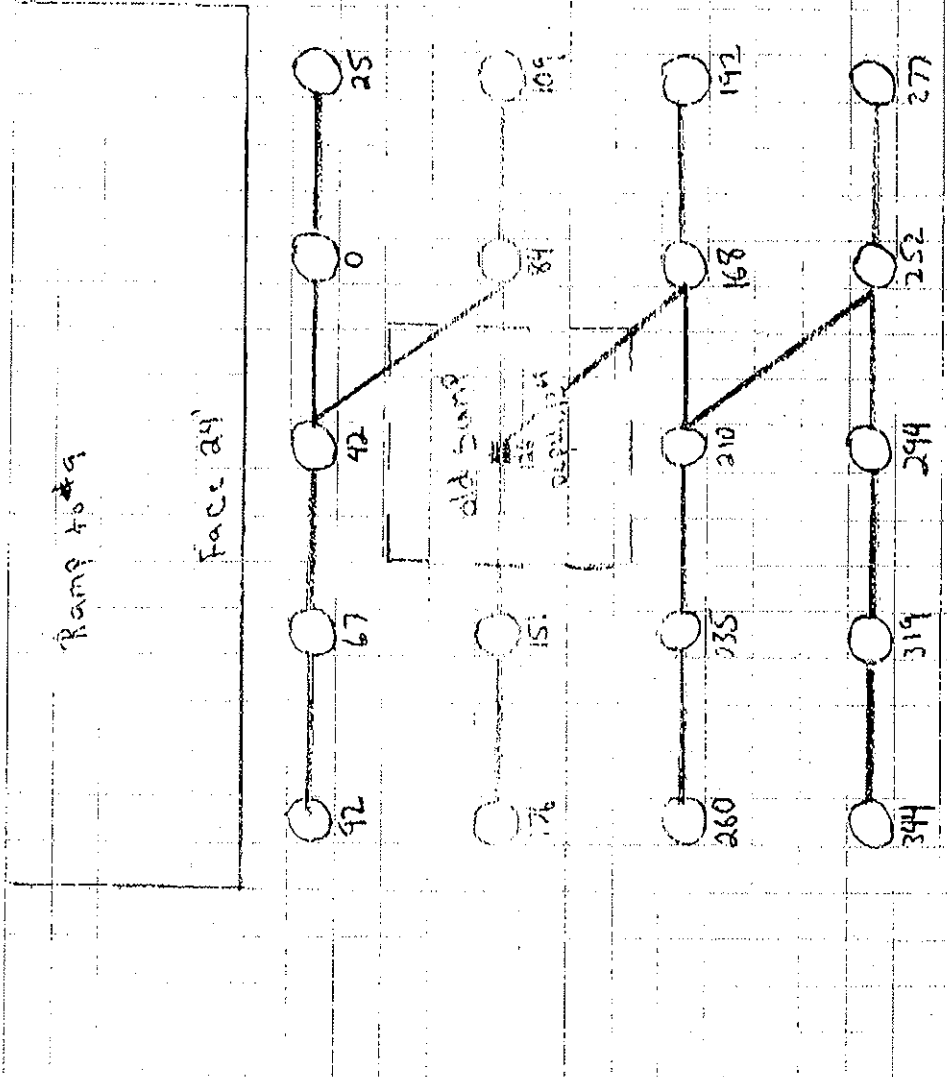
VIBRATION DATA:

Nearest Structure: Mag. in Ag Seismograph Loc.: Same Temperature: 78° Max. Chrg. (lb/8ms): 500
 Northing: 32° 54' 19 N Sky Condition: Clear RPPV: 33
 Easting: 122° 27' 22 W Wind Direction: East Frequency: 37.3
 Distance Away: 1056 Wind Speed: 0-3 Airblast: 112

PERFORMANCE DATA:

Powder Factor (lb/ton): .5 Displacement: Correct Crushability: -
 Lb/yd³: 1.3 Vibration: Correct

JOB _____
ITEM _____
SHEET _____ OF _____
DATE _____
BY _____



5.30.12
P.B.8
1577

main 1056
VIA 2467
SM 2428
M'N 2060

Dep. 47

19 Holes
19: 80.22
19: 50.22
7: 42.15
1: 17.15