

SAN RAFAEL ROCK QUARRY VIBRATION REPORT

Location: PR-7 **Max. Charge Weight:** 500 **Date of Blast:** 11/23/00
Northing: 37° 59' 13.4" N **Time of Blast:** 12:23
Easting: 122° 27' 22.7" W **Blast Duration:** 1.5 **Blast Number:** 160

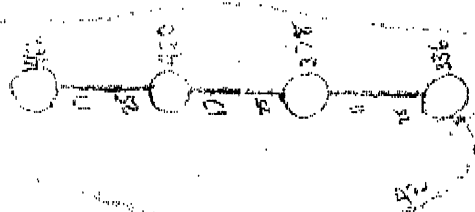
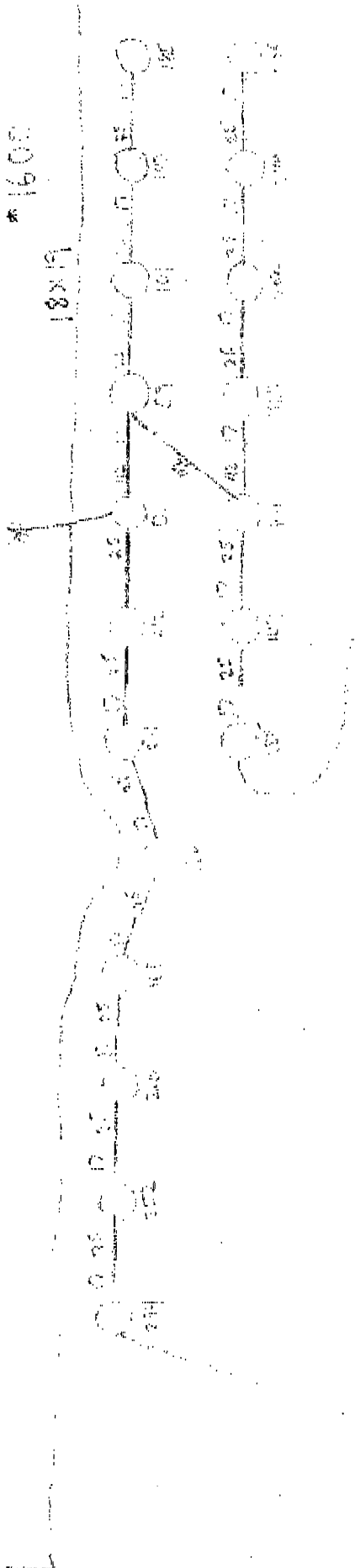
SEISMOGRAPH INFORMATION		UNIT #		UNIT #		UNIT #	
Seismograph Model	10000	10000	10000	10000	10000	10000	10000
Serial Number	10000	10000	10000	10000	10000	10000	10000
Last Calibration Date	5-3-98	5-3-98	5-3-98	5-3-98	5-3-98	5-3-98	5-3-98

LOCATION INFORMATION		UNIT #		UNIT #		UNIT #	
Location	10000	10000	10000	10000	10000	10000	10000
Northing	37° 59' 13.4"	37° 59' 13.4"	37° 59' 13.4"	37° 59' 13.4"	37° 59' 13.4"	37° 59' 13.4"	37° 59' 13.4"
Easting	122° 27' 22.7" W	122° 27' 22.7" W	122° 27' 22.7" W	122° 27' 22.7" W	122° 27' 22.7" W	122° 27' 22.7" W	122° 27' 22.7" W
Distance from Blast	1108	3452	2428	1795			
Scaled Distance	71	221	156	115			

VIBRATION INFORMATION		UNIT #		UNIT #		UNIT #	
Longitudinal Peak Particle Velocity (ips)	.08	.09	.04				
Longitudinal Peak Frequency (Hz)	13	13.8	17.2				
Transverse Peak Particle Velocity (ips)	.09	.10	.08				
Transverse Peak Frequency (Hz)	33.3	4.8	55.5				
Vertical Peak Particle Velocity (ips)	.07	.09	.11				
Vertical Peak Frequency (Hz)	22.7	26.7	50.0				
Peak Vector Sum (ips)	.10	.13	.12				
Peak Air Overpressure (db)	109	106	106				

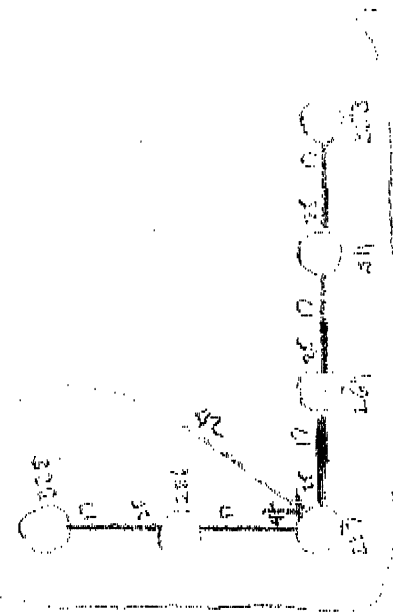
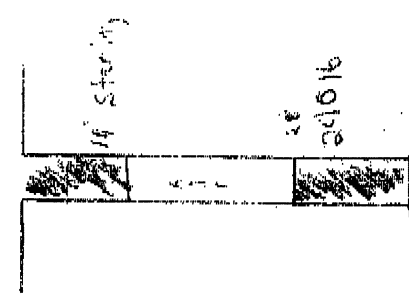
Seismograph Operator: Dennis Lopez **Signature:** [Signature]

9.12.13
 35.1
 *1609



29 Holes
 29: 80.62 det
 29: 50.82 det
 26: 17ms
 6: 42ms
 38: 450gpm
 6,960 lbs/ft²

Det. 43



Main 1102
 Dia 3432
 Sam 2428
 MW 1795
 37°59'13"N
 122°27'11"W

Seismic Analysis

Velocity Waveform Analysis

Serial Number: 9591
Firmware Version: 08-03.23
Event Date: 09/18/2013 11:33:29 (UTC -07:00)
Event number: 4
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):	0.04	0.0225	0.0375
FREQ (HZ):	33.3	31.3	62.5
PD (.001"):	0.2525	0.2325	0.2025
PPA (g):	0.02604	0.01953	0.03906

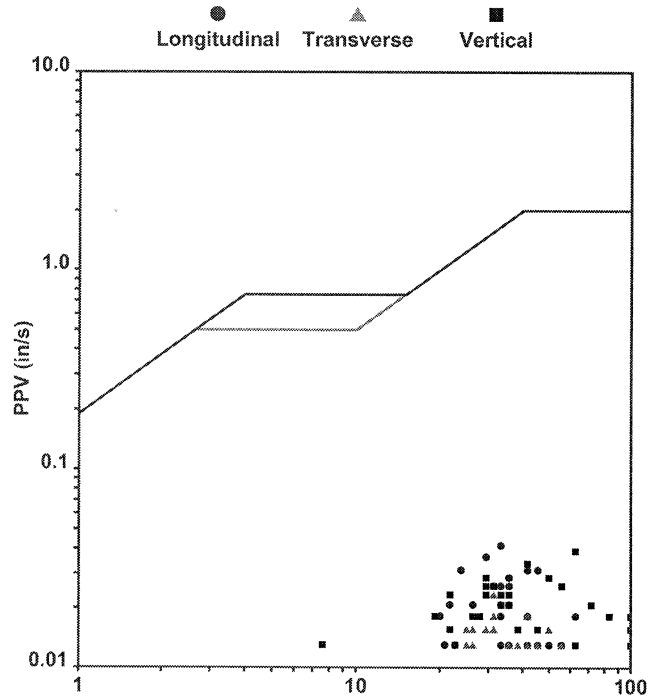
Peak Vector Sum: 0.04 in/s
Peak Air Pressure: 105.2 DB
 0.000606 psi @ 2 HZ

Shaketable Calibrated

On: 02/20/2013 (UTC -07:00)
By: Vibra-Tech, Inc.
 2700 Holloway Road - Suite 113
 Louisville, KY 40203 U.S.A.

USBM Safe Blasting Levels

SSN: 9591 Event: 4



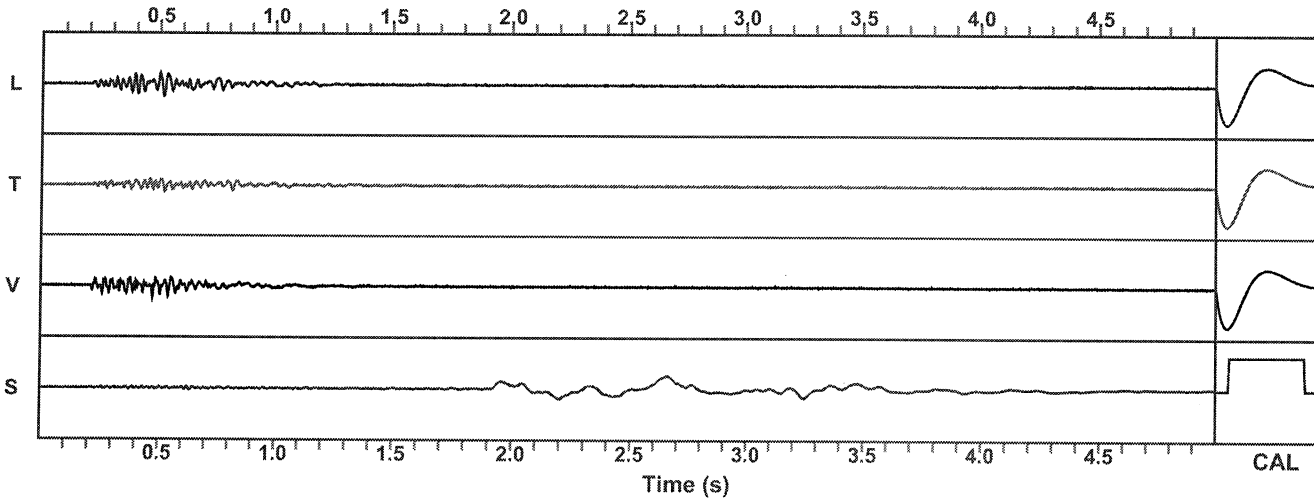
Zero Crossing Half-Wave Frequency Analysis

Waveform Graph Scale

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

Velocity Waveform

SSN: 9591 Event: 4



Seismic Analysis

Velocity Waveform Analysis

Serial Number: 9808
 Firmware Version: 08-03.23
 Event Date: 09/18/2013 11:33:28 (UTC -07:00)
 Event number: 22
 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):	0.1	0.0575	0.09
FREQ (HZ):	45.5	45.5	41.7
PD (.001"):	0.4325	0.4775	0.4175
PPA (g):	0.09766	0.04557	0.09766

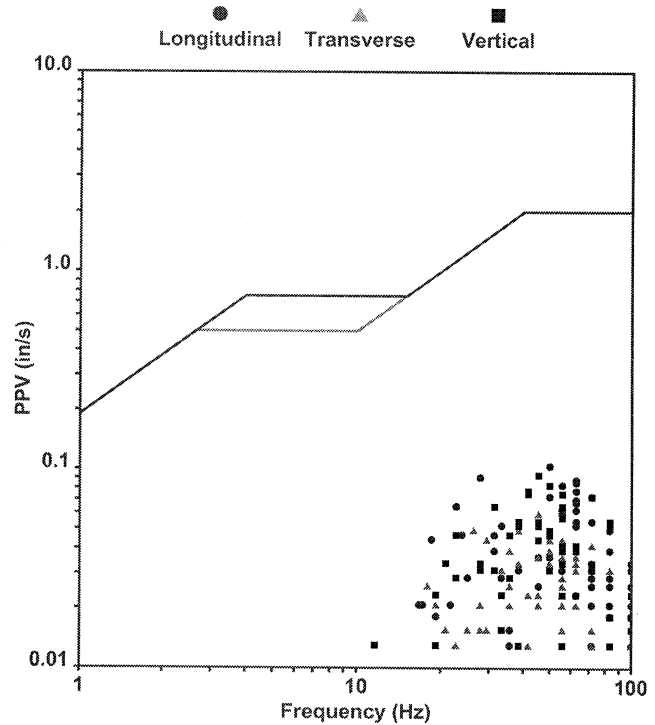
Peak Vector Sum: 0.105 in/s
 Peak Air Pressure: 105.8 DB
 0.0006416 psi @ 3.9 HZ

Shaketable Calibrated

On: 02/20/2013 (UTC -07:00)
 By: Vibra-Tech, Inc.
 2700 Holloway Road - Suite 113
 Louisville, KY 40203 U.S.A.

USBM Safe Blasting Levels

SSN: 9808 Event: 22



Zero Crossing Half-Wave Frequency Analysis

Waveform Graph Scale

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

Velocity Waveform

SSN: 9808 Event: 22

