SAN RAFAEL ROCK QUARRY VIBRATION REPORT

Location: PB-7
Nothing: 37°52.12'N
Easting: 122°23.12'W
Max. Charge Weight: 420
Blast Duration: 343 ms
Date of Blast: 6.29.12
Time of Blast: 11:30
Blast Number: 458

<table>
<thead>
<tr>
<th>Seismograph Model</th>
<th>Unit</th>
<th>Seismograph</th>
<th>Serial Number</th>
<th>Last Calibration Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>300</td>
<td>Micro</td>
<td>Micro</td>
<td>458</td>
<td>5.17.12</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Location</th>
<th>Northing</th>
<th>Easting</th>
<th>Distance from Blast</th>
<th>Scaled Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Martin Dr</td>
<td>33°59.14'N</td>
<td>122°27.22'W</td>
<td>11.09</td>
<td>54</td>
</tr>
<tr>
<td>Via Montana</td>
<td>33°59.14'N</td>
<td>122°27.58'W</td>
<td>33.26</td>
<td>147</td>
</tr>
<tr>
<td>San Marina Dr</td>
<td>33°59.13'N</td>
<td>122°27.30'W</td>
<td>24.82</td>
<td>82</td>
</tr>
<tr>
<td>Mill Way</td>
<td>33°59.13'N</td>
<td>122°27.16'W</td>
<td>18.48</td>
<td>90</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Longitudinal Peak Particle Velocity (ips)</th>
<th>Longitudinal Peak Frequency (Hz)</th>
<th>Transverse Peak Particle Velocity (ips)</th>
<th>Transverse Peak Frequency (Hz)</th>
</tr>
</thead>
<tbody>
<tr>
<td>.06</td>
<td>.06</td>
<td>.04</td>
<td>.04</td>
</tr>
<tr>
<td>25.0</td>
<td>6.2</td>
<td>14.7</td>
<td>5.0</td>
</tr>
<tr>
<td>.04</td>
<td></td>
<td>.04</td>
<td></td>
</tr>
<tr>
<td>.06</td>
<td></td>
<td>35.7</td>
<td>0.8</td>
</tr>
<tr>
<td>.08</td>
<td></td>
<td>.08</td>
<td></td>
</tr>
</tbody>
</table>

Peak Vector Sum (ips) = 0.08
Peak Air Overpressure (db) = 112

Seismograph Operator: Daniel Lopes
Signature: Daniel Lopez
SAN RAFAEL ROCK QUARRY BLAST REPORT

BASE DATA:

Location: PB-7
Northing: 37°59.12 N
Easting: 122°27.12 W
Designed Bench Height (ft): 40
Rock Density (yd^3): 2.23
Relative Rock Hardness: 7
Date: 6-29-17
Time: 11:30
Blast Number: 1581

DESIGN DATA:

Number of Holes Shot: 25
Hole Dia. (in.): 6 3/4
Ave. Hole Depth (ft): 43
Loading Time Required (man hrs): 5
Deck Type: -
Burden (ft): 10
Spacing (ft): 5
Staggered Pattern (y or n): N
Length (ft): -

EXPLOSIVES DATA:

Bulk Explosive Weight
Pitolan 1000
6940
480
50
86.42
15
Max. (lb/ho): 420

VIBRATION DATA:

Nearest Structure: Marin Cty
Seismograph Loc.: -
Temperature: 78°
Max. Chg (lb/8ms): 420
Northing: 32°59.19 N
Sky Condition: Clear
RPPV: 0.8
Easting: 122°27.12 W

Distance Away: 1109
Wind Speed: 2.5
Airblast: 119

PERFORMANCE DATA:

Powder Factor (lb/ton): 5
Lb/yard^3: 1.26
Fragmentation: Great
Digability:
Comments:
Displacement: Great
Crushability:
Fines:
Vibration: Great

Blaster in Charge:
25 Holes
25: 80 EZ det
25: 50 EZ det
41: 42ms EZTL
50: 450 gram

Depth: 43'
16 stem

420 lbs per

Main: 1109
ViaM: 3326
SamM: 2982
M&N: 1848
33° 59' 12" N
121° 27' 12" W

6.29.12
P.B. 7
$1581
Seismic Analysis
Velocity Waveform Analysis

Serial Number: 8030
Firmware Version: 08-03-23
Event Date: 06/29/2012 11:30:34 (UTC -07:00)
Event number: 3
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-GEO-01253
N37 59.481, W122 27.256

Summary Data

<table>
<thead>
<tr>
<th>PPV (in/s)</th>
<th>L</th>
<th>T</th>
<th>V</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.0425</td>
<td>0.035</td>
<td>0.0575</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FREQ (HZ)</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>31.3</td>
<td>29.4</td>
<td>50</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PD (.001&quot;)</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0.275</td>
<td>0.4575</td>
<td>0.21</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FPA (g)</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0.03906</td>
<td>0.02604</td>
<td>0.05859</td>
<td></td>
</tr>
</tbody>
</table>

Peak Vector Sum: 0.065 in/s
Peak Air Pressure: 109.6 DB
0.0008733 psi @ 3.5 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: 3

Printed: June 29, 2012 File: 0000095263_201206.g3k (GeoSonic Inc. PDFGenerator v 1.0)
GeoSonics Inc. Seismic Analysis
Stop Event Report

Serial No: 8056 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 RES.

Begin Date: 06/29/2012 07:00:50 (UTC-7)
End Date: 06/29/2012 12:03:46 (UTC-7)
Events over Trigger: 0 (3-2)
Record Time: 5.0 s
Seismic Trigger: 0.030 in/s
Sound Trigger: N/A
Battery Level: 8.9

Shaketable Calibrated: 05/16/2012
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 8056) did not trigger during the blast on June 29, 2012 at approximately 11:30 indicating the ground vibrations produced were below the ground trigger level of 0.030 in/sec.
The seismograph at 114 San Marino Drive (S/N 8021) did not trigger during the shot on June 29, 2012 at approximately 11:30 indicating the ground vibrations produced were below the ground trigger level of 0.030 in/sec.