**SAN RAFAEL ROCK QUARRY VIBRATION REPORT**

<table>
<thead>
<tr>
<th>Location: South Hill</th>
<th>Max. Charge Weight: 200 kg</th>
<th>Date of Blast: 4/11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northing: 37°59'.02&quot; N</td>
<td></td>
<td>Time of Blast: 11:51</td>
</tr>
<tr>
<td>Easting: 122°27'.22&quot; W</td>
<td>Blast Duration: 2.26 ms</td>
<td>Blast Number: 1546</td>
</tr>
</tbody>
</table>

### Seismograph Information

<table>
<thead>
<tr>
<th>Seismograph Model</th>
<th>Seismograph Serial Number 2481</th>
<th>Seismograph Serial Number 4550</th>
<th>Seismograph Serial Number 4567</th>
<th>Seismograph Serial Number 4570</th>
</tr>
</thead>
<tbody>
<tr>
<td>Last Calibration Date 5-10-10</td>
<td>5-17-10</td>
<td>5-17-10</td>
<td>5-17-10</td>
<td></td>
</tr>
</tbody>
</table>

### Location Information

<table>
<thead>
<tr>
<th>Location</th>
<th>Marin Ag</th>
<th>Via Mont</th>
<th>San Marin</th>
<th>Minter's</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northing</td>
<td>37°59'.19&quot; N</td>
<td>37°59'.18&quot; N</td>
<td>37°59'.31&quot; N</td>
<td>37°59'.80&quot; N</td>
</tr>
<tr>
<td>Easting</td>
<td>122°27'.22&quot; W</td>
<td>122°27'.53&quot; W</td>
<td>122°27'.30&quot; W</td>
<td>122°27'.11&quot; W</td>
</tr>
<tr>
<td>Distance from Blast</td>
<td>1742</td>
<td>2957</td>
<td>3062</td>
<td>2951</td>
</tr>
</tbody>
</table>

### Vibration Information

<table>
<thead>
<tr>
<th>Location</th>
<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>
<th>Vertical Peak Particle Velocity (ips)</th>
<th>Vertical Peak Frequency (Hz)</th>
<th>Peak Vector Sum (ips)</th>
<th>Peak Air Overpressure (db)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marin Ag</td>
<td>0.07</td>
<td>9.0</td>
<td>0.05</td>
<td>35.7</td>
<td>0.03</td>
<td>45.4</td>
<td>0.08</td>
<td>112</td>
</tr>
<tr>
<td>Via Mont</td>
<td>0.02</td>
<td>9.0</td>
<td>0.02</td>
<td>36.7</td>
<td>0.02</td>
<td>45.4</td>
<td>0.03</td>
<td>112</td>
</tr>
<tr>
<td>San Marin</td>
<td>0.04</td>
<td>9.0</td>
<td>0.05</td>
<td>35.7</td>
<td>0.04</td>
<td>45.4</td>
<td>0.08</td>
<td>112</td>
</tr>
<tr>
<td>Minter's</td>
<td>0.05</td>
<td>9.0</td>
<td>0.05</td>
<td>35.7</td>
<td>0.05</td>
<td>45.4</td>
<td>0.05</td>
<td>112</td>
</tr>
</tbody>
</table>

### General Comments

Seismograph Operator: Deron Lopes

Signature: [Signature]
SAN RAFAEL ROCK QUARRY BLAST REPORT

BASE DATA:

Location: South Hill E 1.75
Northing: 32° 59' 02" N
Easting: 122° 22' 22" W
Designed Beach Height (ft): 25
Rock Density (lb/ft³): 2.7
Relative Rock Hardness: 7
Date: 4.1.11
Time: 11:51
Blast Number: 18-46

DESIGN DATA:

Number of Holes Shot: 39
Hole Dia (in): 6.3/4
Stemming (ft): 14 + 15
Loading Time Required (man hrs): 5
Deck Type: __________
Ave. Hole Depth (ft): 2.8
Burden (ft): 13
Stem Type: 3/4 stone
Slag Pattern (y or n): N
Length (ft): __________
Relative Confinement: __________
Spacing (ft): 13
Subdrill (ft): 3
Number of Lost Holes: 0
Tons Shot: 16,562

EXPLOSIVES DATA:

Bulk Explosive
Weight
Booster
Units
Delays
Units
Misc.
Units

4
7680
450 g
78
36
78

Max (lb/hole): 200
Blast Duration (sec): 22.0

VIBRATION DATA:

Nearest Structure: ________
Seismograph Loc.: ________
Temperature: 78°
Max. Cpng. (lb/8ms): 400
Northing: 32° 59' 19" N
Nerthing: __________
Sky Condition: Clear
RPPV: 10%
Easting: 122° 22' 22" W
Easting: __________
Wind Direction: NE
Frequency: 551
Distance Away: 1742
Wind Speed: 0
Airblast: 117

PERFORMANCE DATA:

Powder Factor (lb/ton): 0.4
Displacement:
Crushability:
Lb/yard³: 1.1
Vibration: Great
Fines:
Fragmentation: Great
Dig ability:
Comments: Sump Shal
Blaster in Charge: [Signature]
39 Holes  
78:30 wet tons net  
78: 450' g.m.  
7680 lbs. Titan  

depth 20'  
main 1742  
via Main 2957  
SM 3862  
MTN 3857  
32° 6' 0.2' N  
122° 27' 2.2' W
The seismograph on Quarry Property (S/N 9856) did not trigger during the shot on April 1, 2011 at approximately 11:51 indicating the ground vibrations produced were below the ground trigger level of 0.030 in/sec.
GeoSonics Inc. Seismic Analysis
Stop Event Report

Serial No: 7155 v3.23
Client: COUNTY OF MARIN
Operation: SAN RAFAEL ROCK QUARRY
Location: 16 MARIN BAY PARK CT.
Distance: VIBRA-TECH GSM
Operator: WILLIAM HOSKEN RESIDENC
Comment:

Begin Date: 04/01/2011 07:00:50 (UTC-7)
End Date: 04/01/2011 12:28:58 (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: 8.9

Shaketable Calibrated: 01/26/2011
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 7155) did not trigger during the blast on April 1, 2011 at approximately 11:51 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 9669) did not trigger during the shot on April 1, 2011 at approximately 11:51 indicating the ground vibrations produced were below the ground trigger level of 0.030 in/sec.