SAN RAFAEL ROCK QUARRY VIBRATION REPORT

Location: 78.7
Max Charge Weight: 210
Date of Blast: 10.14.11
Northing: 37°59'12" N
Time of Blast: 12:03
Eastling: 122°27'17" W
Blast Duration: 3.09 ms
Blast Number: 1560

<table>
<thead>
<tr>
<th>Seismograph Model</th>
<th>Micro</th>
<th>micro</th>
<th>micro</th>
<th>Micro</th>
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</thead>
<tbody>
<tr>
<td>Serial Number</td>
<td>2161</td>
<td>4560</td>
<td>4567</td>
<td>4570</td>
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<tr>
<td>Last Calibration Date</td>
<td>5/24/11</td>
<td>5/26/11</td>
<td>5/26/11</td>
<td>5/26/11</td>
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<table>
<thead>
<tr>
<th>Location</th>
<th>Marina Cay</th>
<th>Via Montebello</th>
<th>San Marino</th>
<th>Mt. Near Park</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northing</td>
<td>37°51'19&quot; N</td>
<td>37°59'12&quot; N</td>
<td>37°57'31&quot; N</td>
<td>37°51'30&quot; N</td>
</tr>
<tr>
<td>Eastling</td>
<td>122°27'22&quot; W</td>
<td>122°27'53&quot; W</td>
<td>122°27'30&quot; W</td>
<td>122°27'16&quot; W</td>
</tr>
<tr>
<td>Distance from Blast</td>
<td>29.8</td>
<td>29.56</td>
<td>28.20</td>
<td>18.48</td>
</tr>
<tr>
<td>Scaled Distance</td>
<td>61</td>
<td>208</td>
<td>156</td>
<td>127</td>
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<table>
<thead>
<tr>
<th>Longitudinal Peak Particle Velocity (ips)</th>
<th>.10</th>
<th>.06</th>
<th>.04</th>
</tr>
</thead>
<tbody>
<tr>
<td>Longitudinal Peak Frequency (Hz)</td>
<td>66.3</td>
<td>36.3</td>
<td>30.0</td>
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<tr>
<td>Transverse Peak Particle Velocity (ips)</td>
<td>.12</td>
<td>.07</td>
<td>.06</td>
</tr>
<tr>
<td>Transverse Peak Frequency (Hz)</td>
<td>20.8</td>
<td>6.6</td>
<td>17.8</td>
</tr>
<tr>
<td>Vertical Peak Particle Velocity (ips)</td>
<td>.13</td>
<td>.07</td>
<td>.06</td>
</tr>
<tr>
<td>Vertical Peak Frequency (Hz)</td>
<td>62.5</td>
<td>41.7</td>
<td>41.8</td>
</tr>
<tr>
<td>Peak Vector Sum (ips)</td>
<td>1.14</td>
<td>0</td>
<td>10.0</td>
</tr>
<tr>
<td>Peak Air Overpressure (db)</td>
<td>109</td>
<td>100</td>
<td>104</td>
</tr>
</tbody>
</table>

Seismograph Operator: [Signature]

Signature: [Signature]
**SAN RAFAEL ROCK QUARRY BLAST REPORT**

**BASE DATA:**
- Location: PB-7
- Designed Bench Height (ft): 40
- Date: 10/14/11
- Northing: 32°59'12" N
- Rock Density (lb/ft^3): 2.7
- Time: 12:03
- Easting: 122°37'17" W
- Relative Rock Hardness: 7
- Blast Number: #1560

**DESIGN DATA:**
- Number of Holes Shot: 15
- Hole Dia (in.): 6 1/4
- Stemming (ft): 15
- Loading Time Required (man hrs): 6
- Ave. Hole Depth (ft): 93
- Burden (ft): 15
- Stein Type: 5 1/8
- Staggered Pattern (y or n): Y
- Deck Type: 3 1/2" x 12.5"
- Relative Confinement: 12"
- Spacing (ft): 12"
- Subdrill (ft): 5
- Length (ft): 25
- Tons Shot: 11,150

**EXPLOSIVES DATA:**

<table>
<thead>
<tr>
<th>Bulk Explosive</th>
<th>Weight</th>
<th>Boosters</th>
<th>Units</th>
<th>Delays</th>
<th>Units</th>
<th>Misc.</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prima Nitro</td>
<td>1020</td>
<td>162.9</td>
<td>30</td>
<td>60 62</td>
<td>15</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Max (lb/hole): 400</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Blast Duration (sec): 309</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Total Charge Wt: 6050</td>
</tr>
</tbody>
</table>

**VIBRATION DATA:**
- Nearest Structure: Maria 0.5
- Seismograph Loc: Same
- Temperature: 88°F
- Max. Chrg. (lb/rms): 210
- Northing: 32°59'19" N
- Northing: 122°37'22" W
- Sky Condition: Clear
- RPPV: 14
- Easting: 32°59'12" W
- Easting: 122°37'17" W
- Wind Direction: W
- Frequency: 62.5
- Distance Away: 818

**PERFORMANCE DATA:**
- Powder Factor (lb/ion): 5
- Displacement: Great
- Crushability: 
- Lb/yard^3: 120
- Vibration: Great
- Fines: 
- Fragmentation: Great
- Dig ability: 
- Comments: Decked
- Airblast: 109
- Blaster in Charge: [Signature]
The seismograph at 114 San Marino Drive (S/N 9669) did not trigger during the shot on October 14, 2011 at approximately 12:00 indicating the ground vibrations produced were below the ground trigger level of 0.030 in/sec.
GeoSonics Inc. Seismic Analysis
Velocity Waveform Analysis

Serial No: 7155 v3.23
Date: 10/14/2011 12:00:28 (UTC-7)
Event No: 9
Record Time: 5.0 s
Client: COUNTY OF MARIN
Operation: SAN RAFAEL ROCK QUARRY
Location: 16 MARIN BAY PARK CT.
Distance: 
Operator: VIBRA-TECH GSM
Comment: WILLIAM HOSKEN RESIDENC
Seismic Trigger: 0.030 in/s

Summary Data

<table>
<thead>
<tr>
<th></th>
<th>L</th>
<th>T</th>
<th>V</th>
</tr>
</thead>
<tbody>
<tr>
<td>PPV (in/s)</td>
<td>0.030</td>
<td>0.028</td>
<td>0.048</td>
</tr>
<tr>
<td>FREQ (Hz)</td>
<td>35.7</td>
<td>41.7</td>
<td>45.5</td>
</tr>
<tr>
<td>PD (°01&quot;)</td>
<td>0.22</td>
<td>0.18</td>
<td>0.24</td>
</tr>
<tr>
<td>PPA (g)</td>
<td>0.020</td>
<td>0.026</td>
<td>0.033</td>
</tr>
<tr>
<td>Peak Vector Sum</td>
<td>0.050 in/s</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peak Air Pressure</td>
<td>102 db</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>0.00043 PSI @ 2.4 Hz</td>
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</tbody>
</table>

Additional Info:

j-GEO-01252
N37 59.524, W122 27.373

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

Velocity Waveform Graph Scale
Time Scale: 0.100 s
Seismic Scale: +/- 0.160 in/s
Sound Scale: +/- 0.0023 PSI

Printed: October 14, 2011  File: 65_7155_20111014_120028_4b6etzn.g3k (GeoSonics Inc. AnalysisNET v8.1.33)
GeoSonics Inc. Seismic Analysis
Velocity Waveform Analysis

Serial No: 9856 v3.23
Date: 10/14/2011 12:00:32 (UTC-7)
Event No: 8
Record Time: 5.0 s
Client: COUNTY MARIN
Operation: SAN RAFAEL ROCK QUARRY
Location: ON QUARRY PROPERTY
Distance: 
Operator: VIBRA-TECH GSM
Comment: 
Seismic Trigger: 0.030 in/s

Summary Data
<table>
<thead>
<tr>
<th></th>
<th>L</th>
<th>T</th>
<th>V</th>
</tr>
</thead>
<tbody>
<tr>
<td>PPV (in/s)</td>
<td>0.033</td>
<td>0.033</td>
<td>0.050</td>
</tr>
<tr>
<td>FREQ (Hz)</td>
<td>62.5</td>
<td>41.7</td>
<td>55.6</td>
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<tr>
<td>PD (.001&quot;)</td>
<td>0.28</td>
<td>0.20</td>
<td>0.30</td>
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<tr>
<td>PPA (g)</td>
<td>0.033</td>
<td>0.033</td>
<td>0.046</td>
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<tr>
<td>Peak Vector Sum</td>
<td>0.058 in/s</td>
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<td>Peak Air Pressure</td>
<td>107 db</td>
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<td>0.00071 PSI @ 8.2 Hz</td>
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Additional Info:
j-GEO-01253
N37 59.481, W122 27.256

Shaketable Calibrated: 01/27/2011
By: Vibra-Tech, Inc.
2700 Holloway Road - Suite 113
Louisville, KY 40299 U.S.A.
TEL: 502.240.9900 FAX: 502.240.9902

Velocity Waveform Graph Scale
Time Scale: 0.100 s
Seismic Scale: +/- 0.160 in/s
Sound Scale: +/- 0.0023 PSI

Printed: October 14, 2011   File: 65_9856_20111014_120032_4b6etzk.g3k (GeoSonics Inc. AnalysisNET v8.1.33)