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 OSM
Comment: WILLIAM HOSKEN RHIT
Seismic Trigger: 0.03 in/s
Sound Trigger: 75.9 DB

Additional Info:

<table>
<thead>
<tr>
<th>Summary Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>PPV (in/s):</td>
</tr>
<tr>
<td>L</td>
</tr>
<tr>
<td>0.04</td>
</tr>
<tr>
<td>FREQ (HZ):</td>
</tr>
<tr>
<td>27.8</td>
</tr>
<tr>
<td>PD (°):</td>
</tr>
<tr>
<td>0.345</td>
</tr>
<tr>
<td>PPA (g):</td>
</tr>
<tr>
<td>0.026/04</td>
</tr>
<tr>
<td>Peak Vector Sum:</td>
</tr>
<tr>
<td>0.0675 in/s</td>
</tr>
<tr>
<td>Peak Air Pressure:</td>
</tr>
<tr>
<td>105.5 DB</td>
</tr>
<tr>
<td>0.0000236 psi (at 3.8 HZ)</td>
</tr>
</tbody>
</table>

Shaketable Calibrated
On: 05/16/2012 (UTC -07:00)
By: Vibra-Tech, Inc.
2700 Holloway Road - Suite 113
Louisville, KY 40205 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: 8056 Event: 1

Printed: May 30, 2012 File: 0000094237_201205.0s (GeoSonic Inc. PDGEnator v 1.0)
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-GHO-01253
N37 59.461, W122 37.256

Summary Data

PPV (in/s):
L 0.055 0.0375 0.0675
T 0.4175 0.355 0.5075
V 0.05298 0.03255 0.0653

Peak Vector Sum:
0.0275 in/s
Peak Air Pressure:
111.3 DB

Shakeable 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: VIBRONIQUE RASKIN*
Seismic Trigger: 0.05 in/s
Sound Trigger: 75.9 DB
Additional Info: *RESIDENCE
j-GeO-01254
N37 50.395, W122 27.700

Summary Data

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<thead>
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<th></th>
<th>L</th>
<th>T</th>
<th>V</th>
</tr>
</thead>
<tbody>
<tr>
<td>PPV (in/s):</td>
<td>0.0225</td>
<td>0.0275</td>
<td>0.04</td>
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<tr>
<td>FREQ (HZ):</td>
<td>2k3</td>
<td>31.3</td>
<td>41.7</td>
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<td>PD (001°):</td>
<td>0.195</td>
<td>0.2275</td>
<td>0.2775</td>
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<tr>
<td>PFA (g):</td>
<td>0.01953</td>
<td>0.01953</td>
<td>0.02604</td>
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Peak Vector Sum: 0.0425 in/s
Peak Air Pressure: 104.3 DB
0.0005525 psi @ 1.3 HZ

Seismically Calibrated
On: 05/11/2012 (UTC -07:00)
By: Vibra-Tech, Inc.
2700 Hollway 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

Printed: May 30, 2012 File: 000094260_201205.g3k (GeoSonics Inc. PDFGenerator v 1.0)
<table>
<thead>
<tr>
<th>Date of Blast</th>
<th>Time of Blast</th>
<th>Blast Number</th>
<th>Max. Charge Weight</th>
<th>Blast Duration</th>
<th>Seismograph Model</th>
<th>Serial Number</th>
<th>Last Calibration Date</th>
<th>Distance from Blast</th>
<th>Scaled Distance</th>
<th>Longitudinal Peak Particle Velocity (fps)</th>
<th>Transverse Peak Particle Velocity (fps)</th>
<th>Vertical Peak Particle Velocity (fps)</th>
<th>Peak Vector Sum (ips)</th>
<th>Peak Air Overpressure (db)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5/30/72</td>
<td>11:31</td>
<td>1577</td>
<td>500</td>
<td>348</td>
<td>2198</td>
<td>3790</td>
<td>3/2/72</td>
<td>105.6</td>
<td>47</td>
<td>10.18</td>
<td>19.2</td>
<td>0.8</td>
<td>0.33</td>
<td>33.2</td>
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<td></td>
</tr>
</tbody>
</table>
### SAN RAFAEL ROCK QUARRY BLAST REPORT

**BASE DATA:**
- Location: [Redacted]
- Designed Bore Height (ft): 45
- Date: 5 30 12
- Northing: 37° 54' 10" N
- Rock Density (t/yd³): 2.23
- Time: 11.31
- Easting: 122° 27' 14" W
- Relative Rock Hardness: 7
- Blast Number: 1577

**DESIGN DATA:**
- Number of Holes Shot: 19
- Hole Dia (in): [Redacted]
- Stemming (ft): 19
- Loading Time Required (man hrs): 6
- Avc. Hole Depth (ft): 47
- Burden (ft): 15
- Stem Type: [Redacted]
- Staggered Pattern (y or n): N
- Deck Type: [Redacted]
- Length (ft): [Redacted]
- Relative Confinement: [Redacted]
- Spacing (ft): 15
- Subdrill (ft): [Redacted]
- Number of Lost Holes: 0
- Test Spec: [Redacted]

**EXPLOSIVES DATA:**
<table>
<thead>
<tr>
<th>Bulk Explosive</th>
<th>Weight</th>
<th>Booster</th>
<th>Units</th>
<th>Delays</th>
<th>Units</th>
<th>Misc.</th>
<th>Units</th>
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</thead>
<tbody>
<tr>
<td>Titan, 10 lbs.</td>
<td>2,790</td>
<td>450 com.</td>
<td>2R</td>
<td>9062</td>
<td>19</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5062</td>
<td>19</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>42 ms</td>
<td>7</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**VIBRATION DATA:**
- Nearest Structure: [Redacted]
- Seismograph Loc: Same
- Temperature: 78°
- Max. Chr. (lb/6ms): 500
- Northing: 37° 54' 19" N
- Sky Condition: Clear
- RPPV: .33
- Easting: 122° 27' 22" W
- Wind Direction: East
- Frequency: 37.3
- Distance Away: 1,056
- Wind Speed: 0.3
- Airblast: 18

**PERFORMANCE DATA:**
- Powder Factor (lb/ton): .5
- Displacement: Great
- Crushability: [Redacted]
- Lb/yd³: 1.3
- Vibration: Great