SAN RAFAEL ROCK QUARRY VIBRATION REPORT

Location: South Hill E1.75'  Max. Charge Weight: 310/420  Date of Blast: 4.21.11
Northing: 37°59'01" N  Blast Duration: 436 ms
Easting: 122°27'23" W  Time of Blast: 12:21

Blast Number: 1548

<table>
<thead>
<tr>
<th>SEISMOGRAPH INFORMATION</th>
<th>UNIT #1</th>
<th>UNIT #2</th>
<th>UNIT #3</th>
<th>UNIT #4</th>
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<tbody>
<tr>
<td>Seismograph Model</td>
<td>2000</td>
<td>Micro</td>
<td>Micro</td>
<td>Micro</td>
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<tr>
<td>Serial Number</td>
<td>2481</td>
<td>4650</td>
<td>4567</td>
<td>4570</td>
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<tr>
<td>Last Calibration Date</td>
<td>5/10/10</td>
<td>5/17/10</td>
<td>5/17/10</td>
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<tr>
<th>LOCATION INFORMATION</th>
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<tbody>
<tr>
<td>Location</td>
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<tr>
<td>Northing</td>
</tr>
<tr>
<td>Easting</td>
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<tr>
<td>Distance from Blast</td>
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<tr>
<td>Scaled Distance</td>
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<thead>
<tr>
<th>VIBRATION INFORMATION</th>
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<tbody>
<tr>
<td>Longitudinal Peak Particle Velocity (ips)</td>
</tr>
<tr>
<td>Longitudinal Peak Frequency (Hz)</td>
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<tr>
<td>Transverse Peak Particle Velocity (ips)</td>
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<tr>
<td>Transverse Peak Frequency (Hz)</td>
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<tr>
<td>Vertical Peak Particle Velocity (ips)</td>
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<tr>
<td>Vertical Peak Frequency (Hz)</td>
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<tr>
<td>Peak Vector Sum (ips)</td>
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<tr>
<td>Peak Air Overpressure (db)</td>
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GENERAL COMMENTS:
Nothing triggered.

Seismograph Operator: DeRon Lopes  Signature: [Signature]


SAN RAFAEL ROCK QUARRY BLAST REPORT

**BASE DATA:**
- Location: **South Hill E,75°**
- Northing: **37°59'01"N**
- Easting: **12°27'23"W**
- Designed Bench Height (ft): **25**
- Rock Density (lb/ft³): **2.7**
- Date: **4.21.11**
- Time: **12:21**
- Relative Rock Hardness: **7**
- Blast Number: **15418**

**DESIGN DATA:**
- Number of Holes Shot: **45**
- Hole Dia. (in.): **3/4**
- Stemming (ft): **14**
- Loading Time Required (man hrs): **6**
- Deck Type: **—**
- Ave. Hole Depth (ft): **2.5**
- Burden (ft): **14**
- Stem Type: **3/4" Stone**
- Staggered Pattern (y or n): **N**
- Length (ft): **—**
- Relative Confinement: **—**
- Spacing (ft): **14**
- Subdrill (ft): **4**
- Number of Lost Holes: **0**
- Tons Shot: **22,050**

**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>
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<tbody>
<tr>
<td>Titan 1000</td>
<td>9400</td>
<td>450gram</td>
<td>90</td>
<td>50sec</td>
<td>300</td>
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|                |        |          |       |        |       |       |       | Max (lb/ton): **2,10**
|                |        |          |       |        |       |       |       | Blast Duration (sec): **436.0**

**VIBRATION DATA:**
- Nearest Structure: **Man in y**
- Seismograph Loc.: **Same**
- Temperature: **63°**
- Max. Chrg. (lb/8ms): **420**
- Northing: **37°59'19"N**
- Northing: **—**
- Sky Condition: **Clear**
- RPPV: **0**
- Easting: **12°27'23"W**
- Easting: **—**
- Wind Direction: **E**
- Frequency: **—**
- Distance Away: **1795**
- Distance Away: **—**
- Wind Speed: **1-3 mph**
- Airblast: **—**

**PERFORMANCE DATA:**
- Powder Factor (lb/ton): **4**
- Displacement: **Great**
- Crushability: **—**
- Lb/yrdf³: **1.16**
- Vibration: **Great**
- Fines: **—**
- Fragmentation: **Great**
- Digability: **—**
- Comments: **—**
- Blaster in Charge: **—**
| Site No. | Load Load
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**Face Ht. 25 ft.**

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**45 Holes**

- 45: 50 micron jet
- 45: 30 micron jet
- 90: 480 gram

**9,400 lbs. Titan**

**Depth, 29 ft.**

- 19 Stereins
- Max 210 lbs. per hole
- 420 per delay

**Main 1795**

**Vic. M 694**

**Sum M 3115**

**M' N 29.04**

**37° 57' 01" N**

**122° 37' 23" W**
The seismograph located across the street from 16 Marin Bay Park Court (S/N 7155) did not trigger during the blast on April 21, 2011 at approximately 12:21 indicating the ground vibrations produced were below the ground trigger level of 0.030 in/sec.
The seismograph on Quarry Property (S/N 9856) did not trigger during the shot on April 21, 2011 at approximately 12:21 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 21, 2011 at approximately 12:21 indicating the ground vibrations produced were below the ground trigger level of 0.030 in/sec.