**SAN RAFAEL ROCK QUARRY VIBRATION REPORT**

**Location:** South Hill  
**Max. Charge Weight:** 240  
**Date of Blast:** 6-5-12

**North:** 37°54'19"N  
**Blast Duration:** 599 ms  
**Time of Blast:** 11:32

**East:** 12°27'22"W  
**Blast Number:** #1578

<table>
<thead>
<tr>
<th>Seismograph Model</th>
<th>micro</th>
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<tr>
<td>Serial Number</td>
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<td>4570</td>
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<td>Last Calibration Date</td>
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<td>5-17-12</td>
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<table>
<thead>
<tr>
<th>Location</th>
<th>Marin Cag</th>
<th>Via Montebello</th>
<th>San Marino</th>
<th>9 Miles Park</th>
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<tbody>
<tr>
<td>North</td>
<td>37°54'19&quot;N</td>
<td>37°54'18&quot;N</td>
<td>37°54'31&quot;N</td>
<td>37°54'30&quot;N</td>
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<tr>
<td>East</td>
<td>12°27'22&quot;W</td>
<td>12°27'53&quot;W</td>
<td>12°27'30&quot;W</td>
<td>12°27'16&quot;W</td>
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<tr>
<td>Distance from Blast</td>
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<td>3003</td>
<td>3062</td>
<td>2851</td>
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<td>Scaled Distance</td>
<td>112</td>
<td>194</td>
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<td>184</td>
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</table>

| Longitudinal Peak Particle Velocity (ips) |  
| Longitudinal Peak Frequency (Hz) |  
| Transverse Peak Particle Velocity (ips) |  
| Transverse Peak Frequency (Hz) |  
| Vertical Peak Particle Velocity (ips) |  
| Vertical Peak Frequency (Hz) |  
| Peak Vector Sum (ips) |  
| Peak Air Overpressure (db) |  |

Seismographs back from calibration. Nothing triggered.

Seismograph Operator: [Signature]

Seismograph: [Signature]
## SAN RAFAEL ROCK QUARRY BLAST REPORT

### BASE DATA:
- **Location:** South Hill
- **Designed Bench Height (ft):** 26
- **Date:** 6.5.12
- **Northing:** 39°50'02" N
- **Rock Density (yd³/ft³):** 2.23
- **Time:** 11:32
- **Easting:** 122°27'41" W
- **Relative Rock Hardness:** 2
- **Blast Number:** 1578

### DESIGN DATA:
- **Number of Holes Shot:** 26
- **Hole Dia. (in.):** 6.75
- **Steaming (ft):** 15
- **Loading Time Required (min hrs):** 6
- **Deck Type:** 
- **Ave. Hole Depth (ft):** 29
- **Burden (ft):** 14
- **Cement Type:** 3/4" stone
- **Staggered Pattern (y or n):** N
- **Length (ft):** 
- **Relative Confinement:** 
- **Spacing (ft):** 14
- **Subdrill (ft):** 3
- **Number of Lost Holes:** 0
- **Tons Shot:** 15152

### EXPLOSIVES DATA:
- **Bulk Explosive**
  - **Weight:**
  - **Booster:**
  - **Units:**
  - **Delays:**
  - **Units:**
  - **Misc.:**
  - **Units:**
  - **Max (lb/hole):** 240
  - **Blast Duration (sec):** 5.9 ms
  - **Total Charge Wt.:** 809.2

### VIBRATION DATA:
- **Nearest Structure:** 
- **Seismograph loc.:** Same
- **Temperature:** 72°
- **Max Chrg. (lb/8ms):** 240
- **Northing:** 39°50'02" N
- **Sky Condition:** CK
- **RPPV:** 8
- **Easting:** 122°27'41" W
- **Wind Direction:** SE
- **Frequency:** 8
- **Distance Away:** 1747
- **Wind Speed:** 40 mph
- **Airblast:** 

### PERFORMANCE DATA:
- **Powder Factor (lb/ton):** 0.5
- **Displacement:** Great
- **Crushability:** 
- **Vibration:** Fresh
- **Fines:** 
- **Fragmentation:** Great
- **Digability:** 
- **Blaster in Charge:**

**Comments:** NO Trigger
6.5.12
South Hill
+1578

36 holes
36: 80 62 deh
36: 50 62 deh
10: 42 E3 TL
1:117.5 E2 TL
72: 450 gram

Depth: 39
15 stemming
240 ft. max

Major: 1742
Yield: 3009
Sanding: 3062
unit: 28.51

30° 59' 02" N
122° 27' 21" W
The seismograph on Quarry Property (S/N 8030) did not trigger during the shot on June 5, 2012 at approximately 11:32 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 5, 2012 at approximately 11:32 indicating the ground vibrations produced were below the ground trigger level of 0.030 in/sec.
The seismograph located across the street from 16 Marin Bay Park Court (S/N 8056) did not trigger during the blast on June 5, 2012 at approximately 11:32 indicating the ground vibrations produced were below the ground trigger level of 0.030 in/sec.