

Vibra-Tech Engineers, Inc. Seismic Analysis

Stop Event Report

Serial No: 11673 v10.27
Client: COUNTY OF MARIN
Operation: SAN RAFAEL ROCK QUARRY
Location: ON QUARRY PROPERTY
Distance:
Operator: VIBRA-TECH IP2
Comment:

Begin Date: 04/08/2021 06:04:06 (UTC-7)
End Date: 04/08/2021 11:54:11 (UTC-7)
Events over Trigger: 0 (0--1)
Record Time: 5.0 s
Seismic Trigger: 0.030 in/s
Sound Trigger: 127 db
Battery Level: 8.2

Additional Info:
VIRTUAL CHECK
j-GEO-01253
N37 59.481, W122 27.256

Shaketable Calibrated: 09/11/2020
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 on Quarry Property (S/N 11673) did not trigger during the shot on April 8, 2021 at approximately 11:38 indicating the ground vibrations produced were below the ground trigger level of 0.030 in/sec.

Vibra-Tech Engineers, Inc. Seismic Analysis

Stop Event Report

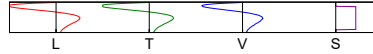
Serial No: 12044 v10.27
Client: COUNTY OF MARIN
Operation: SAN RAFAEL ROCK QUARRY
Location: 16 MARIN BAY PARK CT.
Distance:
Operator: VIBRA-TECH IP2
Comment: WILLIAM HOSKEN RES.

Begin Date: 04/08/2021 07:04:06 (UTC-7)
End Date: 04/08/2021 11:57:11 (UTC-7)
Events over Trigger: 0 (0--1)
Record Time: 5.0 s
Seismic Trigger: 0.030 in/s
Sound Trigger: 127 db
Battery Level: 8.7

Additional Info:
VIRTUAL CHECK
j-GEO-34724
N37 59.524, W122 27.373

Shaketable Calibrated: 10/30/2020
By: GeoSonics Inc.
359 Northgate Drive
Warrendale, PA 15086 U.S.A.
TEL: 724.934.2900 FAX: 724.934.2999

Dynamic Calibration Graph:



Cal Test Results:

Longitudinal: Pass
Transverse: Pass
Vertical: Pass
Sound: Pass

The seismograph located at 16 Marin Bay Park Court (S/N 12044) did not trigger during the shot on April 8, 2021 at approximately 11:38 indicating the ground vibrations produced were below the ground trigger level of 0.030 in/sec.

Seismic Analysis

Velocity Waveform Analysis

Serial Number: 11673
Firmware Version: 0C-10.27
Event Date: 04/15/2021 11:32:29 (UTC -07:00)
Event number: 6
Recording Time: 5 s
Client: COUNTY OF MARIN
Operation: SAN RAFAEL ROCK QUARRY
Location: ON QUARRY PROPERTY
Distance:
Operator: VIBRA-TECH IP2
Comment:
Seismic Trigger: 0.03 in/s
Sound Trigger: 127 dB

Additional Info:

j-GEO-01253
 N37 59.481, W122 27.256

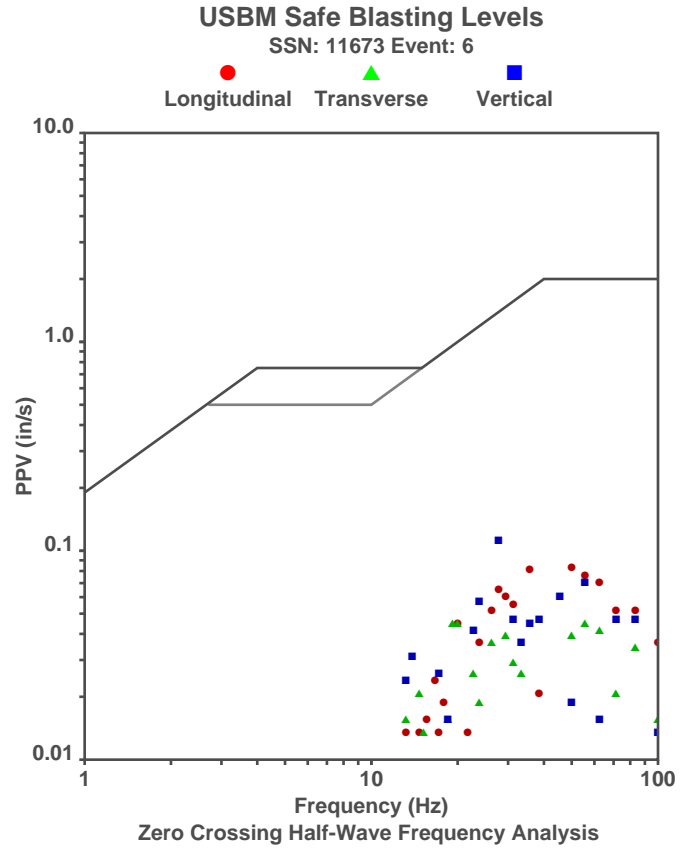
Summary Data

	L	T	V
PPV (in/s):	0.08	0.043	0.108
FREQ (HZ):	50	50	27.8
PD (.001'')	0.36	0.56	0.44
PPA (g):	0.078	0.046	0.098

Peak Vector Sum: 0.13 in/s
Peak Air Pressure: 111 dB
 0.001 psi @ 6.7 HZ

Shaketable Calibrated

On: 09/11/2020 (UTC -07:00)
By: Vibra-Tech, Inc.
 2700 Holloway Road - Suite 113
 Louisville, KY 40203 U.S.A.

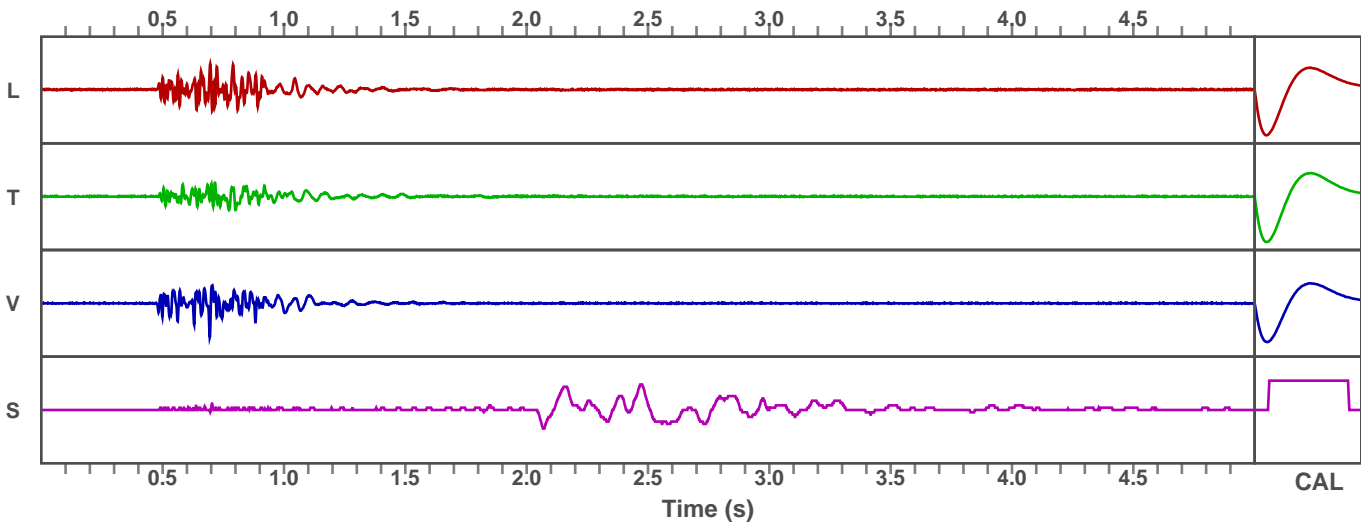


Waveform Graph Scale

Time Scale: 0.1 s
Seismic Scale: +/- 0.1605 in/s
Sound Scale: +/- 0.0023 psi

Velocity Waveform

SSN: 11673 Event: 6



Seismic Analysis

Velocity Waveform Analysis

Serial Number: 12044
Firmware Version: 0C-10.27
Event Date: 04/15/2021 11:32:28 (UTC -07:00)
Event number: 2
Recording Time: 5 s
Client: COUNTY OF MARIN
Operation: SAN RAFAEL ROCK QUARRY
Location: 16 MARIN BAY PARK CT.
Distance:
Operator: VIBRA-TECH IP2
Comment: WILLIAM HOSKEN RES.
Seismic Trigger: 0.03 in/s
Sound Trigger: 127 dB

Additional Info:

j-GEO-34724
 N37 59.524, W122 27.373

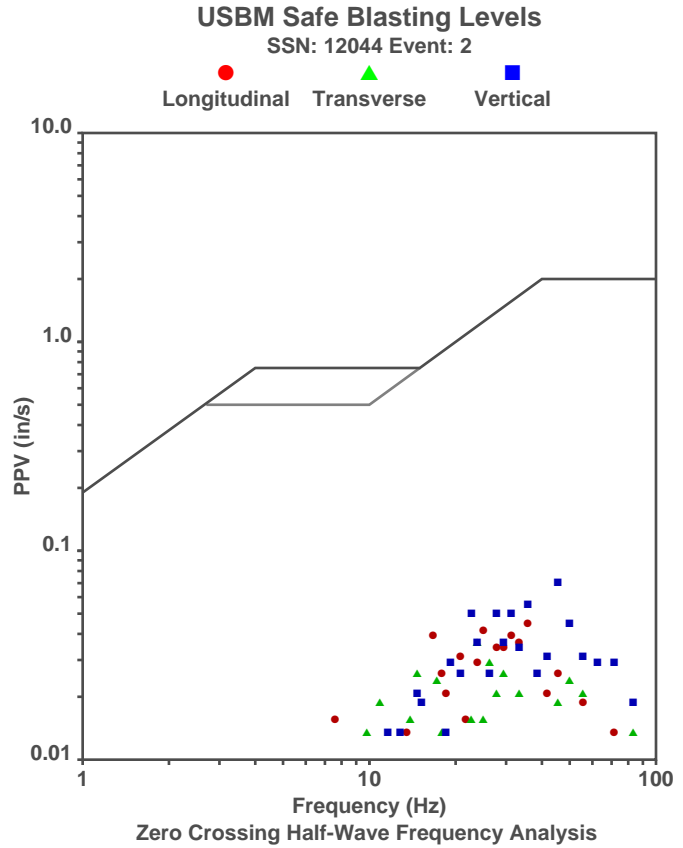
Summary Data

	L	T	V
PPV (in/s):	0.043	0.035	0.068
FREQ (HZ):	35.7	23.8	45.5
PD (.001'')	0.3	0.45	0.34
PPA (g):	0.026	0.033	0.059

Peak Vector Sum: 0.073 in/s
Peak Air Pressure: 108 dB
 0.0007 psi @ 4.7 HZ

Shaketable Calibrated

On: 10/30/2020 (UTC -07:00)
By: GeoSonics, Inc.
 359 Northgate Drive
 Warrendale, PA 15086 U.S.A.

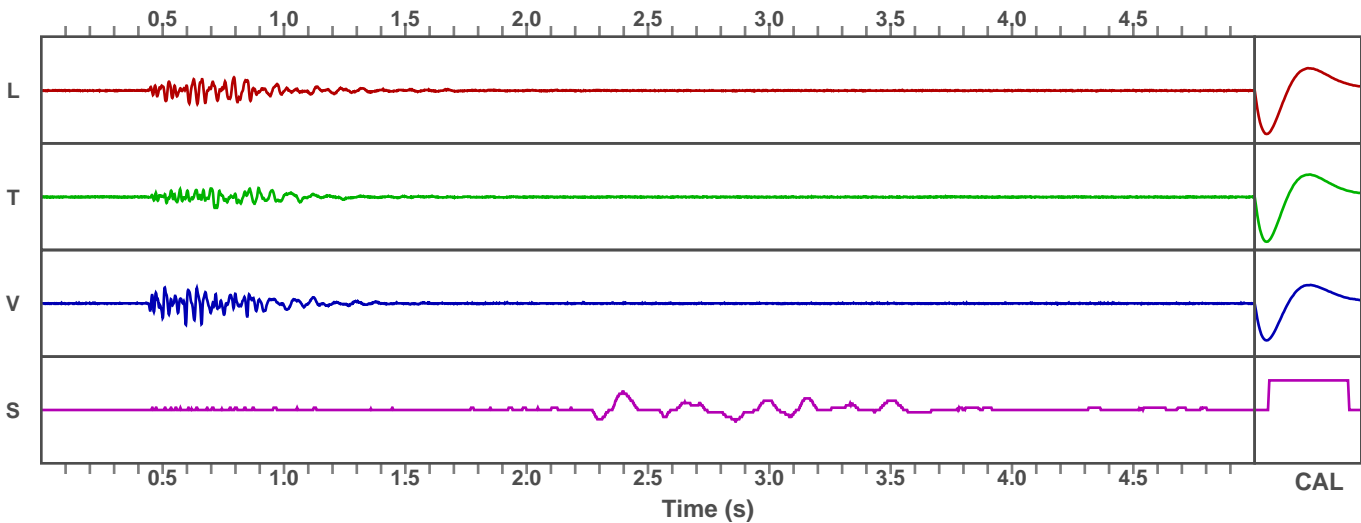


Waveform Graph Scale

Time Scale: 0.1 s
Seismic Scale: +/- 0.16 in/s
Sound Scale: +/- 0.0023 psi

Velocity Waveform

SSN: 12044 Event: 2



Seismic Analysis

Velocity Waveform Analysis

Serial Number: 11673
Firmware Version: 0C-10.27
Event Date: 04/29/2021 11:30:45 (UTC -07:00)
Event number: 7
Recording Time: 5 s
Client: COUNTY OF MARIN
Operation: SAN RAFAEL ROCK QUARRY
Location: ON QUARRY PROPERTY
Distance:
Operator: VIBRA-TECH IP2
Comment:
Seismic Trigger: 0.03 in/s
Sound Trigger: 127 dB

Additional Info:

j-GEO-01253
 N37 59.481, W122 27.256

Summary Data

	L	T	V
PPV (in/s):	0.035	0.03	0.043
FREQ (HZ):	62.5	20	41.7
PD (.001"):	0.28	0.34	0.24
PPA (g):	0.033	0.026	0.033

Peak Vector Sum: 0.055 in/s
Peak Air Pressure: 103 dB
 0.0004 psi @ 5.6 HZ

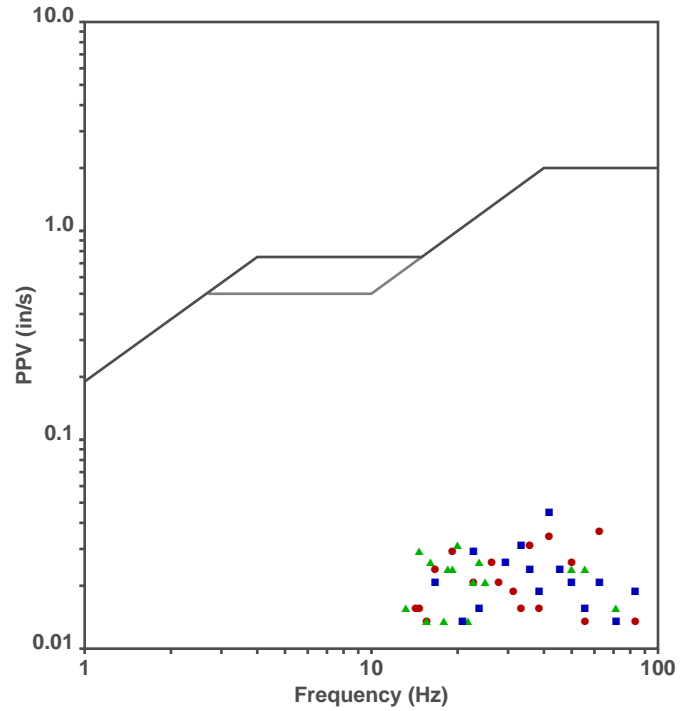
Shaketable Calibrated

On: 09/11/2020 (UTC -07:00)
By: Vibra-Tech, Inc.
 2700 Holloway Road - Suite 113
 Louisville, KY 40203 U.S.A.

USBM Safe Blasting Levels

SSN: 11673 Event: 7

● Longitudinal ▲ Transverse ■ Vertical



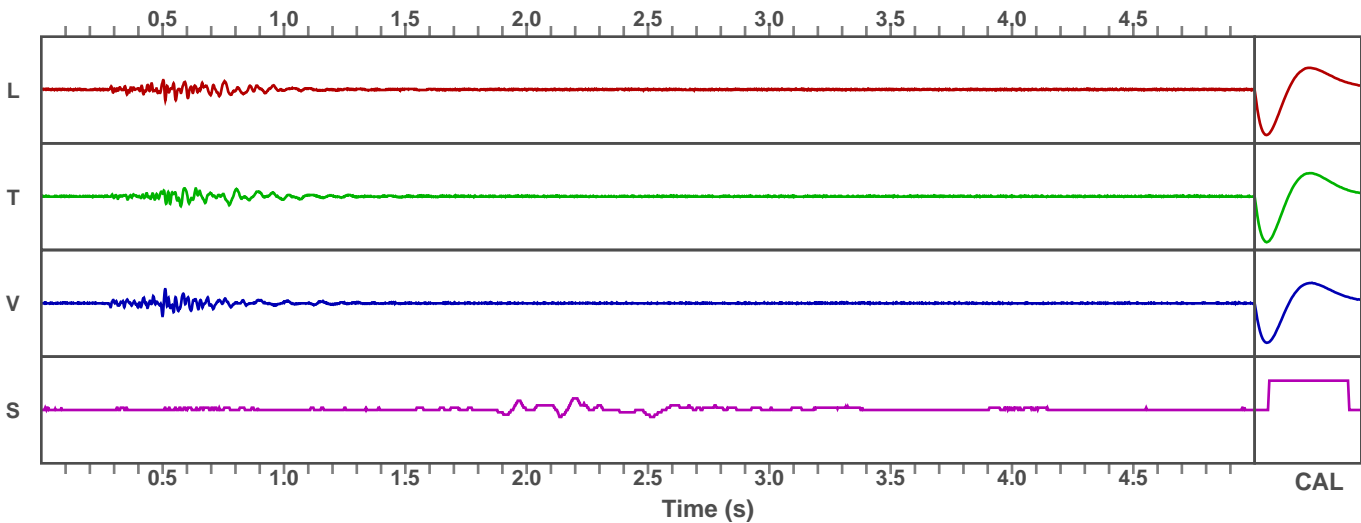
Zero Crossing Half-Wave Frequency Analysis

Waveform Graph Scale

Time Scale: 0.1 s
Seismic Scale: +/- 0.16 in/s
Sound Scale: +/- 0.0023 psi

Velocity Waveform

SSN: 11673 Event: 7



Seismic Analysis

Velocity Waveform Analysis

Serial Number: 12044
Firmware Version: 0C-10.27
Event Date: 04/29/2021 11:30:45 (UTC -07:00)
Event number: 3
Recording Time: 5 s
Client: COUNTY OF MARIN
Operation: SAN RAFAEL ROCK QUARRY
Location: 16 MARIN BAY PARK CT.
Distance:
Operator: VIBRA-TECH IP2
Comment: WILLIAM HOSKEN RES.
Seismic Trigger: 0.03 in/s
Sound Trigger: 127 dB

Additional Info:

j-GEO-34724
 N37 59.524, W122 27.373

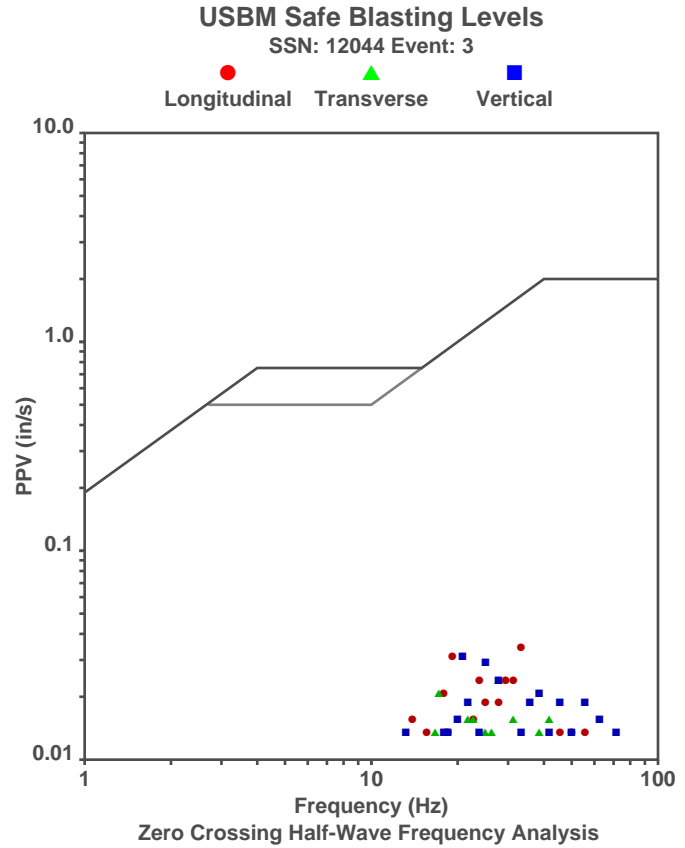
Summary Data

	L	T	V
PPV (in/s):	0.033	0.023	0.03
FREQ (HZ):	33.3	27.8	20
PD (.001"):	0.27	0.2	0.18
PPA (g):	0.02	0.02	0.026

Peak Vector Sum: 0.04 in/s
Peak Air Pressure: 98 dB
 0.0002 psi @ 5.4 HZ

Shaketable Calibrated

On: 10/30/2020 (UTC -07:00)
By: GeoSonics, Inc.
 359 Northgate Drive
 Warrendale, PA 15086 U.S.A.

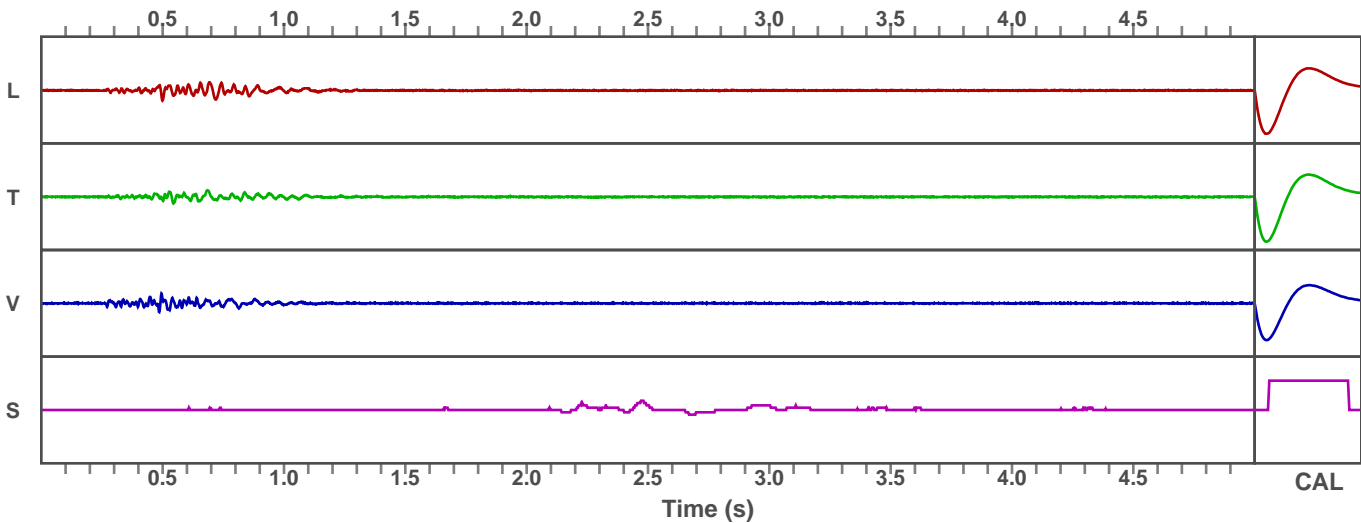


Waveform Graph Scale

Time Scale: 0.1 s
Seismic Scale: +/- 0.16 in/s
Sound Scale: +/- 0.0023 psi

Velocity Waveform

SSN: 12044 Event: 3



Seismic Analysis

Velocity Waveform Analysis

Serial Number: 11673
Firmware Version: 0C-10.27
Event Date: 05/05/2021 11:31:12 (UTC -07:00)
Event number: 8
Recording Time: 5 s
Client: COUNTY OF MARIN
Operation: SAN RAFAEL ROCK QUARRY
Location: ON QUARRY PROPERTY
Distance:
Operator: VIBRA-TECH IP2
Comment:
Seismic Trigger: 0.03 in/s
Sound Trigger: 127 dB

Additional Info:

j-GEO-01253
N37 59.481, W122 27.256

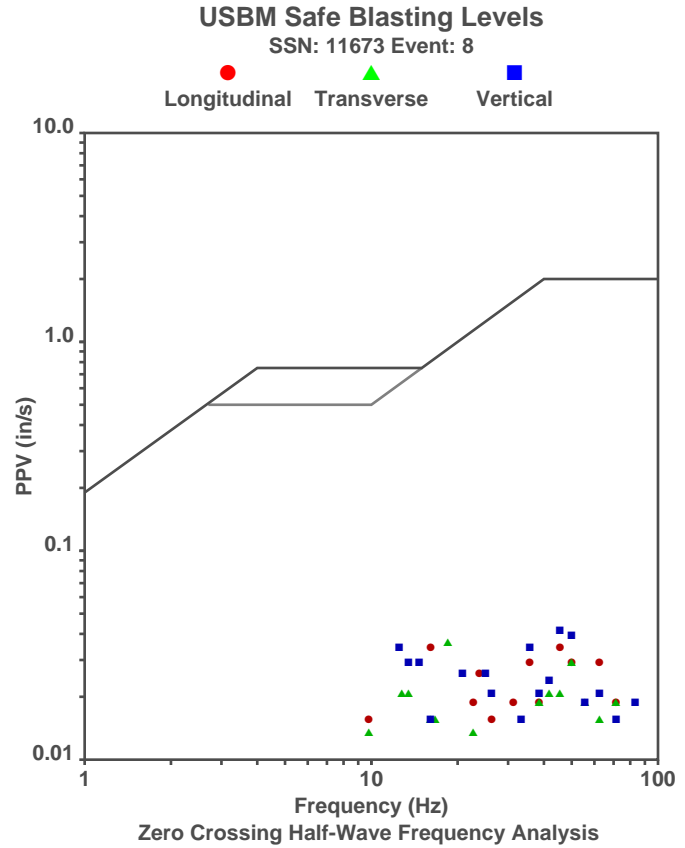
Summary Data

	L	T	V
PPV (in/s):	0.033	0.035	0.04
FREQ (HZ):	41.7	18.5	41.7
PD (.001'')	0.3	0.26	0.31
PPA (g):	0.033	0.02	0.033

Peak Vector Sum: 0.048 in/s
Peak Air Pressure: 109 dB
 0.0008 psi @ 3.7 HZ

Shaketable Calibrated

On: 09/11/2020 (UTC -07:00)
By: Vibra-Tech, Inc.
 2700 Holloway Road - Suite 113
 Louisville, KY 40203 U.S.A.

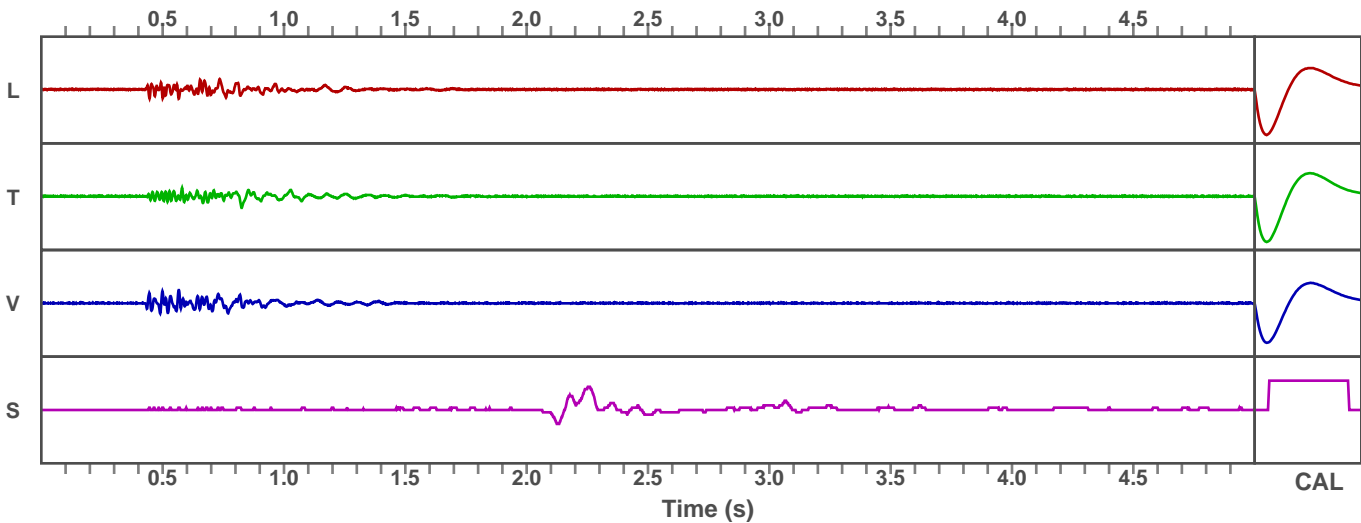


Waveform Graph Scale

Time Scale: 0.1 s
Seismic Scale: +/- 0.16 in/s
Sound Scale: +/- 0.0023 psi

Velocity Waveform

SSN: 11673 Event: 8



Vibra-Tech Engineers, Inc. Seismic Analysis

Stop Event Report

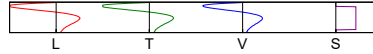
Serial No: 12044 v10.27
Client: COUNTY OF MARIN
Operation: SAN RAFAEL ROCK QUARRY
Location: 16 MARIN BAY PARK CT.
Distance:
Operator: VIBRA-TECH IP2
Comment: WILLIAM HOSKEN RES.

Begin Date: 05/05/2021 07:04:07 (UTC-7)
End Date: 05/05/2021 11:57:15 (UTC-7)
Events over Trigger: 0 (0--1)
Record Time: 5.0 s
Seismic Trigger: 0.030 in/s
Sound Trigger: 127 db
Battery Level: 8.8

Additional Info:
VIRTUAL CHECK
j-GEO-34724
N37 59.524, W122 27.373

Shaketable Calibrated: 10/30/2020
By: GeoSonics Inc.
359 Northgate Drive
Warrendale, PA 15086 U.S.A.
TEL: 724.934.2900 FAX: 724.934.2999

Dynamic Calibration Graph:



Cal Test Results:

Longitudinal: Pass
Transverse: Pass
Vertical: Pass
Sound: Pass

The seismograph located at 16 Marin Bay Park Court (S/N 12044) did not trigger during the shot on May 5, 2021 at approximately 11:31 indicating the ground vibrations produced were below the ground trigger level of 0.030 in/sec.

Seismic Analysis

Velocity Waveform Analysis

Serial Number: 11744
Firmware Version: 0C-10.27
Event Date: 09/17/2021 11:52:17 (UTC -07:00)
Event number: 2
Recording Time: 5 s
Client: COUNTY OF MARIN
Operation: SAN RAFAEL ROCK QUARRY
Location: ON QUARRY PROPERTY
Distance:
Operator: VIBRA-TECH IP2
Comment:
Seismic Trigger: 0.03 in/s
Sound Trigger: 127 dB

Additional Info:

j-GEO-01253
 N37 59.481, W122 27.256

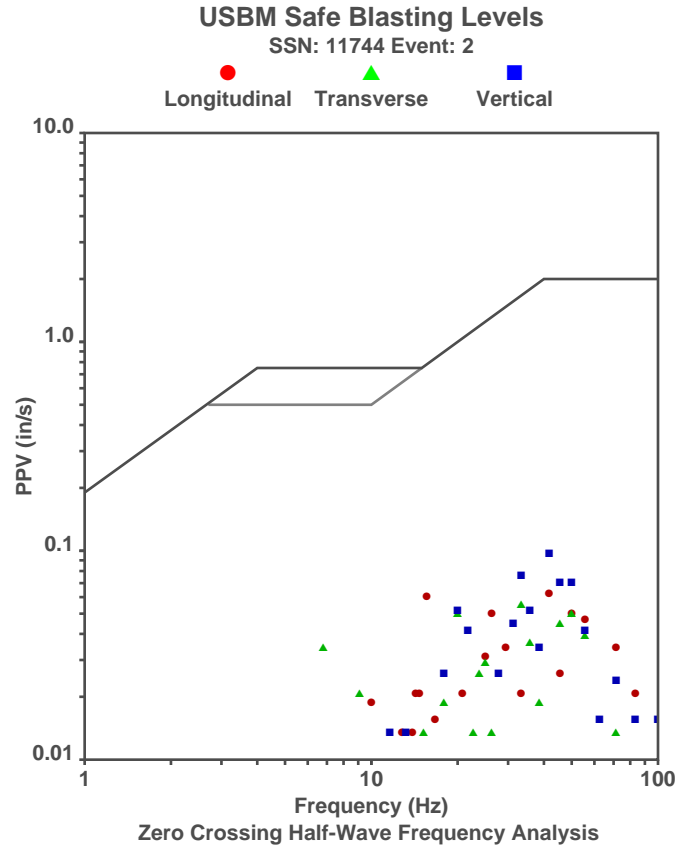
Summary Data

	L	T	V
PPV (in/s):	0.06	0.053	0.093
FREQ (HZ):	41.7	33.3	41.7
PD (.001'')	0.47	0.38	0.45
PPA (g):	0.052	0.039	0.065

Peak Vector Sum: 0.11 in/s
Peak Air Pressure: 116 dB
 0.0018 psi @ 9.1 HZ

Shaketable Calibrated

On: 08/23/2021 (UTC -07:00)
By: Vibra-Tech, Inc.
 2700 Holloway Road - Suite 113
 Louisville, KY 40203 U.S.A.

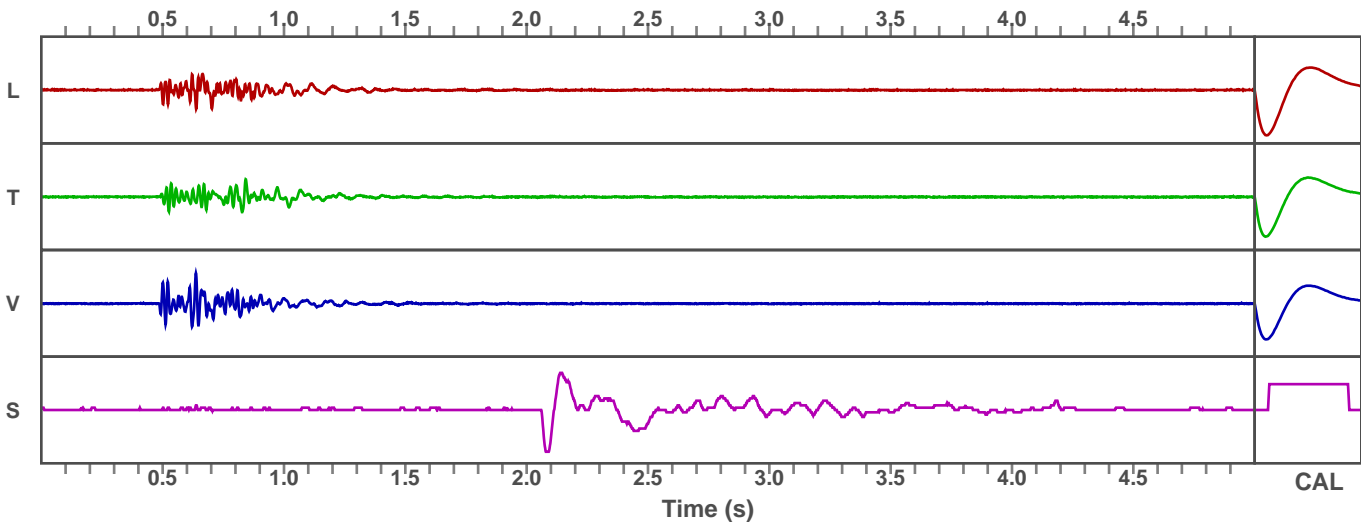


Waveform Graph Scale

Time Scale: 0.1 s
Seismic Scale: +/- 0.16 in/s
Sound Scale: +/- 0.0023 psi

Velocity Waveform

SSN: 11744 Event: 2



Seismic Analysis

Velocity Waveform Analysis

Serial Number: 12006
Firmware Version: 0C-10.27
Event Date: 09/17/2021 11:52:17 (UTC -07:00)
Event number: 2
Recording Time: 5 s
Client: COUNTY OF MARIN
Operation: SAN RAFAEL ROCK QUARRY
Location: 16 MARIN BAY PARK CT.
Distance:
Operator: VIBRA-TECH IP2
Comment: WILLIAM HOSKEN RES.
Seismic Trigger: 0.03 in/s
Sound Trigger: 127 dB

Additional Info:

j-GEO-34724
 N37 59.524, W122 27.373

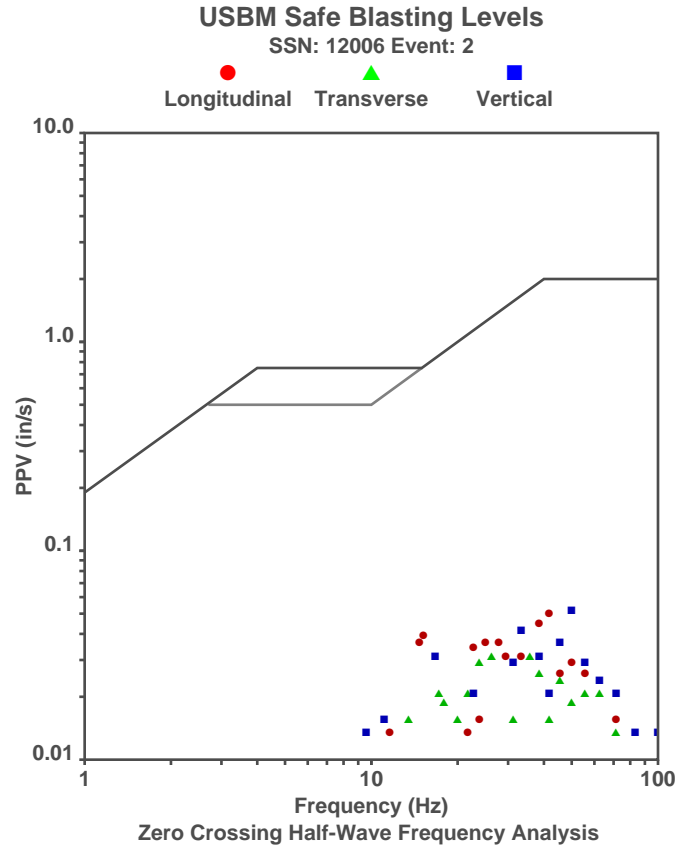
Summary Data

	L	T	V
PPV (in/s):	0.048	0.03	0.05
FREQ (HZ):	35.7	35.7	45.5
PD (.001'')	0.35	0.27	0.31
PPA (g):	0.033	0.026	0.039

Peak Vector Sum: 0.06 in/s
Peak Air Pressure: 115 dB
 0.0016 psi @ 6.7 HZ

Shaketable Calibrated

On: 08/23/2021 (UTC -07:00)
By: Vibra-Tech, Inc.
 2700 Holloway Road - Suite 113
 Louisville, KY 40203 U.S.A.

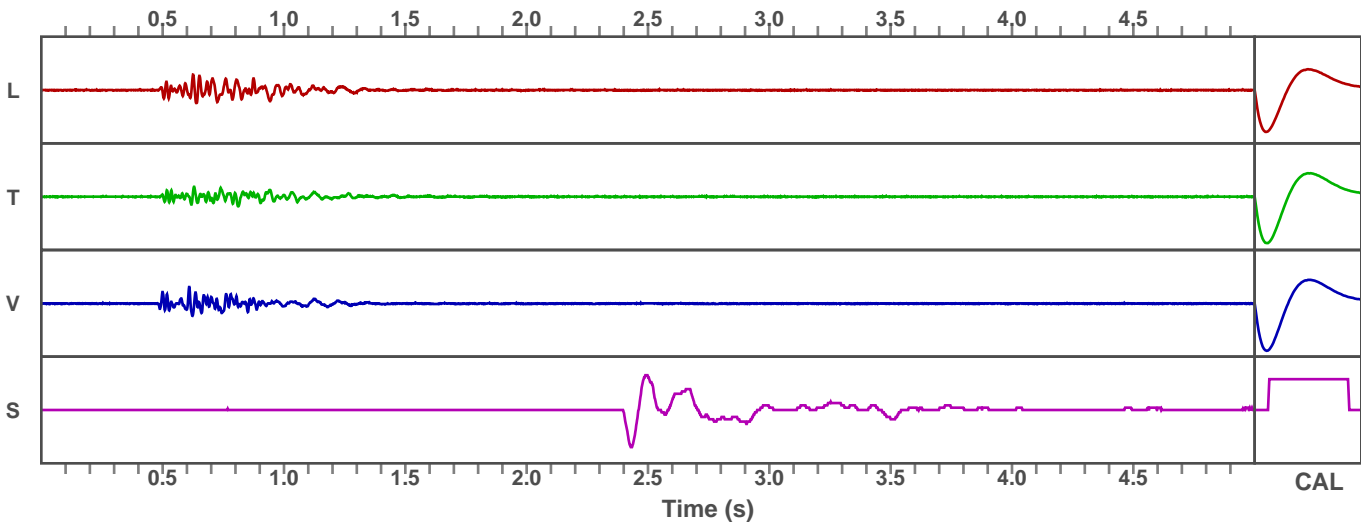


Waveform Graph Scale

Time Scale: 0.1 s
Seismic Scale: +/- 0.16 in/s
Sound Scale: +/- 0.0023 psi

Velocity Waveform

SSN: 12006 Event: 2



Seismic Analysis

Velocity Waveform Analysis

Serial Number: 11744
Firmware Version: 0C-10.27
Event Date: 10/12/2021 11:34:09 (UTC -07:00)
Event number: 3
Recording Time: 5 s
Client: COUNTY OF MARIN
Operation: SAN RAFAEL ROCK QUARRY
Location: ON QUARRY PROPERTY
Distance:
Operator: VIBRA-TECH IP2
Comment:
Seismic Trigger: 0.03 in/s
Sound Trigger: 127 dB

Additional Info:

j-GEO-01253
 N37 59.481, W122 27.256

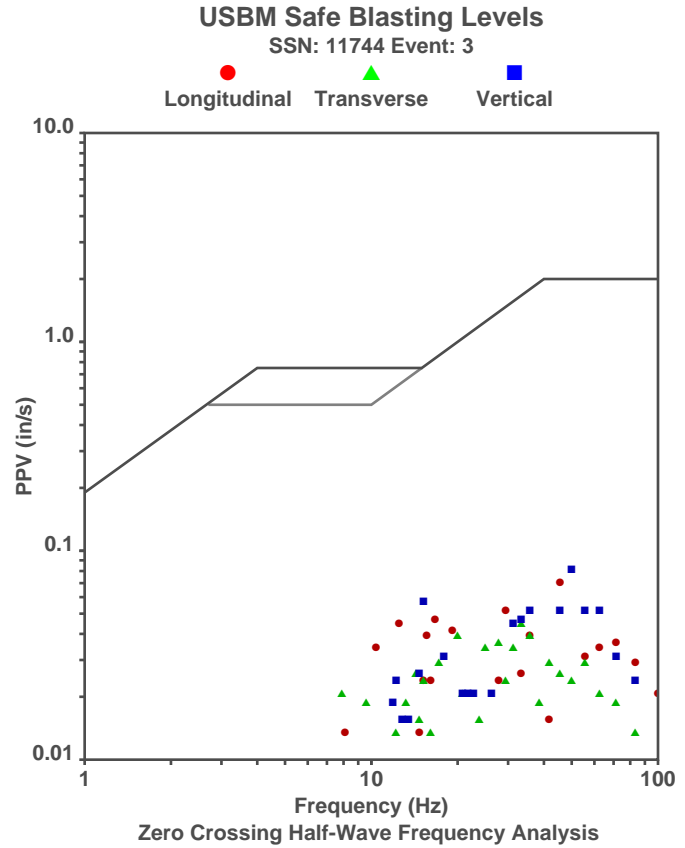
Summary Data

	L	T	V
PPV (in/s):	0.068	0.043	0.078
FREQ (HZ):	45.5	33.3	50
PD (.001''):	0.46	0.33	0.35
PPA (g):	0.046	0.026	0.065

Peak Vector Sum: 0.105 in/s
Peak Air Pressure: 107 dB
 0.0006 psi @ 3.3 HZ

Shaketable Calibrated

On: 08/23/2021 (UTC -07:00)
By: Vibra-Tech, Inc.
 2700 Holloway Road - Suite 113
 Louisville, KY 40203 U.S.A.

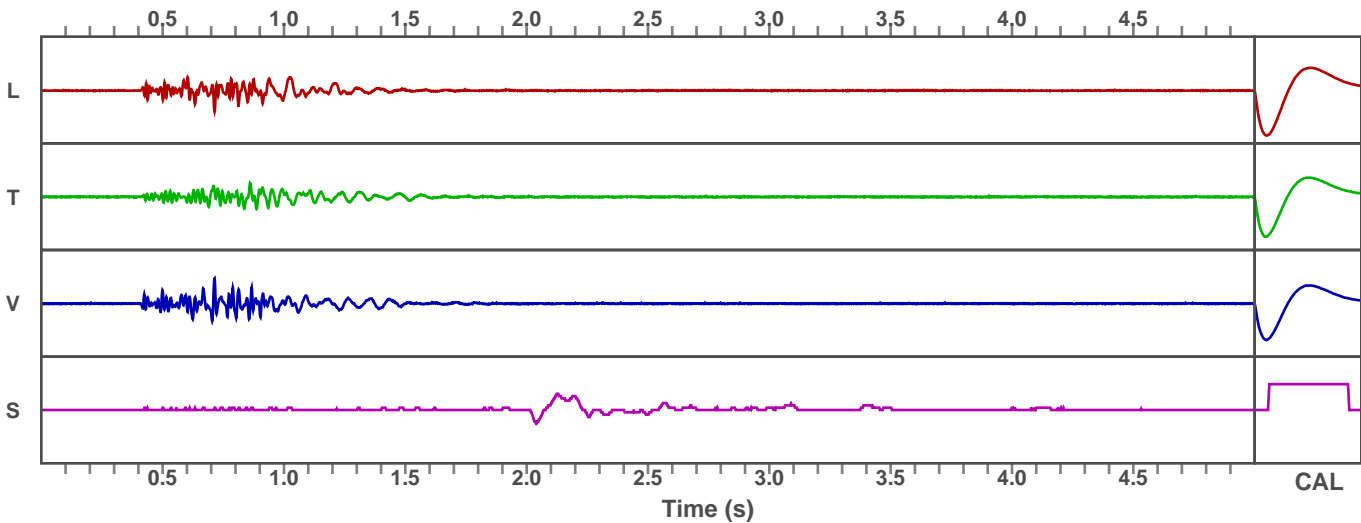


Waveform Graph Scale

Time Scale: 0.1 s
Seismic Scale: +/- 0.16 in/s
Sound Scale: +/- 0.0023 psi

Velocity Waveform

SSN: 11744 Event: 3



Seismic Analysis

Velocity Waveform Analysis

Serial Number: 12006
Firmware Version: 0C-10.27
Event Date: 10/12/2021 11:34:11 (UTC -07:00)
Event number: 3
Recording Time: 5 s
Client: COUNTY OF MARIN
Operation: SAN RAFAEL ROCK QUARRY
Location: 16 MARIN BAY PARK CT.
Distance:
Operator: VIBRA-TECH IP2
Comment: WILLIAM HOSKEN RES.
Seismic Trigger: 0.03 in/s
Sound Trigger: 127 dB

Additional Info:

j-GEO-34724
 N37 59.524, W122 27.373

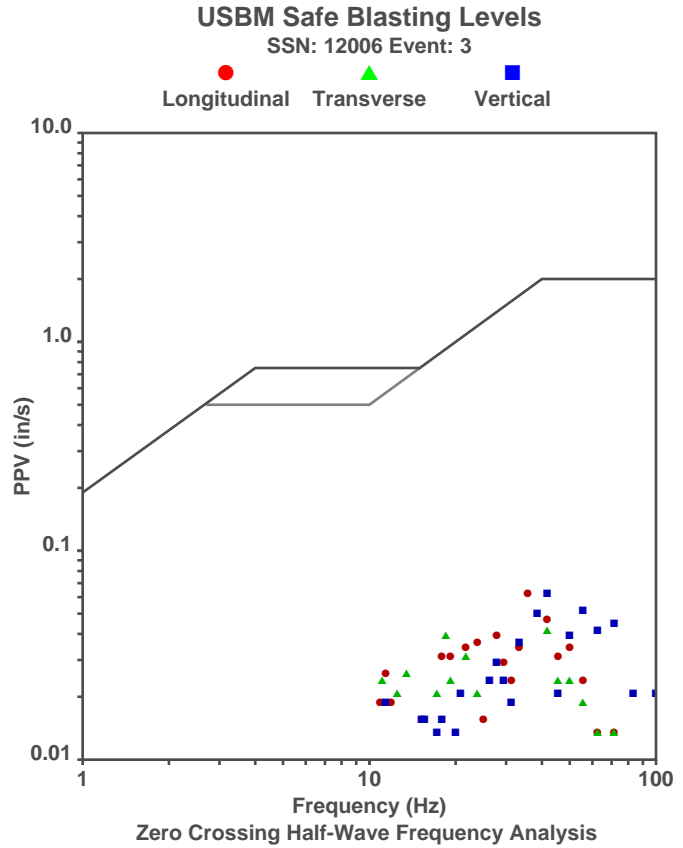
Summary Data

	L	T	V
PPV (in/s):	0.06	0.04	0.06
FREQ (HZ):	35.7	41.7	38.5
PD (.001"):	0.35	0.32	0.32
PPA (g):	0.033	0.033	0.052

Peak Vector Sum: 0.068 in/s
Peak Air Pressure: 106 dB
 0.0006 psi @ 3.8 HZ

Shaketable Calibrated

On: 08/23/2021 (UTC -07:00)
By: Vibra-Tech, Inc.
 2700 Holloway Road - Suite 113
 Louisville, KY 40203 U.S.A.

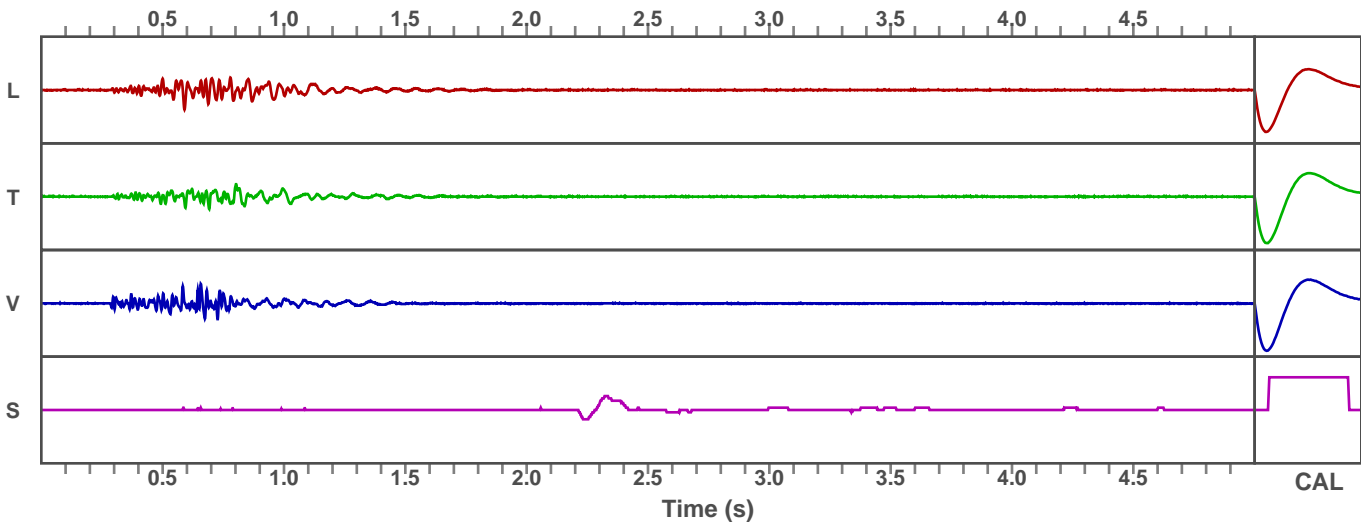


Waveform Graph Scale

Time Scale: 0.1 s
Seismic Scale: +/- 0.16 in/s
Sound Scale: +/- 0.0023 psi

Velocity Waveform

SSN: 12006 Event: 3



Seismic Analysis

Velocity Waveform Analysis

Serial Number: 11744
Firmware Version: 0C-10.27
Event Date: 10/21/2021 11:39:14 (UTC -07:00)
Event number: 4
Recording Time: 5 s
Client: COUNTY OF MARIN
Operation: SAN RAFAEL ROCK QUARRY
Location: ON QUARRY PROPERTY
Distance:
Operator: VIBRA-TECH IP2
Comment:
Seismic Trigger: 0.03 in/s
Sound Trigger: 127 dB

Additional Info:

j-GEO-01253
 N37 59.481, W122 27.256

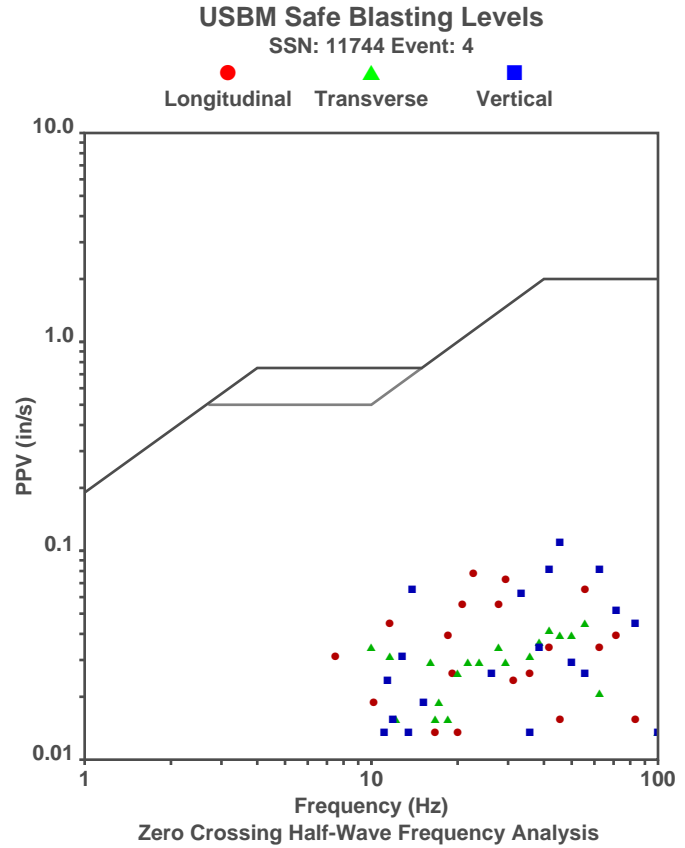
Summary Data

	L	T	V
PPV (in/s):	0.075	0.043	0.105
FREQ (HZ):	22.7	50	41.7
PD (.001'')	0.52	0.54	0.54
PPA (g):	0.059	0.039	0.085

Peak Vector Sum: 0.108 in/s
Peak Air Pressure: 110 dB
 0.0009 psi @ 3.6 HZ

Shaketable Calibrated

On: 08/23/2021 (UTC -07:00)
By: Vibra-Tech, Inc.
 2700 Holloway Road - Suite 113
 Louisville, KY 40203 U.S.A.

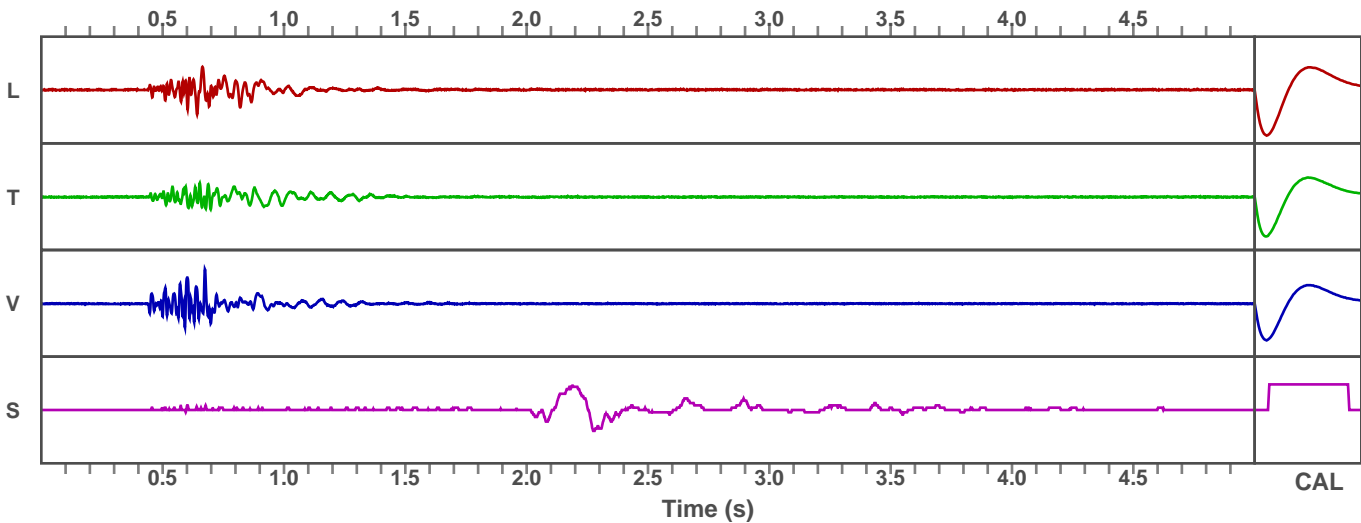


Waveform Graph Scale

Time Scale: 0.1 s
Seismic Scale: +/- 0.16 in/s
Sound Scale: +/- 0.0023 psi

Velocity Waveform

SSN: 11744 Event: 4



Seismic Analysis

Velocity Waveform Analysis

Serial Number: 12006
Firmware Version: 0C-10.27
Event Date: 10/21/2021 11:39:15 (UTC -07:00)
Event number: 4
Recording Time: 5 s
Client: COUNTY OF MARIN
Operation: SAN RAFAEL ROCK QUARRY
Location: 16 MARIN BAY PARK CT.
Distance:
Operator: VIBRA-TECH IP2
Comment: WILLIAM HOSKEN RES.
Seismic Trigger: 0.03 in/s
Sound Trigger: 127 dB

Additional Info:

j-GEO-34724
 N37 59.524, W122 27.373

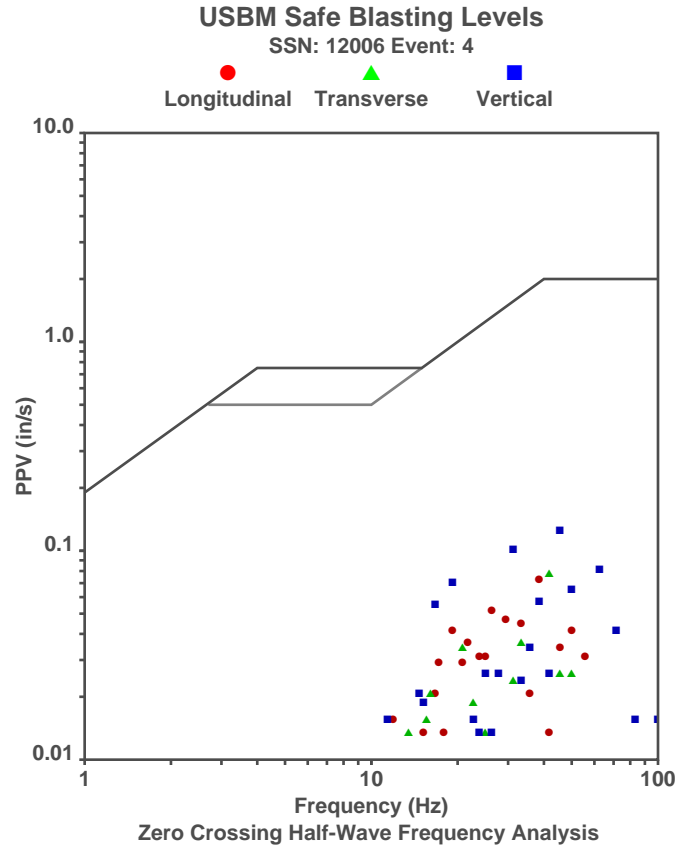
Summary Data

	L	T	V
PPV (in/s):	0.07	0.075	0.12
FREQ (HZ):	38.5	41.7	45.5
PD (.001''):	0.42	0.31	0.49
PPA (g):	0.052	0.052	0.091

Peak Vector Sum: 0.13 in/s
Peak Air Pressure: 110 dB
 0.0009 psi @ 3.7 HZ

Shaketable Calibrated

On: 08/23/2021 (UTC -07:00)
By: Vibra-Tech, Inc.
 2700 Holloway Road - Suite 113
 Louisville, KY 40203 U.S.A.

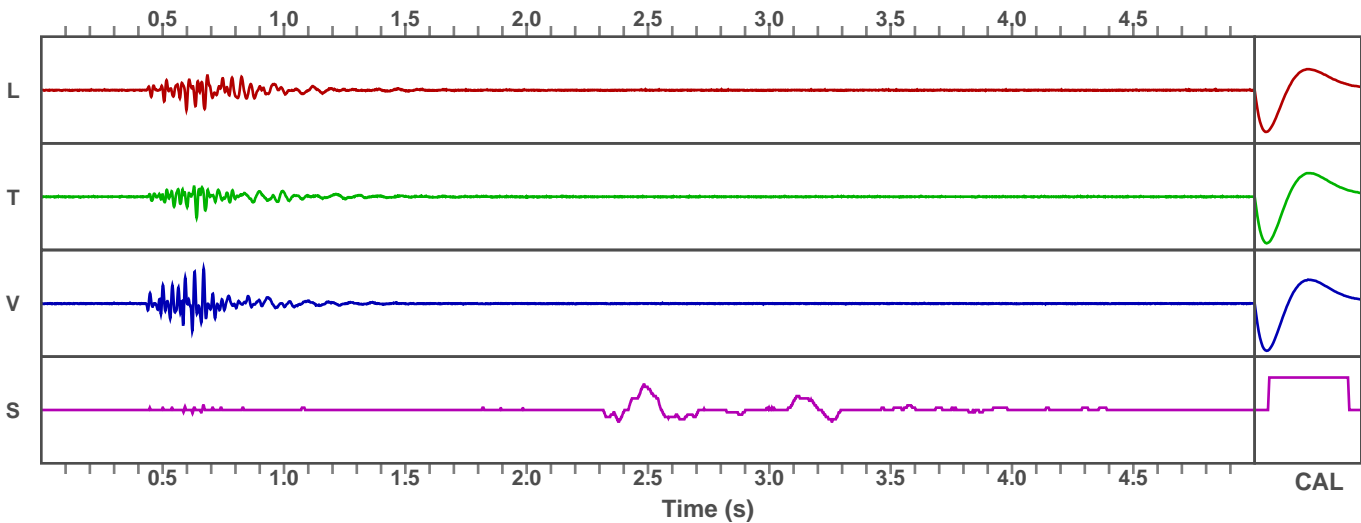


Waveform Graph Scale

Time Scale: 0.1 s
Seismic Scale: +/- 0.18 in/s
Sound Scale: +/- 0.0023 psi

Velocity Waveform

SSN: 12006 Event: 4



Vibra-Tech Engineers, Inc. Seismic Analysis

Stop Event Report

Serial No: 12006 v10.27
Client: COUNTY OF MARIN
Operation: SAN RAFAEL ROCK QUARRY
Location: 16 MARIN BAY PARK CT.
Distance:
Operator: VIBRA-TECH IP2
Comment: WILLIAM HOSKEN RES.

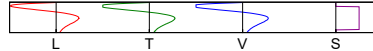
Begin Date: 11/03/2021 07:00:53 (UTC-7)
End Date: 11/03/2021 20:00:00 (UTC-7)
Events over Trigger: 0 (81-80)
Record Time: 5.0 s
Seismic Trigger: 0.030 in/s
Sound Trigger: 127 db
Battery Level: 8.8

Additional Info:

j-GEO-34724
N37 59.524, W122 27.373

Shaketable Calibrated: 08/23/2021
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 at 16 Marin Bay Park Court (S/N 12006) did not trigger during the shot on November 3, 2021 at approximately 11:30 indicating the ground vibrations produced were below the ground trigger level of 0.030 in/sec.

Vibra-Tech Engineers, Inc. Seismic Analysis

Stop Event Report

Serial No: 12006 v10.27
Client: COUNTY OF MARIN
Operation: SAN RAFAEL ROCK QUARRY
Location: 16 MARIN BAY PARK CT.
Distance:
Operator: VIBRA-TECH IP2
Comment: WILLIAM HOSKEN RES.

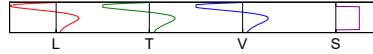
Begin Date: 12/10/2021 07:00:52 (UTC-8)
End Date: 12/10/2021 11:57:35 (UTC-8)
Events over Trigger: 0 (81-80)
Record Time: 5.0 s
Seismic Trigger: 0.030 in/s
Sound Trigger: 127 db
Battery Level: 8.8

Additional Info:

j-GEO-34724
N37 59.524, W122 27.373

Shaketable Calibrated: 08/23/2021
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 at 16 Marin Bay Park Court (S/N 12006) did not trigger during the shot on December 10, 2021 at approximately 11:34 indicating the ground vibrations produced were below the ground trigger level of 0.030 in/sec.

Vibra-Tech Engineers, Inc. Seismic Analysis

Stop Event Report

Serial No: 12006 v10.27
Client: COUNTY OF MARIN
Operation: SAN RAFAEL ROCK QUARRY
Location: 16 MARIN BAY PARK CT.
Distance:
Operator: VIBRA-TECH IP2
Comment: WILLIAM HOSKEN RES.

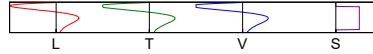
Begin Date: 12/10/2021 07:00:52 (UTC-8)
End Date: 12/10/2021 11:57:35 (UTC-8)
Events over Trigger: 0 (81-80)
Record Time: 5.0 s
Seismic Trigger: 0.030 in/s
Sound Trigger: 127 db
Battery Level: 8.8

Additional Info:

j-GEO-34724
N37 59.524, W122 27.373

Shaketable Calibrated: 08/23/2021
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 at 16 Marin Bay Park Court (S/N 12006) did not trigger during the shot on December 10, 2021 at approximately 11:36 indicating the ground vibrations produced were below the ground trigger level of 0.030 in/sec.