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January 28, 2015

Mr. John Hellert
Continental Placer Inc.
II Winners Circle
Albany, NY 12205

Re: Frontier Stone, LLC
Requested Response Colin Gordon/DEC Questions

Dear Mr. Hellert:

This letter provides responses to the questions from the January 12, 2015 email from Dudley Loew (NYDEC) to Kevin Brown (Brown, Sharlow, Duke, & Fogel) and the December 30, 2014 email from Jennifer Dougherty (Phillips Lytle) to Kevin Brown regarding clarifications from Colin Gordon and Associates.

NYDEC Questions

1. The term "underground blasting" is used in the executive summary on Pg.2. In the context of the NYS Mined Land Reclamation Law, this would describe a subsurface (underground) mining operation. Frontier Stone is applying for a surface quarry operation. Please further define, or consider striking "underground".

We agree that Frontier Stone is a proposed surface mining operation.

2. Vibra-Tech's ambient ground vibration information referenced on Pg.2. should be provided for comparison. Details are needed to define how ambient conditions were determined, the duration of study, and expectations relating to future vibration levels at the manufacturing facility.

Vibra-Tech's scope of work was limited to measuring ground vibration from a single-hole blast at two locations. Field observations of the real-time spectrum analyzer display before the blast event indicated that ambient vibrations were consistent with those reported by Colin Gordon in their ambient vibration study. Vibra-Tech did not collect or analyze any ambient vibration data. The Colin Gordon study determined ambient vibration from the statistical sample of eleven (11) locations around the STAMP area over a one-day period. It should be noted that ambient vibration testing should include all sources of existing vibration at the site. This would include ground vibrations from existing quarry operations located near the STAMP facility. It is our understanding that ambient vibration reported by Colin Gordon did not include ground vibration induced by blasting at these quarries.

3. Please provide a map which identifies both the quarry and STAMP properties in relation to one another.

See Figure A-1 in Appendix A – Frontier Stone – Figures A-1 to A-14.

4. Please provide additional information relating to short duration transient vibrations at the STAMP site which exceed VC-E levels (referenced on Pg. 11). Are the NIST-A, and VC-E criteria used solely for siting, or are these standards to be met during manufacturing operations at the STAMP site. It would appear that these levels would not be maintained during construction, manufacturing, and times of high truck traffic. Is it reasonable to conclude that the STAMP facility will be constructed to account for VC-E exceedances (short term transient events), and if so, what level of vibration in the surrounding environment would be tolerable within the facility? Is it unreasonable for Frontier to try and meet the VC-E criteria, when short duration transient vibrations up to a certain level can be tolerated at the STAMP site?

The VC-E and NIST-A criteria apply to the building floor areas that house vibration sensitive equipment. As vibration is transmitted from the ground to the structure, the structure will amplify or attenuate its amplitude. The amplification or attenuation is controlled by the frequency and duration of the vibration. External sources of vibration such as traffic, blasting, and construction activity have different duration and frequency characteristics. The design of the vibration sensitive facility must consider the external ambient site vibration including its amplitude, duration, and frequency characteristics. In addition, the internal vibration loads such as people walking and HVAC equipment must also be considered. In general, the ambient vibration levels at a site will be increased once the site is developed. Typical outside sources of transient vibration are heavy delivery trucks.

In addition, the following quote should be noted from Page 19 of the Colin Gordon report.

> *"It is important to note that these criteria are for guidance only. The detail sizes given in Table A.1 appear to represent experience at the time of writing. They reflect the fact that the quality of design and of built-in isolation in most equipment tends to improve as dimensional requirements become more stringent. In some cases the criteria may be overly conservative because of the high quality of built-in isolation.*
>
> *Facility vibrations do not necessarily remain constant over extended periods of time. Vibrations measured during construction may not reflect the contribution of mechanical systems in their operational state at building completion. Likewise, vibrations at a few months beyond completion may not include contributions from user-installed equipment, and this contribution could change over time as layout is varied. (This variation has been called "maturation", and must be considered a normal part of the aging process.)"*

In our opinion, is it not reasonable for Frontier Stone to meet the ambient conditions of the site as defined in the Colin Gordon report. Ambient vibration testing conducted by Colin Gordon at 11 different locations over a period of one day did not include the measurement of ground vibrations induced by blasting operations at two nearby quarries. Ambient conditions should include all sources of existing vibration at the site. This includes vibrations from blasting operations for the two existing quarry operations located near the STAMP site. These operations are shown on Figure A-13 in Appendix A. The single hole test blast for Frontier Stone was located approximately 8291 m from the STAMP site. The existing quarry operations are located approximately 5899 m and 10,106 m. If the overall ambient vibration includes the contribution of blast events from the two existing quarry operations located near the STAMP site it would be reasonable for Frontier Stone to meet these conditions.

5. Please provide a scaled map which identifies the single hole test blast location, and all seismograph monitoring points used for the study. This can be accomplished by multiple maps, or map inset(s) if necessary.

See Figures A-2 through A-13 in in Appendix A – Frontier Stone – Figures A-1 to A-14.

6. Table 6-2 on Pg. 13 is confusing. It appears that the Lat. and Lon. are given for the single hole test blast location, but then Location 4 and 7 are unlabeled, and possibly given in feet or meters, while the table column is referencing Lat. Lon. Please clarify or correct.

Table 6-2 of the report has been corrected to reflect GPS locations of the signature hole blast and the two STAMP vibration monitoring locations.

Table 6-2 Single Hole Blast Induced Ground Vibration Measurement Locations

Description	Latitude	Longitude
Single Hole Test Blast Location	N43° 09.508’	W078° 21.695’
STAMP Measurement Location 4	N43° 05.372’	W078° 24.913’
STAMP Measurement Location 7	N43° 05.644’	W078° 24.778’

7. Does equation 7-3 on Pg. 27, and the confinement discussion on Pg.28 adequately consider that the single hole test blast was not coupled, but rather decoupled due to the 5" explosive charge diameter compared to the 6" diameter casing? Since the shot was decoupled is the reduction of the predicted PPV by 3.78 reasonable.

When a blast hole is detonated, the explosion produces a high temperature, high-pressure gas. This gas pressure, known as the detonation pressure, crushes the rock adjacent to the borehole. The detonation pressure rapidly dissipates, consuming approximately ten to fifteen percent of the energy available in the explosive. The remaining energy produces a second, lower pressure gas, known as the explosion pressure. Most of the work done by the explosive is done by the explosion pressure. The explosion pressure expands the cracks made by the detonation pressure, and pushes the fractured rock toward the free face.

In the case of Frontier Stone, there are no benches established for the fractured rock to move toward, the only free face is up toward the ground surface. The single hole test blast at Frontier Stone had 48 feet of ½ inch crushed stone for stemming material. In most quarry applications a 6 inch diameter hole would have 12 to 15 feet of stemming material. Given that the direction of relief is the ground surface and the depth of burial of the explosive charge is severe in our opinion we consider this blast extremely confined. Blasts that are confined will produce elevated amplitudes of ground vibration.

The question regarding the decoupled charge can be answered by determining the pressure created in the borehole. Borehole pressure can be calculated from the following equation.

$$BP = (1.69x10^{-3})x(\rho)x(VOD^2)$$

Where BP = Borehole Pressure (psi)
P = explosive density (g/cc)
VOD = Explosive Velocity of Detonation (ft/sec)

The single hole test blast used PowerAN 500 (5”x30” cartridges). The explosive density of this product 1.25 g/cc and the VOD is 18,000 ft/sec, which yields a borehole pressure of 684,450 psi, if the PowerAN 500 were fully coupled to the borehole wall.

Since the PowerAN 500 was decoupled from the borehole wall the same pressure is not delivered to the borehole wall because some loss will occur due to the difference in volume between the 5” diameter cartridge and the 6” diameter borehole. This pressure loss factor is calculated by the following equation.

$$P_L = \left(\frac{\Phi_E}{\Phi_H}\right)^{2.6}$$

Where P_L = Pressure Loss Factor (psi)
Φ_E = Diameter of Explosive (inch)
Φ_H = Diameter of Borehole (inch)

Based upon the above equation the pressure loss factor due to volume is 0.622, therefore the pressure exerted on the borehole wall would be 684,450 psi multiplied by this factor or 426,059 psi. The compressive strength of the Lockport Formation is estimated to be around 12,000 psi. In both cases the borehole pressure greatly exceeds the compressive strength of the rock, however the higher borehole pressures caused by a fully coupled charge would pulverize the rock more extensively around the blast hole. If the fully coupled charge and the decoupled charge were both the same charge weight then both would have the same amount of available energy. Based upon the conservation of energy law we cannot create or destroy energy, therefore let’s say the amount of available energy is 100%. The energy from the explosive can be partitioned into various categories. Some energy goes to pulverizing the rock near the borehole, some for extending cracks, some for displacing the material, some for heat, some for light, some for ground vibration and some for noise. All these partitions of energy must add up to 100%. The fully coupled charge therefore would use a greater percentage of the energy to pulverize the rock leaving less for the other partitions such as ground vibration. Conversely, the decoupled charge would use a lesser percentage of the energy to pulverize the rock and therefore a greater percentage would be available for ground vibration.

The decoupled charges and the depth of burial of the explosive charge would lead to a greater degree of confinement for the single hole charge used in this test compared to the degree of confinement in a typical quarry bench blast. This greater confinement means greater amplitude for the recorded vibration level, therefore a reduction of the amplitude is necessary to simulate a typical quarry bench blast. The reduction value or 3.78 that we chose is the ratio of a K value (confinement factor) of 605 to a K value of 160. These values are standard values used by the blasting industry and therefore reasonable in our opinion.

8. Please provide a loading/shot diagram.

See Figure A-14 located in in Appendix A – Frontier Stone – Figures A-1 to A-14.

9. The PPV on Table 7-3 on page 29 is listed in mm/s, was this meant to be micrometer, µm/s? Also, the table lists 43 seismographs and their individual distance from the blast hole. The July 18, 2014 Rudenko to Mahar letter indicate that 60 to 75 seismometers would be used. Were additional seismometers used, and if not, why were only 43 utilized.

There were 41 blasting seismographs that collected data from the detonation of the signature blast. An additional six (6) units were located closer to the STAMP Project site, but did not trigger (trigger level was 0.01 in/sec). In addition, there were two ultra-sensitive seismic accelerometers located at the STAMP site that captured data.

The original plan was to run a linear array from the single hole to the STAMP facility. This would have taken the line through the Iroquois National Wildlife Refuge. Permission was not given to traverse through the refuge. A new plan was developed to collect data using the right of ways along existing roads. The table below gives the serial number, distance and peak value for each recorder.

Serial Number	Distance (meters)	PPV (µm/sec)	Distance (feet)	PPV (in/sec)
8334	91.7	28,826	301	1.1349
8602	108.5	24,575	356	0.9675
11398	127.6	24,125	419	0.9498
4620	145	29,007	476	1.1420
4621	161.9	39,365	531	1.5498
4455	180.4	25,898	592	1.0196
4644	198.4	29,266	651	1.1522
4416	215.9	22,014	708	0.8667
4237	239.9	15,799	787	0.6220
4812	268.1	12,949	880	0.5098
4826	304.1	11,913	998	0.4690
4689	340.1	8,288	1,116	0.3263
4463	385	5,179	1,263	0.2039
4779	437.9	5,438	1,437	0.2141
4354	476.7	7,874	1,564	0.3100
4785	481.8	4,661	1,581	0.1835
4325	493.5	5,956	1,619	0.2345
4355	516.3	4,661	1,694	0.1835
11233	517.7	3,934	1,699	0.1549
4085	520	4,143	1,706	0.1631
4786	526.1	3,366	1,726	0.1325
4781	548.9	4,661	1,801	0.1835
7997	556.3	3,178	1,825	0.1251
4787	580.3	2,591	1,904	0.1020
4789	631.9	2,850	2,073	0.1122
6084	698.7	3,048	2,292	0.1200
6108	757.6	2,073	2,486	0.0816

6116	**827.7**	**3,239**	**2,715**	**0.1275**
6109	**939.8**	**1,684**	**3,083**	**0.0663**
6139	**1,024.90**	**1,494**	**3,363**	**0.0588**
6124	**1,114.90**	**3,426**	**3,658**	**0.1349**
6106	**1,202.60**	**1,425**	**3,945**	**0.0561**
6081	**1,389.90**	**2,202**	**4,560**	**0.0867**
6090	**1,462.70**	**2,271**	**4,799**	**0.0894**
6138	**1,643.00**	**1,295**	**5,390**	**0.0510**
6089	**1,863.90**	**1,494**	**6,115**	**0.0588**
6010	**2,212.60**	**1,684**	**7,259**	**0.0663**
6023	**2,669.80**	**648**	**8,759**	**0.0255**
6117	**3,785.00**	**318**	**12,418**	**0.0125**
6033	**4,452.60**	**389**	**14,608**	**0.0153**
6045	**4,731.50**	**259**	**15,523**	**0.0102**
STAMP Research Park #7	**8,286.00**	**38**	**27,186**	**0.0010**
STAMP Research Park #4	**8,817.00**	**33**	**28,929**	**0.0010**

10. During the field study, seismograph #18 was documented to be a distance of 635.51m (2085') from the blast hole, whereas Table 7-3 lists the distance to the blast hole as 516.3 m (1693'). Please verify that the distances provided in in the table are accurate, and if available provide the gps locations of all seismographs.

See "Table 7-3" above. This table has been updated and now shows the serial number of the instrument (replaced "N" in original table). All distances in the original table are correct. The DEC had set up a seismograph at the 18th seismograph on our linear array (This distance was 2,073', and it was set up near Vibra-Tech serial number 4789). The original table was sorted by distance and labeled 1 through 43 (1 being the closest, 43 being the farthest seismograph). Additional seismographs were placed along Fletcher Chapel Road and were also incorporated into this table (distances ranged from 1564' to 1825'). We have added the serial numbers to the table above for correlation to the maps located in Appendix A Figures A-2 through A-13. The table below gives the GPS coordinates for the seismographs.

Serial Number	GPS Coordinate
4085	**N43 09.787 W78 21.739**
4237	**N43 09.388 W78 21.762**
4325	**N43 09.767 W78 21.781**
4354	**N43 09.660 W78 21.979**
4355	**N43 09.668 W78 22.007**
4416	**N43 09.400 W78 21.755**
4455	**N43 09.418 W78 21.746**
4463	**N43 09.316 W78 21.804**
4620	**N43 09.436 W78 21.737**
4621	**N43 09.427 W78 21.740**
4644	**N43 09.409 W78 21.751**
4689	**N43 09.338 W78 21.790**
4779	**N43 09.289 W78 21.817**
4781	**N43 09.600 W78 22.080**

4785	**N43 09.267 W78 21.829**
4786	**N43 09.245 W78 21.842**
4787	**N43 09.220 W78 21.864**
4789	**N43 09.198 W78 21.890**
4812	**N43 09.374 W78 21.770**
4826	**N43 09.356 W78 21.780**
6010	**N43 08.374 W78 22.210**
6023	**N43 08.117 W78 22.214**
6027	**N43 06.542 W78 23.955**
6033	**N43 07.130 W78 22.185**
6040	**N43 05.941 W78 24.483**
6045	**N43 07.289 W78 23.426**
6059	**N43 06.657 W78 22.174**
6064	**N43 05.806 W78 23.442**
6078	**N43 06.210 W78 23.554**
6081	**N43 08.858 W78 22.208**
6084	**N43 09.174 W78 21.935**
6089	**N43 08.574 W78 22.208**
6090	**N43 08.811 W78 22.203**
6097	**N43 07.863 W78 22.212**
6106	**N43 08.975 W78 22.202**
6108	**N43 09.172 W78 22.014**
6109	**N43 09.161 W78 22.201**
6116	**N43 09.169 W78 22.093**
6117	**N43 07.497 W78 22.197**
6124	**N43 09.035 W78 22.204**
6138	**N43 08.703 W78 22.205**
6139	**N43 09.100 W78 22.206**
7997	**N43 09.614 W78 22.079**
8334	**N43 09.462 W78 21.720**
8602	**N43 09.454 W78 21.726**
11233	**N43 09.664 W78 22.012**
11398	**N43 09.444 W78 21.730**
Signature Blast	**N43 09.508 W78 21.695**

11. If the production blast of 14, 4" diameter holes, with 3 explosive decks of 44 lbs. per hole is used to yield approximately 6,888 tons of material, how will this affect the frequency of blasting previously proposed? This should be compared to the blast design, and frequency (once a week, approximately 30 shots per year) identified in section 4.2.6.6. of the DEIS. What is the difference in projected material yield between the two designs?

Section 4.2.6.6 of the DEIS states that the blasting season is approximately 30 weeks long and it is anticipated that blasting will occur once a week. Obviously the season could be 35 weeks depending on the weather.

Section 1.2.3 of the DEIS reads:

> **"***The bedrock will be drilled and blasted by industry standard techniques. Blasting will take place on an as-needed basis. The days of the week or frequency is determined by market conditions, weather conditions and operational restraints during quarry development. Blasting will take place between 9:00 a.m. and 4 p.m. on weekdays only, with no blasting on weekends or holidays. During initial quarry development small blasts could be needed 2 to 3 times a week. As the quarry becomes larger and routine production blasts are the norm, blasts may only occur once to twice a week. Blasted rock will be picked up by a front-end loader and transported to a portable primary crusher. The portable primary crusher will be placed near production faces, and the crushed material will be conveyed out of the quarry to the processing plant for further crushing and screening."*

Based upon a blast yielding 6,888 tons per blast, the following production ranges are:

6,888 tons x 30 weeks = 206,640 tons
6,888 tons x 35 weeks = 241,080 tons
6,888 tons x 2 shots per week x 30 weeks = 413,280 tons
6,888 tons x 2 shots per week x 35 weeks = 482,160 tons

Initial production projections for the quarry were 300,000 to 350,000 tons per year. The 6,888 tons per blast falls within this range given slight variables in the length of the season or number of blasts mentioned in Section 1.2.3.

The blast design preliminarily suggested in the DEIS would yield:

11,893 tons per blast x 30 weeks = 356,790 tons (based on 2 rows of 10 holes).

12. For monitoring purposes, what will the maximum ground vibration level be at the quarry property line to ensure the NIST-A and CV-E vibration limits at the STAMP site are met?

The closest point of blasting to the STAMP property is 7,606 meters (24,955) feet. The mine has a 61 meter (200 ft.) offset from the property line to the closest point of blasting. The Bornitz equation for vibration attenuation and the upper 95% regression equation 7-4 of the report can be used to determine the worst case PPV value to be expected at the quarry property line. The results indicates that the worst case ground vibration to be expected is 6,750 µm/s (0.27 in/s) at the quarry property line. Vibra-Tech does not recommend compliance monitoring at the quarry property line to meet limits for the STAMP location. A spectrum analyzer equipped with an ultra-sensitive seismic accelerometer should be installed at the STAMP site to continuously monitor vibrations for comparison to the criteria.

13. Once the quarry is developed, how is Frontier proposing to adjust production blasting while ensuring ambient vibration levels at the STAMP site. Will additional off site monitoring be conducted?

The analysis conducted by Vibra-Tech is a preliminary simulation of potential vibrations that would be experienced by a multi-hole production blast. The simulation utilized a seed wave resulting from the detonation of a single explosive column which is the basic component of a multi-hole production blast. The waveform characteristics (frequency and duration) of the seed wave are influenced by the geology between the source and the receiver. The amplitude of the seed wave is a function of the amount of explosive detonated and the confining conditions of the blast. Vibra-Tech recommends additional monitoring at the STAMP location after an open face is established and full scale production blasting begins at the quarry to verify the simulations. A spectrum analyzer equipped with an ultra-sensitive seismic accelerometer could be installed at the STAMP site to continuously monitor vibrations for comparison to the criteria. Adjustments to the delay times utilized in a multi-hole production blast can potentially have an effect on the frequency spectrum. In addition, increases or decreases to the charge weight/delay can be tested once an open face is established.

14. Please provide a copy of waveform reports (tapes) or similar data representation for each of the seismographs utilized as part of the study.

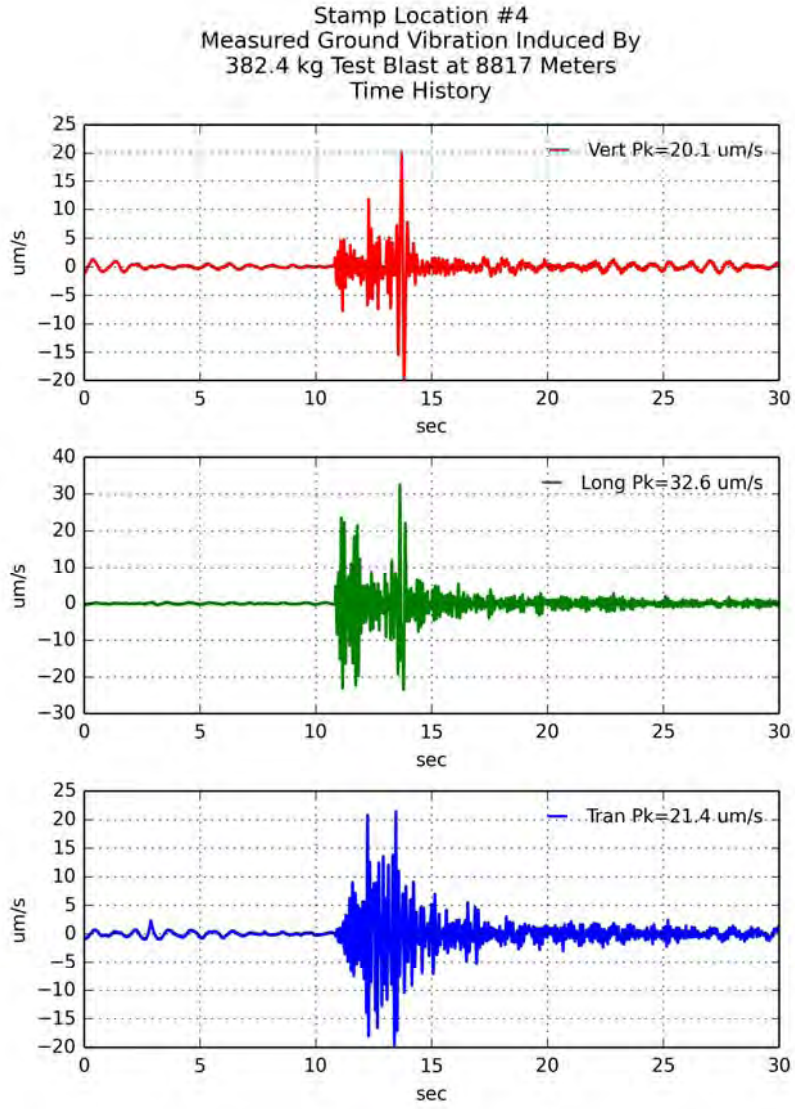
See Appendix B Frontier Stone – Waveforms" ---- please note that the data file for serial number 4354 has become corrupt and I cannot print out the RSVP, the only thing I can see is the peak particle velocity of 0.310 in/sec and the distance of 1,564 feet.

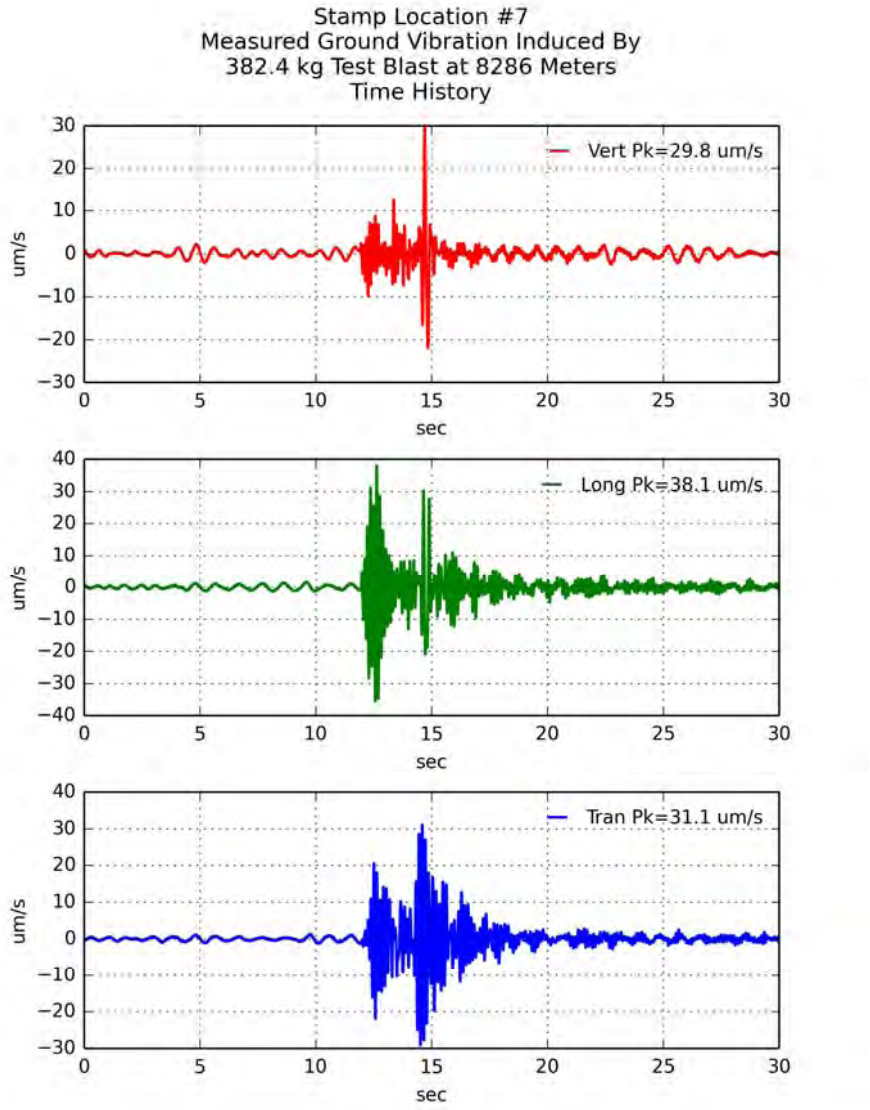
Colin Gordon Questions

15. Comment from Page 2 of 47. Can we see a typical linear averaged ambient spectrum for all axes?

Vibra-Tech's scope of work was limited to measuring ground vibration from a single-hole blast at two locations. Field observations of the real-time spectrum analyzer display before the blast event indicated that ambient vibrations were consistent with those reported by Colin Gordon in their ambient vibration study. Vibra-Tech did not collect or analyze any ambient vibration data.

16. Comment from Page 15 of 47. Can we see a wider time span somewhere? Perhaps 30 seconds of data?





17. Comment from Page 16 of 47. Are these peak hold (ie. max hold) spectra?

The "instantaneous" spectrums located on pages 16 and 21 were calculated from the 8-second time history records shown in the figures located on Page 15 and 20. Eight seconds was chosen to provide a narrow band frequency resolution of 0.125 Hz. No windowing, overlap, or averaging was performed. The spectrum is the peak hold level of the transient signal.

18. Comment from Page 17 of 47. Are these real time octave analysis of synthesized thirds? Are these statistics based on the 8 second sample shown on page 15? If so, what is the integration time or sampling frequency?

All octave analysis in the report were performed on a 16 second time history windows surrounding the transient event. Data was sampled at 1024 Hz per channel. The 1/3 octave bands were calculated in the time domain and the summary statistics (min, avg, min+stdev, max) were calculated with an 8 second integration time.

19. Comment on Page 32 of 47. Is this waveform representative of 42 (3x14) separate blast events, each delayed by 72 ms?

The waveform represents the predicted ground vibration transient event at STAMP location #7, resulting from a multi-hole production blast 7,602 meters away. The delay between each charge is 72 milliseconds. there are 14 holes with 3 delayed charges (decks) per hole. Each charge is 20 kg.

20. Comments on Page 34 of 47. Can the site ambient spectrum be overlaid with this? It should be considered the noise floor.

Vibra-Tech's scope of work was limited to measuring ground vibration from a single-hole blast at two locations on the STAMP property. Vibra-Tech did not collect or analyze any ambient vibration data. It is our understanding that ambient vibration testing conducted by Colin Gordon at 11 different locations over a period of one day **did not** include the measurement of ground vibrations induced by blasting operations at two nearby quarries. One should note that one of the quarries is closer to the STAMP site than Frontier Stone. The overall ambient vibration should include vibration events from these two quarry operations.

21. Comments on Page 47 of 47. It should be indicated in the conclusions that only 72 milliseconds delay will be acceptable.

The delay interval of 72 milliseconds delay may not be the **only** delay that is acceptable. The pattern and timing scenario given in the report is one possible blast design that could be employed. There are numerous patterns and designs that may also meet acceptable design limits. These combinations would require further analysis and testing.

We hope that we have addressed any remaining concerns regarding the report prepared by Vibra-Tech. If you should have any further questions or require additional information, please contact our office.

Sincerely,
VIBRA-TECH ENGINEERS, INC.

M. Sharif

M. Sharif, PE
Project Engineer

Douglas Rudenko

Douglas Rudenko, PG
Vice President

Location of Signature Blast and STAMP Research Park

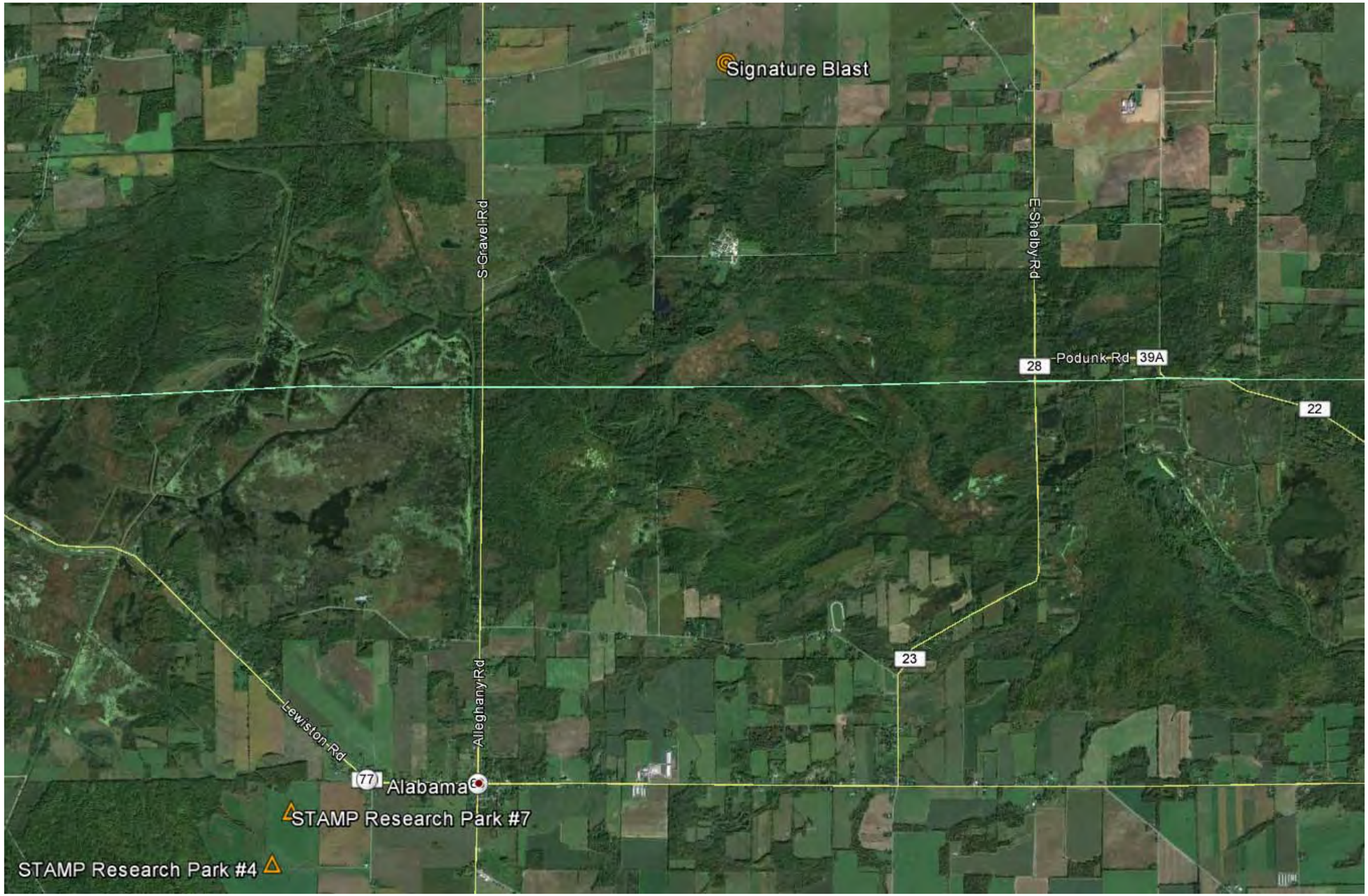
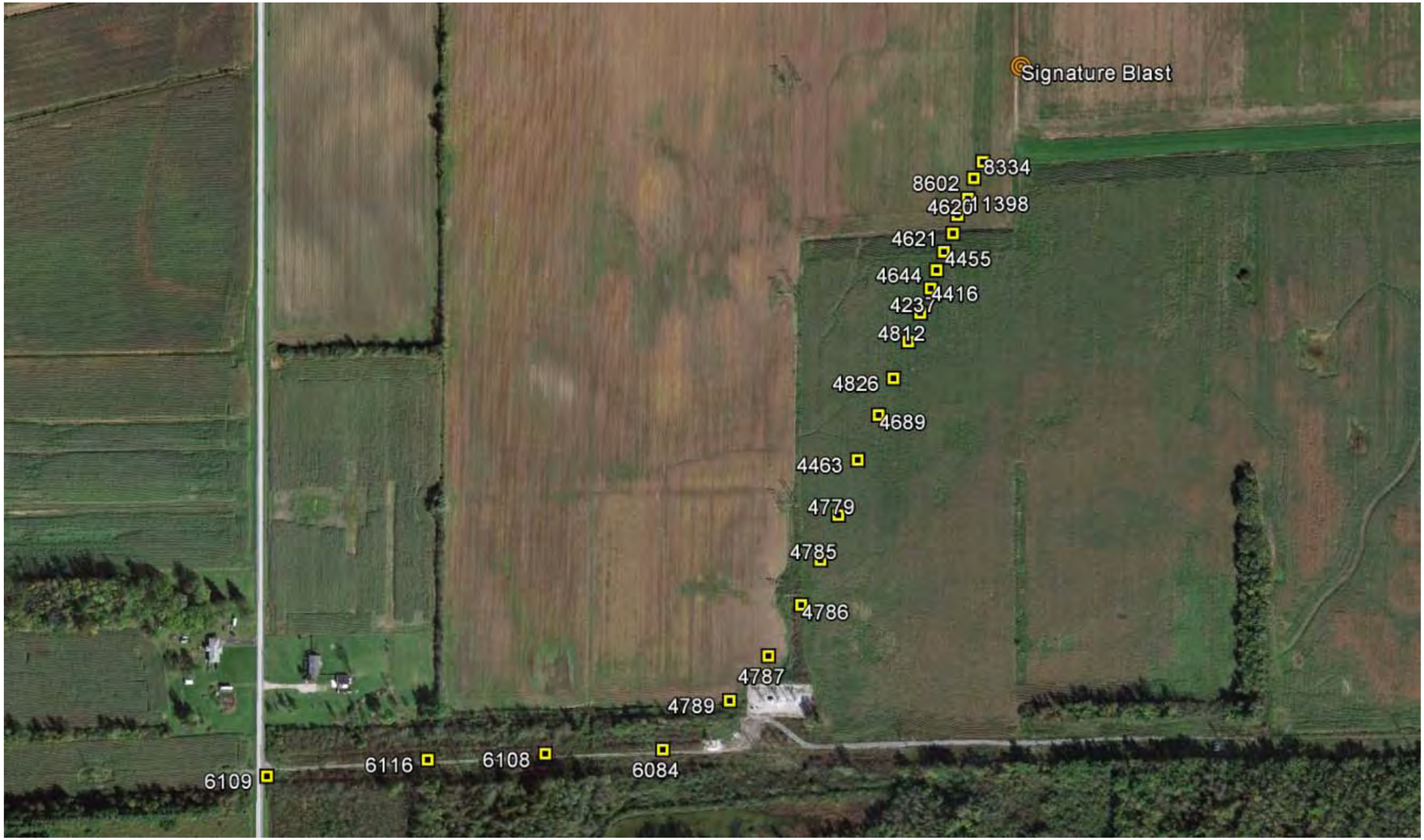


Figure A-1

Location of Seismographs Along Linear Array



1000 feet

Figure A-2

Location of Seismographs Along Linear Array

Figure A-3

Location of Seismographs Along Linear Array

Figure A-4

Location of Seismographs Along Linear Array

Figure A-5

Location of Seismographs Along Linear Array

1000 feet

Figure A-6

Location of Seismographs Along Linear Array

Figure A-7 (EAST)

1000 feet

Location of Seismographs Along Linear Array

Figure A-7 (WEST)

1000 feet

Location of Seismographs Along Linear Array

1000 feet

Figure A-8 (EAST)

Location of Seismographs Along Linear Array

1000 feet

Figure A-8 (WEST)

Location of Seismographs Along Linear Array

Figure A-9

Location of Seismographs Along Linear Array

1000 feet

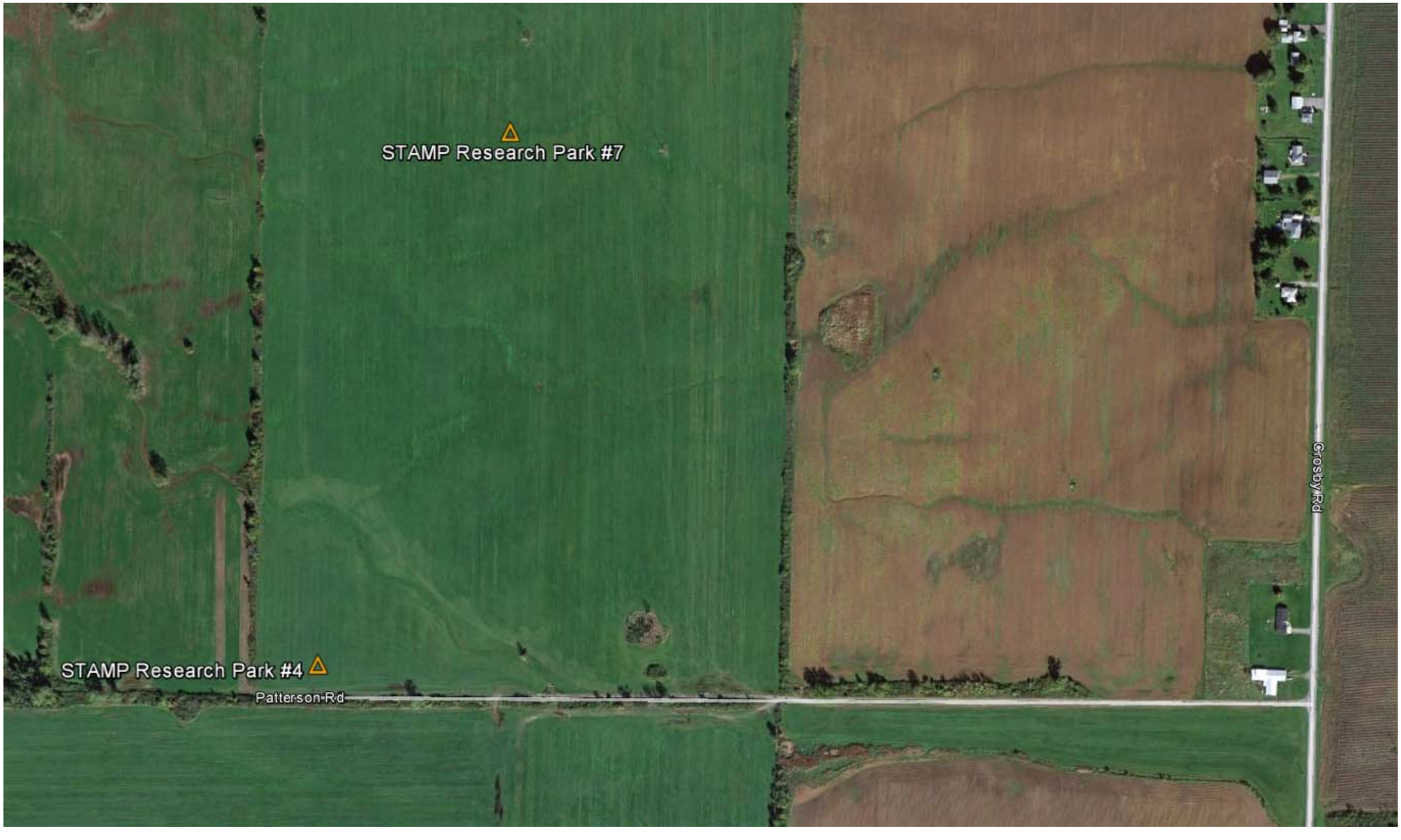
Figure A-10 (EAST)

Location of Seismographs Along Linear Array

1000 feet

Figure A-10 (WEST)

Location of Seismographs Along Linear Array



1000 feet

Figure A-11

Location of Seismographs Along Fletcher Chapel Road

1000 feet

Figure A-12

Location of Signature Blast, STAMP Research Park, and Other Quarry Operations

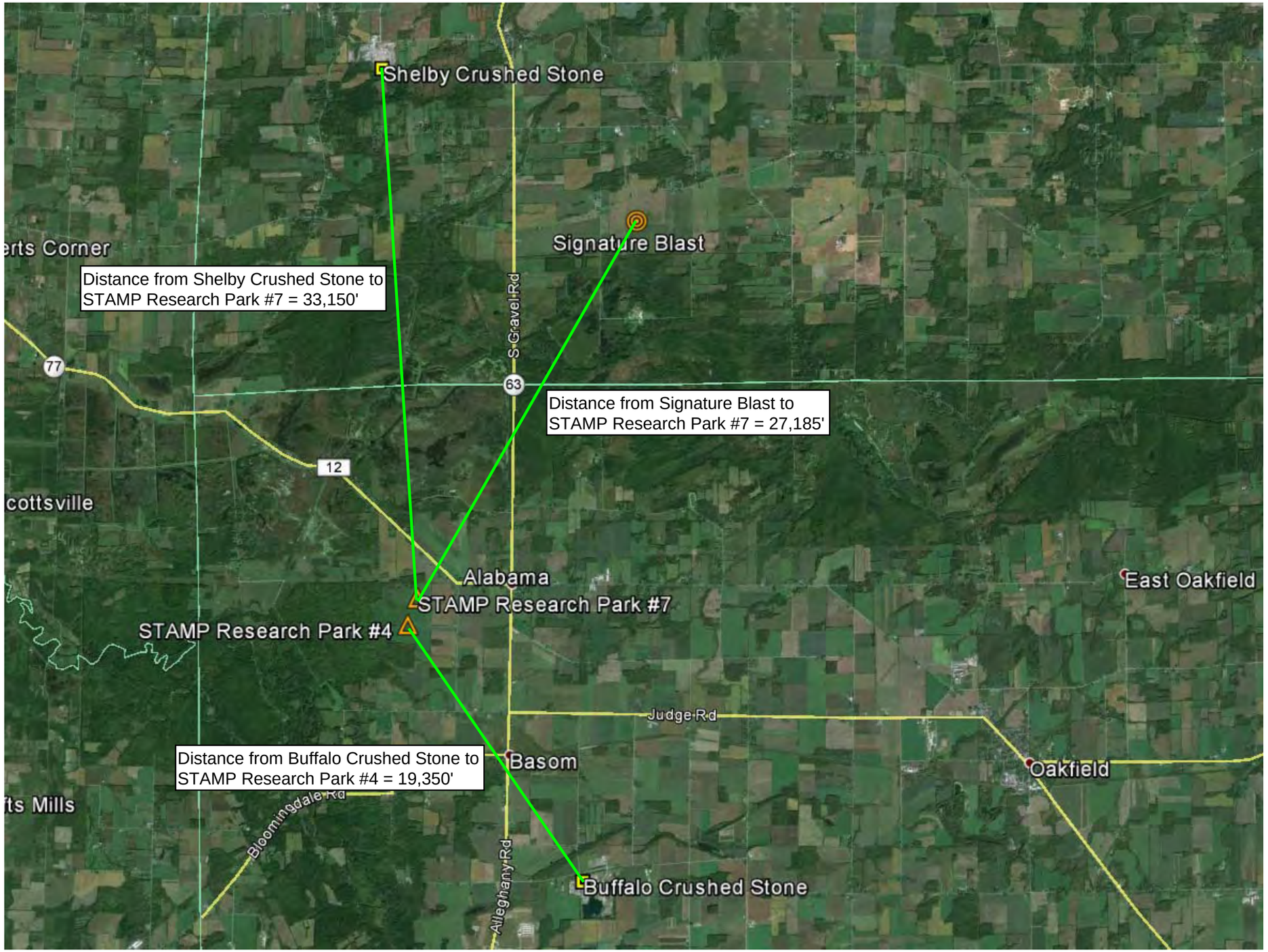


Figure A-13

FRONTIER STONE
SIGNATURE BLAST
SEPTEMBER 17, 2014

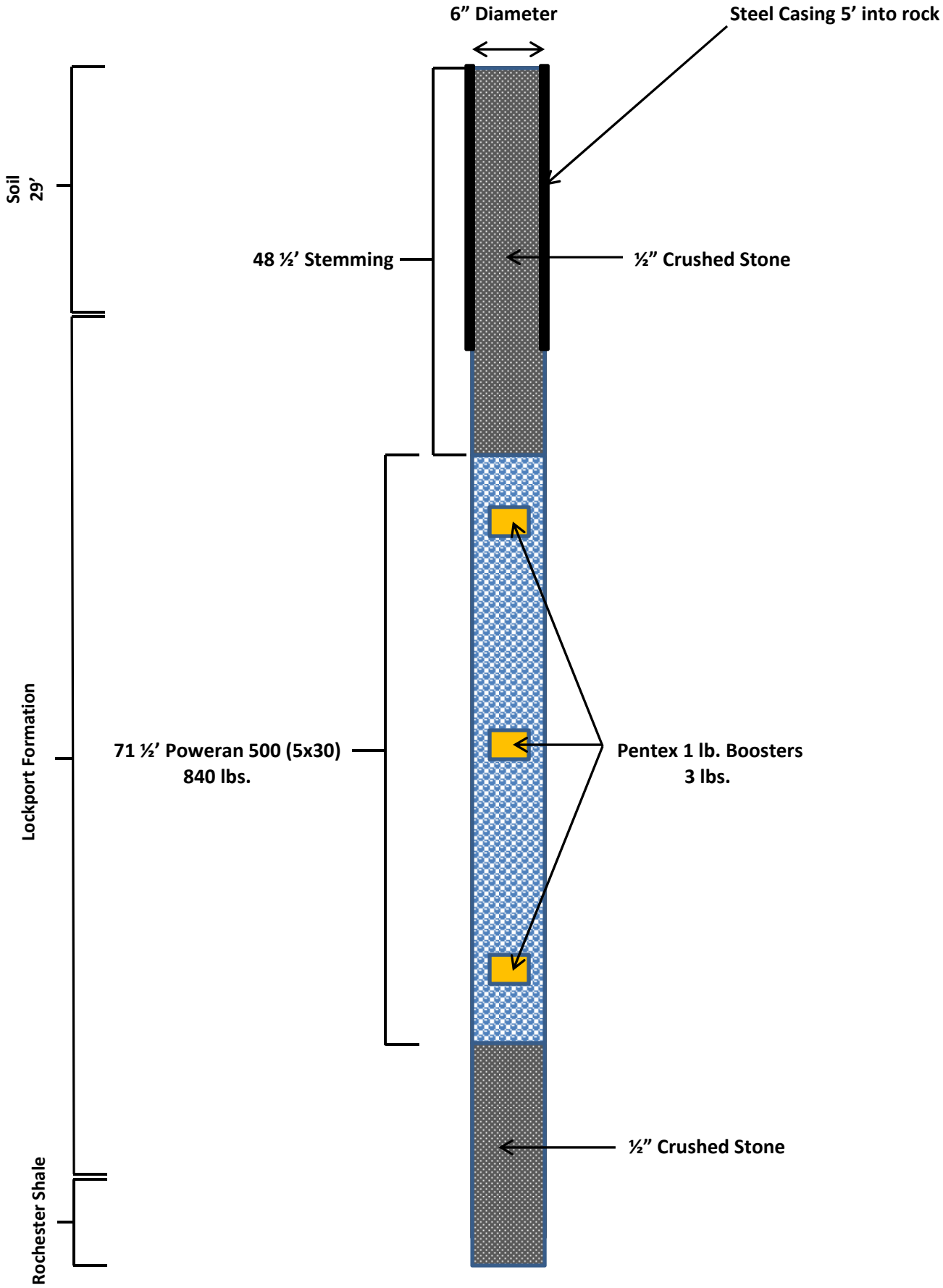


Figure A-14

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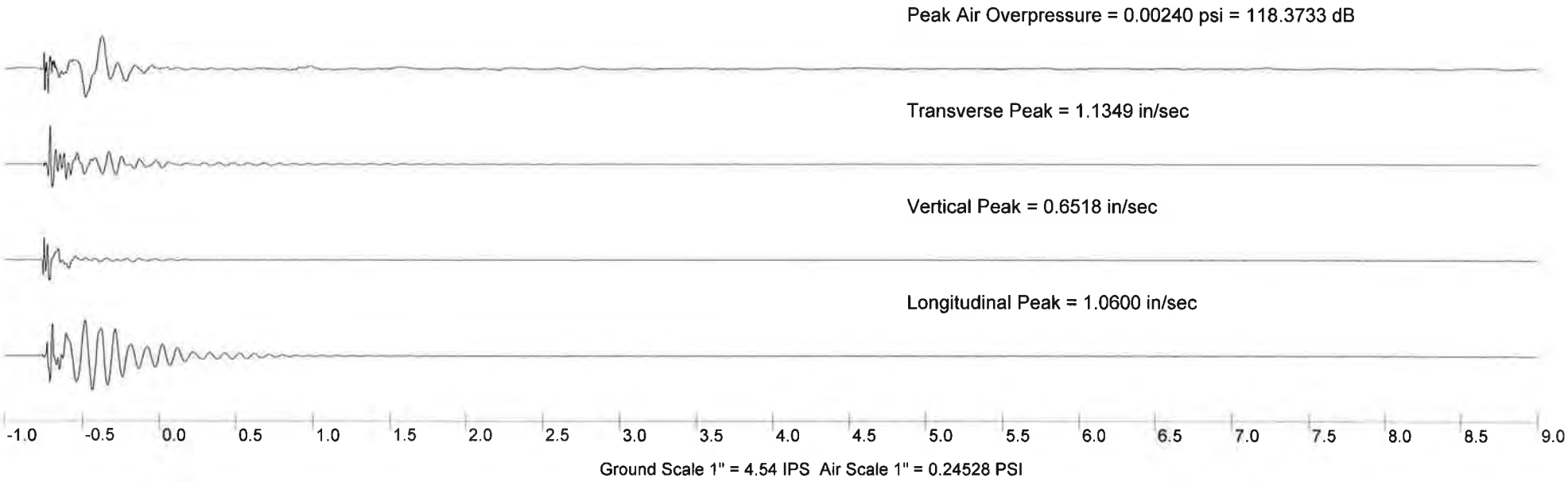
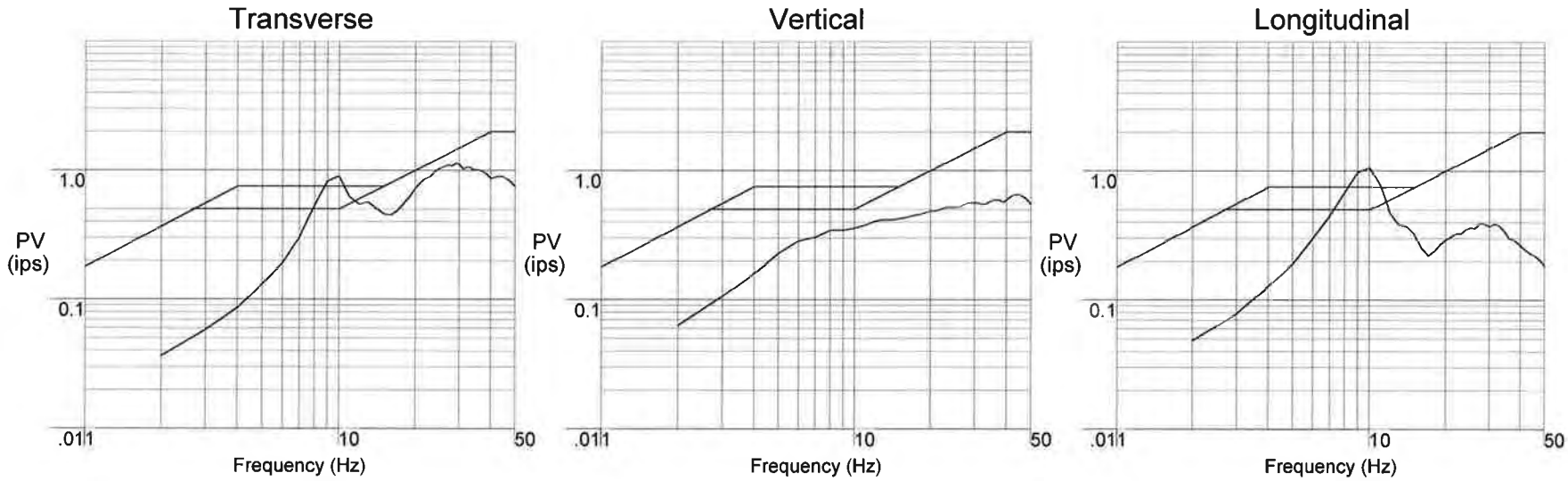
Signature Shot 1

Date and Time: 09/17/2014 13:00:05

Instantel Instrument: BB8334 Distance = 301 ft Location: Array



Ground Scale 1" = 4.54 IPS Air Scale 1" = 0.24528 PSI



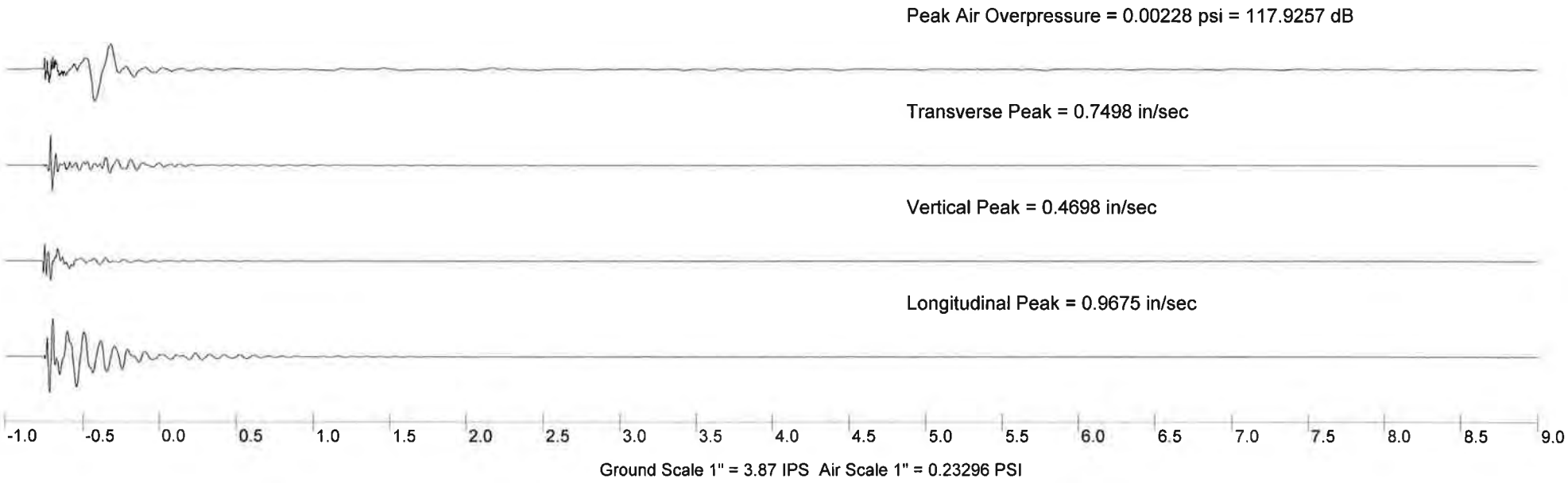
0308000 03701000000.0101224951 06400800000.0500014993 01001000000.0000034988 014401.406 100100100

RSVP

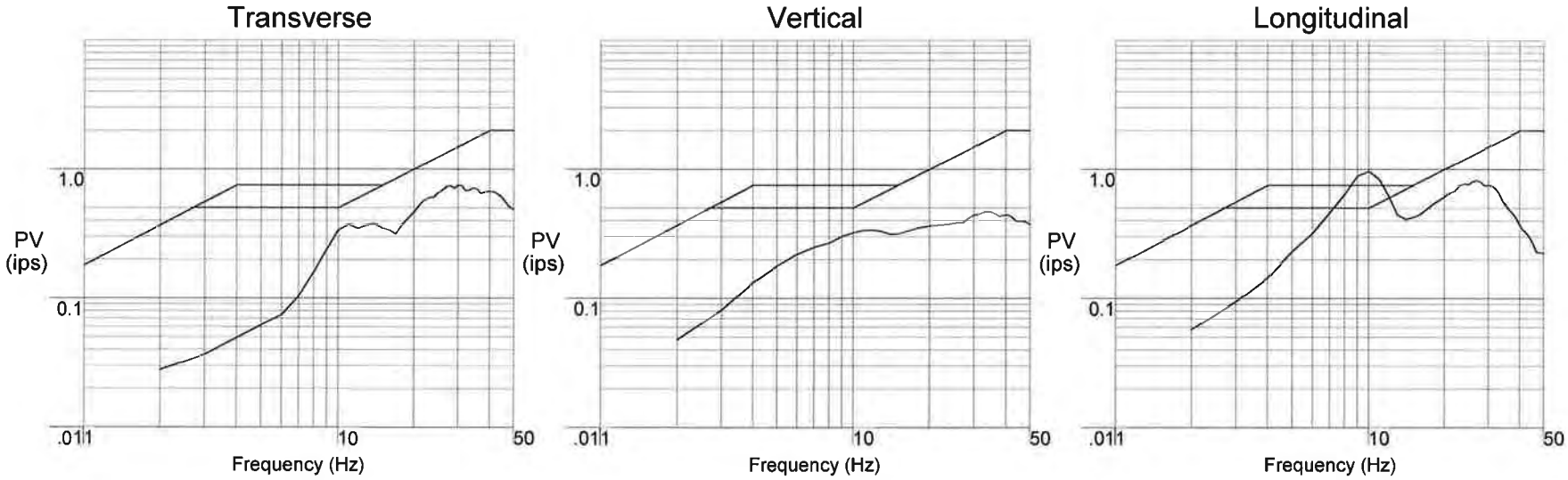
Signature Shot 1

Date and Time: 09/17/2014 13:00:06

Instantel Instrument: BB8602 Distance = 356 ft Location: Array



Ground Scale 1" = 3.87 IPS Air Scale 1" = 0.23296 PSI



0286000 03901100000.0100274995 02300900000 0500014994 02701000000.0100054996 014401 242 100100100

RSVP

-

Signature Shot 1

Date and Time: 09/17/2014 13:00:05

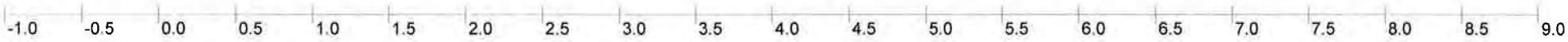
Instantel Instrument: BB11398 Distance = 419 ft Location: Array

Peak Air Overpressure = 0.00011 psi = 91.5644 dB

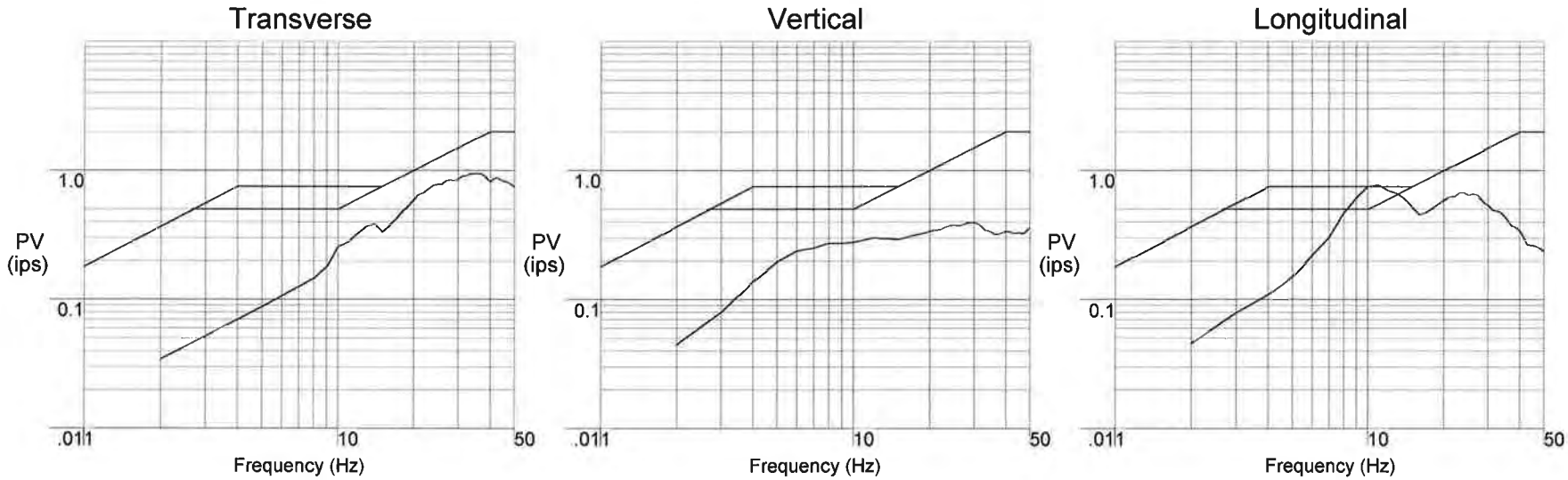
Transverse Peak = 0.9498 in/sec

Vertical Peak = 0.3984 in/sec

Longitudinal Peak = 0.7725 in/sec



Ground Scale 1" = 3.8 IPS Air Scale 1" = 0.0112 PSI



0153000 03902500000 0100094987 05700700000 0600284984 02301000000 0100004998 014501 164 100100100

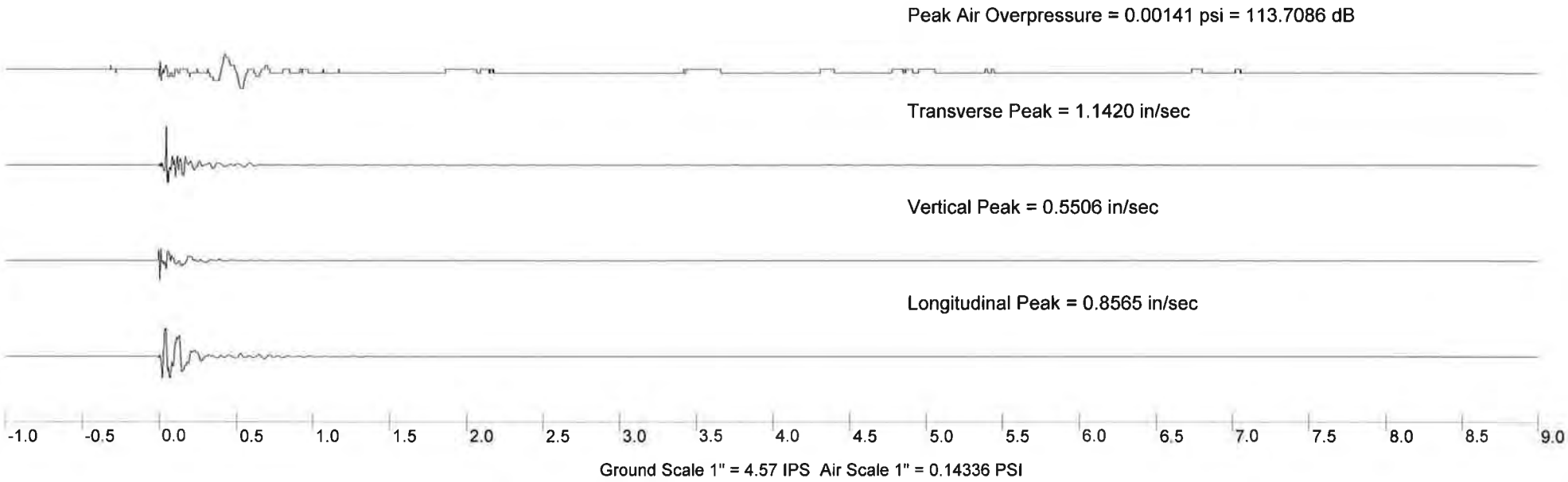
RSVP

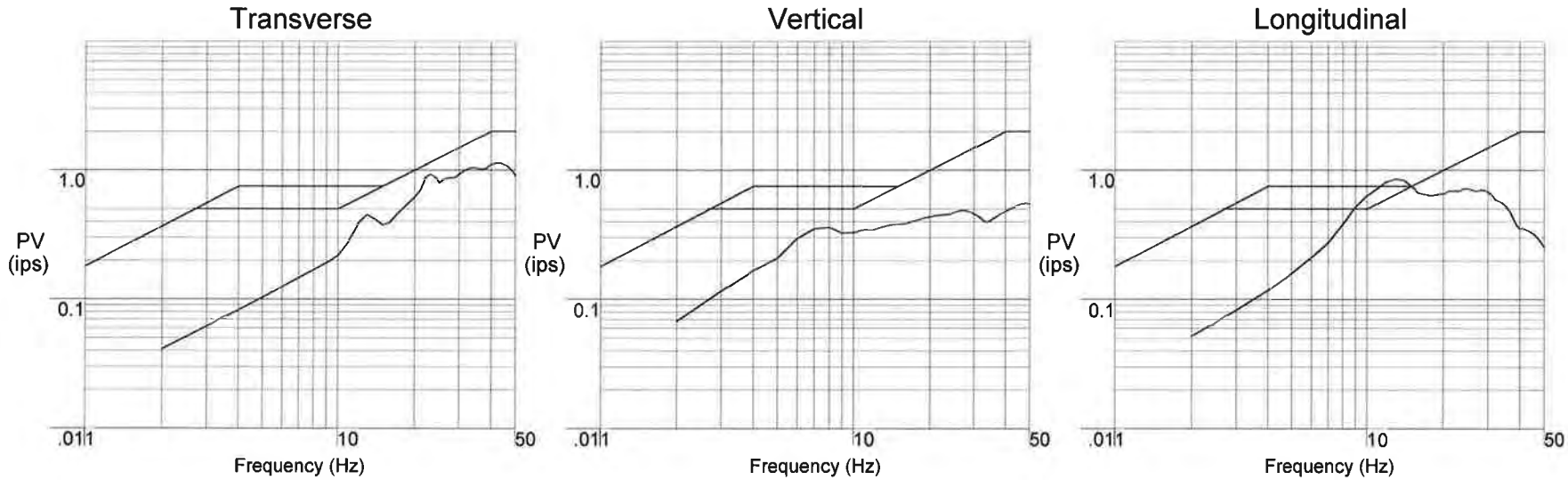
FRONTIER STONE - SHELBY NY

Signature Shot 1

Date and Time: 09/17/2014 13:00:22

Geosonics Instrument: 4620 Distance = 476 ft Location: Array





0758000 10002500000.0104964980 16700700000.0800004999 04201500000.0100004999 052001.448 100100100

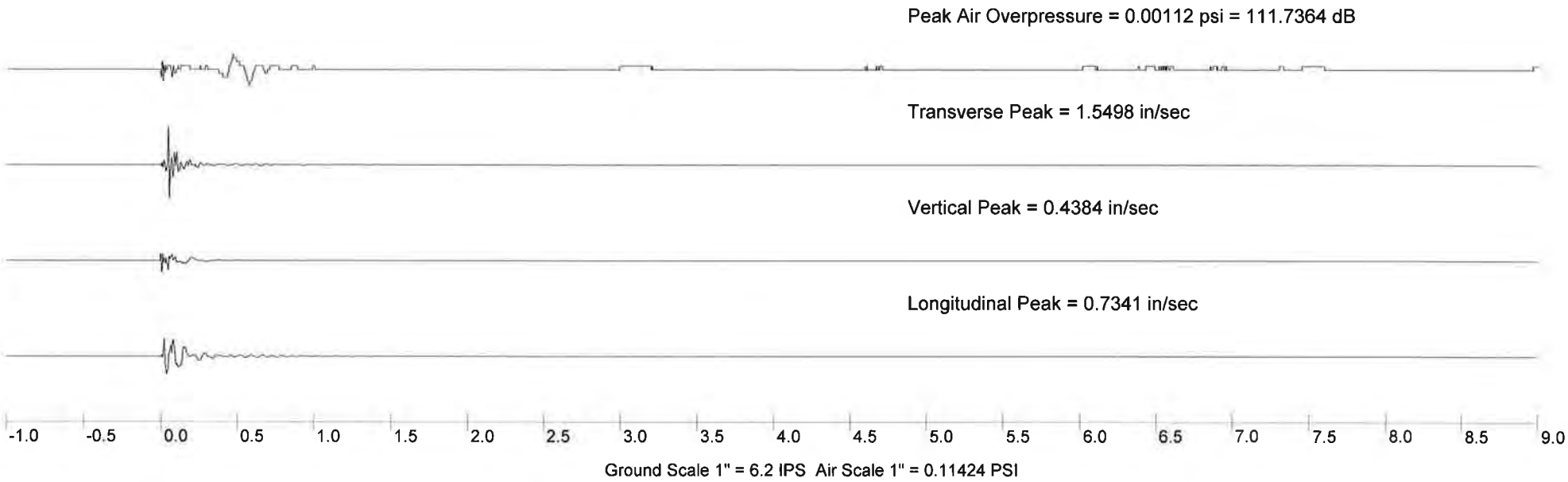
RSVP

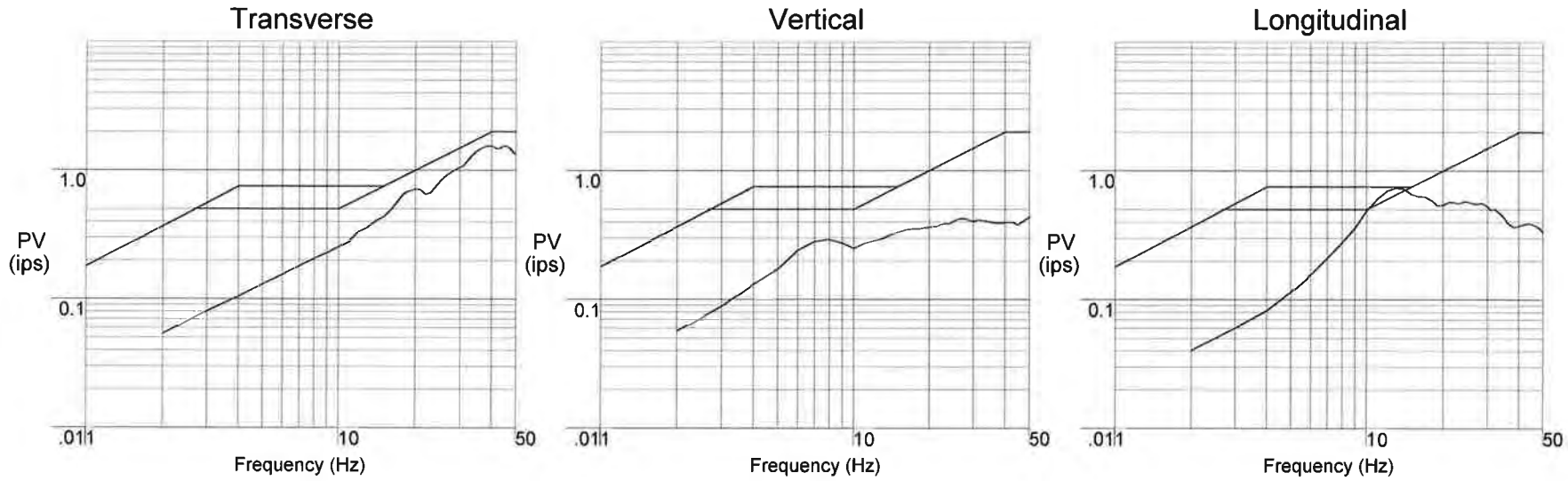
FRONTIER STONE - SHELBY NY

Signature Shot 1

Date and Time: 09/17/2014 13:00:23

Geosonics Instrument: 4621 Distance = 531 ft Location: Array





0732000 08305000000 0100004999 12500700000.0900004999 08301400000.0100004999 052101.692 100100100

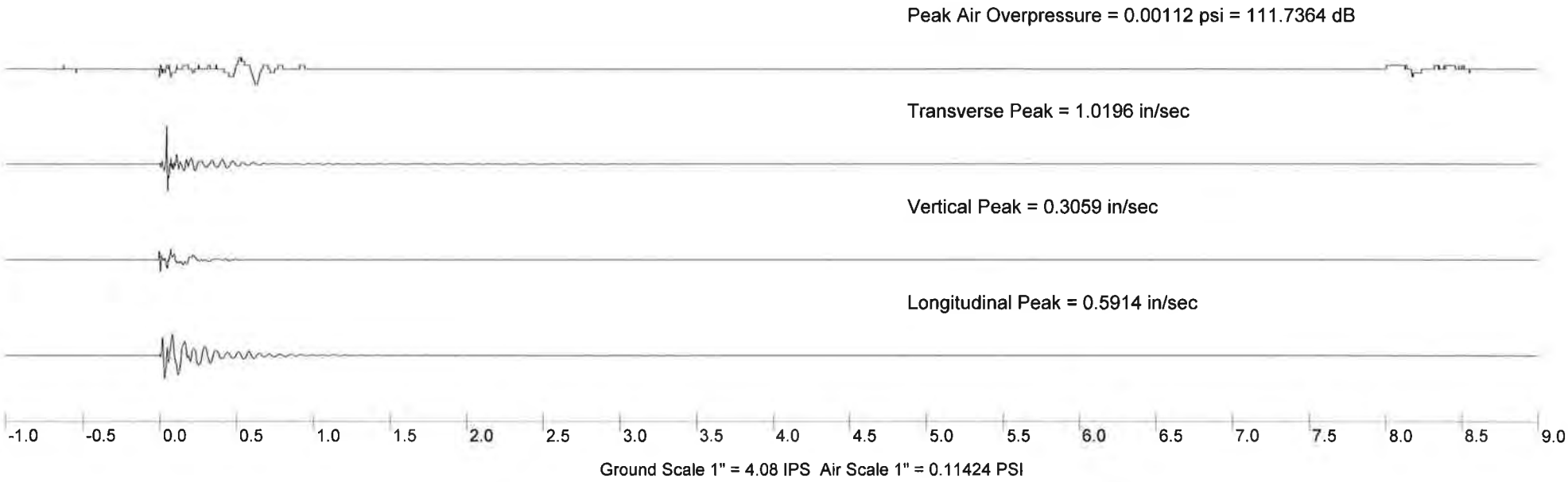
RSVP

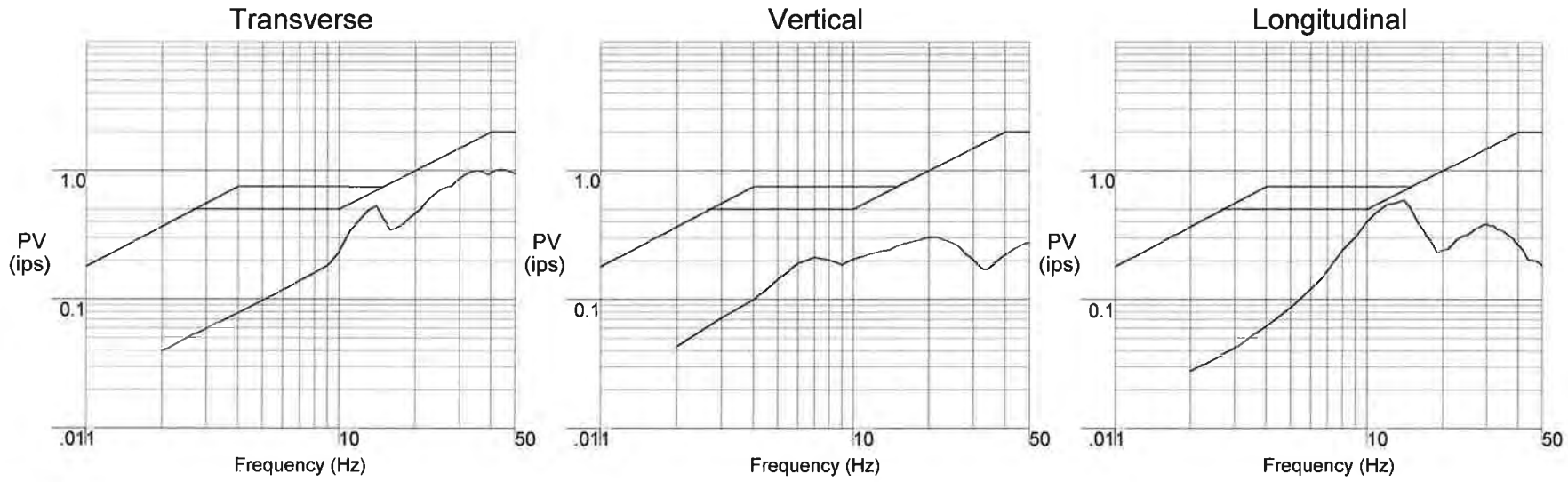
FRONTIER STONE - SHELBY NY

Signature Shot 1

Date and Time: 09/17/2014 13:00:22

Geosonics Instrument: 4455 Distance = 592 ft Location: Array





0809000 08301400000.0100004999 02400600000.0700004999 04601400000.0100004999 052001.064 100100100

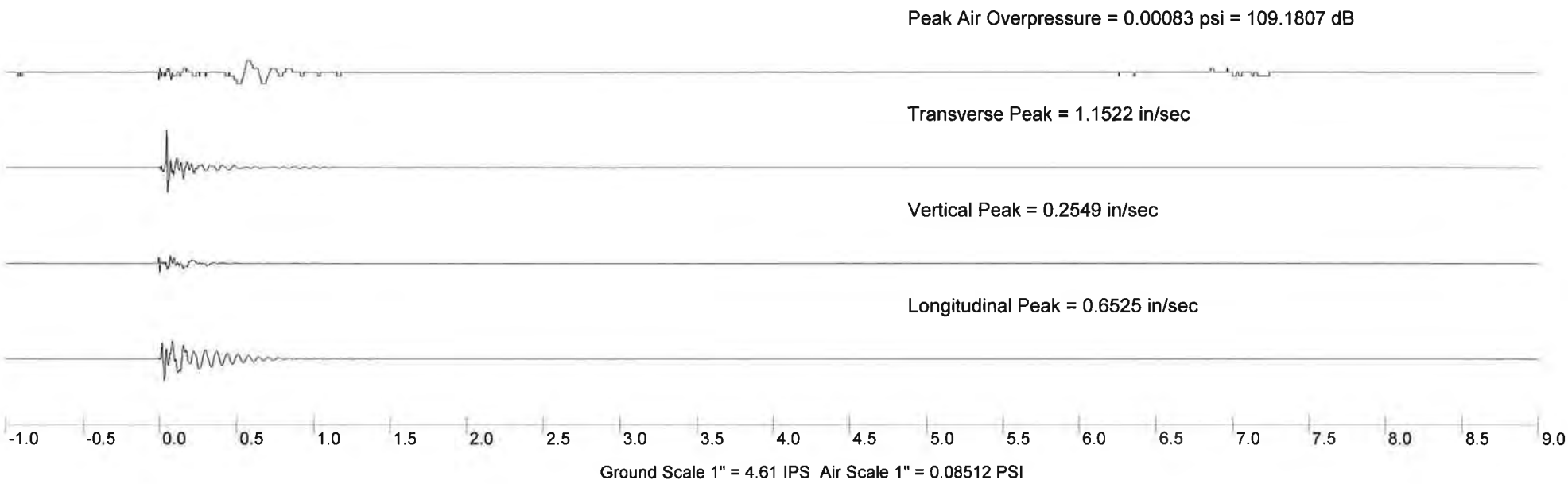
RSVP

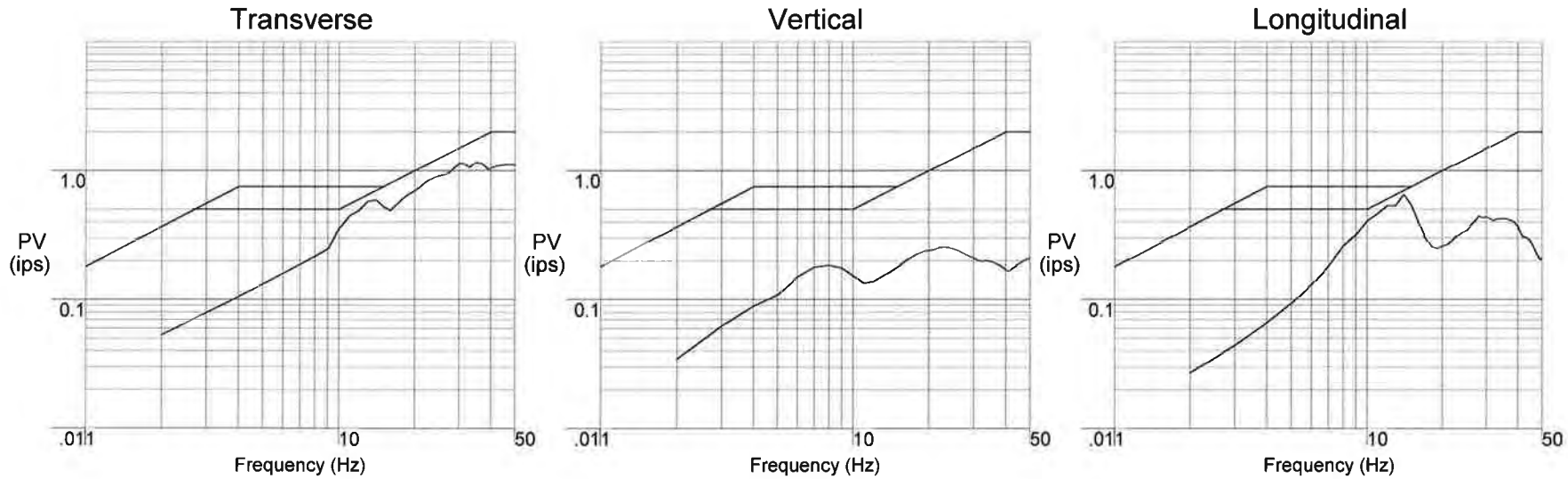
FRONTIER STONE - SHELBY NY

Signature Shot 1

Date and Time: 09/17/2014 13:00:24

Geosonics Instrument: 4644 Distance = 651 ft Location: Array





0749000 05601400000.0200004999 02600600000.0500004999 05601400000.0100004999 052201.185 100100100

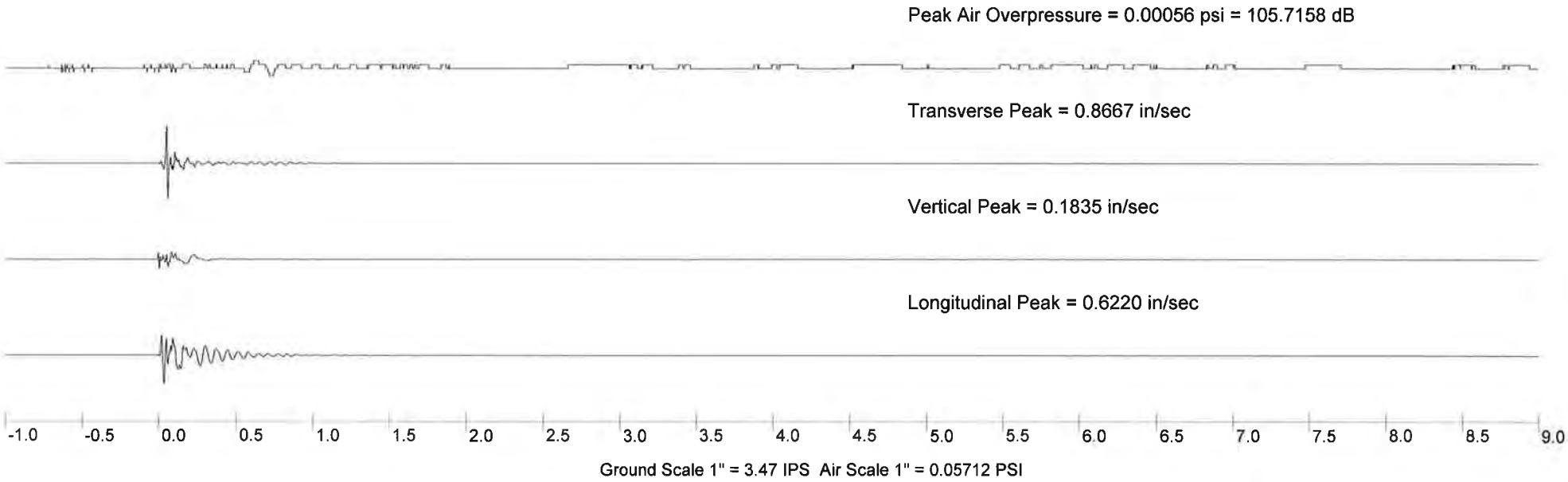
RSVP

FRONTIER STONE - SHELBY NY

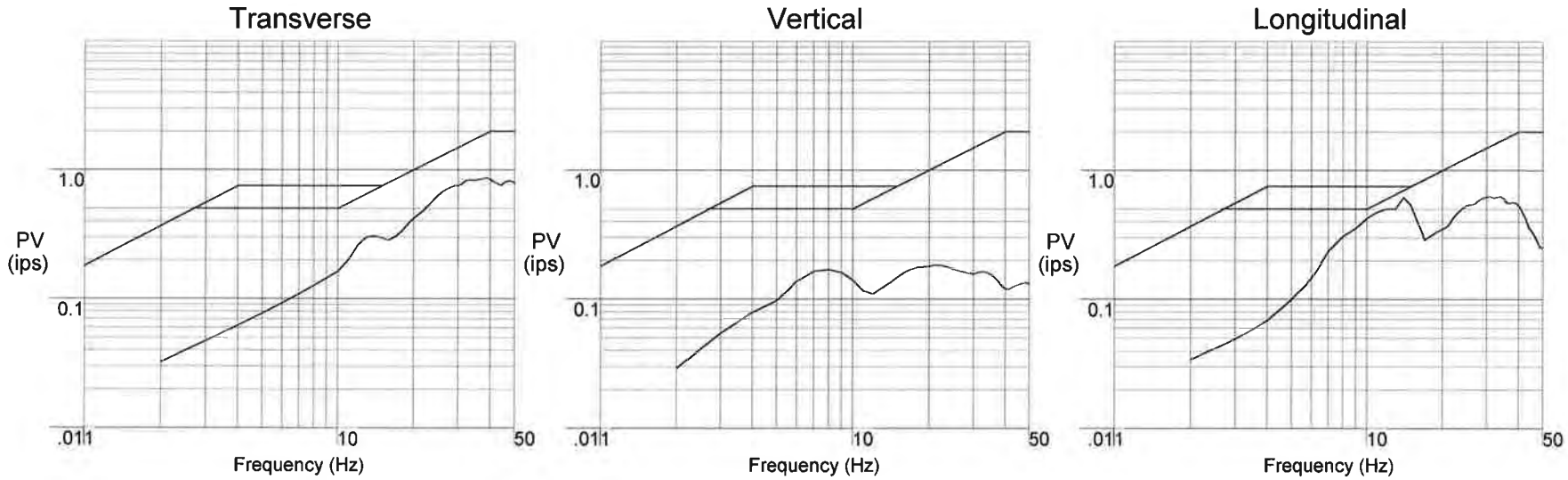
Signature Shot 1

Date and Time: 09/17/2014 13:00:25

Geosonics Instrument: 4416 Distance = 708 ft Location: Array



Ground Scale 1" = 3.47 IPS Air Scale 1" = 0.05712 PSI



0804000 06301500000.0100004999 01700600000.0600004999 05601400000.0100004999 052400.939 100100100

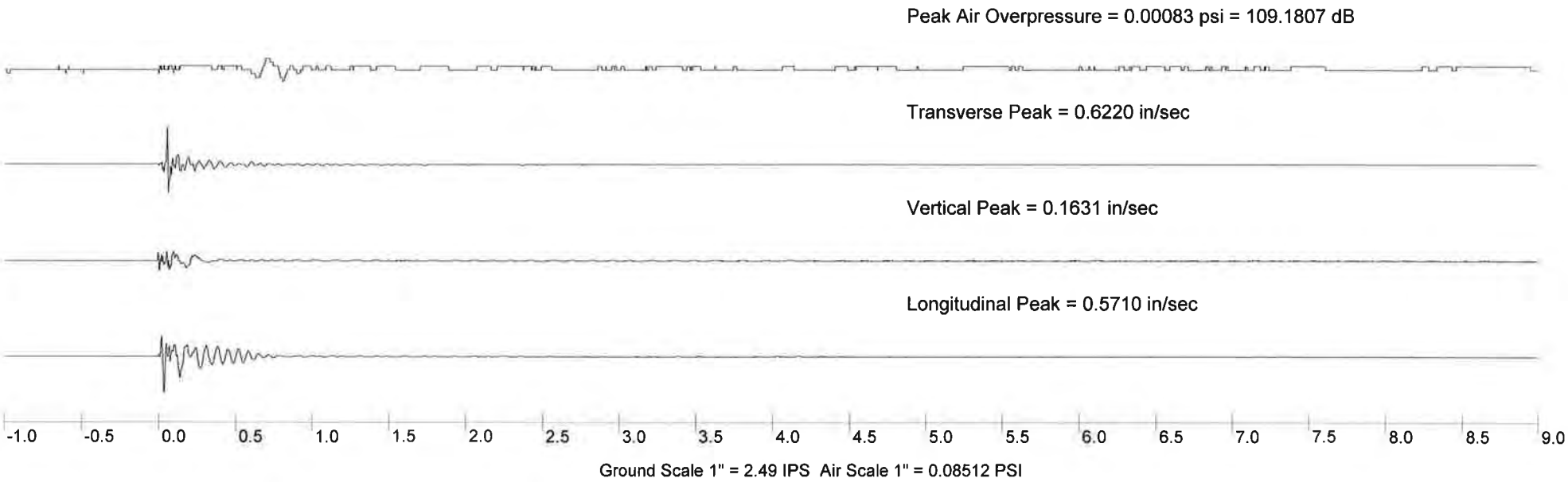
RSVP

FRONTIER STONE - SHELBY NY

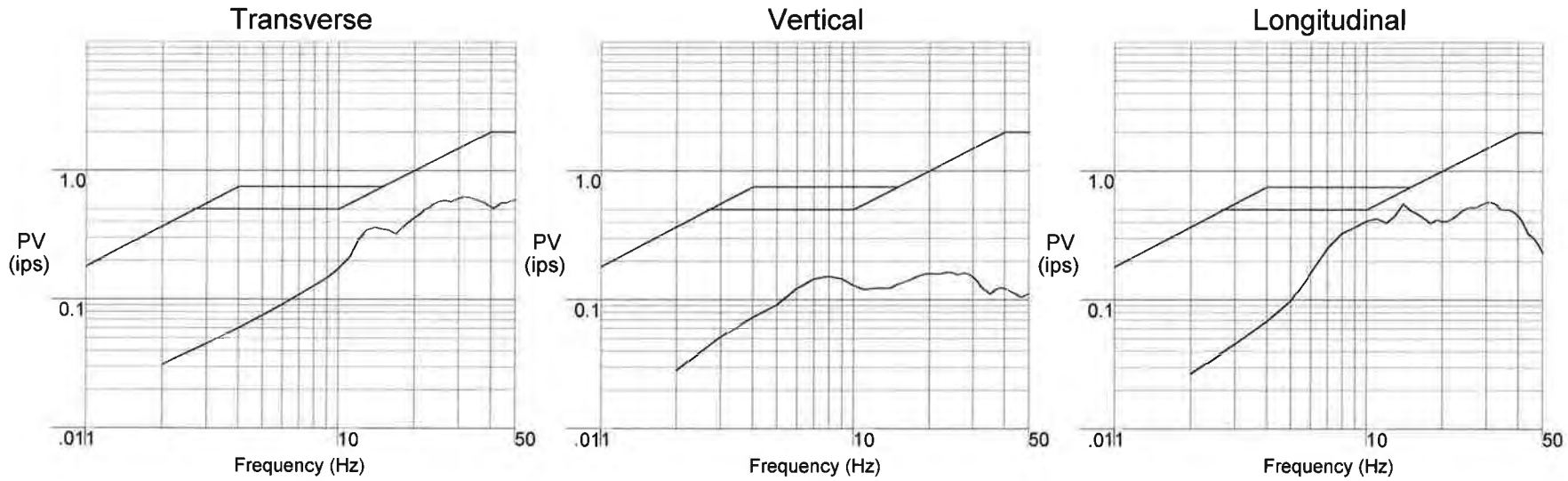
Signature Shot 1

Date and Time: 09/17/2014 13:00:22

Geosonics Instrument: 4237 Distance = 787 ft Location: Array



Ground Scale 1" = 2.49 IPS Air Scale 1" = 0.08512 PSI



0844000 05001400000.0200004999 01700800000.0800004999 05601500000.0200004999 052400.662 100100100

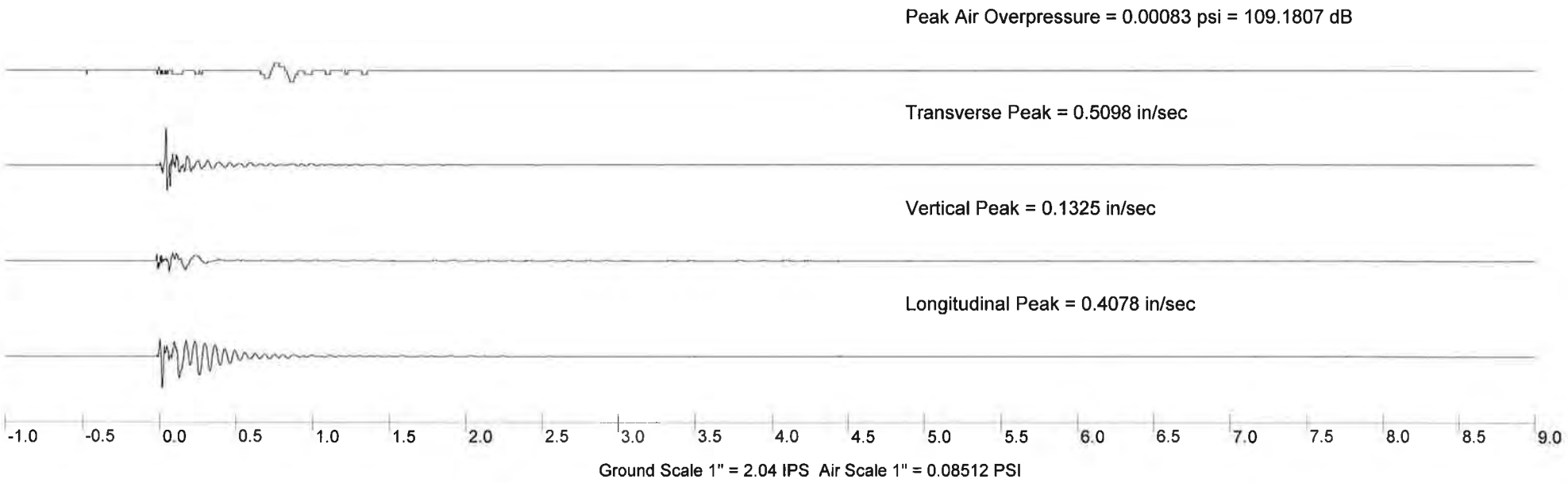
RSVP

FRONTIER STONE - SHELBY NY

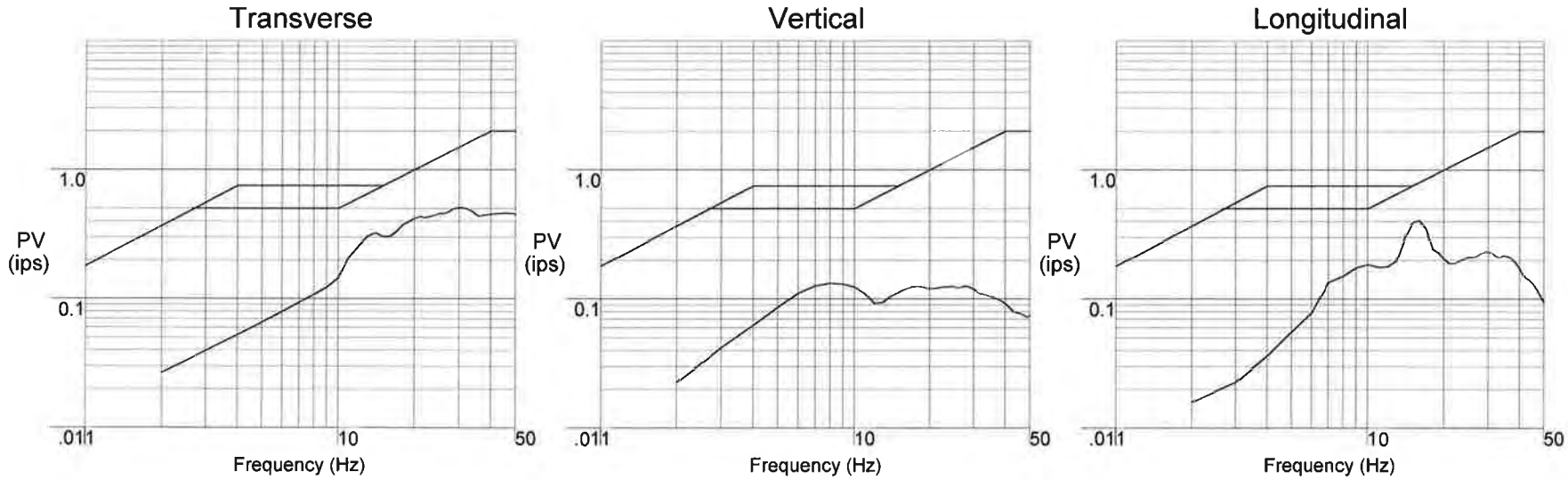
Signature Shot 1

Date and Time: 09/17/2014 13:00:23

Geosonics Instrument: 4812 Distance = 880 ft Location: Array



Ground Scale 1" = 2.04 IPS Air Scale 1" = 0.08512 PSI



0923000 05001500000.0200004999 05600800000.0700004999 06301600000.0100004999 051800.514 100100100

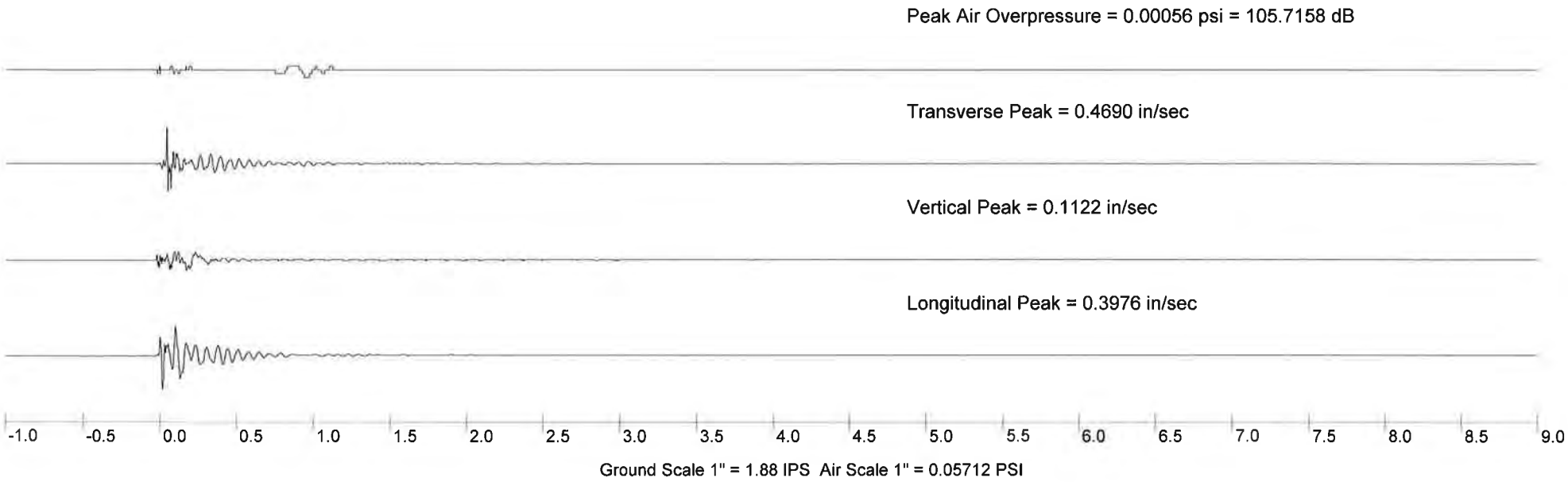
RSVP

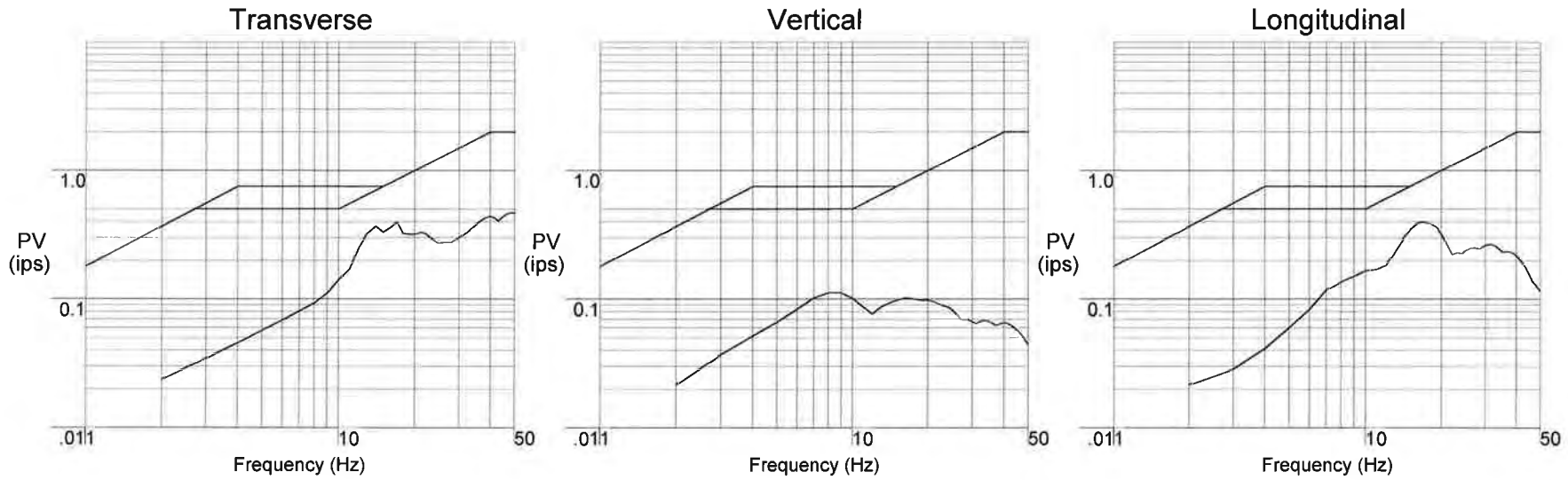
FRONTIER STONE - SHELBY NY

Signature Shot 1

Date and Time: 09/17/2014 13:00:23

Geosonics Instrument: 4826 Distance = 998 ft Location: Array





0969000 06301600000.0200004999 01100800000.0500004999 06301500000.0100004999 052000 493 100100100

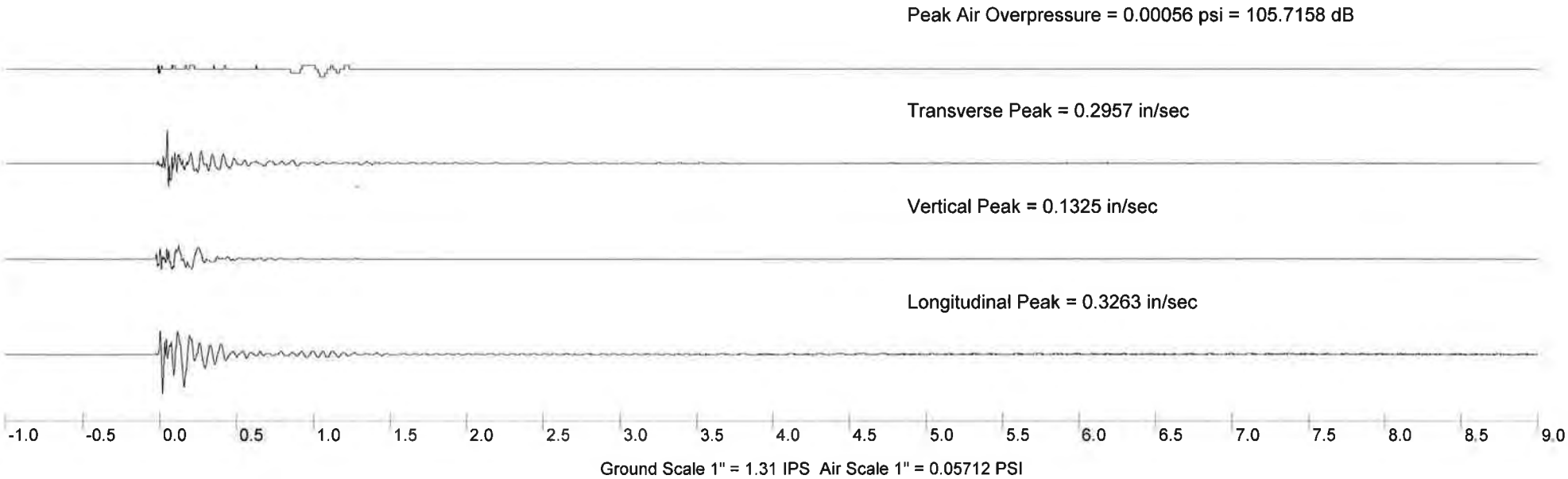
RSVP

FRONTIER STONE - SHELBY NY

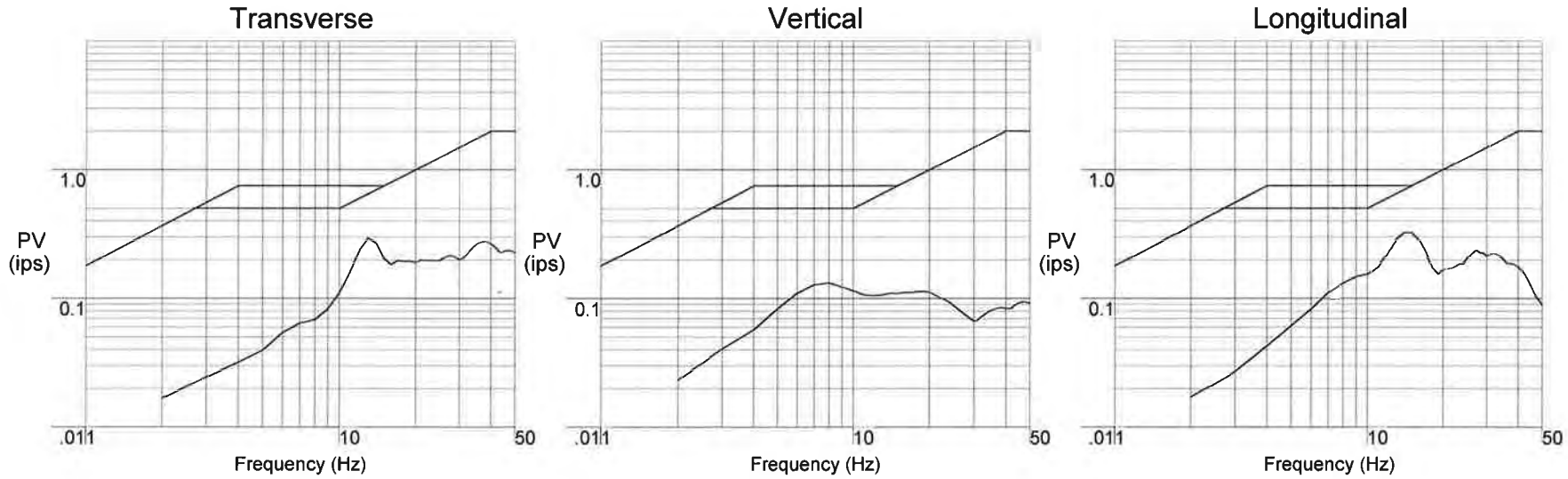
Signature Shot 1

Date and Time: 09/17/2014 13:00:22

Geosonics Instrument: 4689 Distance = 1116 ft Location: Array



Ground Scale 1" = 1.31 IPS Air Scale 1" = 0.05712 PSI



1019000 05601400000 0200004999 01601500000 0700004999 06301400000 0100004999 050900 331 100100100

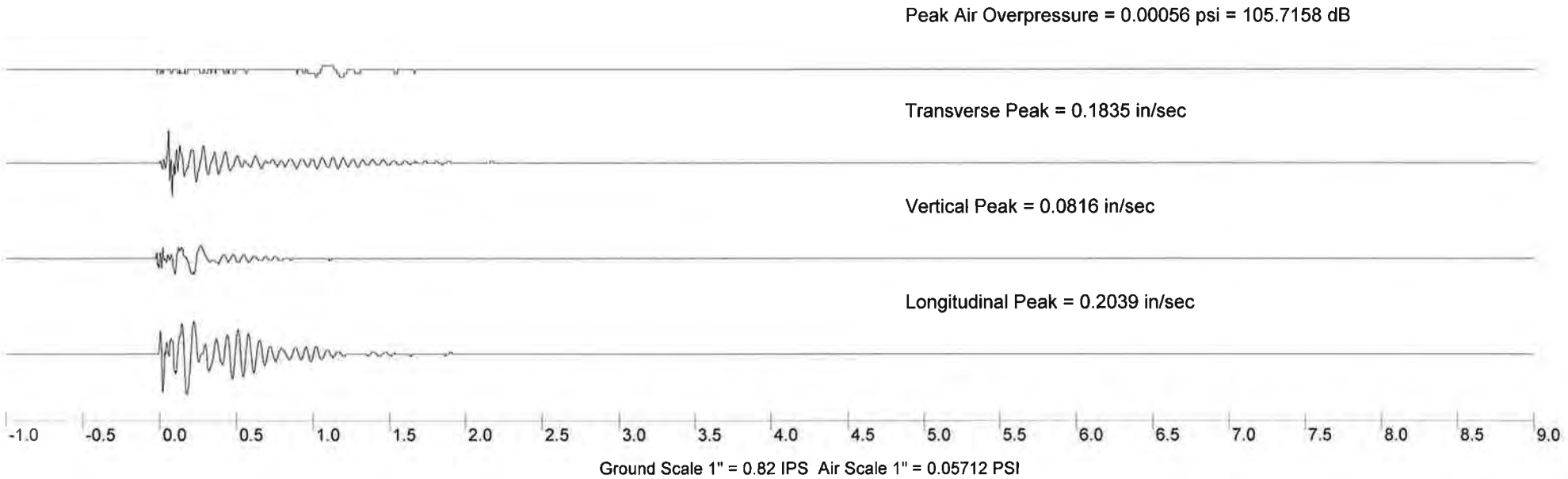
RSVP

FRONTIER STONE - SHELBY NY

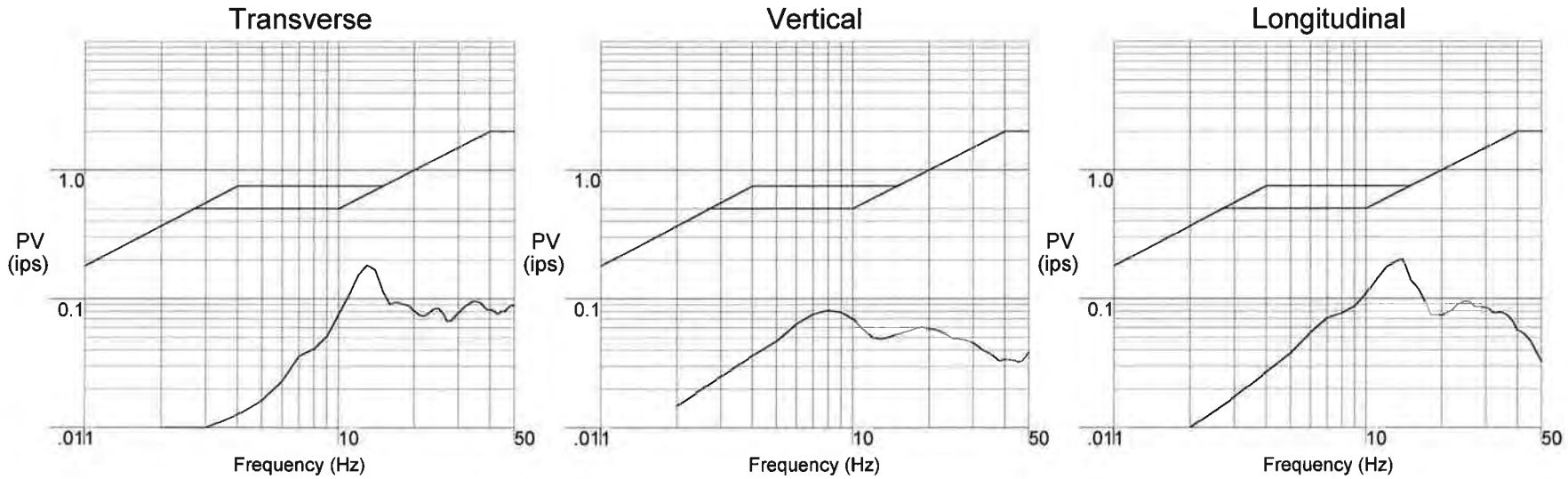
Signature Shot 1

Date and Time: 09/17/2014 13:00:23

Geosonics Instrument: 4463 Distance = 1263 ft Location: Array



Ground Scale 1" = 0.82 IPS Air Scale 1" = 0.05712 PSI



1005000 04201300000.0100004999 01200700000.0400004999 02401400000.0100004999 050900.206 100100100

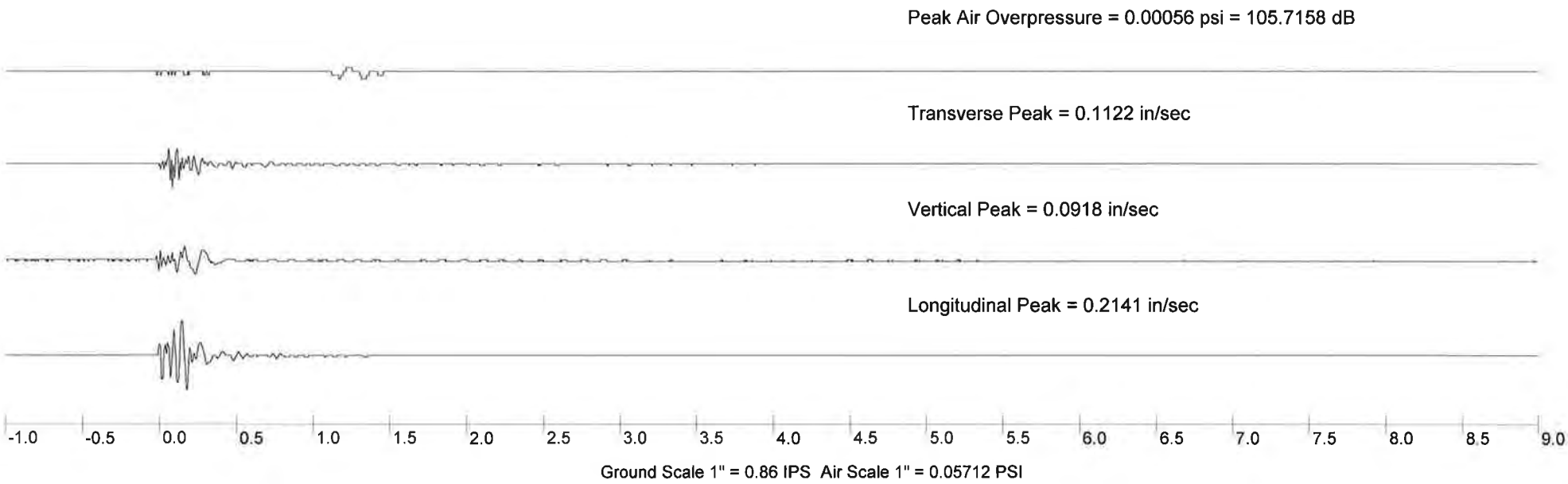
RSVP

FRONTIER STONE - SHELBY NY

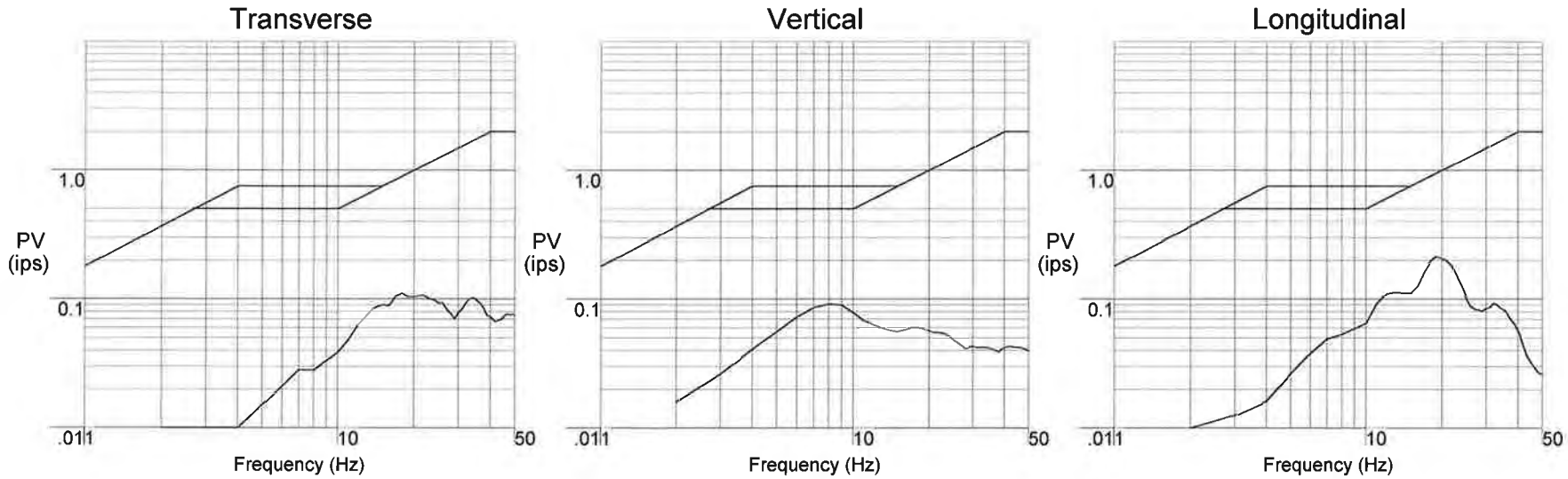
Signature Shot 1

Date and Time: 09/17/2014 13:00:22

Geosonics Instrument: 4779 Distance = 1437 ft Location: Array



Ground Scale 1" = 0.86 IPS Air Scale 1" = 0.05712 PSI



1081000 12501800000.0400004999 01400900000.0800004999 02901900000.0100004999 057100.222 100100100

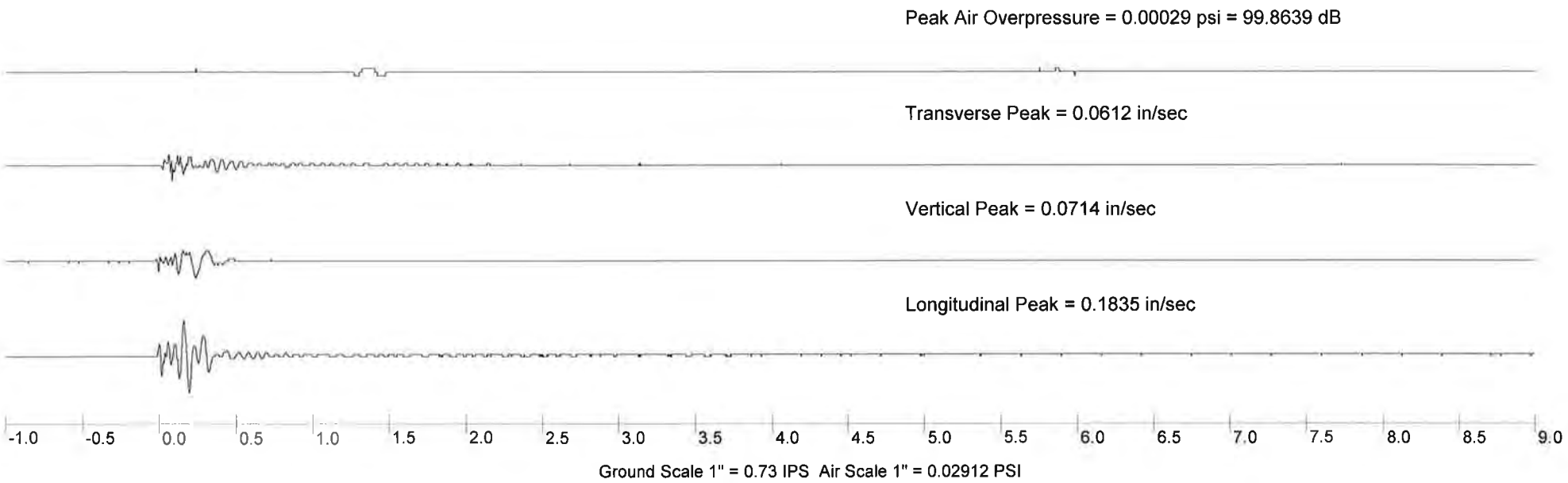
RSVP

FRONTIER STONE - SHELBY NY

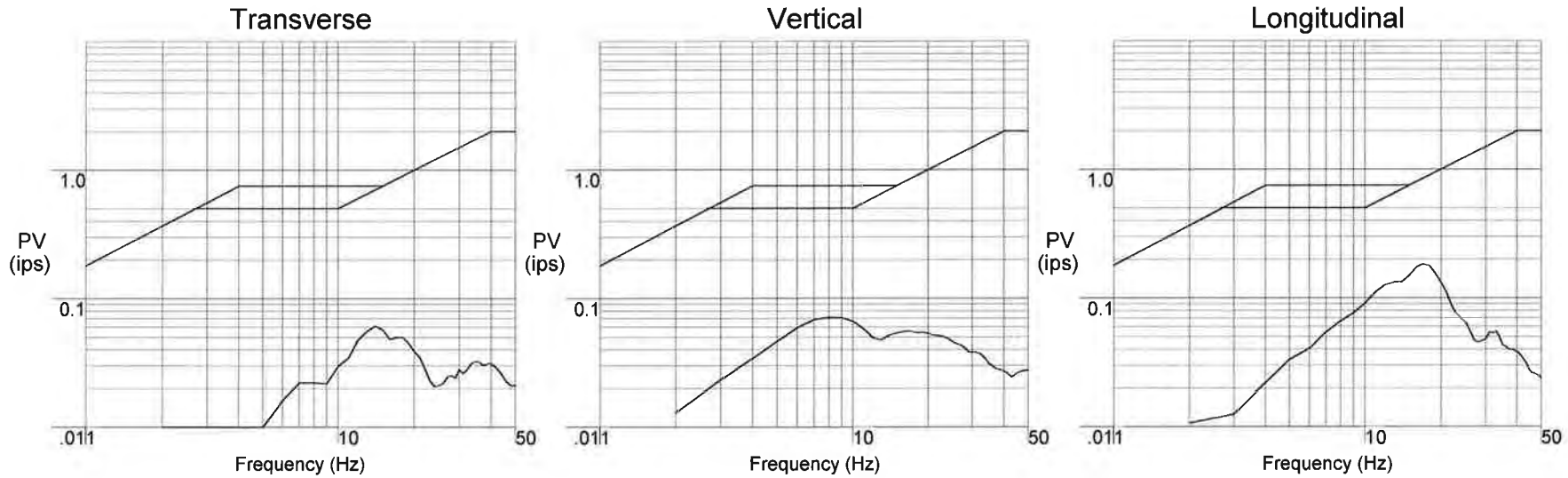
Signature Shot 1

Date and Time: 09/17/2014 13:00:23

Geosonics Instrument: 4785 Distance = 1581 ft Location: Array



Ground Scale 1" = 0.73 IPS Air Scale 1" = 0.02912 PSI



0617000 02101800000.0300004999 01900800000.0600004999 02601700000 0100004999 057700 196 100100100

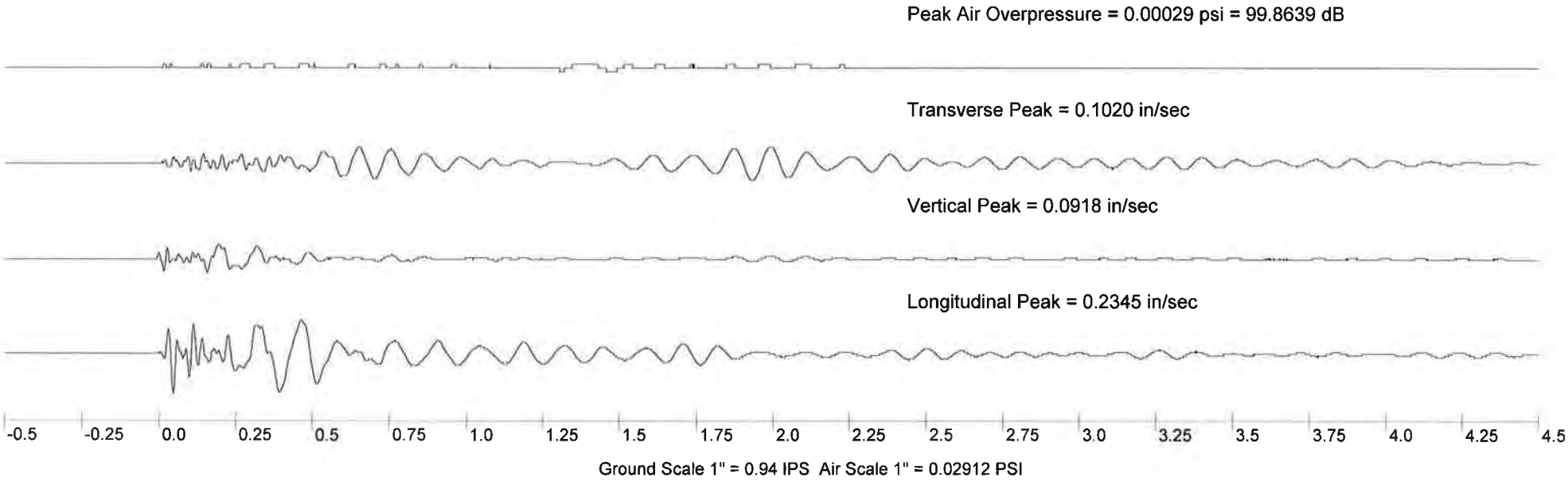
RSVP

FRONTIER STONE - SHELBY NY

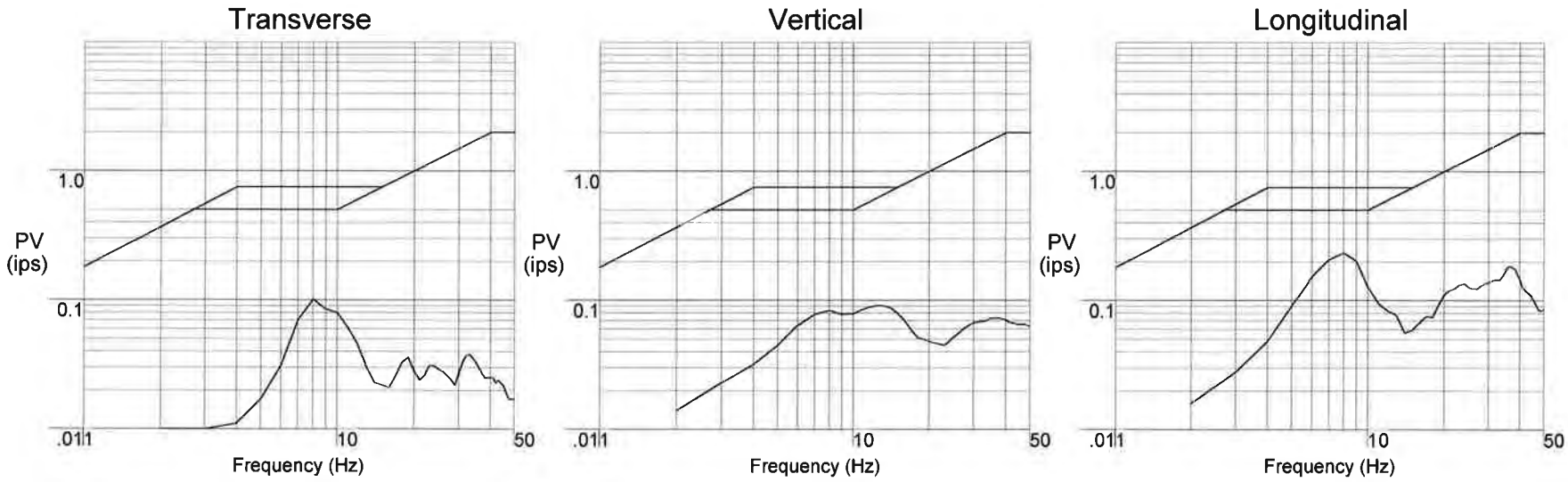
Signature Shot 1

Date and Time: 09/17/2014 13:00:16

Geosonics Instrument: 4325 Distance = 1619 ft Location: Fletcher Chapel Rd House



Ground Scale 1" = 0.94 IPS Air Scale 1" = 0.02912 PSI



0509000 00800700806.0205064962 00900801301.6204914892 03100700803.8600004999 054500.236 100100100

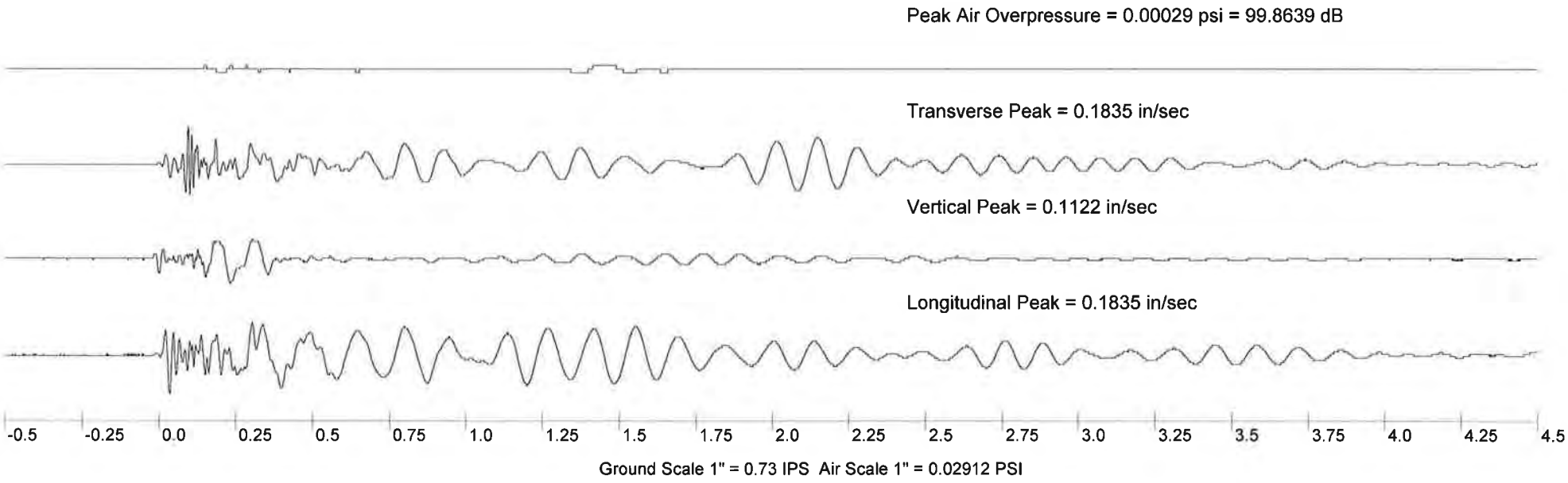
RSVP

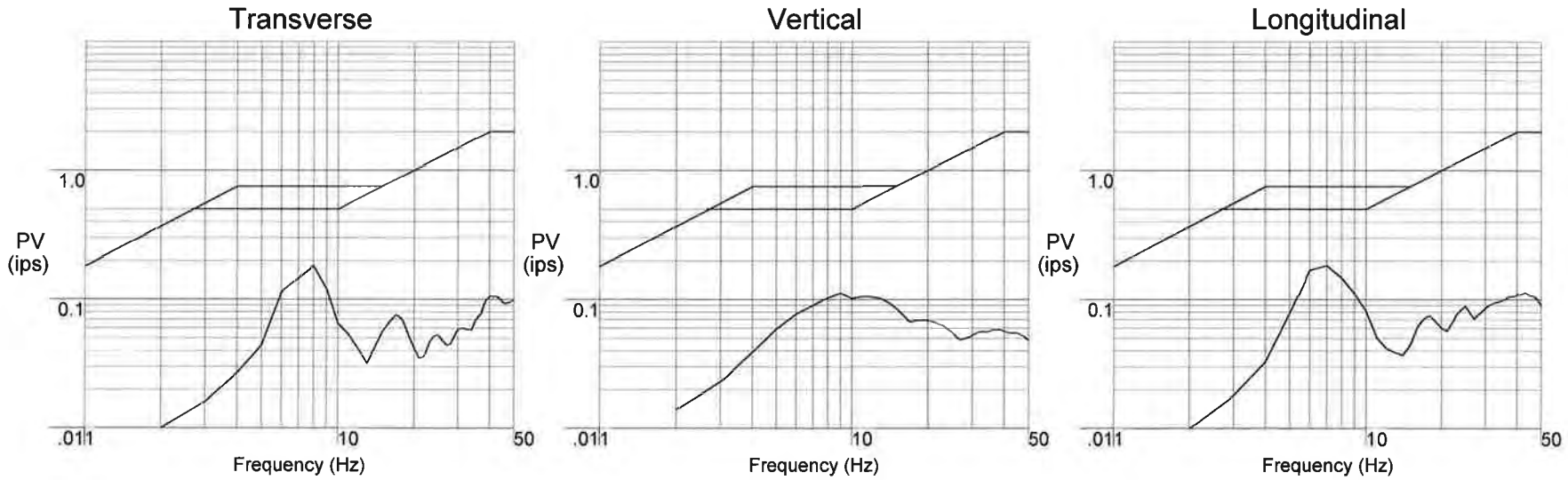
FRONTIER STONE - SHELBY NY

Signature Shot 1

Date and Time: 09/17/2014 13:00:19

Geosonics Instrument: 4355 Distance = 1694 ft Location: Fletcher Chape Accross Street





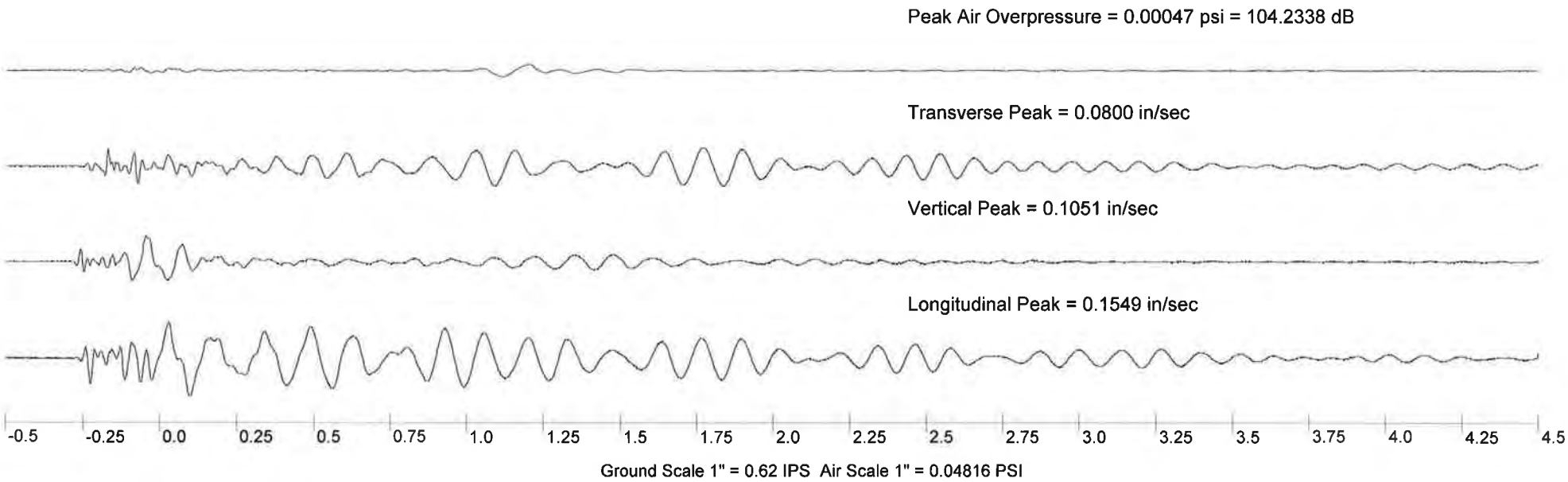
0645000 07100800803.7704944999 00800900901.7400004999 03300600704.6000254999 080300 205 100100100

RSVP

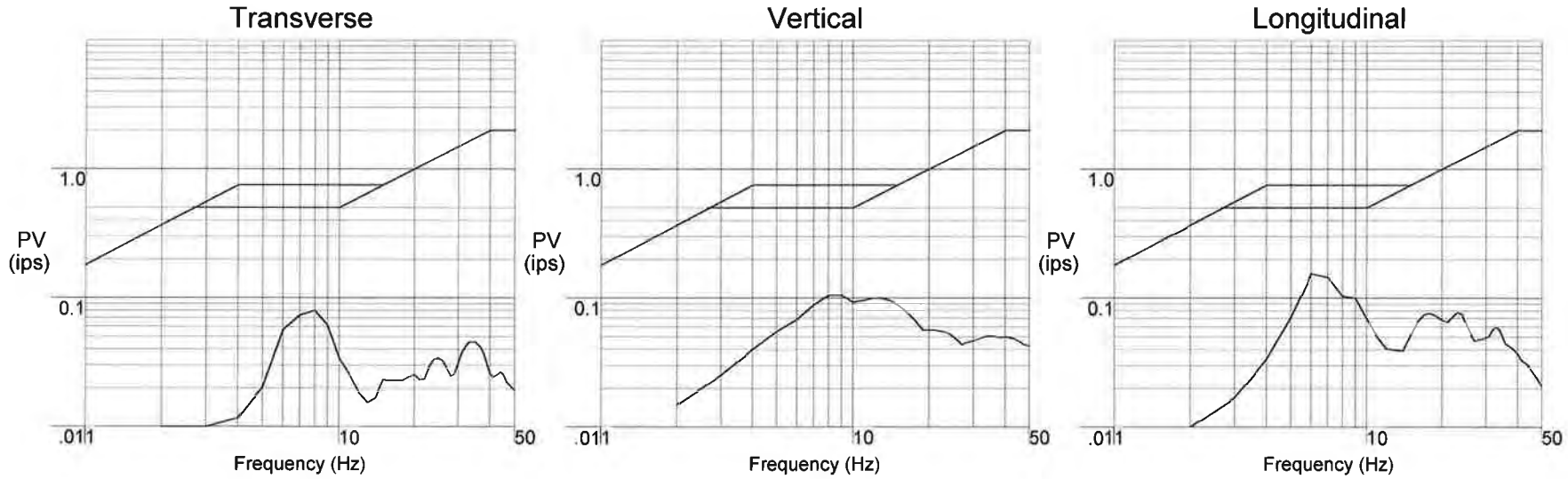
Signature Shot 1

Date and Time: 09/17/2014 13:00:05

Instantel Instrument: BB11233 Distance = 1699 ft Location: Fletcher Chapel Accross Street



Ground Scale 1" = 0.62 IPS Air Scale 1" = 0.04816 PSI



1612000 00800900000.0100124999 01100900000.0500134999 00700700000.0100004999 053000 166 100100100

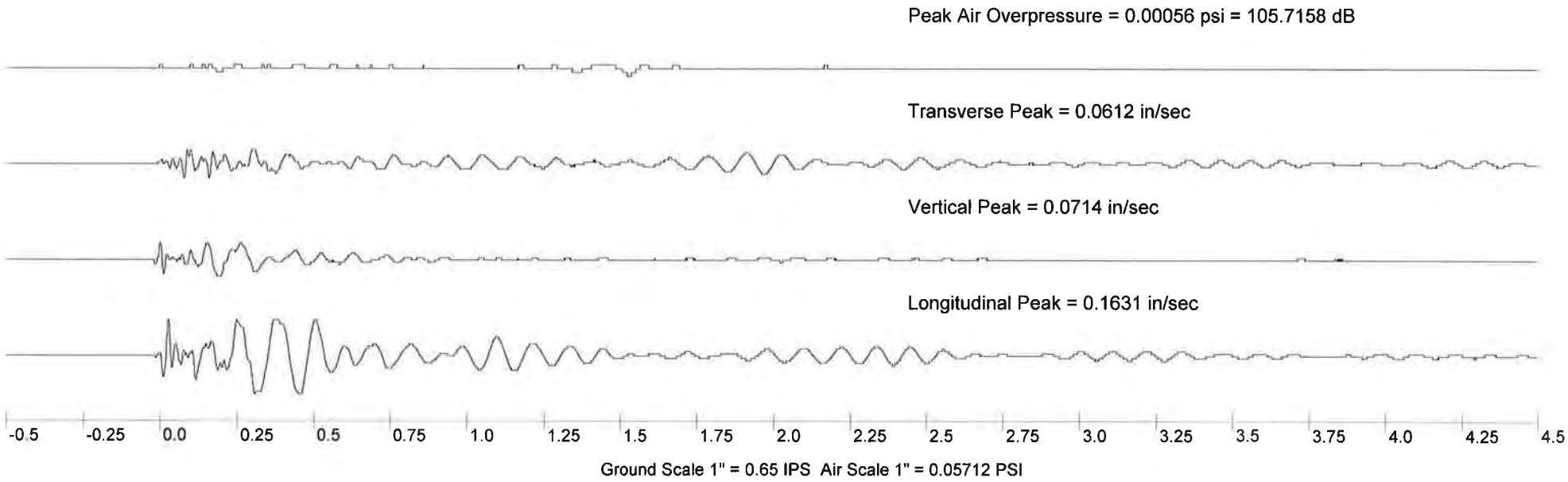
RSVP

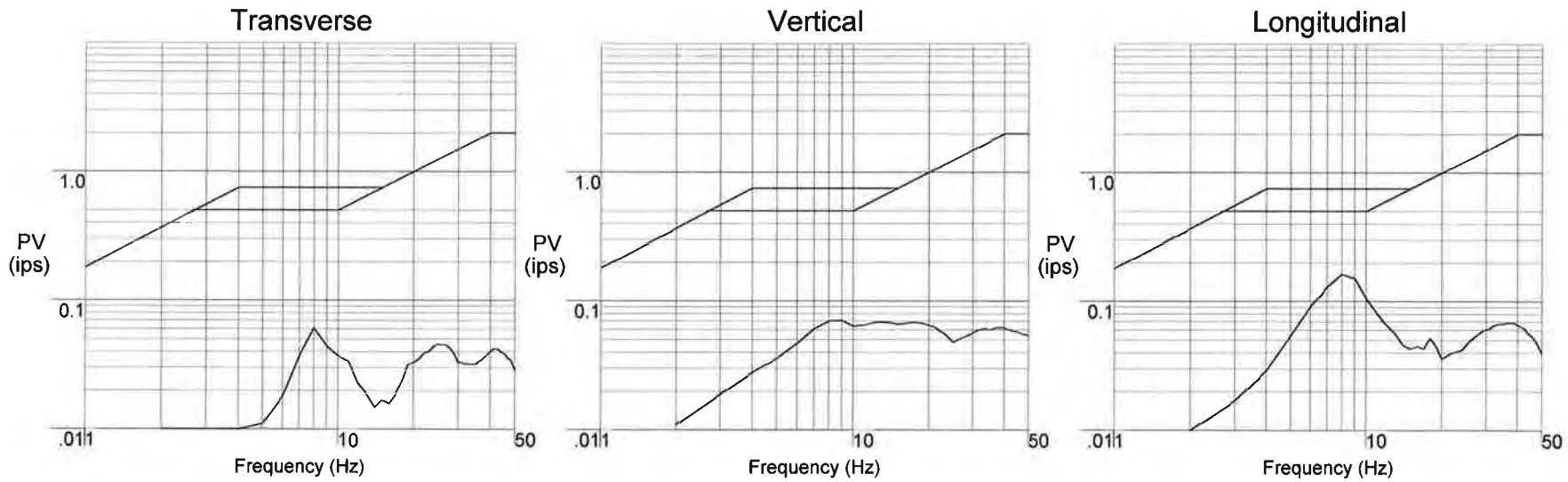
FRONTIER STONE - SHELBY NY

Signature Shot 1

Date and Time: 09/17/2014 13:00:17

Geosonics Instrument: 4085 Distance = 1706 ft Location: Fletcher Chapel Rd Garage





2022000 01300800804.5304924955 00701000901.7404794358 00800900805.2204854967 080500.182 100100100

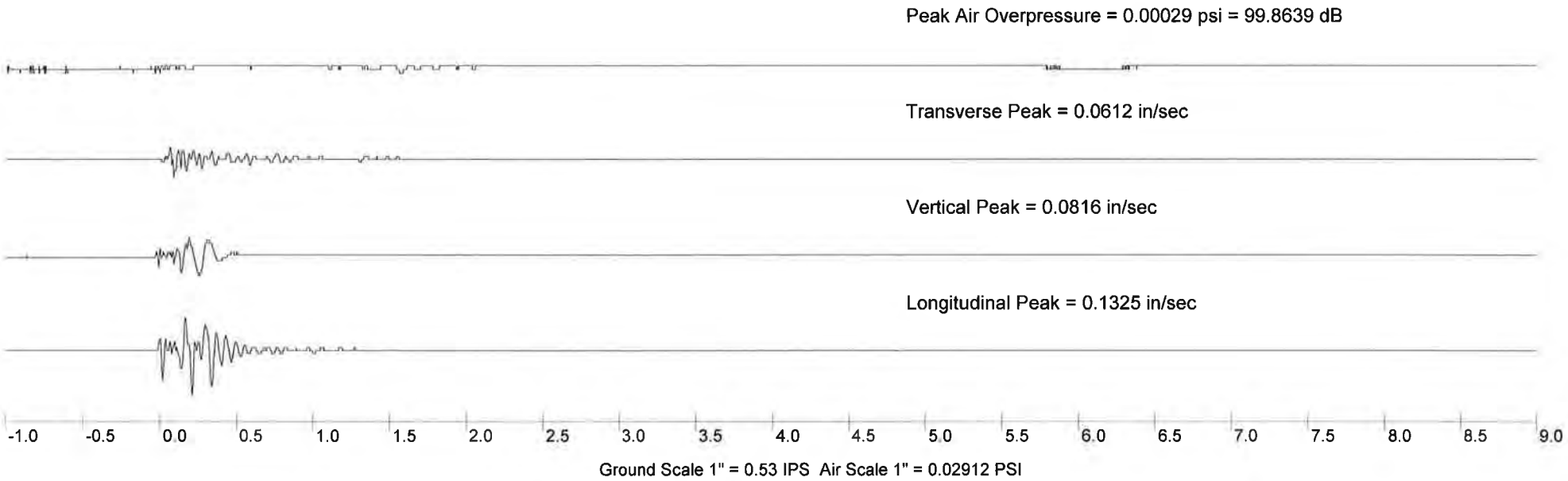
RSVP

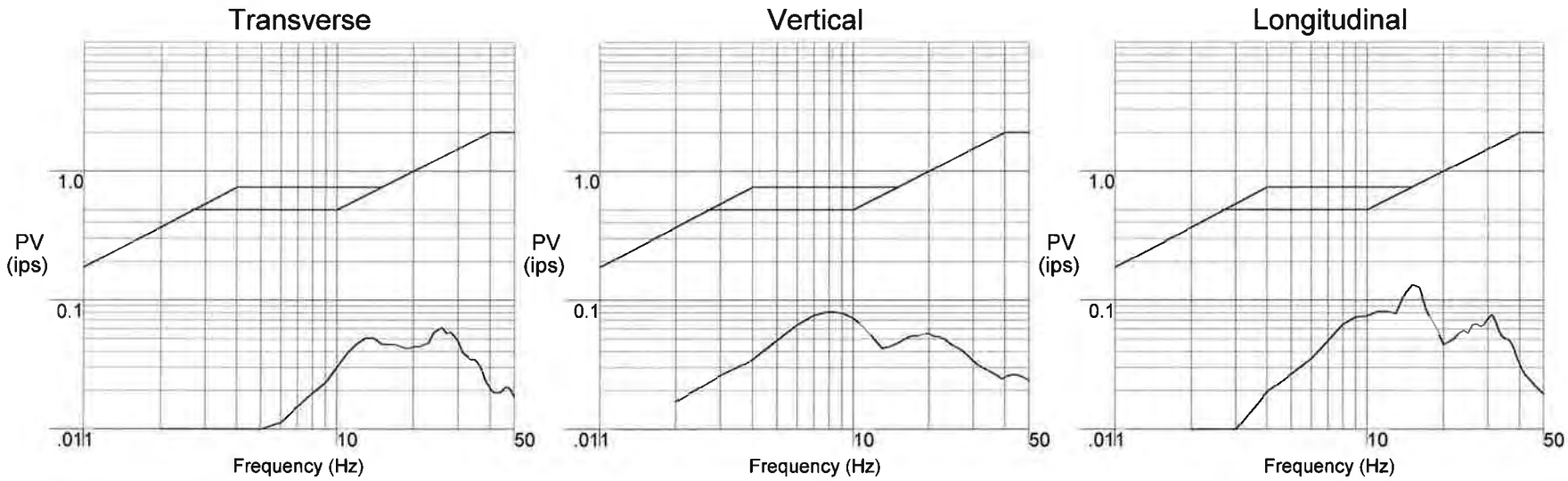
FRONTIER STONE - SHELBY NY

Signature Shot 1

Date and Time: 09/17/2014 13:00:23

Geosonics Instrument: 4786 Distance = 1726 ft Location: Array





0005000 00001100000.0500004999 01300800000.0900004999 04201600000.0100004999 058300.147 100100100

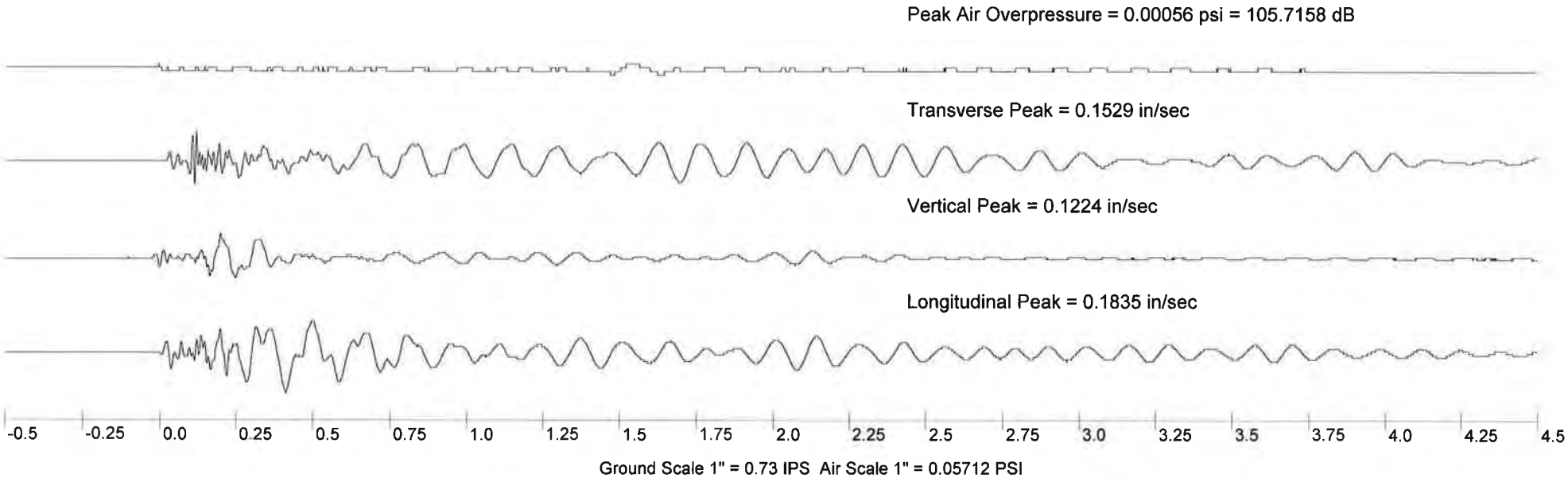
RSVP

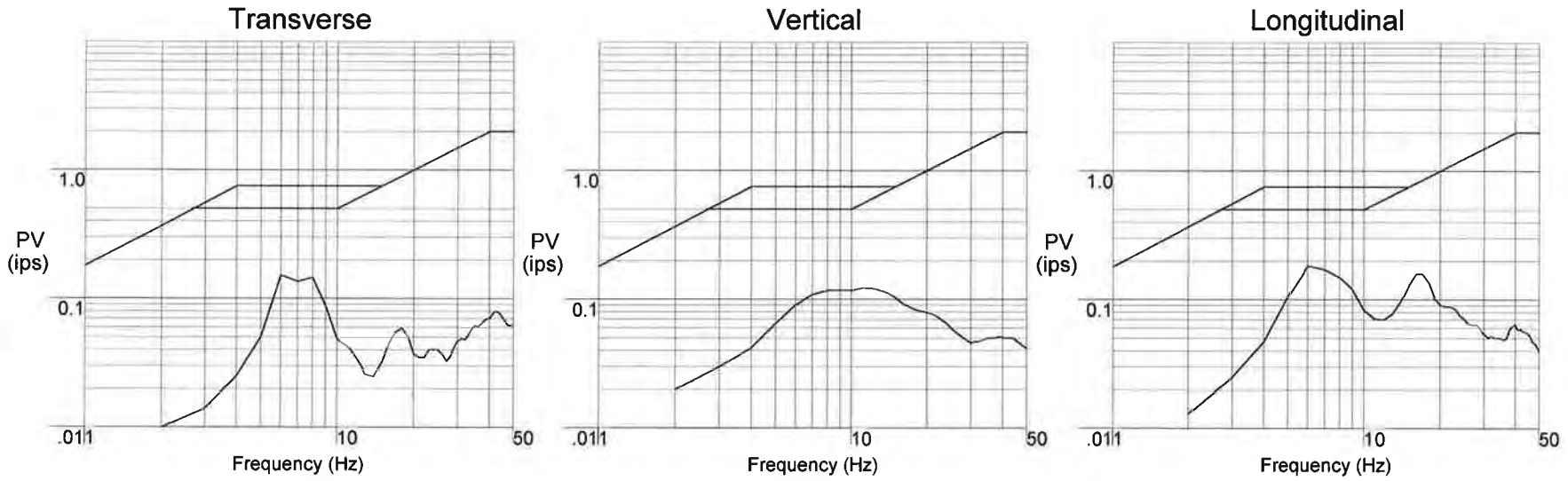
FRONTIER STONE - SHELBY NY

Signature Shot 1

Date and Time: 09/17/2014 13:00:18

Geosonics Instrument: 4781 Distance = 1801 ft Location: End of Field Fletcher Chapel Rd





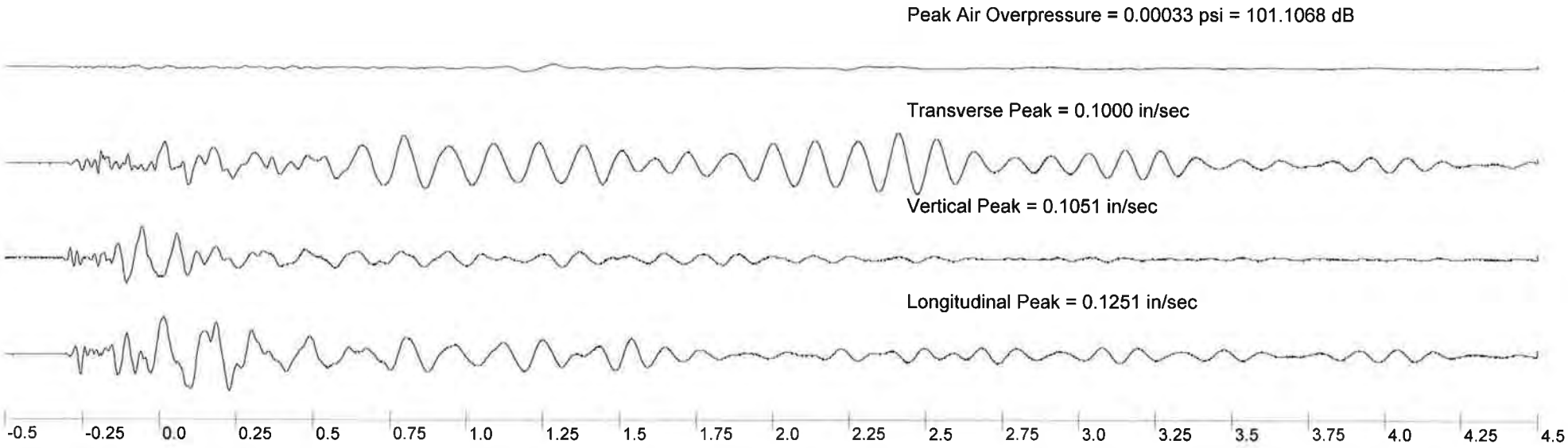
1969000 06300600603.6600004999 00901001101.4003964984 00901600603.3200004999 091200.187 100100100

RSVP

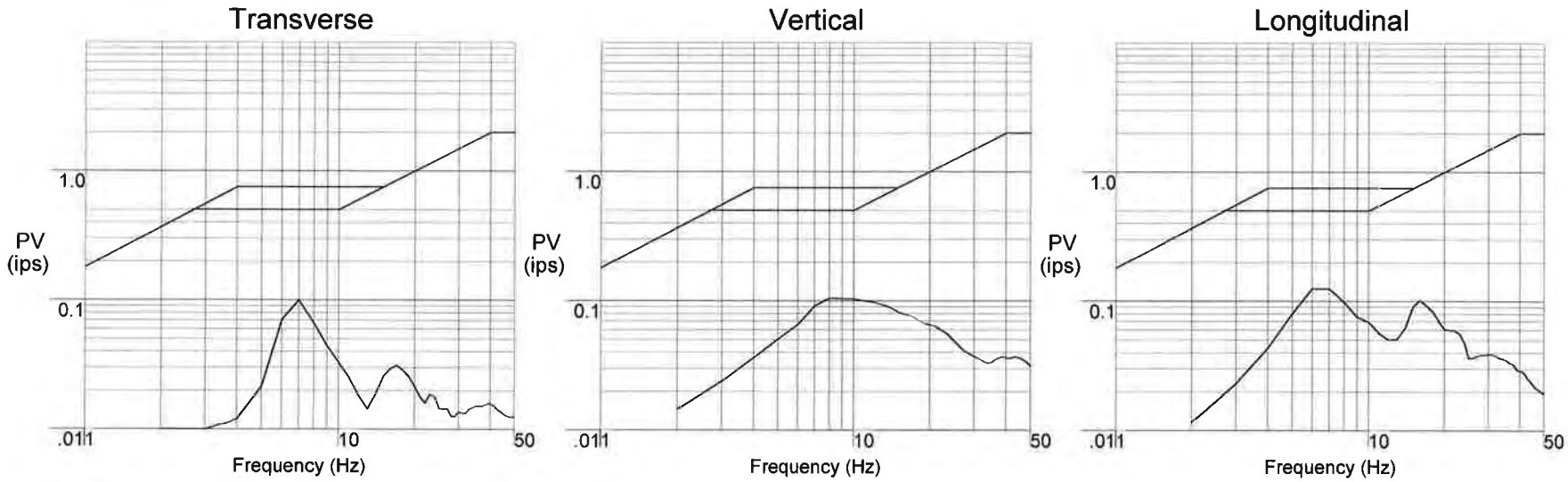
Signature Shot 1

Date and Time: 09/17/2014 13:00:07

Instantel Instrument: BB7997 Distance = 1825 ft Location: Fletcher Chapel Rd



Ground Scale 1" = 0.5 IPS Air Scale 1" = 0.0336 PSI



1780000 00800700000.0000464999 01000800000.0400014999 00900600000.0100254999 051400.154 100100100

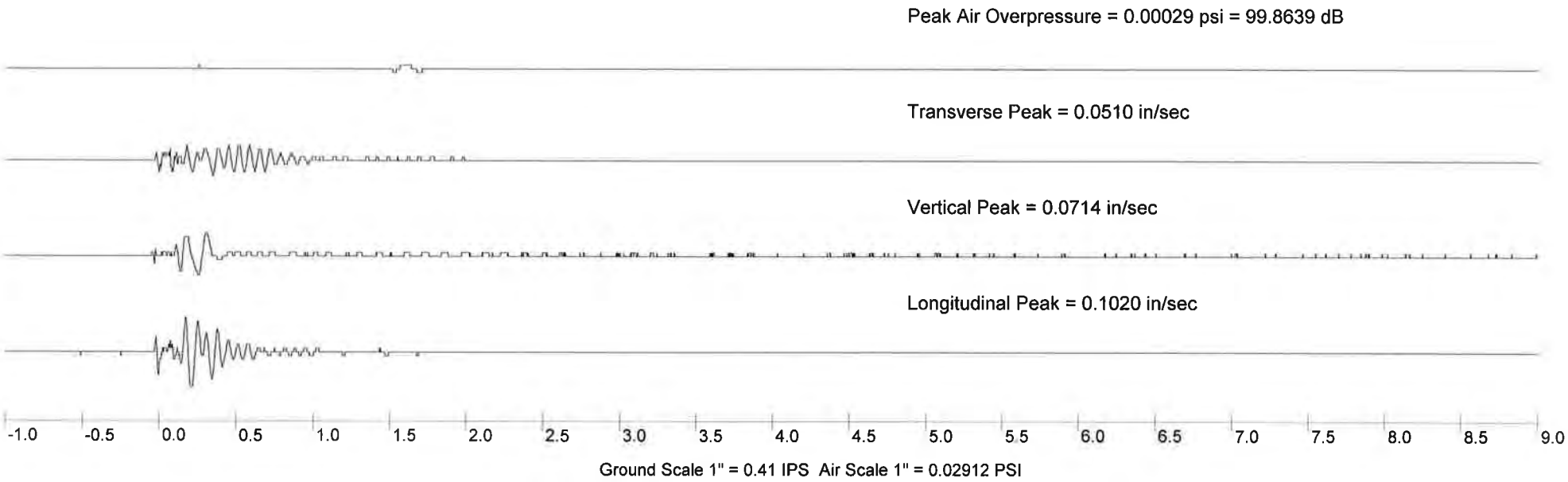
RSVP

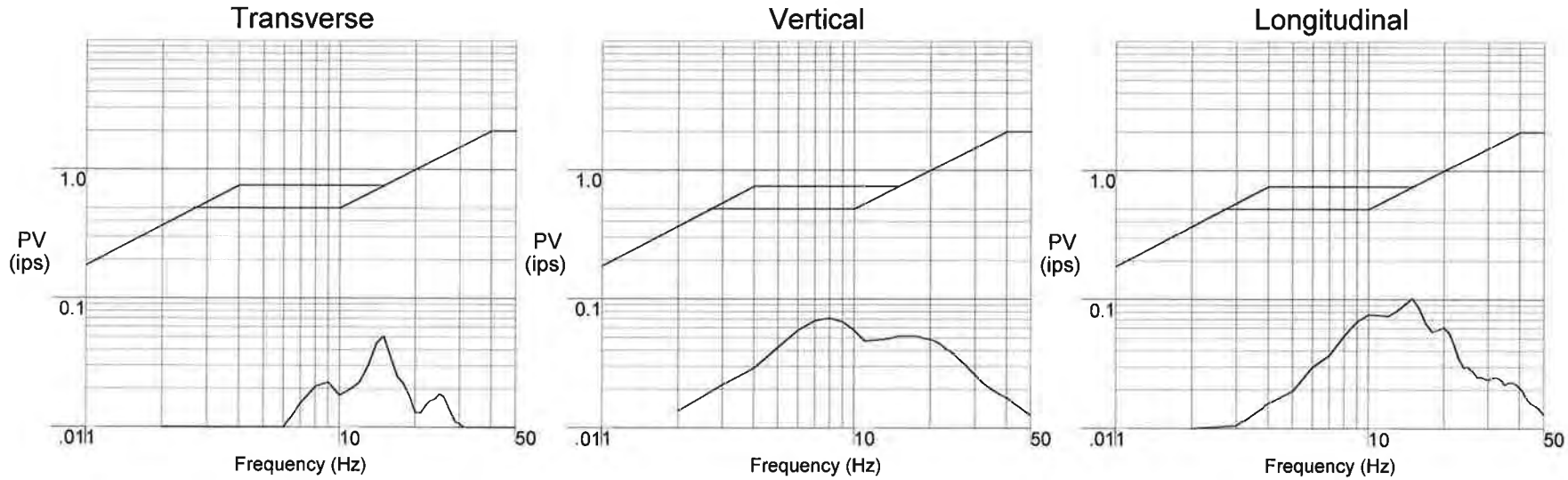
FRONTIER STONE - SHELBY NY

Signature Shot 1

Date and Time: 09/17/2014 13:00:23

Geosonics Instrument: 4787 Distance = 1904 ft Location: Array





0625000 02101500000.0100004999 01400700000.0700004999 02401500000.0100004999 058600.126 100100100

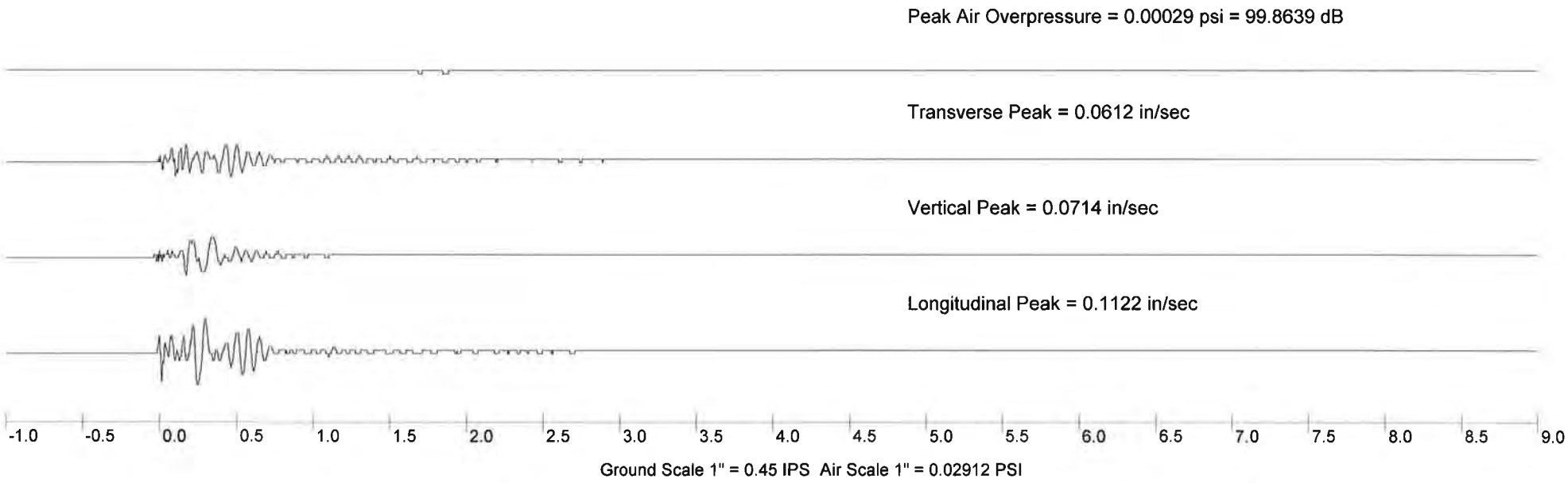
RSVP

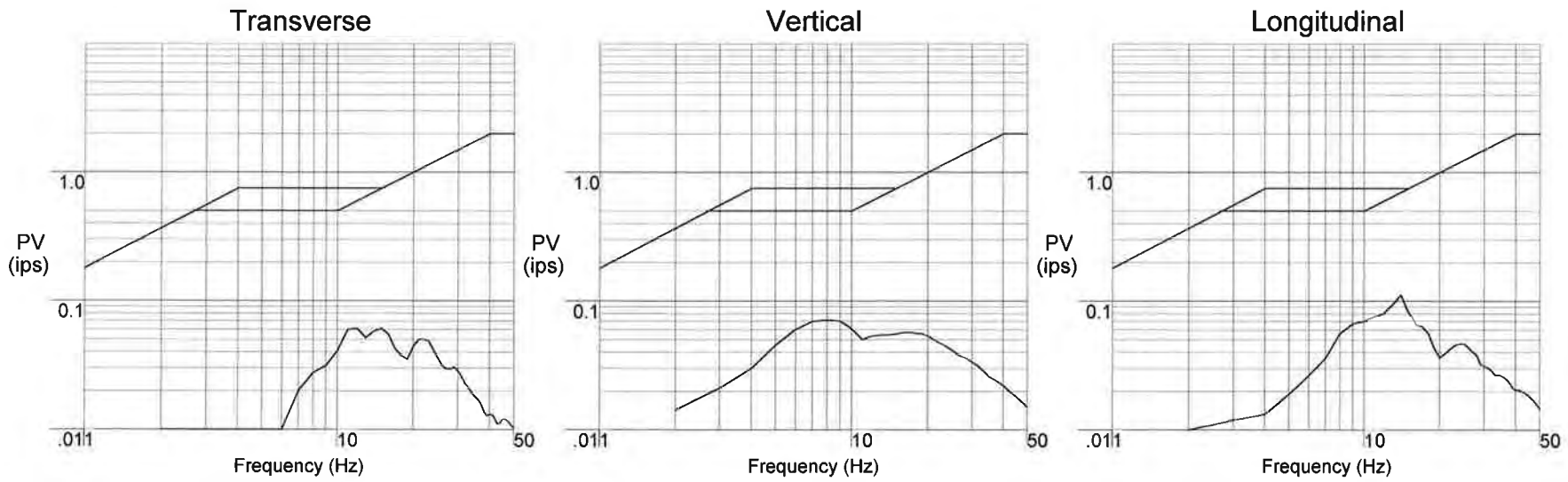
FRONTIER STONE - SHELBY NY

Signature Shot 1

Date and Time: 09/17/2014 13:00:24

Geosonics Instrument: 4789 Distance = 2073 ft Location: Array





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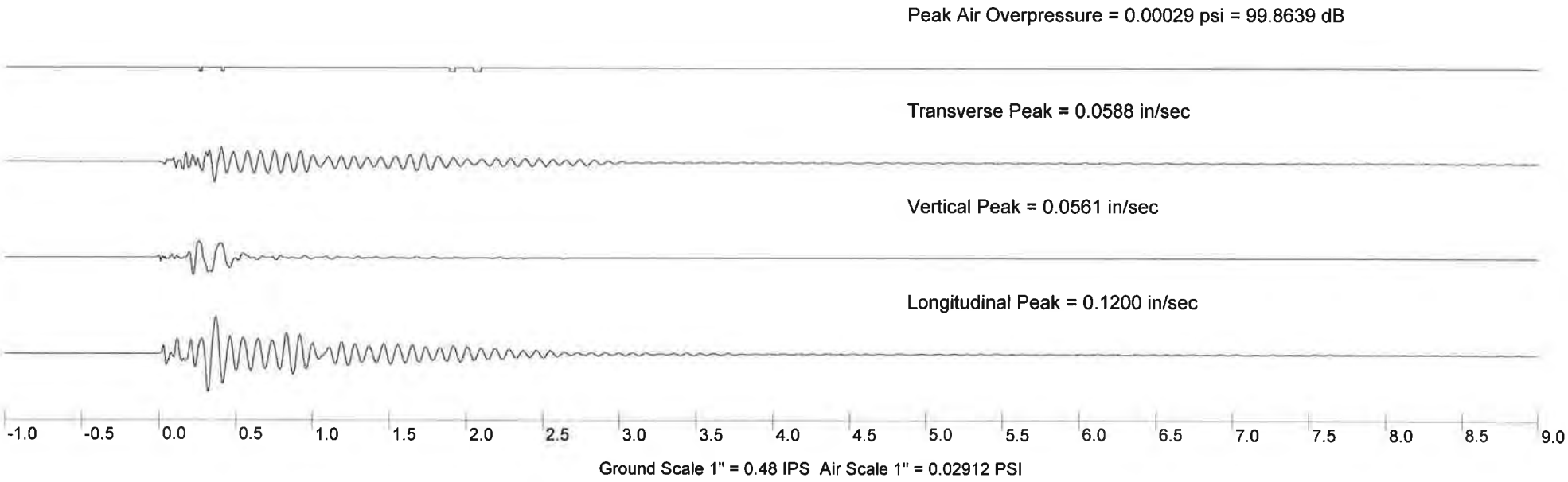
RSVP

FRONTIER STONE - SHELBY NY

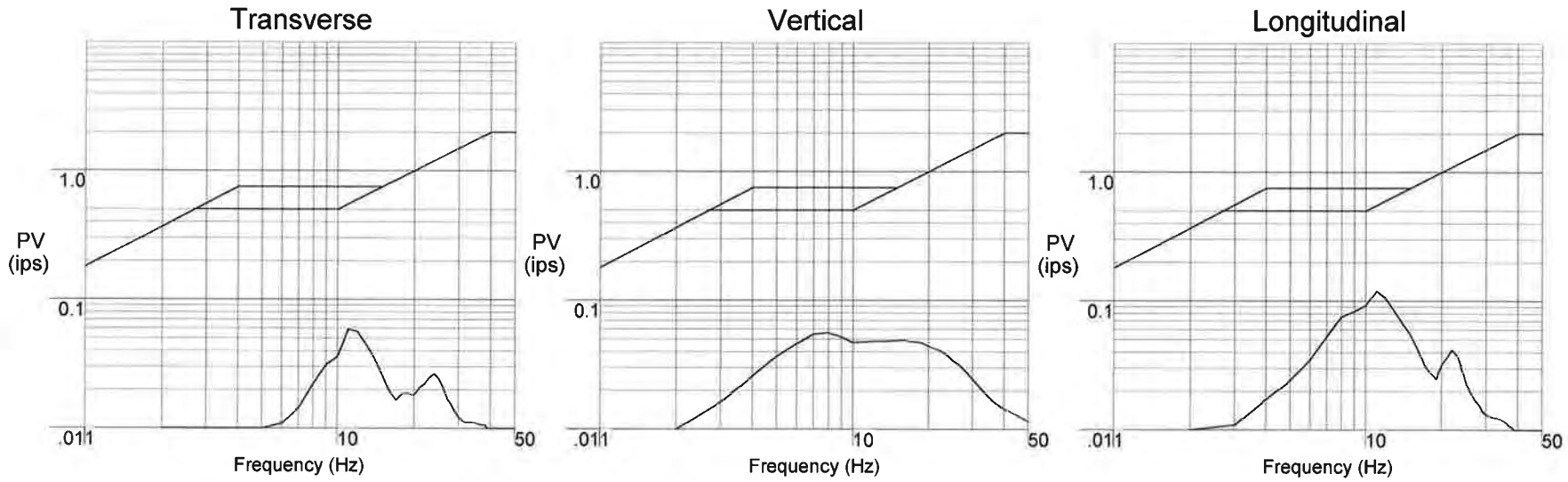
Signature Shot 1

Date and Time: 09/17/2014 13:00:22

Geosonics Instrument: 6084 Distance = 2292 ft Location: Array



Ground Scale 1" = 0.48 IPS Air Scale 1" = 0.02912 PSI



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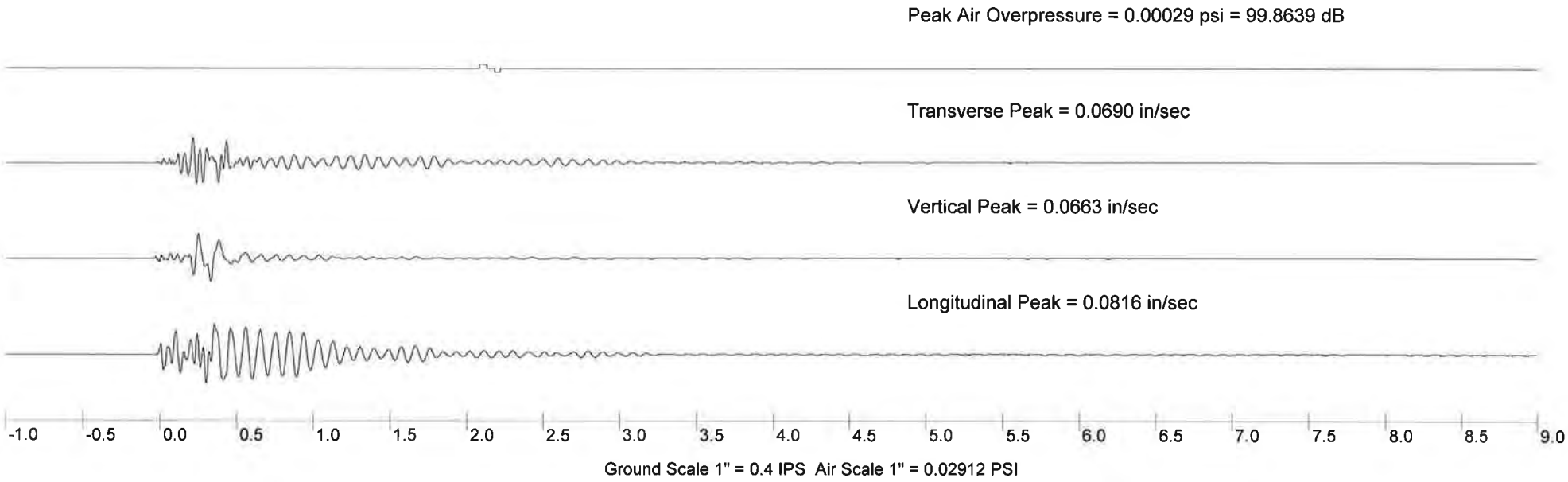
RSVP

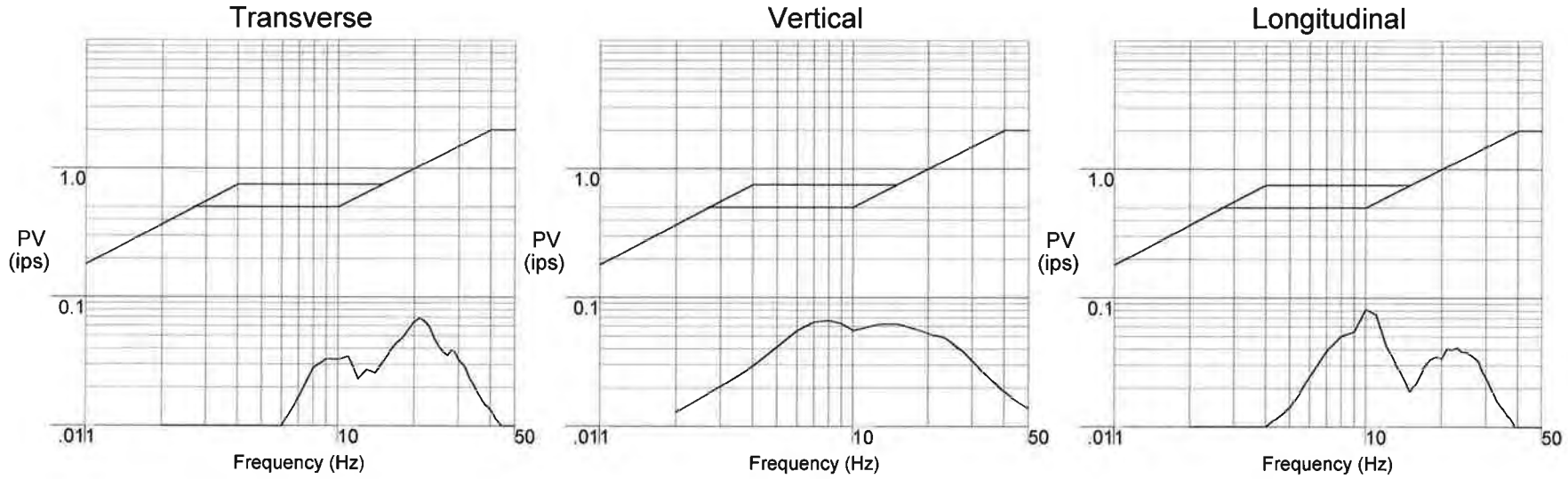
FRONTIER STONE - SHELBY NY

Signature Shot 1

Date and Time: 09/17/2014 13:00:21

Geosonics Instrument: 6108 Distance = 2486 ft Location: Array





1537000 03101100000.0100004999 02000600000.0600004999 01901100000.0000004999 068700.090 100100100

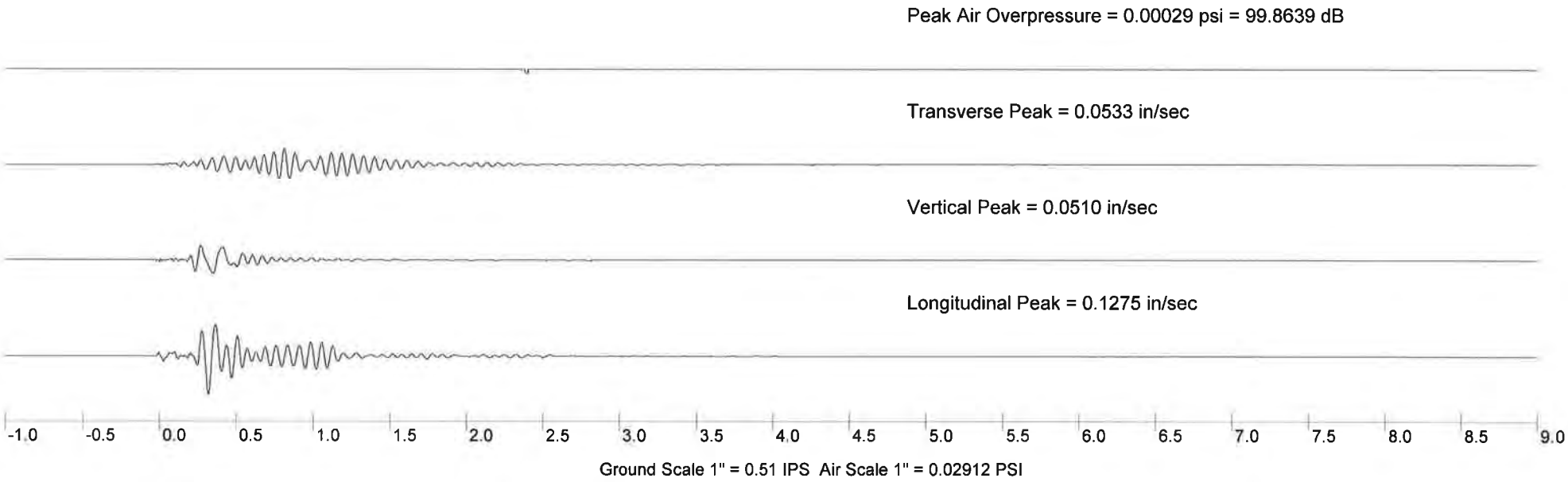
RSVP

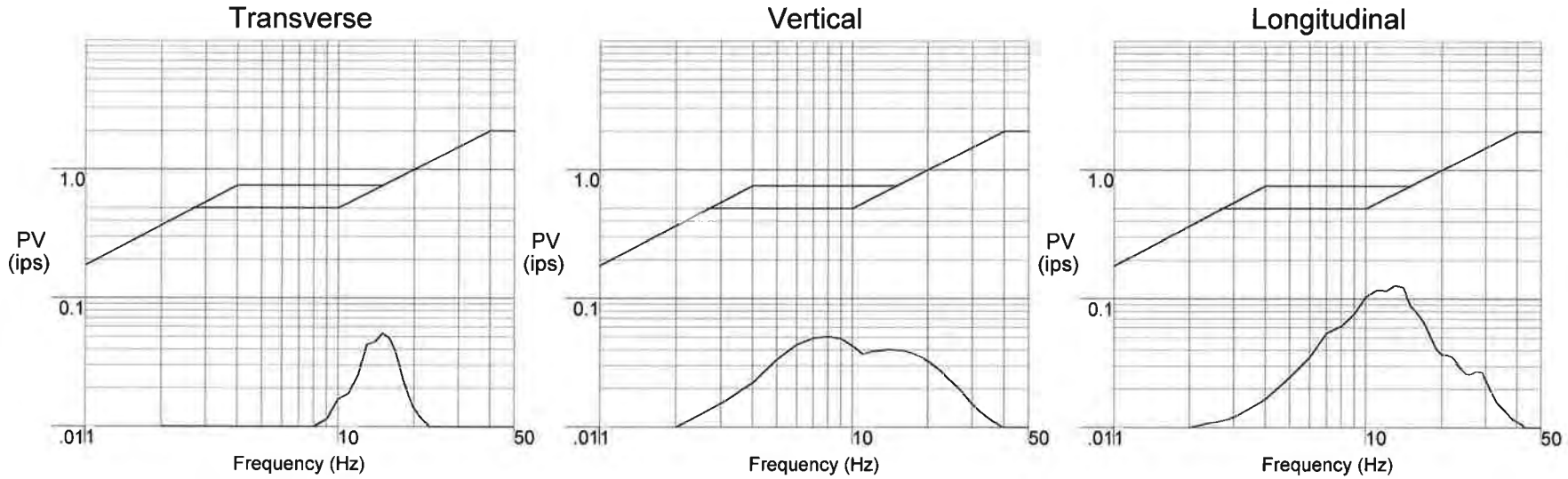
FRONTIER STONE - SHELBY NY

Signature Shot 1

Date and Time: 09/17/2014 13:00:22

Geosonics Instrument: 6116 Distance = 2715 ft Location: Array





1691000 02801400000 0002414999 01700700000 0500004999 02301500000 0104913485 066100.129 100100100

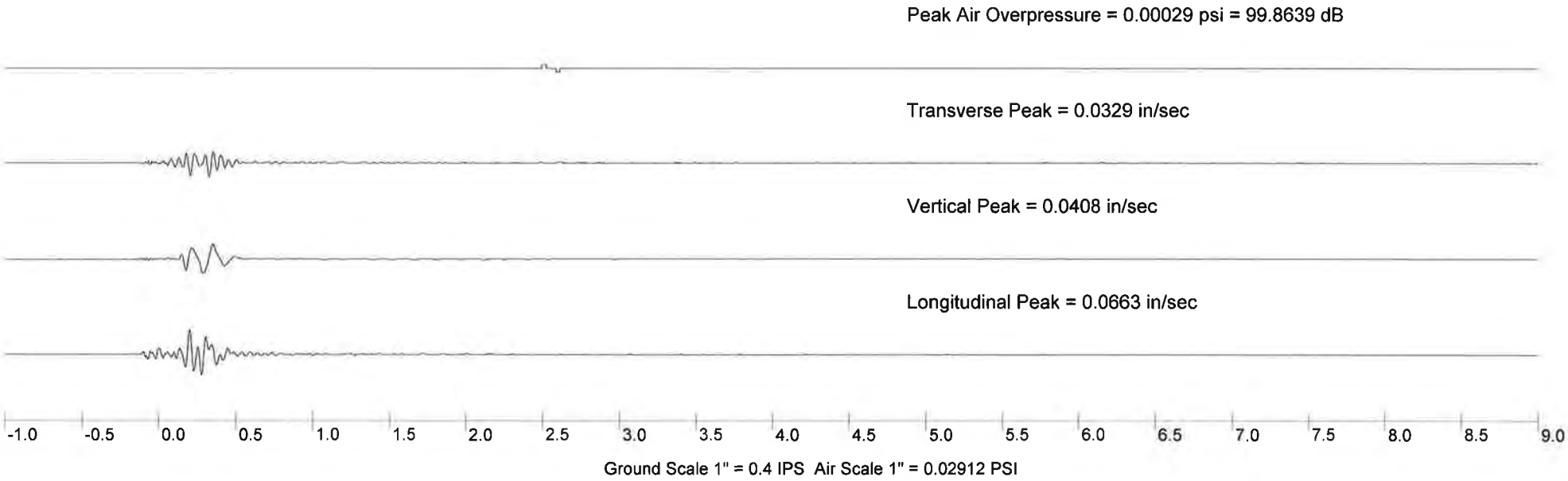
RSVP

FRONTIER STONE - SHELBY NY

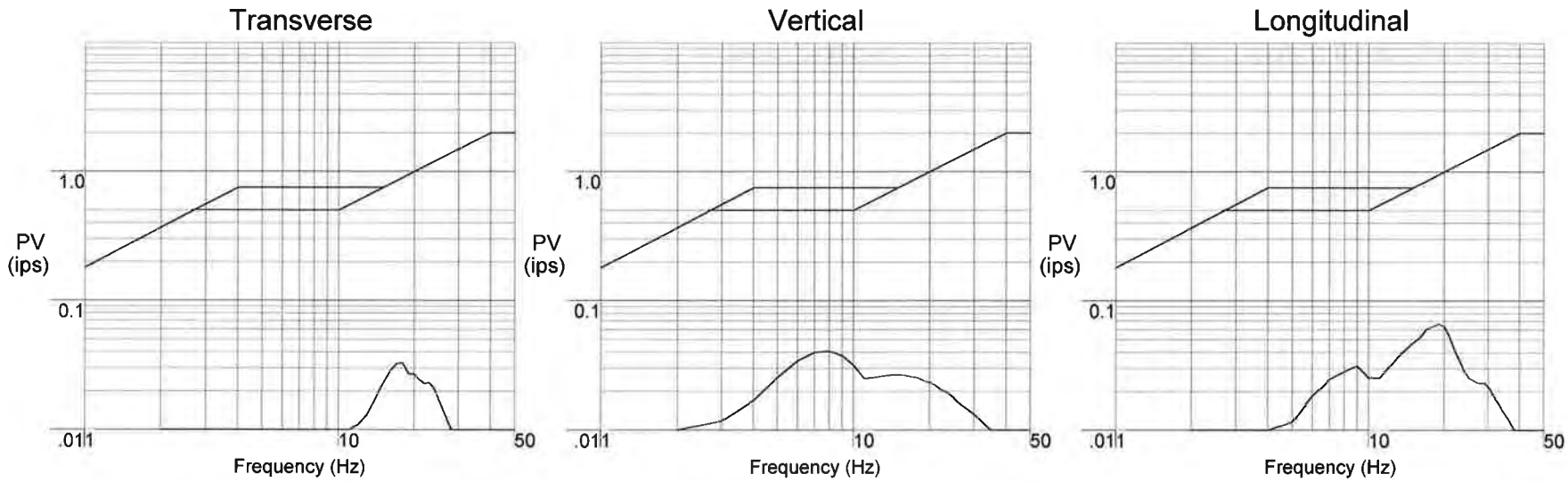
Signature Shot 1

Date and Time: 09/17/2014 13:00:22

Geosonics Instrument: 6109 Distance = 3083 ft Location: Array



Ground Scale 1" = 0.4 IPS Air Scale 1" = 0.02912 PSI



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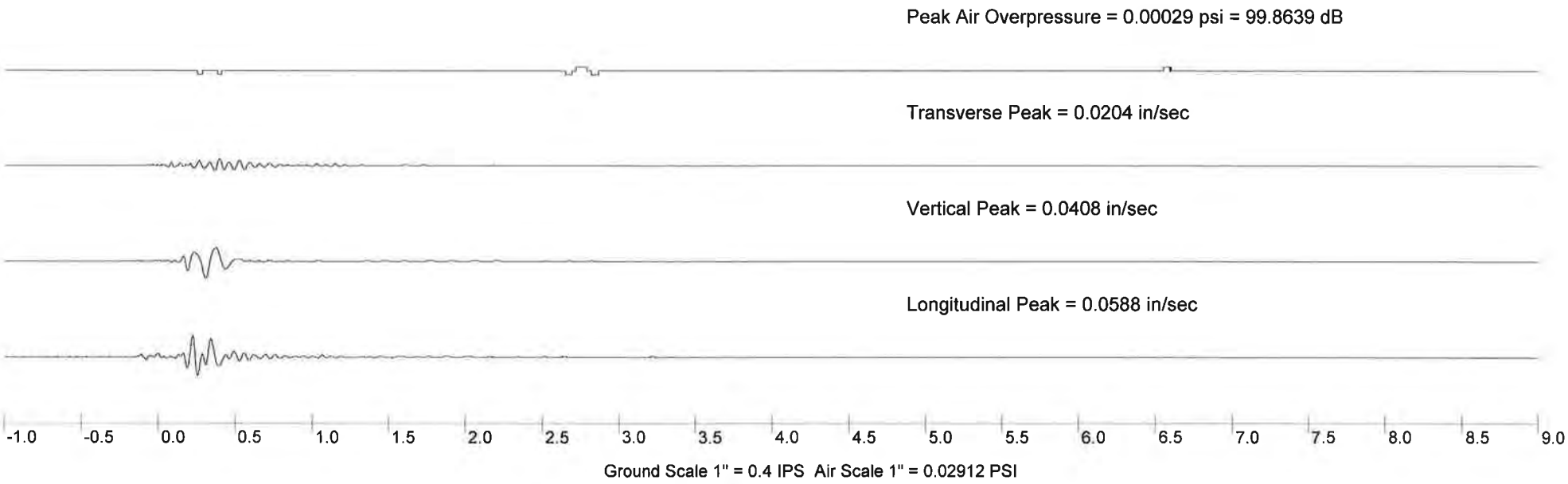
RSVP

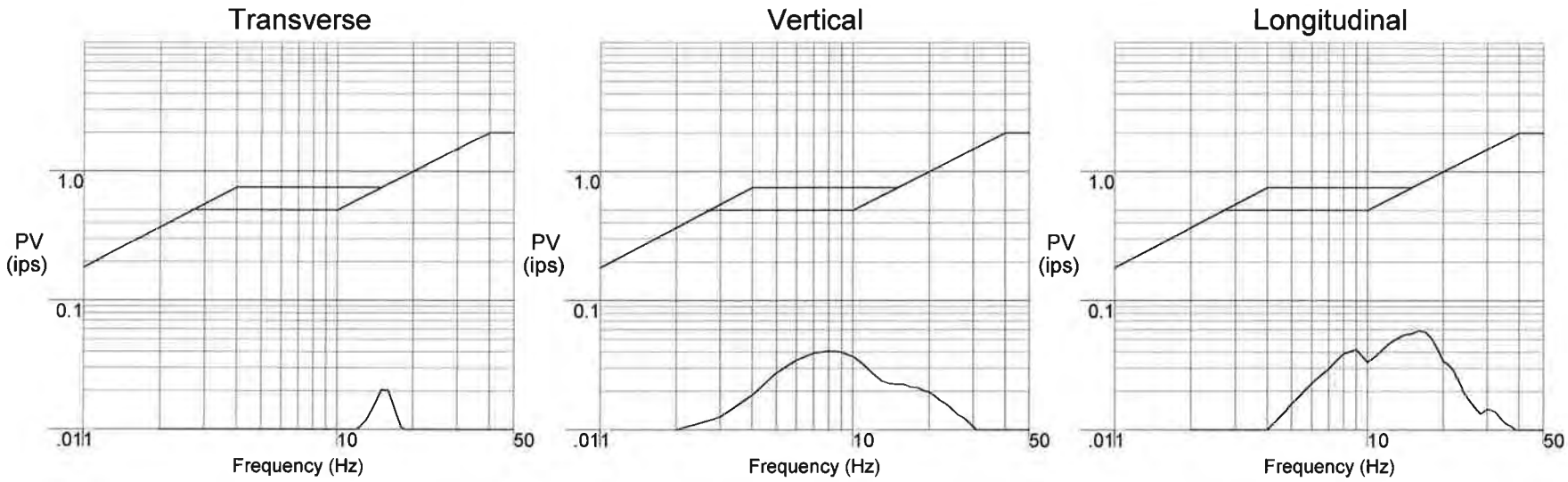
FRONTIER STONE - SHELBY NY

Signature Shot 1

Date and Time: 09/17/2014 13:00:22

Geosonics Instrument: 6139 Distance = 3363 ft Location: Array





0624000 02601600000.0100004999 01800800000.0400004999 02600900000.0100004999 061100.064 100100100

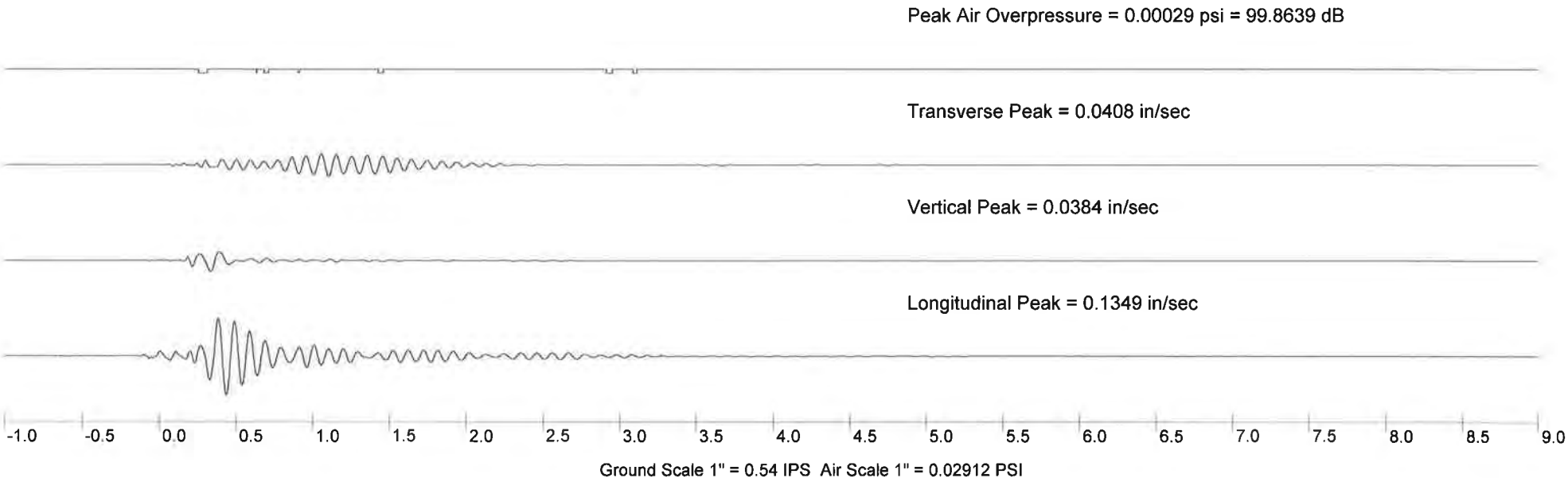
RSVP

FRONTIER STONE - SHELBY NY

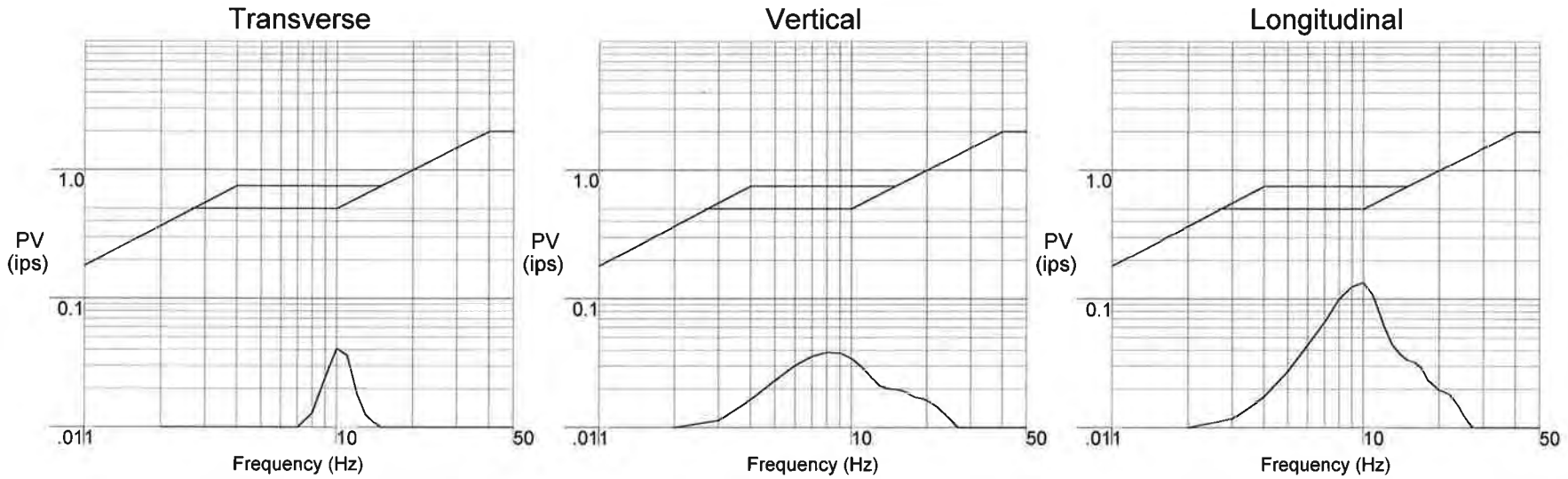
Signature Shot 1

Date and Time: 09/17/2014 13:00:22

Geosonics Instrument: 6124 Distance = 3658 ft Location: Array



Ground Scale 1" = 0.54 IPS Air Scale 1" = 0.02912 PSI



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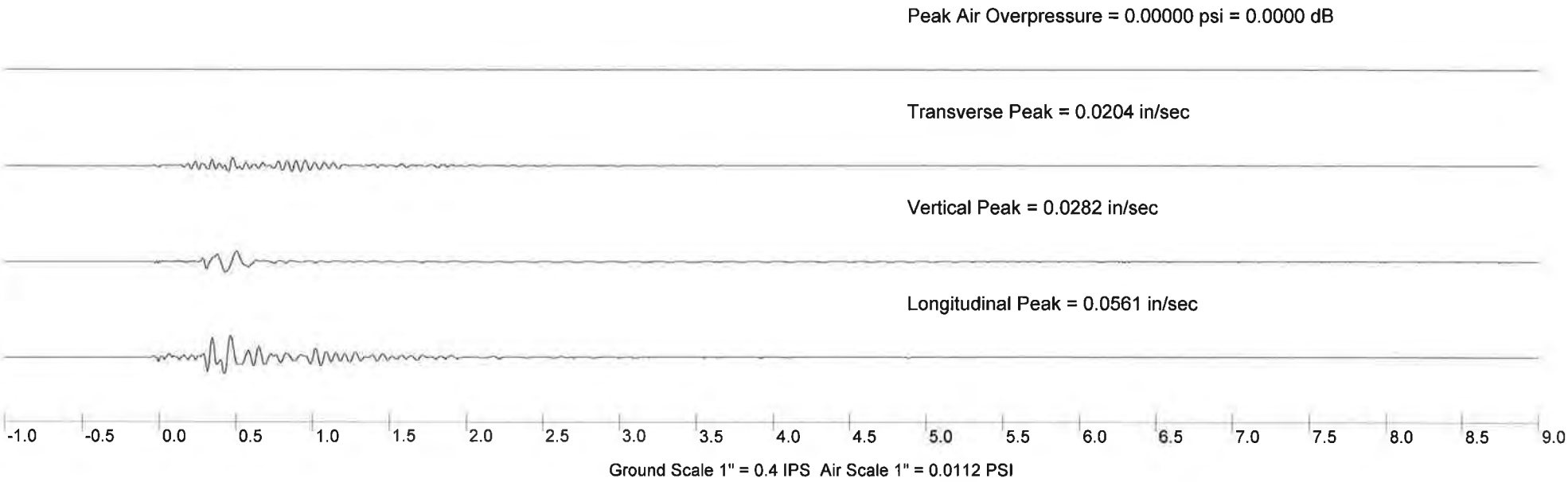
RSVP

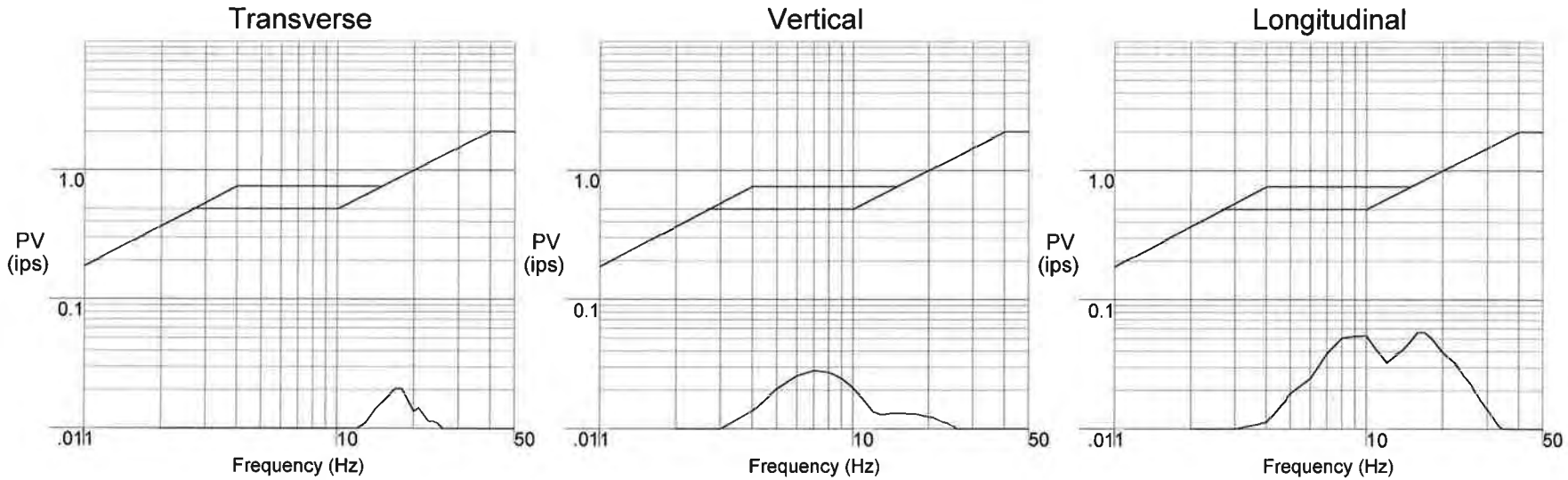
FRONTIER STONE - SHELBY NY

Signature Shot 1

Date and Time: 09/17/2014 13:00:23

Geosonics Instrument: 6106 Distance = 3945 ft Location: Array





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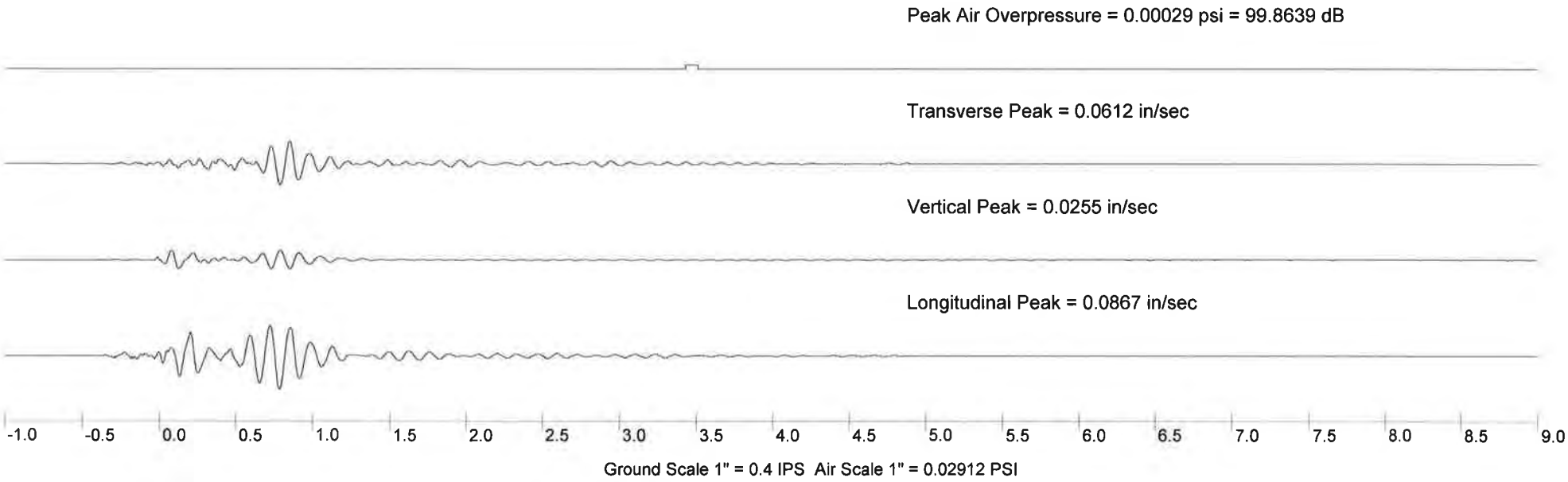
RSVP

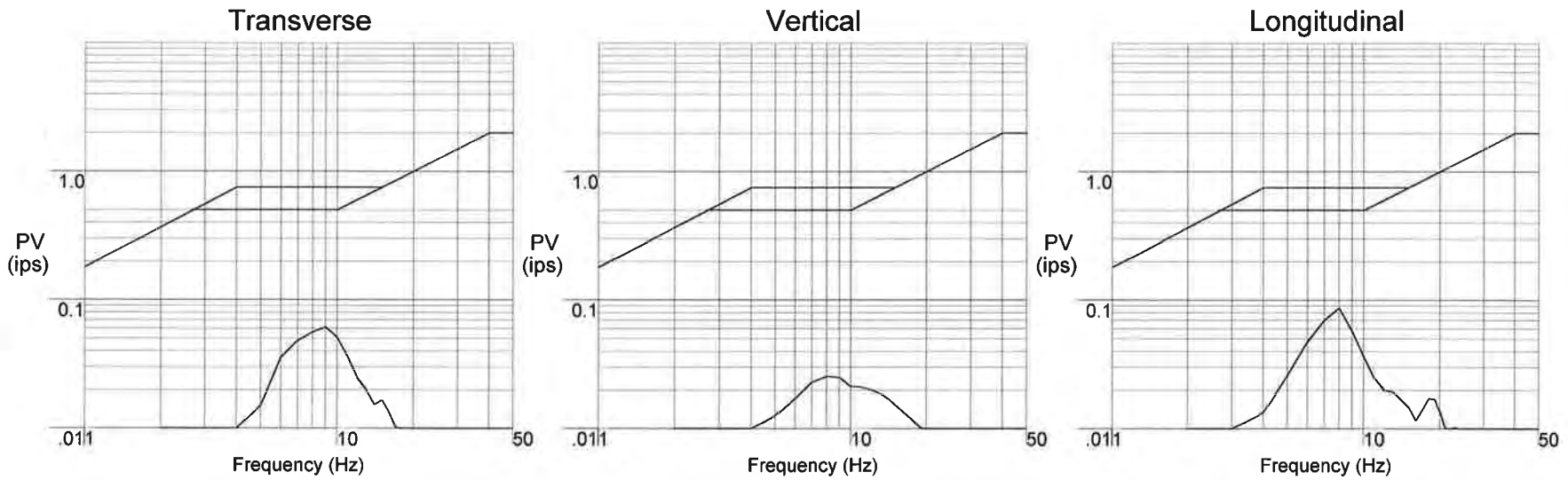
FRONTIER STONE - SHELBY NY

Signature Shot 1

Date and Time: 09/17/2014 13:00:23

Geosonics Instrument: 6081 Distance = 4560 ft Location: Array





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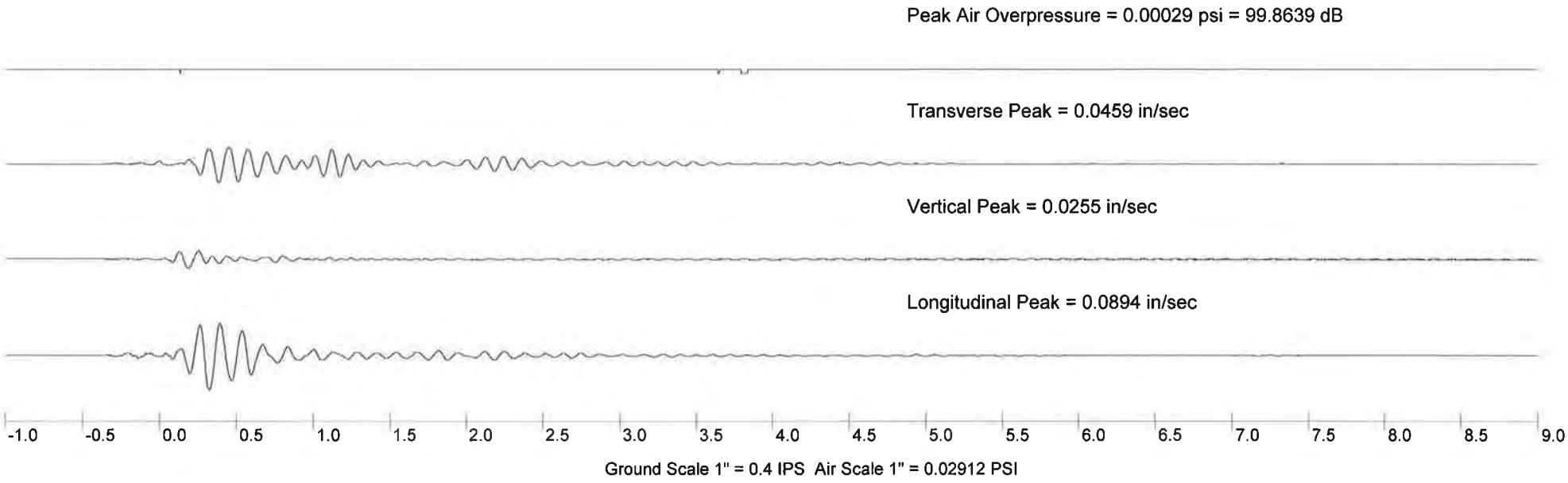
RSVP

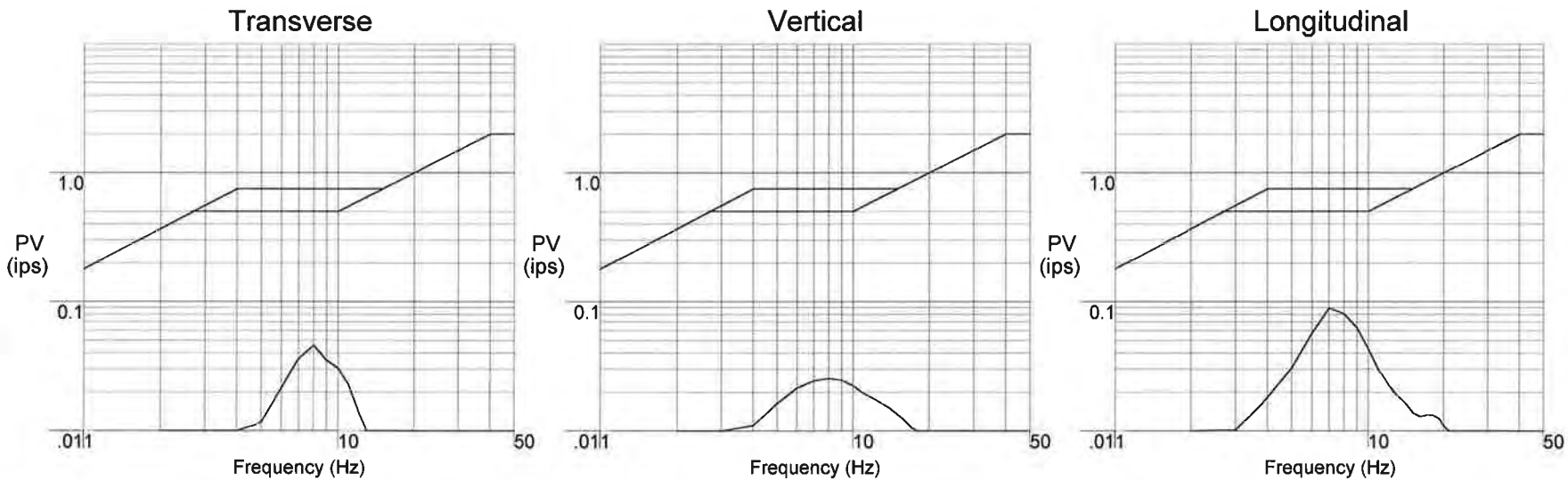
FRONTIER STONE - SHELBY NY

Signature Shot 1

Date and Time: 09/17/2014 13:00:22

Geosonics Instrument: 6090 Distance = 4799 ft Location: Array





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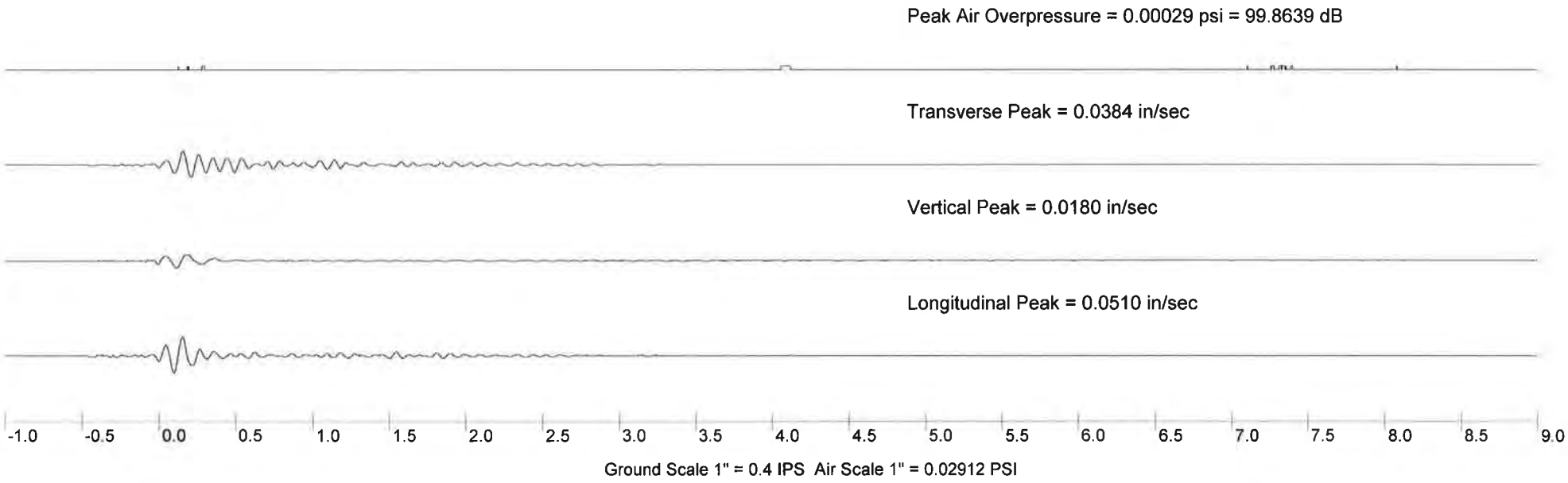
RSVP

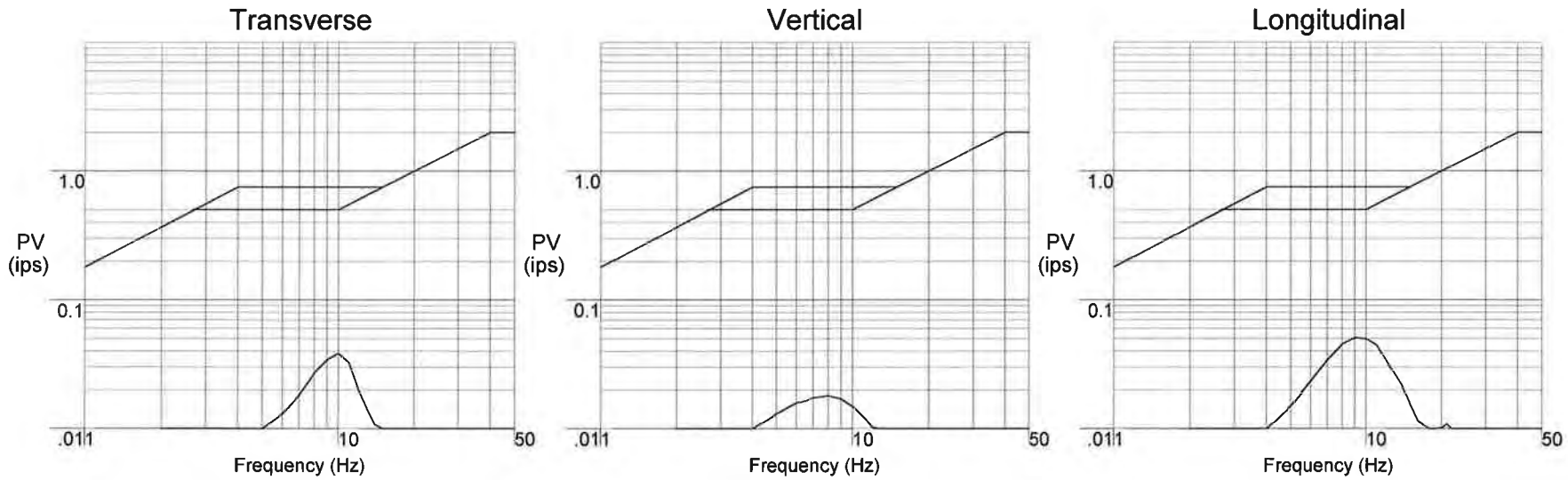
FRONTIER STONE - SHELBY NY

Signature Shot 1

Date and Time: 09/17/2014 13:00:23

Geosonics Instrument: 6138 Distance = 5390 ft Location: Array





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RSVP

FRONTIER STONE - SHELBY NY

Signature Shot 1

Date and Time: 09/17/2014 13:00:23

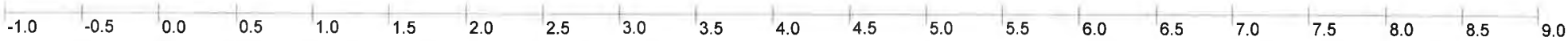
Geosonics Instrument: 6089 Distance = 6115 ft Location: Array

Peak Air Overpressure = 0.00000 psi = 0.0000 dB

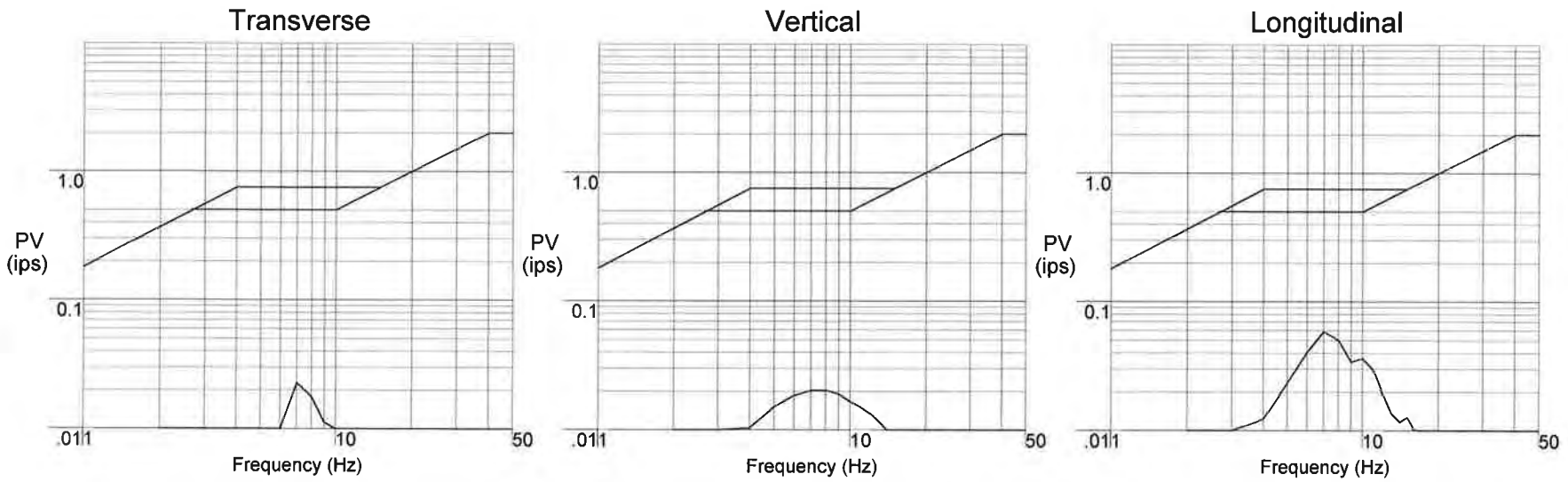
Transverse Peak = 0.0227 in/sec

Vertical Peak = 0.0204 in/sec

Longitudinal Peak = 0.0588 in/sec



Ground Scale 1" = 0.4 IPS Air Scale 1" = 0.0112 PSI



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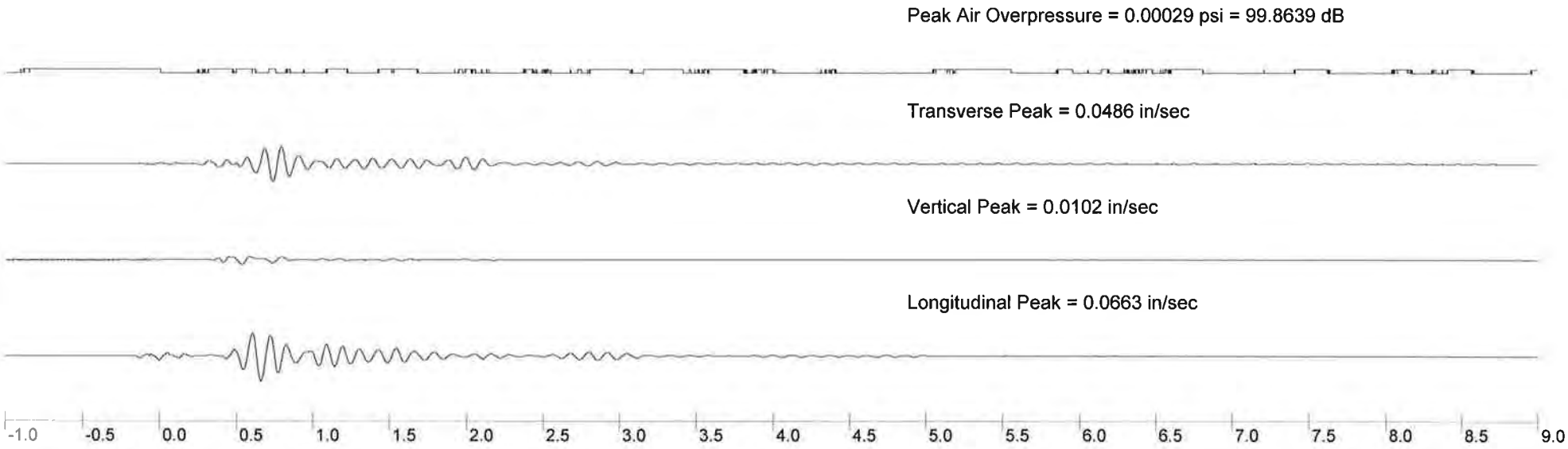
RSVP

FRONTIER STONE - SHELBY NY

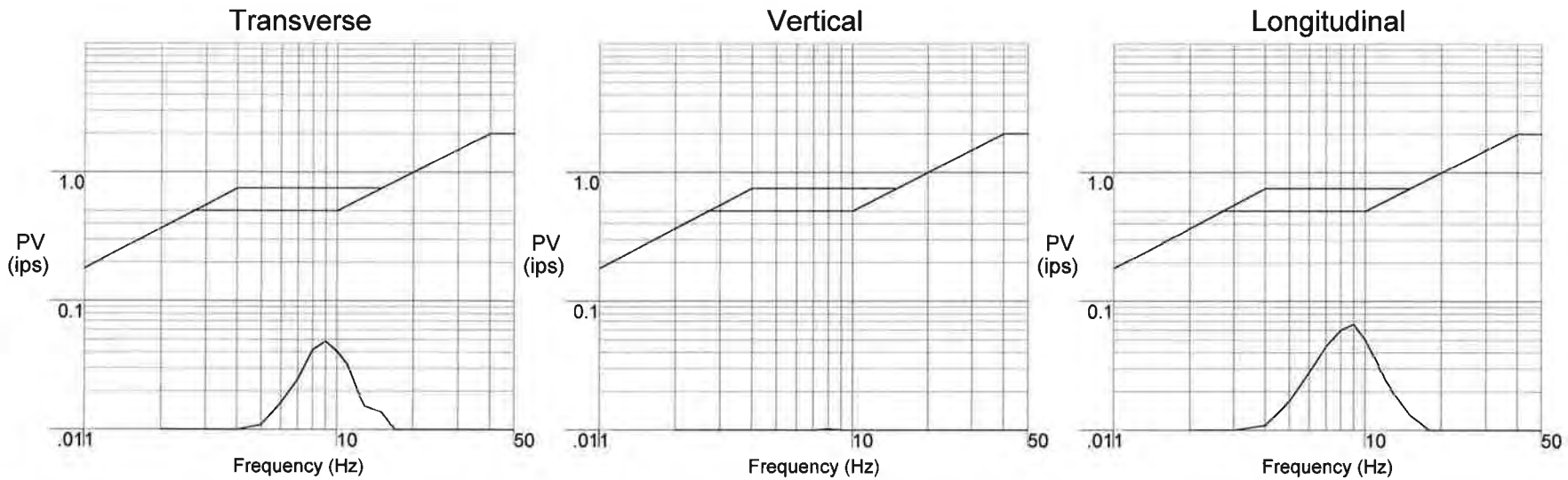
Signature Shot 1

Date and Time: 09/17/2014 13:00:23

Geosonics Instrument: 6010 Distance = 7259 ft Location: Array



Ground Scale 1" = 0.4 IPS Air Scale 1" = 0.02912 PSI



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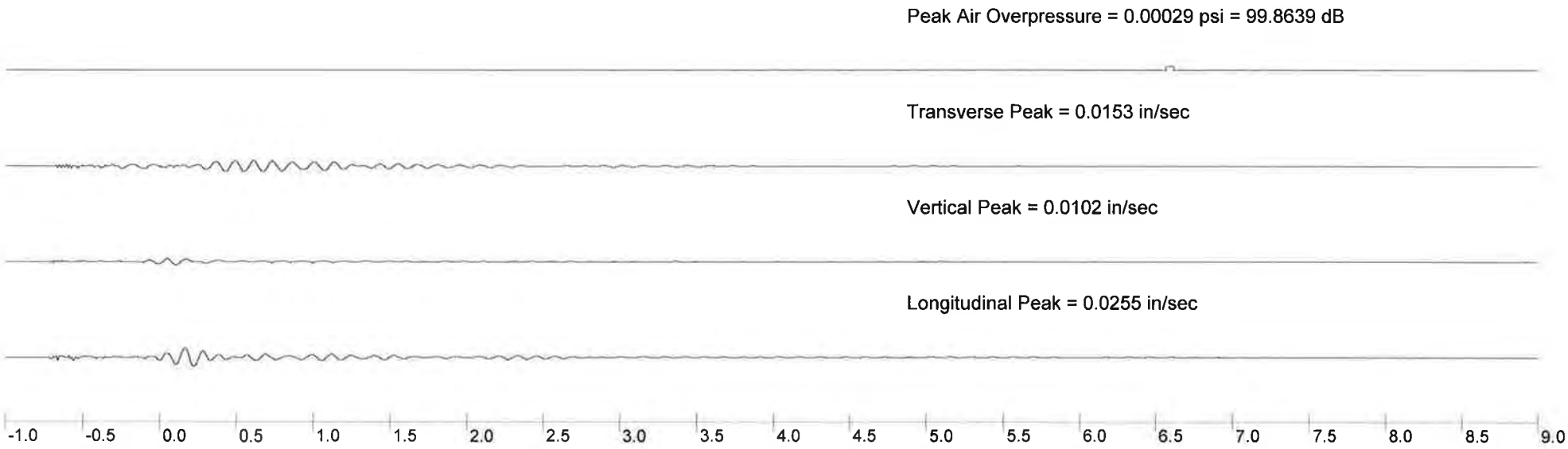
RSVP

FRONTIER STONE - SHELBY NY

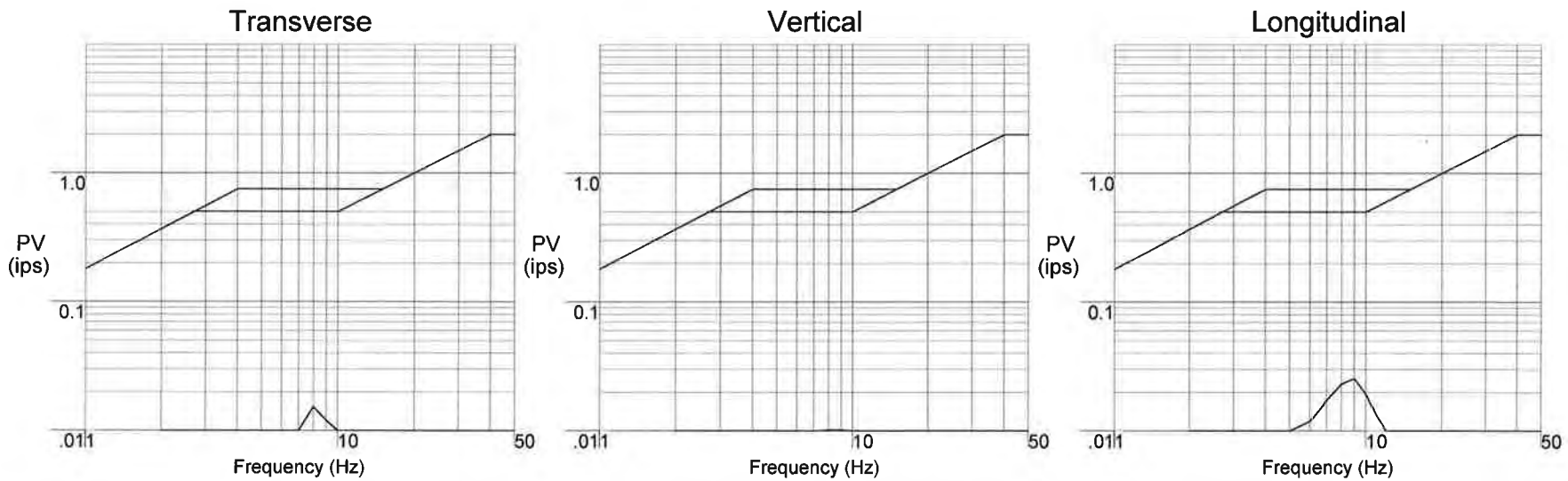
Signature Shot 1

Date and Time: 09/17/2014 13:00:23

Geosonics Instrument: 6023 Distance = 8759 ft Location: Array



Ground Scale 1" = 0.4 IPS Air Scale 1" = 0.02912 PSI



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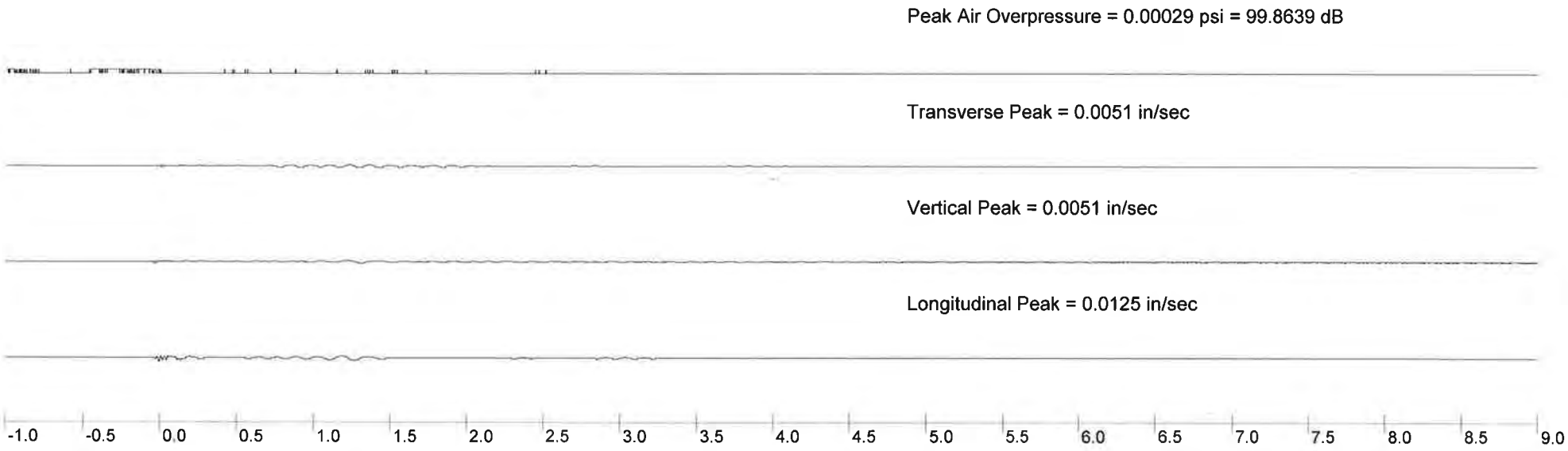
RSVP

FRONTIER STONE - SHELBY NY

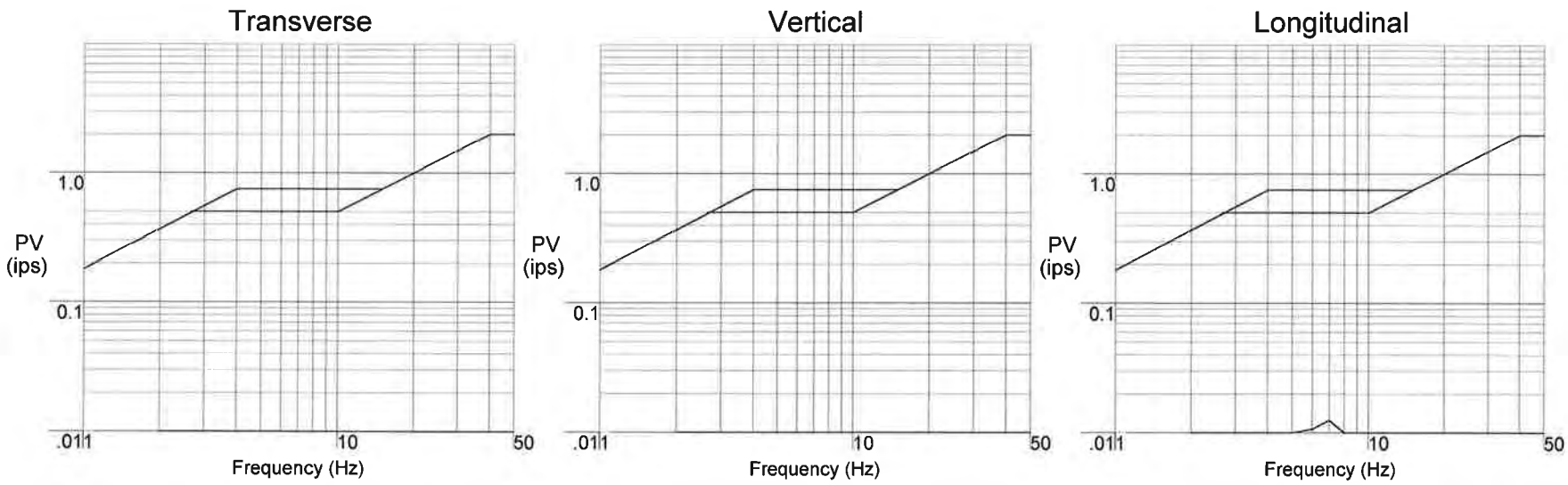
Signature Shot 1

Date and Time: 09/17/2014 13:00:23

Geosonics Instrument: 6117 Distance = 12418 ft Location: Array



Ground Scale 1" = 0.4 IPS Air Scale 1" = 0.02912 PSI



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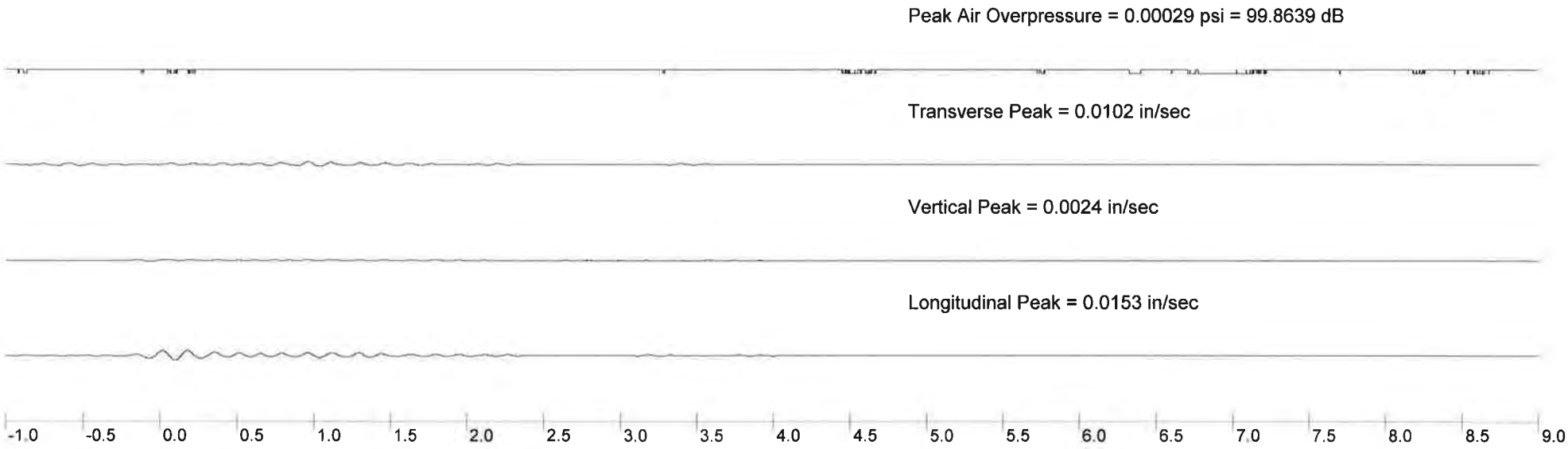
RSVP

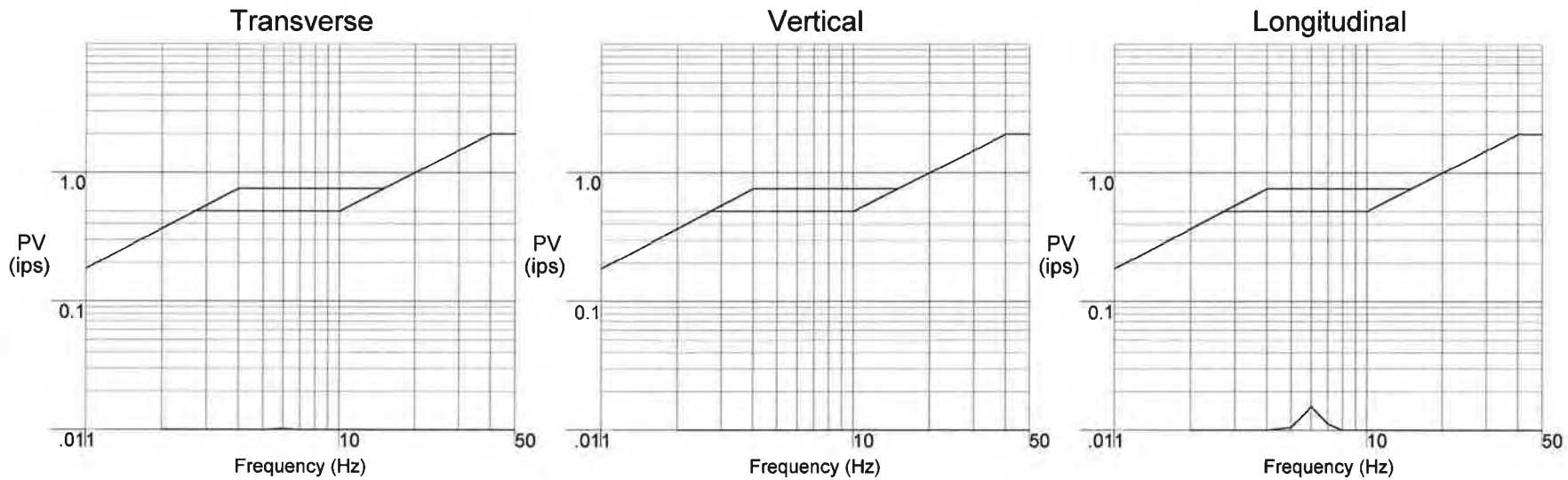
FRONTIER STONE - SHELBY NY

Signature Shot 1

Date and Time: 09/17/2014 13:00:24

Geosonics Instrument: 6033 Distance = 14608 ft Location: Array





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RSVP

FRONTIER STONE - SHELBY NY

Signature Shot 1

Date and Time: 09/17/2014 13:00:26

Geosonics Instrument: 6045 Distance = 15523 ft Location: HW 63 1 mile north of Robert Rd

Peak Air Overpressure = 0.00056 psi = 105.7158 dB

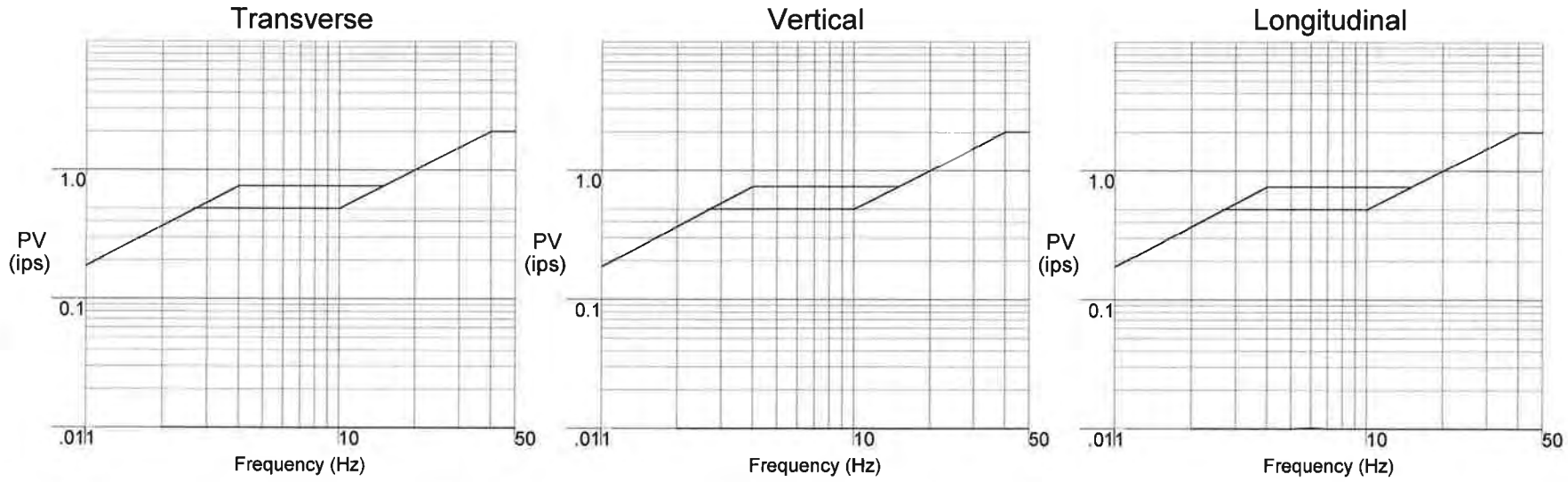
Transverse Peak = 0.0078 in/sec

Vertical Peak = 0.0078 in/sec

Longitudinal Peak = 0.0102 in/sec

-1.0 -0.5 0.0 0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0 8.5 9.0

Ground Scale 1" = 0.4 IPS Air Scale 1" = 0.05712 PSI



1905000 01300800000.0100004999 02800700000.0800004999 01200700000.0200044999 110100.013 100100100

RSVP