**Salls Construction**
**Unser Road Extension**
**SE pipeline**
**master in ground**
**57 ft**
**blast 1**

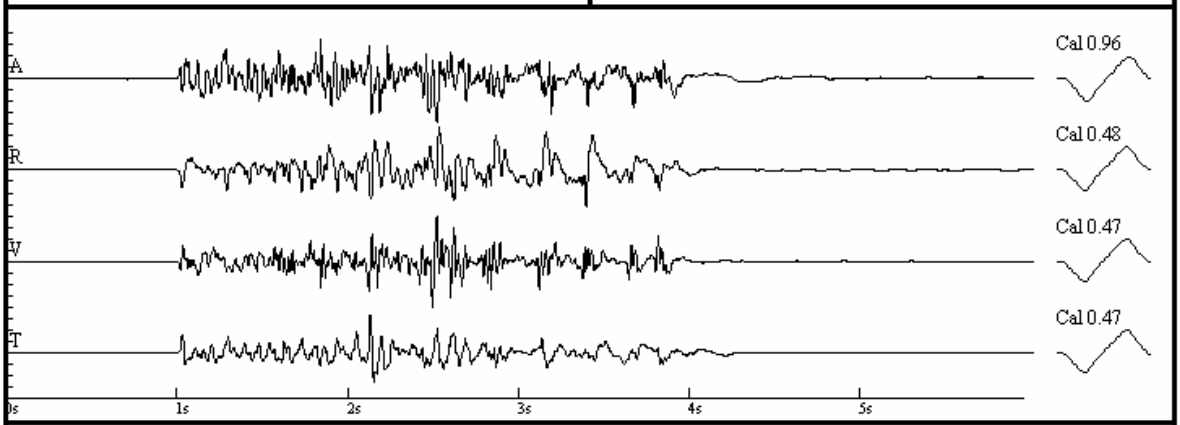
File: 02240159.DTB  Event Number: 159  Date: 10/14/2004  Time: 14:38
Acoustic Trigger: 125 dB  Seismic Trigger: 0.03in/s 0.762mm/s  Serial Number: 2240

**Amplitudes and Frequencies**

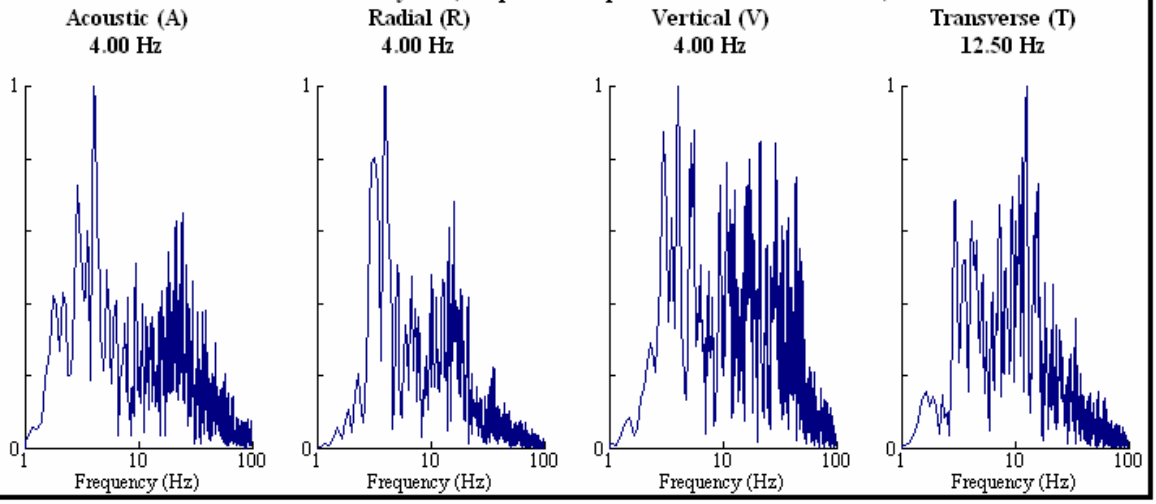
*Acoustic (A):* 129 dB @ 18.2 Hz
(0.54Mb 0.0078psi 0.0540kPa)
*Radial (R):* 4.72in/s 119.888mm/s @ 16.0Hz
***Vertical (V):* 5.08in/s 129.032mm/s @ 19.6Hz**
*Transverse (T):* 4.24in/s 107.696mm/s @ 19.6Hz
*Calibration Date (yyyy/mm/dd):* 2003/12/05

**Graph Information**

*Duration:* 0.000 sec To: 5.963 sec
*Acoustic Scale:*
129dB 0.56Mb (0.140Mb/div)
*Seismic Scale:*
5.08in/s (1.270in/s/div) 129.03mm/s (32.258mm/s/div)
*Time Line Intervals at:* 1.00 s




**Fourier Analysis (Amplitude Spectrum - Box Window)**



**Salls Construction**
**Unser Road Extension**
**20 in. pipeline (SE)**
**50 ft**
**blast 1**

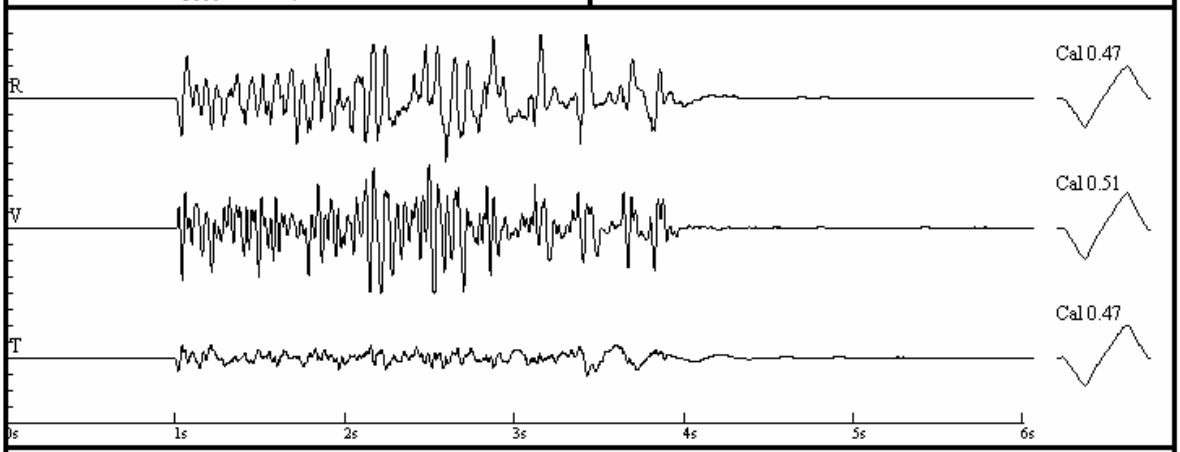
File: 02407124.DTB  Event Number: 124  Date: 10/14/2004  Time: 14:37
Acoustic Trigger: 106 dB  Seismic Trigger: 0.03in/s 0.762mm/s  Serial Number: 2407

**Amplitudes and Frequencies**

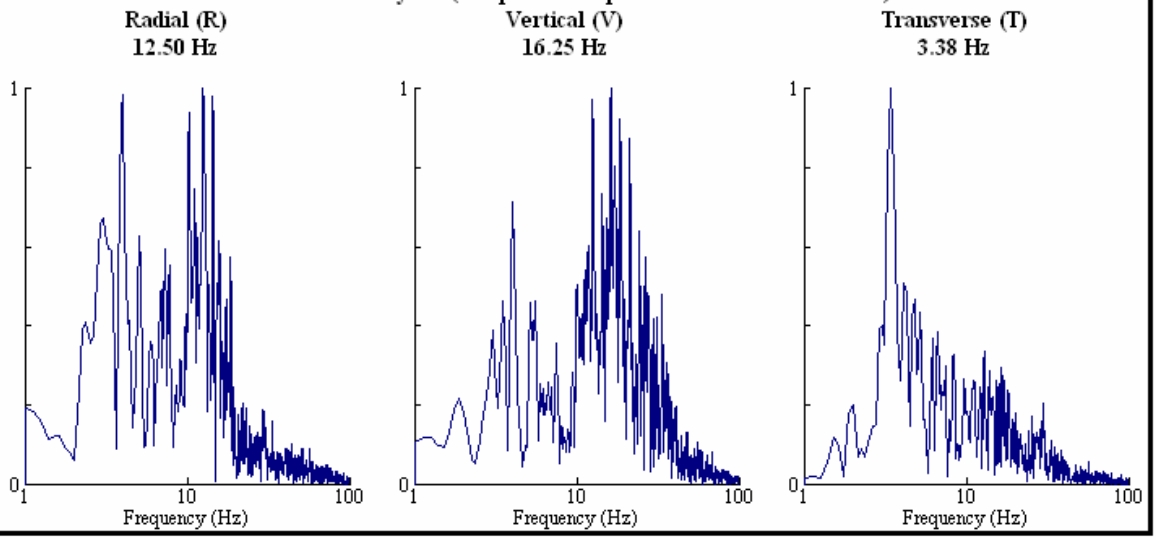
*Radial (R):* 5.04in/s 128.016mm/s @ 11.1Hz
***Vertical (V):* 5.12in/s 130.048mm/s @ 12.8Hz**
*Transverse (T):* 1.44in/s 36.576mm/s @ 4.4Hz
*Calibration Date (yyyy/mm/dd):* 2003/03/17

**Graph Information**

*Duration:* 0.000 sec To: 6.014 sec
*Seismic Scale:*
5.12in/s (1.280in/s/div) 130.05mm/s (32.512mm/s/div)
*Time Line Intervals at:* 1.00 s




**Fourier Analysis (Amplitude Spectrum - Box Window)**



**Salls Construction**
**Unser Road Extension**
**12 in. pipeline (SE)**
**67 ft**
**blast 1**

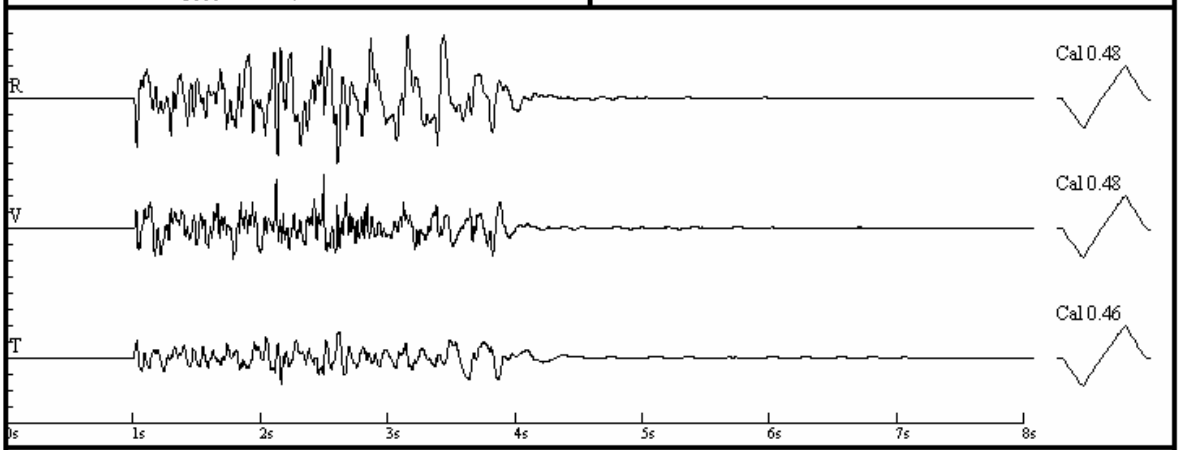
File: 00706011.DTB Event Number: 011 Date: 10/14/2004 Time: 13:46
Acoustic Trigger: 100 dB Seismic Trigger: 0.08in/s 2.032mm/s Serial Number: 706

**Amplitudes and Frequencies**

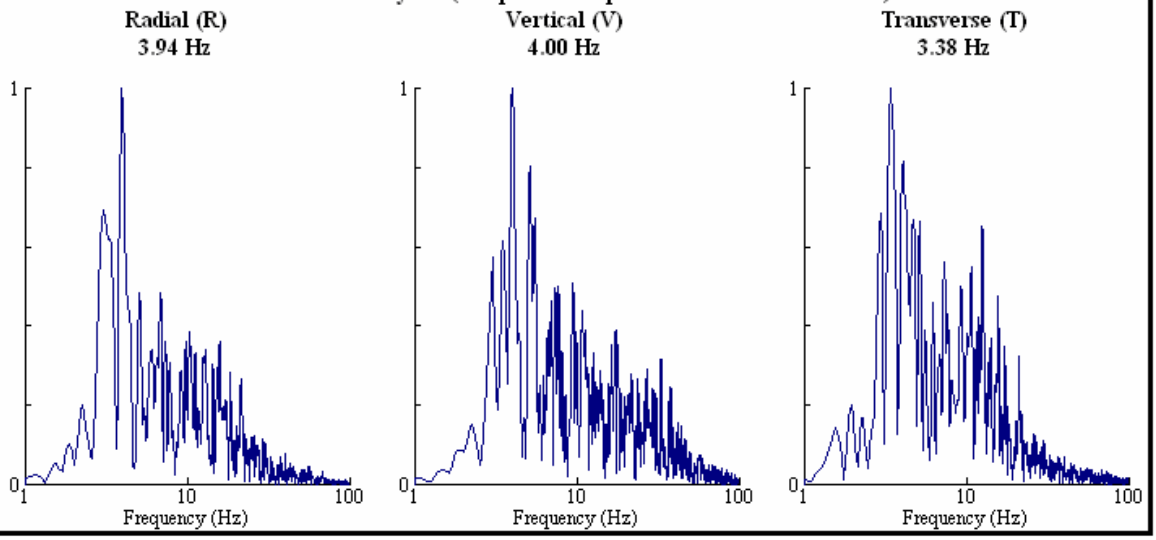
***Radial (R):* 2.72in/s 69.088mm/s @ 7.3Hz**
*Vertical (V):* 2.24in/s 56.896mm/s @ 9.4Hz
*Transverse (T):* 1.08in/s 27.432mm/s @ 9.1Hz
*Calibration Date (yyyy/mm/dd):* 2004/10/06

**Graph Information**

*Duration:* 0.000 sec To: 8.008 sec
*Seismic Scale:*
2.72in/s (0.680in/s/div) 69.09mm/s (17.272mm/s/div)
*Time Line Intervals at:* 1.00 s




**Fourier Analysis (Amplitude Spectrum - Box Window)**



**Salls Construction**
**Unser Road Extension**
**NW pipeline**
**master in ground**
**136 ft**
**blast 2**

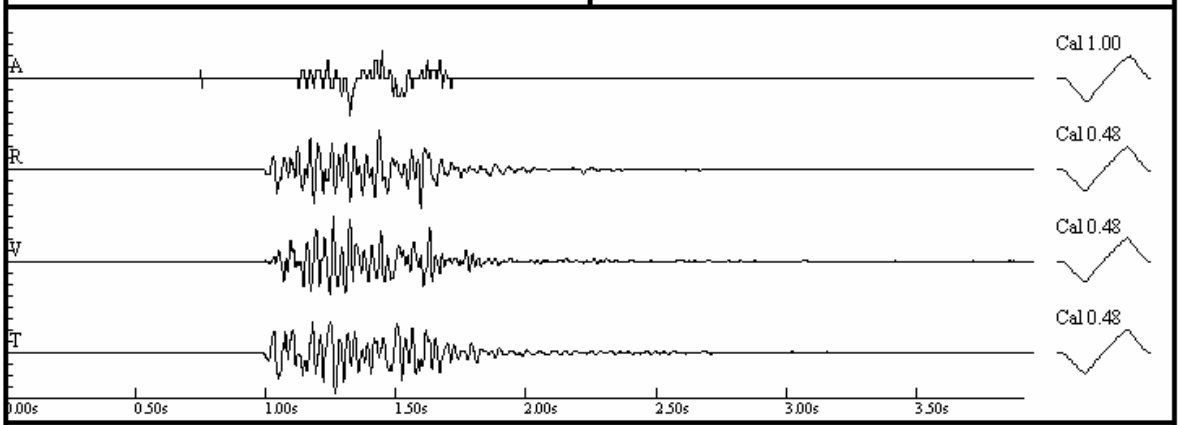
File: 02241188.DTB  Event Number: 188  Date: 10/14/2004  Time: 15:10
Acoustic Trigger: 130 dB  Seismic Trigger: 0.03in/s 0.762mm/s  Serial Number: 2241

**Amplitudes and Frequencies**

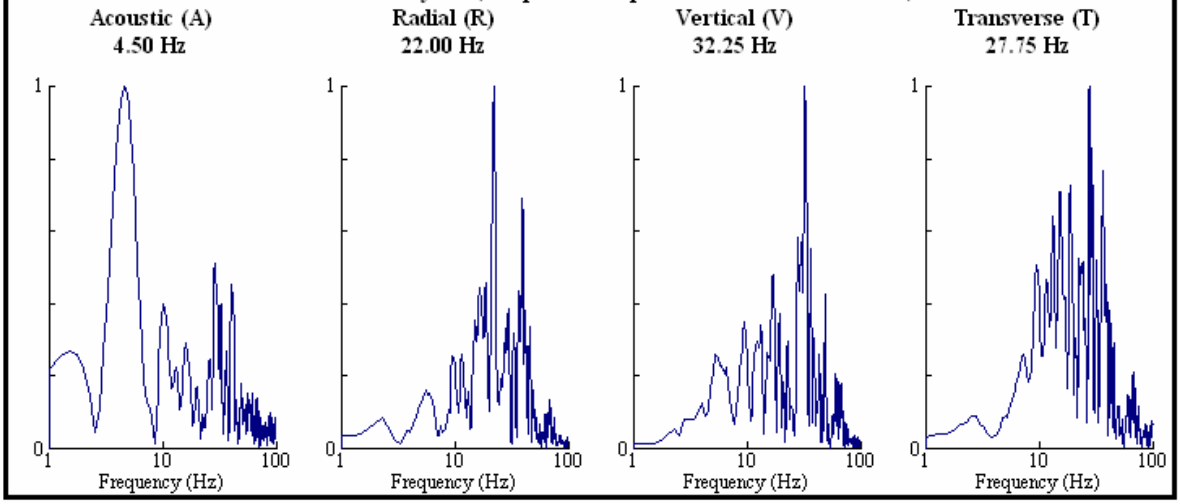
*Acoustic (A):* 118 dB @ 16.0 Hz
(0.16Mb 0.0023psi 0.0160kPa)
*Radial (R):* 0.175in/s 4.445mm/s @ 25.6Hz
***Vertical (V):* 0.195in/s 4.953mm/s @ 36.5Hz**
*Transverse (T):* 0.18in/s 4.572mm/s @ 28.4Hz
*Calibration Date (yyyy/mm/dd):* 2004/03/29

**Graph Information**

*Duration:* 0.000 sec To: 3.918 sec
*Acoustic Scale:*
120dB 0.20Mb (0.050Mb/div)
*Seismic Scale:*
0.20in/s (0.050in/s/div) 5.08mm/s (1.270mm/s/div)
*Time Line Intervals at:* 0.50 s



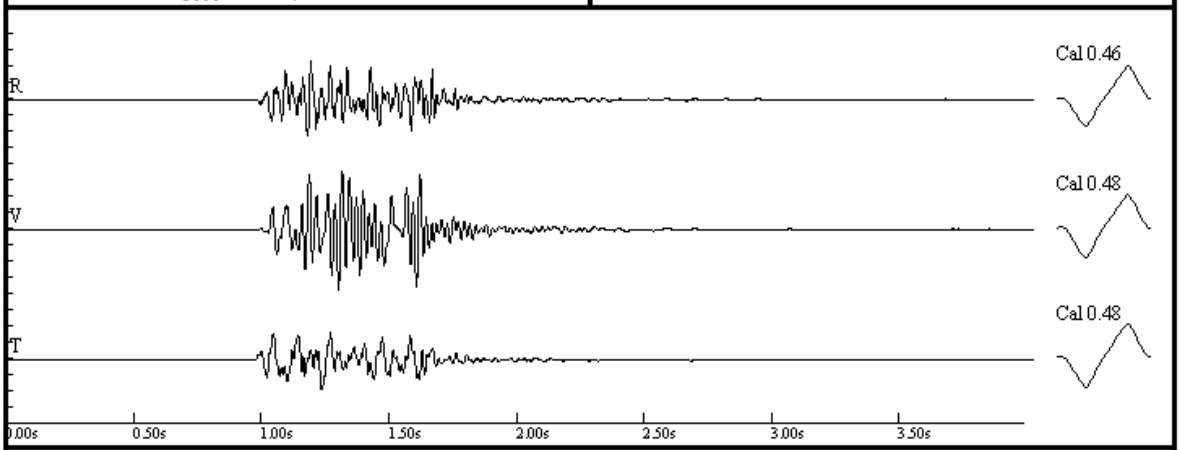

**Fourier Analysis (Amplitude Spectrum - Box Window)**



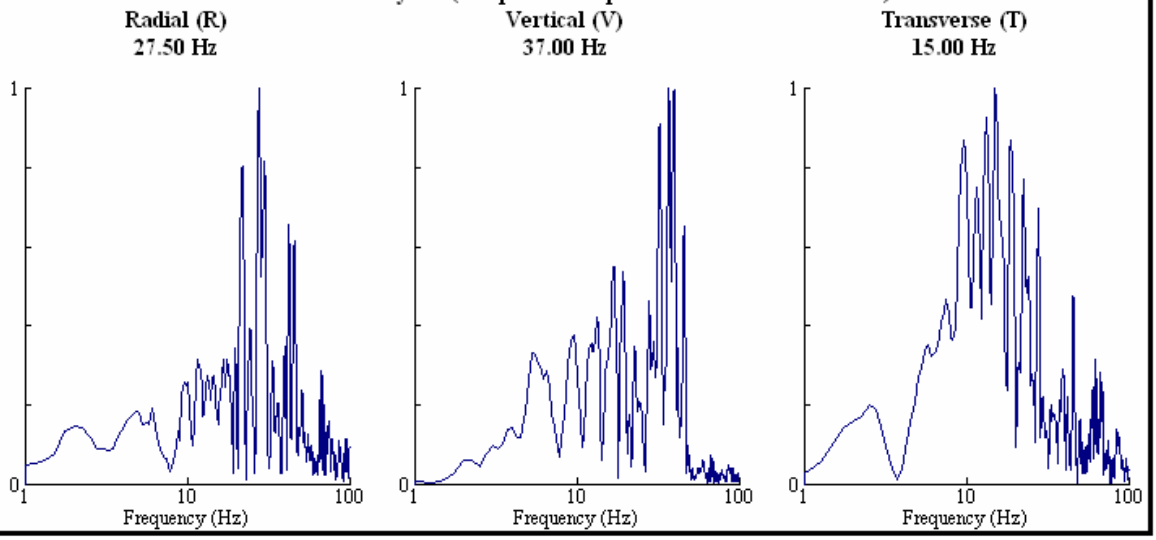
**Salls Construction**
**Unser Road Extension**
**12 in. pipeline (NW)**
**133 ft**
**blast 2**

File: 01258104.DTB  Event Number: 104  Date: 10/14/2004  Time: 15:10
Acoustic Trigger: 125 dB  Seismic Trigger: 0.015in/s 0.381mm/s  Serial Number: 1258

| Amplitudes and Frequencies | Graph Information |
|---|---|
| *Radial (R):* 0.115in/s 2.921mm/s @ 25.6Hz | *Duration:* 0.000 sec To: 3.992 sec |
| ***Vertical (V):* 0.19in/s 4.826mm/s @ 36.5Hz** | *Seismic Scale:* |
| *Transverse (T):* 0.095in/s 2.413mm/s @ 18.2Hz | 0.20in/s (0.050in/s/div) 5.08mm/s (1.270mm/s/div) |
| *Calibration Date (yyyy/mm/dd):* 2000/10/31 | *Time Line Intervals at:* 0.50 s |




**Fourier Analysis (Amplitude Spectrum - Box Window)**



**Salls Construction**
**Unser Road Extension**
**NW pipeline**
**ground surface**
**85 ft**

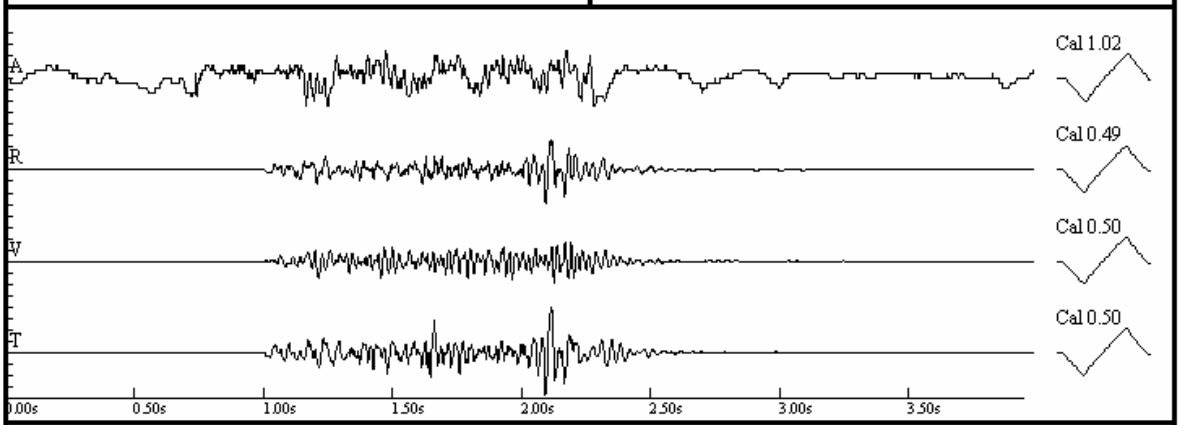
File: 00706059.DTB  Event Number: 059  Date: 10/28/2004  Time: 16:38
Acoustic Trigger: 124 dB  Seismic Trigger: 0.03in/s 0.762mm/s  Serial Number: 706

**Amplitudes and Frequencies**

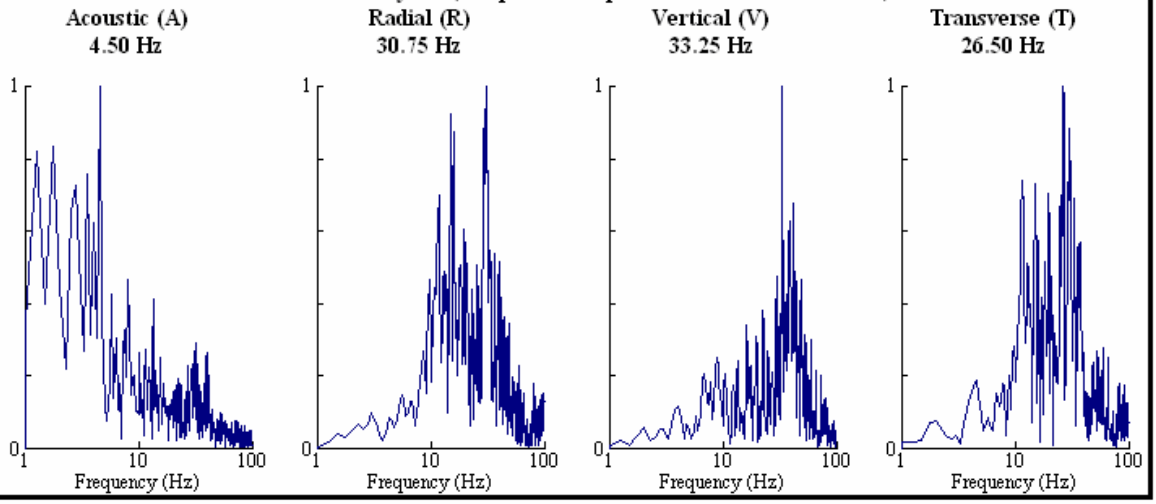
*Acoustic (A):* 116 dB @ 32.0 Hz
(0.12Mb 0.0017psi 0.0120kPa)
*Radial (R):* 0.50in/s 12.70mm/s @ 28.4Hz
*Vertical (V):* 0.325in/s 8.255mm/s @ 51.2Hz
***Transverse (T):* 0.68in/s 17.272mm/s @ 23.2Hz**
*Calibration Date (yyyy/mm/dd):* 2004/10/06

**Graph Information**

*Duration:* 0.000 sec To: 3.949 sec
*Acoustic Scale:*
120dB 0.20Mb (0.050Mb/div)
*Seismic Scale:*
0.68in/s (0.170in/s/div) 17.27mm/s (4.318mm/s/div)
*Time Line Intervals at:* 0.50 s




**Fourier Analysis (Amplitude Spectrum - Box Window)**



**Salls Construction**
**Unser Road Extension**
**12 in. pipeline (NW)**
**88 ft**

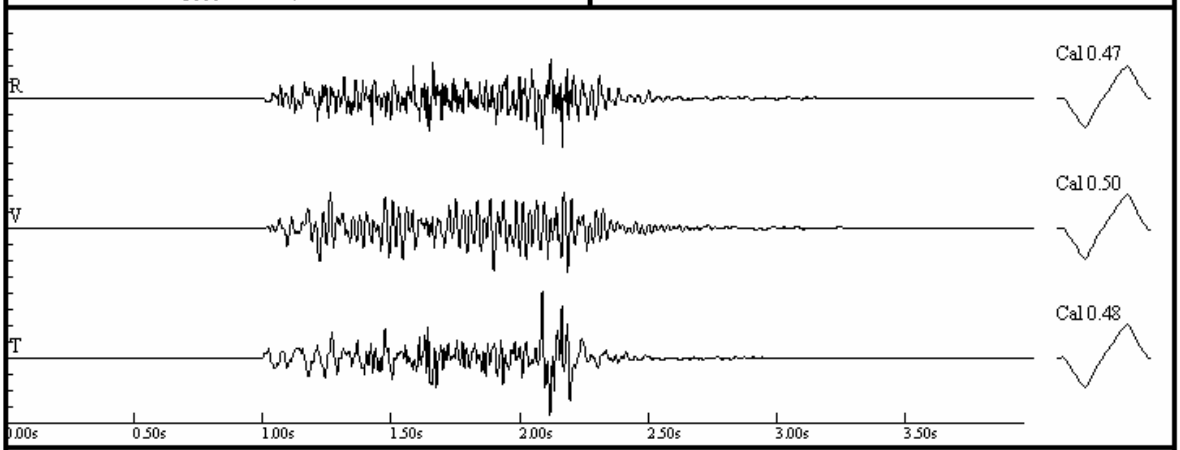
File: 02407126.DTB  Event Number: 126  Date: 10/28/2004  Time: 16:38
Acoustic Trigger: 106 dB  Seismic Trigger: 0.03in/s 0.762mm/s  Serial Number: 2407

**Amplitudes and Frequencies**

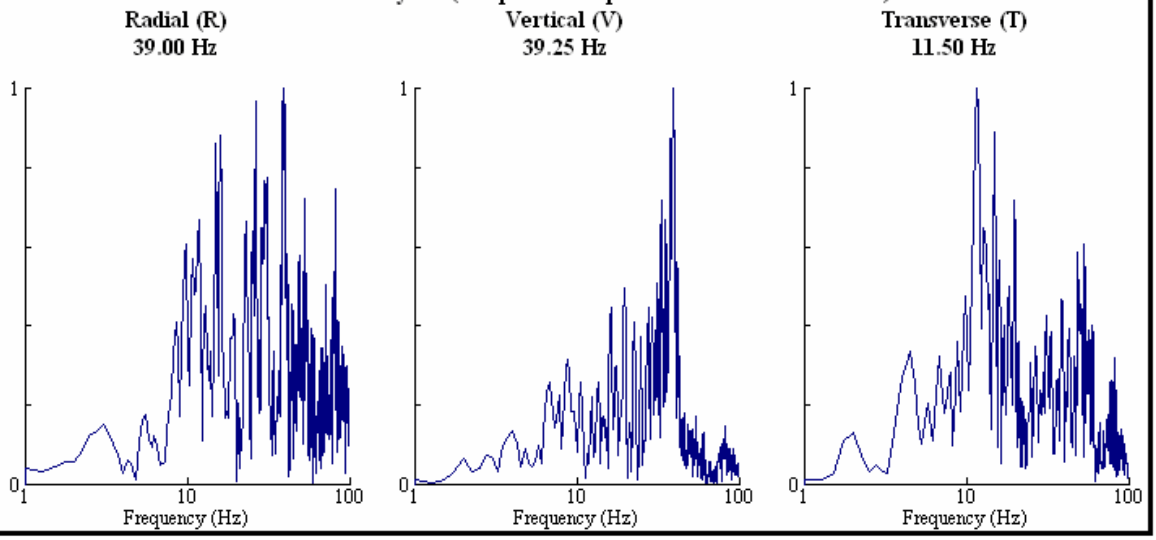
*Radial (R):* 0.335in/s 8.509mm/s @ 51.2Hz
*Vertical (V):* 0.295in/s 7.493mm/s @ 42.6Hz
***Transverse (T):* 0.445in/s 11.303mm/s @ 36.5Hz**
*Calibration Date (yyyy/mm/dd):* 2003/03/17

**Graph Information**

*Duration:* 0.000 sec To: 3.967 sec
*Seismic Scale:*
0.44in/s (0.110in/s/div) 11.18mm/s (2.794mm/s/div)
*Time Line Intervals at:* 0.50 s




**Fourier Analysis (Amplitude Spectrum - Box Window)**



**Salls Construction**
**Unser Road Extension**
**20 in. pipeline (NW)**
**82 ft**
**multiply readings by 0.5**
**R = 0.29 ips T = 0.64 ips**

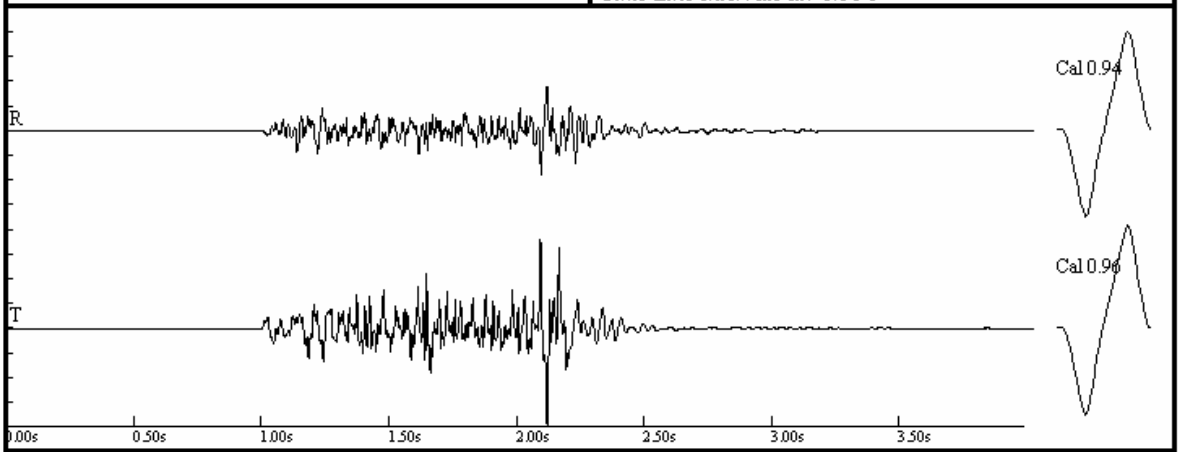
File: 0.1258208.DTB Event Number: 208 Date: 10/28/2004 Time: 16:38
Acoustic Trigger: 120 dB Seismic Trigger: 0.03in/s 0.762mm/s Serial Number: 1258

**Amplitudes and Frequencies**

*Radial (R):* 0.58in/s 14.732mm/s @ 25.6Hz
***Transverse (T):*** **1.28in/s 32.512mm/s @ 18.2Hz**
*Calibration Date (yyyy/mm/dd):* 2000/10/31

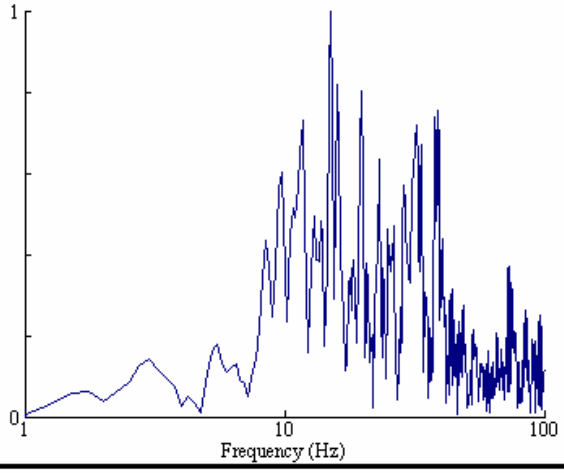
**Graph Information**

*Duration:* 0.000 sec To: 3.992 sec
*Seismic Scale:*
1.28in/s (0.320in/s/div) 32.51mm/s (8.128mm/s/div)
*Time Line Intervals at:* 0.50 s

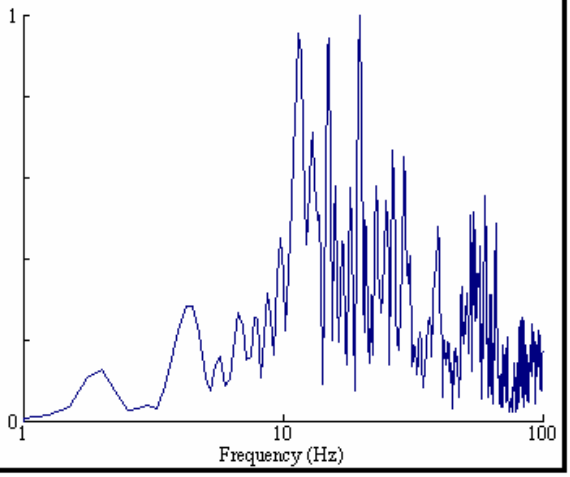



**Fourier Analysis (Amplitude Spectrum - Box Window)**

**Radial (R)**
**15.00 Hz**




**Transverse (T)**
**19.75 Hz**



**Salls Construction**
**Unser Road Extension**
**at pipeline**
**164.5 ft**

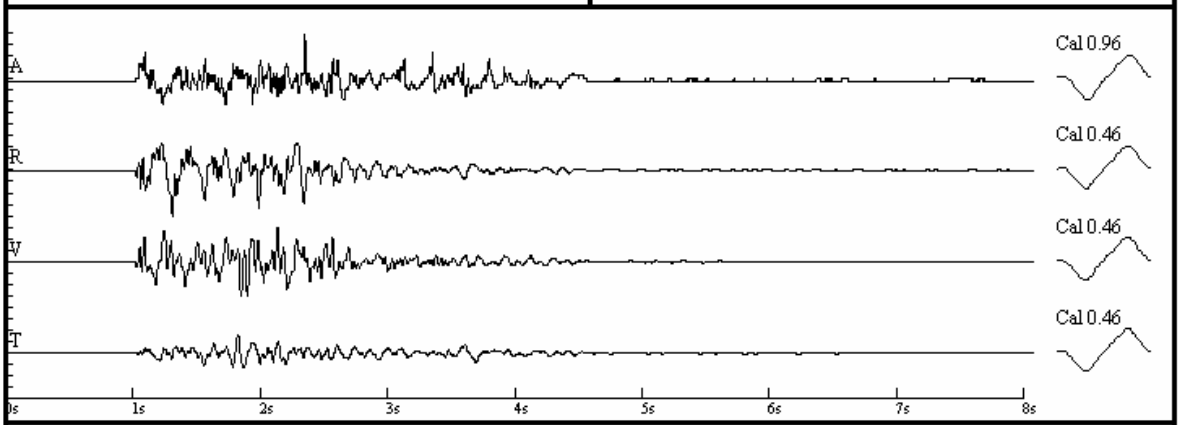
File: 01258228.DTB Event Number: 228 Date: 12/15/2004 Time: 15:10
Acoustic Trigger: 125 dB Seismic Trigger: 0.04in/s 1.016mm/s Serial Number: 1258

**Amplitudes and Frequencies**

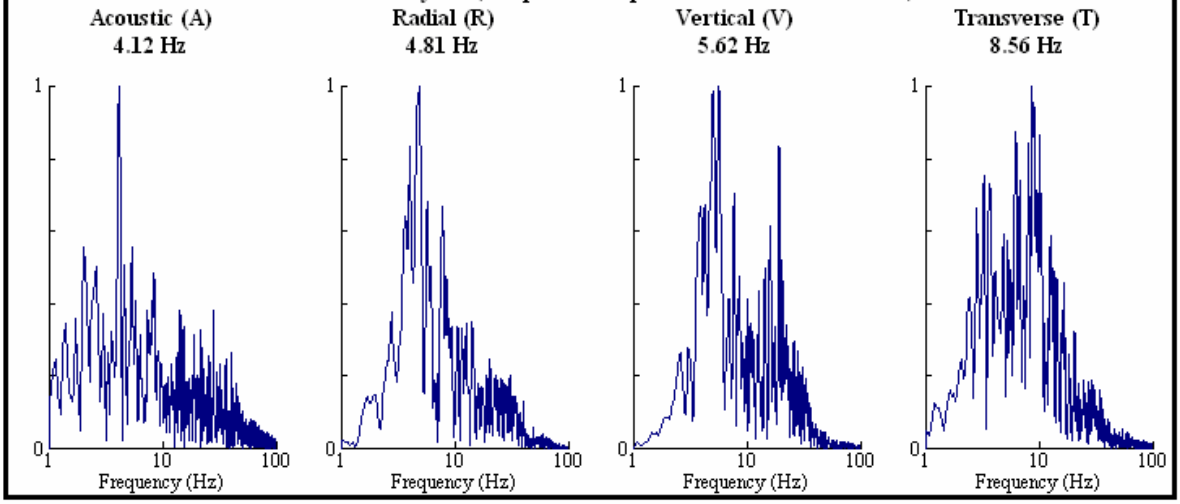
*Acoustic (A):* 130 dB @ 23.2 Hz
(0.60Mb 0.0087psi 0.0600kPa)
***Radial (R):* 2.72in/s 69.088mm/s @ 4.4Hz**
*Vertical (V):* 2.10in/s 53.34mm/s @ 17.0Hz
*Transverse (T):* 1.08in/s 27.432mm/s @ 12.8Hz
*Calibration Date (yyyy/mm/dd):* 2000/10/31

**Graph Information**

*Duration:* 0.000 sec To: 8.010 sec
*Acoustic Scale:*
130dB 0.63Mb (0.158Mb/div)
*Seismic Scale:*
2.72in/s (0.680in/s/div) 69.09mm/s (17.272mm/s/div)
*Time Line Intervals at:* 1.00 s




**Fourier Analysis (Amplitude Spectrum - Box Window)**



**Salls Construction**
**Unser Road Extension**
**at pipeline on ground surface**
**212 ft**
**blast 1**

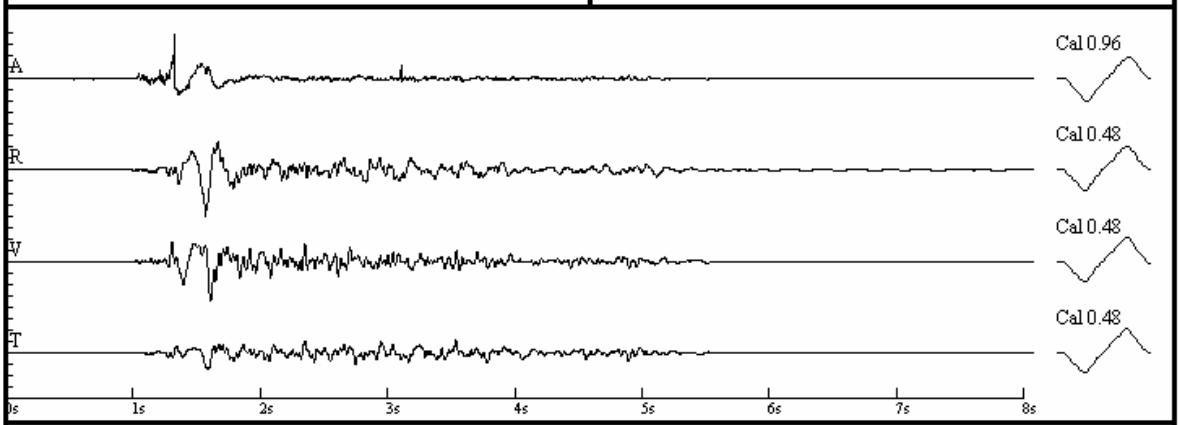
File: 02240203.DTB Event Number: 203 Date: 12/30/2004 Time: 15:46
Acoustic Trigger: 125 dB Seismic Trigger: 0.06in/s 1.524mm/s Serial Number: 2240

**Amplitudes and Frequencies**

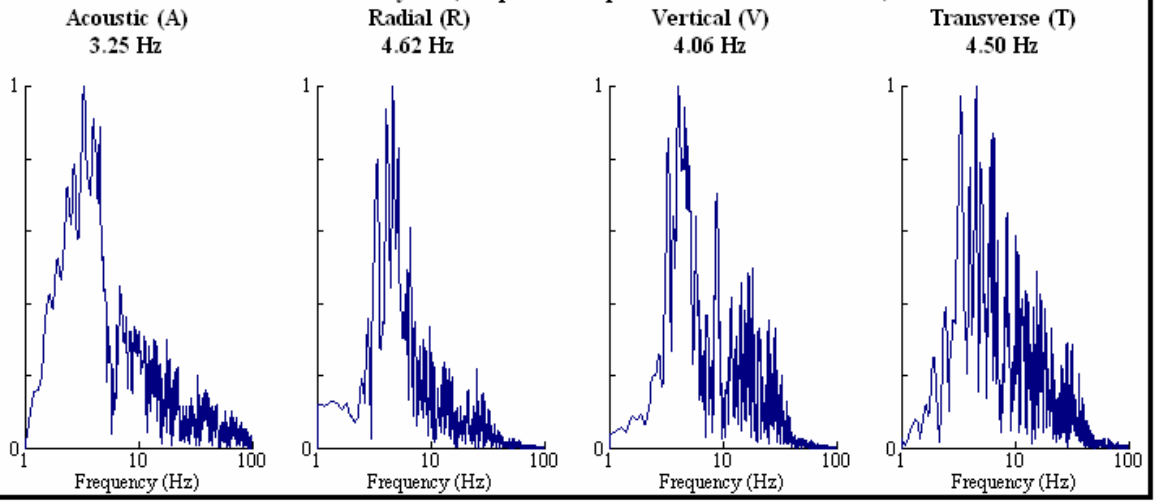
*Acoustic (A):* 143 dB @ 12.1 Hz
(2.72Mb 0.0394psi 0.2719kPa)
***Radial (R):*** **4.72in/s 119.888mm/s @ 5.5Hz**
*Vertical (V):* 4.08in/s 103.632mm/s @ 6.0Hz
*Transverse (T):* 1.60in/s 40.64mm/s @ 6.7Hz
*Calibration Date (yyyy/mm/dd):* 2003/12/05

**Graph Information**

*Duration:* 0.000 sec To: 8.010 sec
*Acoustic Scale:*
143dB 2.83Mb (0.708Mb/div)
*Seismic Scale:*
4.72in/s (1.180in/s/div) 119.89mm/s (29.972mm/s/div)
*Time Line Intervals at:* 1.00 s




**Fourier Analysis (Amplitude Spectrum - Box Window)**



**Salls Construction**
**Unser Road Extension**
**at pipeline on ground surface**
**186 ft**
**blast 1**

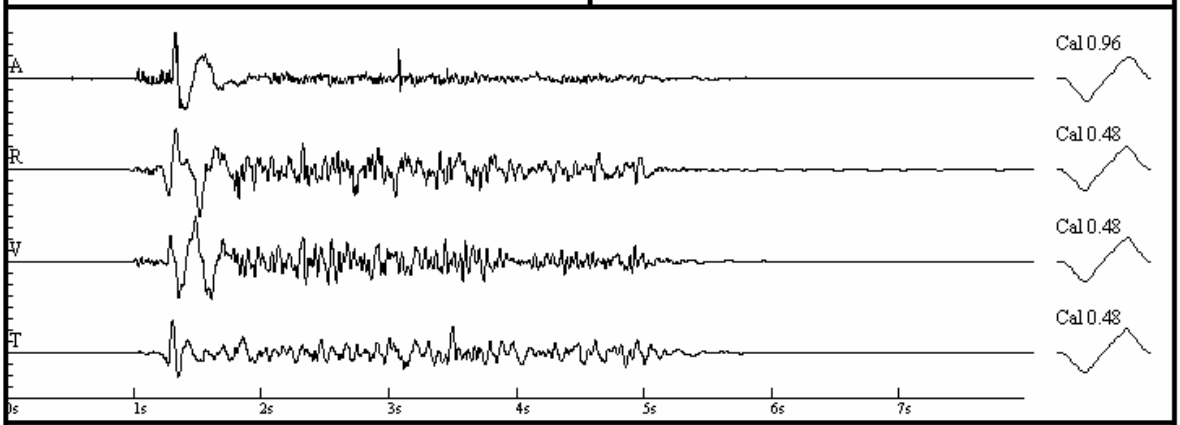
File: 02276269.DTB  Event Number: 269  Date: 12/30/2004  Time: 15:46
Acoustic Trigger: 112 dB  Seismic Trigger: 0.06in/s 1.524mm/s  Serial Number: 2276

**Amplitudes and Frequencies**

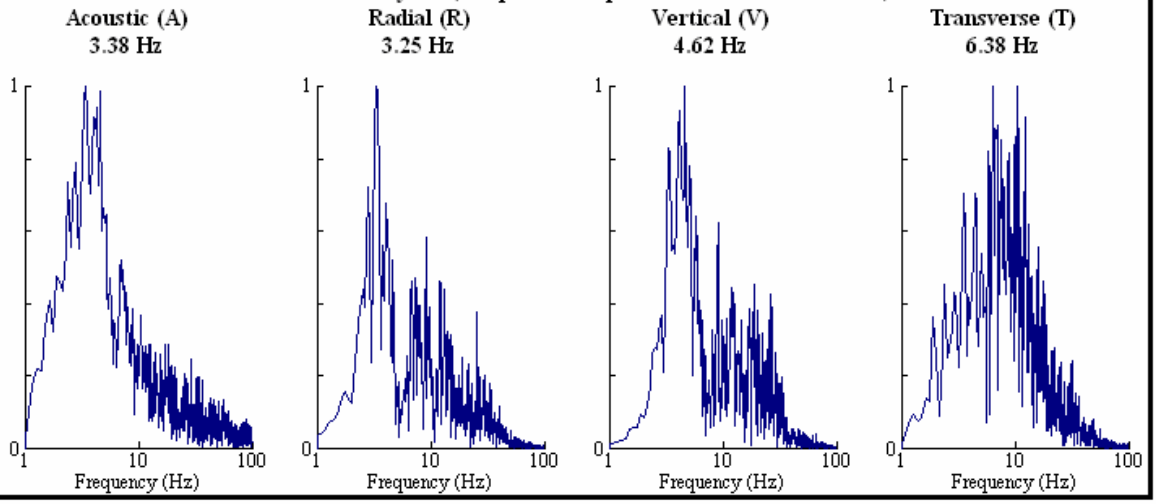
*Acoustic (A):* 137 dB @ 10.6 Hz
(1.44Mb 0.0209psi 0.1440kPa)
***Radial (R):*** **2.88in/s 73.152mm/s @ 4.3Hz**
*Vertical (V):* 2.80in/s 71.12mm/s @ 3.7Hz
*Transverse (T):* 2.02in/s 51.308mm/s @ 10.6Hz
*Calibration Date (yyyy/mm/dd):* 2003/01/06

**Graph Information**

*Duration:* 0.000 sec To: 7.984 sec
*Acoustic Scale:*
137dB 1.42Mb (0.355Mb/div)
*Seismic Scale:*
2.88in/s (0.720in/s/div) 73.15mm/s (18.288mm/s/div)
*Time Line Intervals at:* 1.00 s




**Fourier Analysis (Amplitude Spectrum - Box Window)**



**Salls Construction**
**Unser Road Extension**
**at pipeline on ground surface**
**165 ft**
**blast 1**

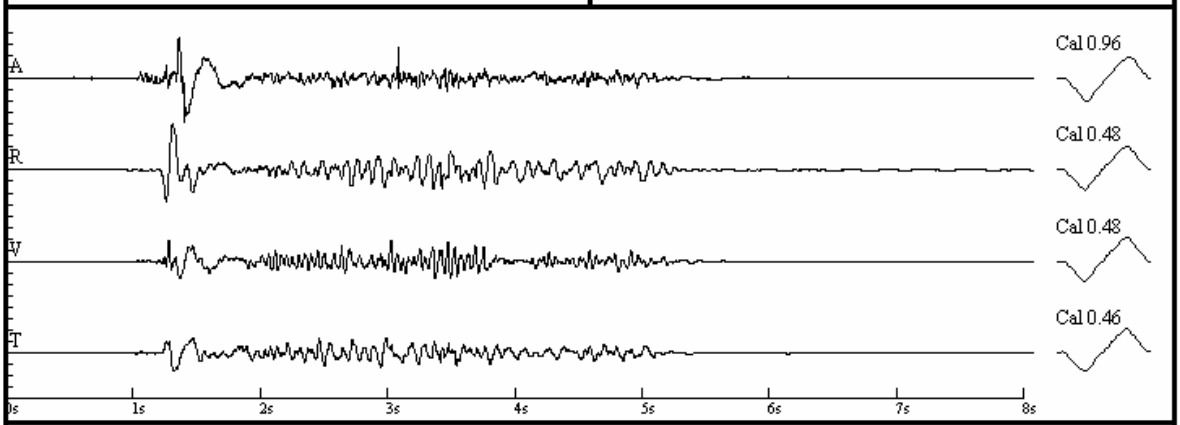
File: 02407156.DTB  Event Number: 156  Date: 12/30/2004  Time: 15:46
Acoustic Trigger: 125 dB  Seismic Trigger: 0.06in/s 1.524mm/s  Serial Number: 2407

**Amplitudes and Frequencies**

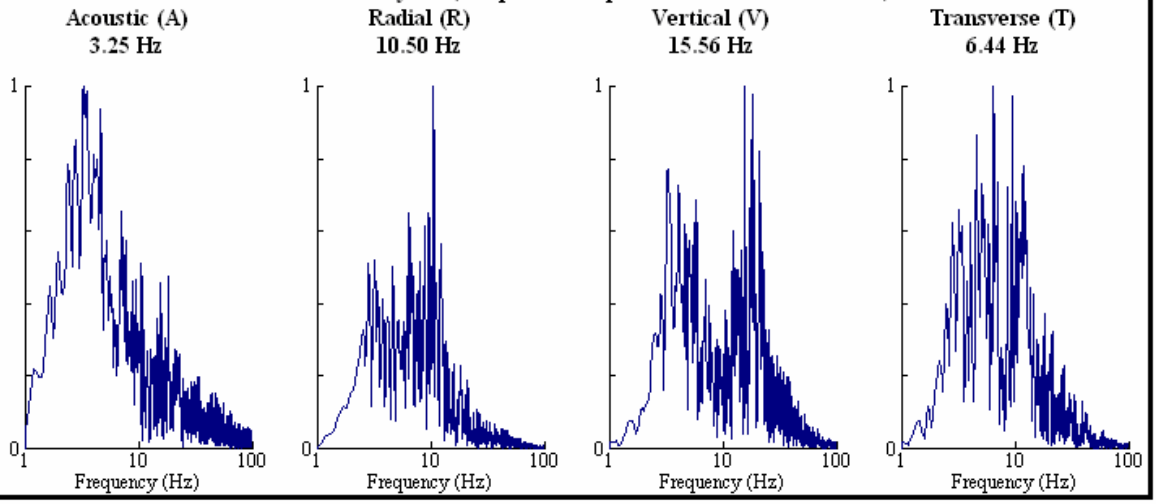
*Acoustic (A):* 136 dB @ 5.4 Hz
(1.20Mb 0.0174psi 0.1200kPa)
***Radial (R):* 6.00in/s 152.40mm/s @ 7.3Hz**
*Vertical (V):* 2.80in/s 71.12mm/s @ 19.6Hz
*Transverse (T):* 2.32in/s 58.928mm/s @ 5.8Hz
*Calibration Date (yyyy/mm/dd):* 2003/03/17

**Graph Information**

*Duration:* 0.000 sec To: 8.010 sec
*Acoustic Scale:*
136dB 1.26Mb (0.315Mb/div)
*Seismic Scale:*
6.00in/s (1.500in/s/div) 152.40mm/s (38.100mm/s/div)
*Time Line Intervals at:* 1.00 s




**Fourier Analysis (Amplitude Spectrum - Box Window)**



**Salls Construction**
**Unser Road Extension**
**at pipeline on ground surface**
**150 ft**
**blast 2**

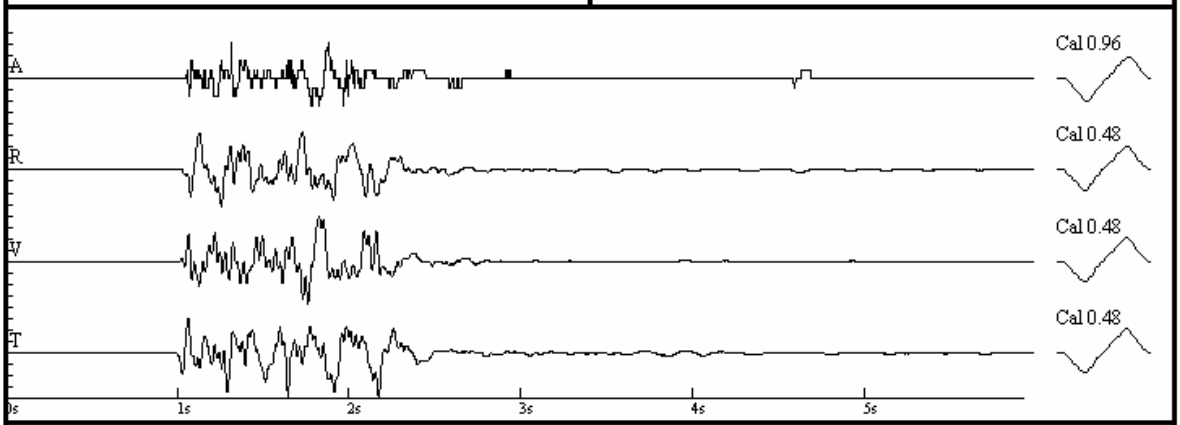
File: 02240204.DTB Event Number: 204 Date: 12/30/2004 Time: 16:24
Acoustic Trigger: 125 dB Seismic Trigger: 0.06in/s 1.524mm/s Serial Number: 2240

**Amplitudes and Frequencies**

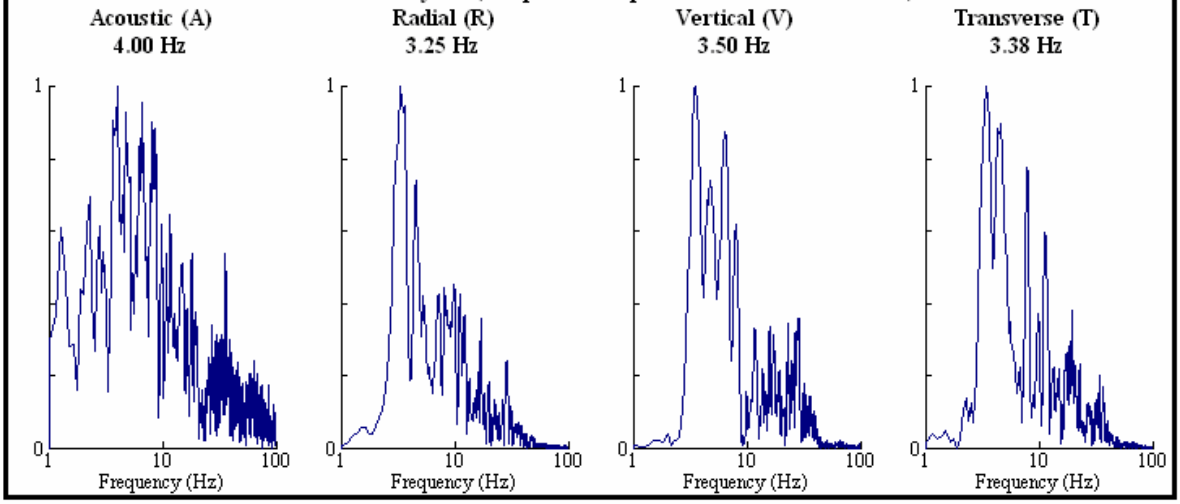
*Acoustic (A):* 118 dB @ 64.0 Hz
(0.16Mb 0.0023psi 0.0160kPa)
*Radial (R):* 0.62in/s 15.748mm/s @ 9.1Hz
***Vertical (V):* 0.76in/s 19.304mm/s @ 6.5Hz**
*Transverse (T):* 0.74in/s 18.796mm/s @ 5.6Hz
*Calibration Date (yyyy/mm/dd):* 2003/12/05

**Graph Information**

*Duration:* 0.000 sec To: 5.939 sec
*Acoustic Scale:*
120dB 0.20Mb (0.050Mb/div)
*Seismic Scale:*
0.76in/s (0.190in/s/div) 19.30mm/s (4.826mm/s/div)
*Time Line Intervals at:* 1.00 s




**Fourier Analysis (Amplitude Spectrum - Box Window)**



**Salls Construction**
**Unser Road Extension**
**at pipeline on ground surface**
**108 ft**
**blast 2**

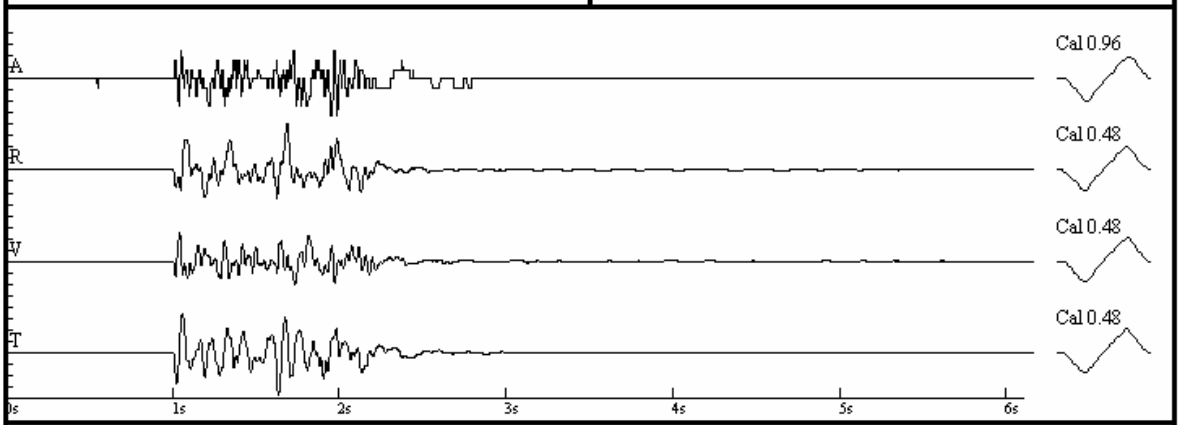
File: 02276270.DTB Event Number: 270 Date: 12/30/2004 Time: 16:24
Acoustic Trigger: 112 dB Seismic Trigger: 0.06in/s 1.524mm/s Serial Number: 2276

**Amplitudes and Frequencies**

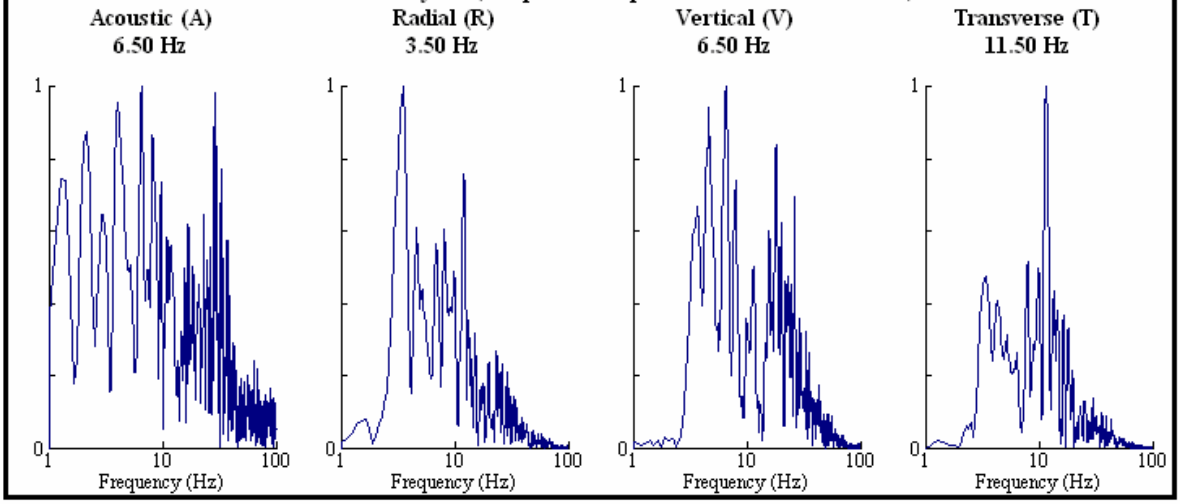
*Acoustic (A):* 118 dB @ 23.2 Hz
(0.16Mb 0.0023psi 0.0160kPa)
***Radial (R):*** **1.50in/s 38.10mm/s @ 7.5Hz**
*Vertical (V):* 0.96in/s 24.384mm/s @ 19.6Hz
*Transverse (T):* 1.38in/s 35.052mm/s @ 13.4Hz
*Calibration Date (yyyy/mm/dd):* 2003/01/06

**Graph Information**

*Duration:* 0.000 sec To: 6.111 sec
*Acoustic Scale:*
120dB 0.20Mb (0.050Mb/div)
*Seismic Scale:*
1.50in/s (0.375in/s/div) 38.10mm/s (9.525mm/s/div)
*Time Line Intervals at:* 1.00 s




**Fourier Analysis (Amplitude Spectrum - Box Window)**



**Salls Construction**
**Unser Road Extension**
**at pipeline on ground surface**
**88 ft**
**blast 2**

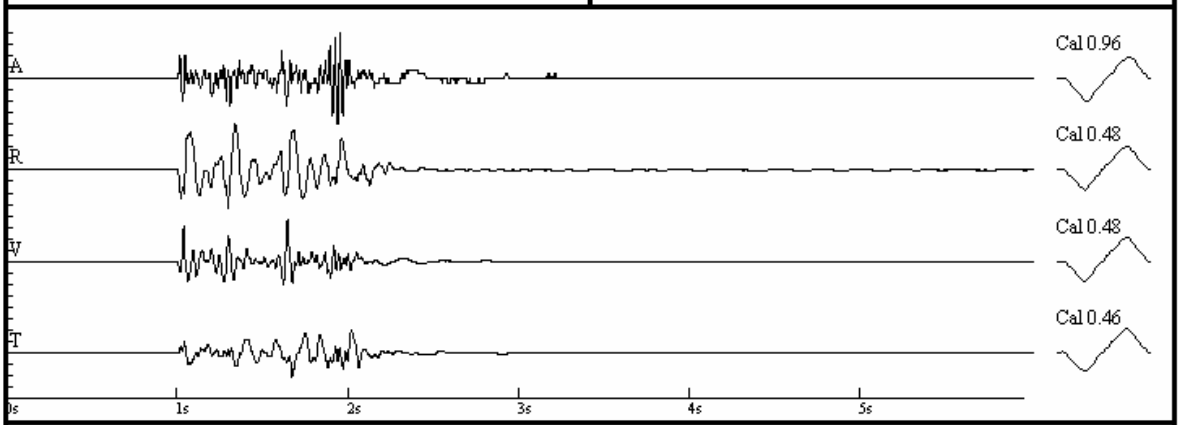
File: 02407157.DTB Event Number: 157 Date: 12/30/2004 Time: 16:23
Acoustic Trigger: 125 dB Seismic Trigger: 0.06in/s 1.524mm/s Serial Number: 2407

**Amplitudes and Frequencies**

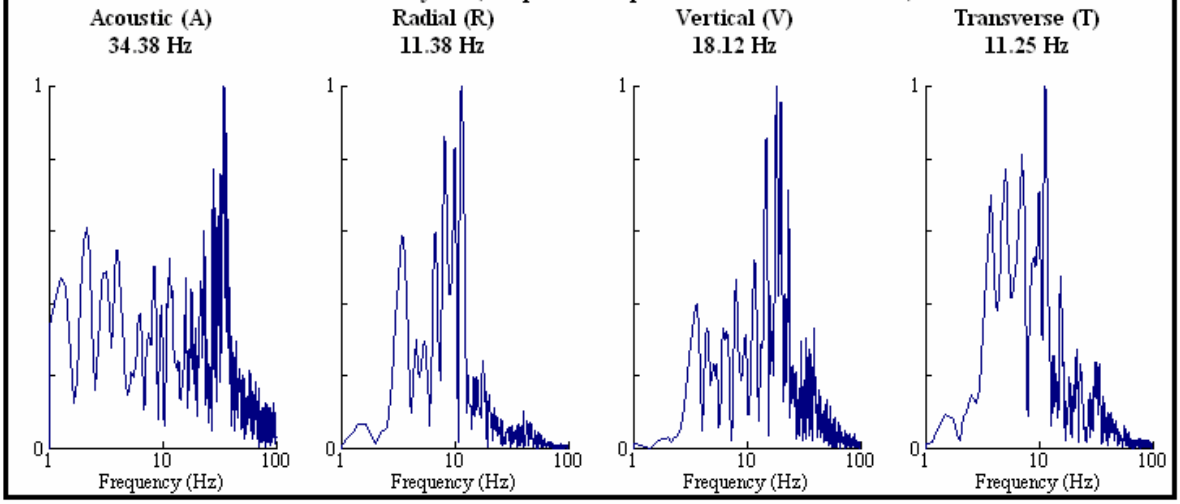
*Acoustic (A):* 126 dB @ 42.6 Hz
(0.40Mb 0.0058psi 0.0400kPa)
***Radial (R):* 3.28in/s 83.312mm/s @ 9.8Hz**
*Vertical (V):* 2.96in/s 75.184mm/s @ 17.0Hz
*Transverse (T):* 1.76in/s 44.704mm/s @ 5.4Hz
*Calibration Date (yyyy/mm/dd):* 2003/03/17

**Graph Information**

*Duration:* 0.000 sec To: 5.963 sec
*Acoustic Scale:*
126dB 0.40Mb (0.100Mb/div)
*Seismic Scale:*
3.28in/s (0.820in/s/div) 83.31mm/s (20.828mm/s/div)
*Time Line Intervals at:* 1.00 s




**Fourier Analysis (Amplitude Spectrum - Box Window)**



**Salls Construction**
**Unser Road Extension**
**at pipeline on ground surface**
**91 ft**

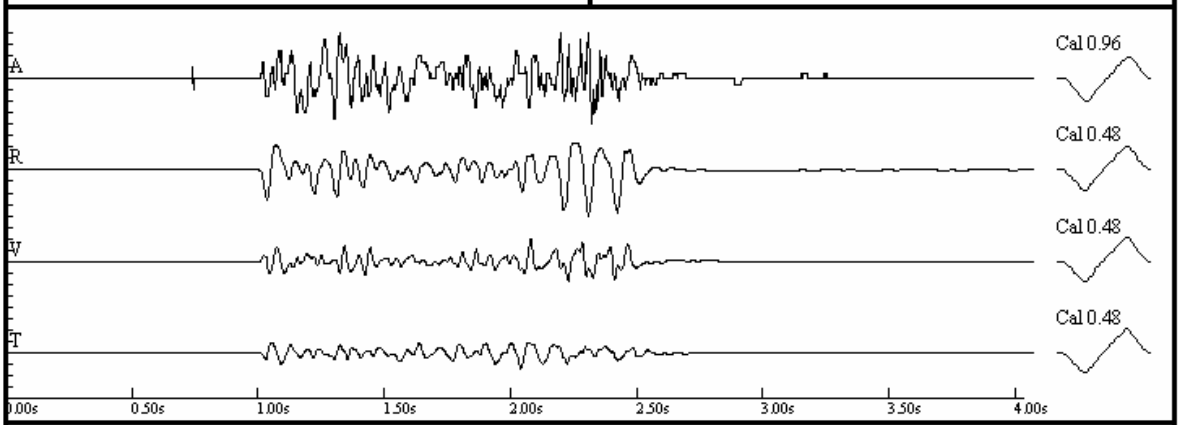
File: 02240213.DTB Event Number: 213 Date: 1/7/2005 Time: 12:18
Acoustic Trigger: 116 dB Seismic Trigger: 0.04in/s 1.016mm/s Serial Number: 2240

**Amplitudes and Frequencies**

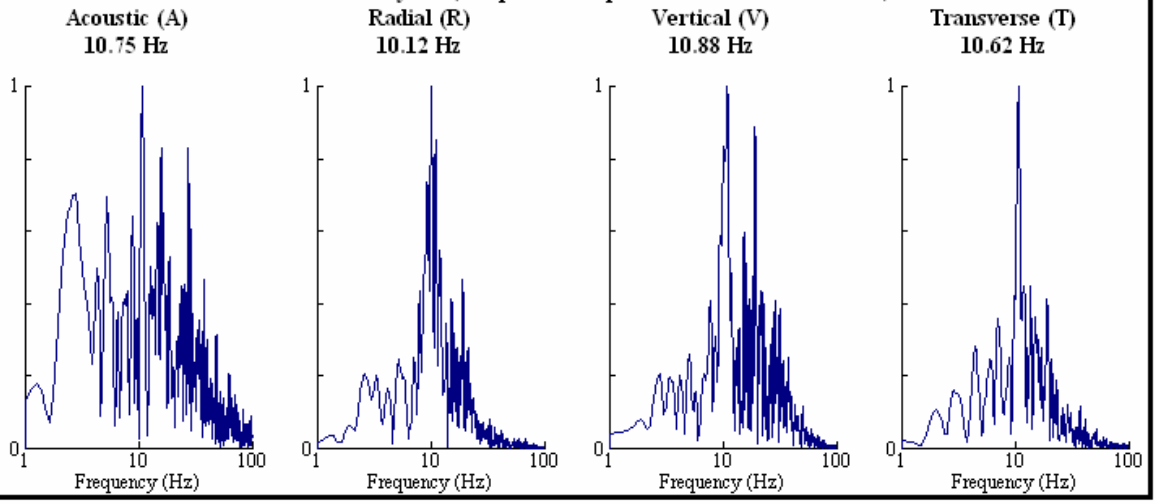
*Acoustic (A):* 124 dB @ 11.1 Hz
(0.32Mb 0.0046psi 0.0320kPa)
***Radial (R):* 5.60in/s 142.24mm/s @ 12.1Hz**
*Vertical (V):* 2.72in/s 69.088mm/s @ 18.2Hz
*Transverse (T):* 1.88in/s 47.752mm/s @ 15.0Hz
*Calibration Date (yyyy/mm/dd):* 2003/12/05

**Graph Information**

*Duration:* 0.000 sec To: 4.039 sec
*Acoustic Scale:*
124dB 0.32Mb (0.080Mb/div)
*Seismic Scale:*
5.60in/s (1.400in/s/div) 142.24mm/s (35.560mm/s/div)
*Time Line Intervals at:* 0.50 s




**Fourier Analysis (Amplitude Spectrum - Box Window)**



**Salls Construction**
**Unser Road Extension**
**at pipeline on ground surface**
**83 ft**
**blast 1 (road cut)**

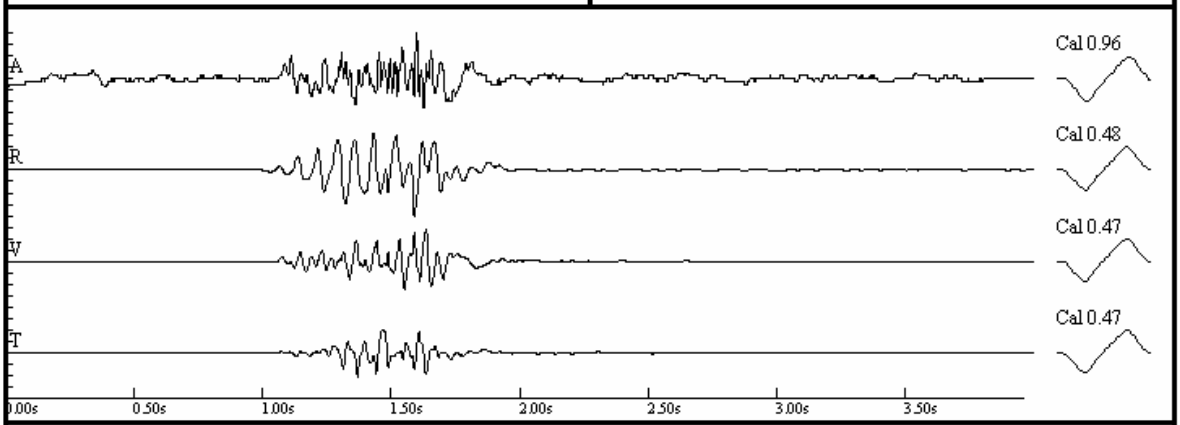
File: 02240236.DTB  Event Number: 236  Date: 1/12/2005  Time: 15:22
Acoustic Trigger: 135 dB  Seismic Trigger: 0.03in/s 0.762mm/s  Serial Number: 2240

**Amplitudes and Frequencies**

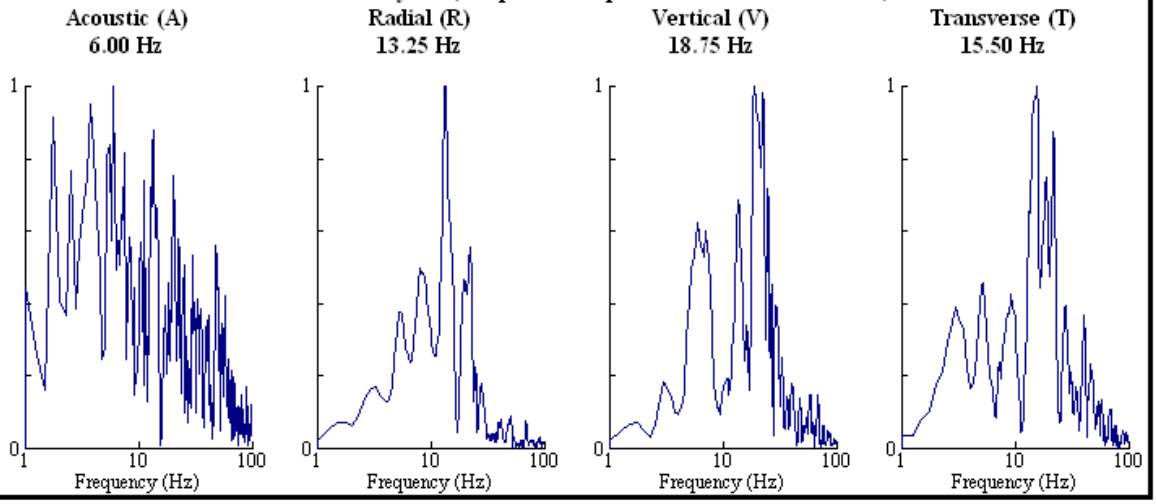
*Acoustic (A):* 124 dB @ 42.6 Hz
(0.32Mb 0.0046psi 0.0320kPa)
***Radial (R):* 2.80in/s 71.12mm/s @ 17.0Hz**
*Vertical (V):* 1.92in/s 48.768mm/s @ 21.3Hz
*Transverse (T):* 1.48in/s 37.592mm/s @ 17.0Hz
*Calibration Date (yyyy/mm/dd):* 2003/12/05

**Graph Information**

*Duration:* 0.000 sec To: 3.967 sec
*Acoustic Scale:*
124dB 0.32Mb (0.080Mb/div)
*Seismic Scale:*
2.80in/s (0.700in/s/div) 71.12mm/s (17.780mm/s/div)
*Time Line Intervals at:* 0.50 s




**Fourier Analysis (Amplitude Spectrum - Box Window)**



**Salls Construction**
**Unser Road Extension**
**at pipeline on ground surface**
**86 ft**
**blast 1 (road cut)**

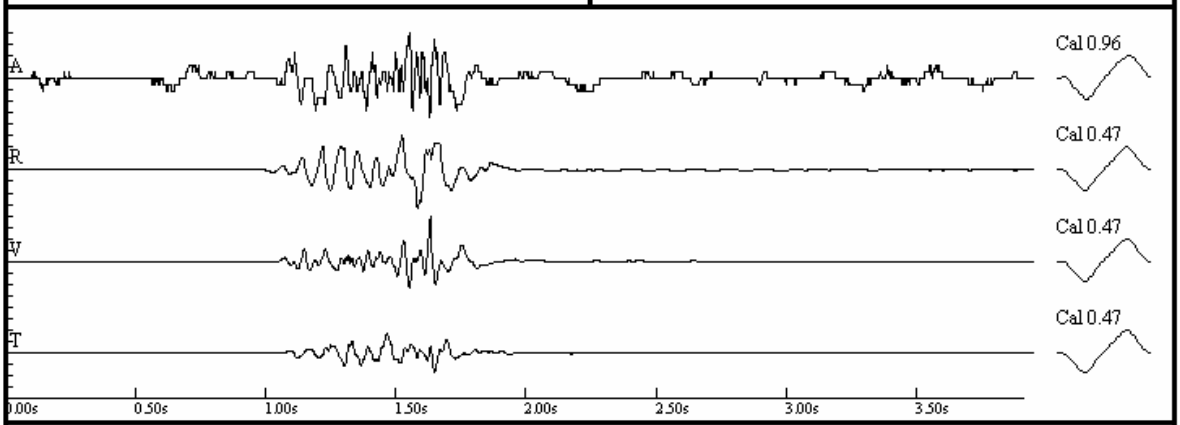
File: 02241254.DTB  Event Number: 254  Date: 1/12/2005  Time: 15:23
Acoustic Trigger: 135 dB  Seismic Trigger: 0.03in/s 0.762mm/s  Serial Number: 2241

**Amplitudes and Frequencies**

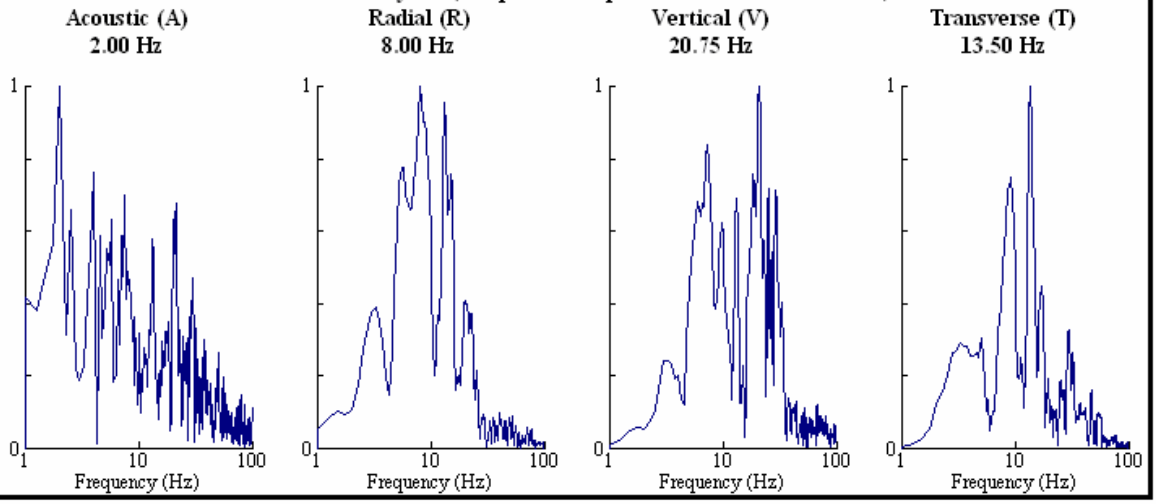
*Acoustic (A):* 123 dB @ 21.3 Hz
(0.28Mb 0.0041psi 0.0280kPa)
*Radial (R):* 2.28in/s 57.912mm/s @ 7.3Hz
***Vertical (V):* 2.68in/s 68.072mm/s @ 23.2Hz**
*Transverse (T):* 1.16in/s 29.464mm/s @ 19.6Hz
*Calibration Date (yyyy/mm/dd):* 2004/03/29

**Graph Information**

*Duration:* 0.000 sec To: 3.918 sec
*Acoustic Scale:*
123dB 0.28Mb (0.070Mb/div)
*Seismic Scale:*
2.68in/s (0.670in/s/div) 68.07mm/s (17.018mm/s/div)
*Time Line Intervals at:* 0.50 s




**Fourier Analysis (Amplitude Spectrum - Box Window)**



**Salls Construction**
**Unser Road Extension**
**at pipeline on ground surface**
**204 ft**
**blast 2 (trench blast)**

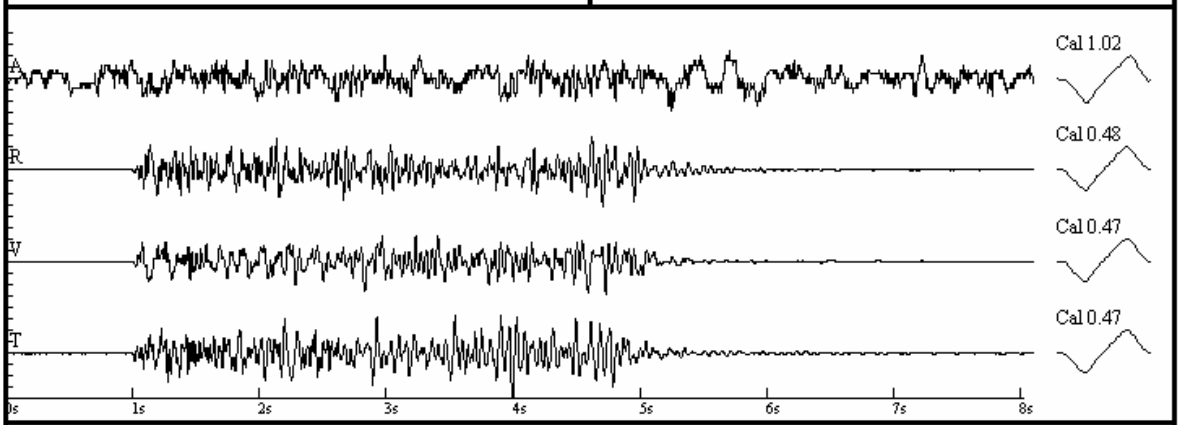
File: 02240237.DTB Event Number: 237 Date: 1/12/2005 Time: 15:26
Acoustic Trigger: 135 dB Seismic Trigger: 0.03in/s 0.762mm/s Serial Number: 2240

**Amplitudes and Frequencies**

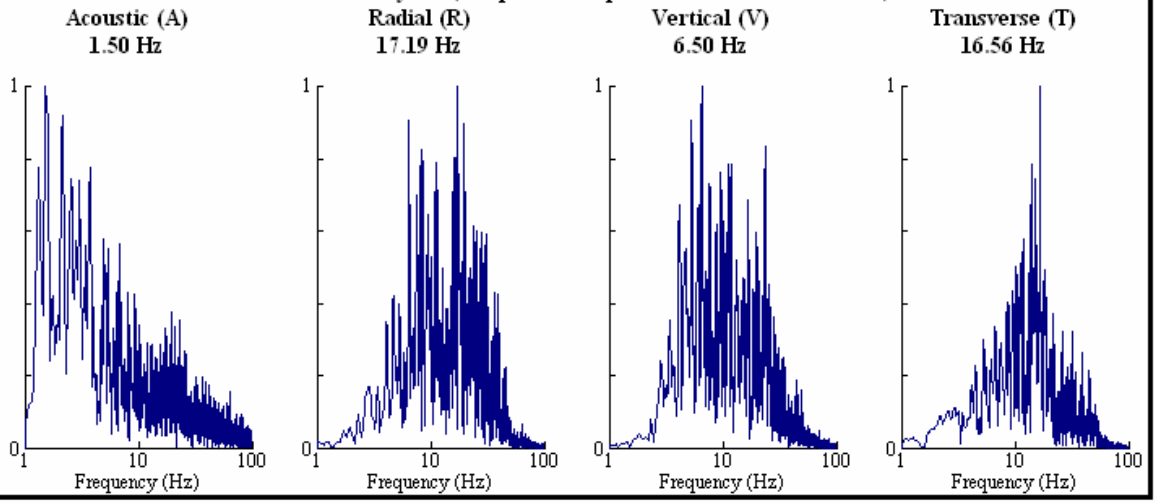
*Acoustic (A):* 117 dB @ 18.2 Hz
(0.14Mb 0.0020psi 0.0140kPa)
*Radial (R):* 0.33in/s 8.382mm/s @ 14.2Hz
*Vertical (V):* 0.30in/s 7.62mm/s @ 18.2Hz
***Transverse (T):* 0.42in/s 10.668mm/s @ 16.0Hz**
*Calibration Date (yyyy/mm/dd):* 2003/12/05

**Graph Information**

*Duration:* 0.000 sec To: 8.033 sec
*Acoustic Scale:*
120dB 0.20Mb (0.050Mb/div)
*Seismic Scale:*
0.42in/s (0.105in/s/div) 10.67mm/s (2.667mm/s/div)
*Time Line Intervals at:* 1.00 s




**Fourier Analysis (Amplitude Spectrum - Box Window)**



**Salls Construction**
**Unser Road Extension**
**at pipeline on ground surface**
**180 ft**
**blast 2 (trench blast)**

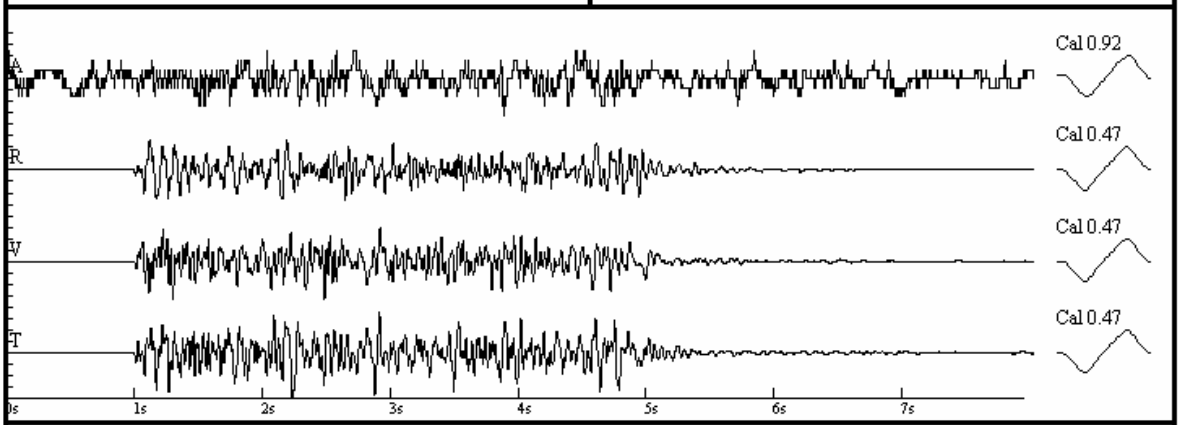
File: 02241255.DTB  Event Number: 255  Date: 1/12/2005  Time: 15:27
Acoustic Trigger: 135 dB  Seismic Trigger: 0.03in/s 0.762mm/s  Serial Number: 2241

**Amplitudes and Frequencies**

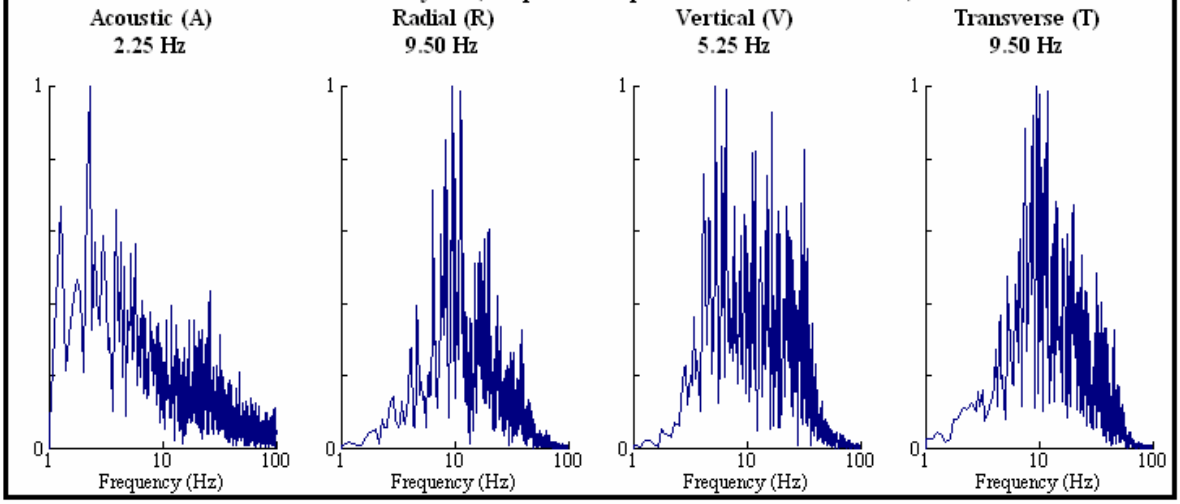
*Acoustic (A):* 118 dB @ 12.8 Hz
(0.16Mb 0.0023psi 0.0160kPa)
*Radial (R):* 0.28in/s 7.112mm/s @ 11.6Hz
*Vertical (V):* 0.35in/s 8.89mm/s @ 21.3Hz
***Transverse (T):* 0.42in/s 10.668mm/s @ 10.6Hz**
*Calibration Date (yyyy/mm/dd):* 2004/03/29

**Graph Information**

*Duration:* 0.000 sec To: 7.959 sec
*Acoustic Scale:*
120dB 0.20Mb (0.050Mb/div)
*Seismic Scale:*
0.42in/s (0.105in/s/div) 10.67mm/s (2.667mm/s/div)
*Time Line Intervals at:* 1.00 s




**Fourier Analysis (Amplitude Spectrum - Box Window)**



**Salls Construction**
**Unser Road Extension**
**at pipeline on ground surface**
**124 ft**

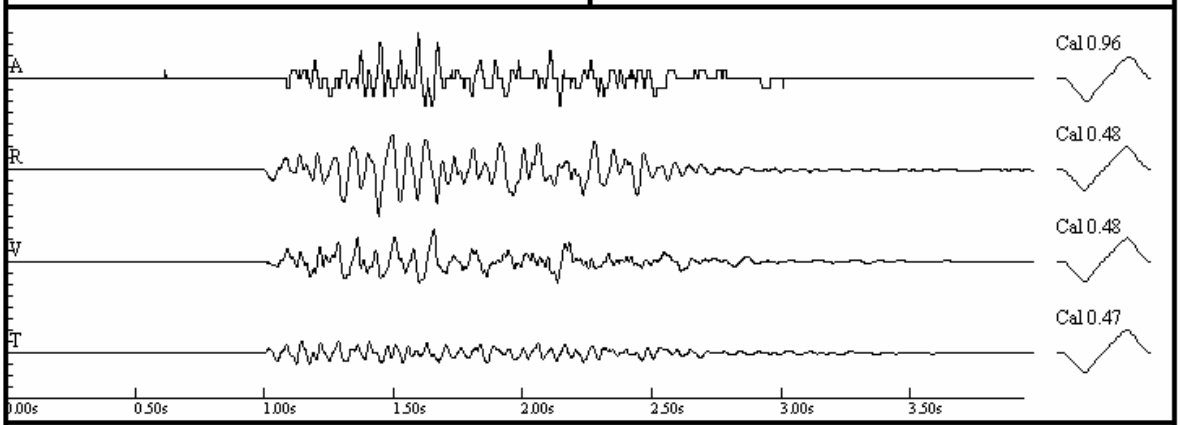
File: 02407165.DTB  Event Number: 165  Date: 1/27/2005  Time: 13:54
Acoustic Trigger: 116 dB  Seismic Trigger: 0.03in/s 0.762mm/s  Serial Number: 2407

**Amplitudes and Frequencies**

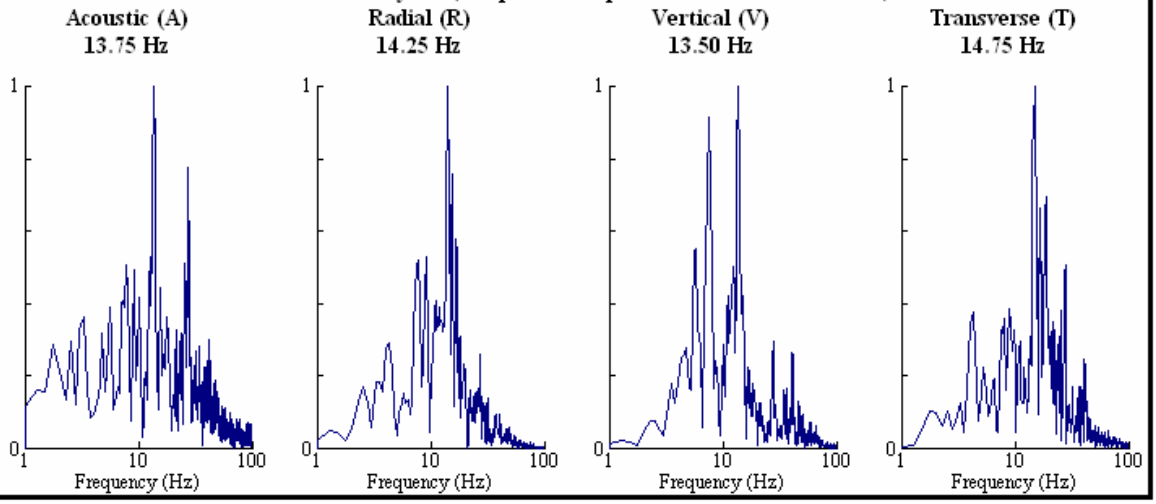
*Acoustic (A):* 120 dB @ 25.6 Hz
(0.20Mb 0.0029psi 0.0200kPa)
***Radial (R):* 0.80in/s 20.32mm/s @ 12.8Hz**
*Vertical (V):* 0.555in/s 14.097mm/s @ 12.1Hz
*Transverse (T):* 0.21in/s 5.334mm/s @ 17.0Hz
*Calibration Date (yyyy/mm/dd):* 2003/03/17

**Graph Information**

*Duration:* 0.000 sec To: 3.943 sec
*Acoustic Scale:*
120dB 0.20Mb (0.050Mb/div)
*Seismic Scale:*
0.80in/s (0.200in/s/div) 20.32mm/s (5.080mm/s/div)
*Time Line Intervals at:* 0.50 s




**Fourier Analysis (Amplitude Spectrum - Box Window)**



**Salls Construction**
**Unser Road Extension**
**at pipeline on ground surface**
**124 ft**
**re-shoot from previous blast**

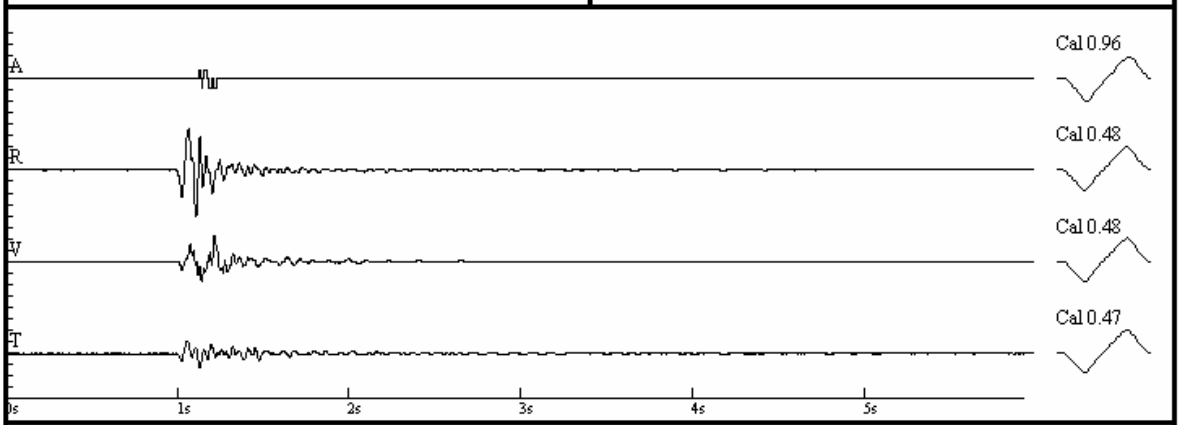
File: 02407166.DTB  Event Number: 166  Date: 1/27/2005  Time: 14:19
Acoustic Trigger: 116 dB  Seismic Trigger: 0.03in/s 0.762mm/s  Serial Number: 2407

**Amplitudes and Frequencies**

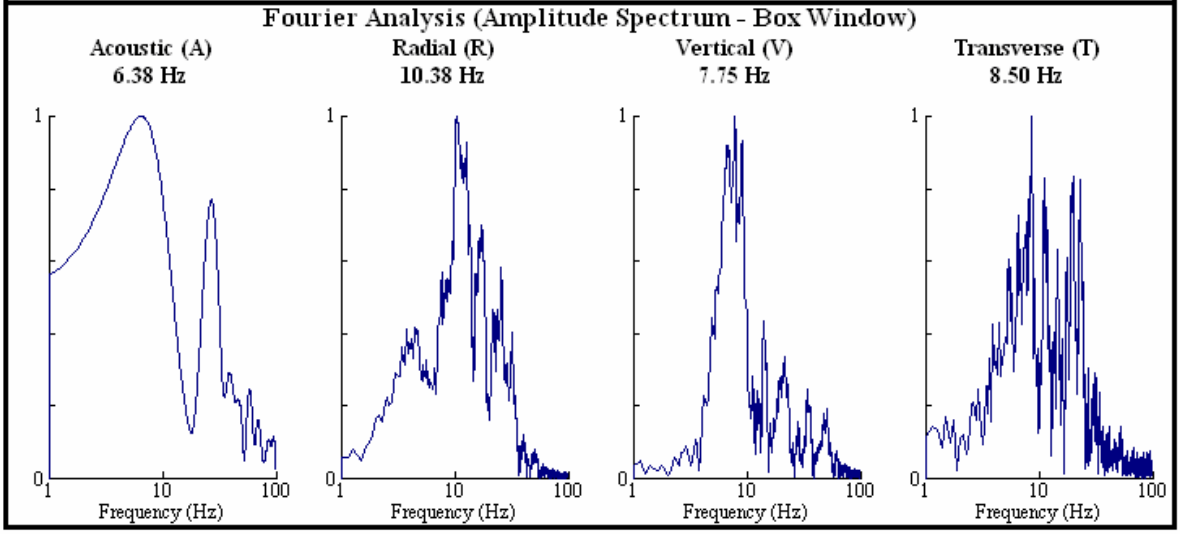
*Acoustic (A):* 106 dB @ 0.0 Hz
(0.04Mb 0.0006psi 0.0040kPa)
***Radial (R):*** **0.21in/s 5.334mm/s @ 19.6Hz**
*Vertical (V):* 0.115in/s 2.921mm/s @ 14.2Hz
*Transverse (T):* 0.07in/s 1.778mm/s @ 17.0Hz
*Calibration Date (yyyy/mm/dd):* 2003/03/17

**Graph Information**

*Duration:* 0.000 sec To: 5.939 sec
*Acoustic Scale:*
120dB 0.20Mb (0.050Mb/div)
*Seismic Scale:*
0.21in/s (0.052in/s/div) 5.33mm/s (1.334mm/s/div)
*Time Line Intervals at:* 1.00 s




**Fourier Analysis (Amplitude Spectrum - Box Window)**



**Salls Construction**
**Unser Road Extension**
**at pipeline on ground surface**
**41 ft**

File: 02276271.DTB Event Number: 271 Date: 1/28/2005 Time: 15:20
Acoustic Trigger: 134 dB Seismic Trigger: 0.04in/s 1.016mm/s Serial Number: 2276

**Amplitudes and Frequencies**

*Acoustic (A):* 148 dB @ 42.6 Hz
(4.96Mb 0.0719psi 0.4959kPa)

***Radial (R):*** **5.68in/s 144.272mm/s @ 8.5Hz**

***Vertical (V):*** **5.68in/s 144.272mm/s @ 14.2Hz**

*Transverse (T):* 3.44in/s 87.376mm/s @ 14.2Hz

*Calibration Date (yyyy/mm/dd):* 2003/01/06

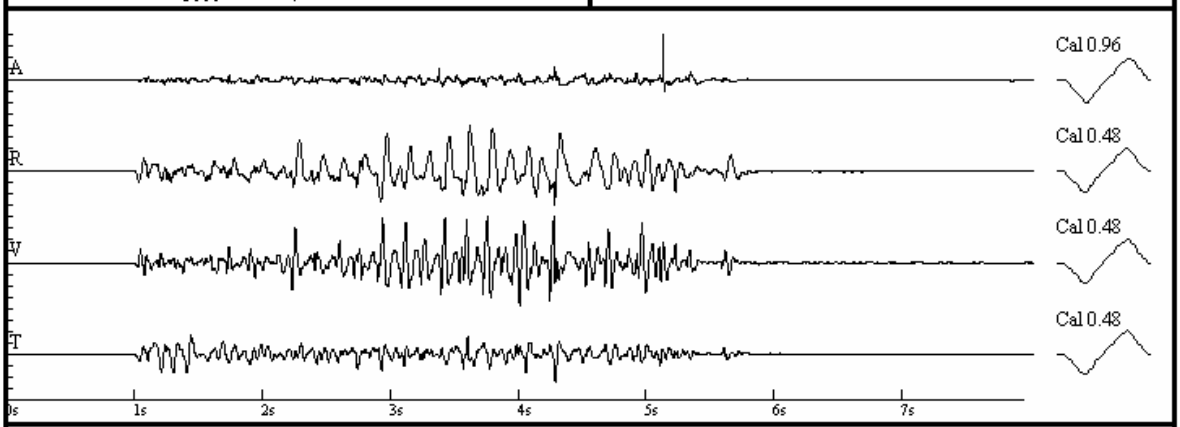
**Graph Information**

*Duration:* 0.000 sec To: 7.959 sec

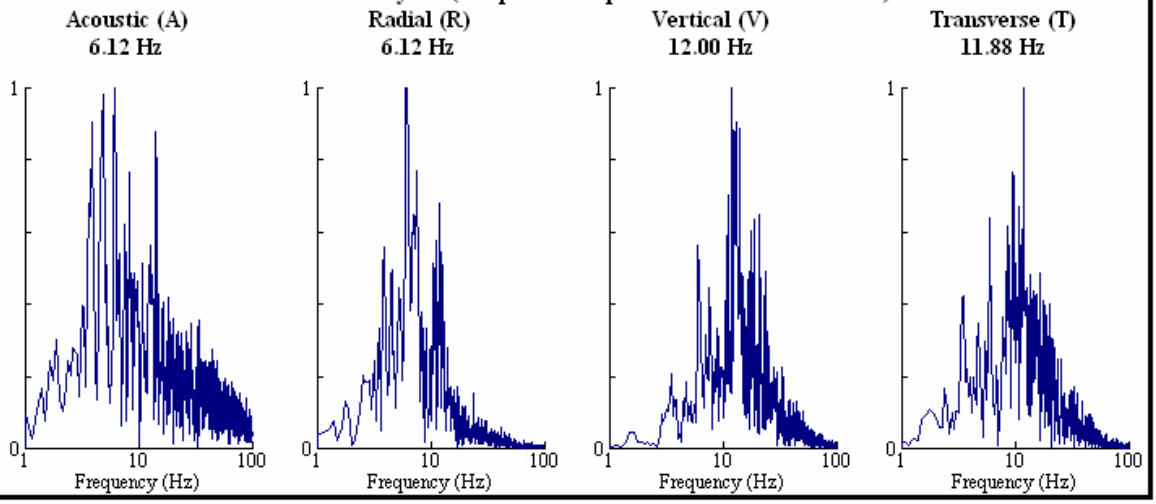
*Acoustic Scale:*
148dB 5.02Mb (1.255Mb/div)

*Seismic Scale:*
5.68in/s (1.420in/s/div) 144.27mm/s (36.068mm/s/div)

*Time Line Intervals at:* 1.00 s




**Fourier Analysis (Amplitude Spectrum - Box Window)**



**Salls Construction**
**Unser Road Extension**
**at pipeline on ground surface**
**50 ft**

File: 02241269.DTB  Event Number: 269  Date: 1/28/2005  Time: 15:19
Acoustic Trigger: 131 dB  Seismic Trigger: 0.04in/s 1.016mm/s  Serial Number: 2241

**Amplitudes and Frequencies**

*Acoustic (A):* 144 dB @ 11.6 Hz
(3.28Mb 0.0476psi 0.3279kPa)

***Radial (R):* 10.08in/s 256.032mm/s @ 12.8Hz**

*Vertical (V):* 8.72in/s 221.488mm/s @ 9.1Hz

*Transverse (T):* 3.76in/s 95.504mm/s @ 9.1Hz

*Calibration Date (yyyy/mm/dd):* 2004/03/29

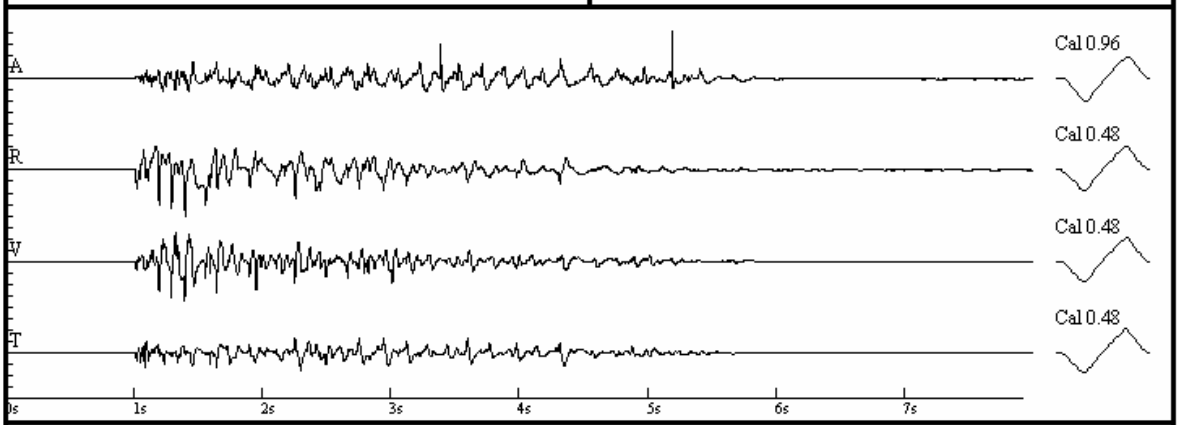
**Graph Information**

*Duration:* 0.000 sec To: 7.936 sec

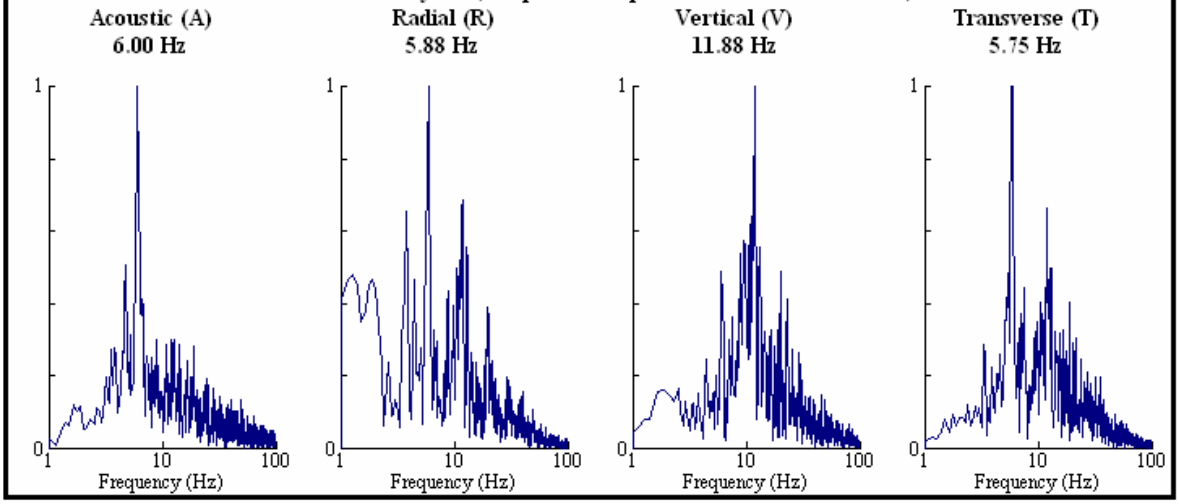
*Acoustic Scale:*
144dB 3.17Mb (0.792Mb/div)

*Seismic Scale:*
10.00in/s (2.500in/s/div) 254.00mm/s (63.500mm/s/div)

*Time Line Intervals at:* 1.00 s




**Fourier Analysis (Amplitude Spectrum - Box Window)**



# Appendix D

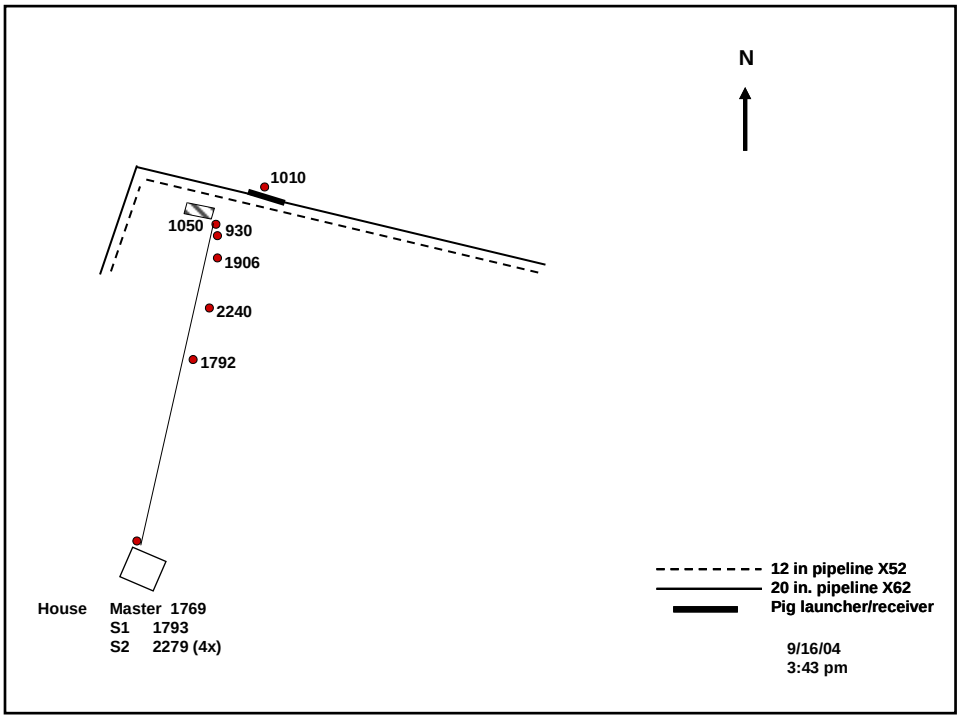
## Summary Table of all Seismograph Data

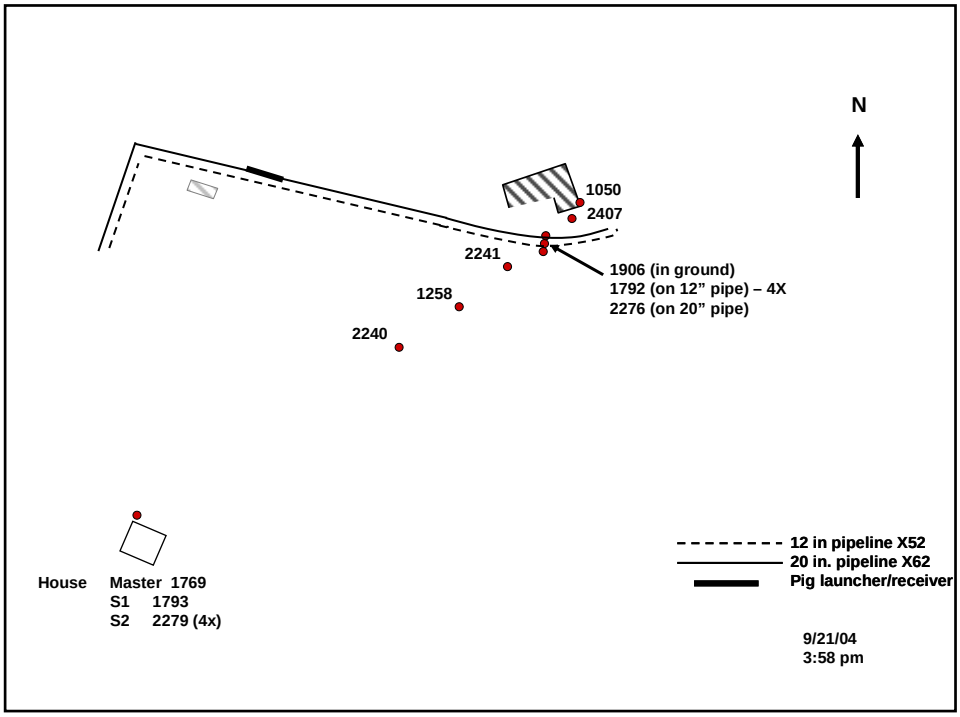
| Shot Date | Serial No | Location | Distance (ft) | Charge Weight/ Delay (lb) | Square-root Scaled Distance ($ft/lb^{1/2}$) | Cube-root Scaled Distance ($ft/lb^{1/3}$) | Peak Particle Velocity (in/sec) | Peak Frequency (Hz) | FFT (Hz) | Airblast (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| 9/16/2004 | 1050 | array toward house | 20 | 5 | 8.9 | 11.7 | 0.8 | 39.3 | 7.88 | 120 |
| | 930 | array toward house | 50 | 5 | 22.4 | 29.2 | 1.12 | 25.6 | 28.06 | 116 |
| | 1906 | array toward house | 150 | 5 | 67.1 | 87.7 | 0.2 | 24.3 | 27.5 | 110 |
| | 2240 | array toward house | 300 | 5 | 134.2 | 175.5 | 0.115 | 24.3 | 16.94 | 106 |
| | 1792 | array toward house | 500 | 5 | 223.6 | 292.4 | 0.09 | 22.2 | 16.5 | 106 |
| | 1769 | house | 970 | 5 | 433.8 | 567.3 | 0.035 | 8.5 | 8.9 | 100 |
| | 1010 | on pig launcher | 357 | 5 | 159.7 | 208.8 | 0.64 | 15 | 15.6 | 112 |
| 9/17/2004 | 1769 | house | 970 | 3 | 560.0 | 672.6 | 0.04 | 14.6 | 7.9 | 112 |
| 9/21/2004 | 1050 | array toward house | 13 | 25 | 2.6 | 4.4 | 19 | 3.5 | 4 | 135 |
| | 2407 | array toward house | 30 | 25 | 6.0 | 10.3 | 8 | 18.2 | 3.7 | 142 |
| | 1906 | array toward house | 110 | 25 | 22.0 | 37.6 | 1.96 | 4.3 | 4.12 | 124 |
| | 2241 | array toward house | 290 | 25 | 58.0 | 99.2 | 1.34 | 6.7 | 4.22 | 118 |
| | 1258 | array toward house | 400 | 25 | 80.0 | 136.8 | 0.335 | 4.2 | 4.22 | 117 |
| | 2240 | array toward house | 600 | 25 | 120.0 | 205.2 | 0.255 | 5.8 | 4.22 | 112 |
| | 930 | house on Unser | 1411 | 25 | 282.2 | 482.6 | 0.09 | 5.5 | 4.03 | 112 |
| | 1769 | house | 1208 | 25 | 241.6 | 413.2 | 0.135 | 6.6 | 4.25 | 110 |
| | 1792 | 12 in. pipeline | 115 | 25 | 23.0 | 39.3 | 1.28 | 5 | 3.81 | nm |
| | 2276 | 20 in. pipeline | 108 | 25 | 21.6 | 36.9 | 1.82 | 10.2 | 4.09 | nm |
| 9/23/2004 a | 2407 | array toward house | 83 | 7.5 | 30.3 | 42.4 | 1.32 | 32 | 18.38 | 126 |
| | 1100 | array toward house | 164 | 7.5 | 59.9 | 83.8 | 0.255 | 36.5 | 10.38 | 120 |
| | 1906 | array toward house | 254 | 7.5 | 92.7 | 129.8 | 0.1 | 8.8 | 8.5 | 110 |
| | 1050 | array in trench | 113 | 7.5 | 41.3 | 57.7 | 0.32 | 85.3 | 39.88 | 125 |
| | 930 | ground at NW pipeline | 201 | 7.5 | 73.4 | 102.7 | 0.15 | 17 | 16.62 | 112 |
| | 2241 | 12 in. pipeline | 196 | 7.5 | 71.6 | 100.1 | 0.14 | 28.4 | 8.56 | nm |
| | 1258 | 20 in. pipeline | 206 | 7.5 | 75.2 | 105.2 | 0.13 | 25.6 | 16.62 | nm |
| | 2240 | pig launcher in ground | 357 | 7.5 | 130.4 | 182.4 | 0.135 | 13.4 | 7.81 | 110 |
| | 1792 | on pig launcher | 357 | 7.5 | 130.4 | 182.4 | 1.07 | 16 | 15.75 | 110 |
| | 1769 | house | 980 | 7.5 | 357.8 | 500.7 | 0.045 | 14.2 | 7.88 | 100 |
| 9/23/2004 b | 1050 | array in trench | 60 | 5 | 26.8 | 35.1 | 0.64 | 85.3 | 40 | 125 |
| | 1906 | array toward house | 254 | 5 | 113.6 | 148.5 | 0.1 | 8.8 | 8.5 | 110 |
| | 930 | ground at NW pipeline | 161 | 5 | 72.0 | 94.2 | 0.13 | 21.3 | 16.75 | 116 |
| | 2241 | 12 in. pipeline | 156 | 5 | 69.8 | 91.2 | 0.11 | 21.3 | 30.06 | nm |
| | 1258 | 20 in. pipeline | 165 | 5 | 73.8 | 96.5 | 0.12 | 17 | 20.31 | nm |
| 09/30/04 | 1050 | start of shot | 5 | 18.5 | 1.2 | 1.9 | 42 | 2.7 | | 140 |
| | 2241 | end of shot | 8 | 18.5 | 1.9 | 3.0 | 19 | 64 | 2.4 | >148 |
| | 1906 | array toward house | 143 | 18.5 | 33.2 | 54.1 | 0.7 | 4.8 | 5.31 | 120 |
| | 1100 | ground at SE pipeline | 165 | 18.5 | 38.4 | 62.4 | 0.84 | 6.2 | 6.31 | 123 |
| | 2407 | 12 in. Pipeline | 165 | 18.5 | 38.4 | 62.4 | 0.72 | 7.1 | 5.81 | nm |
| | 1792 | 20 in. pipeline | 165 | 18.5 | 38.4 | 62.4 | 0.76 | 6 | 4.88 | nm |
| | 1769 | house | 950 | 18.5 | 220.9 | 359.2 | 0.125 | 7.3 | 5.38 | 112 |
| 10/7/2004 a | 1050 | array in trench | 15 | 10 | 4.7 | 7.0 | 3.92 | 32 | 34.75 | 125 |
| | 930 | array in trench | 35 | 10 | 11.1 | 16.2 | 1.24 | 32 | 28.25 | 125 |
| | 1100 | array in trench | 60 | 10 | 19.0 | 27.9 | 0.34 | 42.6 | 8.25 | 124 |
| | 1906 | ground at NW pipeline | 160 | 10 | 50.6 | 74.3 | 0.095 | 32 | 39.75 | 116 |
| | 1258 | 12 in. pipeline | 158 | 10 | 50.0 | 73.3 | 0.14 | 32 | 40.75 | nm |
| | 2240 | 20 in. pipeline | 154 | 10 | 48.7 | 71.5 | 0.15 | 32 | 40.12 | nm |
| 10/7/2004 b | 2241 | ground at SE pipeline | 116 | 48 | 16.7 | 31.9 | 1.66 | 11.6 | 5.12 | 140 |
| | 1792 | 12 in. pipeline | 122 | 48 | 17.6 | 33.6 | 1.42 | 5.2 | 4.25 | nm |
| | 2407 | 20 in. pipeline | 110 | 48 | 15.9 | 30.3 | 2.22 | 4 | 4.88 | nm |
| 10/14/04 a | 1050 | array | 8 | 41.5 | 1.2 | 2.3 | 33.92 | 2.7 | 3.5 | 145 |
| | 2408 | array | 18 | 41.5 | 2.8 | 5.2 | 23 | 10.6 | 6.5 | 142 |
| | 2240 | ground at SE pipeline | 57 | 41.5 | 8.8 | 16.5 | 5.08 | 19.6 | 4 | 129 |
| | 706 | 12 in. pipeline | 67 | 41.5 | 10.4 | 19.4 | 2.72 | 7.3 | 4 | nm |
| | 2407 | 20 in. pipeline | 50 | 41.5 | 7.8 | 14.4 | 5.12 | 12.8 | 16.25 | nm |
| | 1769 | house | 1011 | 41.5 | 156.9 | 292.0 | lost data | | | 110 |
| 10/14/04 b | 2241 | ground at NW pipeline | 136 | 10 | 43.0 | 63.1 | 0.195 | 36.5 | 32.25 | 118 |
| | 1258 | 12 in. pipeline | 133 | 10 | 42.1 | 61.7 | 0.19 | 36.5 | 37 | nm |
| | 930 | 20 in. pipeline | 131 | 10 | 41.4 | 60.8 | lost data | | | nm |
| 10/28/2004 | 704 | house | 1340 | 10 | 423.7 | 622.0 | lost data | | | |
| | 706 | ground at NW pipeline | 85 | 10 | 26.9 | 39.5 | 0.68 | 23.2 | 26.5 | 116 |
| | 2407 | 12 in. pipeline | 88 | 10 | 27.8 | 40.8 | 0.445 | 36.5 | 11.5 | nm |
| | 1258 | 20 in. pipeline | 82 | 10 | 25.9 | 38.1 | 0.29 | 18.2 | 19.75 | nm |
| 12/15/2004 | 704 | array toward house | 608 | 110 | 58.0 | 126.9 | 0.41 | 6.4 | 4.06 | 116 |
| | 1258 | new pipeline surface | 164 | 110 | 15.6 | 34.2 | 2.72 | 4.4 | 4.81 | 130 |
| | 1906 | house | 1137 | 110 | 108.4 | 237.3 | 0.175 | 4.4 | 4 | 112 |
| 12/30/2004 a | 1792 | array toward house | 340 | 216 | 23.1 | 56.7 | 0.78 | 8.5 | 5.06 | 122 |
| | 2407 | ground at pipeline | 165 | 216 | 11.2 | 27.5 | 6 | 7.3 | 10.5 | 136 |
| | 2276 | ground at pipeline | 186 | 216 | 12.7 | 31.0 | 2.88 | 4.3 | 3.25 | 137 |
| | 2240 | ground at pipeline | 212 | 216 | 14.4 | 35.3 | 4.72 | 5.5 | 4.62 | 143 |
| | 1906 | house | 962 | 216 | 65.5 | 160.4 | 0.365 | 5.2 | 3.25 | 117 |
| 12/30/2004 b | 1792 | array toward house | 340 | 40 | 53.8 | 99.4 | 0.3 | 6.7 | 6.38 | 112 |
| | 2407 | ground at pipeline | 88 | 40 | 13.9 | 25.7 | 3.28 | 9.8 | 11.38 | 126 |
| | 2276 | ground at pipeline | 108 | 40 | 17.1 | 31.6 | 1.5 | 7.5 | 3.5 | 118 |
| | 2240 | ground at pipeline | 150 | 40 | 23.7 | 43.9 | 0.76 | 6.5 | 3.5 | 118 |
| | 1906 | house | 962 | 40 | 152.1 | 281.3 | 0.125 | 4.5 | 3.25 | 110 |

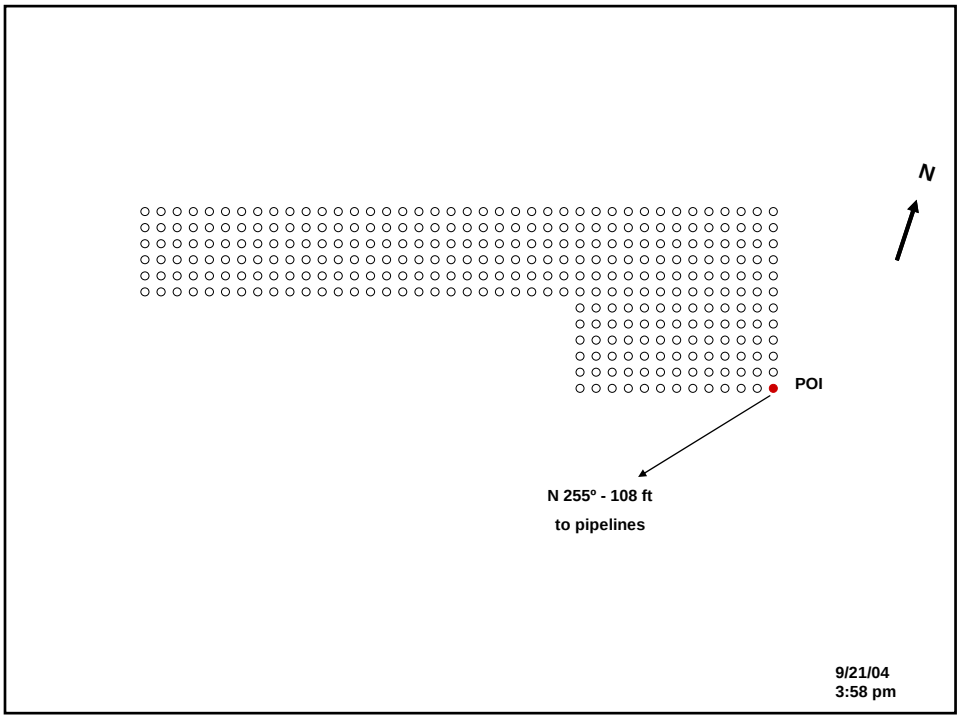
| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 01/07/05 | 2240 | ground at pipeline | 91 | 80 | 10.2 | 21.1 | 5.6 | 12.1 | 10.12 | 124 |
| | 1769 | array toward house | 438 | 80 | 49.0 | 101.7 | 0.315 | 5.9 | 3.38 | 117 |
| | 2407 | Unser | 1623 | 80 | 181.5 | 376.7 | 0.05 | 6.2 | 5.38 | 106 |
| 1/12/2005 a | 2240 | ground at pipeline | 83 | 39 | 13.3 | 24.5 | 2.8 | 17 | 13.25 | 124 |
| | 2241 | ground at pipeline | 86 | 39 | 13.8 | 25.4 | 2.68 | 23.2 | 20.75 | 123 |
| | 1769 | array toward house | 348 | 39 | 55.7 | 102.6 | 0.26 | 13.4 | 11 | 112 |
| 1/12/2005 b | 2240 | pipeline | 204 | 22.5 | 43.0 | 72.3 | 0.42 | 16 | 16.56 | 117 |
| | 2241 | pipeline | 180 | 22.5 | 37.9 | 63.8 | 0.42 | 10.6 | 9.5 | 118 |
| | 1769 | array toward house | 242 | 22.5 | 51.0 | 85.7 | 0.35 | 23.2 | 6.38 | 119 |
| 1/27/2005 a | 2407 | pipeline | 124 | 32 | 21.9 | 39.1 | 0.8 | 12.8 | 14.25 | 120 |
| | 930 | house | 758.6 | 32 | 134.1 | 239.0 | 0.155 | 18.2 | 12.25 | 106 |
| 1/27/2005 b | 2407 | pipeline | 124 | 32 | 21.9 | 39.1 | 0.21 | 19.6 | 10.38 | 106 |
| | 930 | house | 758.6 | 32 | 134.1 | 239.0 | 0.055 | 9.8 | 8.38 | <100 |
| 1/28/2005 | 2276 | ground at pipeline | 41 | 50 | 5.8 | 11.1 | 5.68 | 8.5 | 6.12 | 148 |
| | 2241 | ground at pipeline | 50 | 50 | 7.1 | 13.6 | 10.08 | 12.8 | 5.88 | 144 |
| | 930 | house | 1031.8 | 50 | 145.9 | 280.1 | 0.145 | 10.2 | 5.88 | 120 |

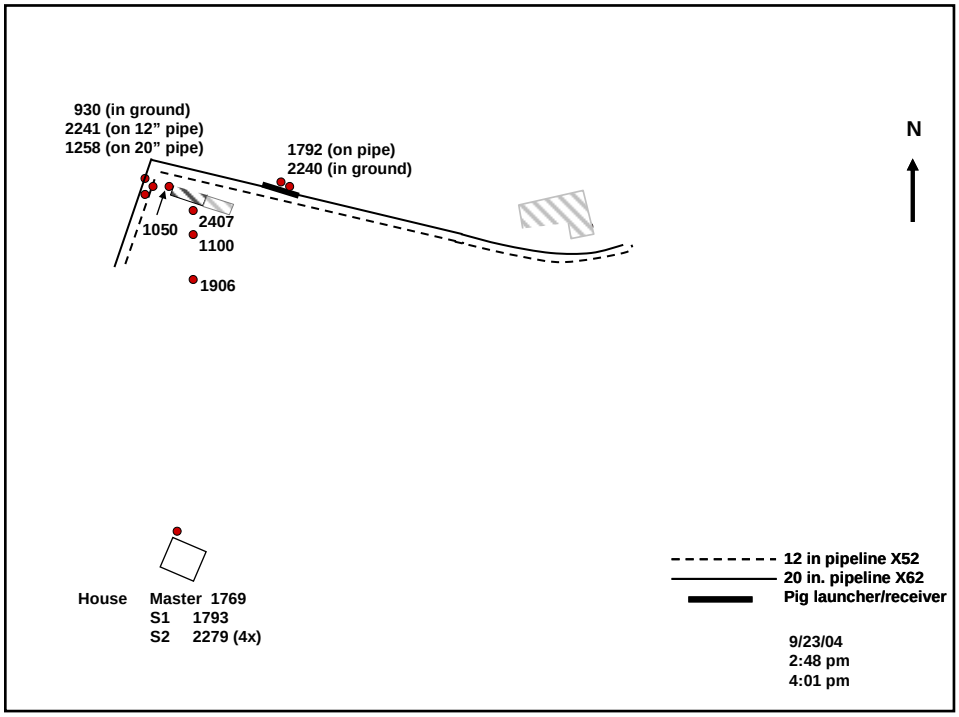
# Appendix E

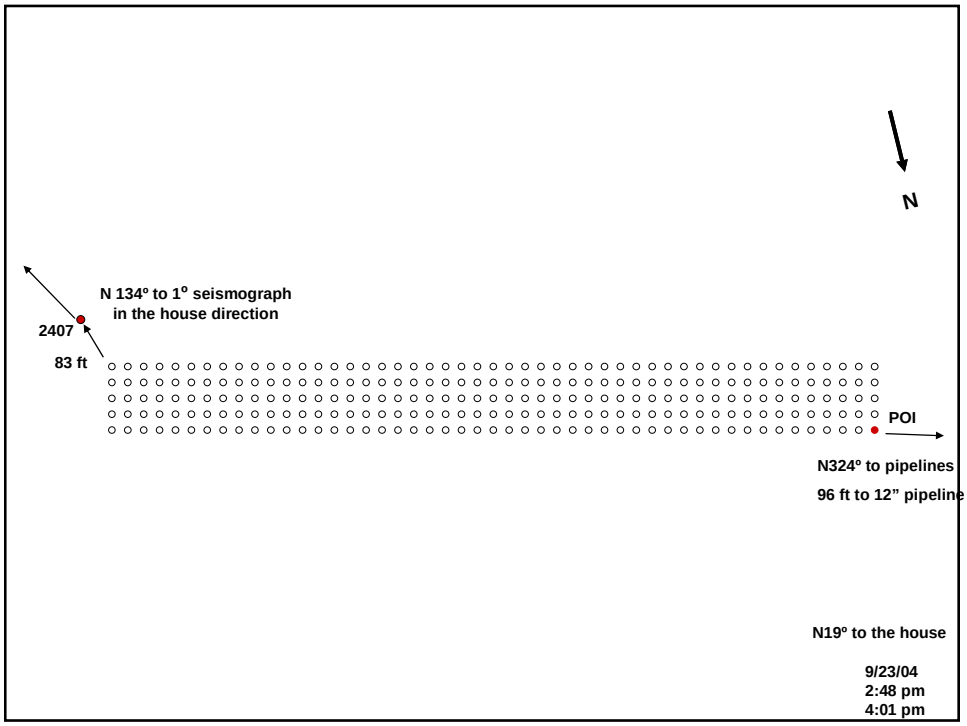
## Maps and Layouts of each Blast

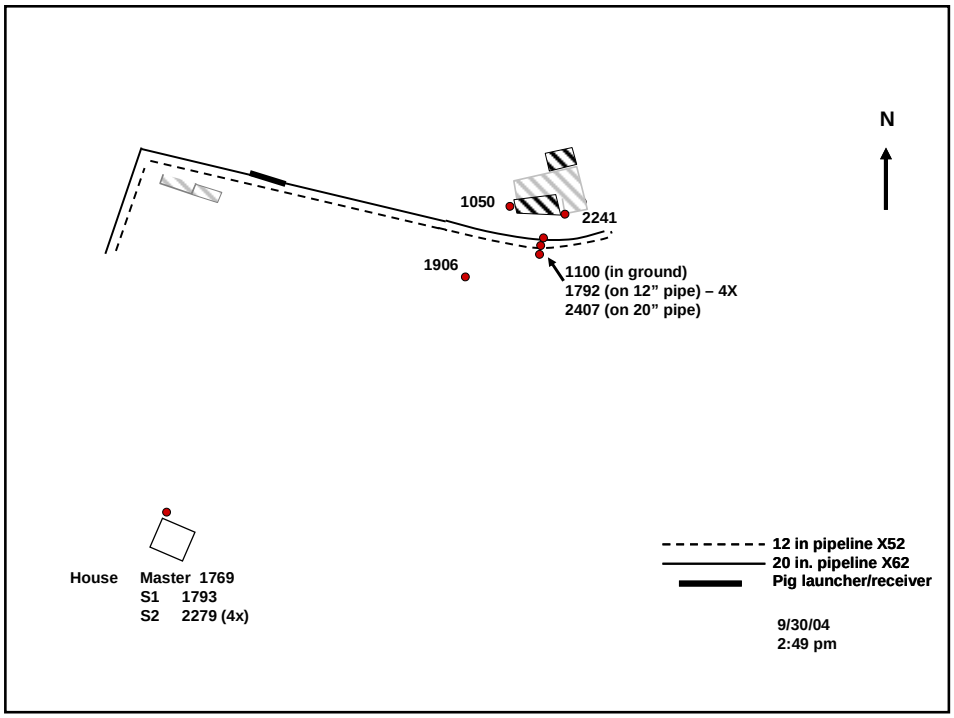

N
1010
1050
930
1906
2240
1792
House
Master 1769
S1 1793
S2 2279 (4x)
12 in pipeline X52
20 in. pipeline X62
Pig launcher/receiver
9/16/04
3:43 pm

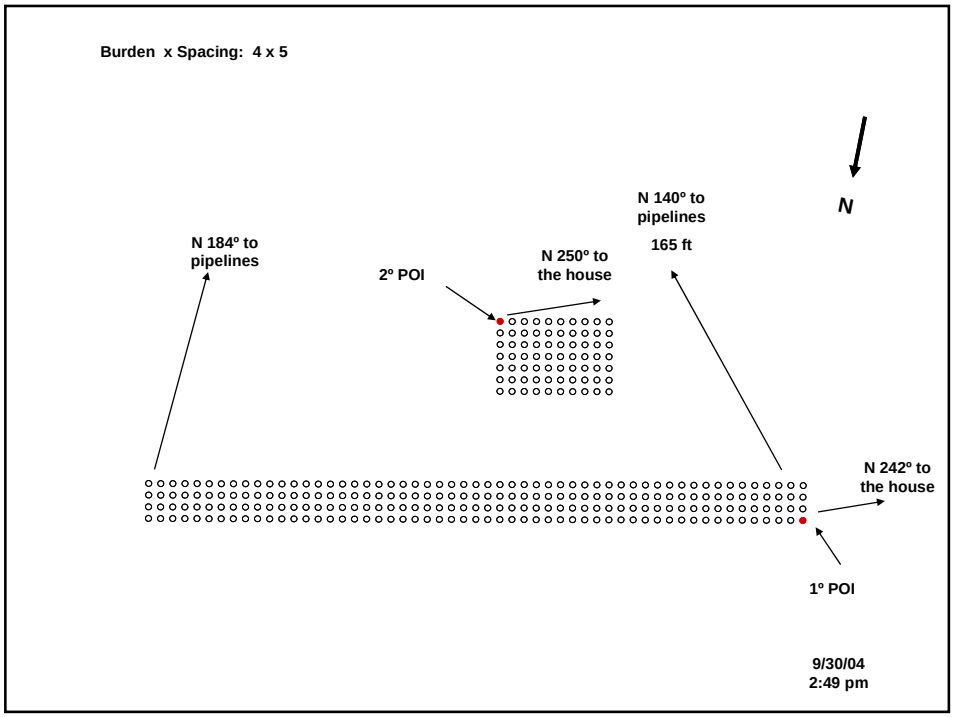

N
1050
2407
2241
1906 (in ground)
1792 (on 12" pipe) – 4X
2276 (on 20" pipe)
1258
2240
House
Master 1769
S1 1793
S2 2279 (4x)
12 in pipeline X52
20 in. pipeline X62
Pig launcher/receiver
9/21/04
3:58 pm

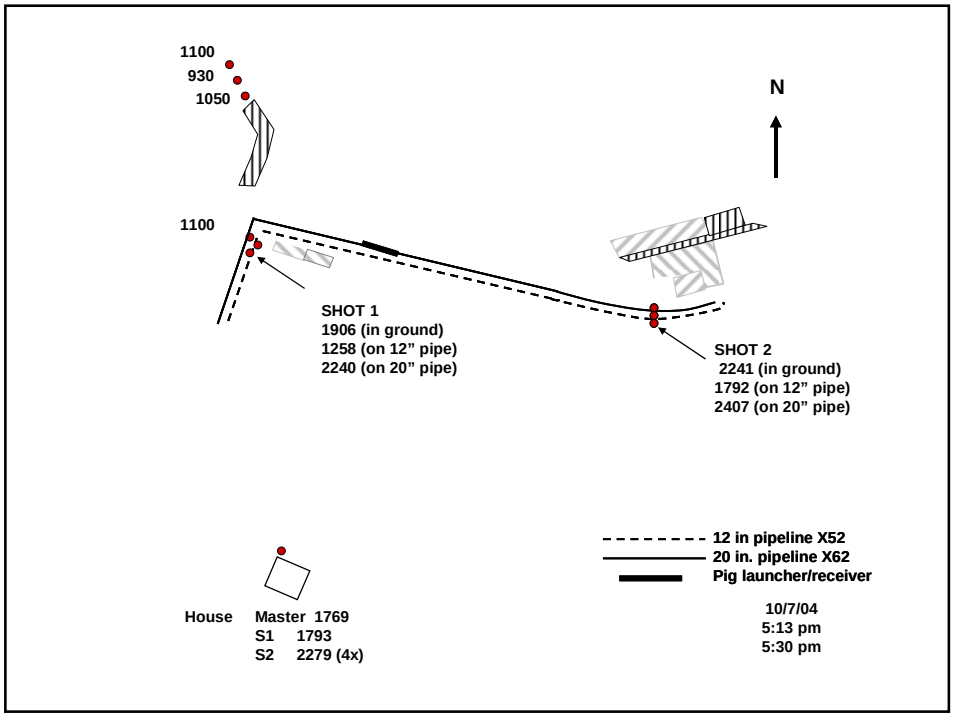

N
POI
N 255º - 108 ft
to pipelines
9/21/04
3:58 pm


930 (in ground)
2241 (on 12" pipe)
1258 (on 20" pipe)
1792 (on pipe)
2240 (in ground)
N
1050
2407
1100
1906
House
Master 1769
S1 1793
S2 2279 (4x)
12 in pipeline X52
20 in. pipeline X62
Pig launcher/receiver
9/23/04
2:48 pm
4:01 pm

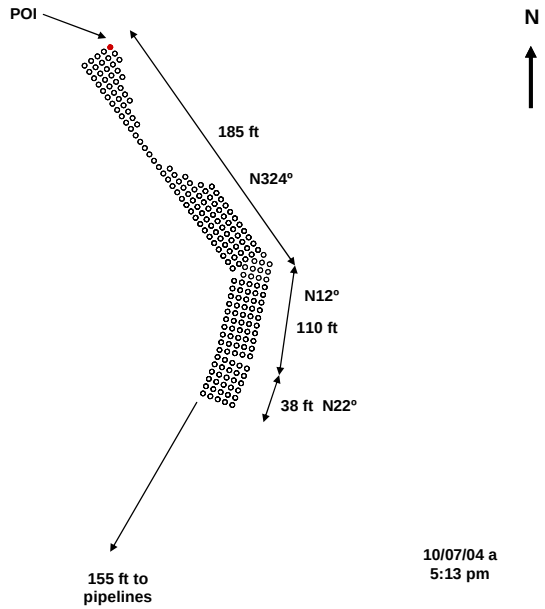

N
N 134° to 1° seismograph
in the house direction
2407
83 ft
POI
N324° to pipelines
96 ft to 12" pipeline
N19° to the house
9/23/04
2:48 pm
4:01 pm


N
1050
2241
1906
1100 (in ground)
1792 (on 12" pipe) – 4X
2407 (on 20" pipe)
House
Master 1769
S1 1793
S2 2279 (4x)
12 in pipeline X52
20 in. pipeline X62
Pig launcher/receiver
9/30/04
2:49 pm


Burden x Spacing: 4 x 5
N
N 140º to pipelines
165 ft
N 184º to pipelines
2º POI
N 250º to the house
N 242º to the house
1º POI
9/30/04
2:49 pm


1100
930
1050
N
1100
SHOT 1
1906 (in ground)
1258 (on 12" pipe)
2240 (on 20" pipe)
SHOT 2
2241 (in ground)
1792 (on 12" pipe)
2407 (on 20" pipe)
12 in pipeline X52
20 in. pipeline X62
Pig launcher/receiver
House
Master 1769
S1 1793
S2 2279 (4x)
10/7/04
5:13 pm
5:30 pm

Burden x Spacing: 4 x 5




- Distance from the pipelines to the POI = 470 ft
- Bearing = N194º
- Coordinates of POI:

  N 35 deg. 09.725'

  W 106 deg. 40.503'

10/07/04 a
5:13 pm

---

POI – Pre Split

Coordinates of POI:

N 35 deg. 09.445'

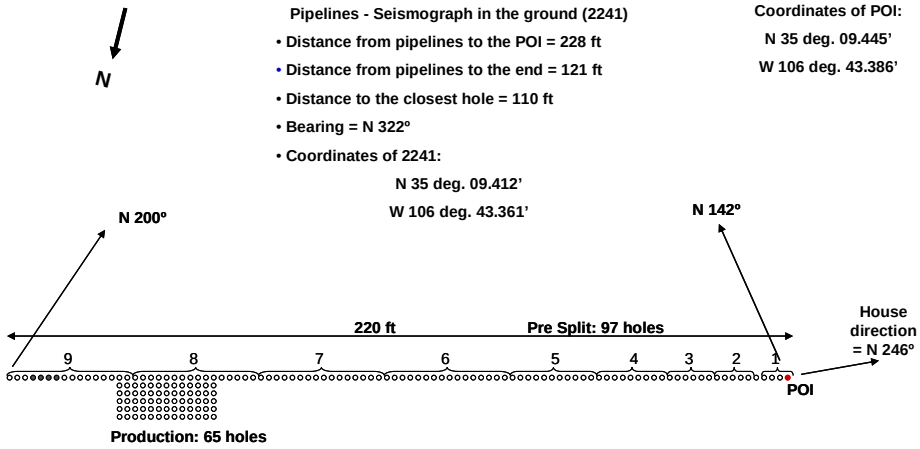
W 106 deg. 43.386'

Pipelines - Seismograph in the ground (2241)

- Distance from pipelines to the POI = 228 ft
- Distance from pipelines to the end = 121 ft
- Distance to the closest hole = 110 ft
- Bearing = N 322º
- Coordinates of 2241:

  N 35 deg. 09.412'

  W 106 deg. 43.361'



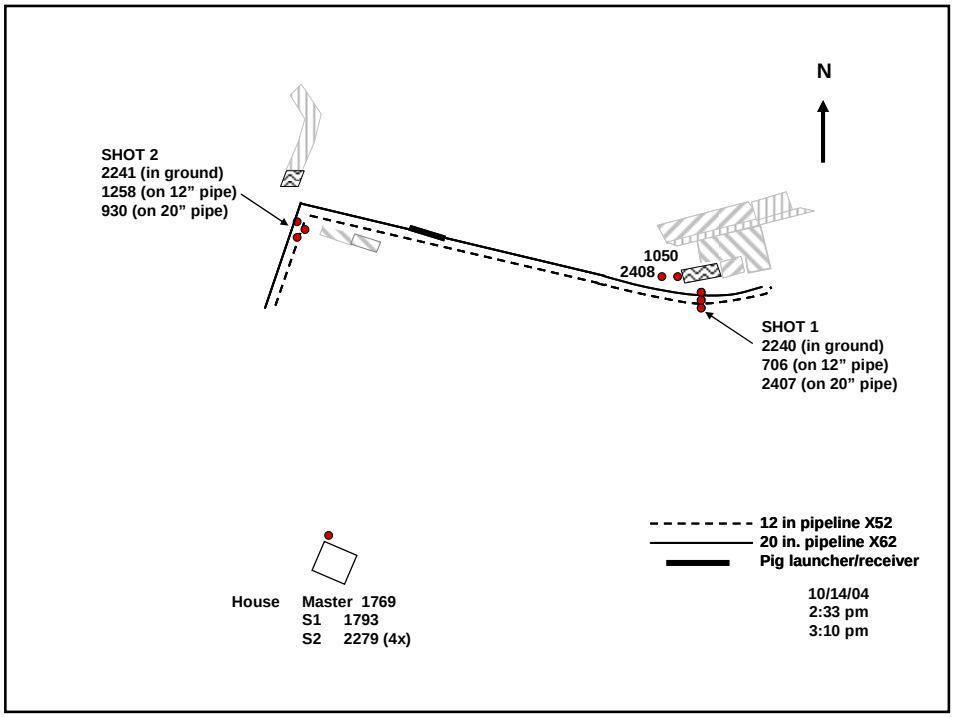

End of Pre Split

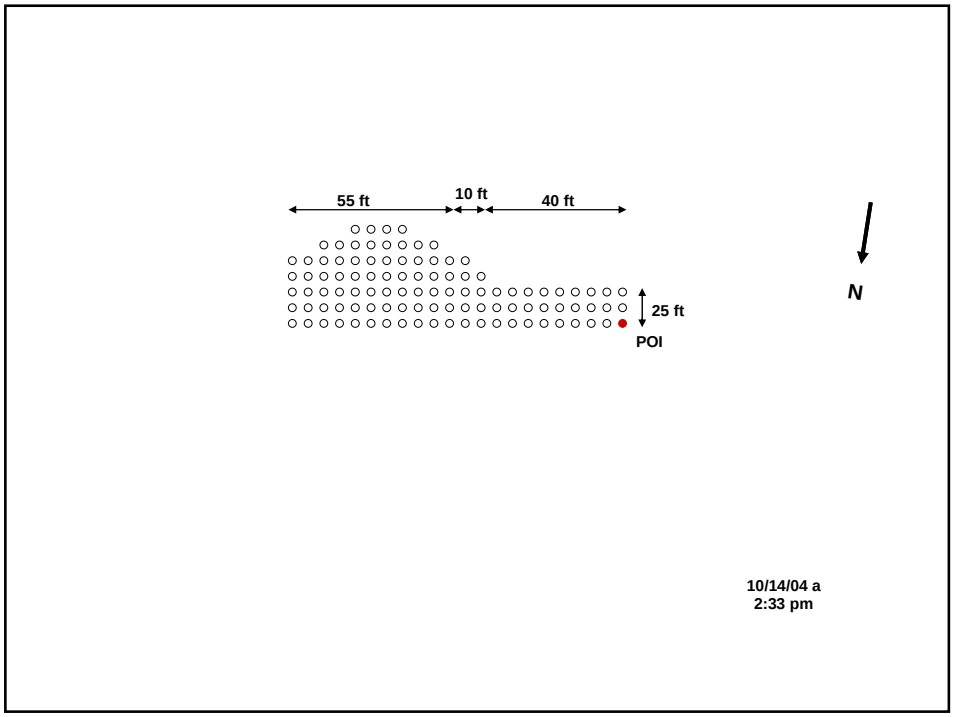
Coordinates:

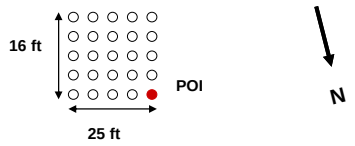
N 35 deg. 09.427'

W 106 deg. 43.339'

10/07/04 b
5:29 pm

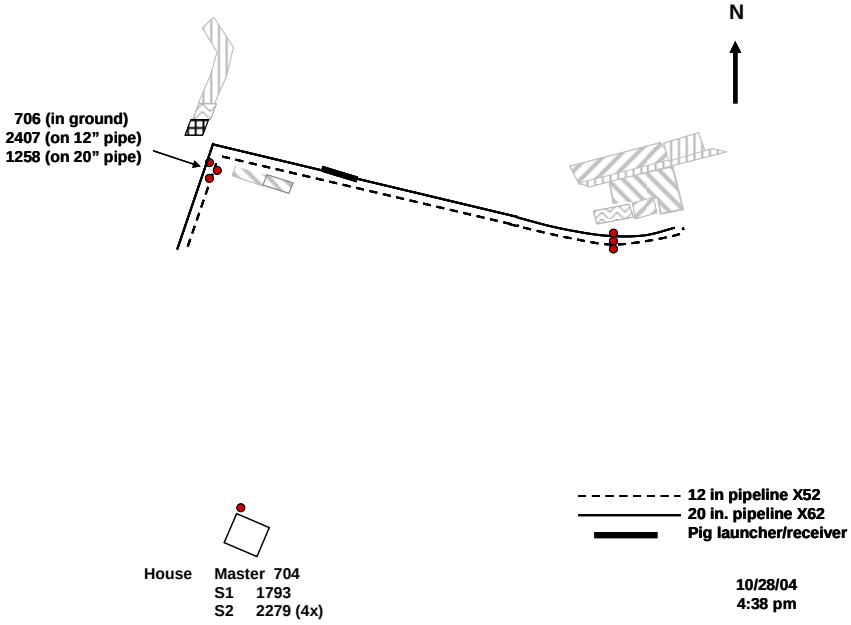

N
SHOT 2
2241 (in ground)
1258 (on 12” pipe)
930 (on 20” pipe)
1050
2408
SHOT 1
2240 (in ground)
706 (on 12” pipe)
2407 (on 20” pipe)
12 in pipeline X52
20 in. pipeline X62
Pig launcher/receiver
House
Master 1769
S1 1793
S2 2279 (4x)
10/14/04
2:33 pm
3:10 pm


55 ft
10 ft
40 ft
25 ft
POI
N
10/14/04 a
2:33 pm

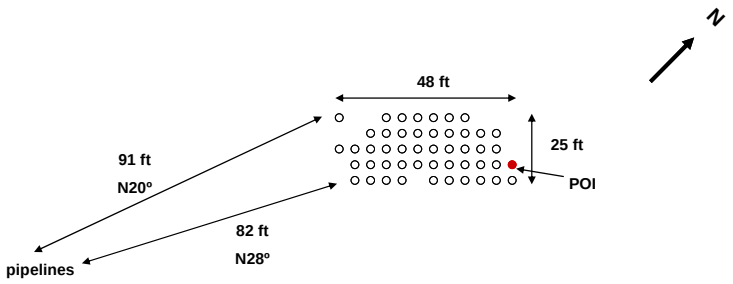



10/14/04 b
3:10 pm

Burden x Spacing: 4 x 5

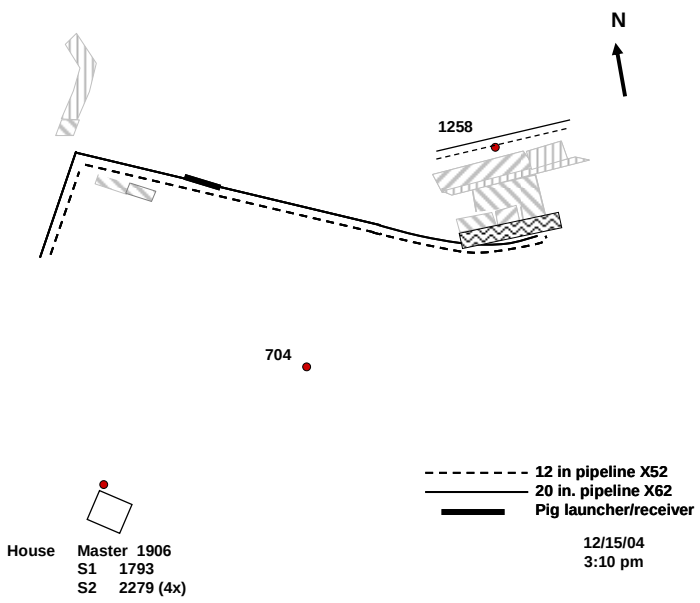


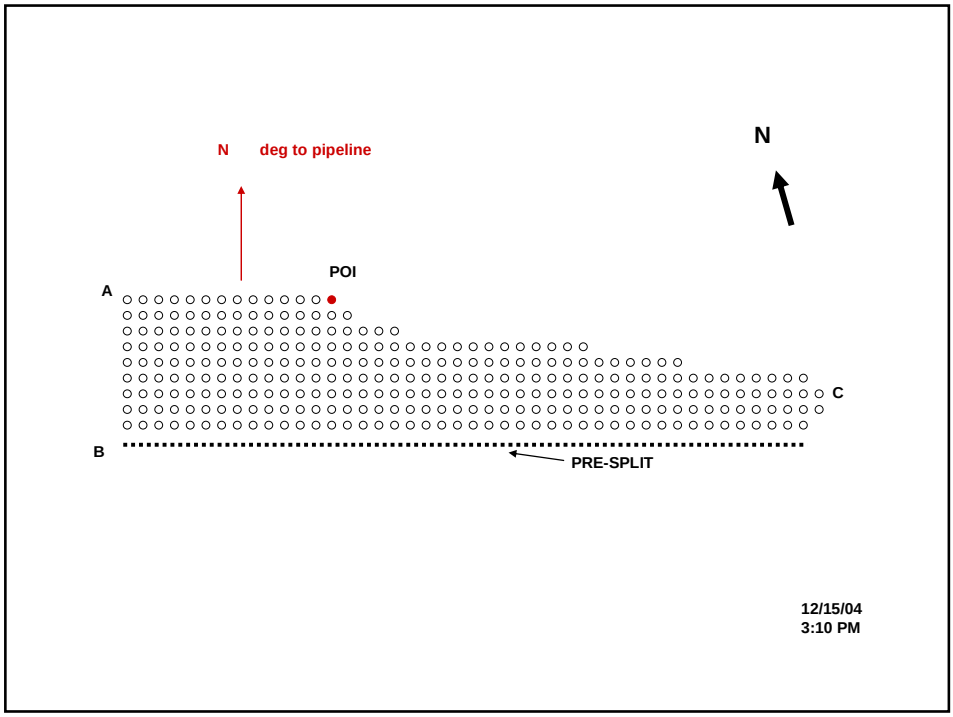

10/28/04
4:38 pm

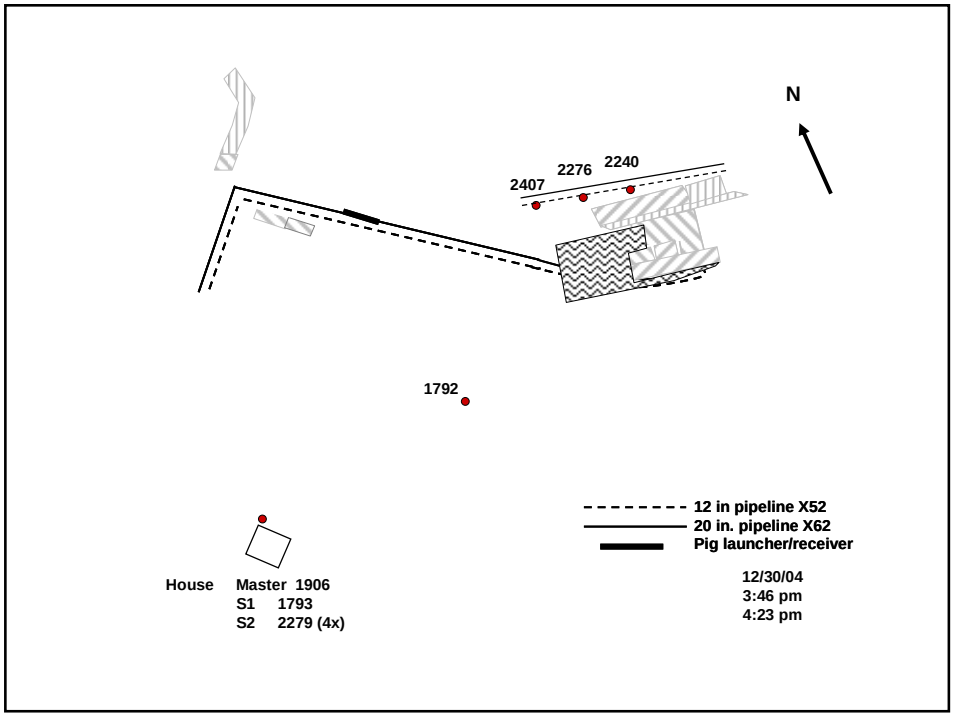


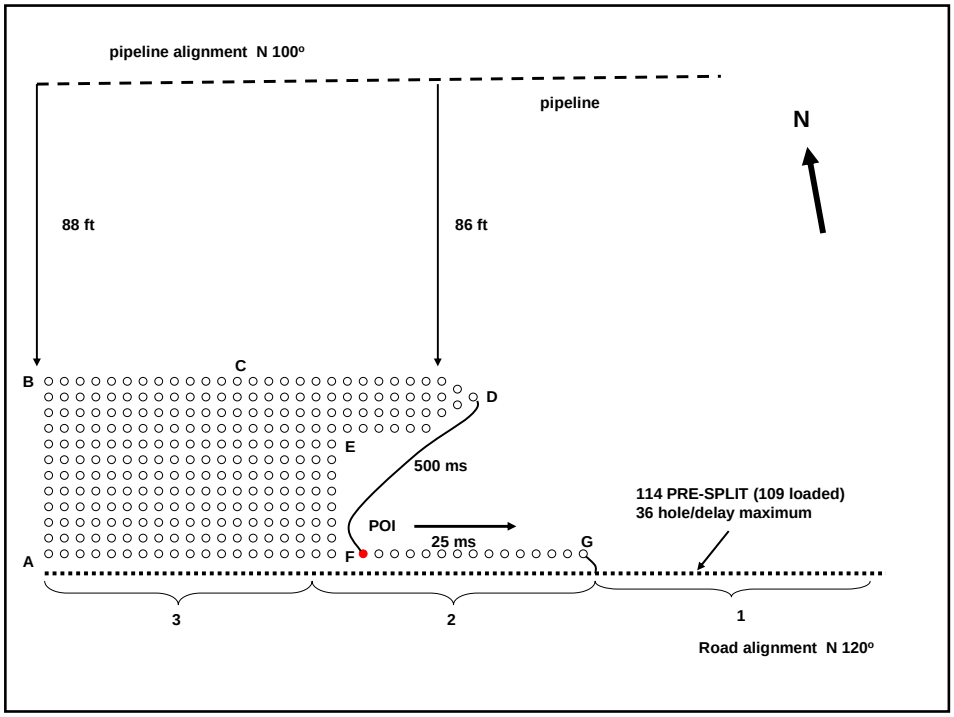

**Burden x Spacing: 4 x 5**

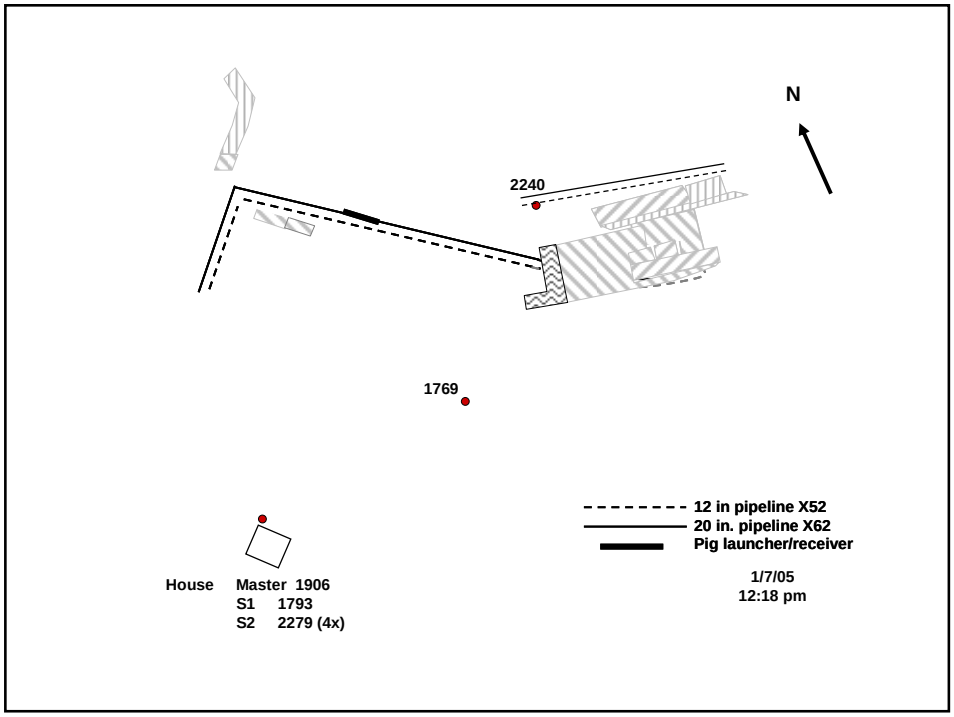
- **Distance from the pipelines to the POI = 128 ft**
- **Bearing = N30º**
- **Coordinates of POI =**
  **N 35 deg. 09.660'**
  **W 106 deg. 43.502'**
- **Trench alignment N 45º**

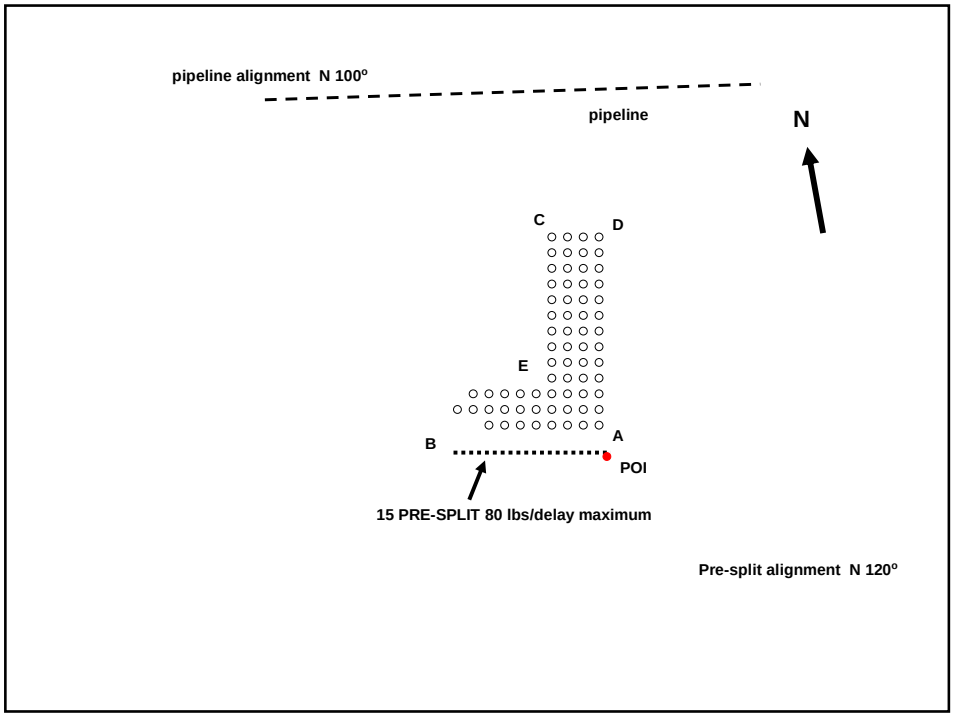


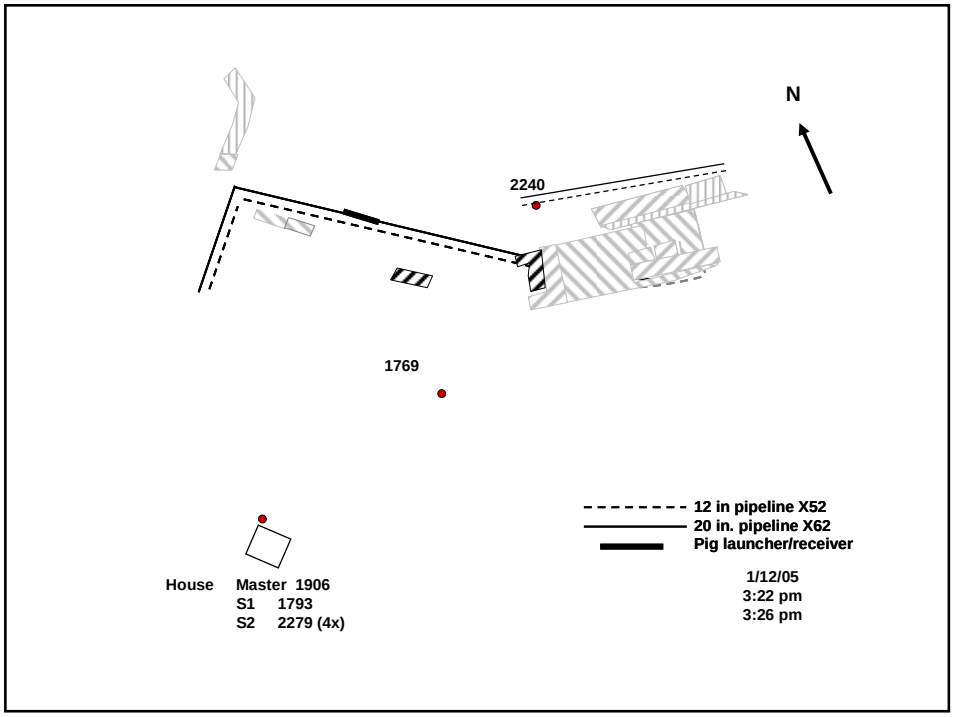

N
N deg to pipeline
POI
A
B
C
PRE-SPLIT
12/15/04
3:10 PM

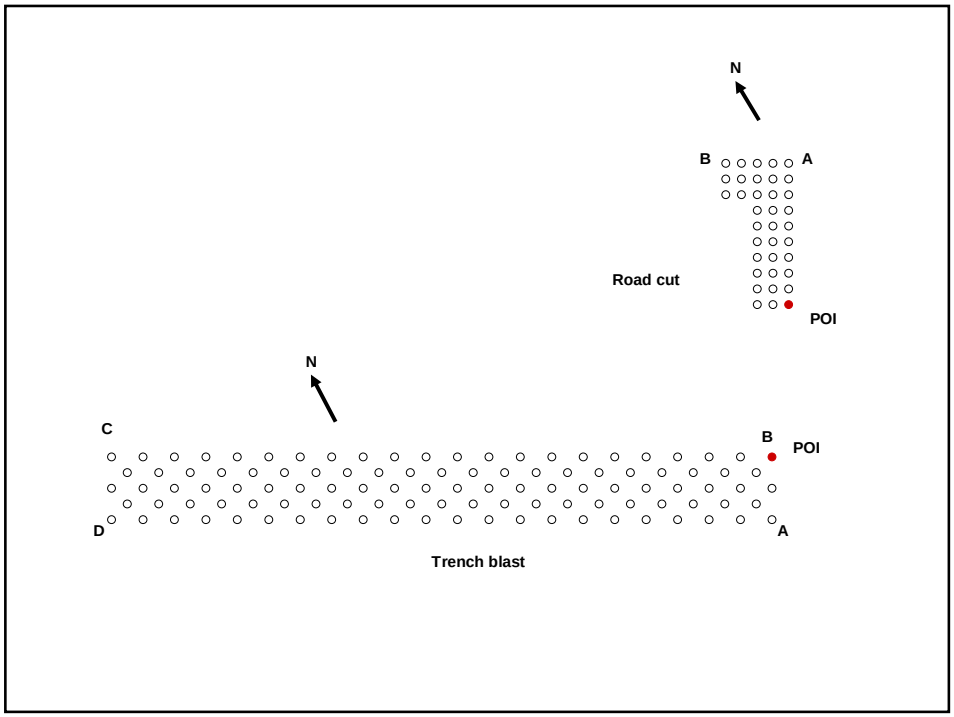

N
2407
2276
2240
1792
12 in pipeline X52
20 in. pipeline X62
Pig launcher/receiver
House
Master 1906
S1 1793
S2 2279 (4x)
12/30/04
3:46 pm
4:23 pm

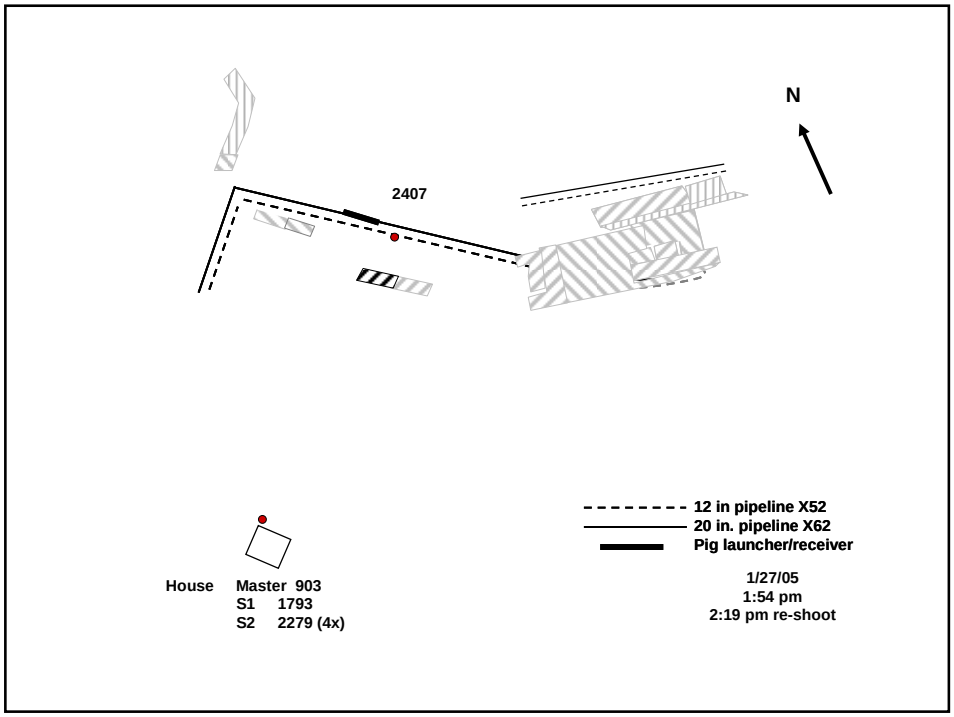

pipeline alignment N 100º
pipeline
N
88 ft
86 ft
B
C
D
E
500 ms
114 PRE-SPLIT (109 loaded)
36 hole/delay maximum
POI
25 ms
G
A
F
3
2
1
Road alignment N 120º

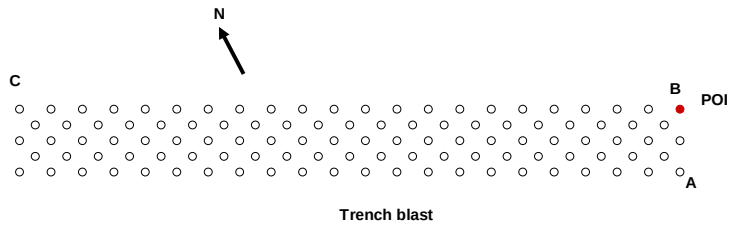

N
2240
1769
12 in pipeline X52
20 in. pipeline X62
Pig launcher/receiver
House
Master 1906
S1 1793
S2 2279 (4x)
1/7/05
12:18 pm

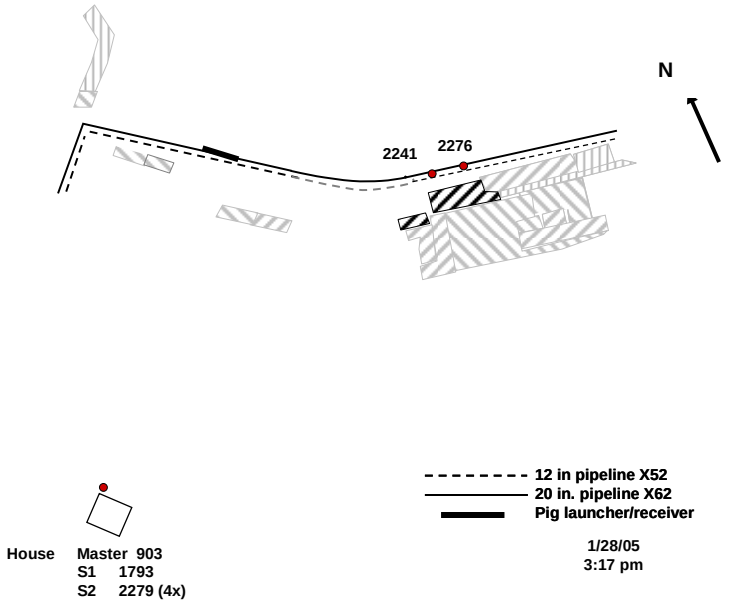

pipeline alignment N 100°
pipeline
N
C
D
E
B
A
POI
15 PRE-SPLIT 80 lbs/delay maximum
Pre-split alignment N 120°


N
2240
1769
12 in pipeline X52
20 in. pipeline X62
Pig launcher/receiver
House
Master 1906
S1 1793
S2 2279 (4x)
1/12/05
3:22 pm
3:26 pm


N
B
A
Road cut
POI
N
C
B
POI
D
A
Trench blast


N
2407
12 in pipeline X52
20 in. pipeline X62
Pig launcher/receiver
House
Master 903
S1 1793
S2 2279 (4x)
1/27/05
1:54 pm
2:19 pm re-shoot


N
C
B
POI
A
Trench blast


N
2241
2276
12 in pipeline X52
20 in. pipeline X62
Pig launcher/receiver
House
Master 903
S1 1793
S2 2279 (4x)
1/28/05
3:17 pm

# Appendix F

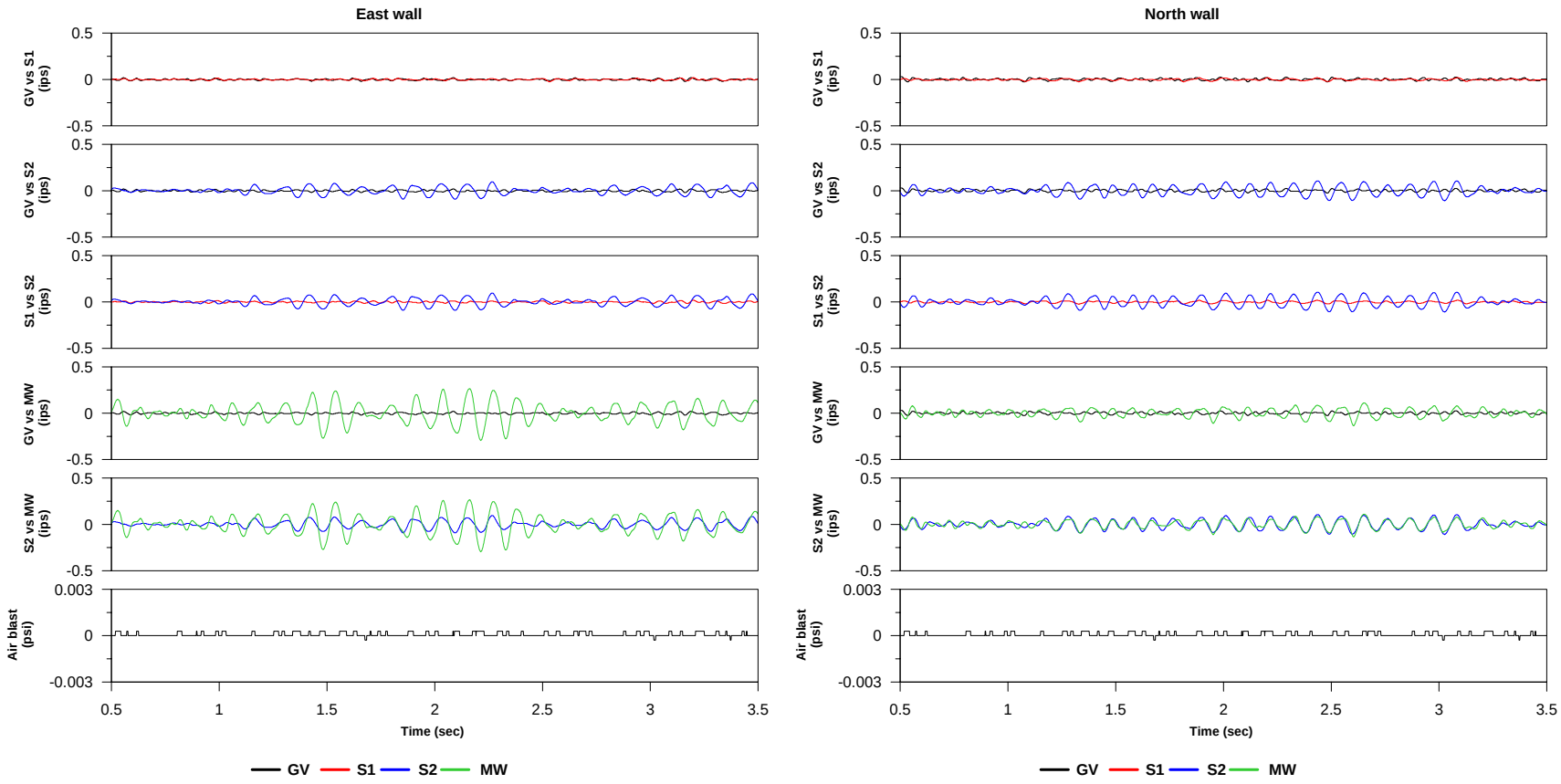
## Summary Table of all Velocity and Airblast Data for the Seismographs in the House

| | Unit | structure location | location of transducer(s) | transverse (north) (in/s) | Peak Frequency (Hz) | FFT Frequency (Hz) | vertical (in/s) | Peak Frequency (Hz) | FFT Frequency (Hz) | Radial (east) (in/s) | Peak Frequency (Hz) | FFT Frequency (Hz) | Airblast (dB) | Airblast (psi) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9/16/2004 | 1769 | master | ground | 0.035 | 8.5 | 8.94 | 0.035 | 12.4 | 7.75 | 0.025 | 17.6 | 12.50 | 100 | 0.0003 |
| 3:56 PM | 1793 | N corner | S1 | 0.035 | 11.6 | 9.00 | 0.040 | 0.0 | 7.75 | 0.025 | 15.0 | 9.12 | | |
| | 1793 | E wall | east mid-wall | | | | | | | 0.295 | 8.9 | 7.69 | | |
| | 2279 | N corner | S2 | 0.165 | 9.1 | 9.44 | 0.090 | 10.6 | 7.75 | 0.095 | 9.6 | 7.69 | | |
| | 2279 | N wall | north mid-wall | 0.165 | 9.6 | 9.44 | | | | | | | | |
| 9/17/2004 | 1769 | master | ground | 0.040 | 14.6 | 7.94 | 0.030 | 12.1 | 10.25 | 0.020 | 17.0 | 8.25 | 112 | 0.0012 |
| 8:59 AM | 1793 | N corner | S1 | 0.030 | 10.0 | 8.00 | 0.040 | 0.0 | 8.12 | 0.025 | 15.0 | 7.31 | | |
| | 1793 | E wall | east mid-wall | | | | | | | 0.325 | 8.3 | 8.06 | | |
| | 2279 | N corner | S2 | 0.120 | 9.3 | 10.25 | 0.080 | 9.4 | 8.06 | 0.105 | 8.3 | 8.06 | | |
| | 2279 | N wall | north mid-wall | 0.110 | 9.6 | 10.25 | | | | | | | | |
| 9/21/2004 | 1769 | master | ground | 0.095 | 5.0 | 4.12 | 0.135 | 6.6 | 4.25 | 0.125 | 3.7 | 4.31 | 110 | 0.0009 |
| 3:57 AM | 1793 | N corner | S1 | 0.115 | 4.9 | 4.06 | 0.140 | 5.5 | 4.31 | 0.120 | 6.3 | 4.38 | | |
| | 1793 | E wall | east mid-wall | | | | | | | 0.740 | 8.0 | 7.81 | | |
| | 2279 | N corner | S2 | 0.245 | 7.8 | 8.19 | 0.280 | 4.3 | 4.31 | 0.340 | 7.3 | 7.81 | | |
| | 2279 | N wall | north mid-wall | 0.260 | 7.4 | 4.06 | | | | | | | | |
| 9/23/2004 | 1769 | master | ground | 0.045 | 14.2 | 7.88 | 0.045 | 10.2 | 8.12 | 0.035 | 14.2 | 7.94 | 100 | 0.0003 |
| 2:50 PM | 1793 | N corner | S1 | 0.035 | 12.1 | 8.50 | 0.040 | 0.0 | 7.88 | 0.030 | 11.6 | 7.62 | | |
| | 1793 | E wall | east mid-wall | | | | | | | 0.475 | 8.2 | 7.94 | | |
| | 2279 | N corner | S2 | 0.135 | 10.2 | 8.06 | 0.090 | 10.6 | 7.62 | 0.200 | 8.5 | 7.94 | | |
| | 2279 | N wall | north mid-wall | 0.125 | 10.6 | 8.06 | | | | | | | | |
| 9/30/2004 | 1769 | master | ground | 0.095 | 9.8 | 5.31 | 0.125 | 7.3 | 5.38 | 0.120 | 7.7 | 5.56 | 112 | 0.0012 |
| 2:59 AM | 1793 | N corner | S1 | 0.115 | 6.0 | 5.31 | 0.140 | 6.2 | 5.38 | 0.100 | 6.7 | 5.38 | | |
| | 1793 | E wall | east mid-wall | | | | | | | 1.120 | 7.1 | 7.44 | | |
| | 2279 | N corner | S2 | 0.320 | 6.9 | 5.31 | 0.330 | 6.9 | 5.38 | 0.500 | 7.1 | 7.44 | | |
| | 2279 | N wall | north mid-wall | 0.355 | 7.5 | 5.31 | | | | 0.000 | 0.0 | 0.00 | | |
| 12/15/2004 | 1906 | master | ground | 0.175 | 4.4 | 4.00 | 0.170 | 5.9 | 4.12 | 0.160 | 3.9 | 4.12 | 112 | 0.0012 |
| 3:50 PM | 1793 | N corner | S1 | 0.220 | 4.7 | 4.06 | 0.220 | 4.7 | 4.12 | 0.150 | 4.1 | 4.06 | | |
| | 1793 | E wall | east mid-wall | | | | | | | 0.860 | 6.7 | 7.81 | | |
| | 2279 | N corner | S2 | 0.485 | 6.5 | 8.69 | 0.440 | 4.5 | 4.12 | 0.440 | 6.5 | 7.81 | | |
| | 2279 | N wall | north mid-wall | 0.565 | 6.9 | 4.06 | | | | | | | | |
| 12/30/2004 | 1906 | master | ground | 0.365 | 5.2 | 3.25 | 0.235 | 5.2 | 4.19 | 0.225 | 5.2 | 3.19 | 117 | 0.0020 |
| 3:46 PM | 1793 | N corner | S1 | 0.400 | 5.2 | 5.00 | 0.300 | 5.1 | 4.19 | 0.220 | 5.2 | 3.19 | | |
| | 1793 | E wall | east mid-wall | | | | | | | 2.220 | 6.9 | 7.69 | | |
| | 2279 | N corner | S2 | 0.700 | 6.9 | 7.75 | 0.630 | 5.1 | 4.19 | 0.880 | 6.5 | 7.62 | | |
| | 2279 | N wall | north mid-wall | 0.700 | 6.4 | 7.75 | | | | | | | | |
| 12/30/2004 | 1906 | master | ground | 0.125 | 4.5 | 3.25 | 0.110 | 5.6 | 6.38 | 0.090 | 7.1 | 3.25 | 110 | 0.0009 |
| 4:24 PM | 1793 | N corner | S1 | 0.100 | 4.0 | 3.38 | 0.140 | 6.4 | 6.88 | 0.095 | 6.4 | 6.38 | | |
| | 1793 | E wall | east mid-wall | | | | | | | 0.880 | 7.3 | 7.85 | | |
| | 2279 | N corner | S2 | 0.330 | 7.7 | 7.00 | 0.310 | 6.0 | 6.88 | 0.415 | 6.9 | 7.75 | | |
| | 2279 | N wall | north mid-wall | 0.295 | 8.2 | 7.00 | | | | | | | | |
| 1/27/2005a | 903 | master | ground | 0.155 | 18.2 | 12.25 | 0.085 | 12.1 | 9.25 | 0.140 | 15.0 | 9.25 | 106 | 0.0006 |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1:54 PM | 1793 | N corner | S1 | 0.115 | 11.6 | 8.06 | 0.120 | 12.8 | 9.12 | 0.100 | 11.6 | 9.15 | | |
| | 1793 | E wall | east mid-wall | | | | | | | 1.040 | 7.5 | 8.00 | | |
| | 2279 | N corner | S2 | 0.440 | 8.8 | 9.25 | 0.230 | 11.6 | 9.12 | 0.400 | 8.2 | 8.00 | | |
| | 2279 | N wall | north mid-wall | 0.395 | 8.5 | 9.25 | | | | | | | | |
| 1/27/2005b | 903 | master | ground | 0.035 | 13.4 | 19.75 | 0.025 | 14.2 | 6.62 | 0.055 | 9.8 | 8.38 | < 100 | |
| 2:19 PM | 1793 | N corner | S1 | 0.040 | 10.6 | 8.12 | 0.020 | 0.0 | 8.38 | 0.035 | 9.8 | 9.50 | | |
| | 1793 | E wall | east mid-wall | | | | | | | 0.350 | 9.1 | 8.12 | | |
| | 2279 | N corner | S2 | 0.175 | 9.4 | 10.25 | 0.070 | 8.2 | 8.00 | 0.125 | 8.5 | 8.12 | | |
| | 2279 | N wall | north mid-wall | 0.170 | 10.2 | 10.25 | | | | | | | | |
| 1/28/2005 | 903 | master | ground | 0.105 | 7.5 | 5.94 | 0.110 | 5.3 | 5.94 | 0.145 | 10.2 | 5.88 | 120 | 0.0029 |
| 3:17 PM | 1793 | N corner | S1 | 0.100 | 4.9 | 4.31 | 0.140 | 6.4 | 5.88 | 0.115 | 5.8 | 5.88 | | |
| | 1793 | E wall | east mid-wall | | | | | | | 1.180 | 8.2 | 8.00 | | |
| | 2279 | N corner | S2 | 0.305 | 7.5 | 9.69 | 0.290 | 5.9 | 5.94 | 0.440 | 7.3 | 5.94 | | |
| | 2279 | N wall | north mid-wall | 0.280 | 6.9 | 5.94 | | | | | | | | |

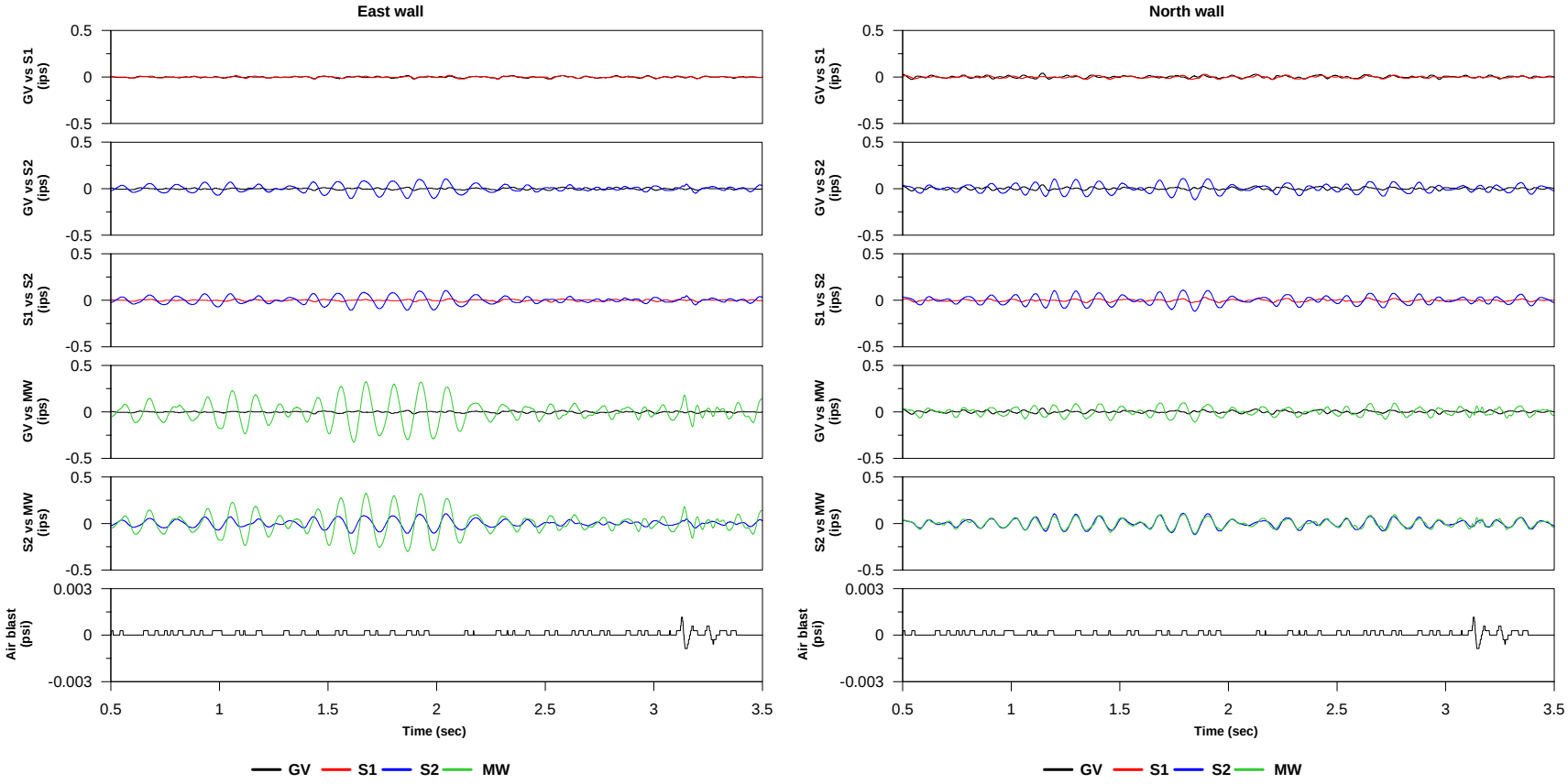
# Appendix G

## Velocity Time Histories Comparative plots


East wall
North wall
GV vs S1 (ips)
GV vs S2 (ips)
S1 vs S2 (ips)
GV vs MW (ips)
S2 vs MW (ips)
Air blast (psi)
0.5
0
-0.5
0.003
-0.003
0.5
1
1.5
2
2.5
3
3.5
Time (sec)
GV
S1
S2
MW

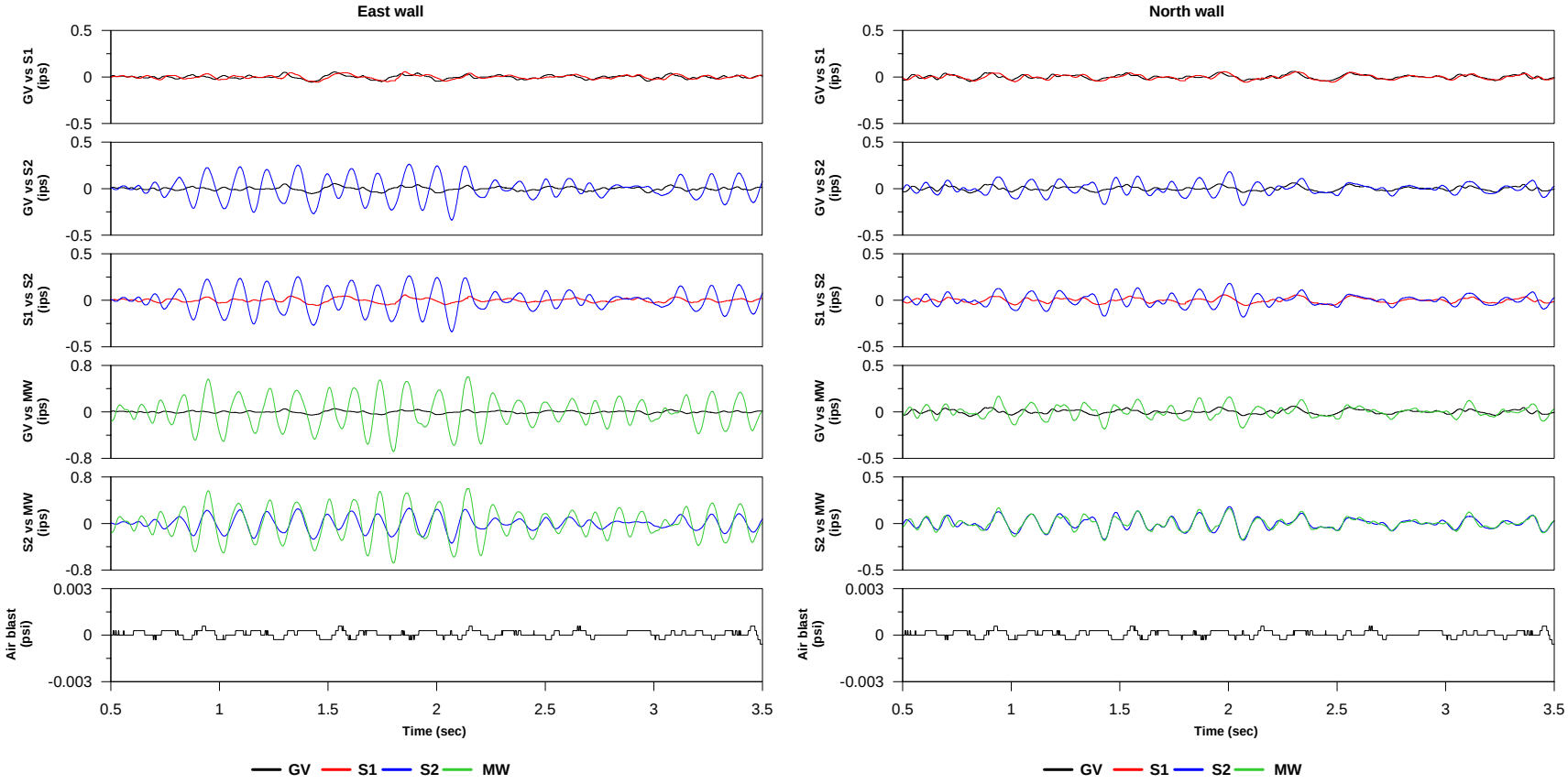
(a) (b)

09/16/04


East wall
North wall
GV vs S1 (ips)
GV vs S2 (ips)
S1 vs S2 (ips)
GV vs MW (ips)
S2 vs MW (ips)
Air blast (psi)
0.5
0
-0.5
0.003
-0.003
0.5
1
1.5
2
2.5
3
3.5
Time (sec)
GV
S1
S2
MW

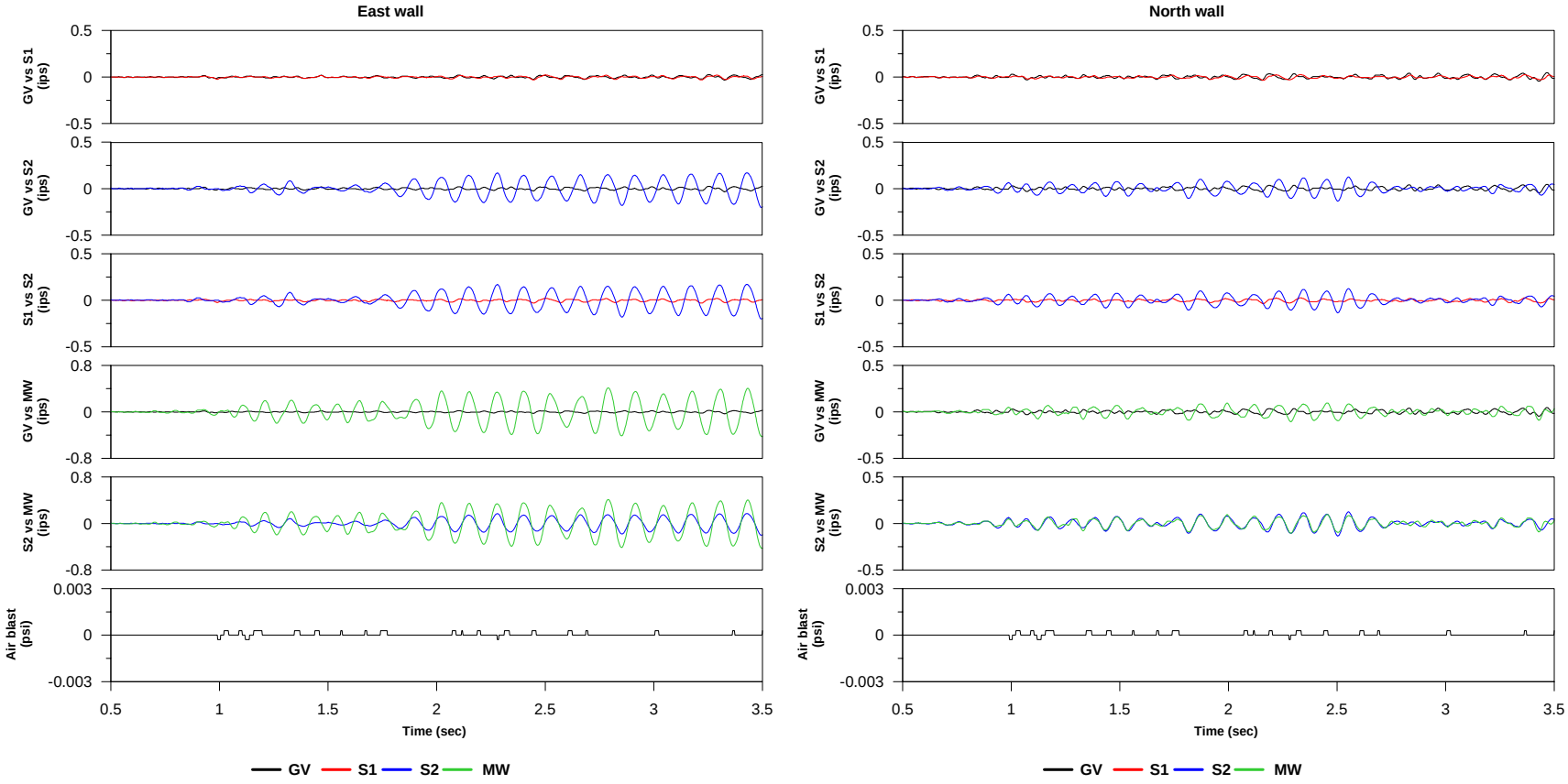
(a) (b)

09/17/05


East wall
North wall
GV vs S1 (ips)
GV vs S2 (ips)
S1 vs S2 (ips)
GV vs MW (ips)
S2 vs MW (ips)
Air blast (psi)
Time (sec)
GV
S1
S2
MW

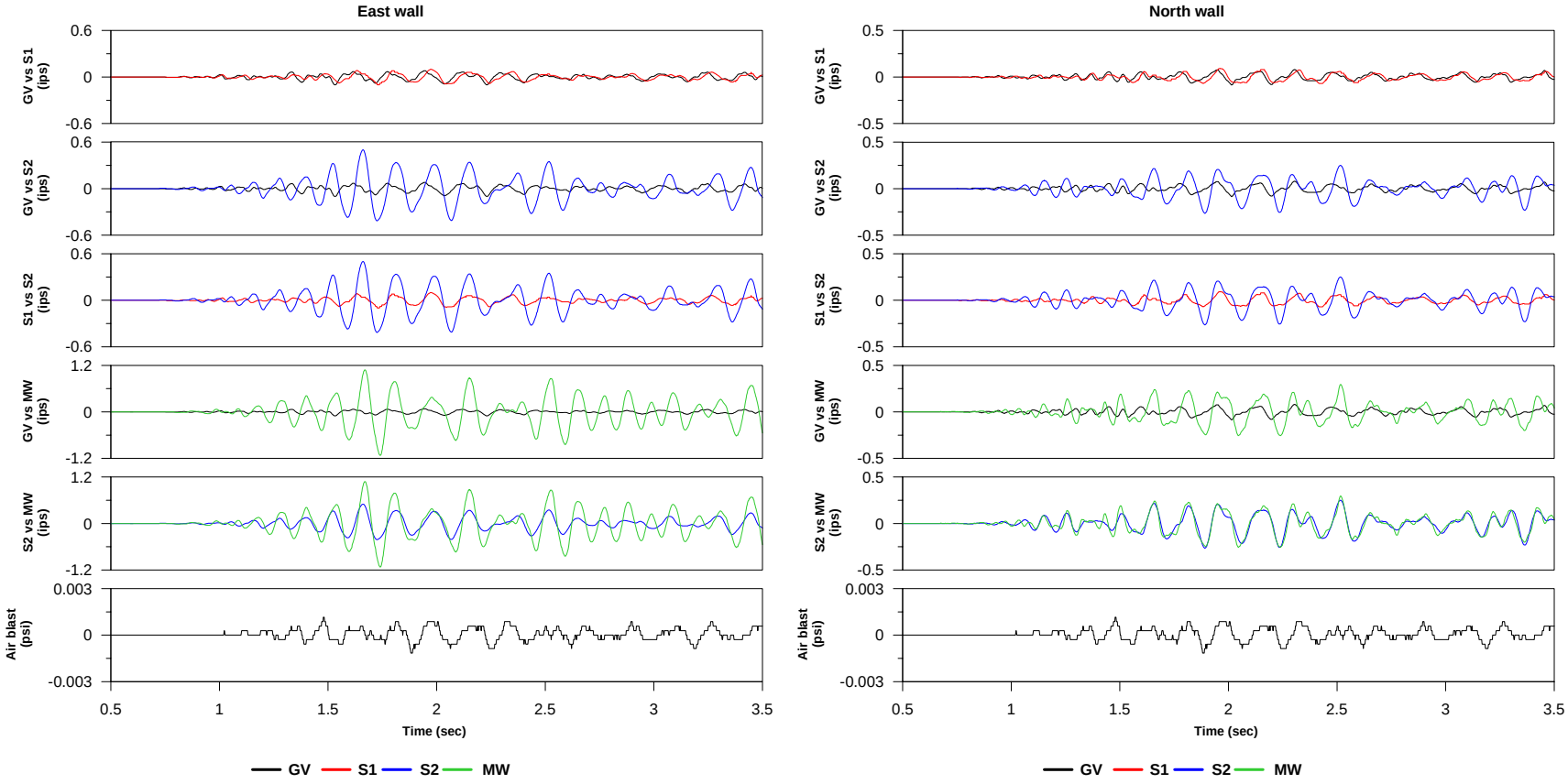
(a) (b)

09/21/04


East wall
North wall
GV vs S1 (ips)
GV vs S2 (ips)
S1 vs S2 (ips)
GV vs MW (ips)
S2 vs MW (ips)
Air blast (psi)
Time (sec)
GV
S1
S2
MW

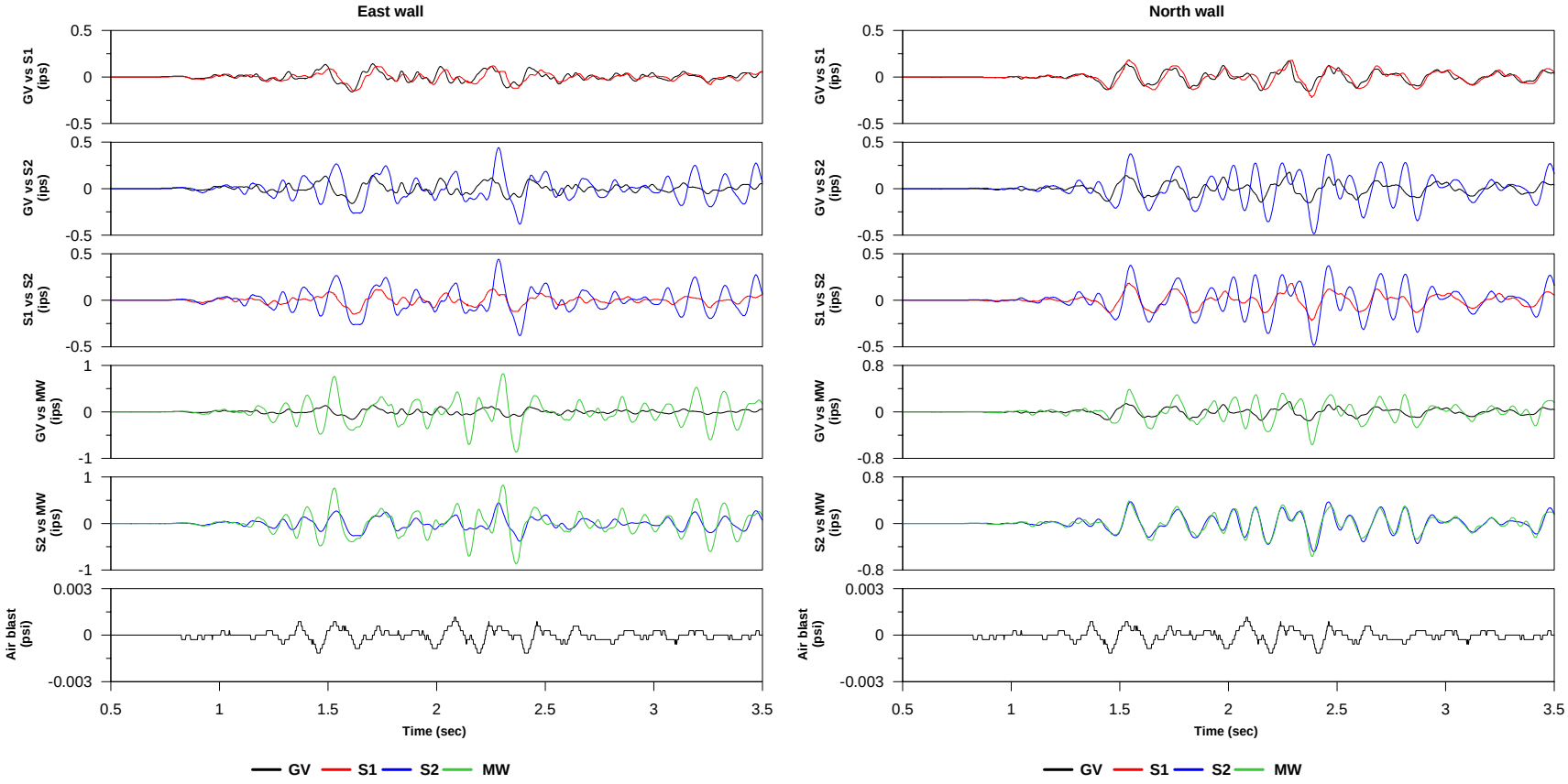
(a) (b)

09/23/04


East wall
North wall
GV vs S1 (ips)
GV vs S2 (ips)
S1 vs S2 (ips)
GV vs MW (ips)
S2 vs MW (ips)
Air blast (psi)
Time (sec)
GV
S1
S2
MW

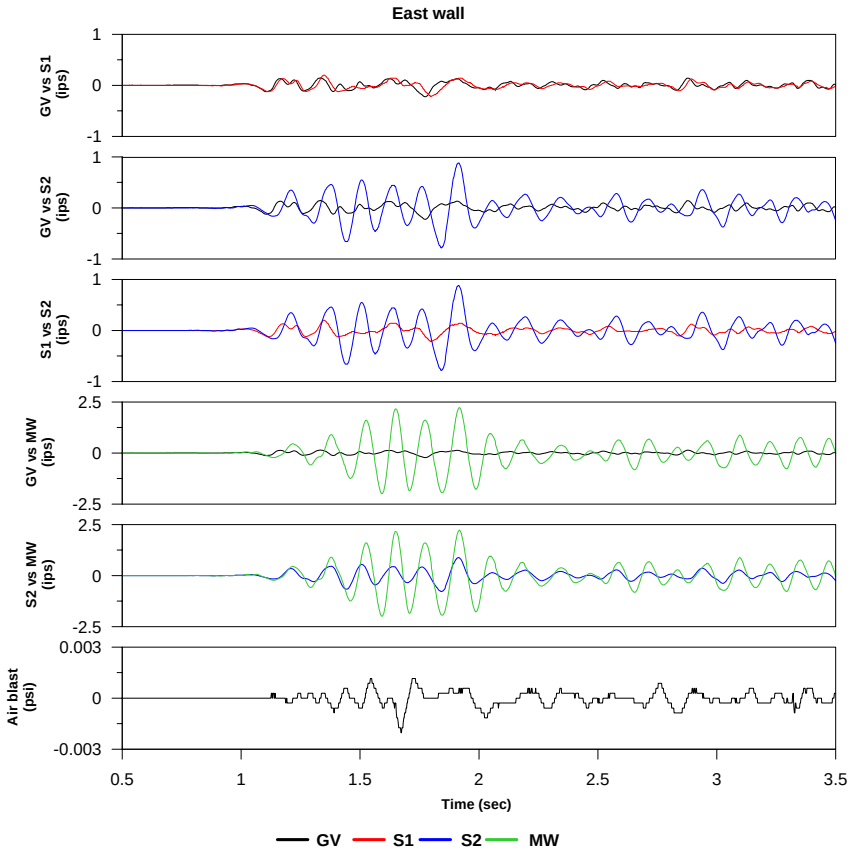
(a) (b)

09/30/04

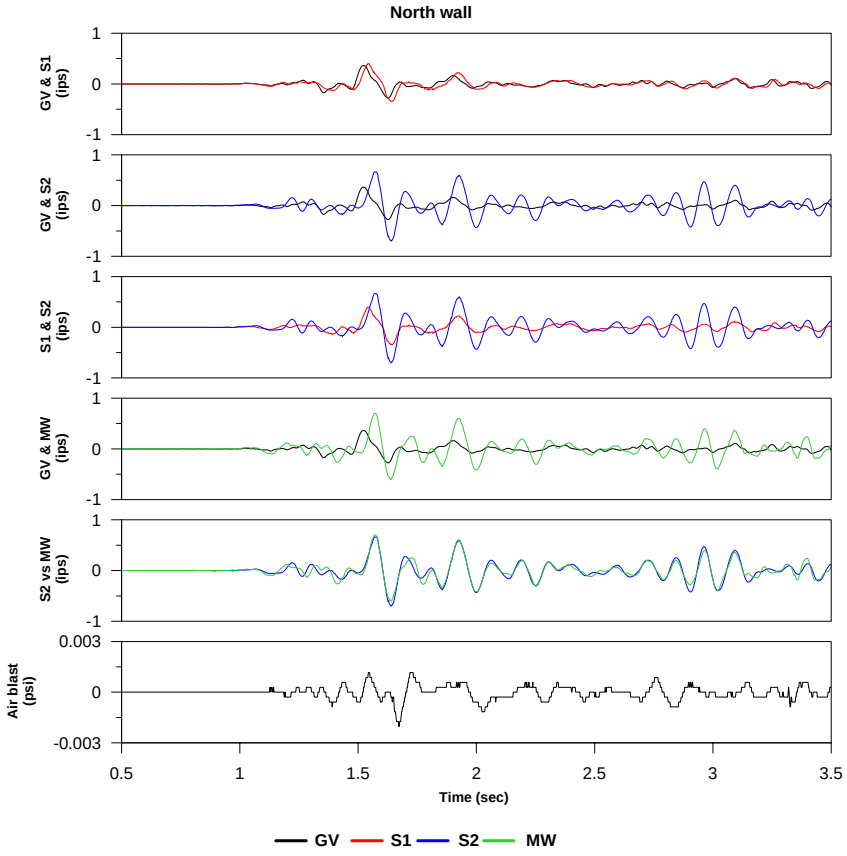

East wall
North wall
GV vs S1 (ips)
GV vs S2 (ips)
S1 vs S2 (ips)
GV vs MW (ips)
S2 vs MW (ips)
Air blast (psi)
Time (sec)
GV
S1
S2
MW

(a) (b)

12/15/04

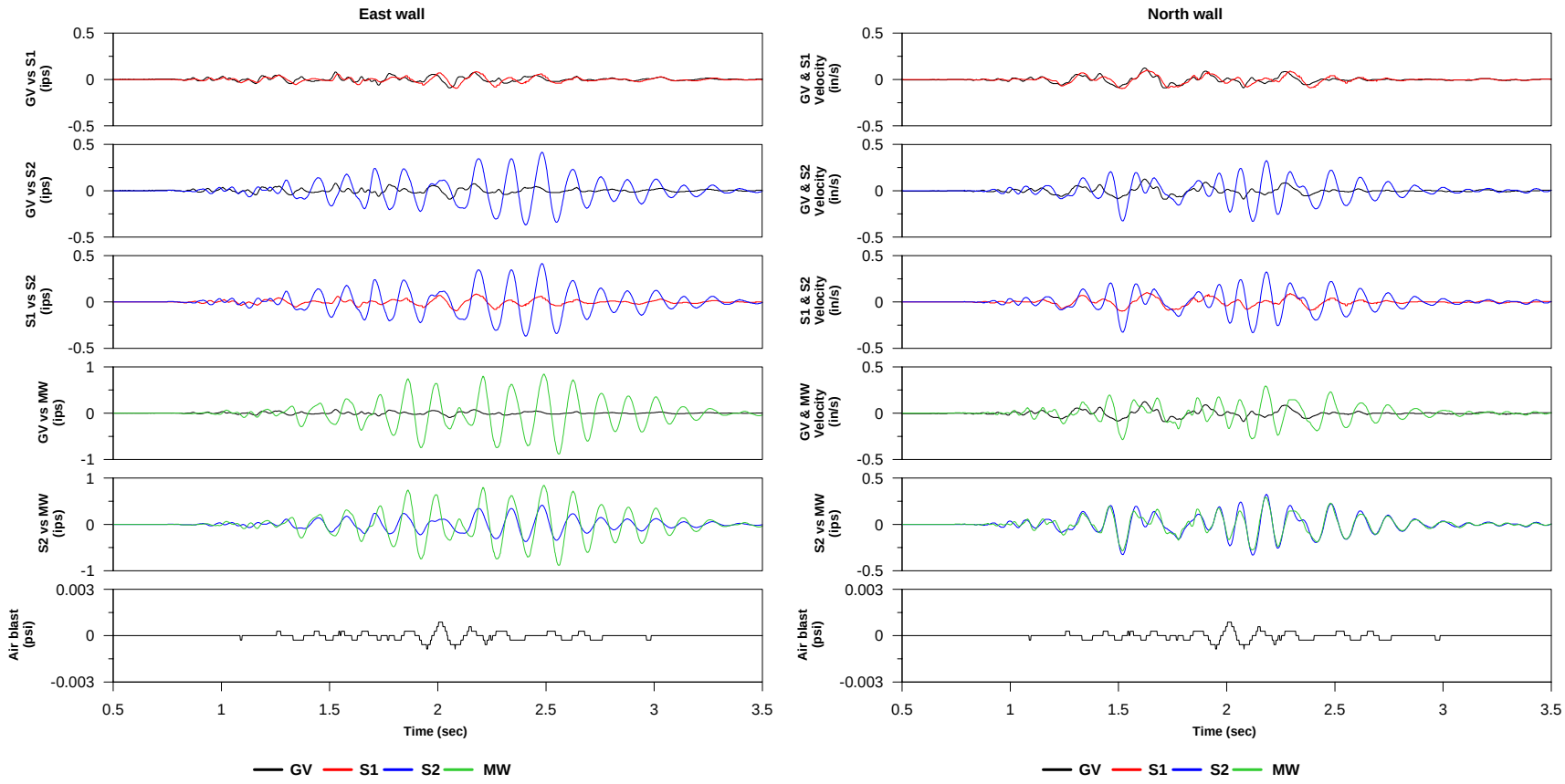

East wall
GV vs S1 (ips)
GV vs S2 (ips)
S1 vs S2 (ips)
GV vs MW (ips)
S2 vs MW (ips)
Air blast (psi)
Time (sec)
GV
S1
S2
MW

(a)


North wall
GV & S1 (ips)
GV & S2 (ips)
S1 & S2 (ips)
GV & MW (ips)
S2 vs MW (ips)
Air blast (psi)
Time (sec)
GV
S1
S2
MW

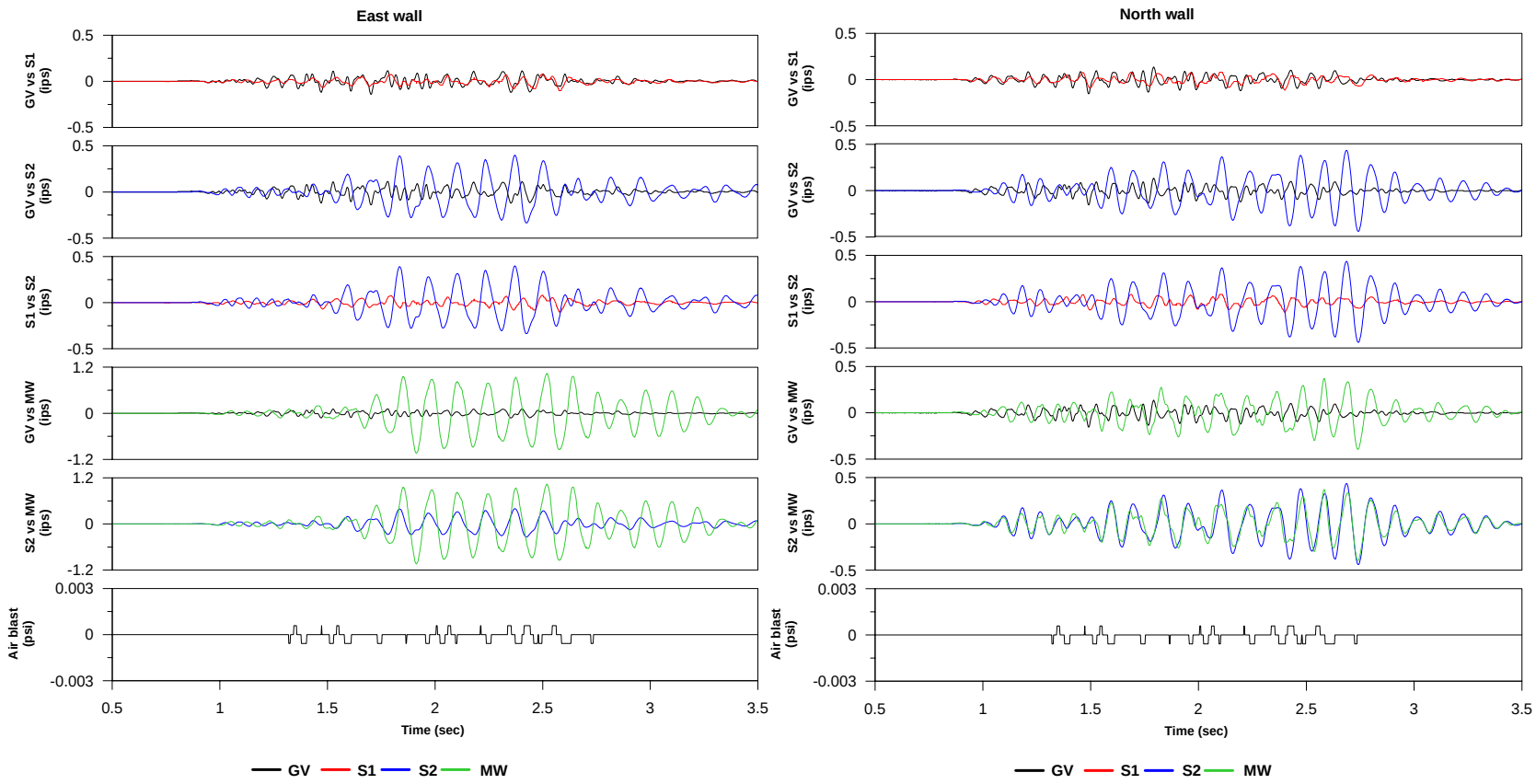
(b)

12/30/04 a


East wall
North wall
GV vs S1 (ips)
GV vs S2 (ips)
S1 vs S2 (ips)
GV vs MW (ips)
S2 vs MW (ips)
Air blast (psi)
GV & S1 Velocity (in/s)
GV & S2 Velocity (in/s)
S1 & S2 Velocity (in/s)
GV & MW Velocity (in/s)
S2 vs MW (ips)
Air blast (psi)
Time (sec)
GV
S1
S2
MW

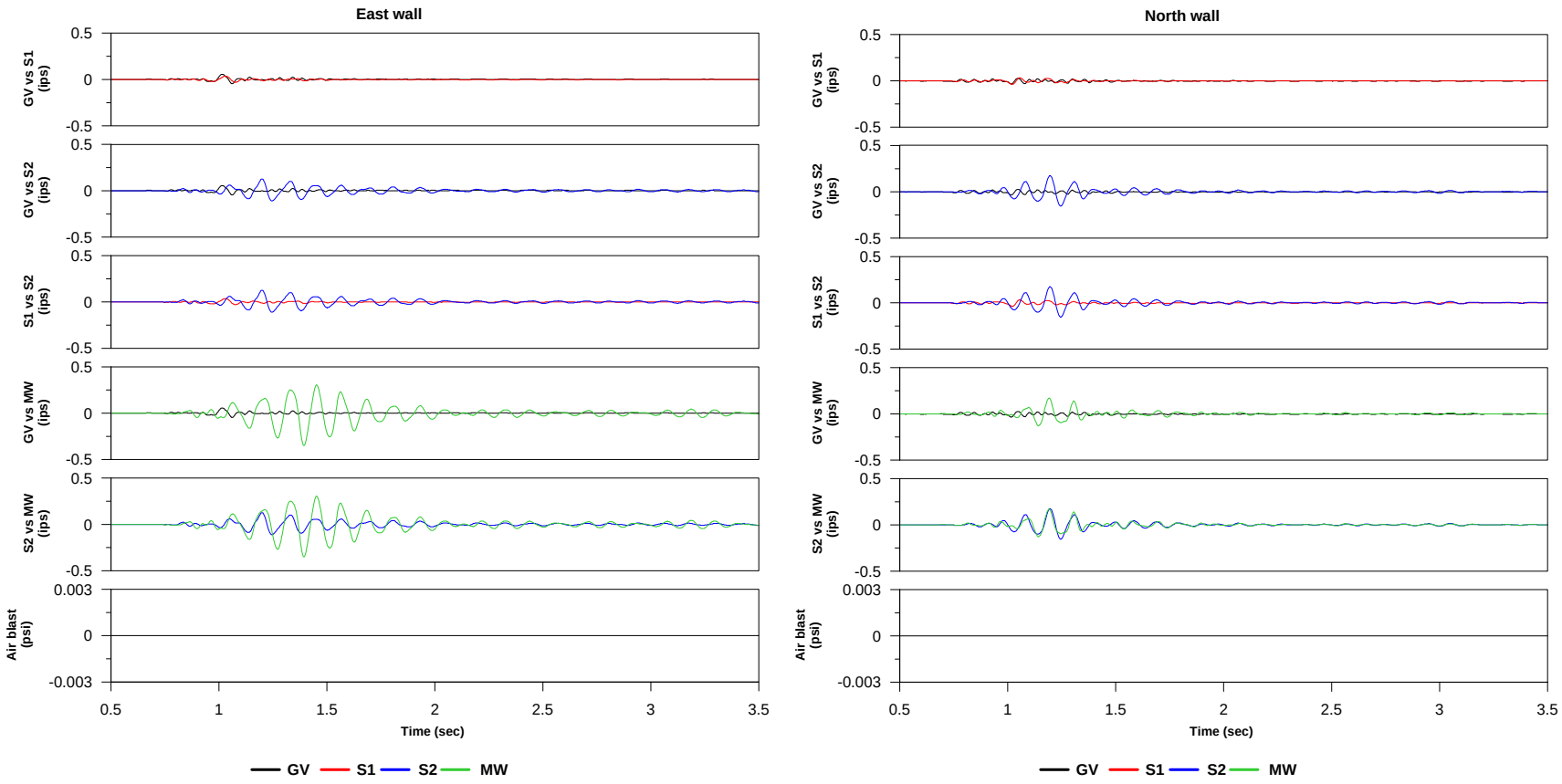
(a) (b)

12/30/04 b


East wall
North wall
GV vs S1 (ips)
GV vs S2 (ips)
S1 vs S2 (ips)
GV vs MW (ips)
S2 vs MW (ips)
Air blast (psi)
Time (sec)
GV
S1
S2
MW

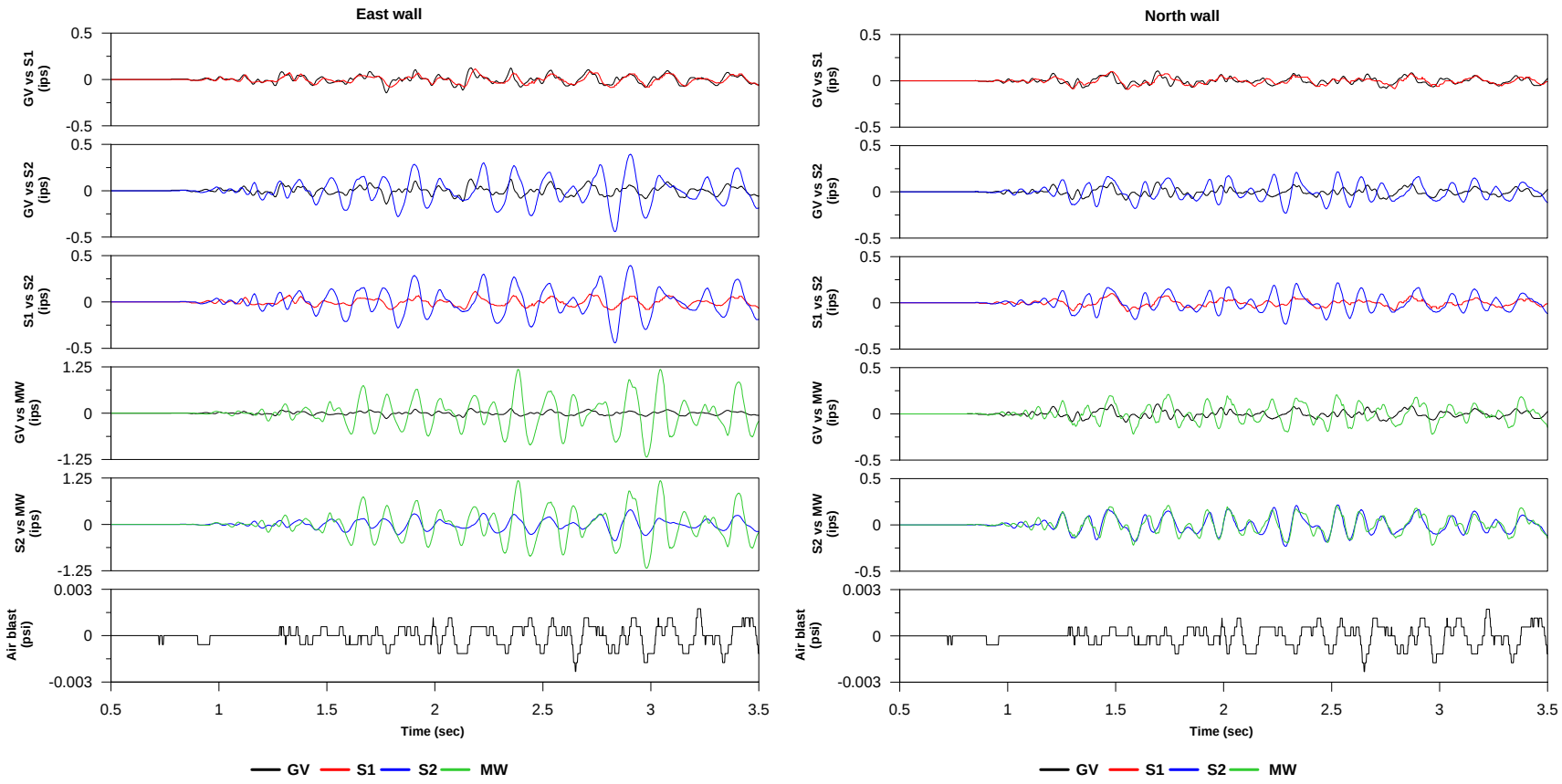
(a) (b)

01/27/05 a


East wall
North wall
GV vs S1 (ips)
GV vs S2 (ips)
S1 vs S2 (ips)
GV vs MW (ips)
S2 vs MW (ips)
Air blast (psi)
0.5
0
-0.5
0.003
-0.003
0.5
1
1.5
2
2.5
3
3.5
Time (sec)
GV
S1
S2
MW

(a) (b)

01/27/05 b

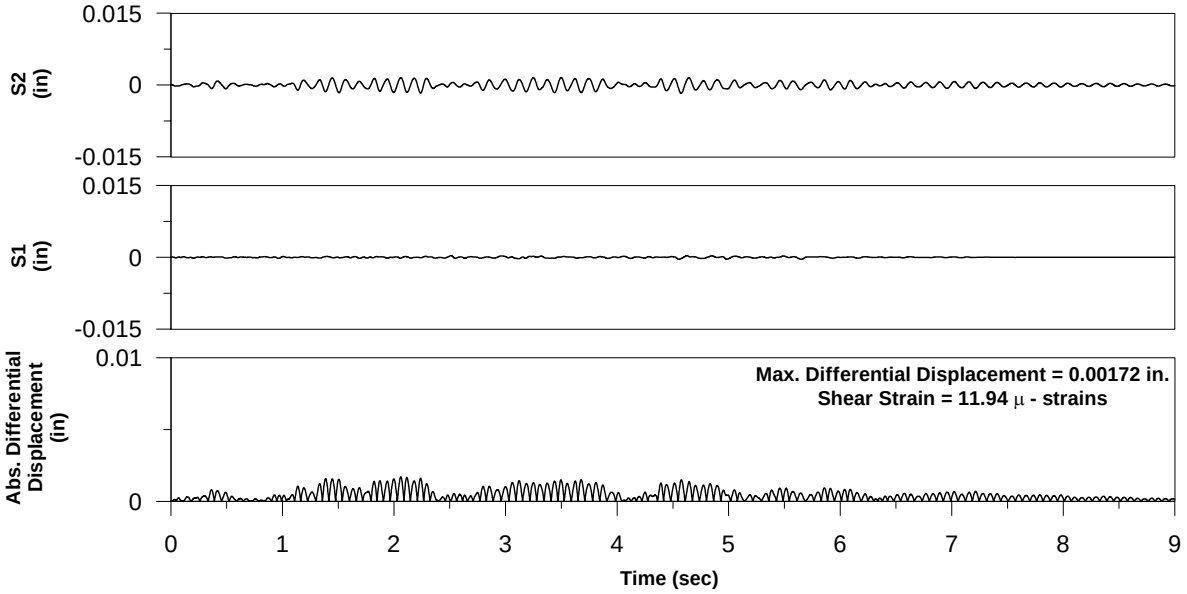

East wall
North wall
GV vs S1 (ips)
GV vs S2 (ips)
S1 vs S2 (ips)
GV vs MW (ips)
S2 vs MW (ips)
Air blast (psi)
Time (sec)
GV
S1
S2
MW

(a) (b)

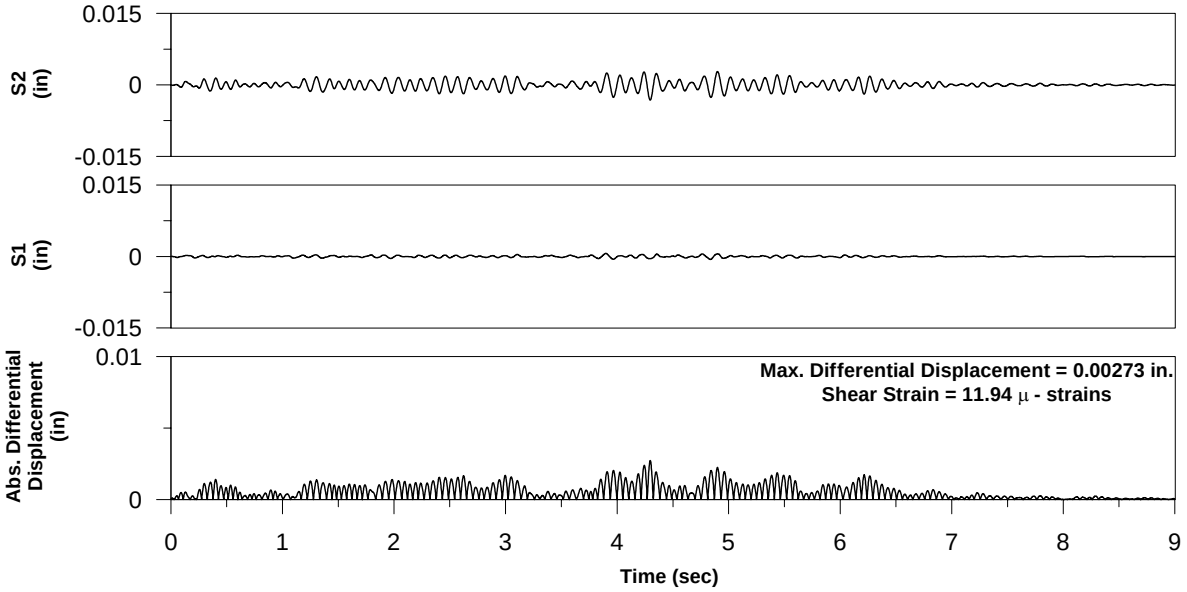
01/28/05

# Appendix H

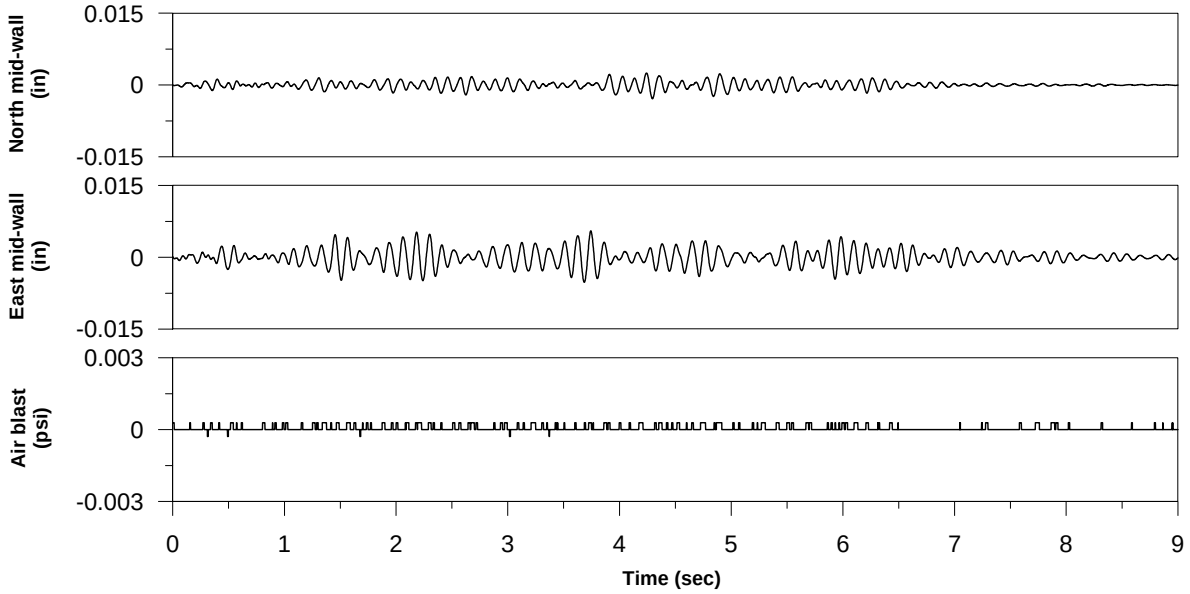
## Displacement Time Histories Used to Compute Strains



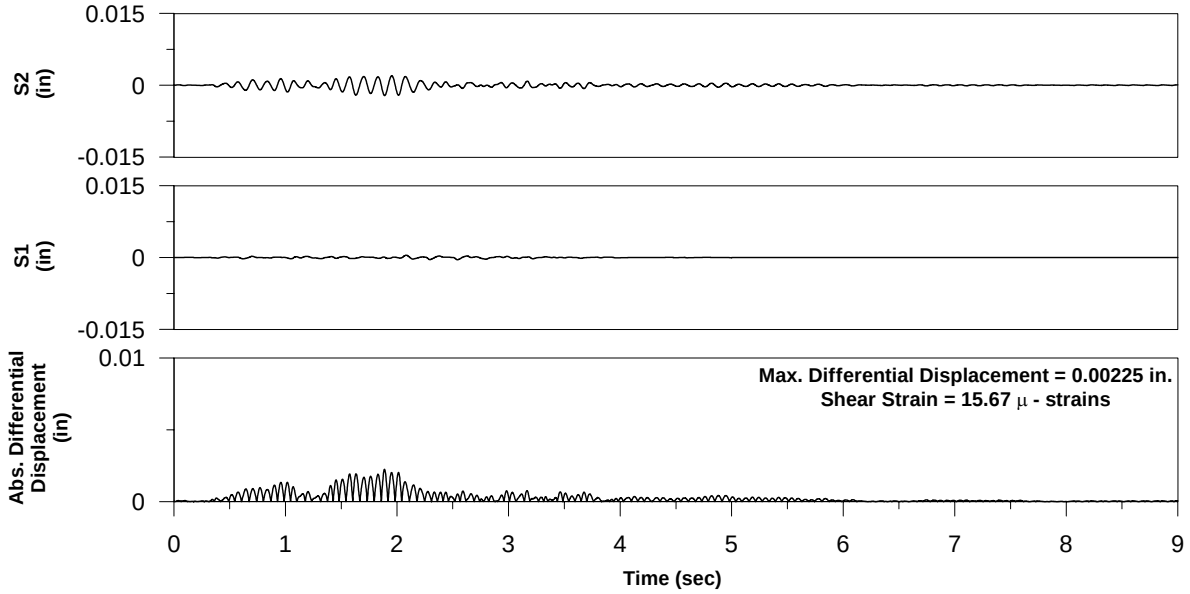

East wall displacement (09/16/04)



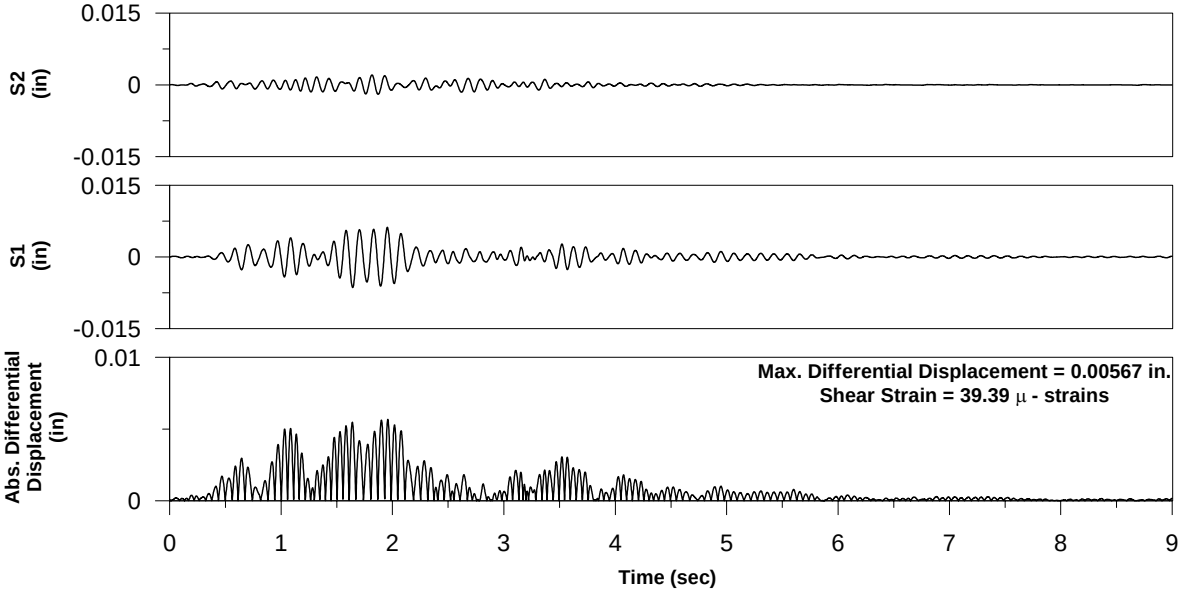

North wall displacement (09/16/040



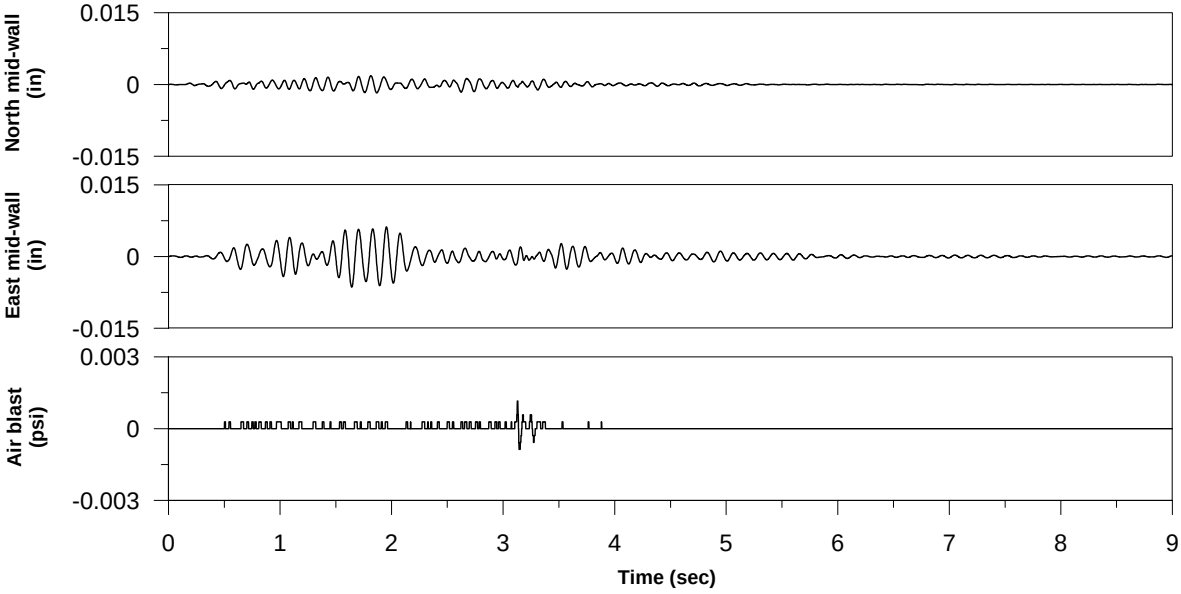

Mid walls displacement (09/16/04)



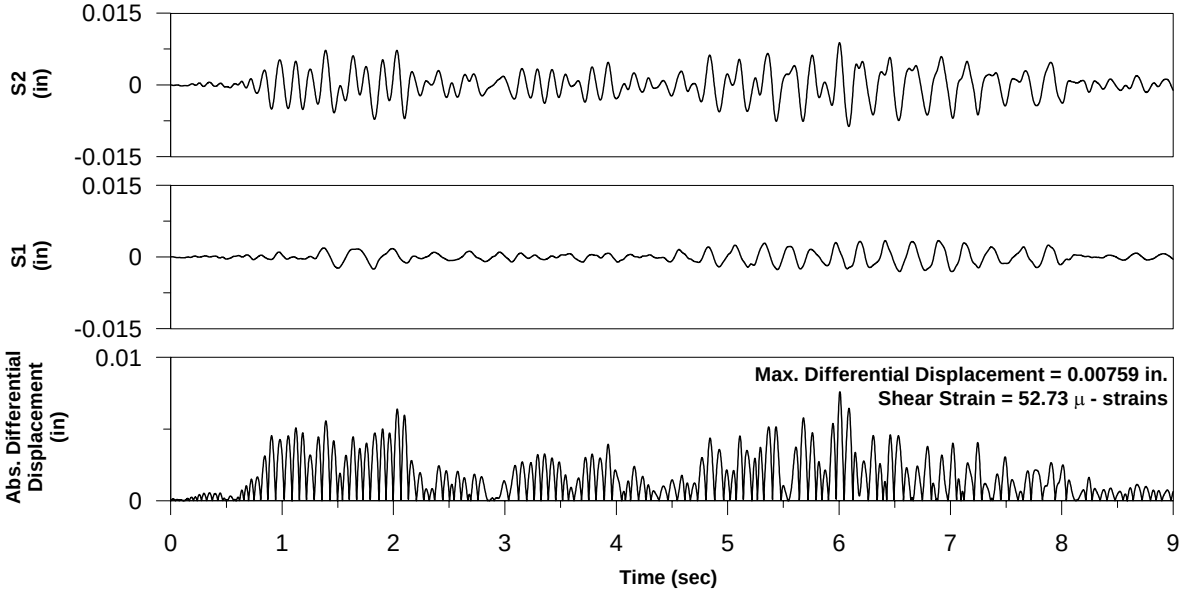

East wall displacement (09/17/04)



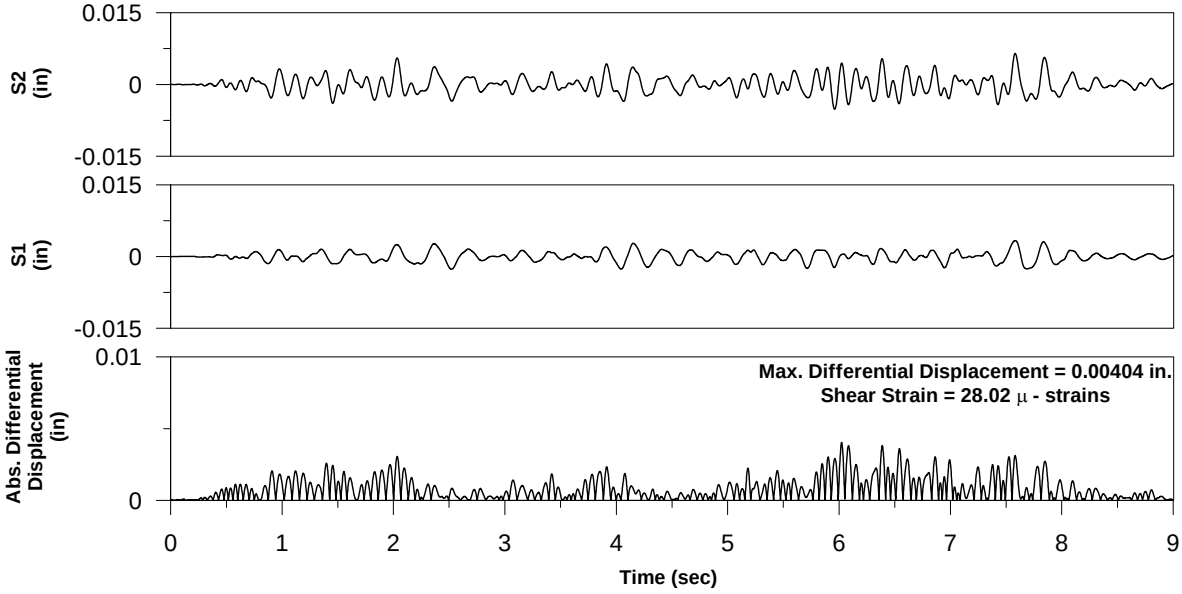

North wall displacement (09/17/04)



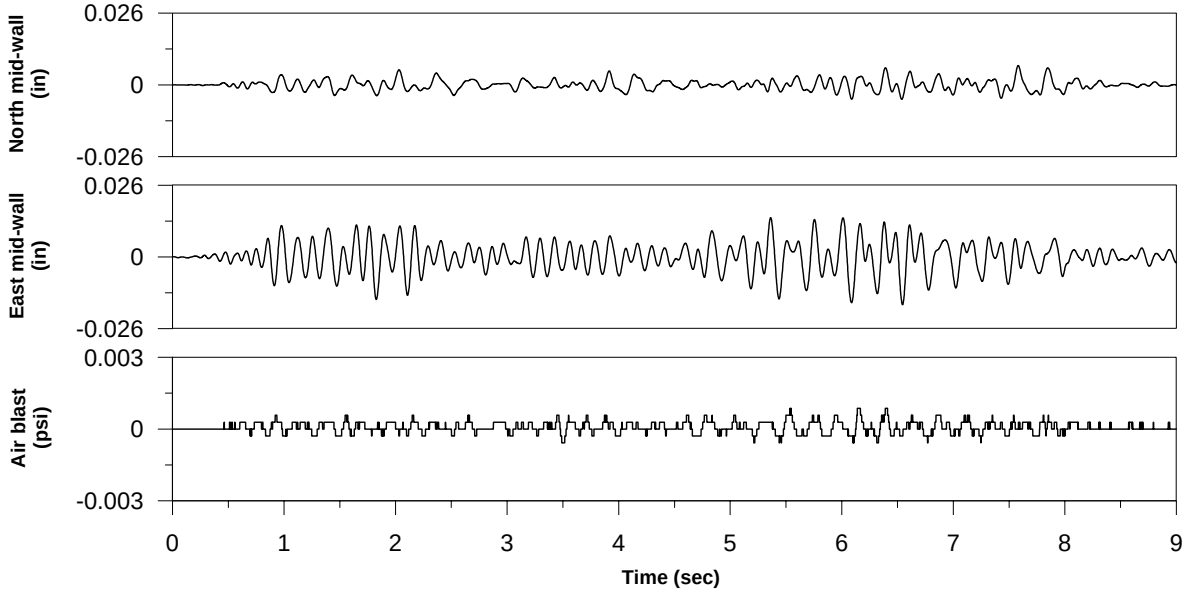

Mid walls displacement (09/17/04)



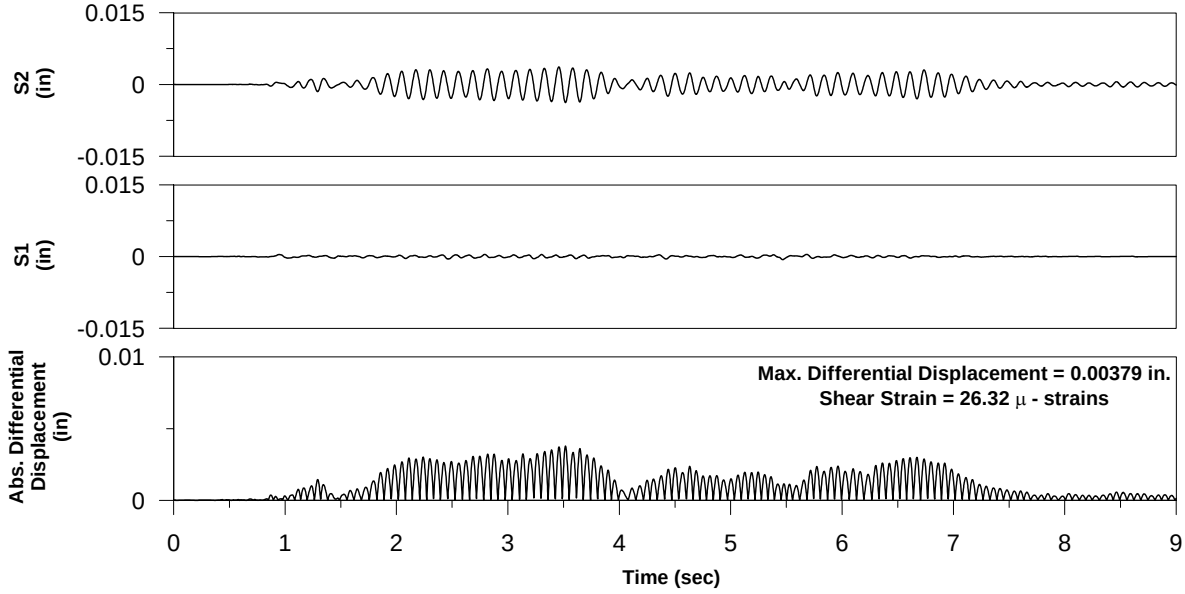

East wall displacement (09/21/04)



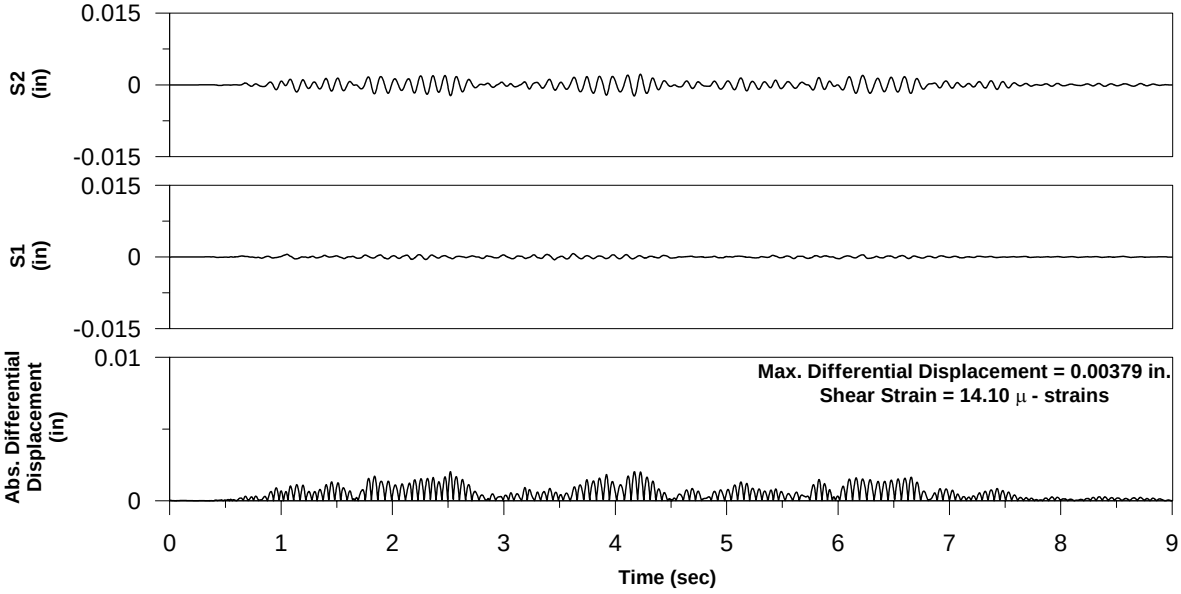

North wall displacement (09/21/04)



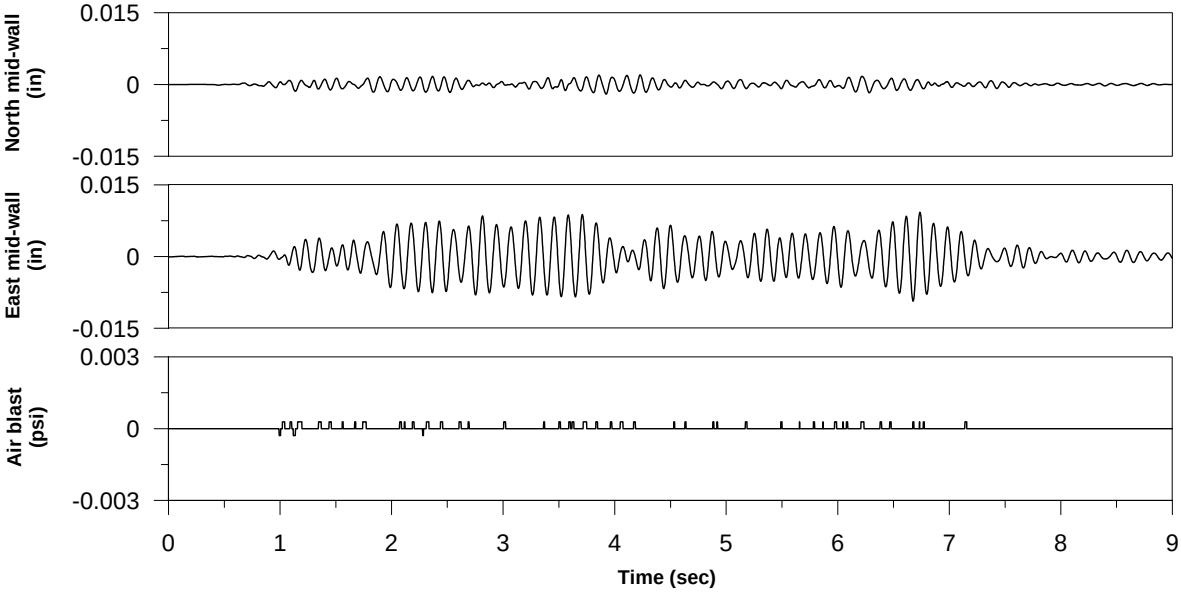

Mid walls displacement (09/21/04)



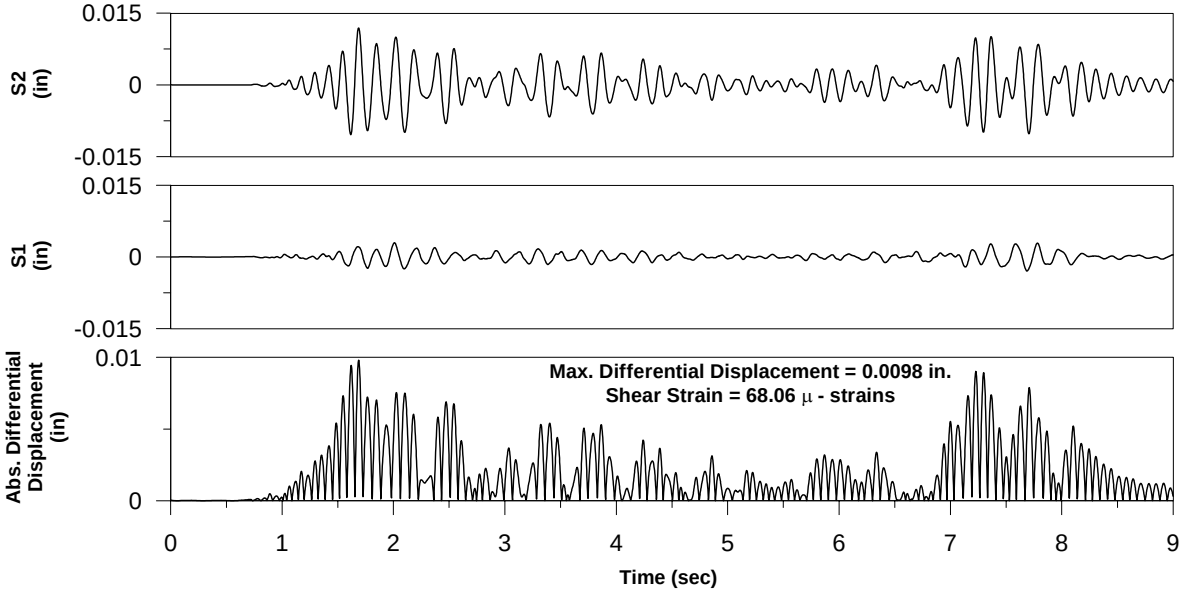

East wall displacement (09/23/04)



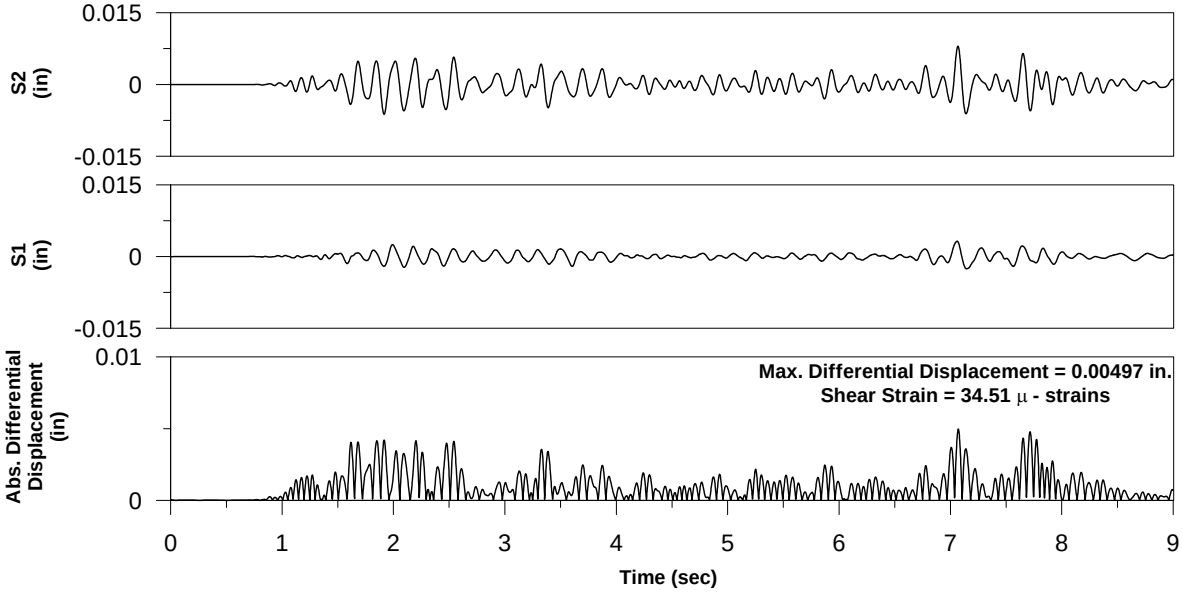

North wall displacement (09/23/04)



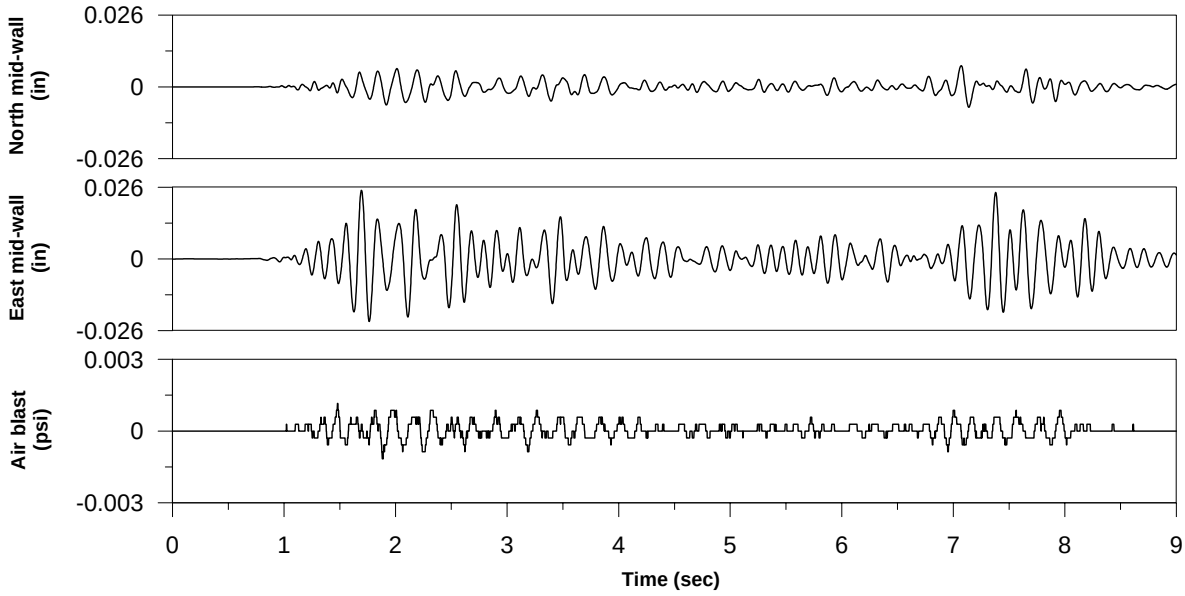

Mid walls displacement (09/23/04)



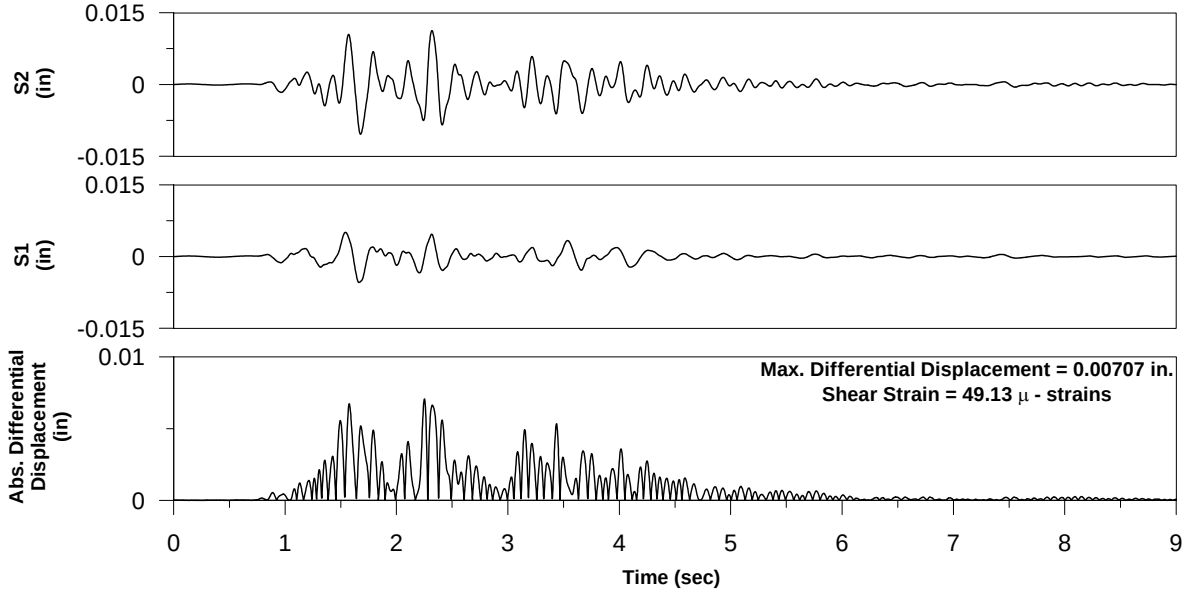

East wall displacement (09/30/04)



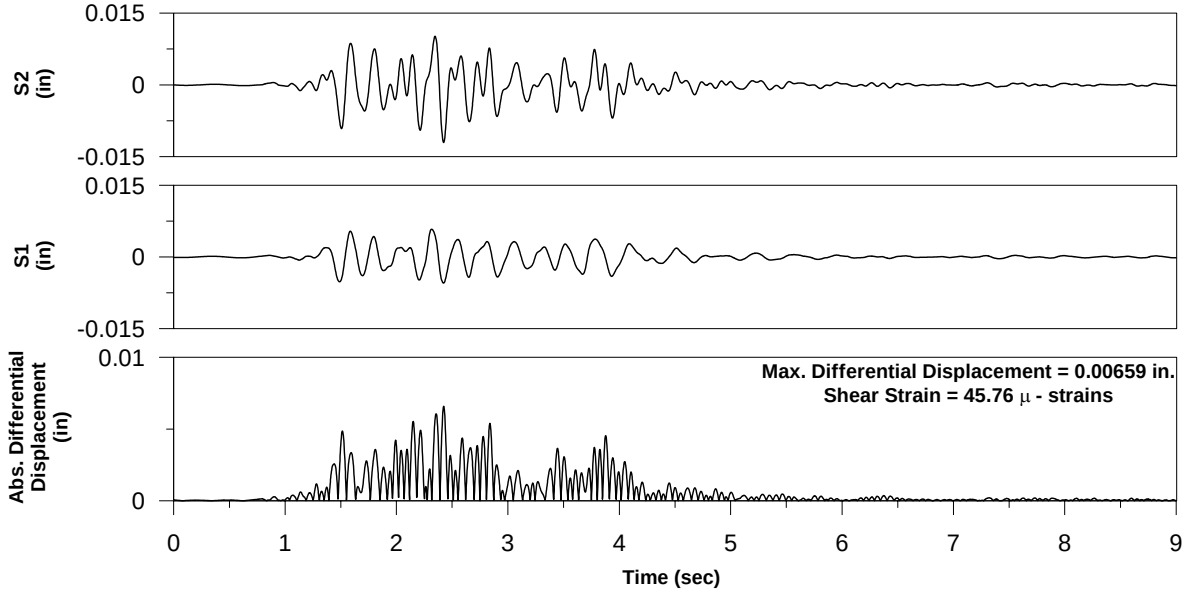

North wall displacement (09/30/04)



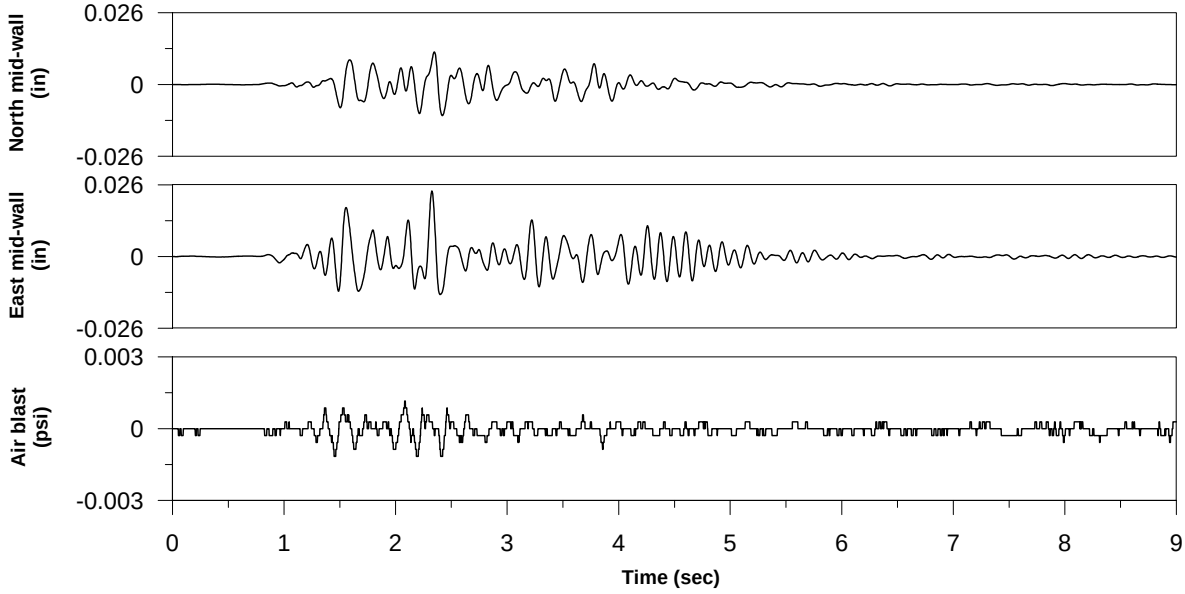

Mid walls displacement (09/30/04)




East wall displacement (12/15/04)




North wall displacement (12/15/04)




Mid walls displacement (12/15/04)