

Appendix G10

Report: 2013 Blast Monitoring Report for the Protection of Nearby Fish Habitat



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ANNUAL REPORT MEMORANDUM

**Agnico Eagle Mines Ltd Meadowbank Division
Environment Department**

SUBJECT: 2013 Blast Monitoring Report for the Protection of Nearby Fish Habitat

1- Introduction and Objectives

As required by the NIRB Project Certificate No.004, Commitment 85, AEM Meadowbank Division conducts monitoring to evaluate blast related peak particle velocity and overpressure to protect nearby fish bearing waters. According to the NIRB commitment, blasting must use a specific charge weight, delay and set.

The detonation of explosives in or near water produces compressive shock waves that can cause significant impacts to the swim bladders of fish, rupture other internal organs and/or damage or kill fish eggs and larvae. In addition, the effects of the shock waves can be intensified in the presence of ice. Consequently, guidelines have been developed by DFO to protect fish and fish habitat from works or undertakings that involve explosives in or near fisheries waters. These guidelines are presented in the DFO report entitled *"Use of Explosives In or Near Canadian Fisheries Water"*, and included the following:

- No explosive is to be detonated in or near fish habitat that produces an instantaneous pressure change (IPC) greater than 100 kPa in the swim bladder of a fish; representatives from DFO requested that AEM use a value of 50 kPa instead of 100 kPa; and
- No explosive is to be detonated that produces a peak particle velocity greater than 13 mm/s in a spawning bed during the period of egg incubation (for lakes near the Meadowbank mine, the fisheries window is from August 15 to June 30).

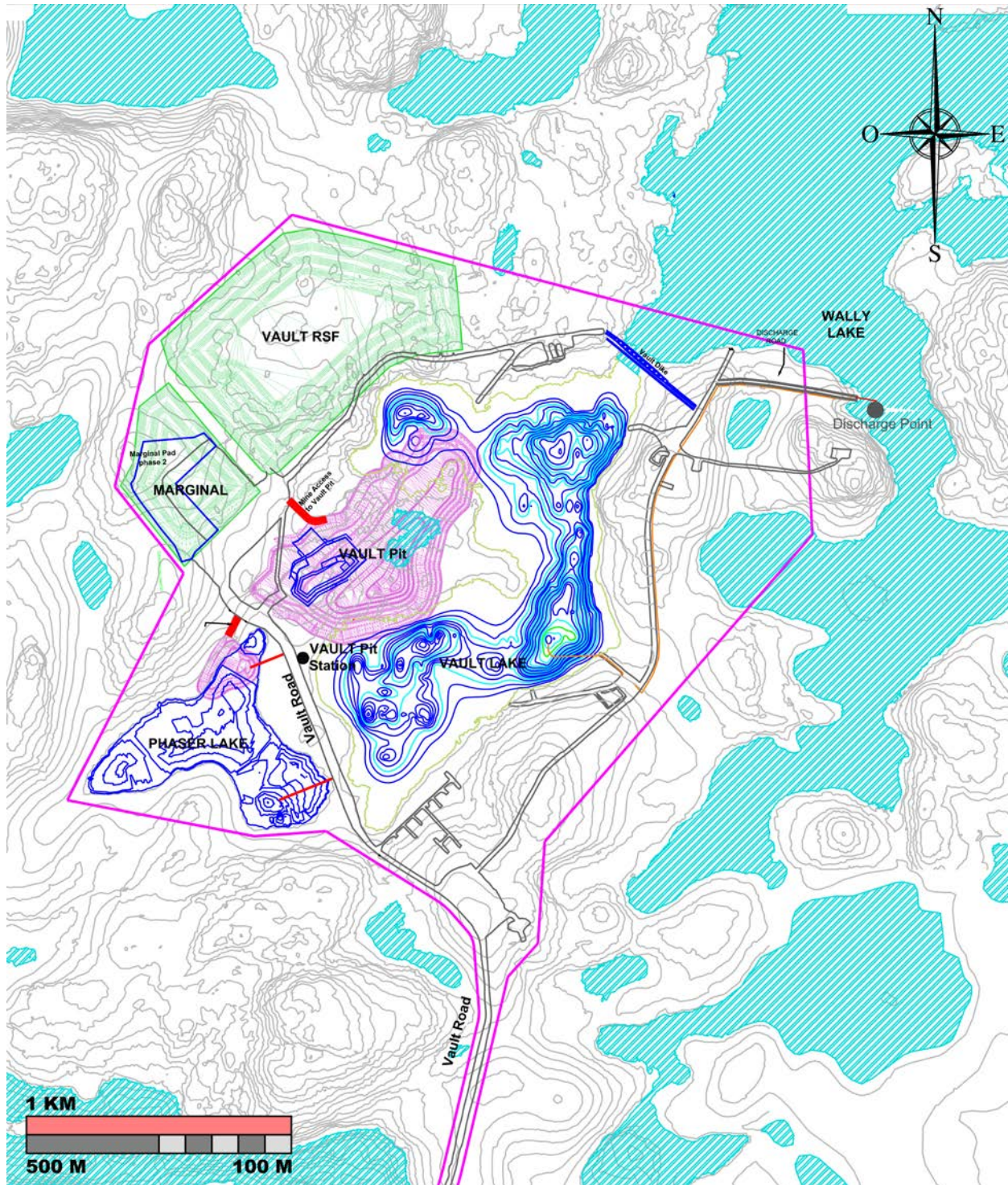
Peak particle velocity (PPV) and overpressure monitoring data was recorded throughout 2013 during blasting activities at the North Portage Pit, South Portage Pit, Bay Goose Pit and Vault Pit. The locations of the blast monitoring stations in 2013 are called Portage Pit North (14W 7214597N 639457E), Portage Pit South (14W 7213663N 639349E), Goose Pit (7212116N 638881E) and Vault Pit (14W 7219726N 640741E). These monitoring stations are illustrated in Figure 1 and Figure 2 for Vault Pit. The Portage stations are located near the shoreline of Second Portage Lake and the station located on the Bay Goose Dike is near Third Portage Lake East Basin. In January 2013, AEM added a blast monitoring station at Vault, located between the Vault Lake and the Vault Pit, to evaluate blast levels and to be protective of fish in Vault Lake. The blast monitoring at Vault occurred from January to March, as AEM blasted some rock near the pit for the Vault Dike construction, and for pre-stripping at Vault Pit from November to December. From April to October no mining activity was completed as activity was focused on Vault Lake dewatering and the fishout.

In 2013, Meadowbank blast engineers have been adjusting blast parameters as part of the continual blast optimization. The hole depth was decreased by an average of 0.2 meters which represented about 2.4% less explosive for each blast, which has resulted in less loss of energy and a sound pressure reduction. The blast engineers also adjusted the blast pattern which ultimately in reduced vibrations during blast. In 2013, they continued to use PPV and IPC for monitoring blasts and sophisticated monitoring techniques such as video and geo-referencing to improve blast procedures and operations.

Figure 1 - Portage and Goose Pit Blast Monitoring Station Location



Figure 2 - Vault Pit Blast Monitoring Station Location



2- Methods

2.1- Blast Monitoring

Blasts were monitored using an Instantel Minimate Blaster which is fully compliant with the international Society of Explosives and Engineers performance specification for blasting seismographs (Instantel, 2005). The Minimate Blaster has three main parts: a monitor, a standard transducer (geophone) and a microphone. The monitor contains the battery and electronic components of the instrument. It also checks the two sensors to be sure that they work properly. The transducer measures ground vibration with a mechanism called a geophone.

They measure transverse, vertical and longitudinal ground vibrations. Transverse ground vibrations agitate particles in a side to side motion. Vertical ground vibrations agitate particles in an up and down motion. Longitudinal ground vibrations agitate particles in a back and forth motion progressing outward from the event site (Instantel, 2005). The Minimate Blaster calculates the PPV for each geophone and calculates the vector sum of the three axes. The final result is the Peak Vector Sum (PVS) and is the resultant particle velocity magnitude of the event:

$$PVS = \sqrt{(T^2 + V^2 + L^2)}$$

Where:

T = particle velocity along the transverse plane

V = particle velocity along the vertical plane

L = particle velocity along the longitudinal plane

The transducer is installed as per the model specifications. All monitoring follows AEM (2010)¹ Blast Monitoring Plan.

2.2- Data Analysis

The blast monitoring data was screened to ensure blast PPV and IPC monitoring results corresponded to a single blast event. As previously discussed, in 2013 the blast engineers thoroughly documented blast patterns, sequencing, and detonation results to track the material accurately, optimize blasts and review procedures. As a result, blast monitoring data is collected as a composite of blast patterns and may include multiple blast patterns that could have occurred during the same monitoring event (i.e. a single PPV and IPC value for 3 blast patterns). The data was screened to remove all redundant data points (such as replicate readings).

¹ AEM. 2010. Meadowbank Gold Project Blast Monitoring Plan. Prepared by Agnico-Eagle Mines: Meadowbank

3- Results, Discussion and Conclusions

All of the 2013 PPV and IPC blast monitoring results are presented in Table 2. PPV concentrations exceeded the DFO limit of 13 mm/s on 16 occasions over the entire year (n = 361 monitored blasts for the entire year). During the period of egg incubation (for lakes near the Meadowbank mine the period is from August 15 to June 30) AEM exceed the DFO PPV limit on 12 occasions (n = 312); these exceedances are indicated in Table 1. The IPC measurements were all below the DFO limit of 50 kpa. The blast monitoring results are reviewed after each blast and the blast mitigation plan was implemented immediately if the vibrations or the overpressure exceed the guidelines (see appended blast results). This plan includes a retroactive analysis to determine what caused the higher than expected results.

Table 1 - Summary of blast peak particle velocity (PPV) exceedances in 2013

Date of Blast	Station	Peak Particulate Velocity (mm/s)		Peak Sound Pressure (kpa)	(sec)	Engineering Comments
<i>DFO Limit</i>		<i>13</i>		<i>50</i>		
05-Jan-13	Vault Pit	16.3	*	0.0228	2.234	Blast close to monitoring station and near surface
25-Feb-13	Goose Pit	13.1	*	0.0195	0.944	Deeper hole than usual.
07-May-13	Goose Pit	15.5	*	0.0025	1.626	Blast close to monitoring station and a large pattern with many holes (3) blasted on the same delay
17-Jul-13	Goose Pit	15.6		0.003	3.732	A large pattern blasted with many holes (4) blasted on the same delay
18-Jul-13	Goose Pit	15.7		0.109	0.49	Surface blast immediately adjacent to the monitoring station
26-Jul-13	Goose Pit	13.4		0.083	3.221	Very large pattern blasted together
29-Jul-13	Goose Pit	14.6		0.0795	3.333	A large pattern blasted near monitoring station and a lot of pre-shear holes on 3 holes / delay
27-Aug-13	Goose Pit	15.2	*	0.0233	0.959	A large pattern blasted with many holes (4) blasted on the same delay
01-Sep-13	Goose Pit	15.1	*	0.0293	3.24	3 holes blasted on the same delay and deeper hole
06-Sep-13	Goose Pit	14.2	*	0.0265	0.833	Large pattern blasted close to monitoring station
26-Sep-13	Goose Pit	13.8	*	0.167	5.196	A large pattern blasted with many holes (4) blasted on the same delay
05-Nov-13	Goose Pit	15.3	*	0.0598	0.571	Pre-shear blast close to wall and to monitoring station and 3 holes / delay
24-Nov-13	Portage Pit South	15.8	*	0.043	2.459	Deeper holes than usual and a long pattern
25-Nov-13	Vault Pit	32.7	*	0.0468	1.222	Lake water pumped out and close to monitoring station
08-Dec-13	Vault Pit	25.9	*	0.0015	0.716	Lake water pumped out, large blast and close to monitoring station
14-Dec-13	Vault Pit	17.2	*	0.132	1.688	Lake water pumped out, large blast and close to monitoring station
*During the period of egg incubation (for lakes near the Meadowbank mine the period is from August 15 to June 30)						

In 2013, the average PPV was 5.39 mm/s (CI +/- 0.39) with a maximum of 32.7 mm/s. The average was a bit higher than last year (5.09 mm/s in 2012). Nearly all of the exceedances were in Goose Pit operations due to the large pattern blasted and in Vault Pit as the blasts are pre-shear and were close to the monitoring station (see Table 1 engineering comments). From August 15 to June 30, during egg incubation, there were 12 exceedances of which 4 were in Vault, 1 in Portage Pit South and 7 in Goose Pit. The upper 95% confidence limit for all of the annual data was 12.60 mm/s.

As discussed in 2011 monitoring report, Wright (1982)² determined that peak particle velocity greater than 13 mm/s is potentially damaging to incubating eggs, however Faulkner et al. (2006)³ found no effects on lake trout eggs due to blasts at Diavik Mine, NWT with maximum PPVs of 28.5 mm/s. Faulkner et al. (2006) measured mean PPV at three exposure stations from September to July, 2003-2004 and found a mean range of 5.8 - 6.4 mm/s and reported 80 exceedances of 13 mm/s PPV at these stations with a maximum PPV of double the DFO guideline. They found there were no differences in mortality of lake trout eggs in incubators between exposure sites and reference sites that resulted from blasting at Diavik in 2003-2004. In 2013, AEM had one blast that exceed the maximum PPV from Faulkner et al. (32.7 mm/s on November 25th). This measurement was in Vault Pit and occurred during winter with Vault Lake dewatered and fishout completed. It is also noted that the 4 exceedances at Vault, as per engineering comments, are due to the proximity of the monitoring station, pre-shear nature and the blast pattern and 3 of the 4 exceedance occurred from November to December once the Vault Lake fishout was completed. In 2014, AEM will change location of the Vault blast monitoring station closer to Wally Lake as it is now the fish habitat with the most value. The result in 2014 will be more representatives of the vibrations and sound that can reach Wally Lake and potentially cause harm to egg's incubation. The other exceedances at Goose Pit and Portage Pit South station were close to the 13mm/s and are not expected to cause effects.

As previously discussed with DFO, at Meadowbank, it is important to consider the location of the monitoring stations and distances to spawning and nursery habitat identified in the baseline habitat mapping. The closest high value habitat area is approximately greater than 250m away from the monitoring station (Goose Pit). Thus incubating eggs would be exposed to significantly less PPV given the distance of the spawning and incubation site from the blast location and due to depth of ice cover which would reduce PPVs due to the blast, as compared to the distance from the blast to the monitoring station. In 2013, AEM discussed with DFO the possibility of conducting monitoring on-ice in areas adjacent to the Bay-Goose dike that are potential spawning and rearing habitat. Unfortunately, recording on ice is notoriously inaccurate and the sound meters available onsite are not suited for on-ice monitoring. Furthermore, the geotechnical department suggested a new sound meter may not be comparable to data collected to date.

AEM environment department will continue to monitor the success of the dike face habitat compensation features through the habitat monitoring program and will consider additional sound blast modelling in the future. As in the past, based on the monitoring station locations and comparison to Faulkner et al. (2006), periodic exceedances of 13 mm/s PPV with from the 2013 blasting are unlikely to impact salmonid incubation sites at the Meadowbank Mine site.

² Wright, D.G. 1982. A Discussion Paper on the Effects of Explosives on Fish and Marine Mammals in the Waters of the Northwest Territories. Canadian Technical Report of Fisheries and Aquatic Sciences 1052.

³ Faulkner, Sean G., Tonn, William, Welz, Marek, Welz, and Schmitt, Douglas. 2006. Effects of Explosives on Incubating Lake Trout Eggs in the Canadian Arctic. North American Journal of Fisheries Management. 26:833-842.



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Table 2 - 2013 PPV and IPC blast monitoring results

Date of Blast	Station	Blast Pattern	Peak Particulate Velocity (mm/s)	Peak Sound Pressure (kpa)	(sec)
<i>DFO Limit</i>			<i>13</i>	<i>50</i>	
01-Jan-13	Portage Pit North	5074262-1	5.16	0.007	3.346
03-Jan-13	Portage Pit South	5116408-1	1.63	0.013	2.157
04-Jan-13	Portage Pit North	5095319-1	4.65	0.0183	2.574
05-Jan-13	Vault Pit	5130750-1	16.3	0.0228	2.234
06-Jan-13	Goose Pit	5088PS522-1	8.57	0.103	0.67
07-Jan-13	Goose Pit	5109519-1	7.67	0.0365	2.353
08-Jan-13	Vault Pit	5130754-1	8.88	0.027	1.066
09-Jan-13	Portage Pit South	5109PS418-1	1.88	0.117	3.752
10-Jan-13	Portage Pit North	5046011-1	3.84	0.0128	2.018
11-Jan-13	Goose Pit	5109521-1	7.81	0.083	1.459
12-Jan-13	Goose Pit	5102526-1	6.13	0.052	3.831
13-Jan-13	Portage Pit North	5095321-1	3.59	0.00825	2.511
14-Jan-13	Vault Pit	5130756-1	7.2	0.0205	1.101
16-Jan-13	Goose Pit	5116POP541-2	2.46		1.52
18-Jan-13	Portage Pit North	5074264-1	5.13	0.01	1.591
19-Jan-13	Goose Pit	5102524-1	6.36	0.0403	1.081
20-Jan-13	Portage Pit South	5116418-1	2.48	0.076	3.456
21-Jan-13	Portage Pit North	5053PS030-1	1.92	0.0403	1.826
24-Jan-13	Goose Pit	5102522-1	3.46	0.0953	4.93
25-Jan-13	Goose Pit	5109POP521-1	4.1	0.0188	1.175
26-Jan-13	Goose Pit	5109541-1	8.23	0.0335	1.158
27-Jan-13	Portage Pit North	5095325-1	2.51	0.0183	2.211
28-Jan-13	Goose Pit	5088PS528-1	8.23	0.0335	1.158
28-Jan-13	Goose Pit	5102520-1	3.24	0.0665	1.292
29-Jan-13	Portage Pit South	5116414-1	3.01	0.0235	5.29
30-Jan-13	Goose Pit	5102518-1	7.81	0.152	4.023
31-Jan-13	Portage Pit North	5074268-1	5.35	0.0173	1.6
01-Feb-13	Goose Pit	5102528-1	7.85	0.0338	0.402
02-Feb-13	Goose Pit	5088PS516-1	1.65	0.0045	1.114
02-Feb-13	Portage Pit South	5123431-1	2.5	0.0243	2.005
02-Feb-13	Portage Pit North	5074272-1	5.45	0.0198	1.7
03-Feb-13	Portage Pit North	5074260-1	1.46	0.0118	1.155
04-Feb-13	Goose Pit	5088PS530-1	9.65	0.153	0.519
05-Feb-13	Goose Pit	5102516-1	3.98	0.044	1.285
05-Feb-13	Portage Pit North	5060028-1	1.87	0.00875	2.25
06-Feb-13	Portage Pit North	5095327-1	1.2	0.0118	1.563
06-Feb-13	Vault Pit	5137KT001-1	6.92	0.339	0.67
08-Feb-13	Portage Pit North	5095323-1	1.8	0.0175	1.995
09-Feb-13	Goose Pit	5088PS532-1	7.98	0.12	5.1
12-Feb-13	Vault Pit	5137787-1	4.91	0.0325	1.643
13-Feb-13	Goose Pit	5102532-1	8.55	0.106	2.515
14-Feb-13	Portage Pit North	5060030-1	2.65	0.0168	1.918



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15-Feb-13	Vault Pit	5123753-1	10.3	0.0298	1.422
16-Feb-13	Goose Pit	5102514-1	5.75	0.0163	1.259
17-Feb-13	Portage Pit North	5095329-1	1.18	0.00825	3.403
22-Feb-13	Portage Pit North	5074280-1	3.62	0.0123	1.896
23-Feb-13	Portage Pit North	5095331-1	1.37	0.0213	4.149
24-Feb-13	Goose Pit	5102538-1	5.19	0.0295	3.194
24-Feb-13	Vault Pit	5137789-1	3.35	0.0498	3.568
25-Feb-13	Goose Pit	5088PS536-1	13.1	0.0195	0.944
26-Feb-13	Portage Pit North	5095313-1	1.46	0.0128	2.654
26-Feb-13	Vault Pit	5123751-1	11.5	0.0273	1.069
27-Feb-13	Portage Pit North	5074270-1	1.84	0.0183	1.786
28-Feb-13	Portage Pit North	5060032-1	2.14	0.0055	3.074
01-Mar-13	Goose Pit	5102508-1	5.02	0.0268	1.306
02-Mar-13	Goose Pit	5102502-1	1.5	0.0218	1.152
02-Mar-13	Portage Pit South	5123403-1	2.43	0.0403	1.656
03-Mar-13	Goose Pit	5088PS512-3	1.5	0.0218	1.152
03-Mar-13	Portage Pit North	5088312-1	4.15	0.0118	1.797
04-Mar-13	Vault Pit	5123755-1	8.69	0.0345	4.419
08-Mar-13	Portage Pit South	5116420-1	2.46	0.024	4.646
10-Mar-13	Portage Pit North	5067255-1	4.12	0.014	1.645
11-Mar-13	Goose Pit	5102534-1	1.5	0.0218	1.152
13-Mar-13	Portage Pit North	5088314-2	3.77	0.0123	0
17-Mar-13	Portage Pit North	5053021-1	1.38	0.0425	0
18-Mar-13	Portage Pit North	5067253-1	3.87	0.0125	0
19-Mar-13	Goose Pit	5088PS512-5	2.89	0.0103	1.878
20-Mar-13	Portage Pit North	5067251-1	3.61	0.0103	0
23-Mar-13	Portage Pit South	5109427-1	1.51	0.0183	6.702
24-Mar-13	Vault Pit	5123761-1	5.73	0.0985	1.223
26-Mar-13	Vault Pit	5137795-1	2.05	0.0168	1.425
28-Mar-13	Goose Pit	5095501-1	5.36	0.0275	1.052
29-Mar-13	Portage Pit North	5067257-1	3.13	0.00925	4.315
31-Mar-13	Goose Pit	5095503-1	6.94	0.0875	1.968
01-Apr-13	Portage Pit North	5053023-1	1.71	0.00575	2.845
03-Apr-13	Goose Pit	5095505-1	4.15	0.177	3.175
04-Apr-13	Portage Pit South	5109413-1	2	0.0115	0
05-Apr-13	Goose Pit	5095517-1	2.84	0.045	1.369
05-Apr-13	Portage Pit North	5067261-1	8.55	0.0193	1.18
07-Apr-13	Portage Pit North	5053025-1	2.92	0.0243	5.759
09-Apr-13	Goose Pit	5095523-1	3.74	0.0693	0
09-Apr-13	Goose Pit	5095519-1	4.43	0.046	0
09-Apr-13	Goose Pit	5088533-1	5.58	0.0545	1.366
10-Apr-13	Portage Pit South	5116426-1	3.12	0.0403	1.516
13-Apr-13	Goose Pit	5095507-1	9.69	0.104	1.01
13-Apr-13	Portage Pit North	5046PS250-1	1.79	0.0313	1.576
13-Apr-13	Portage Pit South	5109407-1	7.15	0.009	5.102
22-Apr-13	Goose Pit	5095511-1	12	0.00075	8.12
23-Apr-13	Portage Pit North	5067267-1	5.71	0.05	2.019
24-Apr-13	Goose Pit	5095523-2	3.97	0.0328	2.177



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25-Apr-13	Portage Pit North	5046PS264-1	9.52	0.0228	1.465
26-Apr-13	Portage Pit South	5109419-1	6.75	0.00875	0
28-Apr-13	Goose Pit	5095513-1	12.6	0.0378	2.507
28-Apr-13	Portage Pit South	5116SL426-2	3.1	0.0178	1.585
01-May-13	Goose Pit	5095527-1	4.88	0.0453	2.333
02-May-13	Portage Pit North	5046PS254-1	5.63	0.026	6.207
03-May-13	Goose Pit	5095527-2	1.84	0.0138	0
05-May-13	Portage Pit South	5109423-1	4.58	0.011	1.204
06-May-13	Portage Pit North	5060254-1	2.58	0.0095	0
07-May-13	Goose Pit	5095515-1	15.5	0.0025	1.626
09-May-13	Goose Pit	5081511-1	11.4	0.164	0
09-May-13	Portage Pit North	5060256-1	3.28	0.0253	6.012
10-May-13	Portage Pit North	5067PS303-1	3.69	0.0343	0
11-May-13	Goose Pit	5095529-1	3.67	0.0343	0
12-May-13	Portage Pit South	5109431-1	2.11	0.011	6.972
13-May-13	Portage Pit North	5060258-1	8.23	0.0368	5.291
15-May-13	Goose Pit	5095521-1	8.21	0.0005	-0.22
15-May-13	Portage Pit North	5088328-1	1.38	0.0438	0
17-May-13	Portage Pit South	5109425-1	2.04	0.038	0
18-May-13	Goose Pit	5088532-1	8.52	0.0278	2.45
20-May-13	Portage Pit North	5060260-1	7.28	0.0173	4.309
24-May-13	Goose Pit	5088506-1	5.2	0.0265	1.237
24-May-13	Portage Pit North	5060262-1	4.91	0.0108	1.774
24-May-13	Portage Pit South	5109421-1	1.69	0.0303	5.05
25-May-13	Portage Pit North	5088338-1	1.36	0.0108	2.019
26-May-13	Portage Pit South	5088PS400-2	1.88	0.0395	4.375
27-May-13	Goose Pit	5088510-1	4.22	0.0438	1.834
29-May-13	Goose Pit	5088504-1	9.37	0.036	0
30-May-13	Goose Pit	5088510-2	2.74	0.023	0
01-Jun-13	Goose Pit	5088520-1	9.89	0.201	3.702
02-Jun-13	Portage Pit South	5102404-1	3.91	0.027	4.493
03-Jun-13	Goose Pit	5088512-1	2.38	0.00075	1.23
03-Jun-13	Portage Pit South	5102408-1	1.67	0.008	0
04-Jun-13	Portage Pit South	5088PS424-1	2.58	0.0495	1.571
06-Jun-13	Portage Pit South	5088PS424-2	2.23	0.0258	1.631
07-Jun-13	Portage Pit North	5053251-1	5.63	0.0005	0.003
09-Jun-13	Goose Pit	5088514-2	12.3	0.0673	1.218
10-Jun-13	Portage Pit North	5067PS303-2	2.57	0.00625	1.532
11-Jun-13	Goose Pit	5088522-1	3.61	0.001	1.074
11-Jun-13	Portage Pit South	5102412-1	3.54	0.00075	0.003
14-Jun-13	Portage Pit North	5046PS266-1	9.32	0.0508	1.224
16-Jun-13	Portage Pit North	5046PS266-2	9.2	0.008	1.262
16-Jun-13	Portage Pit South	5088PS424-4	5.22	0.0723	5.474
17-Jun-13	Portage Pit South	5088PS424-5	3.08	0.0455	1.39
18-Jun-13	Portage Pit North	5053257-1	5.98	0.01333	6.679
20-Jun-13	Portage Pit South	5102418-1	4.47	0.0158	2.716
21-Jun-13	Goose Pit	5088524-1	3.86	0.00075	0
21-Jun-13	Portage Pit North	5053253-2	1.87	0.03	2.633



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21-Jun-13	Portage Pit South	5088PS422-2	3.57	0.0523	1.38
22-Jun-13	Portage Pit North	5053261-1	5.09	0.0133	1.493
22-Jun-13	Portage Pit South	5088PS422-3	2.98	0.0423	1.386
23-Jun-13	Portage Pit South	5102400-1	2.29	0.0138	1.855
24-Jun-13	Goose Pit	5067PS503-1	5.57	0.0425	0.761
25-Jun-13	Portage Pit South	5088PS422-4	5.92	0.0653	1.455
26-Jun-13	Portage Pit North	5053259-1	7.15	0.017	6.893
28-Jun-13	Portage Pit North	5088334-1	5.16	0.0193	2.002
29-Jun-13	Goose Pit	5088518-1	9.6	0.047	3.309
30-Jun-13	Goose Pit	5081531-1	6.73	0.0353	1.016
01-Jul-13	Goose Pit	5088POP508-1	3.1	0.254	0.775
04-Jul-13	Goose Pit	5081503-1	6.31	0.00075	0.993
05-Jul-13	Portage Pit North	5067PS301-2	3.65	0.0203	1.792
05-Jul-13	Portage Pit South	5102424-1	2.7	0.0148	2.63
06-Jul-13	Goose Pit	5067PS537-1	11.4	0.177	0.681
07-Jul-13	Goose Pit	5081505-1	4.94	0.0298	4.198
08-Jul-13	Goose Pit	5067PS519-2	2.09	0.0543	1.042
08-Jul-13	Goose Pit	5081517-1	6.75	0.0223	1.357
09-Jul-13	Portage Pit North	5081301-1	2.92	0.016	1.683
10-Jul-13	Portage Pit South	5095401-1	2.7	0.0148	2.63
11-Jul-13	Goose Pit	5067PS519-3	6.18	0.0285	1.257
11-Jul-13	Portage Pit North	5088332-1	2.07	0.0178	5.347
12-Jul-13	Portage Pit North	5067PS307-1	5.14	0.0143	1.852
14-Jul-13	Goose Pit	5067PS509-1	9.9	0.003	0.491
15-Jul-13	Portage Pit North	5067PS307-2	3.66	0.0135	1.89
15-Jul-13	Portage Pit North	5081303-1	4.72	0.025	1.728
16-Jul-13	Goose Pit	5067PS509-2	12.3	0.00275	0.475
17-Jul-13	Goose Pit	5081507-1	15.6	0.003	3.732
17-Jul-13	Portage Pit North	5067PS309-1	2.65	0.024	2.044
18-Jul-13	Goose Pit	5067PS513-1	15.7	0.109	0.49
18-Jul-13	Portage Pit North	5067PS313-1	3.09	0.0245	0.816
19-Jul-13	Goose Pit	5067PS513-2	12.9	0.0843	0.486
19-Jul-13	Portage Pit North	5081305-1	4.78	0.011	3.614
20-Jul-13	Goose Pit	5067PS525-1	3.23	0.0593	0.837
20-Jul-13	Portage Pit North	5039256-1	7.2	0.0323	2.362
20-Jul-13	Portage Pit South	5095405-1	4.22	0.0258	2.431
22-Jul-13	Goose Pit	5067PS525-2	9.44	0.195	3.831
23-Jul-13	Goose Pit	5074PS515-2	6.02	0.136	0.679
24-Jul-13	Portage Pit South	5095409-1	6.86	0.00625	1.559
25-Jul-13	Portage Pit North	5046250-1	6.34	0.0128	1.54
26-Jul-13	Goose Pit	5081509-1	13.4	0.083	3.221
27-Jul-13	Goose Pit	5074PS527-1	3.39	0.082	0.885
28-Jul-13	Portage Pit South	5095411-1	4.21	0.0333	3.657
29-Jul-13	Goose Pit	5081513-1	14.6	0.0795	3.333
02-Aug-13	Goose Pit	5081519-1	6.63	0.00075	0.927
03-Aug-13	Portage Pit South	5095415-1	5.12	0.017	0
04-Aug-13	Goose Pit	5067PS529-2	4.47	0.156	3.379
04-Aug-13	Portage Pit South	5088400-1	6.48	0.0218	2.009



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05-Aug-13	Goose Pit	5081545-1	12.8	0.055	3.708
07-Aug-13	Goose Pit	5067PS529-4	4.53	0.114	0
07-Aug-13	Portage Pit North	5046258-1	6.1	0.0333	5.987
09-Aug-13	Goose Pit	5081525-1	5.4	0.025	4.892
10-Aug-13	Portage Pit North	5067PS313-4	3.1	0.0153	3.74
11-Aug-13	Goose Pit	5067501-1	12.5	0.0853	0.969
11-Aug-13	Portage Pit North	5081307-1	3.1	0.0153	3.74
12-Aug-13	Goose Pit	5074500-2	5.71	0.0485	0.977
12-Aug-13	Portage Pit North	5046260-1	7.65	0.00675	1.906
13-Aug-13	Goose Pit	5081527-1	4.46	0.13	1.065
14-Aug-13	Portage Pit North	5095421-1	4.42	0.0158	1.996
15-Aug-13	Portage Pit North	5081309-1	2.48	0.029	4.691
16-Aug-13	Goose Pit	5074532-1	8.07	0.0445	1.904
16-Aug-13	Portage Pit North	5067PS315-2	2.42	0.047	2.21
16-Aug-13	Portage Pit North	5046266-1	2.92	0.00675	2.502
17-Aug-13	Portage Pit South	5095419-1	3.48	0.00575	2.237
18-Aug-13	Goose Pit	5074534-1	5.56	0.019	1.35
19-Aug-13	Goose Pit	5074518-1	7.73	0.0398	1.611
19-Aug-13	Portage Pit North	5081311-1	2.13	0.0208	4.187
21-Aug-13	Portage Pit North	5046264-1	5.16	0.00825	2.377
22-Aug-13	Goose Pit	5074506-1	11.1	0.0483	3.774
23-Aug-13	Portage Pit North	5081315-1	2.91	0.0153	2.651
24-Aug-13	Goose Pit	5074522-1	7.59	0.05	3.61
24-Aug-13	Portage Pit North	5074300-1	2.9	0.0248	1.448
24-Aug-13	Portage Pit South	5095413-1	3.97	0.0348	3.154
25-Aug-13	Portage Pit North	5074300-2	4.07	0.00875	1.629
25-Aug-13	Portage Pit South	5088402-1	2.32	0.0145	4.696
27-Aug-13	Goose Pit	5074508-1	15.2	0.0233	0.959
27-Aug-13	Portage Pit South	5088406-1	2.52	0.0168	2.798
29-Aug-13	Goose Pit	5067PS516-1	9.93		0
29-Aug-13	Goose Pit	5067521-1	6.3	0.0695	3.789
30-Aug-13	Goose Pit	5074526-1	4.52	0.0345	1.316
30-Aug-13	Portage Pit South	5088404-1	4.48	0.0295	4.572
01-Sep-13	Goose Pit	5074510-1	15.1	0.0293	3.24
01-Sep-13	Portage Pit North	5074304-1	5.55	0.0178	1.918
03-Sep-13	Goose Pit	5074524-1	5.04	0.057	3.558
04-Sep-13	Portage Pit South	5088410-1	3.6	0.0135	3.367
04-Sep-13	Portage Pit South	5130606-1	6.87	0.0498	1.734
06-Sep-13	Goose Pit	5074512-1	14.2	0.0265	0.833
06-Sep-13	Goose Pit	5088SL510-1	12.3	0.0673	1.218
06-Sep-13	Portage Pit South	5088418-1	4.35	0.0155	3.118
08-Sep-13	Portage Pit North	5081313-1	5.7	0.014	4.068
08-Sep-13	Portage Pit South	5088420-1	5.5	0.01	5.5
10-Sep-13	Goose Pit	5074514-1	12.3	0.0268	5.226
10-Sep-13	Portage Pit North	5032PS004-1	6.64	0.0205	1.358
11-Sep-13	Goose Pit	5067505-1	7.96	0.00075	2.404
11-Sep-13	Portage Pit South	5088416-2	3.8	0.00975	1.253
11-Sep-13	Portage Pit South	5081PS001-1	4.41	0.0523	1.235



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12-Sep-13	Portage Pit North	5032PS004-2	4.22	0.0095	1.412
13-Sep-13	Portage Pit North	5032PS004-3	1.96	0.00775	1.78
14-Sep-13	Portage Pit North	5025PS001-3	1.75	0.0075	1.549
15-Sep-13	Goose Pit	5067507-1	6.44		
15-Sep-13	Portage Pit North	5025PS001-4	2	0.0085	1.546
15-Sep-13	Portage Pit South	5088422-1	6.58	0.0158	3.518
16-Sep-13	Portage Pit North	5074306-1	3.95	0.013	3.702
17-Sep-13	Goose Pit	5067537-1	4.64	0.0388	1.055
17-Sep-13	Portage Pit North	5025PS001-5	5.74	0.056	2.025
18-Sep-13	Portage Pit South	5088424-1	5.29	0.0373	1.307
19-Sep-13	Portage Pit North	5025PS001-6	6.9	0.0443	1.377
19-Sep-13	Portage Pit South	5088414-1	5.37	0.0173	4.08
20-Sep-13	Portage Pit North	5039253-1	4.76	0.0005	0.463
20-Sep-13	Portage Pit South	5088426-1	4.38	0.111	1.648
21-Sep-13	Goose Pit	5067509-1	5.24	0.0513	1.663
21-Sep-13	Portage Pit North	5032PS006-3	4.18	0.00075	1.553
22-Sep-13	Portage Pit North	5039255-1	4.55	0.054	2.2
23-Sep-13	Goose Pit	5067525-1	3.92	0.0483	2.095
26-Sep-13	Goose Pit	5067511-1	13.8	0.167	5.196
28-Sep-13	Portage Pit South	5123603-1	2.68	0.017	1.765
29-Sep-13	Portage Pit North	5074308-1	3	0.0155	3.367
30-Sep-13	Goose Pit	5067531-1	8.74	0.149	0.978
30-Sep-13	Portage Pit South	5081403-1	3.82	0.00825	1.708
01-Oct-13	Portage Pit North	51401181-1	2.16	0.0005	0.023
01-Oct-13	Portage Pit South	5109PS609-1	5.1	0.0118	1.637
03-Oct-13	Portage Pit South	5109PS609-2	3.6	0.0445	1.559
04-Oct-13	Portage Pit South	5109PS609-3	2.53	0.0168	2.499
06-Oct-13	Portage Pit North	5074312-1	4.28	0.0135	1.173
06-Oct-13	Portage Pit South	5109PS611-2	1.77	0.029	5.251
07-Oct-13	Portage Pit South	5109PS613-3	1.33	0.0158	1.987
07-Oct-13	Portage Pit South	5081407-1	3.75	0.0128	1.701
08-Oct-13	Portage Pit South	5081401-1	2.09	0.0218	1.909
09-Oct-13	Goose Pit	5067523-1	2.55	0.026	1.167
09-Oct-13	Portage Pit South	5109PS613-5	1.85	0.01	2.289
10-Oct-13	Portage Pit South	5123601-1	2.88	0.0173	3.063
11-Oct-13	Goose Pit	5046PS508-1	1.57	0.0225	1.162
12-Oct-13	Goose Pit	5046PS506-1	1.47	0.017	1.271
13-Oct-13	Goose Pit	5046PS508-3	3.23	0.00075	0.952
13-Oct-13	Portage Pit South	5123607-1	5.06	0.0443	1.245
14-Oct-13	Goose Pit	5046PS508-4	2.92	0.00075	0.424
14-Oct-13	Goose Pit	5067519-1	7.12	0.00275	3.977
14-Oct-13	Portage Pit South	5067PS401-1	3.42	0.102	1.183
15-Oct-13	Goose Pit	5046PS508-5	8.9	0.053	0.963
16-Oct-13	Goose Pit	5067551-1	7.85	0.0773	1
16-Oct-13	Portage Pit South	5081417-1	6.49	0.0108	2.28
18-Oct-13	Portage Pit South	5123605-1	1.72	0.0315	3.756
19-Oct-13	Goose Pit	5046PS508-6	7.86	0.111	2.172
19-Oct-13	Portage Pit South	5081413-1	5.04	0.01	2.528



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20-Oct-13	Portage Pit South	5123621-1	1.78	0.008	3.18
22-Oct-13	Goose Pit	5060504-1	4.32	0.038	1.469
22-Oct-13	Portage Pit North	5074314-1	3.16	0.025	5.818
22-Oct-13	Portage Pit South	5067PS403-1	4.95	0.13	1.472
23-Oct-13	Portage Pit South	5123623-1	1.72	0.00875	3.685
24-Oct-13	Portage Pit South	5074310-1	2.62	0.00825	1.786
25-Oct-13	Goose Pit	5046PS510-3	8.15	0.0678	0.639
25-Oct-13	Goose Pit	5060506-1	5.21	0.0348	3.755
25-Oct-13	Portage Pit South	5081409-1	3.9	0.0218	2.207
26-Oct-13	Goose Pit	5067517-1	8.87	0.0208	0.85
27-Oct-13	Goose Pit	5046PS506-3	4.32	0.0265	1.236
27-Oct-13	Portage Pit North	5067303-1	3.22	0.0163	3.054
28-Oct-13	Goose Pit	5060516-1	4.32	0.0265	1.236
28-Oct-13	Goose Pit	5046PS510-4	6.06	0.0858	0.609
29-Oct-13	Goose Pit	5046PS506-4	1.75	0.0543	1.261
29-Oct-13	Portage Pit South	5081411-1	4.12	0.009	1.887
30-Oct-13	Portage Pit North	5032002-1	4.62	0.0108	0.307
31-Oct-13	Goose Pit	5060508-1	12.3	0.0975	4.312
31-Oct-13	Portage Pit South	5123613-1	1.45	0.0075	4.984
01-Nov-13	Goose Pit	5060514-1	2.69	0.138	4.464
02-Nov-13	Goose Pit	5060520-1	11.9	0.072	4.34
03-Nov-13	Goose Pit	5060524-1	6.64	0.138	3.127
03-Nov-13	Portage Pit North	5032004-1	3.38	0.005	2.466
04-Nov-13	Goose Pit	5123615-1	1.75	0.0095	2.208
05-Nov-13	Goose Pit	5046PS512-3	15.3	0.0598	0.571
07-Nov-13	Goose Pit	5046PS514-1	9.07	0.00175	0.785
07-Nov-13	Portage Pit North	5032006-1	3.36	0.0258	2.116
08-Nov-13	Goose Pit	5060518-1	9.96	0.002	5.788
08-Nov-13	Portage Pit North	5067307-1	2.87	0.009	5.676
08-Nov-13	Vault Pit	5144FM750-1	7.66	0.0395	0.908
09-Nov-13	Goose Pit	5046PS514-2	9.96	0.002	5.788
09-Nov-13	Goose Pit	5046PS516-2	6.04	0.0838	0.778
09-Nov-13	Portage Pit South	5081423-1	2.82	0.0235	2.419
11-Nov-13	Goose Pit	5046PS514-4	6.54	0.075	0.98
11-Nov-13	Portage Pit South	5081421-1	5.18	0.0403	5.066
13-Nov-13	Portage Pit North	5067311-1	3.15	0.00075	4.108
14-Nov-13	Portage Pit North	5053PS301-2	1.64	0.0268	1.983
15-Nov-13	Portage Pit North	5053PS301-3	1.96	0.001	1.989
15-Nov-13	Portage Pit South	5123POP605-1	2.74	0.0005	0.006
16-Nov-13	Goose Pit	5060512-1	6.49	0.0243	0.896
17-Nov-13	Vault Pit	5137793-1	4.9	0.0183	1.678
18-Nov-13	Portage Pit North	5067313-1	2.99	0.0133	4.531
20-Nov-13	Goose Pit	5046529-1	7.22	0.0913	1.204
21-Nov-13	Goose Pit	5053501-1	7.74	0.219	3.852
22-Nov-13	Portage Pit South	5116602-1	2.04	0.0188	2.642
23-Nov-13	Goose Pit	5053503-1	5.45	0.0178	1.175
24-Nov-13	Goose Pit	5053533-1	2.76	0.0173	1.23
24-Nov-13	Portage Pit South	5067PS407-1	15.8	0.043	2.459



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25-Nov-13	Portage Pit South	5116614-1	1.44	0.0215	-0.25
25-Nov-13	Vault Pit	5137821-1	32.7	0.0468	1.222
26-Nov-13	Goose Pit	5053535-1	4.62	0.0935	5.855
26-Nov-13	Portage Pit South	5074416-1	5.07	0.0005	0.005
28-Nov-13	Portage Pit North	5067315-1	1.3	0.0005	0.019
29-Nov-13	Portage Pit South	5067PS409-2	7.65	0.00275	1.297
30-Nov-13	Goose Pit	5053525-1	2.71	0.0438	2.646
01-Dec-13	Portage Pit South	5116606-1	1.6	0.00875	1.856
04-Dec-13	Goose Pit	5053507-1	7.21	0.0275	2.564
05-Dec-13	Portage Pit South	5074414-1	12.2	0.00075	3.841
06-Dec-13	Portage Pit South	5116606-2	1.2	0.0005	0.336
08-Dec-13	Vault Pit	5137827-1	25.9	0.0015	0.716
09-Dec-13	Goose Pit	5074412-1	2.88	0.0005	0.18
11-Dec-13	Goose Pit	5053509-1	8.42	0.025	2.793
11-Dec-13	Goose Pit	5123POP615-1	1.56	0.0005	0.036
11-Dec-13	Portage Pit South	5109PS611-5	2.02	0.0005	0.178
13-Dec-13	Portage Pit South	5074408-1	2.79	0.001	0.246
14-Dec-13	Vault Pit	5137829-1	17.2	0.132	1.688
16-Dec-13	Portage Pit South	5109PS615-5	1.76	0.0005	0.009
17-Dec-13	Goose Pit	5046522-1	7.73	0.0788	7.389
18-Dec-13	Portage Pit South	5074400-1	3.2	0.0005	0.245
19-Dec-13	Vault Pit	5137833-2	10.3	0.00075	0.943
20-Dec-13	Goose Pit	5046500-1	7.45	0.0155	1.534
20-Dec-13	Portage Pit South	5116612-1	8.51	0.0035	1.126
21-Dec-13	Portage Pit South	5074410-1	1.31	0.00075	0.421
23-Dec-13	Goose Pit	5046532-1	5.14	0.025	1.323
25-Dec-13	Portage Pit South	5116610-1	1.53	0.0005	1.97
27-Dec-13	Portage Pit North	5053PS302-1	2.62	0.00125	1.746
28-Dec-13	Portage Pit North	5053PS300-1	3.07	0.0268	4.048
28-Dec-13	Portage Pit North	5053PS302-2	1.26	0.00125	1.708
30-Dec-13	Portage Pit North	5046PS310-1	5.02	0.029	4.978

Date/Time Vert at 19:13:38 November 25, 2013
Trigger Source Geo: 1.00 mm/s
Range Geo : 254 mm/s
Record Time 6.0 sec at 4096 sps
Job Number: 1

Serial Number BE18425 V 10.30-1.1 Minimate Blaster
Battery Level 6.0 Volts
Unit Calibration April 12, 2012 by Instantel
File Name T425F2ZS.2Q0

Post Event Notes
 5137821

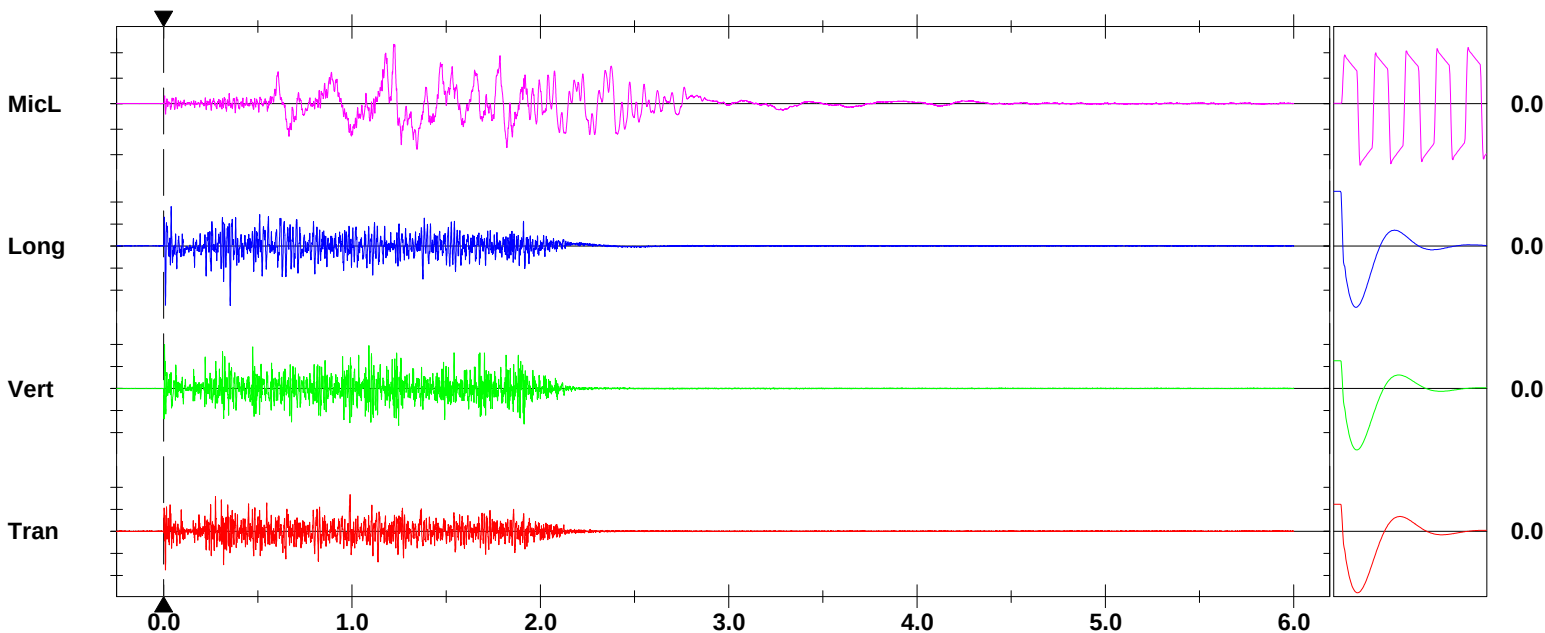
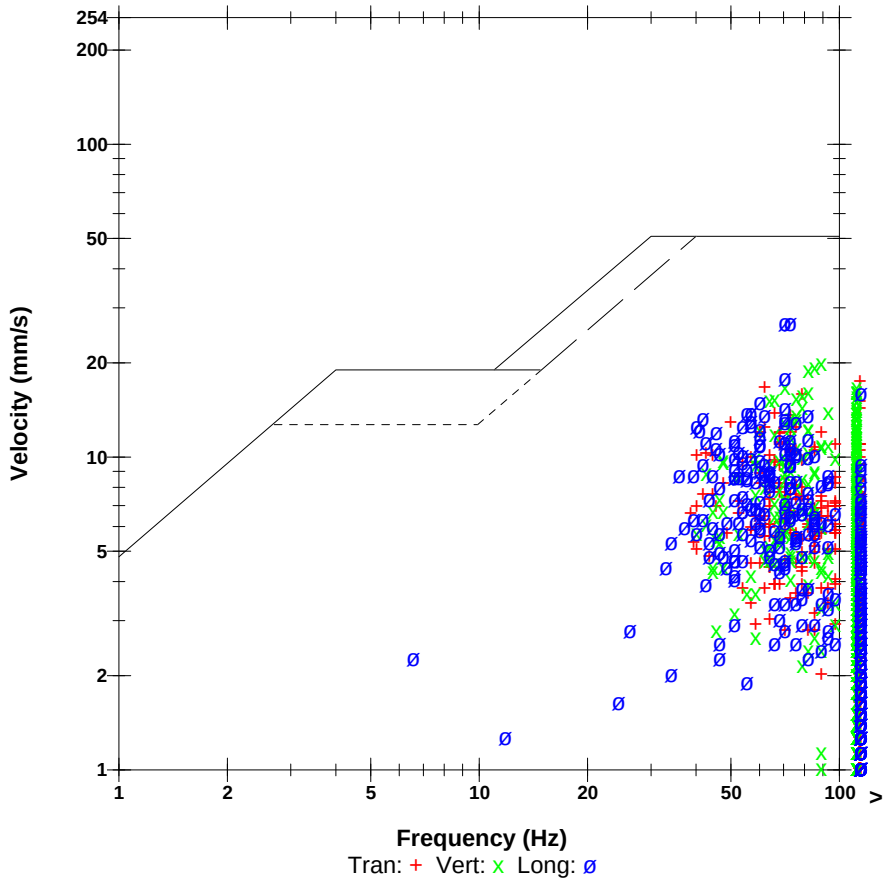
Extended Notes

Microphone Linear Weighting
PSPL 46.8 pa.(L) at 1.222 sec
ZC Freq 4.3 Hz
Channel Test Passed (Freq = 20.5 Hz Amp = 621 mv)

	Tran	Vert	Long	
PPV	17.5	19.9	26.9	mm/s
ZC Freq	108	89	71	Hz
Time (Rel. to Trig)	0.010	0.005	0.353	sec
Peak Acceleration	1.43	2.12	1.33	g
Peak Displacement	0.0394	0.0301	0.0557	mm
Sensor Check	Passed	Passed	Check	
Frequency	7.4	7.5	8.2	Hz
Overswing Ratio	4.2	4.6	3.9	

Peak Vector Sum 32.7 mm/s at 0.010 sec

USBM RI8507 And OSMRE



Date/Time Vert at 00:39:01 December 14, 2013
Trigger Source Geo: 1.00 mm/s
Range Geo : 254 mm/s
Record Time 6.0 sec at 4096 sps
Job Number: 1

Notes
 Location: Unit 4
 Client:
 User Name:
 General:

Serial Number BE18424 V 10.10-1.1 Minimate Blaster
Battery Level 6.0 Volts
Unit Calibration April 12, 2012 by Instantel
File Name T424F3XJ.510

Post Event Notes
 5137829+5137833 SEQ1

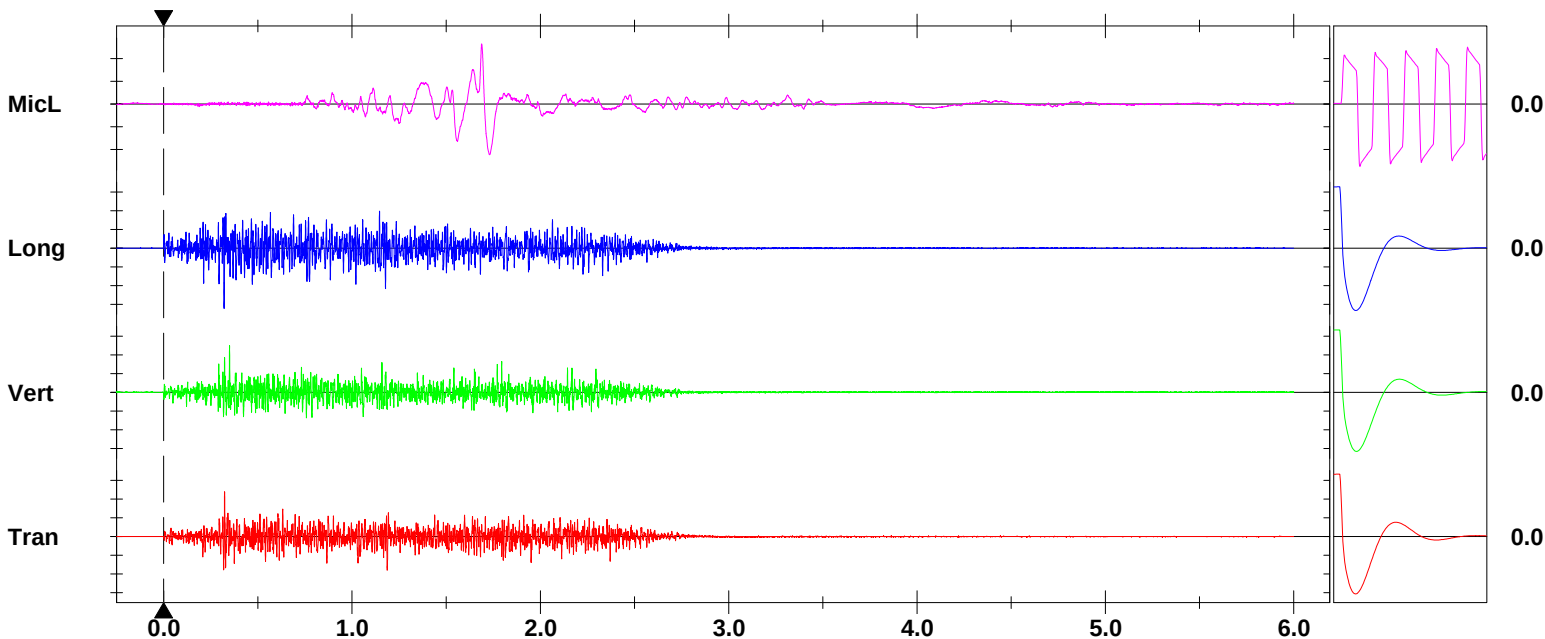
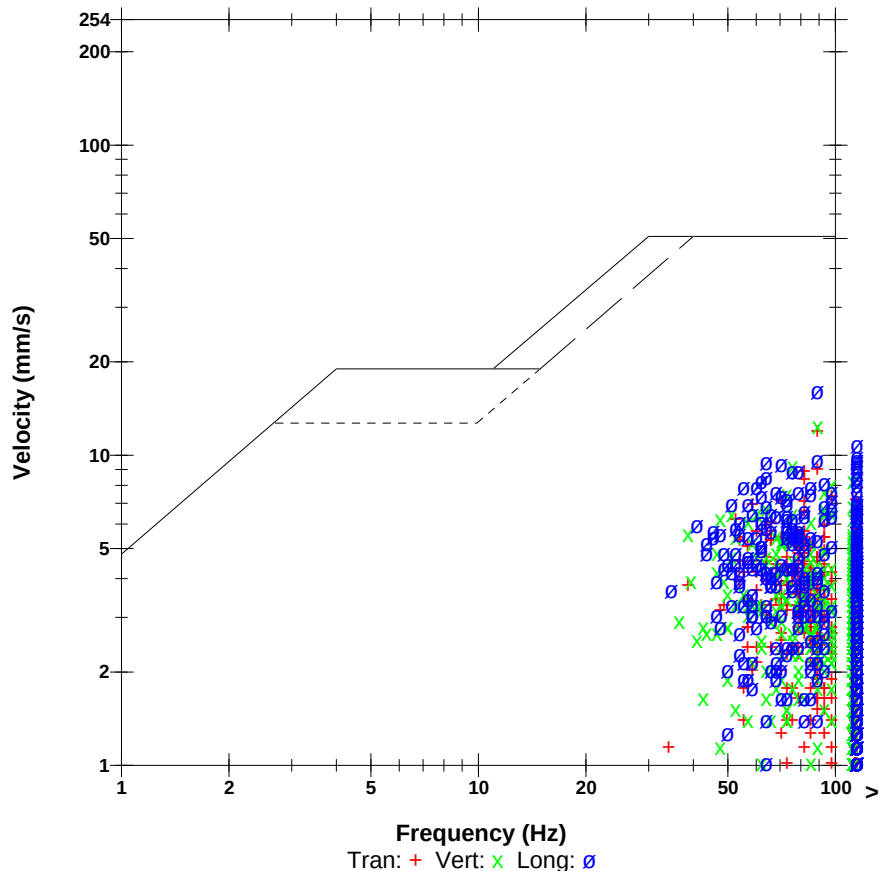
Extended Notes

Microphone Linear Weighting
PSPL 132 pa.(L) at 1.688 sec
ZC Freq 5.0 Hz
Channel Test Passed (Freq = 20.9 Hz Amp = 620 mv)

	Tran	Vert	Long	
PPV	11.9	12.4	16.1	mm/s
ZC Freq	89	89	89	Hz
Time (Rel. to Trig)	0.323	0.350	0.321	sec
Peak Acceleration	1.01	1.01	1.01	g
Peak Displacement	0.0167	0.0156	0.0272	mm
Sensor Check	Passed	Passed	Passed	
Frequency	8.1	7.5	7.5	Hz
Overswing Ratio	4.1	4.5	5.2	

Peak Vector Sum 17.2 mm/s at 0.321 sec

USBM RI8507 And OSMRE



Sensor Check

Date/Time Vert at 12:31:43 December 8, 2013
Trigger Source Geo: 1.00 mm/s
Range Geo : 254 mm/s
Record Time 6.0 sec at 4096 sps
Job Number: 1

Notes

Location: Unit 6
 Client: MEADOWBANK UNIT 6
 User Name:
 General:

Serial Number BE18427 V 10.30-1.1 Minimate Blaster
Battery Level 6.1 Volts
Unit Calibration April 17, 2012 by Instantel
File Name T427F3NC.4V0

Post Event Notes

5137827

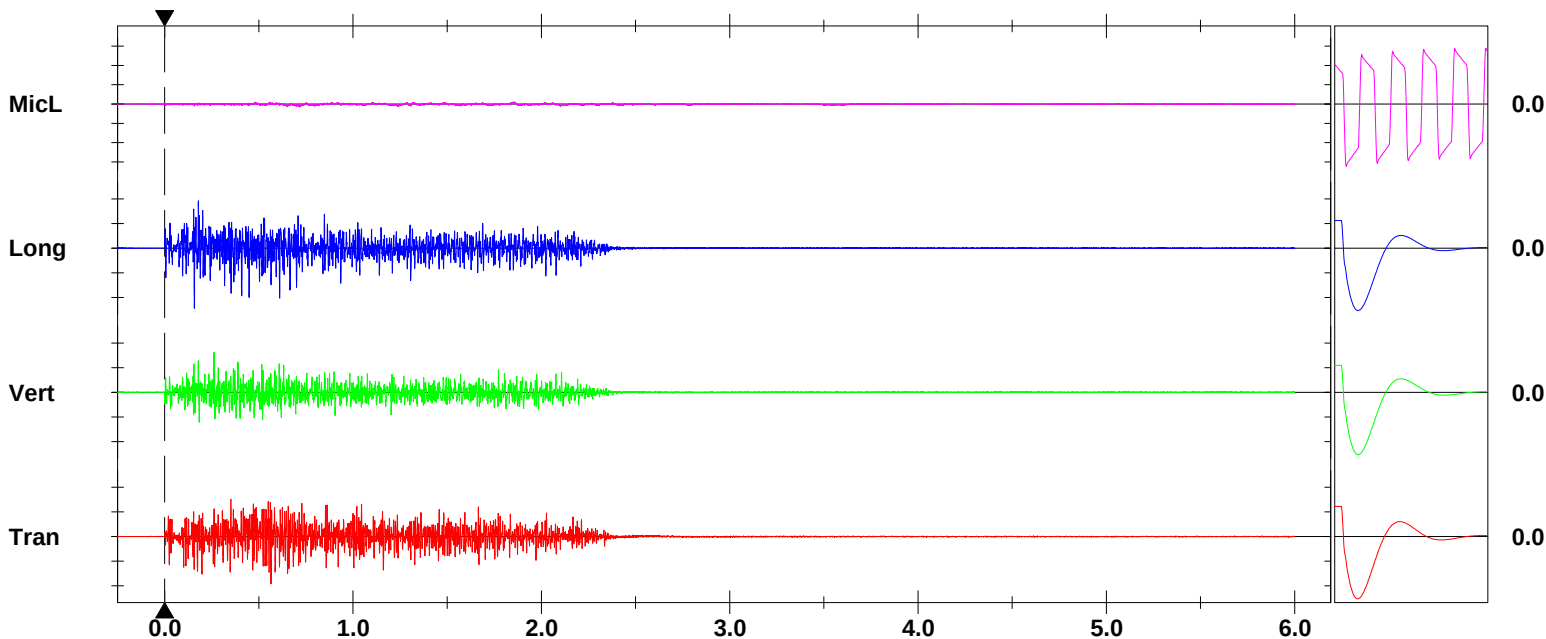
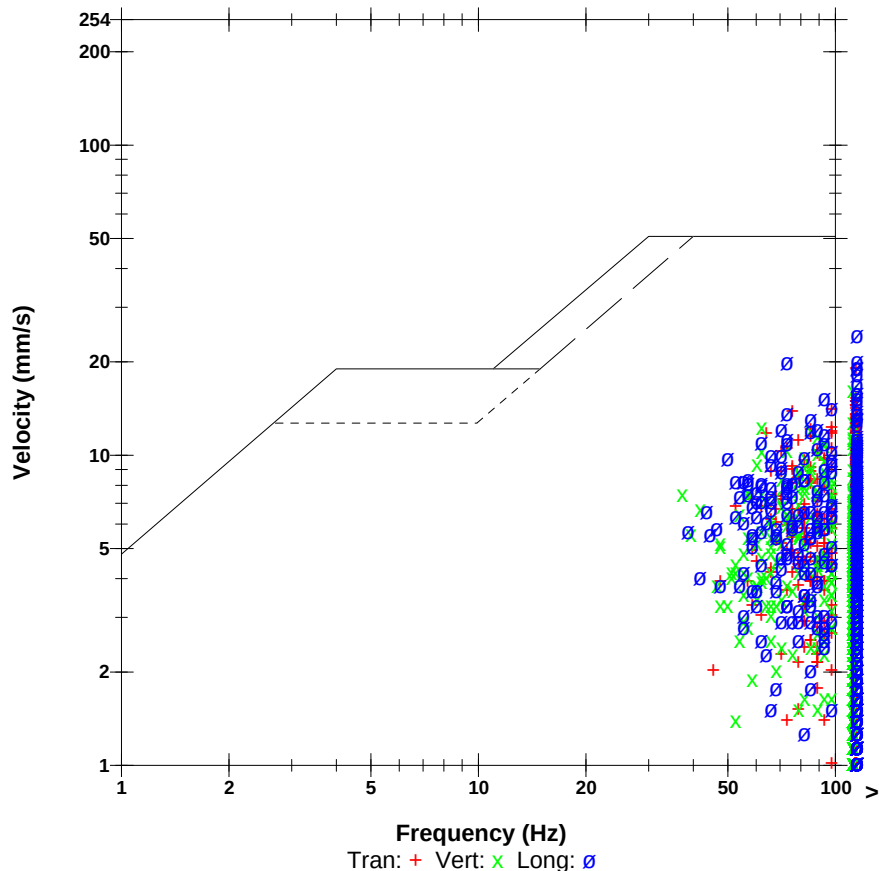
Extended Notes

Microphone Linear Weighting
PSPL 1.50 pa.(L) at 0.716 sec
ZC Freq 19.5 Hz
Channel Test Passed (Freq = 20.1 Hz Amp = 923 mv)

	Tran	Vert	Long	
PPV	19.2	16.3	24.4	mm/s
ZC Freq	137	102	128	Hz
Time (Rel. to Trig)	0.564	0.262	0.157	sec
Peak Acceleration	1.48	1.54	1.80	g
Peak Displacement	0.0257	0.0224	0.0317	mm
Sensor Check	Passed	Passed	Passed	
Frequency	7.6	7.4	7.3	Hz
Overswing Ratio	4.2	4.7	4.9	

Peak Vector Sum 25.9 mm/s at 0.157 sec

USBM RI8507 And OSMRE



Sensor Check

Date/Time Vert at 12:23:02 January 5, 2013
Trigger Source Geo: 1.00 mm/s
Range Geo : 254 mm/s
Record Time 7.0 sec at 4096 sps
Job Number: 1

Serial Number BE15259 V 10.30-1.1 Minimate Blaster
Battery Level 6.3 Volts
Unit Calibration December 20, 2011 by InstanTEL
File Name Q259EMB9.2E0

Notes
 Location: PORTAGE PIT
 Client: Agnico-Eagle Mines Limited
 User Name: Meadowbank Division
 General: Engineering Departement

Post Event Notes
 5130750

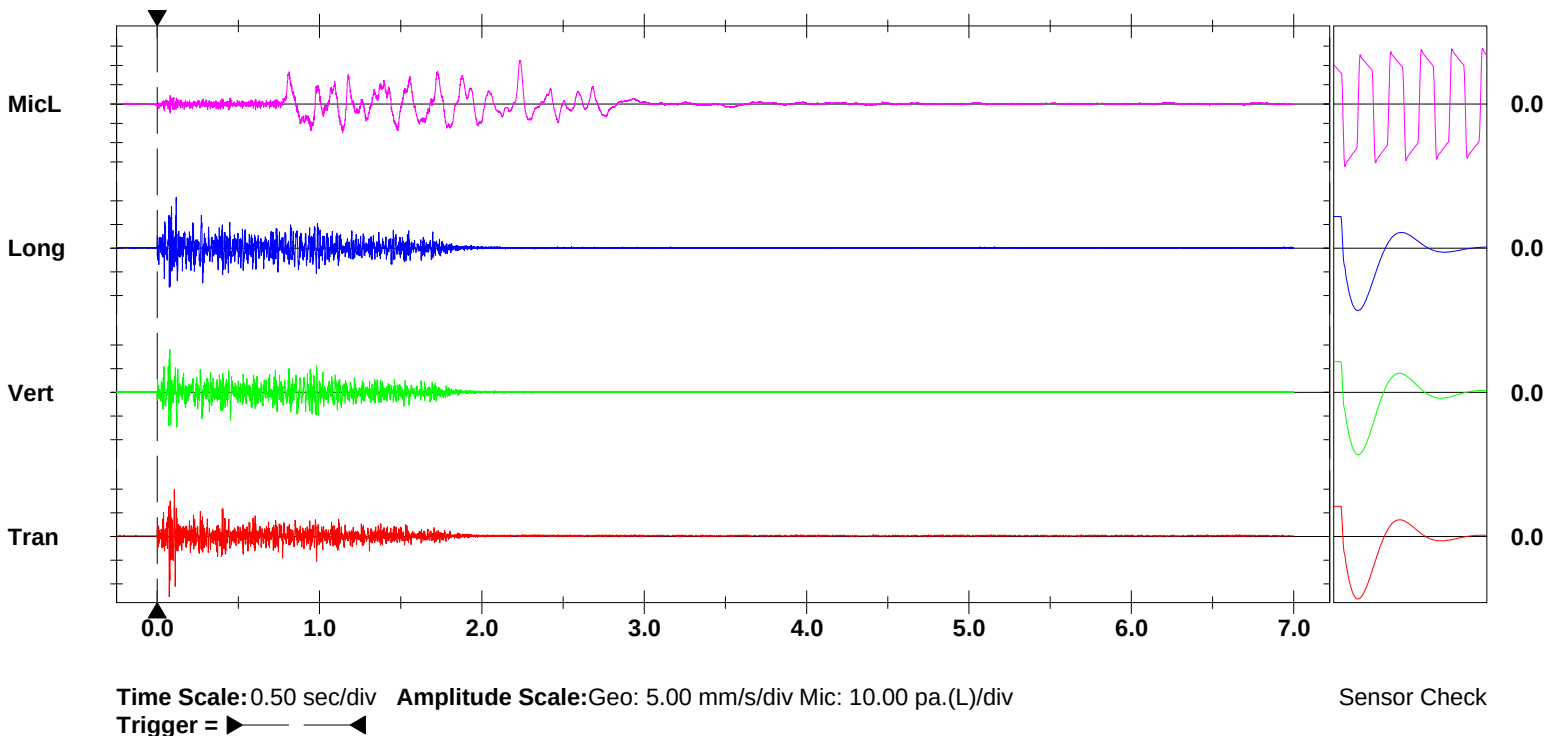
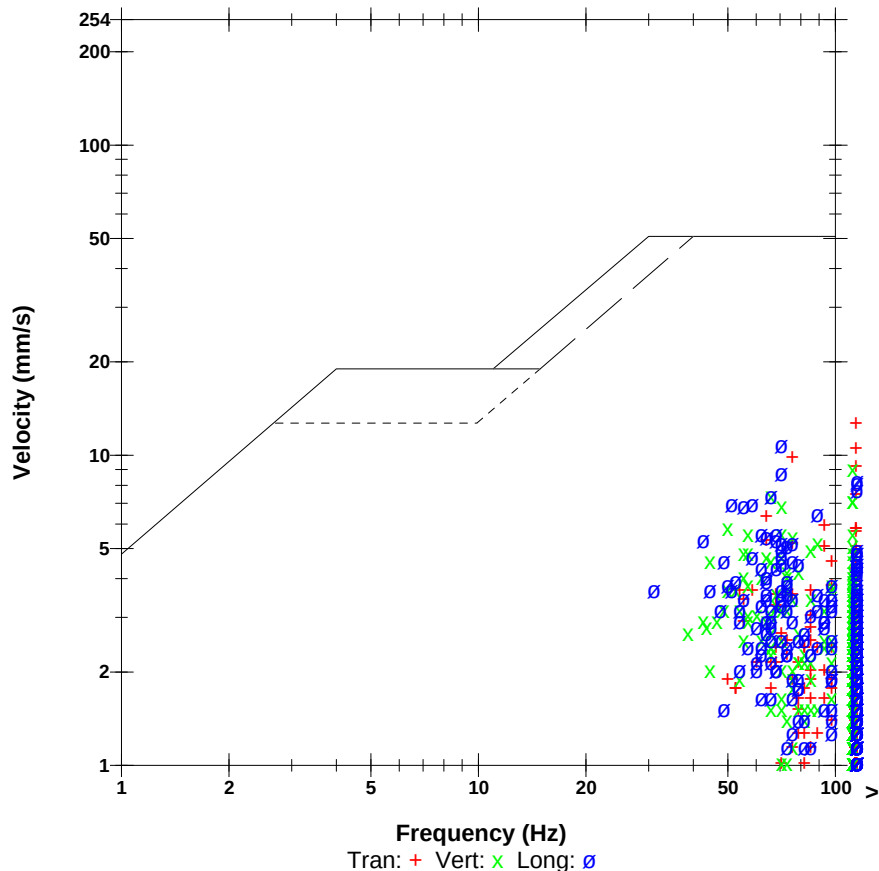
Extended Notes

Microphone Linear Weighting
PSPL 22.8 pa.(L) at 2.234 sec
ZC Freq 7.6 Hz
Channel Test Passed (Freq = 20.5 Hz Amp = 612 mv)

	Tran	Vert	Long	
PPV	12.7	9.02	10.8	mm/s
ZC Freq	186	158	71	Hz
Time (Rel. to Trig)	0.074	0.078	0.117	sec
Peak Acceleration	1.43	1.01	1.22	g
Peak Displacement	0.0165	0.0153	0.0196	mm
Sensor Check	Passed	Passed	Passed	
Frequency	7.5	7.6	7.3	Hz
Overswing Ratio	3.8	3.3	4.0	

Peak Vector Sum 16.3 mm/s at 0.074 sec

USBM RI8507 And OSMRE



Date/Time Vert at 13:28:18 November 24, 2013
Trigger Source Geo: 1.00 mm/s
Range Geo : 254 mm/s
Record Time 6.0 sec at 4096 sps
Job Number: 1

Notes

Location: Unit 5
Client: MEADOWBANK
User Name:
General:

Serial Number BE18425 V 10.30-1.1 Minimate Blaster
Battery Level 6.2 Volts
Unit Calibration April 12, 2012 by Instantel
File Name T425F2XH.F60

Post Event Notes

5053533 + 5074418 + 5067PS407 SEQ1+5067PS409 SEQ1

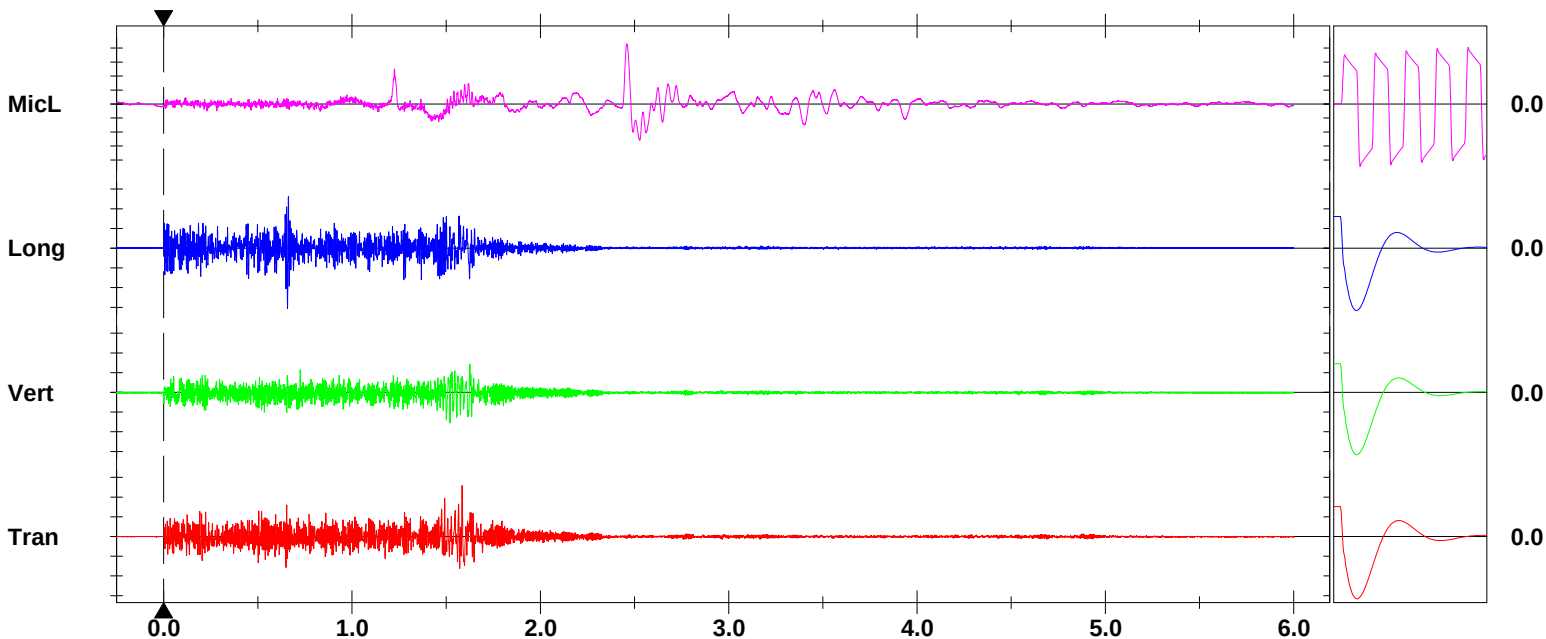
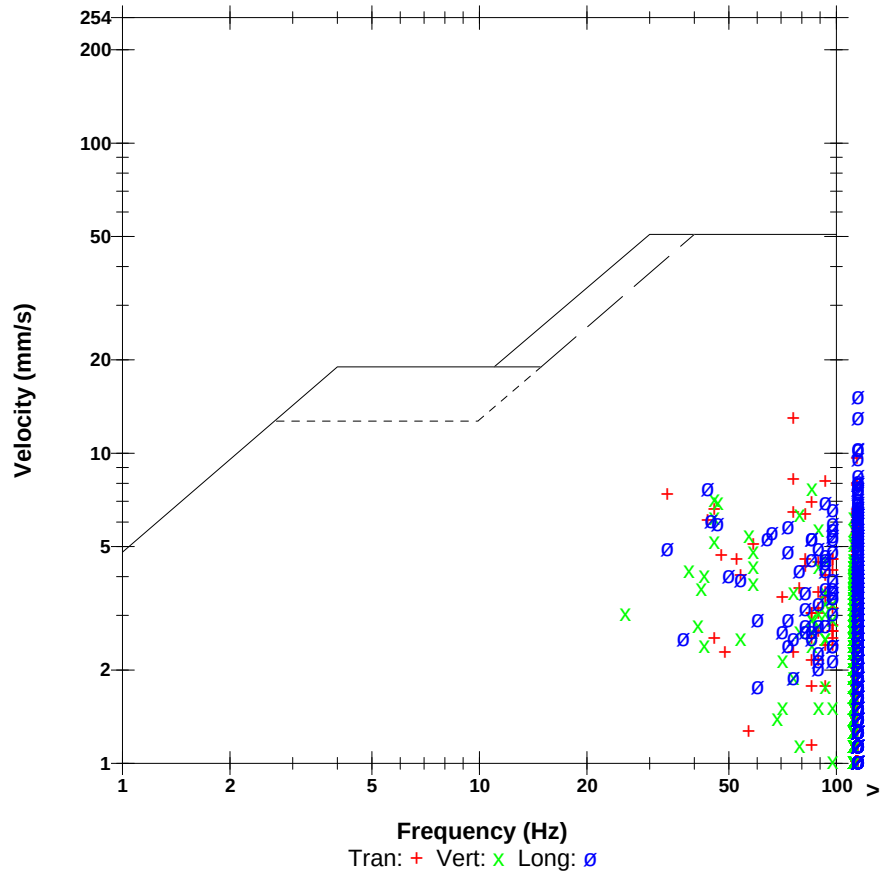
Extended Notes

Microphone Linear Weighting
PSPL 43.0 pa.(L) at 2.459 sec
ZC Freq 12.3 Hz
Channel Test Passed (Freq = 20.5 Hz Amp = 587 mv)

	Tran	Vert	Long	
PPV	13.0	7.75	15.2	mm/s
ZC Freq	76	85	108	Hz
Time (Rel. to Trig)	1.584	1.520	0.657	sec
Peak Acceleration	0.795	0.583	1.11	g
Peak Displacement	0.0316	0.0240	0.0230	mm
Sensor Check	Passed	Passed	Passed	
Frequency	7.6	7.6	7.8	Hz
Overswing Ratio	3.9	4.4	4.0	

Peak Vector Sum 15.8 mm/s at 0.657 sec

USBM RI8507 And OSMRE



Sensor Check

Date/Time Vert at 12:42:56 July 29, 2013
Trigger Source Geo: 1.00 mm/s
Range Geo : 254 mm/s
Record Time 6.0 sec at 4096 sps
Job Number: 1

Notes

Location: Unit 5
Client: MEADOWBANK
User Name:
General:

Serial Number BE18425 V 10.30-1.1 Minimate Blaster
Battery Level 6.2 Volts
Unit Calibration April 12, 2012 by Instantel
File Name T425EWUW.NK0

Post Event Notes

5081513 + 5081543 + 5074PS527-2 + 5067PS521

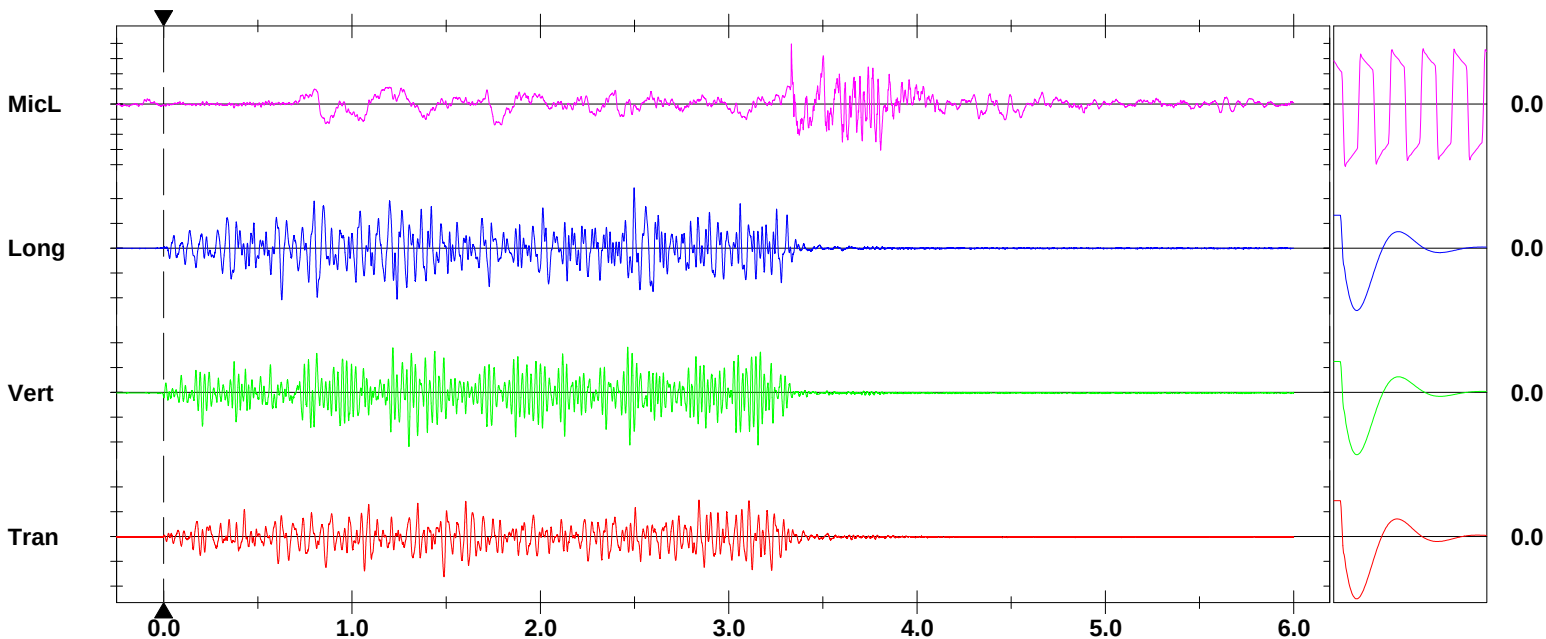
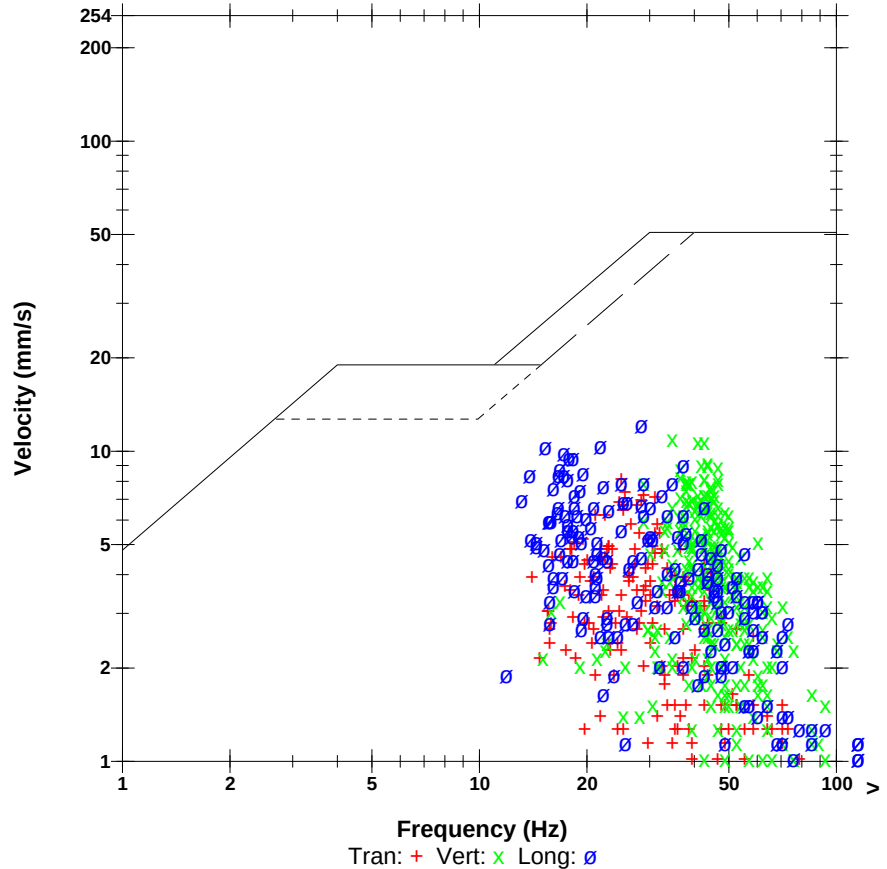
Extended Notes

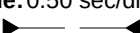
Microphone Linear Weighting
PSPL 79.5 pa.(L) at 3.333 sec
ZC Freq 7.7 Hz
Channel Test Passed (Freq = 20.1 Hz Amp = 574 mv)

	Tran	Vert	Long	
PPV	8.13	10.9	12.2	mm/s
ZC Freq	25.0	34.7	28.4	Hz
Time (Rel. to Trig)	1.488	1.302	2.498	sec
Peak Acceleration	0.212	0.318	0.318	g
Peak Displacement	0.0516	0.0493	0.0917	mm
Sensor Check	Passed	Passed	Passed	
Frequency	7.9	7.6	7.7	Hz
Overswing Ratio	3.6	4.0	3.8	

Peak Vector Sum 14.6 mm/s at 2.498 sec

USBM RI8507 And OSMRE



Time Scale: 0.50 sec/div **Amplitude Scale:** Geo: 5.00 mm/s/div Mic: 20.0 pa.(L)/div
Trigger = 

Sensor Check

Date/Time Vert at 18:28:52 August 27, 2013
Trigger Source Geo: 1.00 mm/s
Range Geo : 254 mm/s
Record Time 6.0 sec at 4096 sps
Job Number: 1

Notes
 Location: Unit 7
 Client:
 User Name:
 General:

Serial Number BE18421 V 10.30-1.1 Minimate Blaster
Battery Level 6.2 Volts
Unit Calibration April 12, 2012 by Instantel
File Name T421EYD2.040

Post Event Notes
 5074508

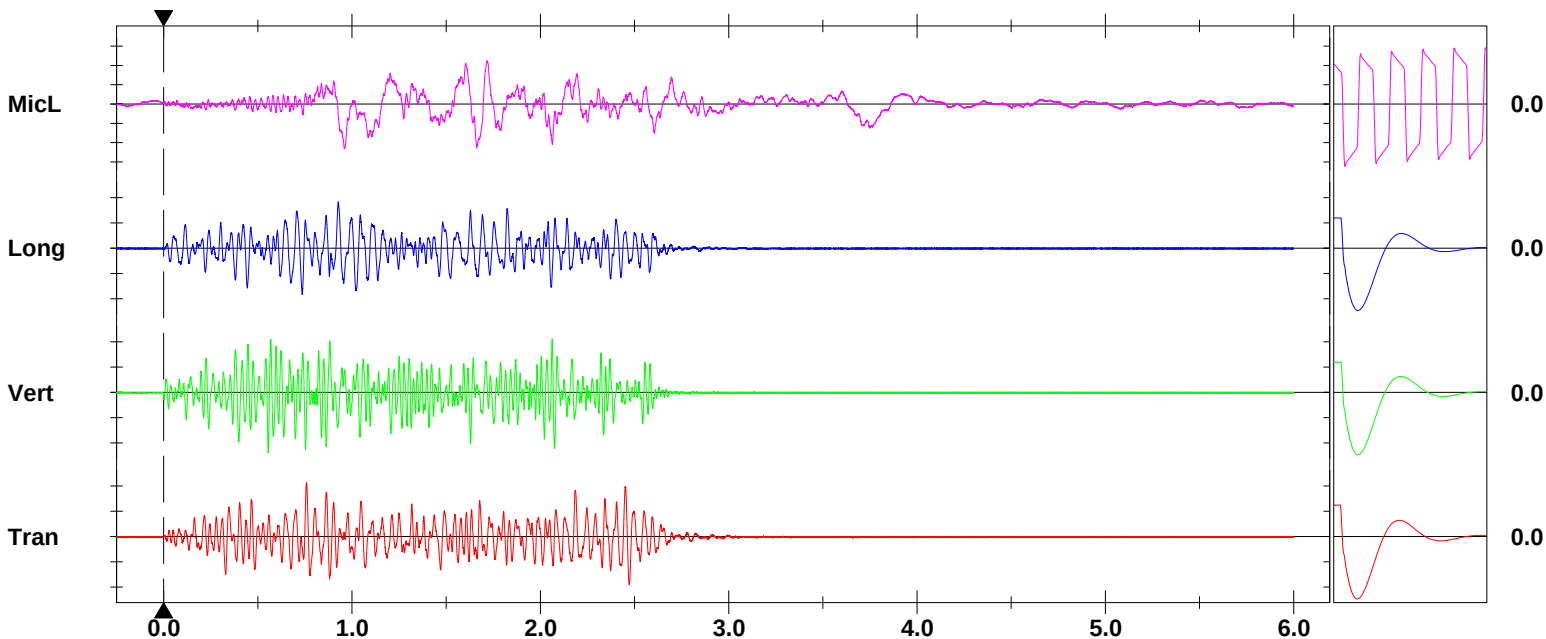
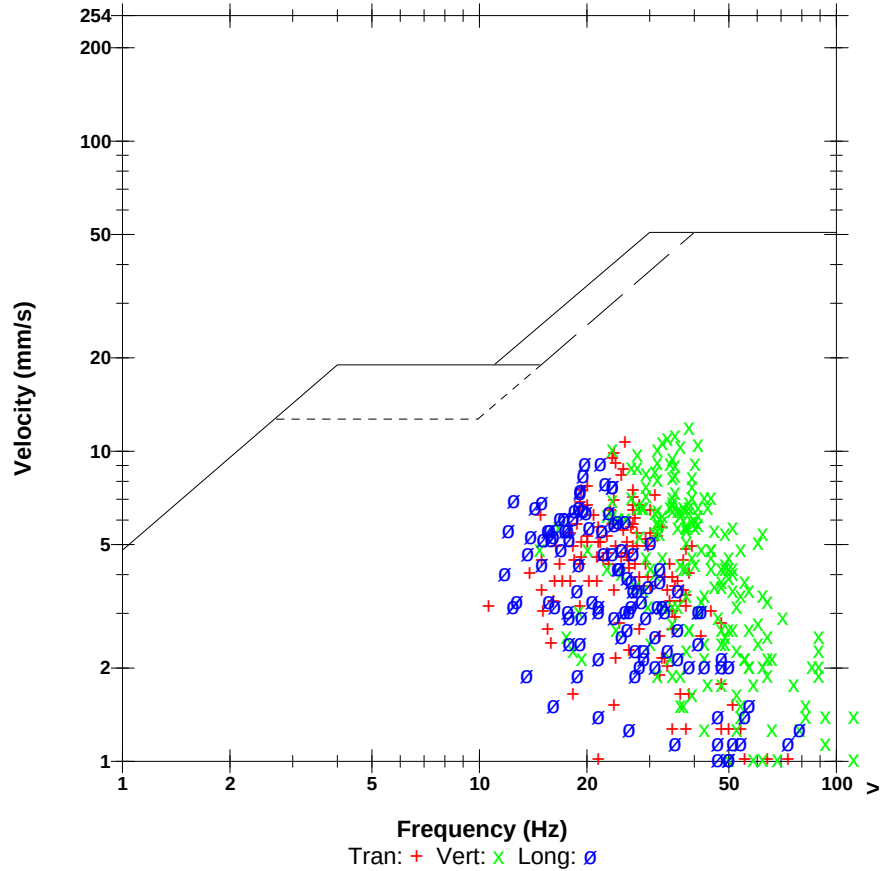
Extended Notes

Microphone Linear Weighting
PSPL 23.3 pa.(L) at 0.959 sec
ZC Freq 6.5 Hz
Channel Test Passed (Freq = 19.7 Hz Amp = 616 mv)

	Tran	Vert	Long	
PPV	10.7	11.9	9.14	mm/s
ZC Freq	25.6	38.6	21.8	Hz
Time (Rel. to Trig)	0.758	0.555	0.735	sec
Peak Acceleration	0.212	0.318	0.212	g
Peak Displacement	0.0639	0.0568	0.0697	mm
Sensor Check	Passed	Passed	Passed	
Frequency	7.5	7.4	7.3	Hz
Overswing Ratio	3.9	3.9	4.3	

Peak Vector Sum 15.2 mm/s at 0.863 sec

USBM RI8507 And OSMRE



Time Scale: 0.50 sec/div **Amplitude Scale:** Geo: 5.00 mm/s/div Mic: 10.00 pa.(L)/div
Trigger = 

Sensor Check

Date/Time Tran at 12:48:52 September 26, 2013
Trigger Source Geo: 1.00 mm/s
Range Geo : 254 mm/s
Record Time 6.0 sec at 4096 sps
Job Number: 1
Notes
 Location: Unit 4
 Client:
 User Name:
 General:

Serial Number BE18424 V 10.10-1.1 Minimate Blaster
Battery Level 6.3 Volts
Unit Calibration April 12, 2012 by Instantel
File Name T424EZW6.9G0

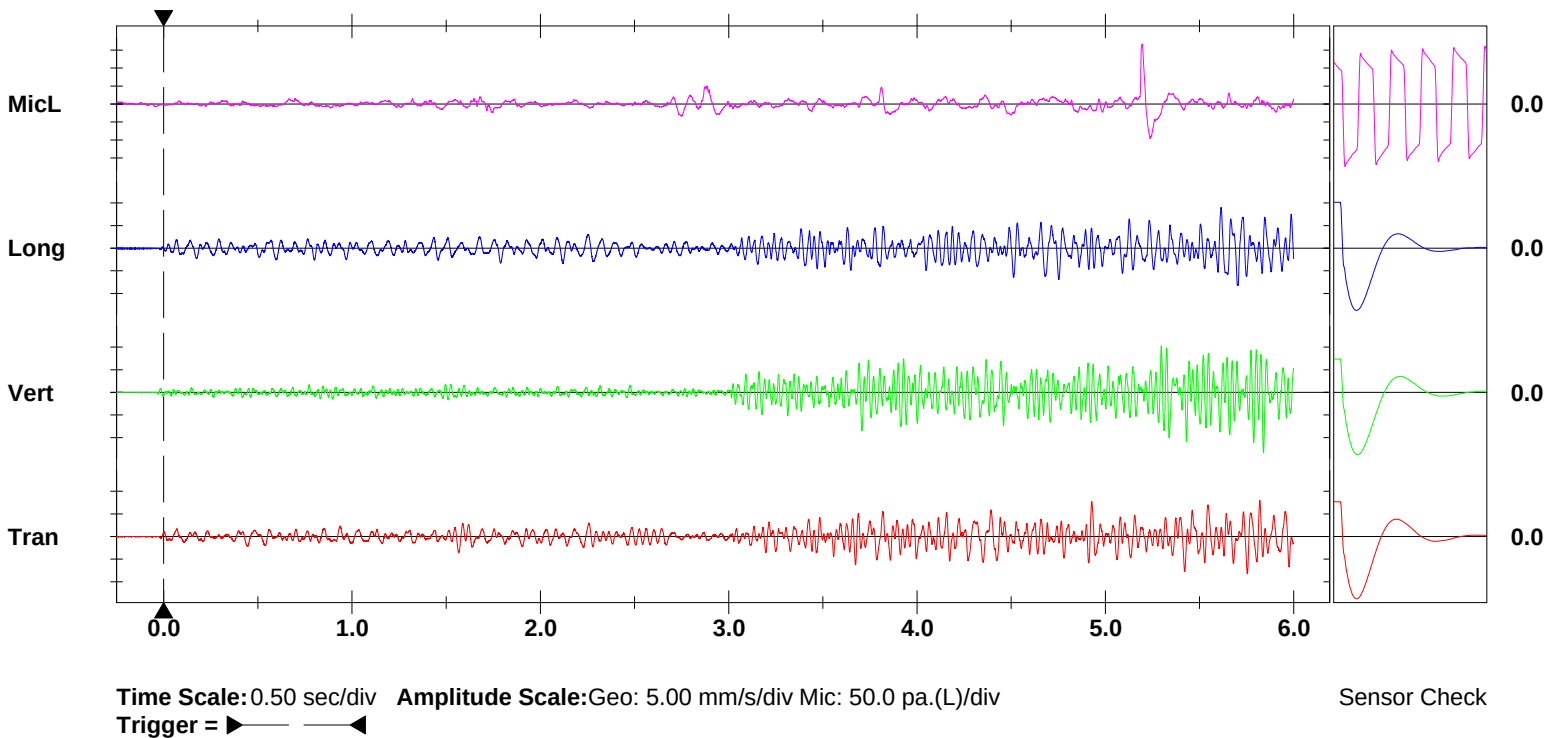
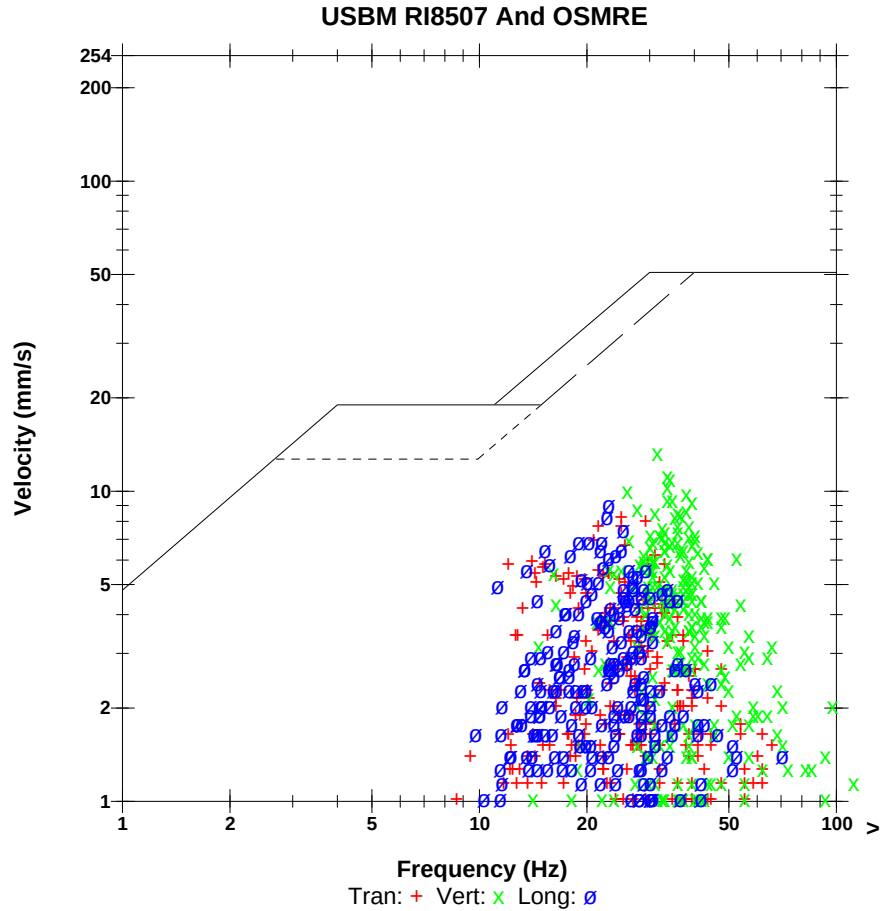
Post Event Notes
 Bay Goose Station D
 BLAST NOTICE: 5067511 & 5067515

Extended Notes

Microphone Linear Weighting
PSPL 167 pa.(L) at 5.196 sec
ZC Freq 6.8 Hz
Channel Test Passed (Freq = 20.1 Hz Amp = 712 mv)

	Tran	Vert	Long	
PPV	8.25	13.3	9.02	mm/s
ZC Freq	25.0	31.5	23.0	Hz
Time (Rel. to Trig)	5.753	5.839	5.615	sec
Peak Acceleration	0.212	0.318	0.212	g
Peak Displacement	0.0519	0.0650	0.0702	mm
Sensor Check	Passed	Passed	Passed	
Frequency	7.9	7.4	7.7	Hz
Overswing Ratio	3.6	3.9	4.3	

Peak Vector Sum 13.8 mm/s at 5.839 sec



Date/Time Vert at 00:38:24 July 26, 2013
Trigger Source Geo: 1.00 mm/s
Range Geo : 254 mm/s
Record Time 6.0 sec at 4096 sps
Job Number: 1

Notes
 Location: Unit 7
 Client:
 User Name:
 General:

Serial Number BE18421 V 10.30-1.1 Minimate Blaster
Battery Level 6.3 Volts
Unit Calibration April 12, 2012 by Instantel
File Name T421EWO.F400

Post Event Notes
 5081509

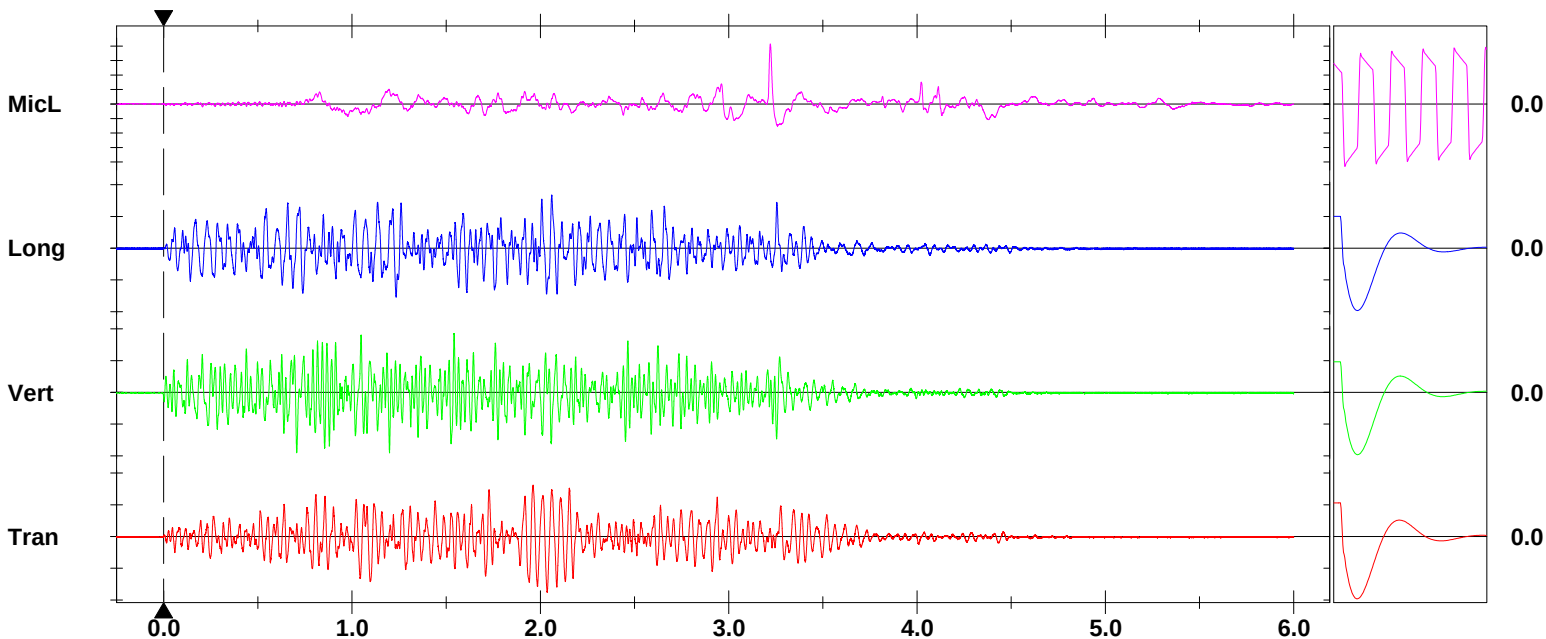
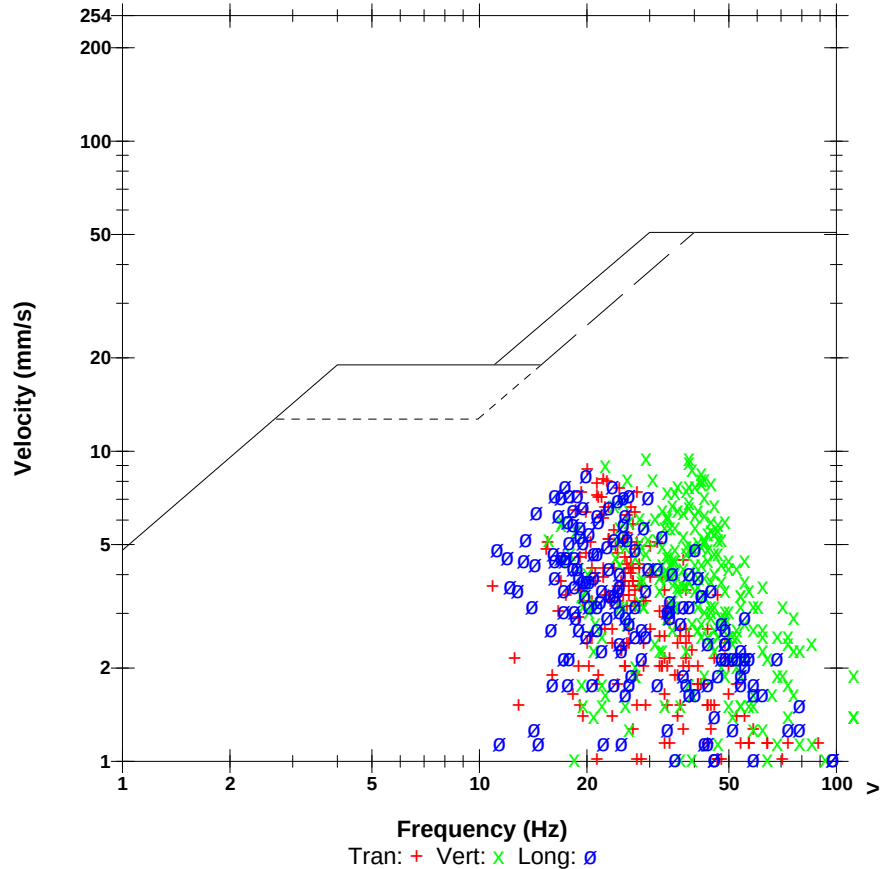
Extended Notes

Microphone Linear Weighting
PSPL 83.0 pa.(L) at 3.221 sec
ZC Freq 14.9 Hz
Channel Test Passed (Freq = 19.7 Hz Amp = 613 mv)

	Tran	Vert	Long	
PPV	8.76	9.52	8.38	mm/s
ZC Freq	20.1	29.3	19.9	Hz
Time (Rel. to Trig)	2.036	0.706	2.061	sec
Peak Acceleration	0.212	0.318	0.212	g
Peak Displacement	0.0646	0.0509	0.0671	mm
Sensor Check	Passed	Passed	Passed	
Frequency	7.6	7.4	7.3	Hz
Overswing Ratio	3.8	3.8	4.1	

Peak Vector Sum 13.4 mm/s at 2.059 sec

USBM RI8507 And OSMRE



Date/Time Long at 12:37:50 February 25, 2013
Trigger Source Geo: 1.00 mm/s
Range Geo : 254 mm/s
Record Time 6.0 sec at 4096 sps
Job Number: 1
Notes
 Location:
 Client:
 User Name:
 General:

Serial Number BE18427 V 10.30-1.1 Minimate Blaster
Battery Level 6.1 Volts
Unit Calibration April 17, 2012 by Instantel
File Name T427EOXP.R20

Post Event Notes

Bay Goose Station D
 Blast Today February 25, 2013@ 12:45 PM (5102540, 5088PS536-1, and 5053PS032-2).

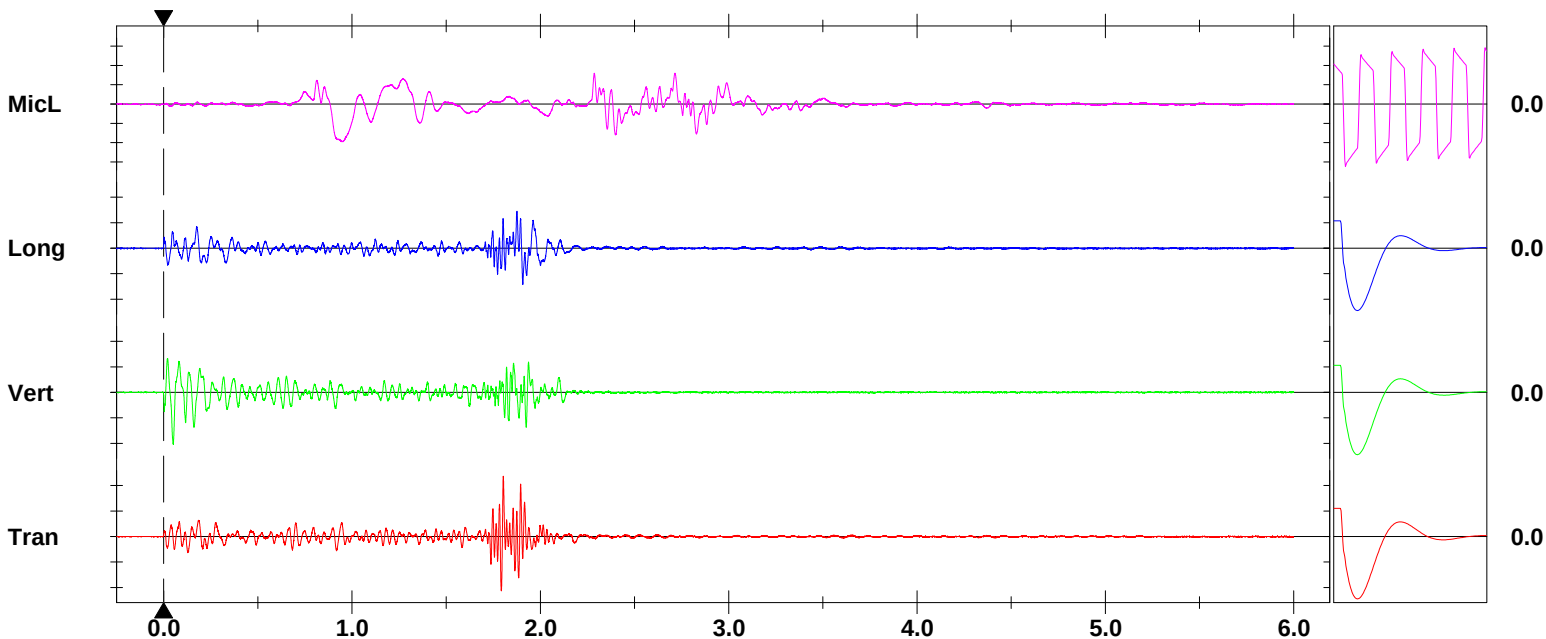
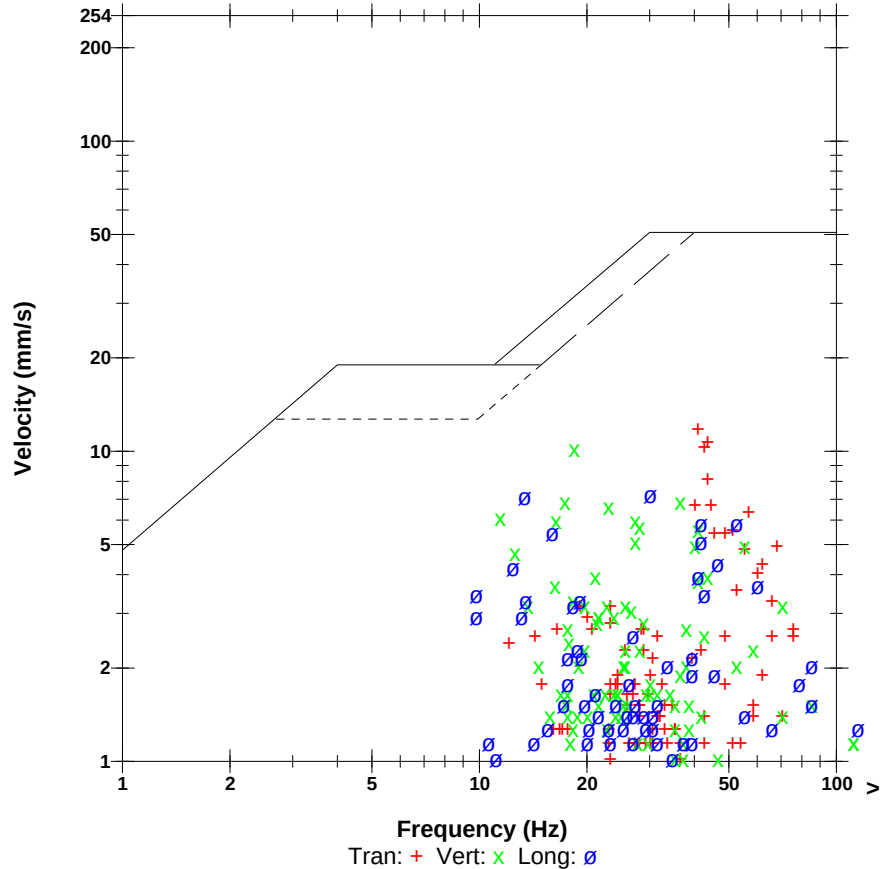
Extended Notes

Microphone Linear Weighting
PSPL 19.5 pa.(L) at 0.944 sec
ZC Freq 3.7 Hz
Channel Test Passed (Freq = 20.1 Hz Amp = 808 mv)

	Tran	Vert	Long	
PPV	11.8	10.2	7.24	mm/s
ZC Freq	41	18.5	30.1	Hz
Time (Rel. to Trig)	1.803	0.050	1.875	sec
Peak Acceleration	0.371	0.212	0.212	g
Peak Displacement	0.0426	0.0729	0.0648	mm
Sensor Check	Passed	Passed	Passed	
Frequency	7.3	7.3	7.2	Hz
Overswing Ratio	4.3	4.6	5.0	

Peak Vector Sum 13.1 mm/s at 1.803 sec

USBM RI8507 And OSMRE



Time Scale: 0.50 sec/div **Amplitude Scale:** Geo: 5.00 mm/s/div Mic: 10.00 pa.(L)/div
Trigger = 

Sensor Check

Date/Time Vert at 00:28:11 July 18, 2013
Trigger Source Geo: 1.00 mm/s
Range Geo : 254 mm/s
Record Time 6.0 sec at 4096 sps
Job Number: 1
Notes
 Location:
 Client:
 User Name:
 General:

Serial Number BE18424 V 10.10-1.1 Minimate Blaster
Battery Level 6.3 Volts
Unit Calibration April 12, 2012 by Instantel
File Name T424EW9L.AZ0

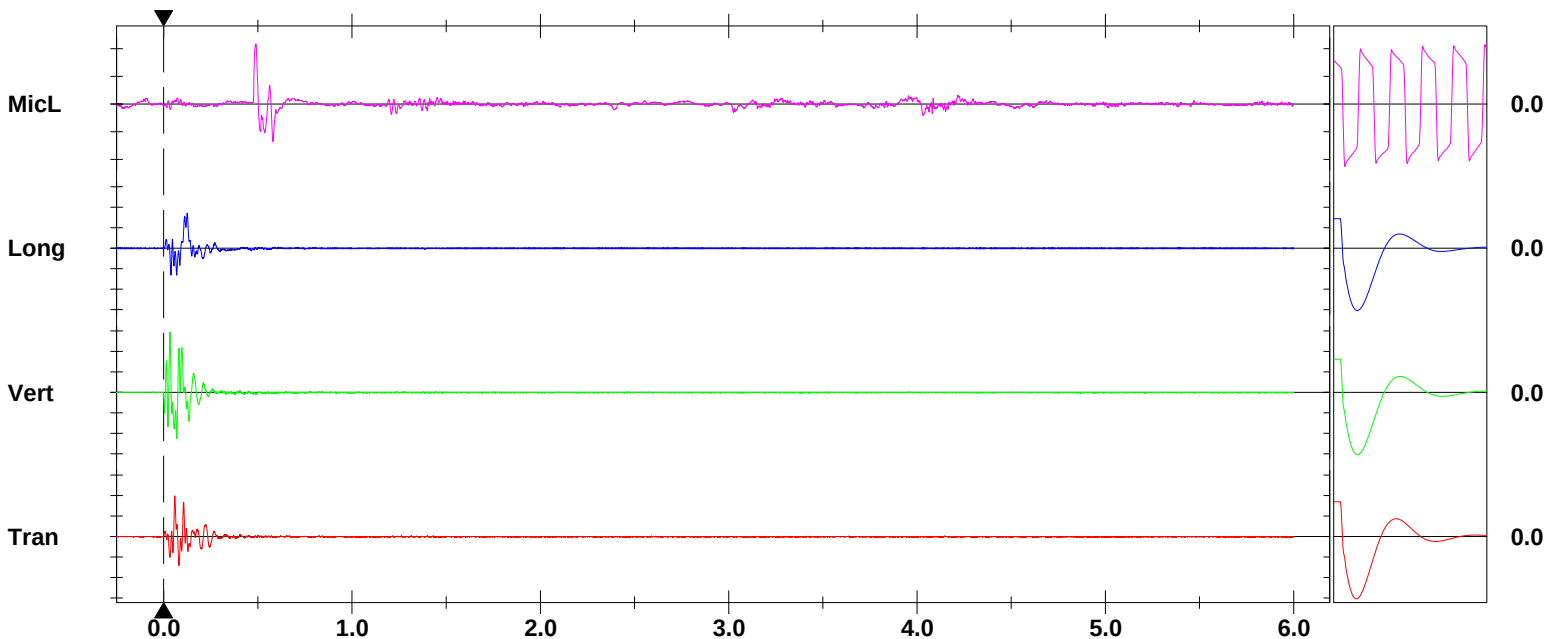
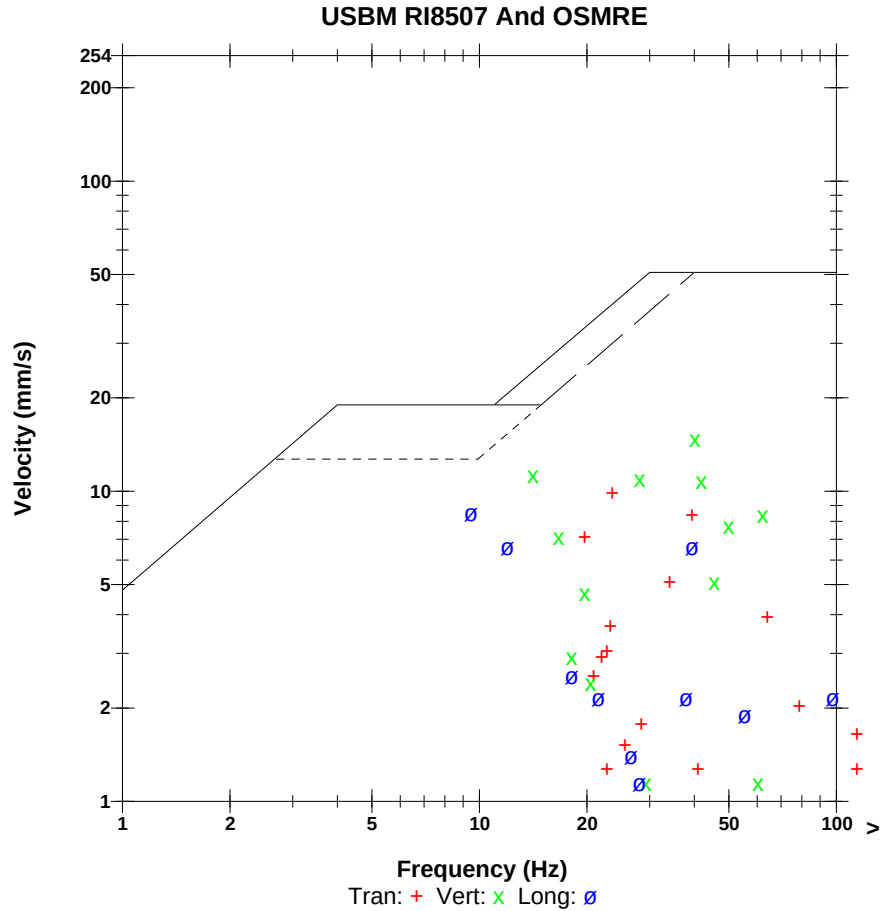
Post Event Notes
 5067PS513

Extended Notes

Microphone Linear Weighting
PSPL 109 pa.(L) at 0.490 sec
ZC Freq 2.6 Hz
Channel Test Passed (Freq = 20.1 Hz Amp = 695 mv)

	Tran	Vert	Long	
PPV	9.91	14.7	8.51	mm/s
ZC Freq	23.5	40	9.5	Hz
Time (Rel. to Trig)	0.059	0.033	0.125	sec
Peak Acceleration	0.212	0.371	0.212	g
Peak Displacement	0.0490	0.107	0.107	mm
Sensor Check	Passed	Passed	Passed	
Frequency	8.1	7.4	7.4	Hz
Overswing Ratio	3.5	3.9	4.4	

Peak Vector Sum 15.7 mm/s at 0.033 sec



Time Scale: 0.50 sec/div **Amplitude Scale:** Geo: 5.00 mm/s/div Mic: 50.0 pa.(L)/div
Trigger = 

Sensor Check

Date/Time Vert at 06:24:37 July 17, 2013
Trigger Source Geo: 1.00 mm/s
Range Geo : 254 mm/s
Record Time 6.0 sec at 4096 sps
Job Number: 1

Notes

Location:
 Client: MEADOWBANK UNIT 6
 User Name:
 General:

Serial Number BE18427 V 10.30-1.1 Minimate Blaster
Battery Level 6.1 Volts
Unit Calibration April 17, 2012 by Instantel
File Name T427EW87.510

Post Event Notes

Blast at Goose Pit #5081507 +5081537+ 5067PS509 SEQ4
 Blast monitoring at Goose Dike. Station D
 July 17, 2013 at 6h30 AM

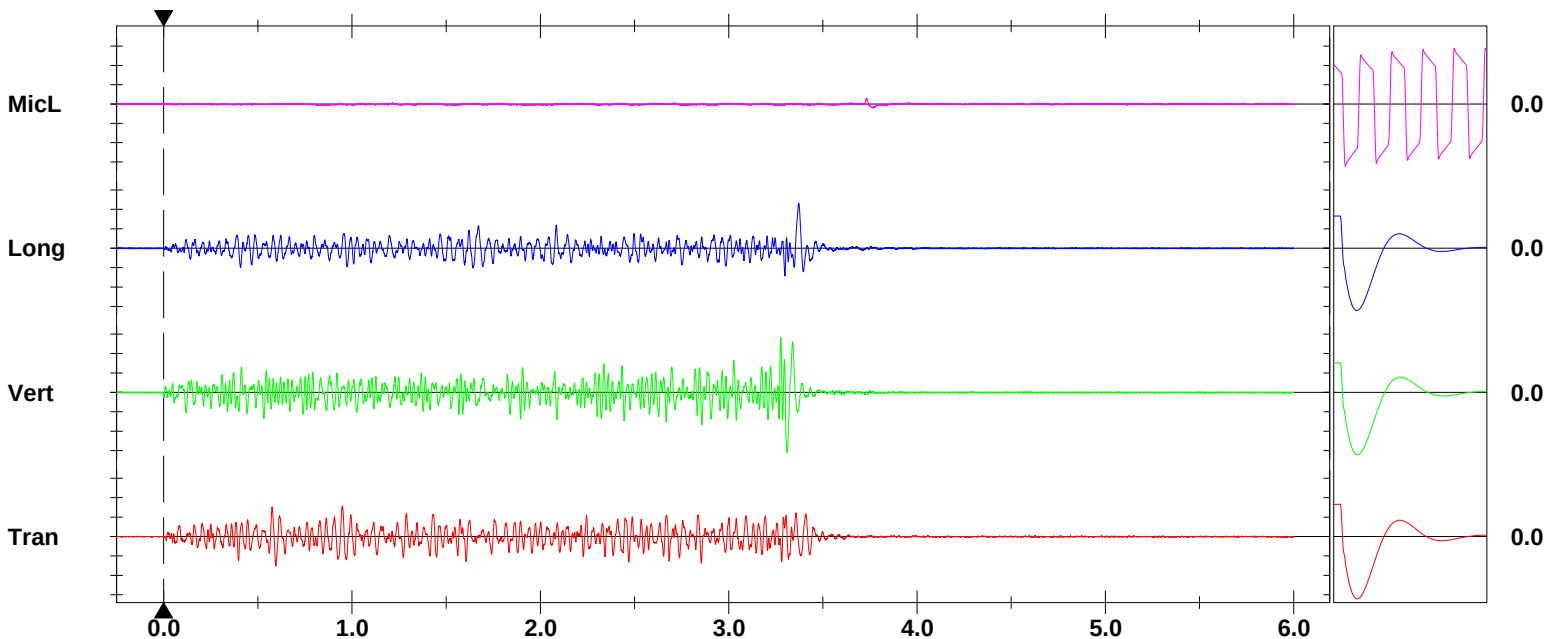
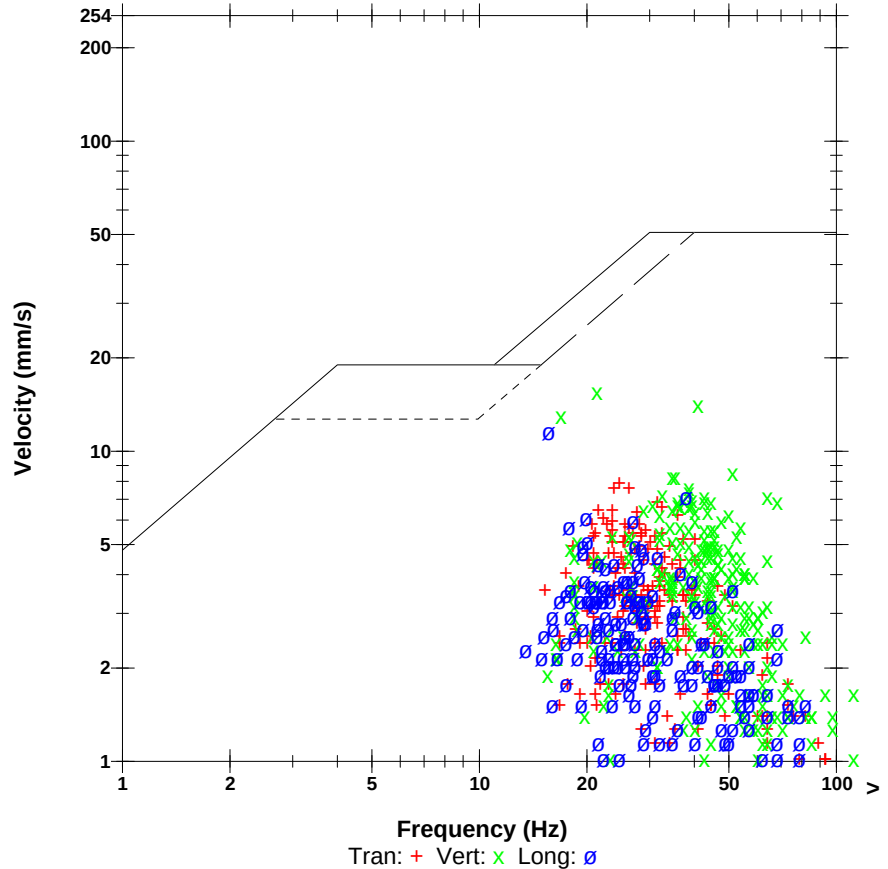
Extended Notes

Microphone Linear Weighting
PSPL 3.00 pa.(L) at 3.732 sec
ZC Freq 28.4 Hz
Channel Test Passed (Freq = 20.1 Hz Amp = 655 mv)

	Tran	Vert	Long	
PPV	7.87	15.5	11.6	mm/s
ZC Freq	24.7	21.3	15.6	Hz
Time (Rel. to Trig)	0.949	3.310	3.372	sec
Peak Acceleration	0.265	0.424	0.318	g
Peak Displacement	0.0507	0.116	0.111	mm
Sensor Check	Passed	Passed	Passed	
Frequency	7.5	7.4	7.5	Hz
Overswing Ratio	3.9	4.2	4.3	

Peak Vector Sum 15.6 mm/s at 3.312 sec

USBM RI8507 And OSMRE



Time Scale: 0.50 sec/div **Amplitude Scale:** Geo: 5.00 mm/s/div Mic: 10.00 pa.(L)/div
Trigger = 

Sensor Check

Date/Time Vert at 12:37:49 May 7, 2013
Trigger Source Geo: 1.00 mm/s
Range Geo : 254 mm/s
Record Time 6.0 sec at 4096 sps
Job Number: 1

Notes

Location:
 Client: MEADOWBANK UNIT 6
 User Name:
 General:

Serial Number BE18427 V 10.30-1.1 Minimate Blaster
Battery Level 6.2 Volts
Unit Calibration April 17, 2012 by Instantel
File Name T427ESL7.310

Post Event Notes

5095515+5140LG004

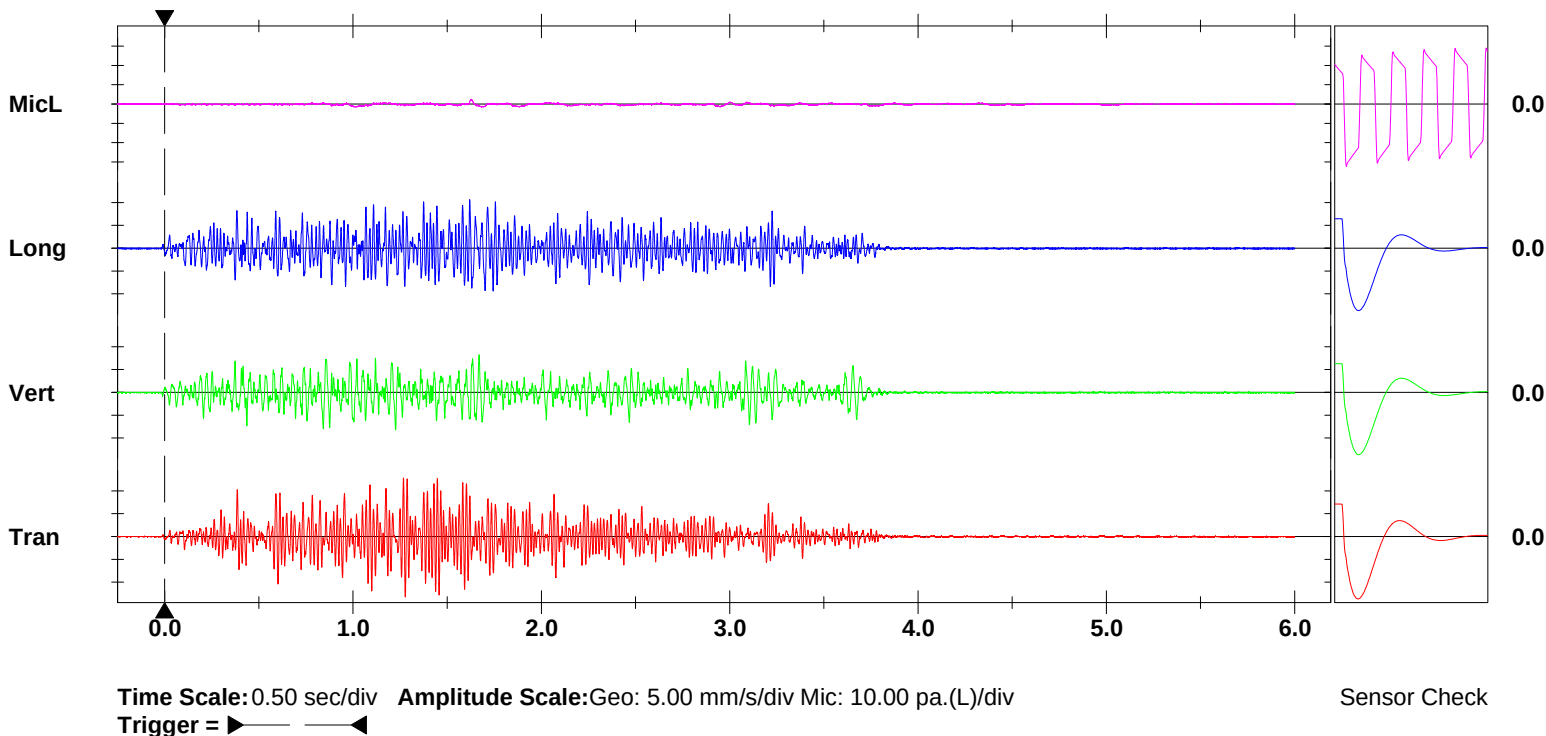
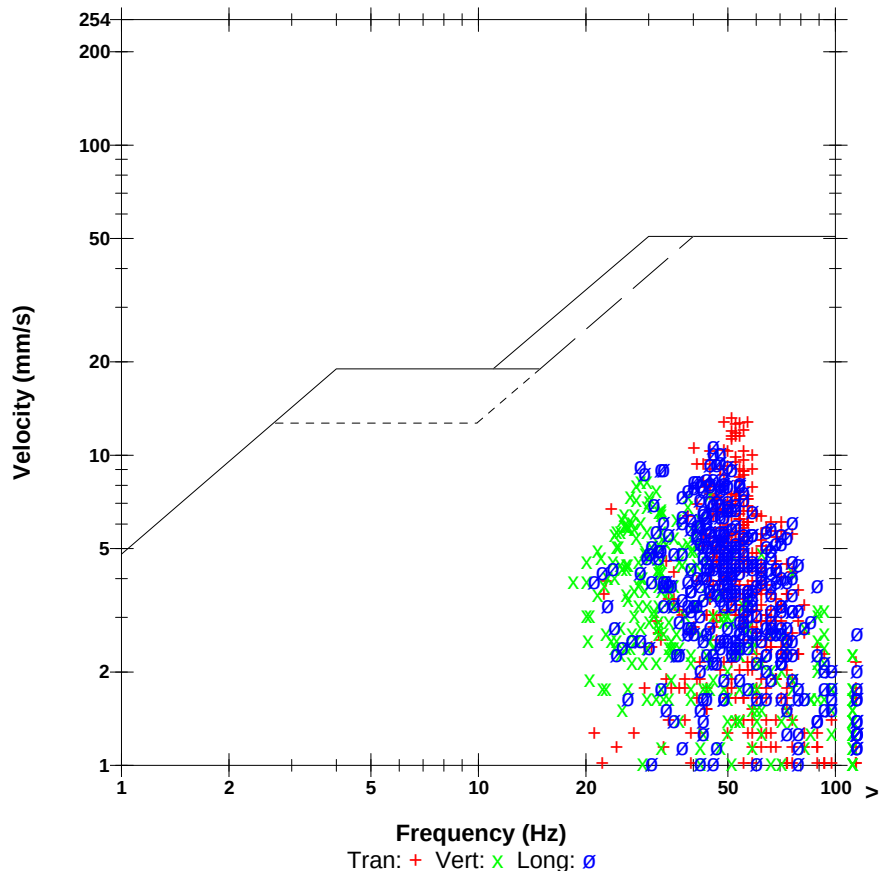
Extended Notes

Microphone Linear Weighting
PSPL 2.50 pa.(L) at 1.626 sec
ZC Freq 20.3 Hz
Channel Test Passed (Freq = 20.1 Hz Amp = 700 mv)

	Tran	Vert	Long	
PPV	13.2	8.25	10.7	mm/s
ZC Freq	51	28.4	46	Hz
Time (Rel. to Trig)	1.277	1.226	1.619	sec
Peak Acceleration	0.530	0.318	0.371	g
Peak Displacement	0.0416	0.0420	0.0475	mm
Sensor Check	Passed	Passed	Passed	
Frequency	7.7	7.3	7.3	Hz
Overswing Ratio	3.9	4.5	4.7	

Peak Vector Sum 15.5 mm/s at 1.582 sec

USBM RI8507 And OSMRE



Date/Time Vert at 12:31:10 September 6, 2013
 Trigger Source Geo: 1.00 mm/s
 Range Geo: 254 mm/s
 Record Time 6.0 sec at 4096 sps
 Job Number: 1

Notes
 Location: Unit 5
 Client: MEADOWBANK
 User Name:
 General:

Serial Number BE18425 V 10.30-1.1 Minimate Blaster
 Battery Level 6.2 Volts
 Unit Calibration April 12, 2012 by Instantel
 File Name T425EYV4.3Y0

Post Event Notes
 Bay Goose Station D
 5074512/5074542 + 5088412 + 5088418

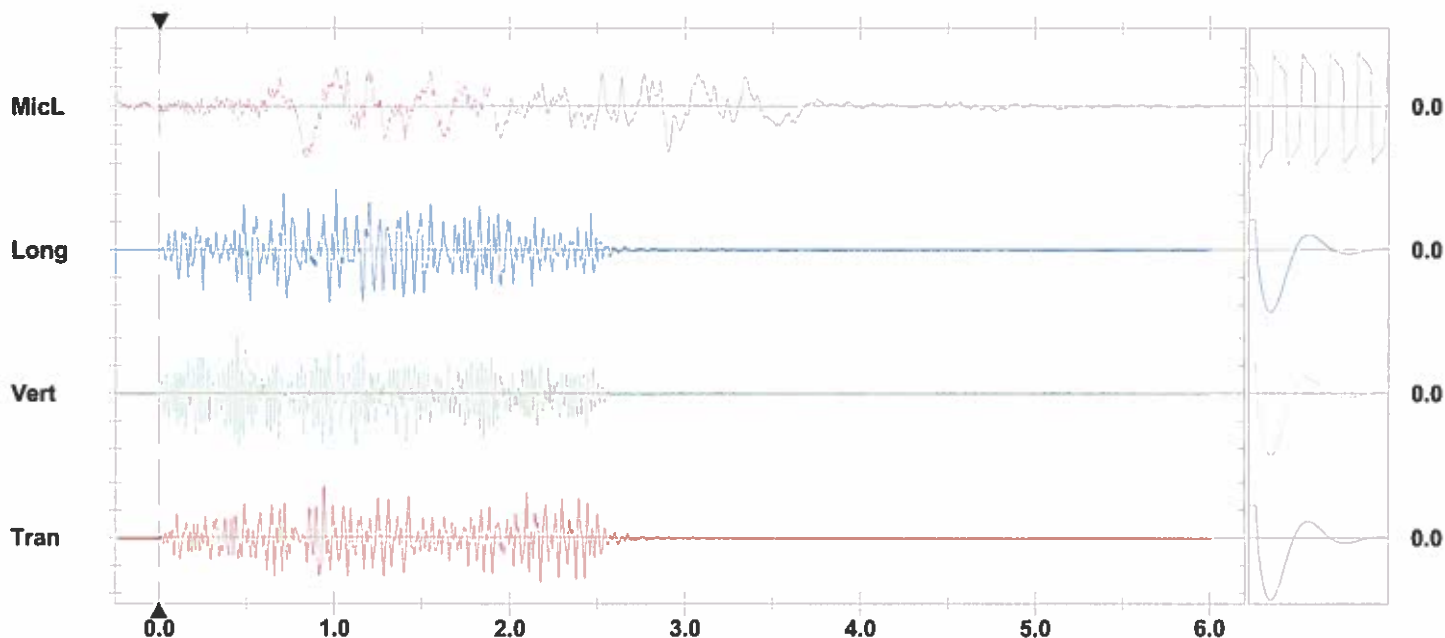
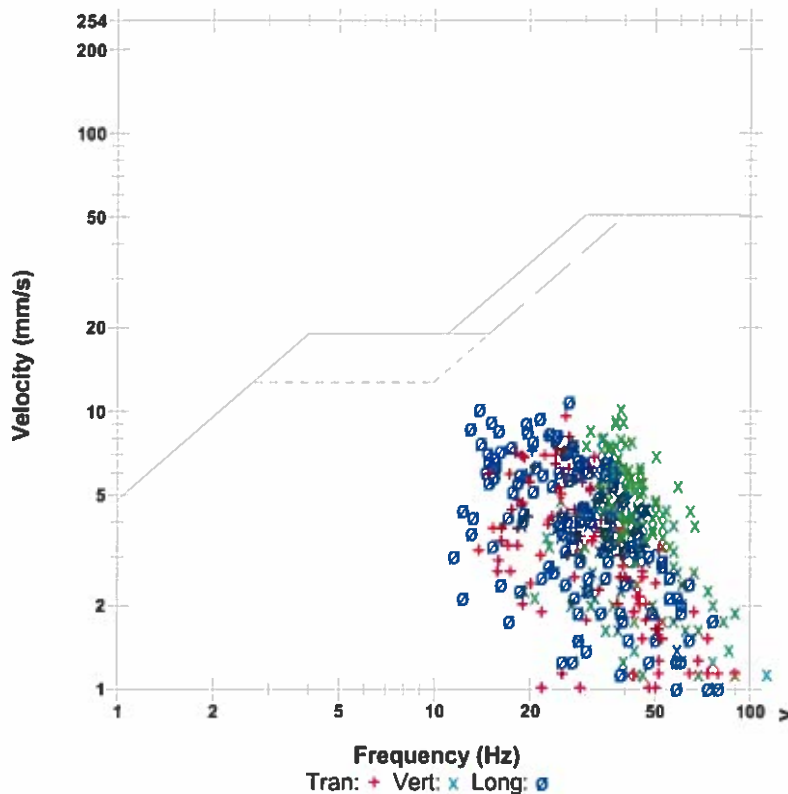
Extended Notes

Microphone Linear Weighting
 PSPL 26.5 pa.(L) at 0.833 sec
 ZC Freq 3.1 Hz
 Channel Test Passed (Freq = 20.1 Hz Amp = 642 mv)

	Tran	Vert	Long	
PPV	9.65	10.3	10.9	mm/s
ZC Freq	25.9	38.6	26.6	Hz
Time (Rel. to Trig)	0.936	0.442	1.006	sec
Peak Acceleration	0.212	0.318	0.212	g
Peak Displacement	0.0616	0.0429	0.0837	mm
Sensor Check	Passed	Passed	Passed	
Frequency	7.8	7.6	7.4	Hz
Overswing Ratio	3.7	4.1	4.0	

Peak Vector Sum 14.2 mm/s at 0.935 sec

USBM RI8507 And OSMRE



Time Scale: 0.50 sec/div Amplitude Scale: Geo: 5.00 mm/s/div Mic: 10.00 pa.(L)/div
 Trigger =

Sensor Check

Date/Time Vert at 00:34:54 November 5, 2013
Trigger Source Geo: 1.00 mm/s
Range Geo : 254 mm/s
Record Time 6.0 sec at 4096 sps
Job Number: 1

Notes

Location: UNIT 3
Client: AGNICO-EAGLE MINES LTD.
User Name: OPERATIONS/DIKES
General: BLAST VIBRATION MONITORING AT DIKE CREST

Serial Number BE15260 V 10.60-1.1 Minimate Blaster
Battery Level 5.9 Volts
Unit Calibration June 5, 2013 by Instantel
File Name Q260F1XA.Y60

Post Event Notes

Bay Goose Station D
 Blast Notice 5046PS512 seq 3

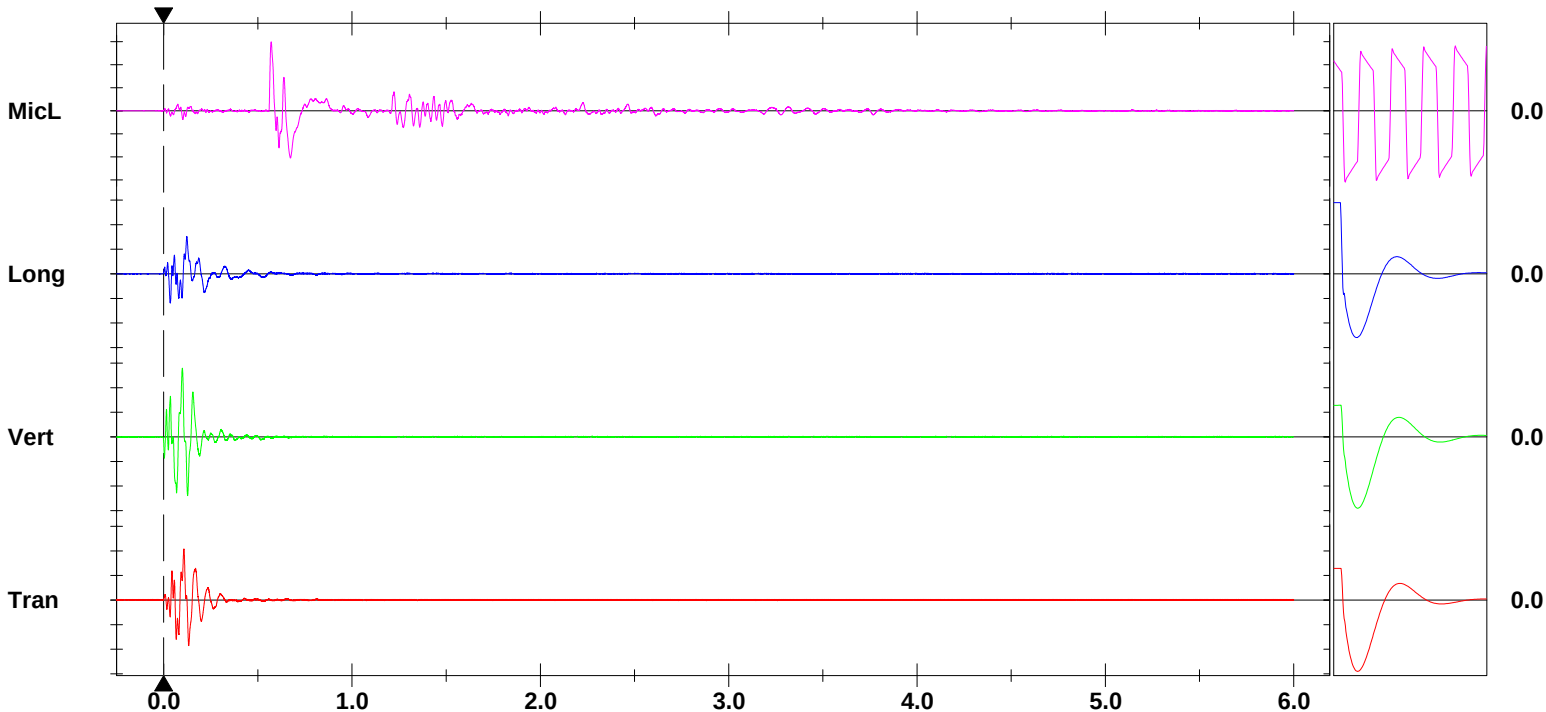
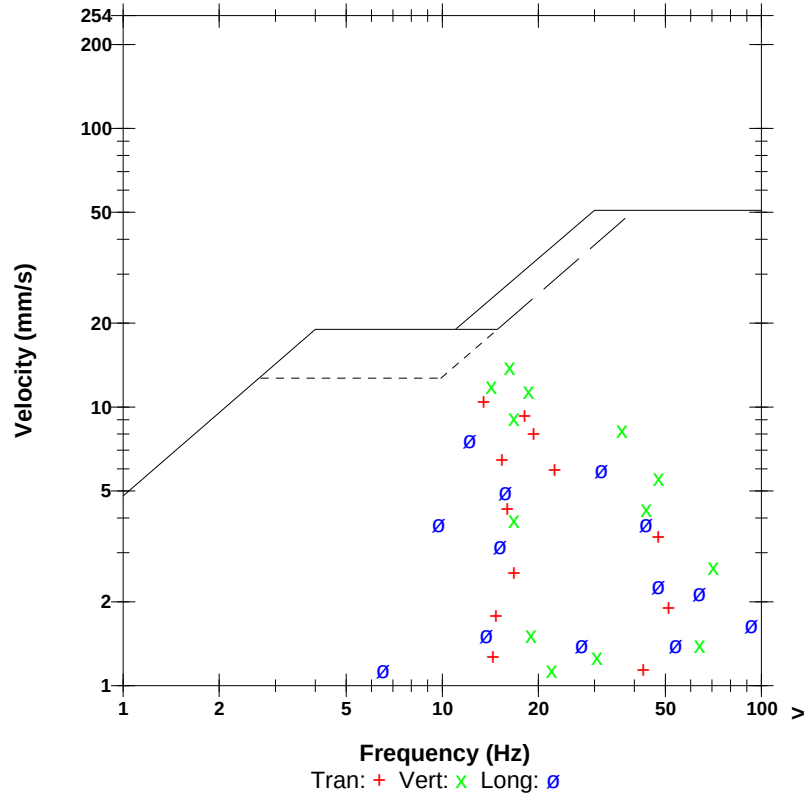
MONITORING STATION

Microphone Linear Weighting
PSPL 59.8 pa.(L) at 0.571 sec
ZC Freq 16.3 Hz
Channel Test Passed (Freq = 20.1 Hz Amp = 753 mv)

	Tran	Vert	Long	
PPV	10.4	14.0	7.62	mm/s
ZC Freq	13.5	16.3	12.2	Hz
Time (Rel. to Trig)	0.107	0.098	0.123	sec
Peak Acceleration	0.212	0.265	0.212	g
Peak Displacement	0.0872	0.111	0.0783	mm
Sensor Check	Passed	Passed	Check	
Frequency	7.5	7.7	7.9	Hz
Overswing Ratio	4.3	3.7	3.7	

Peak Vector Sum 15.3 mm/s at 0.098 sec

USBM RI8507 And OSMRE



Time Scale: 0.50 sec/div **Amplitude Scale:** Geo: 5.00 mm/s/div Mic: 20.0 pa.(L)/div
Trigger = 

Sensor Check

Date/Time Vert at 18:25:57 September 1, 2013
Trigger Source Geo: 1.00 mm/s
Range Geo: 254 mm/s
Record Time 6.0 sec at 4096 sps
Job Number: 1

Notes
Location: Unit 7
Client:
User Name:
General:

Serial Number BE18421 V 10.30-1.1 Minimate Blaster
Battery Level 6.1 Volts
Unit Calibration April 12, 2012 by Instantel
File Name T421EYMB.790

Post Event Notes
 Blast Notice 5074510 + 5074516-2
 Bay Goose Station D

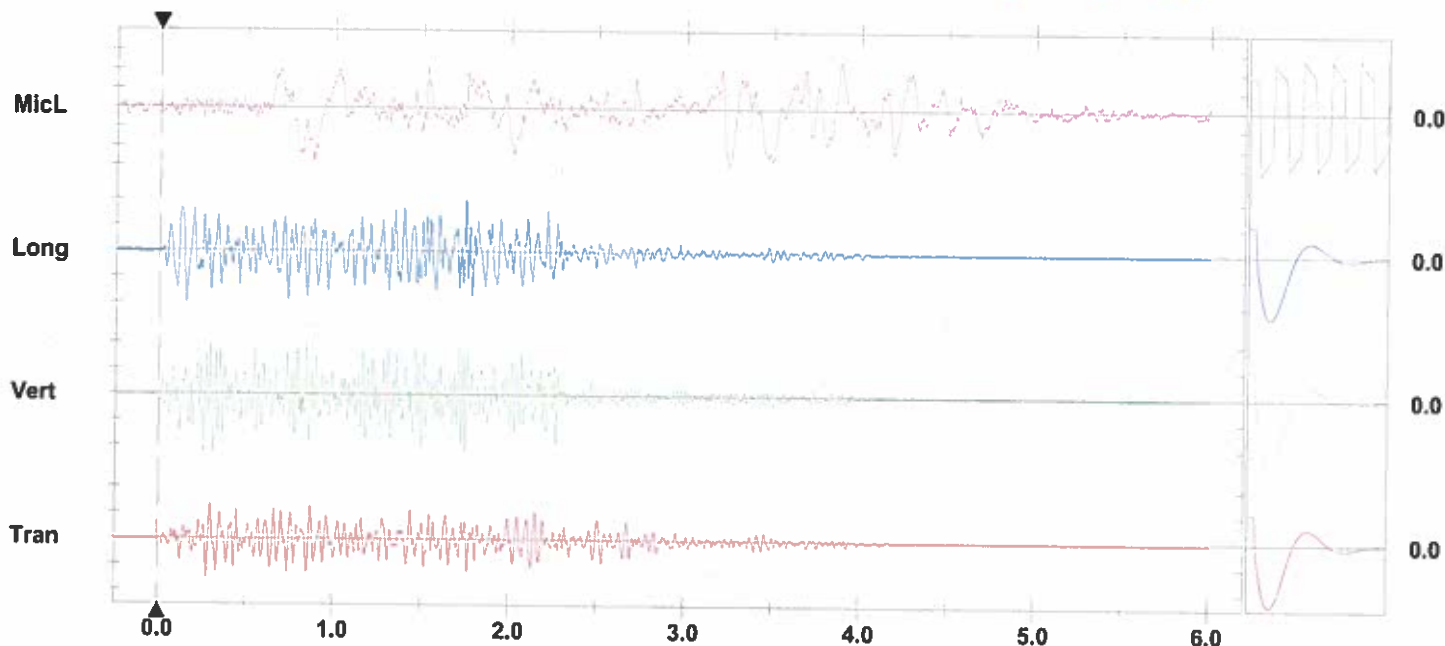
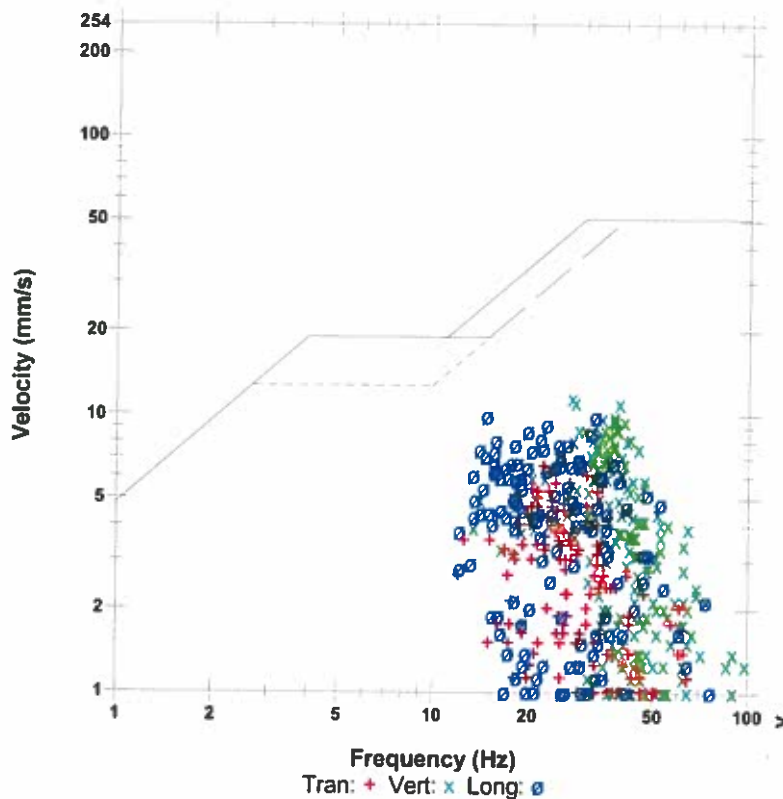
Extended Notes

Microphone Linear Weighting
PSPL 29.3 pa.(L) at 3.240 sec
ZC Freq 6.9 Hz
Channel Test Passed (Freq = 19.7 Hz Amp = 562 mv)

	Tran	Vert	Long	
PPV	7.24	11.6	9.91	mm/s
ZC Freq	25.0	27.3	14.7	Hz
Time (Rel. to Trig)	0.276	0.250	0.151	sec
Peak Acceleration	0.159	0.265	0.265	g
Peak Displacement	0.0467	0.0668	0.0945	mm
Sensor Check	Passed	Passed	Passed	
Frequency	7.5	7.4	7.3	Hz
Overswing Ratio	3.8	3.9	4.2	

Peak Vector Sum 15.1 mm/s at 1.750 sec

USBM RI8507 And OSMRE



Time Scale: 0.50 sec/div **Amplitude Scale:** Geo: 5.00 mm/s/div Mic: 10.00 pa.(L)/div
Trigger =

Sensor Check