# Appendix G7

## Report: 2014 Blast Monitoring Report

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# ANNUAL REPORT MEMORANDUM

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

**SUBJECT: 2014 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 2014 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 2014 are called Portage Pit North (14W 7214597N 639457E), Portage Pit South (14W 7213663N 639349E), Goose Pit (14W 7212116N 638881E), Vault Pit station #1 (14W 7219726N 640741E) and Vault Pit station #2 (15W 7220873N 359907E). 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. The Vault Pit station #1 is located between the Vault Attenuation Pond (dewatered Vault Lake) and the Vault Pit, and Vault Pit station #2 is located near Wally Lake. From January to March, blast monitoring was conducted at Vault station #1. Starting in April, 2014 the monitoring was conducted at Vault station #2. The reason for this change (stated in the *2013 Blast monitoring report)* in 2014, was to monitor blasting effects closer to Wally Lake, which became the fish habitat with most value after the fishout of Vault Lake was completed in 2013. The results in 2014 are more representative of the blasting effects related to Wally Lake fish habitat.

In 2014, Meadowbank drill and blast engineers continued blast optimization in order to improve blast quality by adjusting some blast parameters. One of these improvements included the gradual decrease of the powder factor at Vault due to the fragile rock characteristics. This resulted in less blast movement dilution and reduced vibrations during the blasting events. In 2014, instruments were used to measure PPV and IPC. In addition, sophisticated monitoring techniques such as video and geo-referencing were utilized to improve blast procedures and operations.

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**Figure 1 - Portage and Goose Pit Blast Monitoring Station Location**

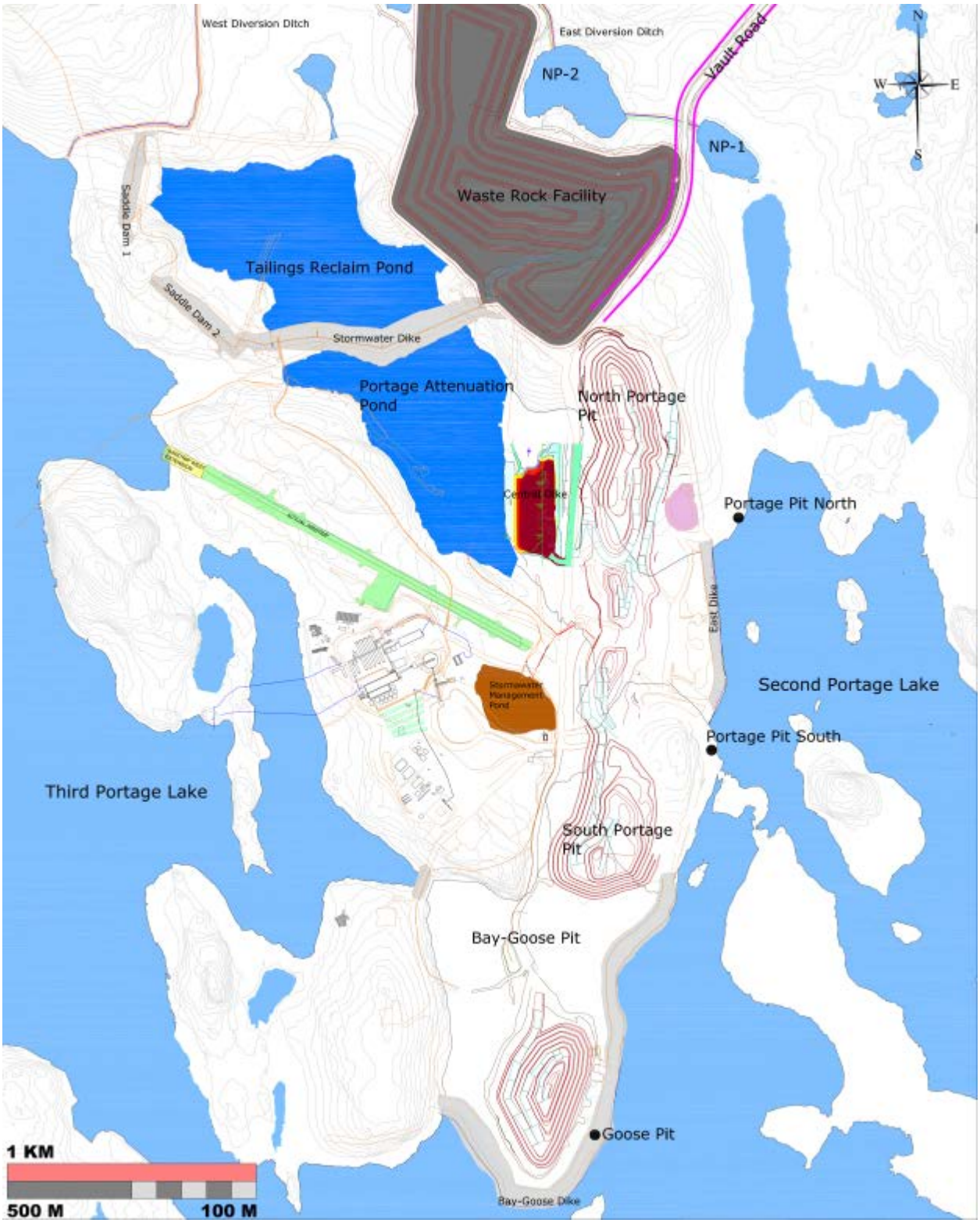
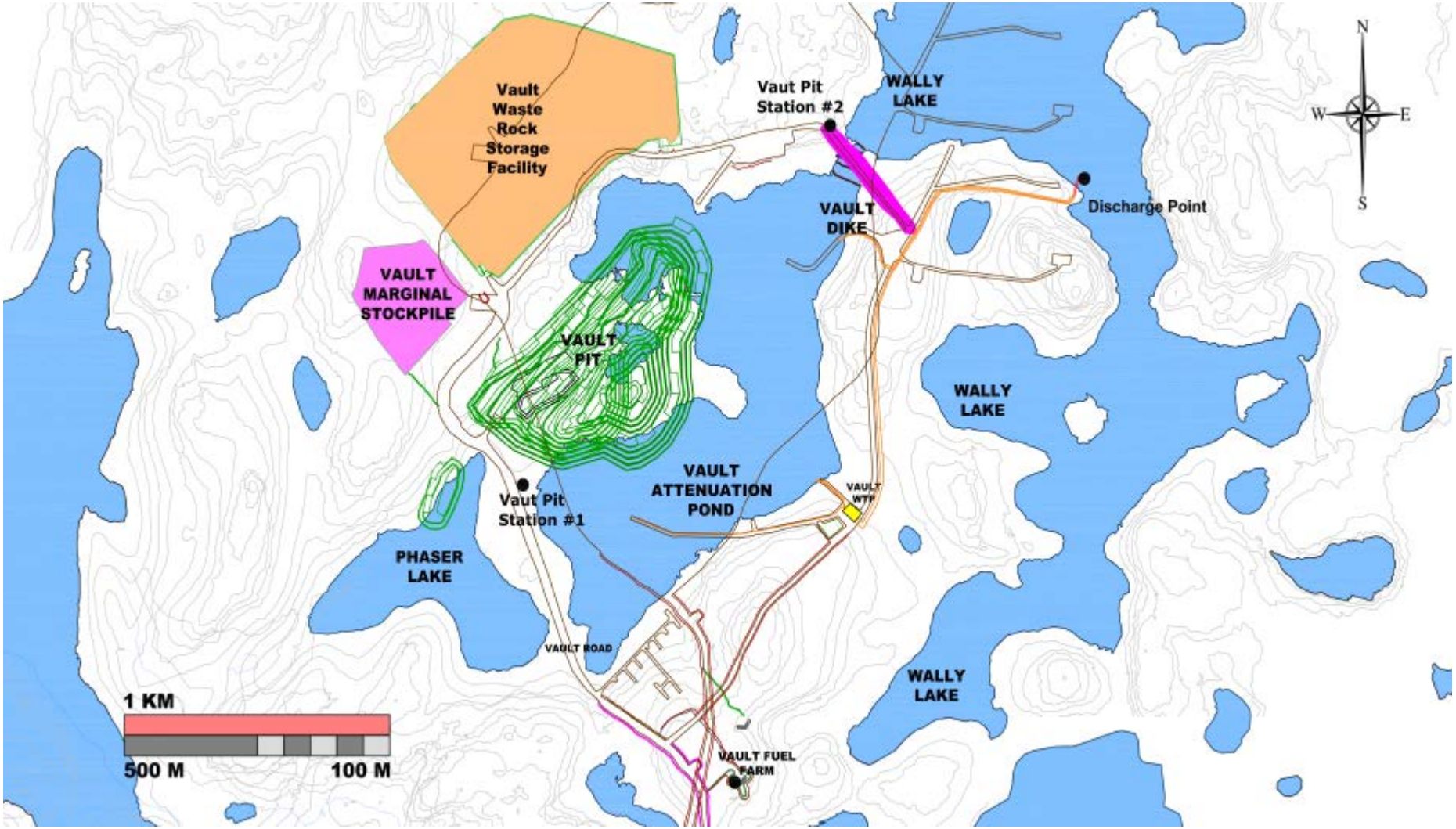


**Figure 2 - Vault Pit Blast Monitoring Station Location**



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## 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 specifications 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 ensure they are functioning. The transducer measures ground vibration with a mechanism called a geophone.

This instrument measures 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 2014 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 2014 PPV and IPC blast monitoring results are presented in Table 2. PPV concentrations exceeded the DFO limit of 13 mm/s on 8 occasions over the entire year (n = 243 monitored blasts for the entire year) and all of these were during the period of egg incubation (for lakes near the Meadowbank mine the period is from August 15 to June 30). 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 2014**

| Date of Blast | Station | Peak Particle Velocity (mm/s) | | Peak Sound Pressure (kpa) | (sec) | Engineering Comments |
|---|---|---|---|---|---|---|
| *DFO Limit* | | *13* | | *50* | | |
| 23-02-2014 | Vault Pit #1 | 14.0 | * | 0.0160 | 3.473 | Longer holes than usual (about 10m deep). It was a blast surface and near monitoring station. |
| 07-03-2014 | Portage Pit South | 18.1 | * | 0.0160 | 3.498 | Huge blast of 900 holes. |
| 08-03-2014 | Gosse Pit | 13.2 | * | 0.0303 | 5.005 | Holes are adjacent to the wall that is adjacent to the blast monitor. Pre-shear are on 3 holes / delay and are 21m deep causing more vibration. |
| 14-03-2014 | Vault Pit #1 | 21.2 | * | 0.0425 | 2.687 | Blast with longer holes than usual, about 11m deep and the blast was close to the monitoring station. |
| 15-03-2014 | Vault Pit #1 | 23.8 | * | 0.0245 | 1.336 | Blast with longer holes than usual, about 11m deep and the blast was close to the monitoring station. |
| 13-05-2014 | Portage Pit South | 23.3 | * | 0.0835 | 1.160 | Sump blast with 14m depth holes and timed delays ignite very quickly which is to be expected to cause increased vibrations. |
| 01-06-2014 | Portage Pit South | 14.2 | * | 0.0205 | 1.241 | Blast was shot with sump that has deeper holes and quicker delays which in turn increase vibration as well as having two patterns blast at the same time. |
| 05-06-2014 | Portage Pit South | 19.1 | * | 0.0363 | 3.523 | Many boulders included into the blast which are known to create massive air blasts but mainly because the blast was very close to the monitoring station. |
| *During the period of egg incubation (for lakes near the Meadowbank mine the period is from August 15 to June 30) | | | | | | |

In 2014, the average PPV was 3.93 (CI +/- 0.50) with a maximum of 23.8 mm/s (maximum in 2013 was 32.7 mm/s). The average was lower than last year (5.39 mm/s in 2013). This difference can be explained by the fact that on 26 occasions out of a total of 77 blasts, AEM recorded a PPV of 0 at Vault pit. It should be noted that all of the 0 PPV have been recorded at Vault Pit Station #2 which is farther from the Vault Pit but is more representative of the vibrations and sound that can affect Wally Lake. If all the 0 PPV recorded was removed from the data set, the average is 4.61 (CI +/- 0.54). Four of the eight PPV exceedances during the egg incubation period were in Portage

Pit South and were due to due to the large blast patterns and quicker delays and three were in Vault Pit Station #1 due to blasting occurring in close proximity to the blast monitoring station (see Table 1 engineering comments). It should be noted that this station was a considerable distance from Wally Lake and Vault Pit Station # 2 (no exceedances) and the fishout of Vault had occurred previously in 2013; there likely was little, if any, affect to incubating eggs in Wally Lake from these blasts. The last PPV exceedance from August 15 to June 30, during egg incubation, was in Goose Pit due to the pre-shear and proximity to the blast monitoring station. The upper 95% confidence limit for all of the annual data was 10.97 mm/s.

As discussed in the 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 being 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 2014, AEM had no blasts that exceeded the maximum PPV from Faulkner et al. The maximum measurement recorded in 2014 was in Vault Pit Station #1 and occurred during winter (maximum is 23.8 mm/s on March 15th) after Vault Lake had been dewatered and the fish removed (2013). In 2015, AEM will only monitor at Vault Pit Station #2 which is in close proximity to Wally Lake as it is now the fish habitat with the most value.

Through previous discussions with DFO in 2013 and 2014 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 Goose Pit monitoring station. 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. Another important point for 2015 is that mining and thus blasting will cease in the Goose pit by Q2.

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 through comparison to Faulkner et al. (2006), periodic exceedances of 13 mm/s PPV with from the 2014 blasting were 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 - 2014 PPV and IPC blast monitoring results**

| Date | Station | Blast Pattern | Peak Particule Velocity (mm/s) | Peak Sound Pressure (kpa) | (sec) |
|---|---|---|---|---|---|
| *DFO Limit* | | | *13* | *50* | |
| 02-01-2014 | Portage Pit South | 5074422-1 | 3.15 | 0.0008 | 0.505 |
| 03-01-2014 | Portage Pit North | 5046PS310-3 | 5.59 | 0.0010 | 1.784 |
| 07-01-2014 | Portage Pit North | 5060300-1 | 2.05 | 0.0008 | 0.241 |
| 10-01-2014 | Portage Pit South | 5109601-1 | 3.43 | 0.0010 | 2.942 |
| 11-01-2014 | Portage Pit North | 5053PS312-1 | 2.58 | 0.1200 | 2.554 |
| 11-01-2014 | Gosse Pit | 5046508-1 | 7.33 | 0.0300 | 0.979 |
| 12-01-2014 | Portage Pit South | 5067401-1 | 1.89 | 0.0008 | 2.6 |
| 15-01-2014 | Gosse Pit | 5039544-1 | 5.65 | 0.0528 | 1.166 |
| 15-01-2014 | Gosse Pit | 5046510-1 | 8.9 | 0.0308 | 1.096 |
| 17-01-2014 | Portage Pit South | 5067405-1 | 4.45 | 0.0008 | 1.115 |
| 18-01-2014 | Portage Pit North | 5046PS308-1 | 7.04 | 0.0008 | 2.012 |
| 18-01-2014 | Gosse Pit | 5025PS501-1 | 1.67 | 0.0908 | 1.592 |
| 20-01-2014 | Gosse Pit | 5046512-1 | 3.16 | 0.1470 | 1.622 |
| 21-01-2014 | Portage Pit South | 5109609-1 | 2.29 | 0.0008 | 0.211 |
| 23-01-2014 | Gosse Pit | 5025PS503-3 | 8.31 | 0.0480 | 0.932 |
| 25-01-2014 | Portage Pit North | 5060304-1 | 1.89 | 0.0008 | 0.027 |
| 27-01-2014 | Gosse Pit | 5039520-1 | 9.26 | 0.0333 | 3.346 |
| 28-01-2014 | Portage Pit South | 5109611-1 | 1.45 | 0.0013 | 1.631 |
| 30-01-2014 | Gosse Pit | 5039505-1 | 8.36 | 0.0415 | 1.731 |
| 31-01-2014 | Gosse Pit | 5025PS501-2 | 1.99 | 0.1710 | 1.26 |
| 31-01-2014 | Vault Pit #1 | 5137841-1 | 11 | 0.0300 | 1.169 |
| 31-01-2014 | Portage Pit North | 5060308-1 | 2.25 | 0.0008 | 0.031 |
| 01-02-2014 | Portage Pit South | 5067413-1 | 3.29 | 0.0010 | 5.74 |
| 04-02-2014 | Gosse Pit | 5025PS507-3 | 9.53 | 0.1530 | 0.913 |
| 08-02-2014 | Gosse Pit | 5039521-1 | 2.91 | 0.0613 | 1.143 |
| 08-02-2014 | Gosse Pit | 5025PS507-4 | 9.69 | 0.1000 | 4.198 |
| 09-02-2014 | Portage Pit South | 5116636-1 | 2.53 | 0.0173 | 2.096 |
| 10-02-2014 | Gosse Pit | 5025PS509-2 | 6.69 | 0.0843 | 3.825 |
| 11-02-2014 | Portage Pit South | 5123635-1 | 1.84 | 0.0173 | 2.075 |
| 12-02-2014 | Gosse Pit | 5025PS531-2 | 4.49 | 0.0553 | 0.89 |
| 13-02-2014 | Gosse Pit | 5025PS509-3 | 6.46 | 0.0568 | 0.706 |
| 13-02-2014 | Vault Pit #1 | 5137895-1 | 6.64 | 0.0253 | 1.712 |
| 14-02-2014 | Vault Pit #1 | 5130700-1 | 8.4 | 0.0408 | 1.475 |
| 14-02-2014 | Gosse Pit | 5025PS531-3 | 3.6 | 0.0395 | 1.091 |
| 16-02-2014 | Gosse Pit | 5025PS531-4 | 9.32 | 0.0285 | 1.453 |
| 17-02-2014 | Gosse Pit | 5039509-1 | 7.24 | 0.0200 | 3.185 |
| 17-02-2014 | Gosse Pit | 5025PS511-2 | 8.45 | 0.0895 | 0.737 |
| 18-02-2014 | Gosse Pit | 5025PS511-4 | 4.6 | 0.0980 | 0.821 |
| 18-02-2014 | Gosse Pit | 5025PS511-3 | 4.47 | 0.1480 | 0.798 |
| 19-02-2014 | Gosse Pit | 5025PS531-5 | 1.81 | 0.0175 | 1.017 |
| 20-02-2014 | Vault Pit #1 | 5130702-1 | 10.5 | 0.0643 | 2.667 |

| | | | | | |
|---|---|---|---|---|---|
| 21-02-2014 | Portage Pit South | 5053PS400-1 | 6.79 | 0.1620 | 1.365 |
| 22-02-2014 | Gosse Pit | 5039511-1 | 8.94 | 0.0260 | 1.574 |
| 22-02-2014 | Portage Pit South | 5060PS410-1 | 1.62 | 0.0975 | 1.261 |
| 23-02-2014 | Portage Pit South | 5123641-1 | 1.77 | 0.0563 | 5.381 |
| 23-02-2014 | Vault Pit #1 | 5130704-1 | 14 | 0.0160 | 3.473 |
| 27-02-2014 | Gosse Pit | 5032500-1 | 5.25 | 0.0335 | 1.999 |
| 04-03-2014 | Gosse Pit | 5032504-1 | 4.61 | 0.0225 | 1.256 |
| 04-03-2014 | Vault Pit #1 | 5130702-2 | 5.72 | 0.0243 | 1.41 |
| 06-03-2014 | Portage Pit South | 5116638-1 | 2.13 | 0.1070 | 2.671 |
| 06-03-2014 | Portage Pit South | 5109PS633-1 | 1.73 | 0.0273 | 2.427 |
| 07-03-2014 | Portage Pit South | 5060400-1 | 18.1 | 0.0160 | 3.498 |
| 08-03-2014 | Gosse Pit | 5025PS514-1 | 13.2 | 0.0303 | 5.005 |
| 10-03-2014 | Gosse Pit | 5032506-1 | 8.8 | 0.0588 | 2.948 |
| 10-03-2014 | Gosse Pit | 5032514-1 | 2.04 | 0.0348 | 3.51 |
| 12-03-2014 | Portage Pit South | 5060402-1 | 3 | 0.0085 | 3.314 |
| 14-03-2014 | Vault Pit #1 | 5130706-1 | 21.2 | 0.0425 | 2.687 |
| 15-03-2014 | Vault Pit #1 | 5137823-1 | 23.8 | 0.0245 | 1.336 |
| 15-03-2014 | Gosse Pit | 5032508-1 | 8.59 | 0.0183 | 2.562 |
| 16-03-2014 | Gosse Pit | 5032512-1 | 8.21 | 0.0283 | 2.571 |
| 16-03-2014 | Portage Pit South | 5123633-1 | 7.79 | 0.0023 | 0.022 |
| 18-03-2014 | Gosse Pit | 5032516-1 | 3.43 | 0.0013 | 3.327 |
| 19-03-2014 | Portage Pit South | 5060406-1 | 3.07 | 0.0093 | 1.82 |
| 20-03-2014 | Portage Pit South | 5109PS641-1 | 2.18 | 0.0198 | 2.838 |
| 21-03-2014 | Portage Pit South | 5060408-1 | 3.18 | 0.0125 | 4.797 |
| 23-03-2014 | Portage Pit South | 5109647-1 | 1.16 | 0.0193 | 2.342 |
| 23-03-2014 | Gosse Pit | 5032510-1 | 10.7 | 0.0018 | 3.22 |
| 24-03-2014 | Vault Pit #2 | 5137843-1 | 0 | 0 | 0 |
| 25-03-2014 | Vault Pit #2 | 5137807-1 | 1.05 | 0.0050 | -0.002 |
| 26-03-2014 | Portage Pit South | 5060410-1 | 2.47 | 0.0088 | 1.758 |
| 27-03-2014 | Vault Pit #2 | 5130710-1 | 1.66 | 0.0130 | 3.907 |
| 28-03-2014 | Gosse Pit | 5011PS503-1 | 8.76 | 0.1770 | 1.288 |
| 30-03-2014 | Gosse Pit | 5018PS501-1 | 1.42 | 0.1380 | 0.909 |
| 31-03-2014 | Portage Pit South | 5109613-1 | 1.73 | 0.0145 | 3.237 |
| 01-04-2014 | Gosse Pit | 5025501-1 | 8.4 | 0.0503 | 1.002 |
| 02-04-2014 | Portage Pit South | 5088PS600-1 | 1.37 | 0.1270 | 2.702 |
| 05-04-2014 | Portage Pit South | 5039PS401-1 | 12.4 | 0.0240 | 1.278 |
| 06-04-2014 | Gosse Pit | 5011PS509-1 | 4.19 | 0.0013 | 1.603 |
| 07-04-2014 | Gosse Pit | 5025503-1 | 4.82 | 0.0018 | 5.734 |
| 07-04-2014 | Portage Pit South | 5088PS602-1 | 5.57 | 0.0458 | 1.736 |
| 08-04-2014 | Portage Pit South | 5053401-1 | 6.81 | 0.0085 | 1.863 |
| 10-04-2014 | Gosse Pit | 5025507-1 | 3.87 | 0.0748 | 0.934 |
| 13-04-2014 | Portage Pit South | 5053405-1 | 4.44 | 0.0195 | 5.805 |
| 13-04-2014 | Portage Pit South | 5102600-1 | 5.23 | 0.0195 | 4.702 |
| 17-04-2014 | Gosse Pit | 5025515-1 | 1.82 | 0.0090 | 4.149 |
| 17-04-2014 | Portage Pit South | 5053407-1 | 3.16 | 0.0108 | 2.598 |
| 19-04-2014 | Vault Pit #2 | 5137819-1 | 1.11 | 0.0288 | 1.808 |
| 21-04-2014 | Vault Pit #2 | 5137805-1 | 0 | 0 | 0 |
| 22-04-2014 | Portage Pit South | 5053411-1 | 10.7 | 0.1340 | 4.26 |

| | | | | | |
|---|---|---|---|---|---|
| 23-04-2014 | Portage Pit South | 5102602-1 | 2.46 | 0.0343 | 2.265 |
| 24-04-2014 | Portage Pit South | 5053413-1 | 2.39 | 0.0340 | 5.938 |
| 24-04-2014 | Gosse Pit | 5025509-1 | 12.2 | 0.0535 | 3.151 |
| 26-04-2014 | Vault Pit #2 | 5130714-1 | 1.55 | 0.0158 | 4.461 |
| 27-04-2014 | Vault Pit #2 | 5137811-1 | 0 | 0 | 0 |
| 29-04-2014 | Portage Pit South | 5088PS602-3 | 3.89 | 0.0803 | 1.853 |
| 30-04-2014 | Vault Pit #2 | 5130716-1 | 2.09 | 0.0190 | 4.621 |
| 04-05-2014 | Portage Pit South | 5102602-2 | 2.58 | 0.0108 | 1.467 |
| 04-05-2014 | Vault Pit #2 | 5137849-1 | 0 | 0 | 0 |
| 07-05-2014 | Vault Pit #2 | 5130720-1 | 2.46 | 0.0080 | 4.47 |
| 09-05-2014 | Vault Pit #2 | 5109PS700-2 | 0 | 0 | 0 |
| 12-05-2014 | Vault Pit #2 | 5130726-1 | 3.46 | 0.0145 | 3.735 |
| 13-05-2014 | Portage Pit South | 5039412-1 | 23.3 | 0.0835 | 1.16 |
| 14-05-2014 | Vault Pit #2 | 5130730-1 | 0 | 0 | 0 |
| 15-05-2014 | Vault Pit #2 | 5130746-1 | 0 | 0 | 0 |
| 16-05-2014 | Portage Pit South | 5053POP405-1 | 1.35 | 0.1510 | 1.82 |
| 16-05-2014 | Gosse Pit | 5004PS501-1 | 0.22 | 0.1100 | 0.007 |
| 17-05-2014 | Portage Pit South | 5053POP405-2 | 1.49 | 0.0485 | 2.31 |
| 18-05-2014 | Vault Pit #2 | 5130738-1 | 0 | 0 | 0 |
| 19-05-2014 | Portage Pit South | 5046402-1 | 12.1 | 0.0355 | 2.941 |
| 22-05-2014 | Portage Pit South | 5046400-1 | 6.06 | 0.0488 | 4.524 |
| 26-05-2014 | Portage Pit South | 5046404-1 | 7.58 | 0.0230 | 3.173 |
| 26-05-2014 | Vault Pit #2 | 5130768-1 | 1.73 | 0.0328 | 3.411 |
| 27-05-2014 | Vault Pit #2 | 5130728-1 | 0 | 0 | 0 |
| 27-05-2014 | Portage Pit South | 5109617-1 | 1.7 | 0.0135 | 4.093 |
| 29-05-2014 | Portage Pit North | 5053301-1 | 6.43 | 0.0305 | 2.358 |
| 01-06-2014 | Portage Pit South | 5046406-1 | 14.2 | 0.0205 | 1.241 |
| 02-06-2014 | Vault Pit #2 | 5130732-1 | 1.7 | 0.0193 | 3.76 |
| 05-06-2014 | Portage Pit South | 5046408-1 | 19.1 | 0.0363 | 3.523 |
| 08-06-2014 | Portage Pit North | 5053303-1 | 2.97 | 0.0075 | 3.618 |
| 08-06-2014 | Vault Pit #2 | 5109PS706-2 | 0 | 0 | 0 |
| 10-06-2014 | Vault Pit #2 | 5130734-1 | 0 | 0 | 0 |
| 11-06-2014 | Portage Pit North | 5053305-1 | 3.53 | 0.0058 | 2.439 |
| 16-06-2014 | Vault Pit #2 | 5130722-1 | 1.45 | 0.0095 | 2.142 |
| 18-06-2014 | Portage Pit North | 5053305-2 | 3.18 | 0.0105 | 4.064 |
| 22-06-2014 | Portage Pit South | 5088PS608-3 | 1.49 | 0.0195 | 2.308 |
| 23-06-2014 | Vault Pit #2 | 5130740-1 | 0 | 0 | 0 |
| 25-06-2014 | Portage Pit South | 5088PS610-1 | 3.39 | 0.0170 | 2.821 |
| 27-06-2014 | Vault Pit #2 | 5137777-1 | 0 | 0 | 0 |
| 01-07-2014 | Portage Pit South | 5102608-1 | 2.5 | 0.0080 | 0.166 |
| 02-07-2014 | Vault Pit #2 | 5109PS706-3 | 4.13 | 0.0110 | 3.005 |
| 03-07-2014 | Vault Pit #2 | 5109PS706-4 | 2.24 | 0.0028 | 0.439 |
| 04-07-2014 | Vault Pit #2 | 5109PS706-5 | 2.23 | 0.0055 | 3.031 |
| 05-07-2014 | Portage Pit South | 5039401-1 | 4.04 | 0.0083 | 1.268 |
| 08-07-2014 | Portage Pit South | 5095603-1 | 5.69 | 0.0098 | 4.906 |
| 09-07-2014 | Vault Pit #2 | 5109PS702-4 | 0 | 0 | 0 |
| 11-07-2014 | Portage Pit South | 5039403-1 | 6.56 | 0.0133 | 1.105 |
| 14-07-2014 | Portage Pit South | 5039405-1 | 4.15 | 0.0105 | 1.639 |

| | | | | | |
|---|---|---|---|---|---|
| 15-07-2014 | Portage Pit South | 5095615-1 | 4.78 | 0.0098 | 2.519 |
| 17-07-2014 | Vault Pit #2 | 5123701-1 | 0 | 0 | 0 |
| 18-07-2014 | Vault Pit #2 | 5130748-1 | 2.16 | 0.0188 | 1.735 |
| 19-07-2014 | Vault Pit #2 | 5137POP849-1 | 2.18 | 0.0070 | 1.304 |
| 21-07-2014 | Vault Pit #2 | 5130766-1 | 1.53 | 0.0075 | 1.115 |
| 21-07-2014 | Portage Pit South | 5095613-1 | 2.22 | 0.0085 | 0.875 |
| 26-07-2014 | Vault Pit #2 | 5123705-1 | 1.84 | 0.0175 | 5.745 |
| 31-07-2014 | Vault Pit #2 | 5130744-1 | 3.51 | 0.0098 | 4.267 |
| 31-07-2014 | Vault Pit #2 | 5130742-1 | 2.04 | 0.0183 | 4.586 |
| 31-07-2014 | Portage Pit South | 5095605-1 | 3.4 | 0.0100 | 2.593 |
| 01-08-2014 | Portage Pit South | 5095617-1 | 2.42 | 0.0098 | 2.293 |
| 01-08-2014 | Vault Pit #2 | 5123727-1 | 0 | 0 | 0 |
| 02-08-2014 | Vault Pit #2 | 5109PS707-3 | 0 | 0 | 0 |
| 06-08-2014 | Vault Pit #2 | 5123707-1 | 1.14 | 0.0118 | 0.002 |
| 09-08-2014 | Vault Pit #2 | 5109PS723-2 | 0 | 0 | 0 |
| 09-08-2014 | Portage Pit South | 5095609-1 | 2.89 | 0.0088 | 0.585 |
| 10-08-2014 | Vault Pit #2 | 5130772-1 | 2.99 | 0.0125 | 1.981 |
| 11-08-2014 | Vault Pit #2 | 5109PS723-3 | 0 | 0 | 0 |
| 11-08-2014 | Portage Pit South | 5032406-1 | 5.14 | 0.0148 | 0.06 |
| 15-08-2014 | Vault Pit #2 | 5123723-1 | 1.93 | 0.0040 | 5.64 |
| 17-08-2014 | Portage Pit South | 5095611-1 | 3.83 | 0.0185 | 3.896 |
| 17-08-2014 | Vault Pit #2 | 5109PS721-2 | 0 | 0 | 0 |
| 19-08-2014 | Vault Pit #2 | 5123721-1 | 1.33 | 0.0060 | 3.993 |
| 22-08-2014 | Portage Pit South | 5074001-1 | 2.62 | 0.0643 | 1.101 |
| 23-08-2014 | Vault Pit #2 | 5123721-2 | 1.54 | 0.0055 | 3.773 |
| 25-08-2014 | Portage Pit South | 5088602-2 | 4.96 | 0.0123 | 2.868 |
| 29-08-2014 | Vault Pit #2 | 5123709-1 | 3.04 | 0.0168 | 2.783 |
| 31-08-2014 | Vault Pit #2 | 5109PS707-1 | 1.46 | 0.0100 | 2.593 |
| 01-09-2014 | Portage Pit South | 5088600-1 | 5.11 | 0.0230 | 1.727 |
| 06-09-2014 | Portage Pit South | 5088602-3 | 3.58 | 0.0063 | 3.995 |
| 06-09-2014 | Portage Pit South | 5088604-1 | 3.04 | 0.0168 | 1.742 |
| 07-09-2014 | Vault Pit #2 | 5116700-1 | 2.39 | 0.0183 | 5.914 |
| 10-09-2014 | Vault Pit #2 | 5116702-1 | 1.26 | 0.0063 | 5.184 |
| 13-09-2014 | Gosse Pit | 5109POP500-2 | 2.78 | 0.0348 | 5.307 |
| 15-09-2014 | Vault Pit #2 | 5123713-1 | 3.55 | 0.0130 | 4.827 |
| 18-09-2014 | Portage Pit South | 5088606-1 | 3.53 | 0.0175 | 5.835 |
| 19-09-2014 | Gosse Pit | 5004PS501-2 | 3.46 | 0.0273 | 0.807 |
| 20-09-2014 | Gosse Pit | 5004PS501-3 | 6.15 | 0.0540 | 0.826 |
| 22-09-2014 | Gosse Pit | 5004PS501-4 | 7.6 | 0.0620 | 0.848 |
| 22-09-2014 | Portage Pit South | 5088608-1 | 1.87 | 0.0180 | 4.924 |
| 23-09-2014 | Gosse Pit | 5018500-1 | 4.5 | 0.0623 | 0.938 |
| 23-09-2014 | Vault Pit #2 | 5123715-1 | 2.88 | 0.0115 | 4.302 |
| 25-09-2014 | Vault Pit #2 | 5123719-1 | 1.21 | 0.0075 | 0.319 |
| 27-09-2014 | Vault Pit #2 | 5116702-2 | 0 | 0 | 0 |
| 28-09-2014 | Vault Pit #2 | 5123737-1 | 1.11 | 0.0050 | 2.678 |
| 01-10-2014 | Vault Pit #2 | 5116706-1 | 0 | 0 | 0 |
| 02-10-2014 | Portage Pit South | 5067PS601-1 | 2.61 | 0.0285 | 3.112 |
| 04-10-2014 | Portage Pit South | 5088POP600-1 | 3.11 | 0.0113 | 1.674 |

| | | | | | |
|---|---|---|---|---|---|
| 04-10-2014 | Portage Pit South | 5067PS601-2 | 2.29 | 0.0313 | 1.86 |
| 05-10-2014 | Vault Pit #2 | 5123717-1 | 1.51 | 0.0225 | 1.994 |
| 06-10-2014 | Portage Pit South | 5067PS601-4 | 1.99 | 0.0278 | 1.645 |
| 09-10-2014 | Gosse Pit | 5018504-1 | 6.74 | 0.0010 | 1.184 |
| 11-10-2014 | Portage Pit South | 5081603-1 | 7.66 | 0.0375 | 5.4 |
| 11-10-2014 | Vault Pit #2 | 5116752-1 | 0 | 0 | 0 |
| 14-10-2014 | Portage Pit South | 5088610-1 | 1.77 | 0.0075 | 2.083 |
| 17-10-2014 | Vault Pit #2 | 5116704-1 | 0 | 0 | 0 |
| 19-10-2014 | Vault Pit #2 | 5116758-1 | 0 | 0 | 0 |
| 20-10-2014 | Vault Pit #2 | 5116710-1 | 0 | 0 | 0 |
| 22-10-2014 | Portage Pit South | 5088POP602-1 | 8.51 | 0.0268 | 1.562 |
| 23-10-2014 | Portage Pit South | 5067PS601-6 | 6.08 | 0.0578 | 1.556 |
| 25-10-2014 | Portage Pit South | 5067PS603-3 | 1.2 | 0.0203 | -0.106 |
| 26-10-2014 | Portage Pit South | 5081605-1 | 2.79 | 0.0095 | 1.656 |
| 27-10-2014 | Vault Pit #2 | 5123825-1 | 0 | 0 | 0 |
| 28-10-2014 | Portage Pit South | 5067PS611-1 | 3.61 | 0.0535 | 2.235 |
| 29-10-2014 | Portage Pit South | 5067PS607-1 | 1.87 | 0.0265 | 2.316 |
| 29-10-2014 | Portage Pit South | 5081601-1 | 4.37 | 0.0060 | 1.582 |
| 30-10-2014 | Portage Pit South | 5067PS607-2 | 1.33 | 0.0258 | 2.348 |
| 31-10-2014 | Portage Pit South | 5067PS607-3 | 2.55 | 0.0150 | 2.703 |
| 01-11-2014 | Gosse Pit | 5011511-1 | 5.03 | 0.0425 | 2.233 |
| 02-11-2014 | Gosse Pit | 4990PS511-2 | 2.71 | 0.0005 | 0.054 |
| 03-11-2014 | Gosse Pit | 4990PS511-3 | 3.46 | 0.0015 | 1.745 |
| 03-11-2014 | Vault Pit #2 | 5116712-1 | 0 | 0 | 0 |
| 05-11-2014 | Gosse Pit | 5011513-1 | 7.19 | 0.0633 | 1.069 |
| 05-11-2014 | Portage Pit South | 5067PS607-4 | 1.3 | 0.0183 | 1.031 |
| 06-11-2014 | Vault Pit #2 | 5116718-1 | 0 | 0 | 0 |
| 07-11-2014 | Portage Pit South | 5081607-1 | 3.59 | 0.0713 | 2.398 |
| 09-11-2014 | Gosse Pit | 4990PS511-5 | 6 | 0.0530 | 0.738 |
| 09-11-2014 | Vault Pit #2 | 5116720-1 | 0 | 0 | 0 |
| 10-11-2014 | Portage Pit South | 5067PS603-4 | 1.89 | 0.0178 | 2.262 |
| 11-11-2014 | Portage Pit South | 5067PS603-5 | 1.39 | 0.0198 | 2.37 |
| 12-11-2014 | Portage Pit South | 5067PS611-2 | 1.79 | 0.0525 | 2.021 |
| 12-11-2014 | Gosse Pit | 5011503-1 | 7.76 | 0.0010 | 1.087 |
| 14-11-2014 | Portage Pit South | 5067PS609-1 | 1.73 | 0.0245 | 3.739 |
| 15-11-2014 | Gosse Pit | 5011505-1 | 6.48 | 0.0013 | 2.676 |
| 17-11-2014 | Portage Pit South | 5081613-1 | 2.73 | 0.0755 | 2.171 |
| 19-11-2014 | Gosse Pit | 5011509-1 | 3.4 | 0.0403 | 2.56 |
| 21-11-2014 | Portage Pit South | 5081613-2 | 1.04 | 0.0305 | 2.502 |
| 24-11-2014 | Vault Pit #2 | 5116708-2 | 0 | 0 | 0 |
| 28-11-2014 | Portage Pit South | 5081609-1 | 2 | 0.0138 | 2.774 |
| 30-11-2014 | Portage Pit South | 5074600-1 | 3.95 | 0.0143 | 4.497 |
| 01-12-2014 | Vault Pit #2 | 5109701-1 | 0 | 0 | 0 |
| 05-12-2014 | Vault Pit #2 | 5109707-1 | 0 | 0 | 0 |
| 07-12-2014 | Portage Pit South | 5067PS617-1 | 1.68 | 0.0350 | 1.308 |
| 09-12-2014 | Portage Pit South | 5074606-1 | 2.08 | 0.0283 | 0.777 |
| 14-12-2014 | Gosse Pit | 4990PS500-1 | 2.32 | 0.0323 | 1.039 |
| 15-12-2014 | Gosse Pit | 5004520-1 | 11 | 0.0343 | 1.158 |

| | | | | | |
|---|---|---|---|---|---|
| 16-12-2014 | Portage Pit South | 5074602-1 | 6.71 | 0.0100 | 1.650 |
| 17-12-2014 | Vault Pit #2 | 5116716-1 | 0 | 0 | 0 |
| 18-12-2014 | Gosse Pit | 5004520-2 | 5.11 | 0.0013 | 2.535 |
| 19-12-2014 | Gosse Pit | 4997PS501-2 | 1.16 | 0.0145 | 0.890 |
| 20-12-2014 | Vault Pit #2 | 5109PS717-2 | 0 | 0 | 0 |
| 22-12-2014 | Gosse Pit | 5004500-1 | 7.81 | 0.0008 | 0.229 |
| 23-12-2014 | Portage Pit South | 5074608-1 | 1.84 | 0.0083 | 4.707 |
| 24-12-2014 | Vault Pit #2 | 5109717-1 | 0 | 0 | 0 |
| 31-12-2014 | Gosse Pit | 5004502-1 | 0.22 | 0.0830 | 0.001 |
| 31-12-2014 | Portage Pit South | 5074610-1 | 1.99 | 0.0180 | 2.083 |

# Event Report

**Date/Time** Vert at 12:33:48 March 15, 2014
**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** BE15259 V 10.60-1.1 Minimate Blaster
**Battery Level** 6.1 Volts
**Unit Calibration** January 2, 2014 by Instantel
**File Name** Q259F8MY.WC0

**Post Event Notes**
5137823

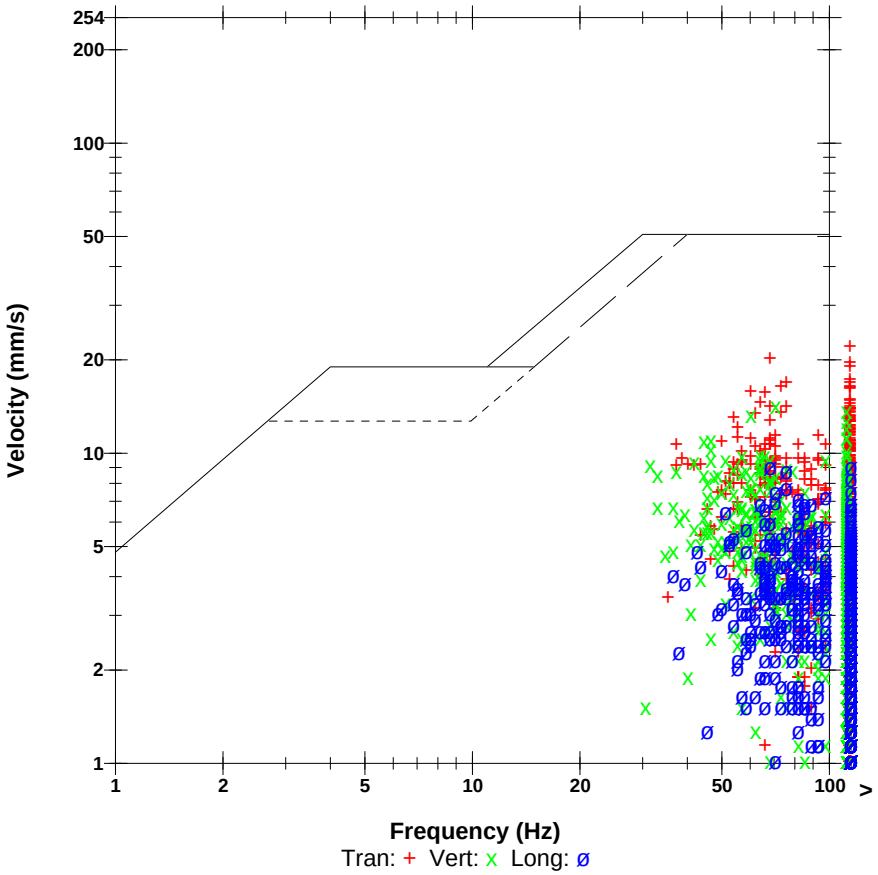
**Extended Notes**

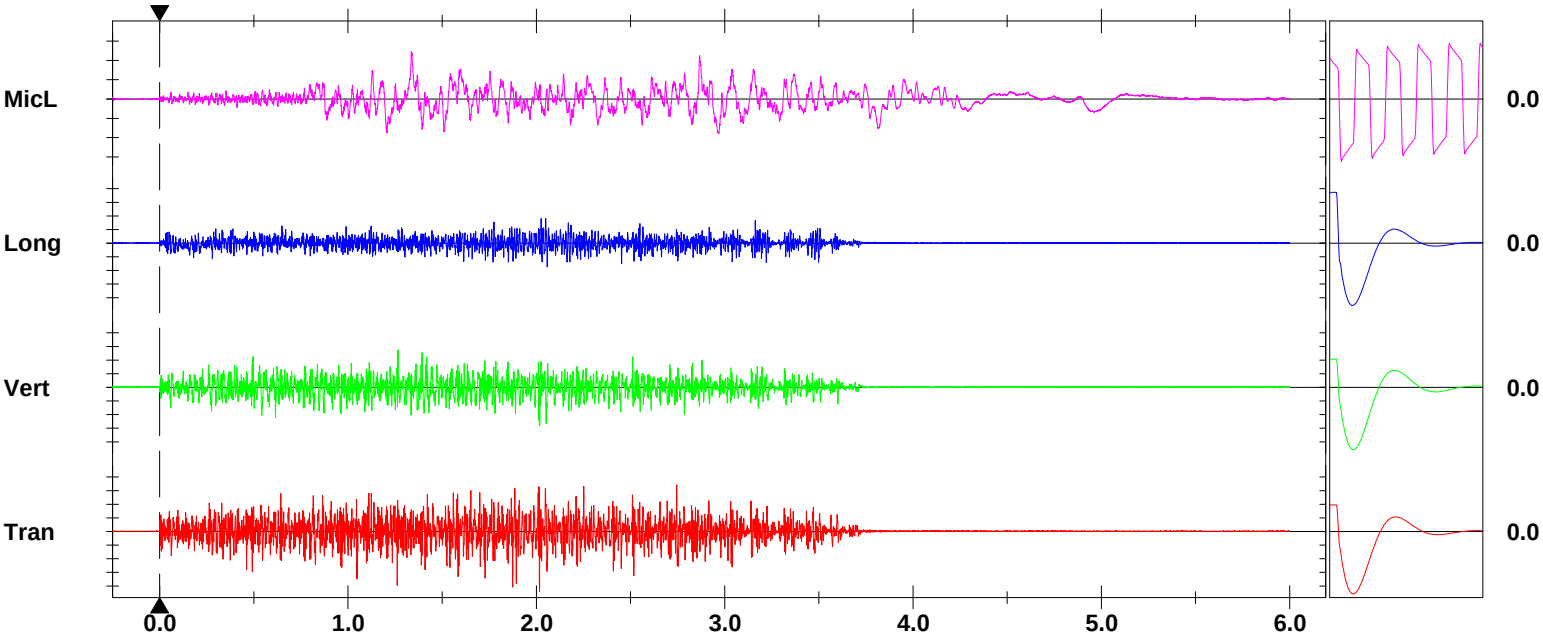
**Microphone** Linear Weighting
**PSPL** 24.5 pa.(L) at 1.336 sec
**ZC Freq** 7.9 Hz
**Channel Test** Passed (Freq = 20.1 Hz Amp = 902 mv)

| | Tran | Vert | Long | |
|---|---|---|---|---|
| **PPV** | 22.1 | 14.2 | 9.02 | mm/s |
| **ZC Freq** | 146 | 71 | 171 | Hz |
| **Time (Rel. to Trig)** | 2.017 | 2.018 | 2.025 | sec |
| **Peak Acceleration** | 2.60 | 1.48 | 1.06 | g |
| **Peak Displacement** | 0.0387 | 0.0339 | 0.0171 | mm |
| **Sensor Check** | Passed | Passed | Passed | |
| **Frequency** | 7.4 | 7.7 | 7.6 | Hz |
| **Overswing Ratio** | 4.3 | 3.7 | 4.5 | |

**Peak Vector Sum** 23.8 mm/s at 2.017 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 Sensor Check
**Trigger =**

# Event Report

**Date/Time** Vert at 12:29:38 March 14, 2014
**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** BE15259 V 10.60-1.1 Minimate Blaster
**Battery Level** 6.1 Volts
**Unit Calibration** January 2, 2014 by Instantel
**File Name** Q259F8L4.1E0

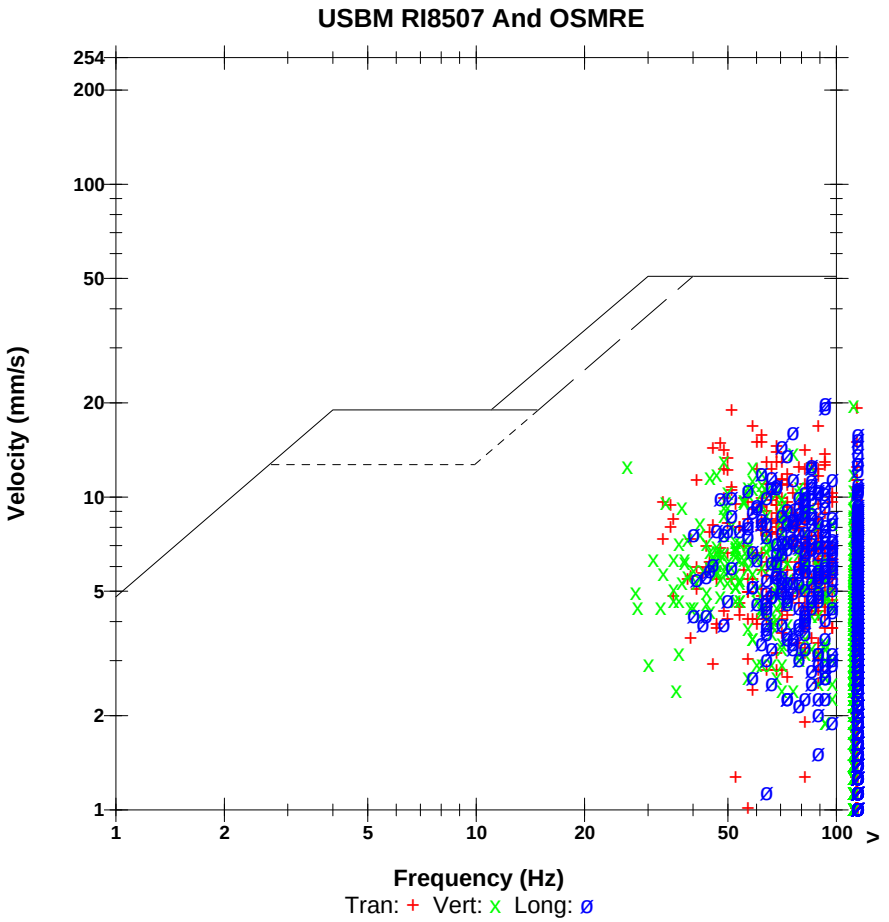
**Post Event Notes**
5130706

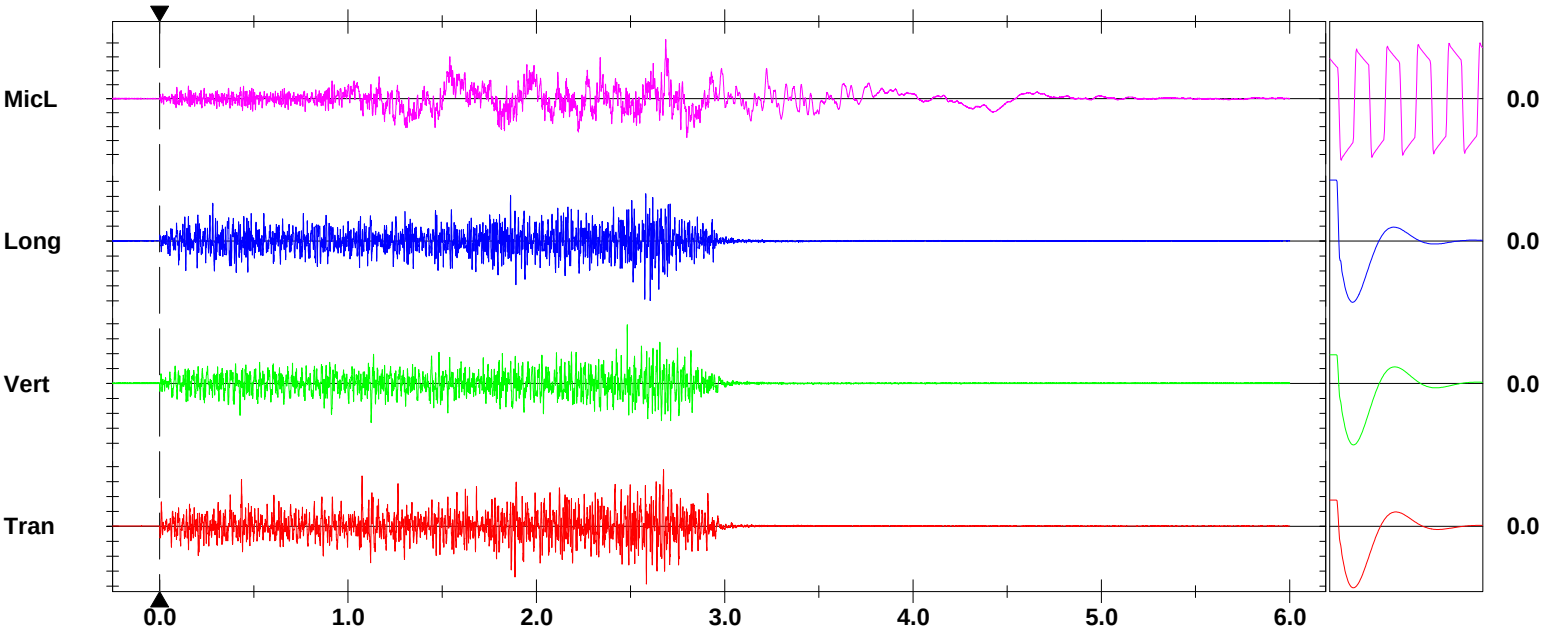
**Extended Notes**

**Microphone** Linear Weighting
**PSPL** 42.5 pa.(L) at 2.687 sec
**ZC Freq** 15.8 Hz
**Channel Test** Passed (Freq = 20.1 Hz Amp = 855 mv)

| | Tran | Vert | Long | |
|---|---|---|---|---|
| **PPV** | 19.3 | 19.7 | 19.9 | mm/s |
| **ZC Freq** | 137 | 120 | 93 | Hz |
| **Time (Rel. to Trig)** | 2.584 | 2.483 | 2.604 | sec |
| **Peak Acceleration** | 1.54 | 1.59 | 1.86 | g |
| **Peak Displacement** | 0.0523 | 0.0324 | 0.0291 | mm |
| **Sensor Check** | Passed | Passed | Check | |
| **Frequency** | 7.4 | 7.6 | 7.8 | Hz |
| **Overswing Ratio** | 4.3 | 3.7 | 4.4 | |

**Peak Vector Sum** 21.2 mm/s at 2.483 sec




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

# Event Report

**Date/Time** Long at 06:21:51 February 23, 2014
**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** BE15259 V 10.60-1.1 Minimate Blaster
**Battery Level** 5.8 Volts (Battery Low)
**Unit Calibration** January 2, 2014 by Instantel
**File Name** Q259F7LG.CF0

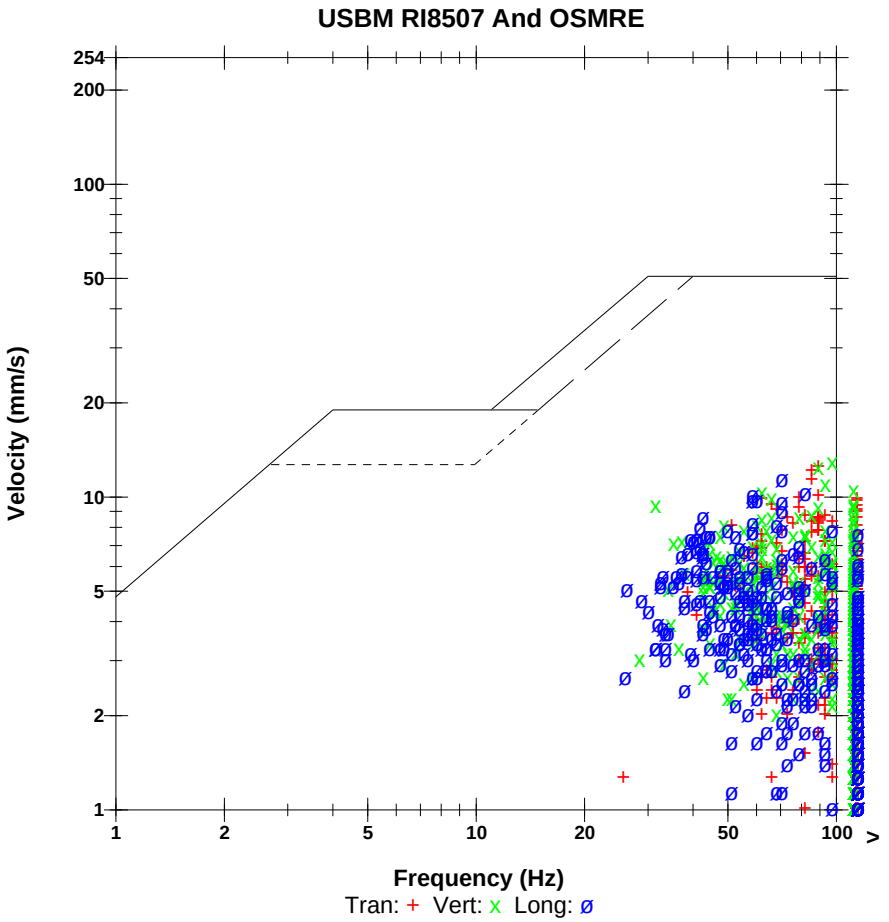
**Post Event Notes**
5130704 SEQ1

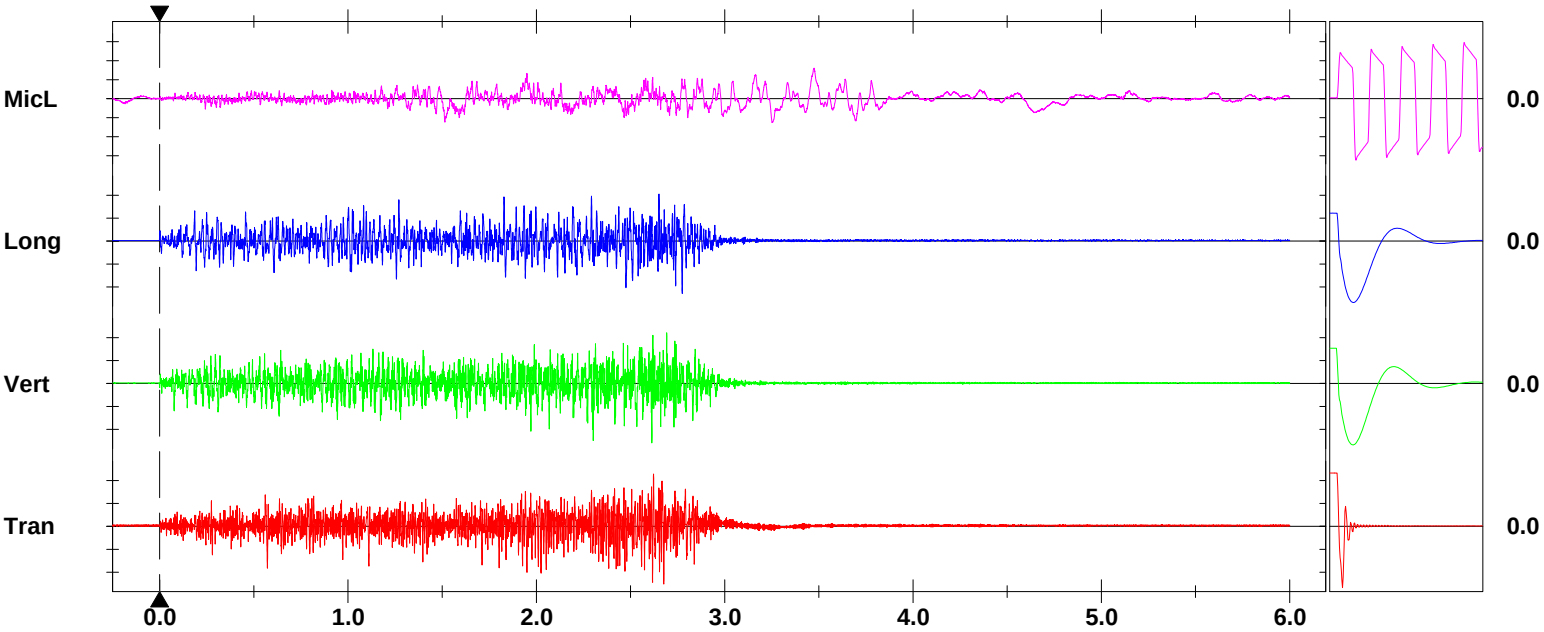
**Extended Notes**

**Microphone** Linear Weighting
**PSPL** 16.0 pa.(L) at 3.473 sec
**ZC Freq** 8.3 Hz
**Channel Test** Passed (Freq = 20.9 Hz Amp = 623 mv)

| | Tran | Vert | Long | |
|---|---|---|---|---|
| **PPV** | 12.6 | 13.0 | 11.4 | mm/s |
| **ZC Freq** | 89 | 98 | 71 | Hz |
| **Time (Rel. to Trig)** | 2.676 | 2.613 | 2.774 | sec |
| **Peak Acceleration** | 1.27 | 1.48 | 0.742 | g |
| **Peak Displacement** | 0.0235 | 0.0336 | 0.0288 | mm |
| **Sensor Check** | Check | Passed | Passed | |
| **Frequency** | 48.8 | 7.8 | 7.2 | Hz |
| **Overswing Ratio** | 100.3 | 3.7 | 4.8 | |

**Peak Vector Sum** 14.0 mm/s at 2.613 sec




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

# Event Report

**Date/Time** Tran at 12:45:50 March 7, 2014
**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** BE15259 V 10.60-1.1 Minimate Blaster
**Battery Level** 6.1 Volts
**Unit Calibration** January 2, 2014 by Instantel
**File Name** Q259F886.4E0

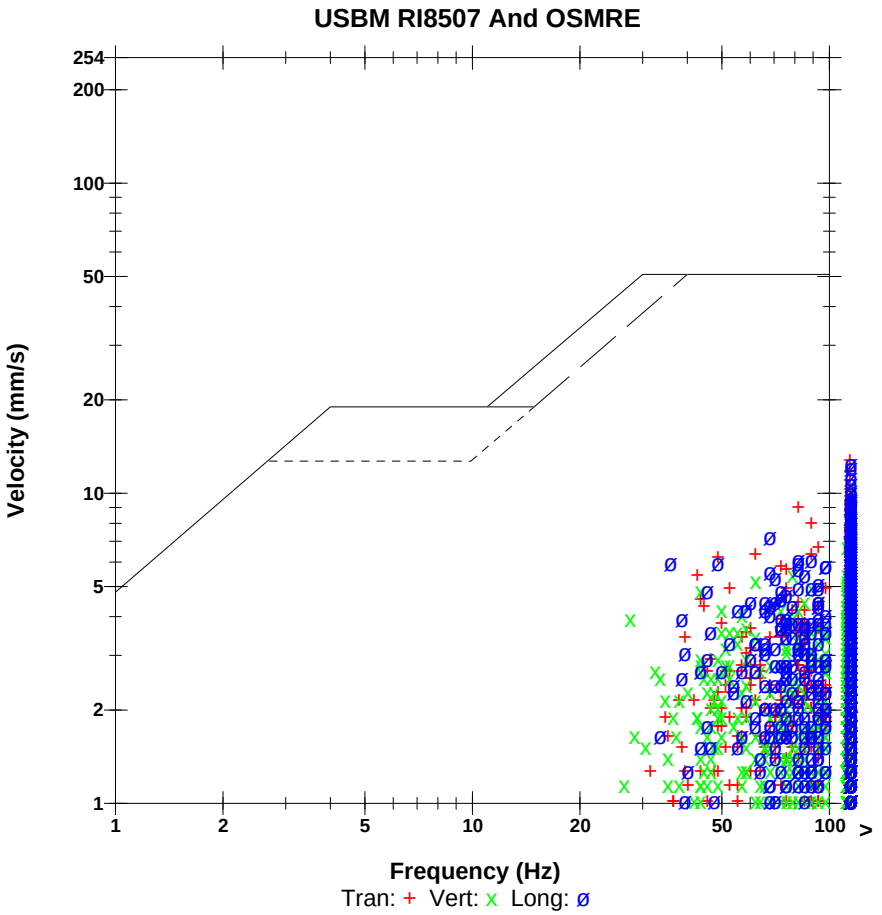
**Post Event Notes**
5060400

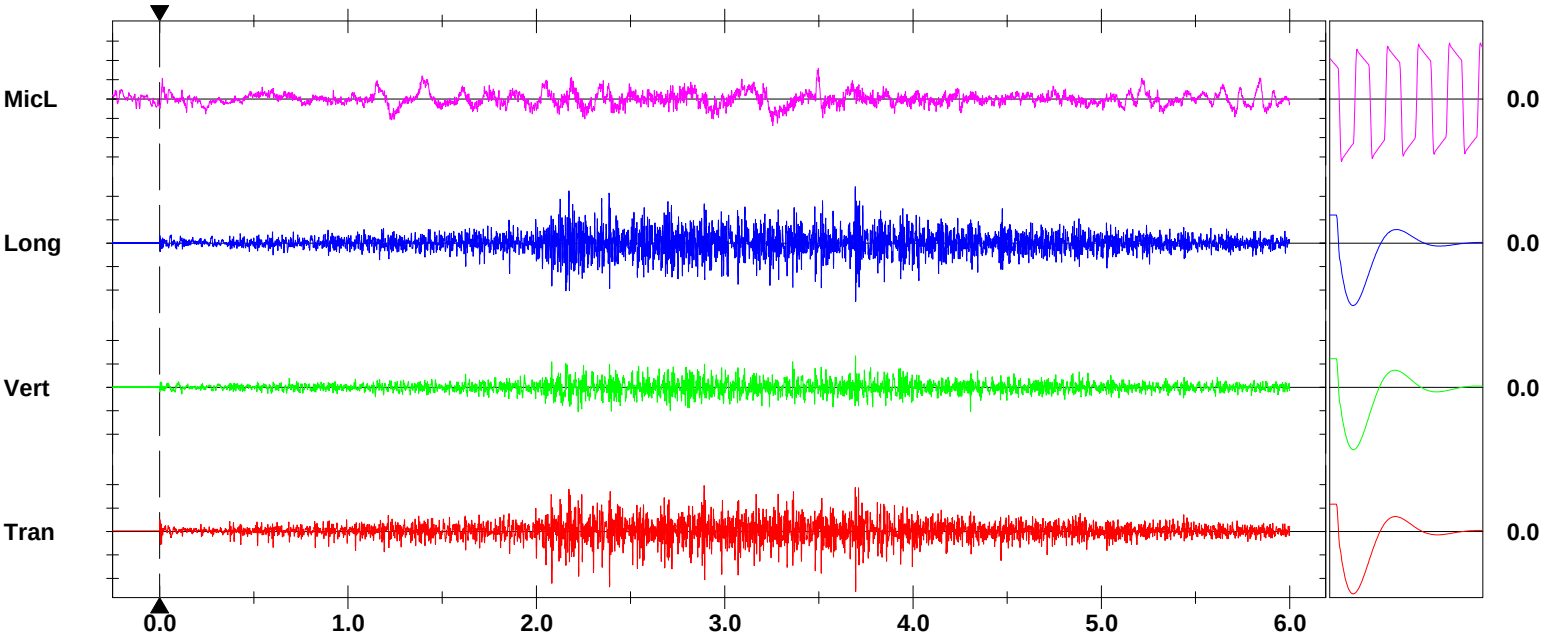
**Extended Notes**

**Microphone** Linear Weighting
**PSPL** 16.0 pa.(L) at 3.498 sec
**ZC Freq** 20.5 Hz
**Channel Test** Passed (Freq = 20.5 Hz Amp = 847 mv)

| | Tran | Vert | Long | |
|---|---|---|---|---|
| **PPV** | 12.8 | 6.73 | 12.4 | mm/s |
| **ZC Freq** | 158 | 186 | 186 | Hz |
| **Time (Rel. to Trig)** | 3.695 | 3.695 | 3.696 | sec |
| **Peak Acceleration** | 1.59 | 0.795 | 1.59 | g |
| **Peak Displacement** | 0.0151 | 0.0172 | 0.0184 | mm |
| **Sensor Check** | Passed | Passed | Passed | |
| **Frequency** | 7.5 | 7.6 | 7.3 | Hz |
| **Overswing Ratio** | 4.2 | 3.7 | 4.6 | |

**Peak Vector Sum** 18.1 mm/s at 3.696 sec




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

# Event Report

**Date/Time** Long at 12:28:49 June 5, 2014
**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** BE15259 V 10.60-1.1 Minimate Blaster
**Battery Level** 6.3 Volts
**Unit Calibration** January 2, 2014 by Instantel
**File Name** Q259FCUT.C10

**Post Event Notes**
5046408

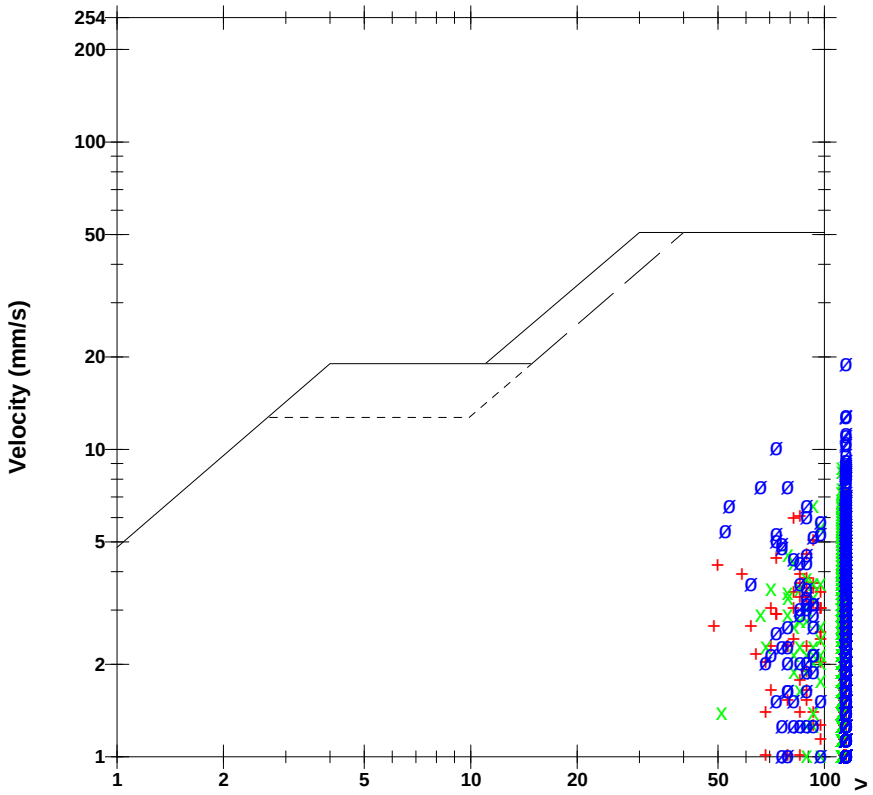
**Extended Notes**

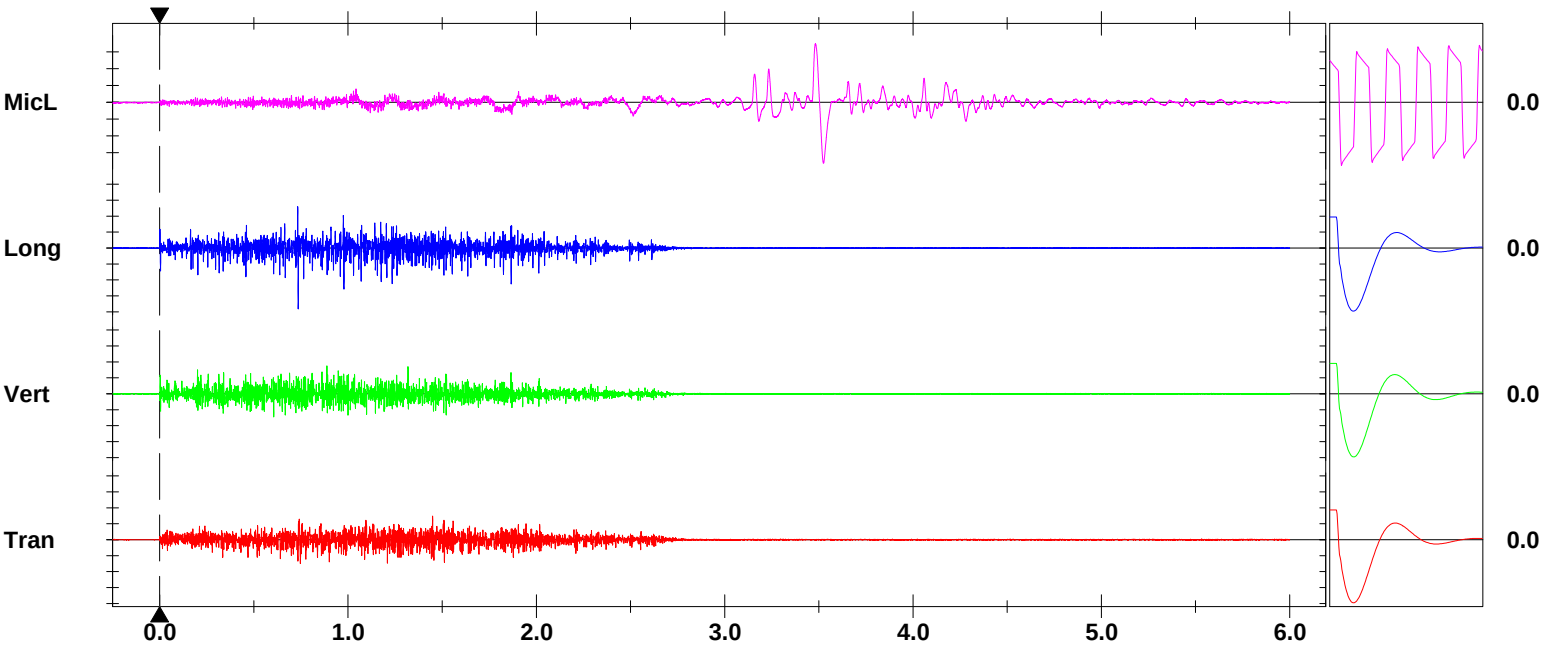
**Microphone** Linear Weighting
**PSPL** 36.3 pa.(L) at 3.523 sec
**ZC Freq** 8.2 Hz
**Channel Test** Passed (Freq = 20.5 Hz Amp = 645 mv)

| | Tran | Vert | Long | |
|---|---|---|---|---|
| **PPV** | 7.49 | 8.76 | 19.0 | mm/s |
| **ZC Freq** | 114 | 205 | 146 | Hz |
| **Time (Rel. to Trig)** | 0.747 | 0.888 | 0.736 | sec |
| **Peak Acceleration** | 1.01 | 1.17 | 2.12 | g |
| **Peak Displacement** | 0.0115 | 0.00854 | 0.0191 | mm |
| **Sensor Check** | Passed | Passed | Passed | |
| **Frequency** | 7.5 | 7.7 | 7.4 | Hz |
| **Overswing Ratio** | 3.8 | 3.3 | 4.1 | |

**Peak Vector Sum** 19.1 mm/s at 0.736 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 Sensor Check
**Trigger =**

# Event Report

**Date/Time** Vert at 00:26:24 June 2, 2014
**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** BE15259 V 10.60-1.1 Minimate Blaster
**Battery Level** 6.3 Volts
**Unit Calibration** January 2, 2014 by Instantel
**File Name** Q259FCOB.W00

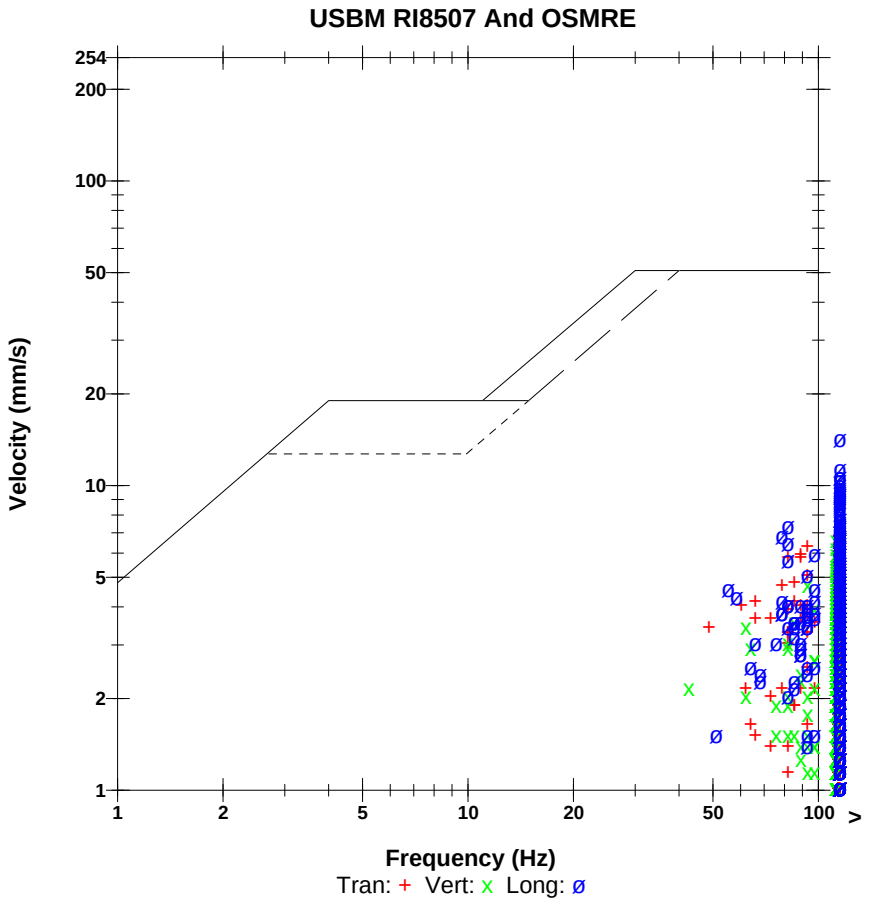
**Post Event Notes**
5046406

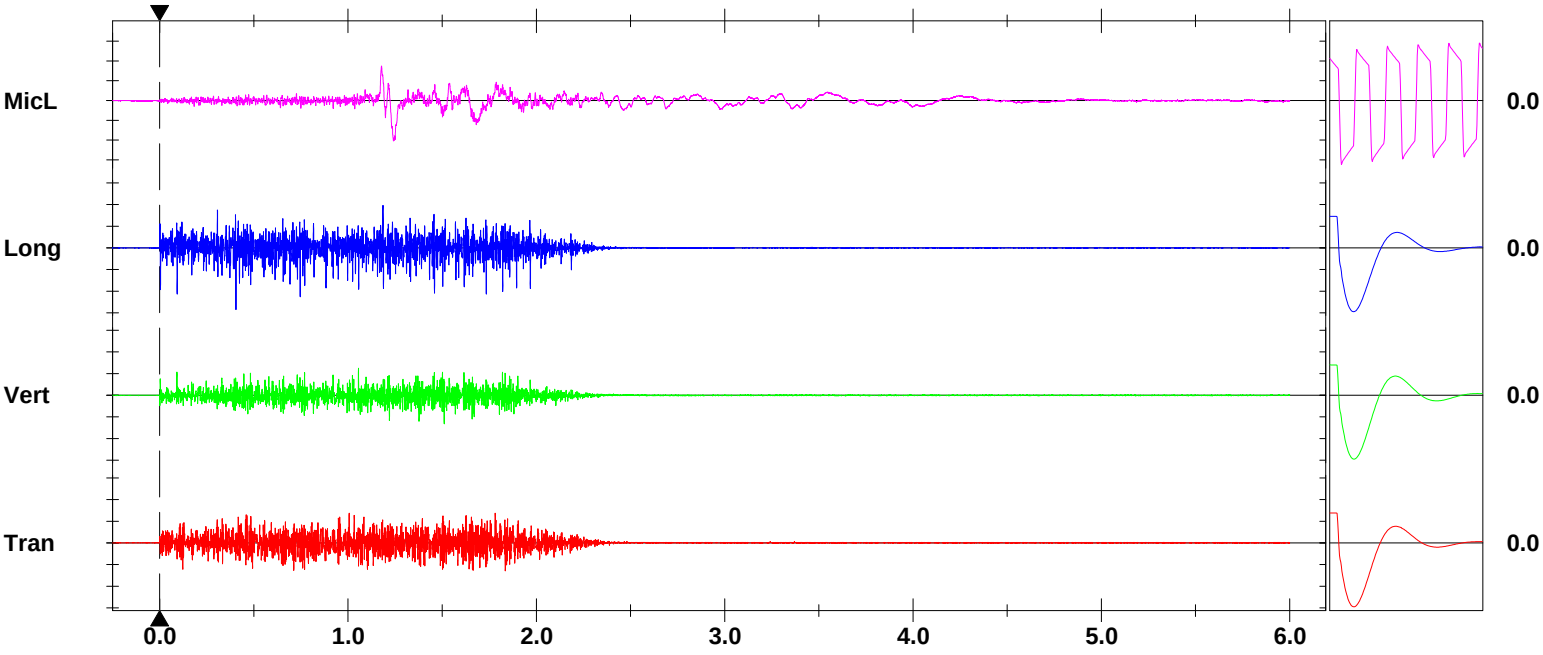
**Extended Notes**

**Microphone** Linear Weighting
**PSPL** 20.5 pa.(L) at 1.241 sec
**ZC Freq** 8.9 Hz
**Channel Test** Passed (Freq = 20.5 Hz Amp = 709 mv)

| | Tran | Vert | Long | |
|---|---|---|---|---|
| **PPV** | 6.86 | 6.60 | 14.2 | mm/s |
| **ZC Freq** | 205 | 228 | 158 | Hz |
| **Time (Rel. to Trig)** | 1.006 | 1.511 | 0.405 | sec |
| **Peak Acceleration** | 1.11 | 1.01 | 1.48 | g |
| **Peak Displacement** | 0.00895 | 0.00788 | 0.0130 | mm |
| **Sensor Check** | Passed | Passed | Passed | |
| **Frequency** | 7.5 | 7.6 | 7.3 | Hz |
| **Overswing Ratio** | 3.9 | 3.4 | 4.2 | |

**Peak Vector Sum** 14.3 mm/s at 0.405 sec




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

# Event Report

| | |
|---|---|
| **Date/Time** | Vert at 00:29:18 May 13, 2014 |
| **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** | BE15259 V 10.60-1.1 Minimate Blaster |
| **Battery Level** | 6.2 Volts |
| **Unit Calibration** | January 2, 2014 by Instantel |
| **File Name** | Q259FBNA.OU0 |

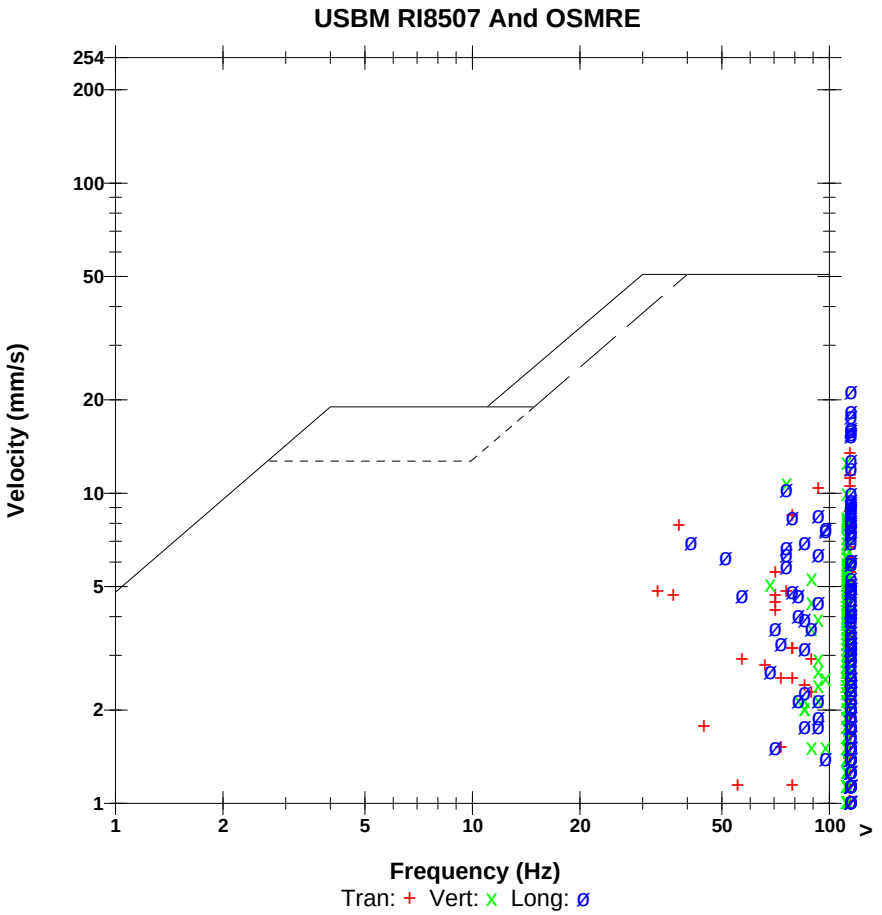
**Post Event Notes**
5039412

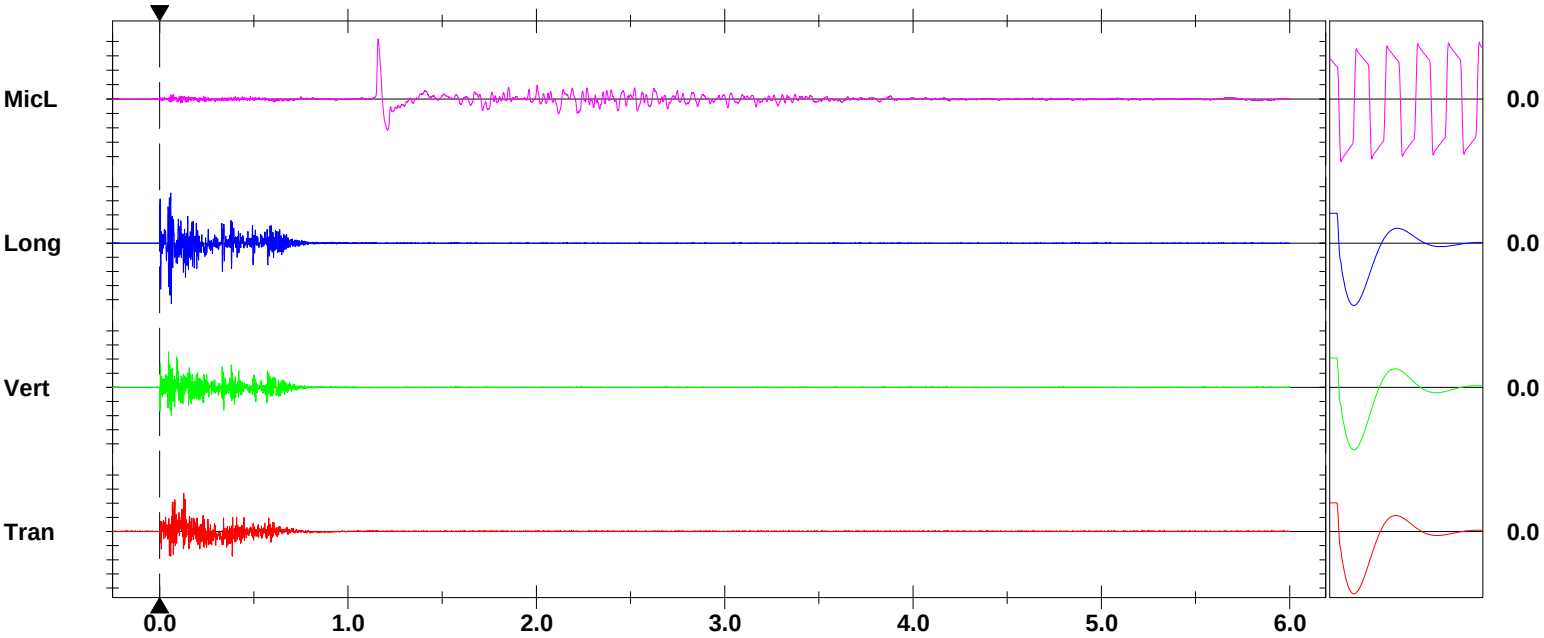
**Extended Notes**

| | |
|---|---|
| **Microphone** | Linear Weighting |
| **PSPL** | 83.5 pa.(L) at 1.160 sec |
| **ZC Freq** | 8.2 Hz |
| **Channel Test** | Passed (Freq = 20.5 Hz Amp = 760 mv) |

| | Tran | Vert | Long | |
|---|---|---|---|---|
| **PPV** | 13.5 | 12.6 | 21.3 | mm/s |
| **ZC Freq** | 186 | 137 | 137 | Hz |
| **Time (Rel. to Trig)** | 0.128 | 0.047 | 0.062 | sec |
| **Peak Acceleration** | 1.59 | 1.33 | 2.23 | g |
| **Peak Displacement** | 0.0200 | 0.0199 | 0.0232 | mm |
| **Sensor Check** | Passed | Passed | Passed | |
| **Frequency** | 7.5 | 7.7 | 7.3 | Hz |
| **Overswing Ratio** | 3.9 | 3.4 | 4.2 | |

**Peak Vector Sum** 23.3 mm/s at 0.062 sec




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

# Event Report

**Date/Time** Tran at 17:43:20 March 7, 2014
**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 1
Client: AGNICO-EAGLE MINES LTD
User Name: DIKES
General: BLAST MONITORING AT DIKE CREST

**Serial Number** BE13567 V 10.60-1.1 Minimate Blaster
**Battery Level** 6.4 Volts
**Unit Calibration** June 5, 2013 by Instantel
**File Name** O567F88J.W80

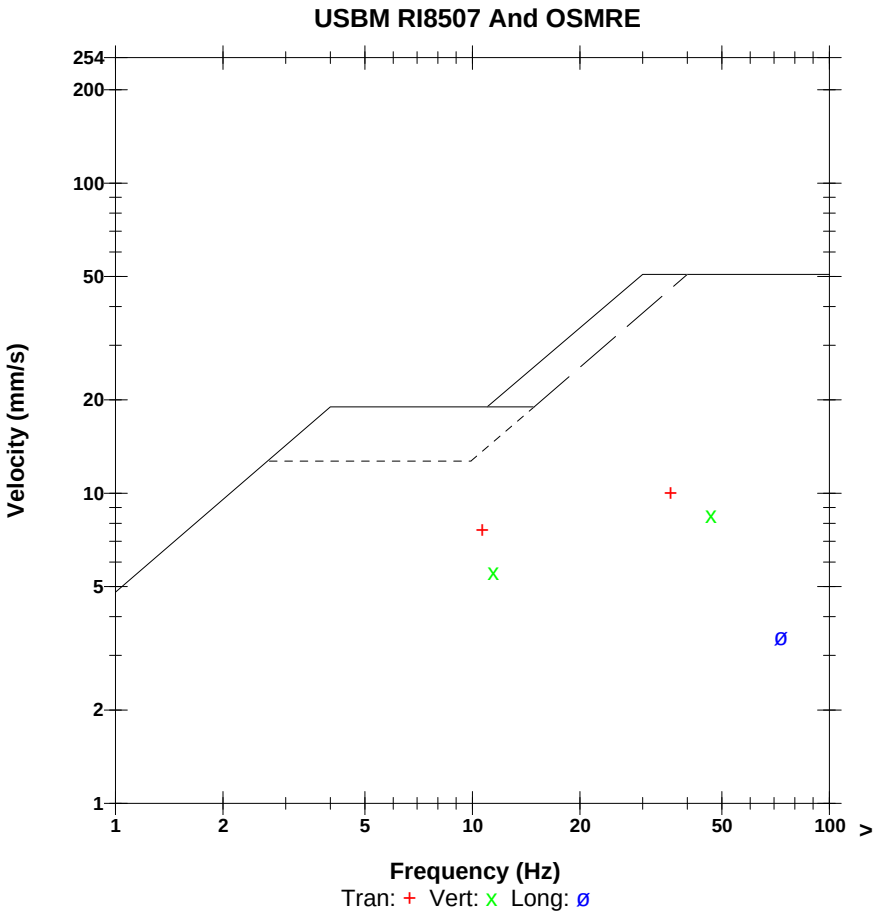
**Post Event Notes**
5025PS514 SEQ 1

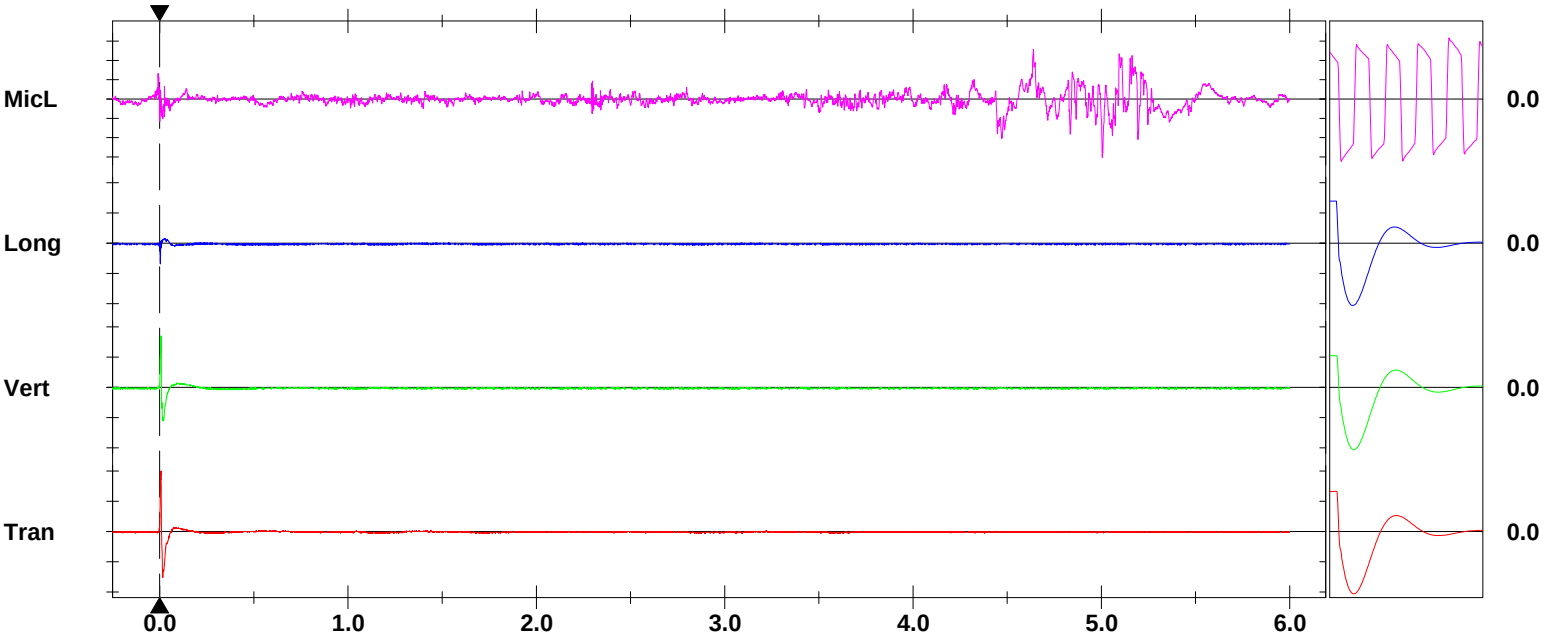
**Extended Notes**

**Microphone** Linear Weighting
**PSPL** 30.3 pa.(L) at 5.005 sec
**ZC Freq** 21.1 Hz
**Channel Test** Passed (Freq = 20.1 Hz Amp = 633 mv)

| | Tran | Vert | Long | |
|---|---|---|---|---|
| **PPV** | 10.0 | 8.51 | 3.43 | mm/s |
| **ZC Freq** | 35.9 | 47 | 73 | Hz |
| **Time (Rel. to Trig)** | 0.007 | 0.007 | 0.003 | sec |
| **Peak Acceleration** | 0.530 | 0.583 | 0.212 | g |
| **Peak Displacement** | 0.0727 | 0.0572 | 0.0137 | mm |
| **Sensor Check** | Passed | Passed | Passed | |
| **Frequency** | 7.5 | 7.5 | 7.7 | Hz |
| **Overswing Ratio** | 3.9 | 3.6 | 3.9 | |

**Peak Vector Sum** 13.2 mm/s at 0.007 sec




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