Appendix G6

Report*: 2012 Blast Monitoring Report for the Protection of Nearby Fish Habitat*

ANNUAL REPORT MEMORANDUM

Agnico Eagle Mines Ltd: Meadowbank Division
Environment Department

SUBJECT: 2012 Blast Monitoring Report for the Protection of Nearby Fish Habitat

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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.

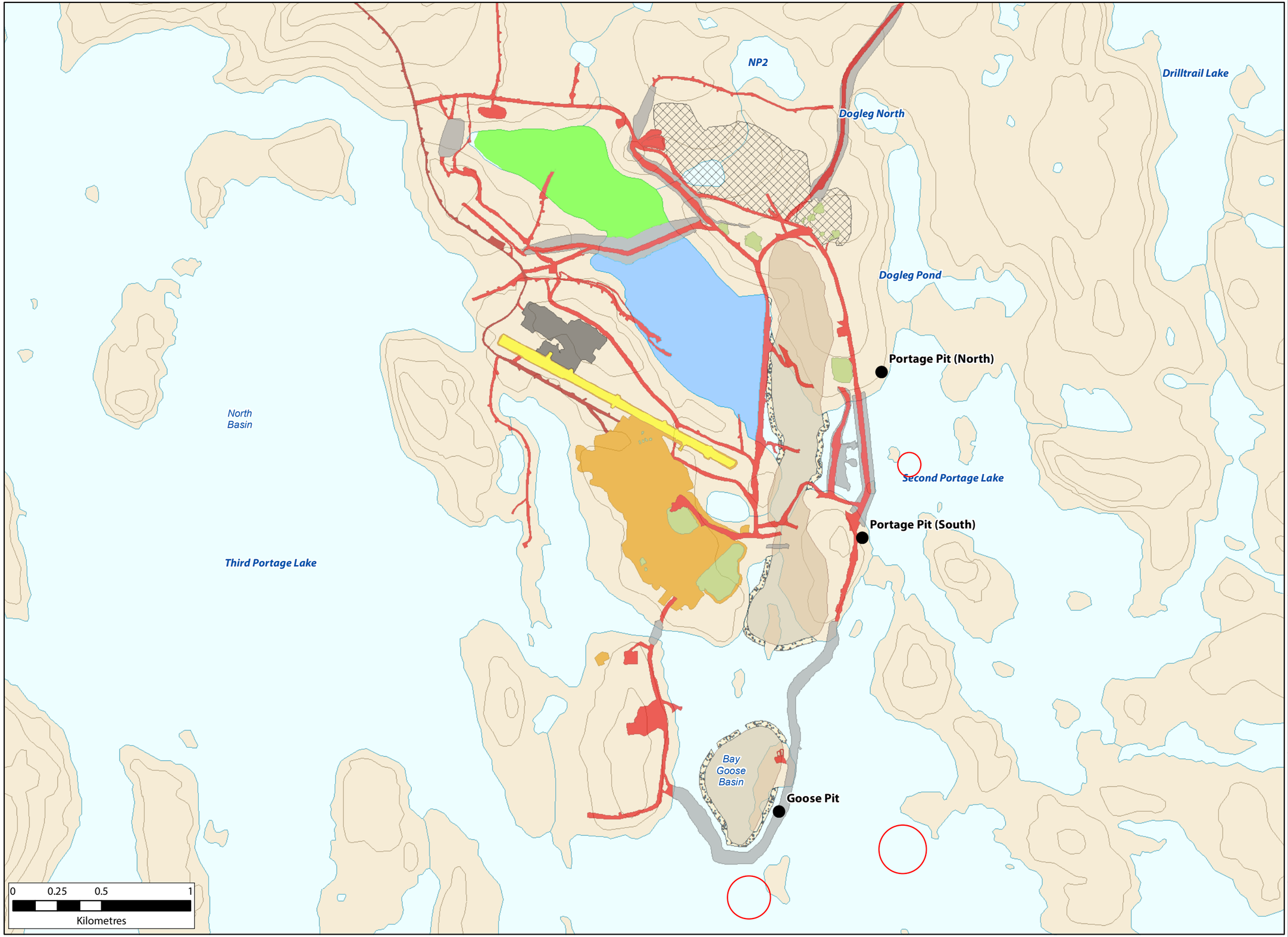
The detonation of explosives in or near water produces compressive shock waves that can cause significant impacts to the swim bladders of fish, rupture other internal organs and/or damage or kill fish eggs and larvae. In addition, the effects of the shock waves can be intensified in the presence of ice. 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 2012 during blasting activities at the North Portage Pit and South Portage pit. The locations of the blast monitoring stations in 2012, called Portage (North) (14W 7214597N 639457E) and Portage (South) (14W 7213663N 639349E) and along the Goose Pit (7212121 N 638879E) and are illustrated in Figure 1. The portage stations are located near the shoreline of Second Portage Lake and another station is located on the Bay-Goose Dike near Third Portage Lake East Basin.

In 2012, Meadowbank blast engineers have been optimizing blasting material density, patterns and timing to reduce dilution and control fly rock. They continue to use PPV and IPC for monitoring blasts but have also introduced sophisticated monitoring techniques such as video and geo-referencing to improve blast procedures and operations.



Legend

- Blast Monitoring Station Location
- Quarry
- AWAR Quarry
- Dikes
- Portage Attenuation Facility
- Tailings Storage Facility
- Roads
- AWAR
- Stockpiles
- Facility
- Airstrip
- Portage Rock Storage Facility
- Mine Pit Area
- Pit Cap
- Likely natural spawning areas nearest to blast monitoring stations

Blast Monitoring Station Locations

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PROJECT: DA11-062-03

CLIENT: Agnico-Eagle Mines Ltd., Meadowbank Div.

N W E S
UTM Zone 14 NAD83

DATE: MARCH 2013

SCALE: 1:20,000

DRAWN BY: LC

CHECKED BY: TF

FIGURE: 1

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)[i] 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 2012 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 so that replicates were removed. All stations monitored on the “central dike” were removed as this monitoring station is not required for fisheries protection and evaluation. Data was analyzed in excel 2010.

3 Results, Discussion and Conclusions

All of the 2012 PPV and IPC blast monitoring results are presented in Table 2. PPV concentrations exceeded the DFO limit of 13 mm/s on 13 occasions over the entire year (n = 231 monitored blasts for the entire year). Exceedances are summarized in Table 1. Few data were collected in January and February as the equipment was sent for re-calibration. 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 7 occasions (n = 193); 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 2012.

Date of Blast	Station	PPV (mm/s)		Peak Sound Pressure (kpa)	(sec)	Engineering comment
DFO Limit		13		50		
20-Mar-12	PORTAGE PIT	14.1	*	0.016	1.682	Surface blast immediately adjacent to station
28-Apr-12	PORTAGE PIT	18.7	*	0.0218	2.354	Possibly more than 8 holes at one time
15-May-12	GOOSE PIT	25	*	0	5.188	Pre-shear holes (surface blast)
25-May-12	GOOSE PIT	21.3	*		2.866	Mass blast and Pre-shear at same time
28-May-12	GOOSE PIT	13.4	*	0.442	2.104	Surface blast
12-Jul-12	GOOSE PIT	16.1		0.133	0.766	Longer holes than usual
29-Jul-12	GOOSE PIT	16.5		0.17	2.046	Surface blast immediately adjacent to station
1-Aug-12	GOOSE PIT	13.3		0.451	1.54	Surface blast
3-Aug-12	GOOSE PIT	13.2		0.0423	1.177	Surface blast
10-Aug-12	GOOSE PIT	19.1			3.942	Mass blast and Pre-shear at same time
12-Aug-12	GOOSE PIT	13.9		0.106	0.795	Surface blast
28-Aug-12	GOOSE PIT	15.7	*	0.297	2.058	Deeper holes than usual
5-Oct-12	GOOSE PIT	17	*	0.395	0.875	Deeper holes than usual
*During the period of egg incubation (for lakes near the Meadowbank mine the period is from August 15 to June 30)						

In 2012, the average PPV was 5.09 mm/s (CI +/- 0.51) with a maximum of 25 mm/s. The average has decreased from last year (6.33 mm/s in 2011). Nearly all of the exceedances were in Goose Pit operations due to surface (pre-shear) blasting (See table 1 engineering comments). From August 15 to June 30, during egg incubation, there were 7 exceedences all of which were in Goose Pit. The upper 95% confidence limit for all of the annual data was 13.25 mm/s.

As discussed in 2011 monitoring report, Wright (1982)[ii] determined that peak particle velocity greater than 13 mm/s is potentially damaging to incubating eggs, however Faulkner et al. (2006)[iii] 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.

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 compared to the distance from the blast to the monitoring station. Based on the monitoring station locations and comparison to Faulkner et al. (2006), exceedances of 13 mm/s PPV from the 2012 blasting are unlikely to impact salmonid incubation sites at the Meadowbank Mine site.

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[i] AEM. 2010. Meadowbank Gold Project Blast Monitoring Plan. Prepared by Agnico-Eagle Mines: Meadowbank Division. May 2010 version 1.

[ii] 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.

[iii] 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.

Table 2- 2012 PPV and IPC Monitoring Results						
Date of Blast	Station	Blast Pattern	Explosives	Peak Particle Velocity (mm/s)	Peak Sound Pressure (kpa)	(sec)
DFO Limit				*13*	*50*	
28-Jan-12	PORTAGE PIT	5081015	31018	7.2	0.0105	
29-Jan-12	PORTAGE PIT	5116328	27726	1.18	0.00625	
31-Jan-12	PORTAGE PIT	5109305	39942	2.01	0.0868	
1-Feb-12	PORTAGE PIT	5095263	40467	2.22	0.105	
2-Feb-12	PORTAGE PIT	5074006	6882	3.41	0.00975	
3-Feb-12	PORTAGE PIT	5116338	44624	1.88	0.0283	
4-Feb-12	PORTAGE PIT	5102274	6422	2.02	0.0163	
5-Feb-12	PORTAGE PIT	5109307	77873	5.61	0.0353	
6-Feb-12	PORTAGE PIT	5088250	38924	2.16	0.0478	
12-Feb-12	PORTAGE PIT	5095267	65824	4.65	0.0153	
12-Feb-12	PORTAGE PIT	5116340	53735	4.65	0.0153	
13-Feb-12	PORTAGE PIT	5102282	26572	2.46	0.00675	
15-Feb-12	PORTAGE PIT	5109311	64647	4.69	0.056	
17-Feb-12	PORTAGE PIT	5095267	0	3.87	0.011	
17-Feb-12	PORTAGE PIT	5109297	27646	4.82	0.0643	2.542
18-Feb-12	PORTAGE PIT	5088256	23173	1.96	0.013	
22-Feb-12	PORTAGE PIT	5095281	24984	1.11	0.0235	
23-Feb-12	PORTAGE PIT	5102280	26042	3.97	0.0393	2.205
25-Feb-12	PORTAGE PIT	5074012	40915	4.01	0.097	2.129
27-Feb-12	PORTAGE PIT	5067PS029	0	2.18	0.0175	0.101
27-Feb-12	PORTAGE PIT	5081023	20872	10.3	0.014	1.301
20-Mar-12	PORTAGE PIT	5074024	19899	14.1	0.016	1.682
24-Mar-12	GOOSE PIT	5130502	16987	8.19	0.0323	1.279
24-Mar-12	GOOSE PIT	5130524	11676	8.19	0.0323	1.279
30-Mar-12	GOOSE PIT	5130520	38786	8.7	0.281	3.435
2-Apr-12	PORTAGE PIT	5109335	54212	2.32	0.0095	1.707
4-Apr-12	PORTAGE PIT	5081035	29200	5.66	0.0193	4.604
8-Apr-12	GOOSE PIT	5130506	28079	8.97	0.148	3.106
8-Apr-12	PORTAGE PIT	5102296	50553	9.35	0.0395	5.708
9-Apr-12	PORTAGE PIT	5081037	46785	3.03	0.01	1.769
11-Apr-12	PORTAGE PIT	5109317	45052	2.99	0.0258	4.697
14-Apr-12	PORTAGE PIT	5102308	24295	8.05	0.0233	6.799
14-Apr-12	GOOSE PIT	5130508	39142	2.77	0.066	1.544
14-Apr-12	PORTAGE PIT	5102298	18365	8.05	0.0233	6.799
17-Apr-12	PORTAGE PIT	5109319	53459	1.61	0.0295	1.86
22-Apr-12	GOOSE PIT	5130532	6882	12.7		1.031
24-Apr-12	PORTAGE PIT	5067003	16683	11.9	0.018	1.482
26-Apr-12	GOOSE PIT	5130518	41591	3.97	0.026	0.874
28-Apr-12	PORTAGE PIT	5067005	19470	18.7	0.0218	2.354
29-Apr-12	PORTAGE PIT	5095fm273	2073	1.67	0.0488	2.072
29-Apr-12	GOOSE PIT	5130522	26731	3.44	0.113	1.434
29-Apr-12	PORTAGE PIT	5081039	44051	1.67	0.0488	2.072
2-May-12	GOOSE PIT	5123515	20056	3.31	0	2.34
2-May-12	GOOSE PIT	5123511	12998	3.31	0	2.342
3-May-12	PORTAGE PIT	5067007	34310	8.38	0.0215	4.51
4-May-12	PORTAGE PIT	5088PS304	0	2	0.034	2.634
6-May-12	GOOSE PIT	5123519	10567	2.14	0.224	2.686
6-May-12	PORTAGE PIT	5067015	10421	12.5	0.123	2.29
7-May-12	PORTAGE PIT	5095287	41034	4.89	0.015	1.833
8-May-12	PORTAGE PIT	5095297	13415	1.26	0.021	0.429
10-May-12	PORTAGE PIT	5067011	38565	12.9	0.0258	3.516
11-May-12	GOOSE PIT	5109PS541	0	9.01	0.443	0.697
11-May-12	GOOSE PIT	5123541	22636	7.49	0	5.188
13-May-12	PORTAGE PIT	5102292	44007	1.68	0.0205	4.096
15-May-12	GOOSE PIT	5109PS521	0	25	0	5.188
16-May-12	PORTAGE PIT	5088274	40340	3.41	0.023	3.575

Table 2- 2012 PPV and IPC Monitoring Results						
Date of Blast	Station	Blast Pattern	Explosives	Peak Particle Velocity (mm/s)	Peak Sound Pressure (kpa)	(sec)
DFO Limit				*13*	*50*	
20-May-12	GOOSE PIT	5123527	32883	6.58	0.362	0.759
21-May-12	PORTAGE PIT	5074040	11836	3.63	0.0255	2.274
21-May-12	PORTAGE PIT	5095285	49332	2.2	0.0435	1.81
22-May-12	GOOSE PIT	5123517	51702	5.24	0.445	1.469
24-May-12	PORTAGE PIT	5074040	0	3.88	0.00925	0.129
25-May-12	GOOSE PIT	5123521	40343	21.3		2.866
28-May-12	PORTAGE PIT	5102302	62061	1.84	0.0085	1.115
28-May-12	GOOSE PIT	5123525	38152	13.4	0.442	2.104
1-Jun-12	GOOSE PIT	5123529	41751	10.9	0.121	3.05
3-Jun-12	PORTAGE PIT	5074030	49356	4.53	0.015	6.334
4-Jun-12	PORTAGE PIT	5130400	18576	1.5	0.0108	4.913
4-Jun-12	PORTAGE PIT	5088278	43873	4.33	0.0263	4.142
5-Jun-12	GOOSE PIT	5109PS513	0	8.22	0.0858	0.815
6-Jun-12	GOOSE PIT	5123531	34873	7.65	0.106	1.553
7-Jun-12	PORTAGE PIT	5130402	15757	2.61	0.0213	3.12
9-Jun-12	GOOSE PIT	5123513	32413	6.04	0.0778	5.624
9-Jun-12	PORTAGE PIT	5074034	20975	6.59	0.0345	4.673
9-Jun-12	PORTAGE PIT	5130410	13269	2.02	0.0323	3.161
10-Jun-12	PORTAGE PIT	5130404	10037	2.6	0.0193	1.352
11-Jun-12	PORTAGE PIT	5130412	9617	2.17	0.023	1.421
11-Jun-12	PORTAGE PIT	5088PS310	0	1.71	0.016	1.782
11-Jun-12	GOOSE PIT	5109ps533	0	7.38	0.0368	0.113
13-Jun-12	GOOSE PIT	5123509	5454	8.6	0.36	1.239
13-Jun-12	PORTAGE PIT	5095PS319	0	1.08	0.095	2.246
14-Jun-12	PORTAGE PIT	5067PS031	0	3.41	0.024	4.781
14-Jun-12	PORTAGE PIT	5067PS051	0	1.22	0.0903	1.642
14-Jun-12	PORTAGE PIT	5074036	26291	3.41	0.024	4.781
15-Jun-12	PORTAGE PIT	5130406	0	2.55	0.037	2.873
16-Jun-12	GOOSE PIT	5123533	19233	6.65	0.0868	2.289
17-Jun-12	PORTAGE PIT	5130414	8757	1.93	0.0358	4.7
17-Jun-12	PORTAGE PIT	5130416	14263	1.93	0.0358	4.7
18-Jun-12	PORTAGE PIT	5074032	35093	2.51	0.0238	1.688
18-Jun-12	GOOSE PIT	5123503	13168	9.34	0.137	1.543
19-Jun-12	PORTAGE PIT	5053PS004	0	5.54	0.116	1.214
21-Jun-12	PORTAGE PIT	5067017	7781	5.48	0.0873	2.652
21-Jun-12	PORTAGE PIT	5081049	27409	6.98	0.0318	2.148
21-Jun-12	PORTAGE PIT	5067009	10527	5.48	0.0873	2.652
22-Jun-12	PORTAGE PIT	5130426	19549	1.49	0.00775	4.649
24-Jun-12	PORTAGE PIT	5053PS012	0	7.27	0.0698	1.163
29-Jun-12	PORTAGE PIT	5081041	13231	1.43	0.01	1.779
29-Jun-12	PORTAGE PIT	5130430	32148	1.96	0.00975	4.641
1-Jul-12	PORTAGE PIT	5060010	27042	9.57	0.0588	2.892
2-Jul-12	PORTAGE PIT	5130418	11315	2.53	0.0188	3.354
6-Jul-12	PORTAGE PIT	5130436	11741	2.2	0.0165	2.976
6-Jul-12	PORTAGE PIT	5060008	29274	5.76	0.0615	1.607
7-Jul-12	GOOSE PIT	5123501	5332	2.69	0.0388	2.024
8-Jul-12	PORTAGE PIT	5095289	53746	4.21	0.0163	1.715
8-Jul-12	PORTAGE PIT	5095PS312	0	4.33	0.096	2.427
10-Jul-12	PORTAGE PIT	5060012	26711	8.67	0.023	3.719
11-Jul-12	PORTAGE PIT	5074062	5839	2.9	0.0143	5.36
11-Jul-12	PORTAGE PIT	5095PS312	0	1.79	0.02	0.408
11-Jul-12	PORTAGE PIT	5081031	26181	2.9	0.0143	5.36
12-Jul-12	GOOSE PIT	5116508	19949	16.1	0.133	0.766
15-Jul-12	GOOSE PIT	5116514	26893	9.21	0.03	1.148
16-Jul-12	PORTAGE PIT	5095291	68780	5.36	0.0245	1.67

Table 2- 2012 PPV and IPC Monitoring Results						
Date of Blast	**Station**	**Blast Pattern**	**Explosives**	**Peak Particle Velocity (mm/s)**	**Peak Sound Pressure (kpa)**	**(sec)**
DFO Limit				*13*	*50*	
18-Jul-12	PORTAGE PIT	5060014	35030	7.55	0.0335	2.288
20-Jul-12	PORTAGE PIT	5102304	32799	4.8	0.0145	1.482
20-Jul-12	PORTAGE PIT	5102306	50053	4.8	0.0145	1.482
21-Jul-12	GOOSE PIT	5116520	34452	12.9	0.0333	1.011
22-Jul-12	PORTAGE PIT	5102314	48702	3.65	0.0075	2.373
24-Jul-12	GOOSE PIT	5116512	21161	6.36	0.0583	3.301
27-Jul-12	PORTAGE PIT	5102322	35397	3.31	0.00875	1.996
28-Jul-12	PORTAGE PIT	5123413	22433	2.4	0.0333	2.252
29-Jul-12	GOOSE PIT	5116524	43799	16.5	0.17	2.046
29-Jul-12	PORTAGE PIT	5074046	10497	4.3	0.0283	2.289
31-Jul-12	PORTAGE PIT	5095293	44634	1.28	0.00725	1.534
1-Aug-12	GOOSE PIT	5116528	45506	13.3	0.451	1.54
2-Aug-12	PORTAGE PIT	5074048	19333	1.5	0.0128	3.062
3-Aug-12	GOOSE PIT	5116542	14033	13.2	0.0423	1.177
4-Aug-12	PORTAGE PIT	5081059	22278	6.73	0.0645	3.108
6-Aug-12	GOOSE PIT	5116520	0	3.72	0.0183	2.291
7-Aug-12	PORTAGE PIT	5088PS320	0	2.81	0.035	3.741
8-Aug-12	PORTAGE PIT	5123415	24099	1.97	0.0118	5.57
9-Aug-12	PORTAGE PIT	5088282	9319	3.47	0.015	1.724
10-Aug-12	GOOSE PIT	5116532	45384	19.1		3.942
12-Aug-12	GOOSE PIT	5116546	10623	13.9	0.106	0.795
12-Aug-12	PORTAGE PIT	5074050	34269	2.69	0.02	2.77
14-Aug-12	PORTAGE PIT	5074052	15012	2.5	0.0205	2.111
14-Aug-12	PORTAGE PIT	5074054	5109	2.5	0.0205	2.111
16-Aug-12	PORTAGE PIT	5053PS029	0	1.79	0.0248	6.829
16-Aug-12	PORTAGE PIT	5067021	8314	1.79	0.0248	6.829
17-Aug-12	PORTAGE PIT	5088296	20164	4.36	0.0415	4.12
18-Aug-12	PORTAGE PIT	5074064	8576	2.39	0.0163	3.428
19-Aug-12	GOOSE PIT	5116536	36837	9.53	0.461	1.893
21-Aug-12	PORTAGE PIT	5067019	4156	3.53	0.00725	1.55
21-Aug-12	PORTAGE PIT	5067023	16446	3.53	0.00725	1.55
22-Aug-12	GOOSE PIT	5123539	34130	5.16	0.163	6.133
23-Aug-12	PORTAGE PIT	5053003	24554	5.18	0.0133	1.345
25-Aug-12	PORTAGE PIT	5067025	37744	3.97	0.0113	3.64
26-Aug-12	PORTAGE PIT	5102320	28032	3.69	0.0173	1.878
28-Aug-12	GOOSE PIT	5123537	36088	15.7	0.297	2.058
30-Aug-12	GOOSE PIT	5116516	15565	6.79	0.108	3.236
1-Sep-12	PORTAGE PIT	5053005	47380	6.87	0.0298	1.669
1-Sep-12	GOOSE PIT	5116POP542	0	1.78	0.0603	0.906
4-Sep-12	PORTAGE PIT	5074056	27864	4.06	0.0075	3.898
10-Sep-12	PORTAGE PIT	5067029	0	1.46	0.0363	2.506
13-Sep-12	GOOSE PIT	5123535	0	3.8	0.116	2.67
15-Sep-12	PORTAGE PIT	5088298	0	4.55	0.0195	3.81
16-Sep-12	PORTAGE PIT	5053ps035	0	3.8	0.116	2.67
16-Sep-12	PORTAGE PIT	5067035	0	2.05	0.0283	2.63
18-Sep-12	PORTAGE PIT	5081251	0	4.71	0.453	6.18
18-Sep-12	GOOSE PIT	5116526	0	4.71	0.453	6.177
19-Sep-12	PORTAGE PIT	5067037	0	2.16	0.0195	2.7
23-Sep-12	PORTAGE PIT	5123421	0	1.33	0.0155	4.76
24-Sep-12	PORTAGE PIT	5067PS253	0	4.54	0.0278	1.776
27-Sep-12	GOOSE PIT	5116550	0	6.69	0.0445	1.357
28-Sep-12	GOOSE PIT	5116510	0	8.71	0.0325	1.183
1-Oct-12	PORTAGE PIT	5130440	0	1.67	0.00775	1.803
4-Oct-12	PORTAGE PIT	5081253	0	2.64	0.006	1.458
5-Oct-12	GOOSE PIT	5109503	0	17	0.395	0.875

Table 2- 2012 PPV and IPC Monitoring Results						
Date of Blast	**Station**	**Blast Pattern**	**Explosives**	**Peak Particle Velocity (mm/s)**	**Peak Sound Pressure (kpa)**	**(sec)**
DFO Limit				*13*	*50*	
5-Oct-12	PORTAGE PIT	5060018	0	2.38	0.0178	1.7
5-Oct-12	PORTAGE PIT	5095303	0	2.38	0.0178	1.7
8-Oct-12	GOOSE PIT	5123543	0	4.11	0.0598	0.681
10-Oct-12	PORTAGE PIT	5130422	0	3.7	0.0138	4.224
12-Oct-12	GOOSE PIT	5109507	0	6.78	0.0715	3.526
13-Oct-12	PORTAGE PIT	5053PS041	0	2.55	0.0493	1.726
14-Oct-12	GOOSE PIT	5116538	16609	2.46	0.0255	1.191
15-Oct-12	PORTAGE PIT	5088292	39535	4.04	0.0103	1.325
16-Oct-12	PORTAGE PIT	5130424	23645	3.9	0.0193	4.673
19-Oct-12	GOOSE PIT	5109PS554	0	2.07	0.008	2.885
19-Oct-12	PORTAGE PIT	5123417	11204	3.84	0.00625	2.204
22-Oct-12	GOOSE PIT	5116540	67187	5.1	0.0638	2.199
25-Oct-12	GOOSE PIT	5109509	29191	9.39	0.027	2.86
26-Oct-12	PORTAGE PIT	5123425	36083	1.89	0.0268	2.983
26-Oct-12	PORTAGE PIT	5123423	0	1.89	0.0268	2.983
27-Oct-12	GOOSE PIT	5109547	15292	11.3	0.125	0.808
27-Oct-12	PORTAGE PIT	5088300	18013	2.46	0.081	3.715
29-Oct-12	GOOSE PIT	5109505	54645	5.51	0.055	1.223
29-Oct-12	GOOSE PIT	5109533	14572	3.86	0.0203	3.742
1-Nov-12	PORTAGE PIT	5088306	68632	6.07	0.033	1.143
1-Nov-12	GOOSE PIT	5109533	0	3.86	0.0203	3.742
2-Nov-12	PORTAGE PIT	5123425	0	2.46	0.016	3.254
4-Nov-12	PORTAGE PIT	5123405	11425	2.46	0.016	3.254
5-Nov-12	GOOSE PIT	5109511	41882	9.61	0.00075	0.573
7-Nov-12	PORTAGE PIT	5067PS263	0	6.07	0.033	1.143
7-Nov-12	PORTAGE PIT	5088304	28732	1.85	0.00375	5.813
10-Nov-12	GOOSE PIT	5109535	53963	6.96	0.0673	1.148
12-Nov-12	GOOSE PIT	5109531	31051	6.44	0.082	5.562
14-Nov-12	GOOSE PIT	5109537	60297	3.58	0.0195	1.169
15-Nov-12	PORTAGE PIT	5102318	28440	2.57	0.029	1.975
16-Nov-12	PORTAGE PIT	5123401	61240	3.61	0.0188	1.846
18-Nov-12	PORTAGE PIT	5067PS273	0	2.47	0.031	1.664
19-Nov-12	PORTAGE PIT	5102326	32774	3.16	0.0115	2.624
22-Nov-12	GOOSE PIT	5109539	33824	7.21	0.0035	4.716
23-Nov-12	GOOSE PIT	5109529	48652	6.38	0.034	1.539
23-Nov-12	PORTAGE PIT	5088PS316	0	1.69	0.0433	2.336
24-Nov-12	PORTAGE PIT	5081273	45126	2.55	0.0173	1.716
25-Nov-12	PORTAGE PIT	5123435	68776	1.77	0.0373	6.317
26-Nov-12	GOOSE PIT	5116POP10	7707	2.11	0.051	1.53
27-Nov-12	PORTAGE PIT	5102312	48402	1.79	0.0265	2.444
28-Nov-12	PORTAGE PIT	5123427	29076	1.94	0.01	1.999
1-Dec-12	GOOSE PIT	5109513	49979	9.41	0.0495	0.924
3-Dec-12	PORTAGE PIT	5081277	43150	2.13	0.0165	1.739
8-Dec-12	PORTAGE PIT	5081271	73003	8.36	0.0393	5.072
9-Dec-12	GOOSE PIT	5109543	24772	8.36	0.0393	5.072
10-Dec-12	PORTAGE PIT	5053009	29507	4.44	0.0138	3.804
11-Dec-12	GOOSE PIT	5109543	0	2.34	0.103	1.381
11-Dec-12	PORTAGE PIT	5123429	41558	2.34	0.103	1.381
13-Dec-12	PORTAGE PIT	5116400	17112	1.94	0.00828	2.187
13-Dec-12	PORTAGE PIT	5081279	35920	5.99	0.0183	3.72
16-Dec-12	GOOSE PIT	5109527	37064	6.96	0.0673	4.56
18-Dec-12	PORTAGE PIT	5081283	43078	2.98	0.00625	1.345
20-Dec-12	GOOSE PIT	5109545	46242	4.35	0.147	2.579
20-Dec-12	PORTAGE PIT	5095309	8116	5.59	0.00875	1.692
20-Dec-12	PORTAGE PIT	5116402	47993	2.18	0.0435	2.25

Table 2- 2012 PPV and IPC Monitoring Results						
Date of Blast	**Station**	**Blast Pattern**	**Explosives**	**Peak Particle Velocity (mm/s)**	**Peak Sound Pressure (kpa)**	**(sec)**
DFO Limit				*13*	*50*	
21-Dec-12	PORTAGE PIT	5116404	28173	1.79	0.0378	3.313
23-Dec-12	GOOSE PIT	5109525	47813	2.87	0.0425	2.248
23-Dec-12	PORTAGE PIT	5095311	50635	2.2	0.0418	3.993
25-Dec-12	PORTAGE PIT	5116406	13912	2.04	0.0195	3.98
25-Dec-12	GOOSE PIT	5088PS526	0	2.87	0.0425	2.25
27-Dec-12	PORTAGE PIT	5116410	10444	1.33	0.00875	2.711
28-Dec-12	GOOSE PIT	5109515	53219	11.5	0.109	0.957
29-Dec-12	PORTAGE PIT	5095317	45572	4.37	0.0175	3.328
30-Dec-12	PORTAGE PIT	5074252	17946	4.42	0.006	2.807
31-Dec-12	PORTAGE PIT	5116412	48859	1.63	0.0243	2.152

Instantel

Event Report

Date/Time	Vert at 12:56:24 May 15, 2012
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	BE18425 V 10.30-1.1 Minimate Blaster
Battery Level	6.3 Volts
Unit Calibration	April 12, 2012 by Instantel
File Name	T425EA83.Y00

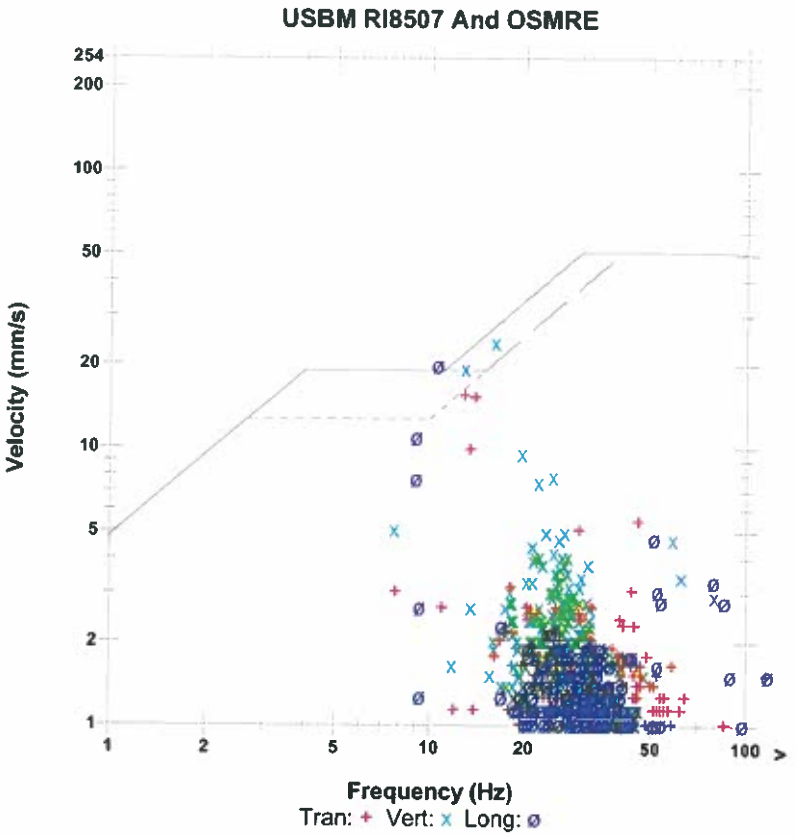
Post Event Notes
Bay-Goose Monitoring Station D
BLAST TODAY May 15th, 2012, 12:45 PM at GOOSE Pit (5123541, 5109541-2 &5109PS521-1)

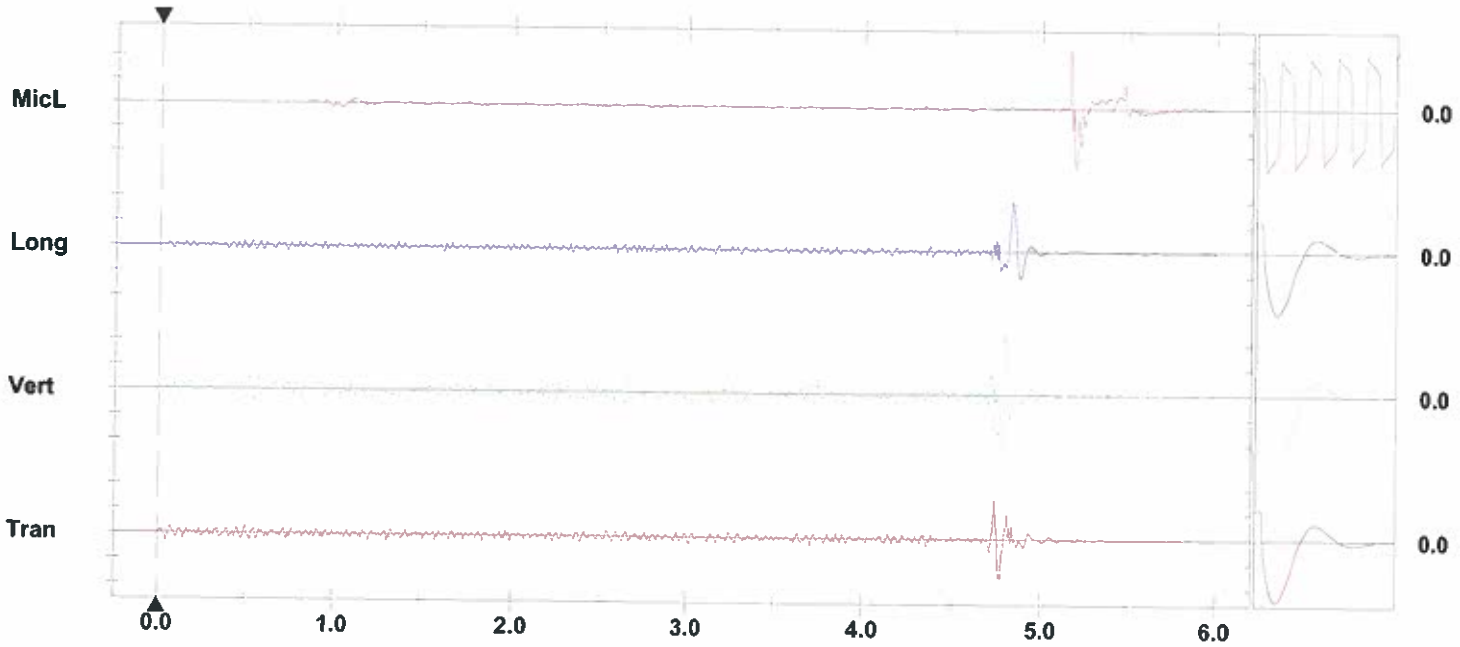
Extended Notes

Microphone	Linear Weighting
PSPL	*** pa.(L) at 5.188 sec
ZC Freq	5.6 Hz
Channel Test	Passed (Freq = 20.1 Hz Amp = 645 mv)

	Tran	Vert	Long	
PPV	15.5	24.0	19.8	mm/s
ZC Freq	12.8	16.0	10.5	Hz
Time (Rel. to Trig)	4.773	4.789	4.836	sec
Peak Acceleration	0.318	0.318	0.212	g
Peak Displacement	0.183	0.222	0.280	mm
Sensor Check	Passed	Passed	Passed	
Frequency	7.4	7.3	7.3	Hz
Overswing Ratio	3.9	4.2	4.6	

Peak Vector Sum 25.0 mm/s at 4.789 sec
***** : Out of Range**





Time Scale: 0.50 sec/div **Amplitude Scale:** Geo: 10.00 mm/s/div Mic: 200 pa.(L)/div
Trigger = ▶ ◀

Sensor Check

Instantel

Event Report

25

Date/Time	Vert at 06:41:43 May 24, 2012
Trigger Source	Geo: 1.00 mm/s
Range	Geo : 254 mm/s
Record Time	7.0 sec at 4096 sps
Job Number:	1
Notes	
Location:	PORTAGE PIT
Client:	Agnico-Eagle Mines Limited
User Name:	Meadowbank Division
General:	Engineering Departement

Serial Number	BE15259 V 10.30-1.1 Minimate Blaster
Battery Level	6.2 Volts
Unit Calibration	December 20, 2011 by Instantel
File Name	Q259EAOA.LJ0

Post Event Notes
5123521
5109PS529-1

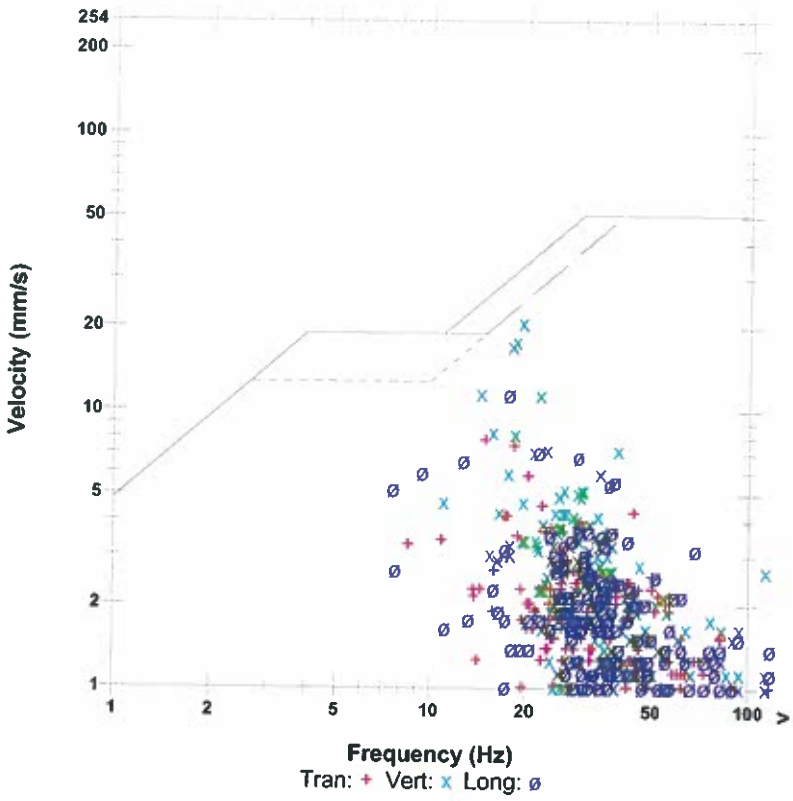
Extended Notes

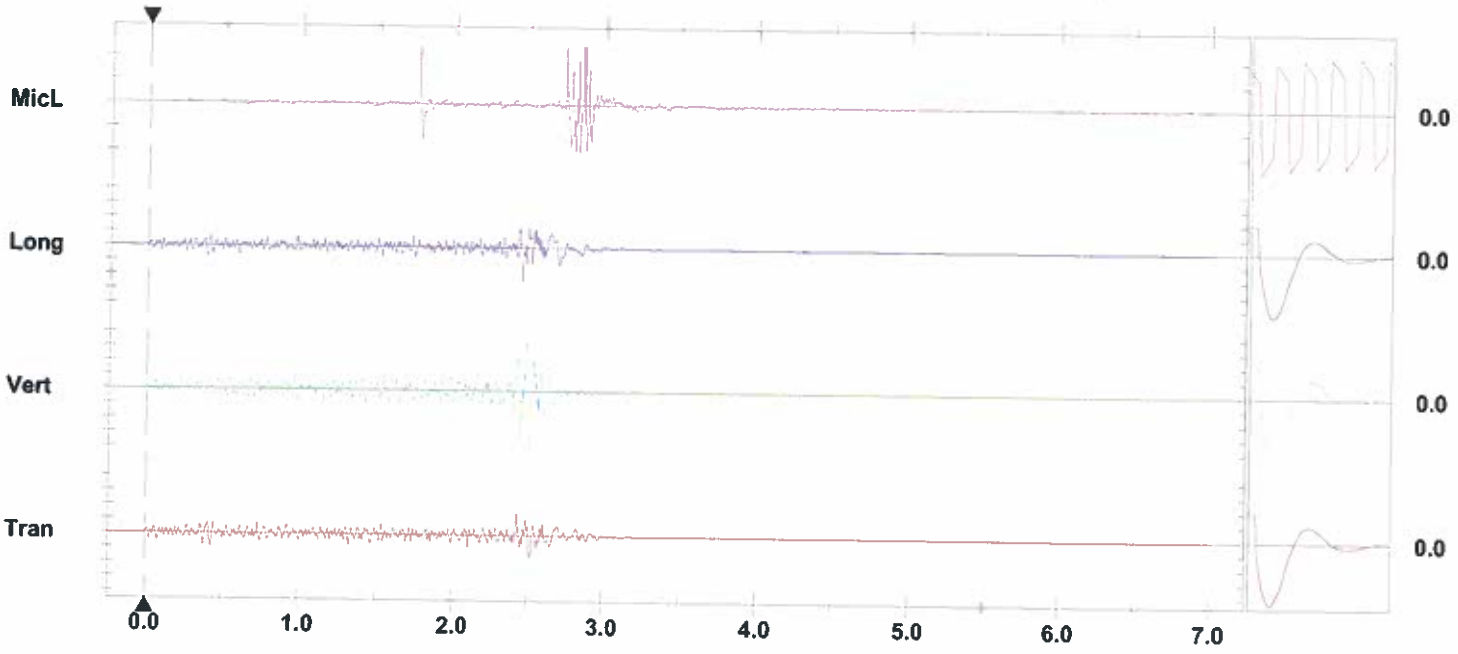
Microphone	Linear Weighting
PSPL	*** pa.(L) at 2.866 sec
ZC Freq	59 Hz
Channel Test	Passed (Freq = 20.5 Hz Amp = 538 mv)

	Tran	Vert	Long	
PPV	7.87	20.8	11.4	mm/s
ZC Freq	14.8	19.3	17.7	Hz
Time (Rel. to Trig)	2.437	2.510	2.455	sec
Peak Acceleration	0.212	0.477	0.265	g
Peak Displacement	0.0700	0.145	0.108	mm
Sensor Check	Passed	Passed	Passed	
Frequency	7.5	7.6	7.2	Hz
Overswing Ratio	3.7	3.2	4.0	

Peak Vector Sum 21.3 mm/s at 2.510 sec
***** : Out of Range**

USBM RI8507 And OSMRE





Time Scale: 0.50 sec/div **Amplitude Scale:** Geo: 5.00 mm/s/div Mic: 200 pa.(L)/div
Trigger = ▶ ◀

Sensor Check

Event Report

Date/Time Long at 12:38:56 April 28, 2012
Trigger Source Geo: 1.00 mm/s
Range Geo : 254 mm/s
Record Time 7.0 sec at 4096 sps
Job Number: 1
Notes
Location: PORTAGE PIT
Client: Agnico-Eagle Mines Limited
User Name: Meadowbank Division
General: Engineering Departement

Serial Number BE15259 V 10.30-1.1 Minimate Blaster
Battery Level 6.3 Volts
Unit Calibration December 20, 2011 by Instantel
File Name Q259E9CL.SW0

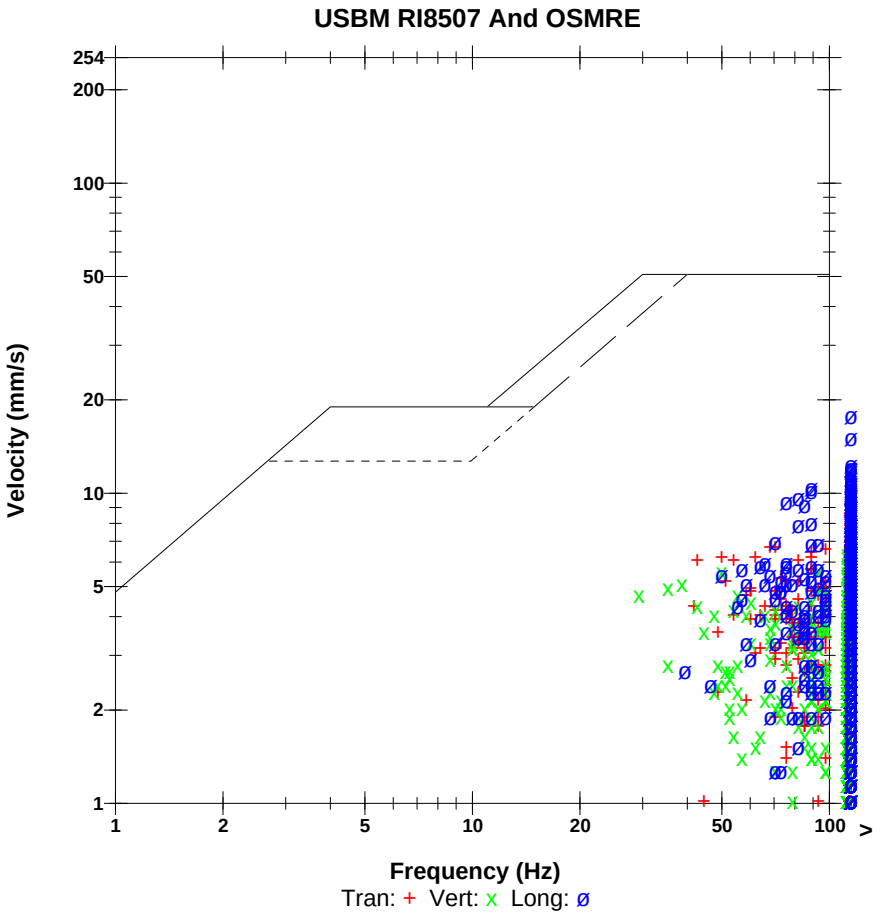
Post Event Notes
5067005 & 5110CEN-BLAST 12

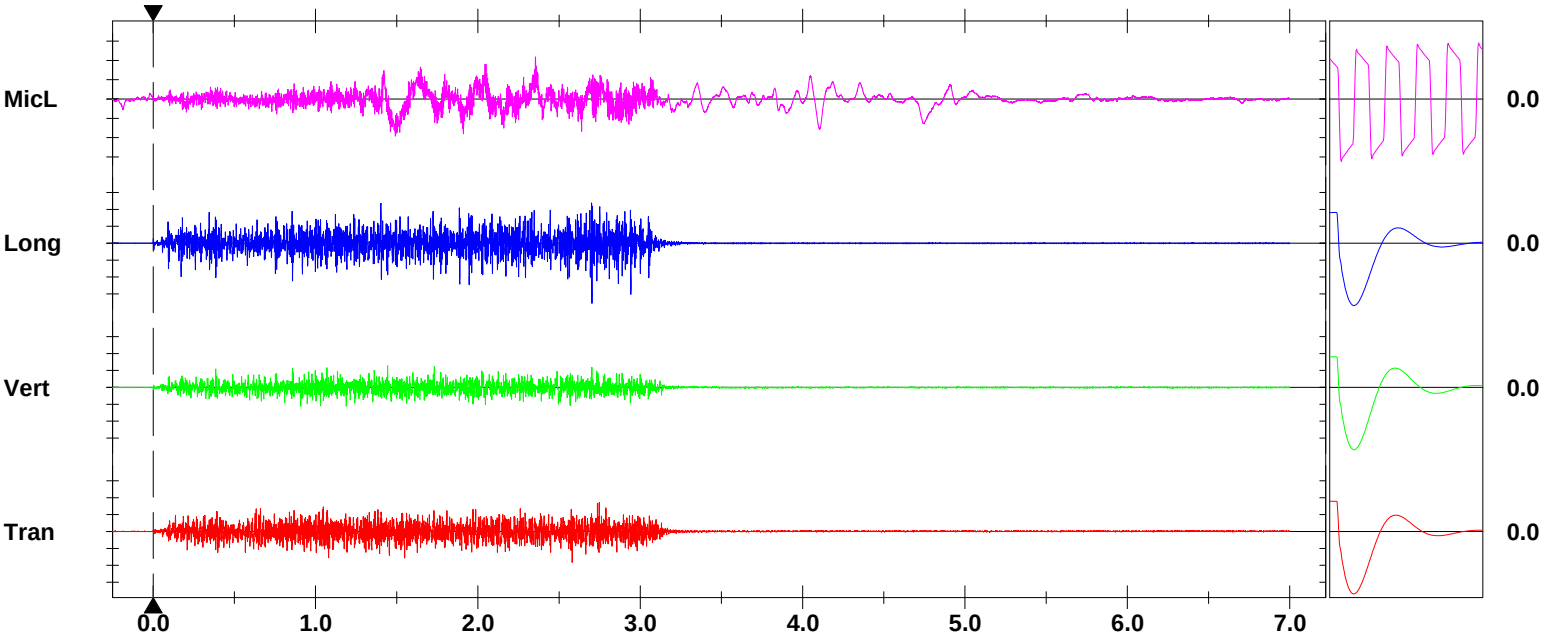
Extended Notes

Microphone Linear Weighting
PSPL 21.8 pa.(L) at 2.354 sec
ZC Freq 9.7 Hz
Channel Test Passed (Freq = 20.5 Hz Amp = 620 mv)

	Tran	Vert	Long	
PPV	9.14	6.35	17.8	mm/s
ZC Freq	186	108	158	Hz
Time (Rel. to Trig)	2.581	1.444	2.703	sec
Peak Acceleration	1.27	0.795	1.96	g
Peak Displacement	0.0160	0.0199	0.0167	mm
Sensor Check	Passed	Passed	Passed	
Frequency	7.4	7.6	7.2	Hz
Overswing Ratio	3.8	3.3	4.1	

Peak Vector Sum 18.7 mm/s at 2.702 sec





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

Instantel Event Report

Date/Time	Vert at 12:32:42 August 10, 2012
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	6.4 Volts
Unit Calibration	April 12, 2012 by Instantel
File Name	T424EEP6.UI0

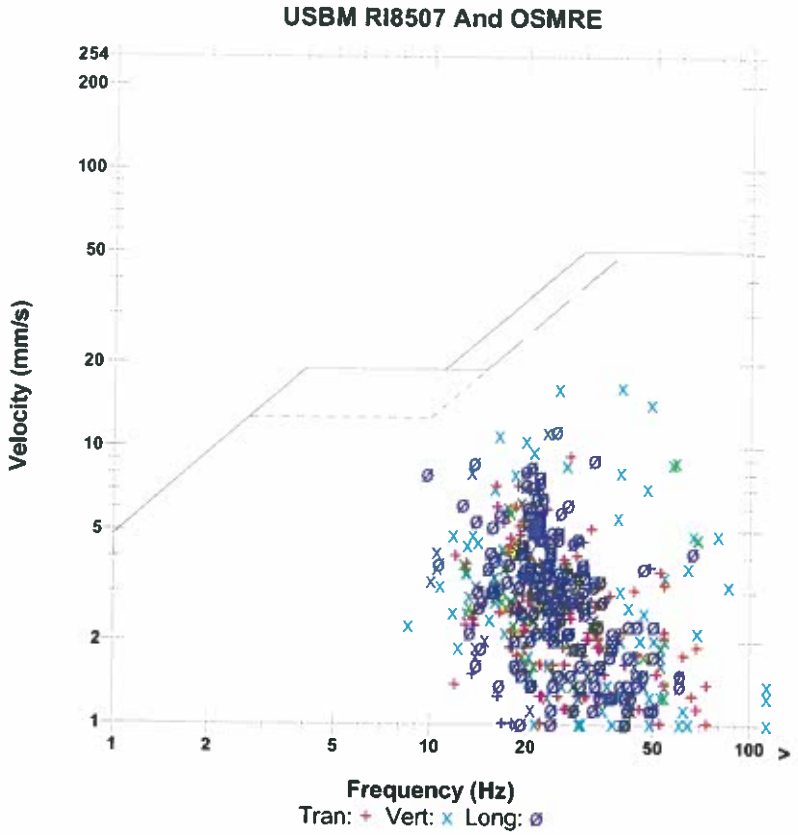
Post Event Notes
Bay Goose Station D
Blast today August 10th, 2012, 12:45 PM at Goose (5116532, 5109PS537 and 5123POP02)

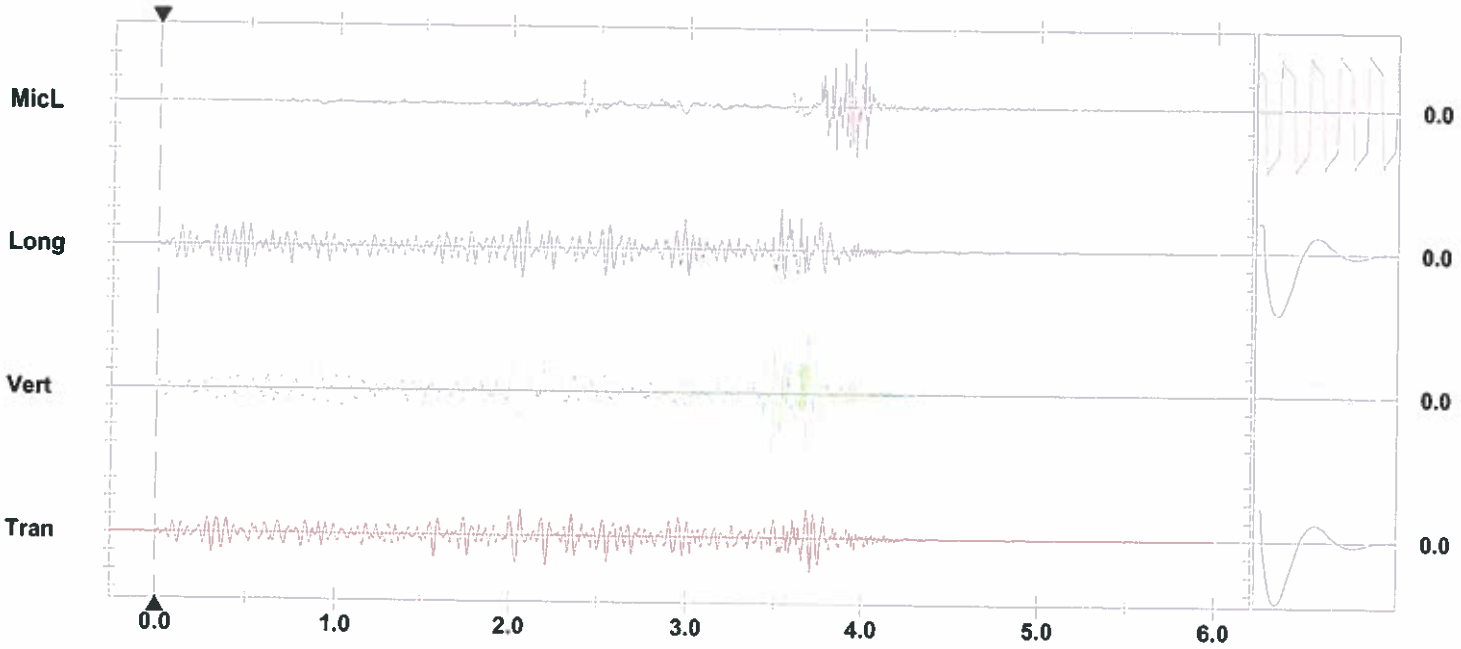
Extended Notes

Microphone	Linear Weighting
PSPL	*** pa.(L) at 3.942 sec
ZC Freq	49 Hz
Channel Test	Passed (Freq = 20.1 Hz Amp = 498 mv)

	Tran	Vert	Long	
PPV	9.27	16.5	11.4	mm/s
ZC Freq	27.3	39.4	24.7	Hz
Time (Rel. to Trig)	3.709	3.684	3.526	sec
Peak Acceleration	0.212	0.530	0.265	g
Peak Displacement	0.0743	0.0874	0.0979	mm
Sensor Check	Passed	Passed	Passed	
Frequency	7.7	7.6	7.5	Hz
Overswing Ratio	3.6	4.0	3.8	

Peak Vector Sum 19.1 mm/s at 3.684 sec
***** : Out of Range**





Time Scale: 0.50 sec/div **Amplitude Scale:** Geo: 5.00 mm/s/div Mic: 200 pa.(L)/div
Trigger = ▶ ◀

Sensor Check

Instantel Event Report

Date/Time	Tran at 12:45:00 August 28, 2012
Trigger Source	Geo: 1.00 mm/s
Range	Geo : 254 mm/s
Record Time	7.0 sec at 4096 sps
Job Number:	1
Notes	
Location:	PORTAGE PIT
Client:	Agnico-Eagle Mines Limited
User Name:	Meadowbank Division
General:	Engineering Departement

Serial Number	BE15259 V 10.30-1.1 Minimate Blaster
Battery Level	6.3 Volts
Unit Calibration	December 20, 2011 by Instantel
File Name	Q259EFMJ.F00

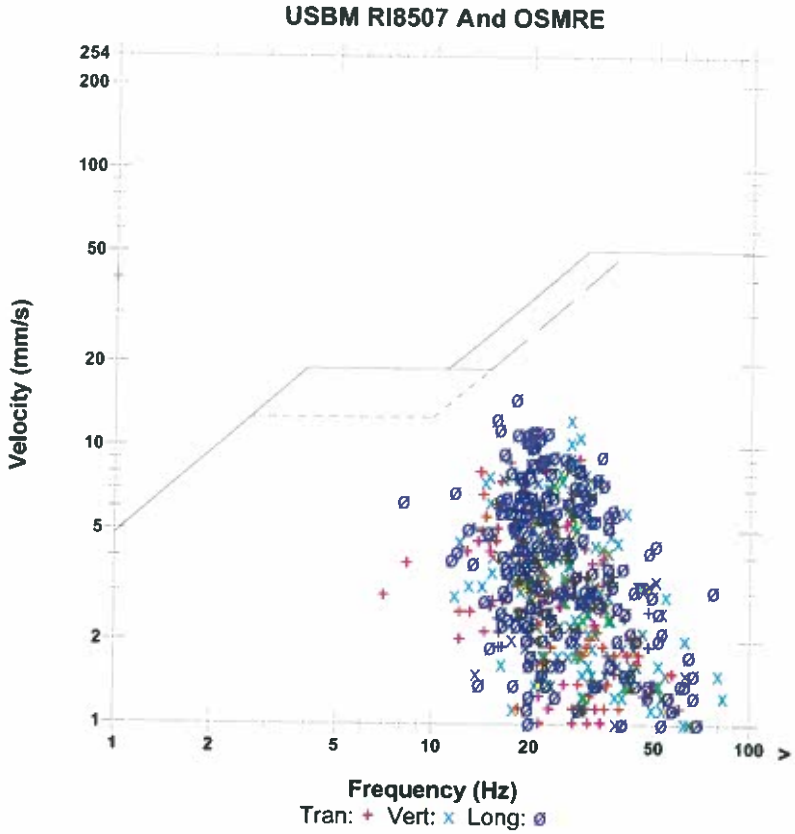
Post Event Notes
5116536-2 & 5123537 & 5116POP528 & 5116SL01

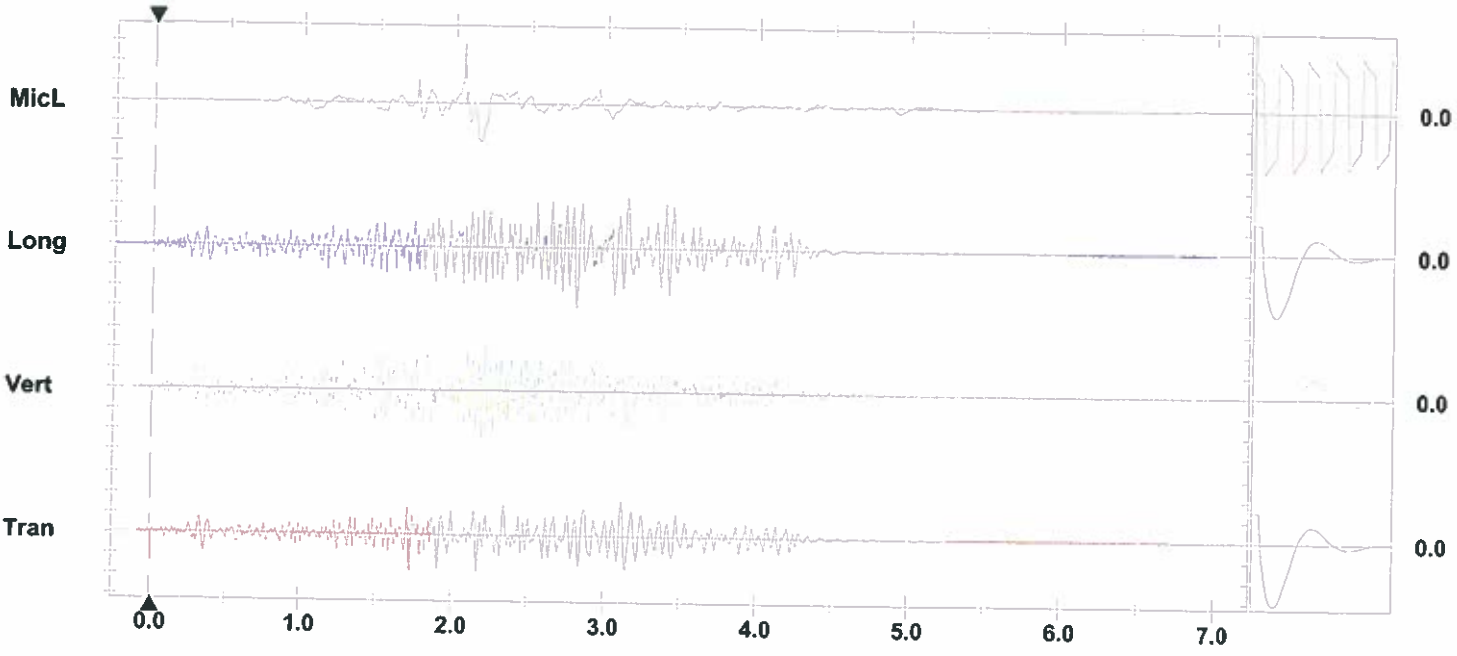
Extended Notes

Microphone	Linear Weighting
PSPL	297 pa.(L) at 2.058 sec
ZC Freq	4.1 Hz
Channel Test	Passed (Freq = 20.5 Hz Amp = 556 mv)

	Tran	Vert	Long	
PPV	9.02	12.6	14.9	mm/s
ZC Freq	28.4	26.6	18.0	Hz
Time (Rel. to Trig)	1.724	2.189	2.812	sec
Peak Acceleration	0.212	0.318	0.265	g
Peak Displacement	0.0867	0.0790	0.131	mm
Sensor Check	Passed	Passed	Passed	
Frequency	7.6	7.7	7.2	Hz
Overswing Ratio	3.7	3.2	3.9	

Peak Vector Sum 15.7 mm/s at 2.813 sec





Time Scale: 0.50 sec/div **Amplitude Scale:** Geo: 5.00 mm/s/div Mic: 100.0 pa.(L)/div
Trigger = ▶ ◀

Sensor Check

Instantel

Event Report

Date/Time Vert at 00:25:33 October 5, 2012
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: MEADOWBANK GOLD MINE
Client: AGNICO-EAGLE MINES LTD.
User Name: OPERATIONS/DIKES
General: BLAST VIBRATION MONITORING AT DIKE CREST

Serial Number BE15260 V 10.30-1.1 Minimate Blaster
Battery Level 6.1 Volts
Unit Calibration March 16, 2012 by Instantel
File Name Q260EHJY.IL0

Post Event Notes
Bay Goose Station D
Blast TONIGHT October 4, 2012, 00:45 AM at Goose and North Cell (5102503 and 5109503)

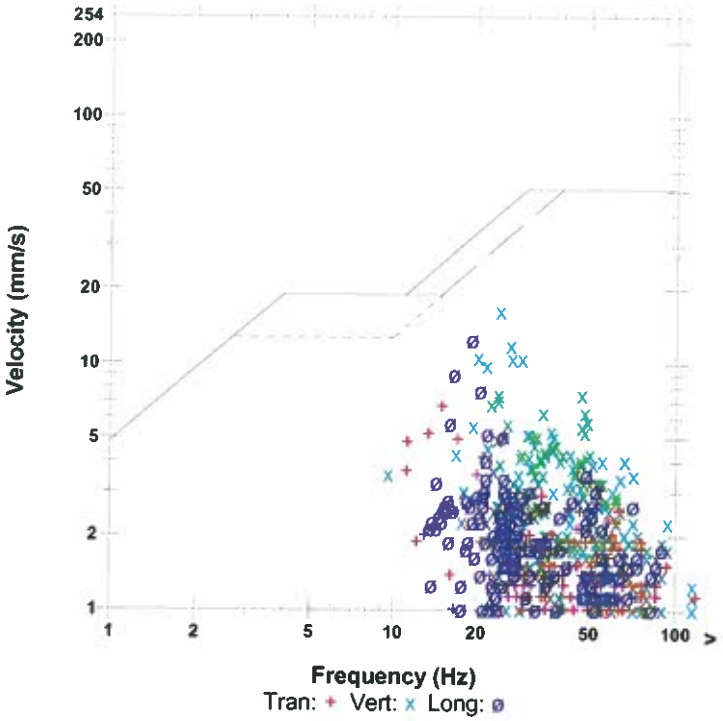
MONITORING STATION

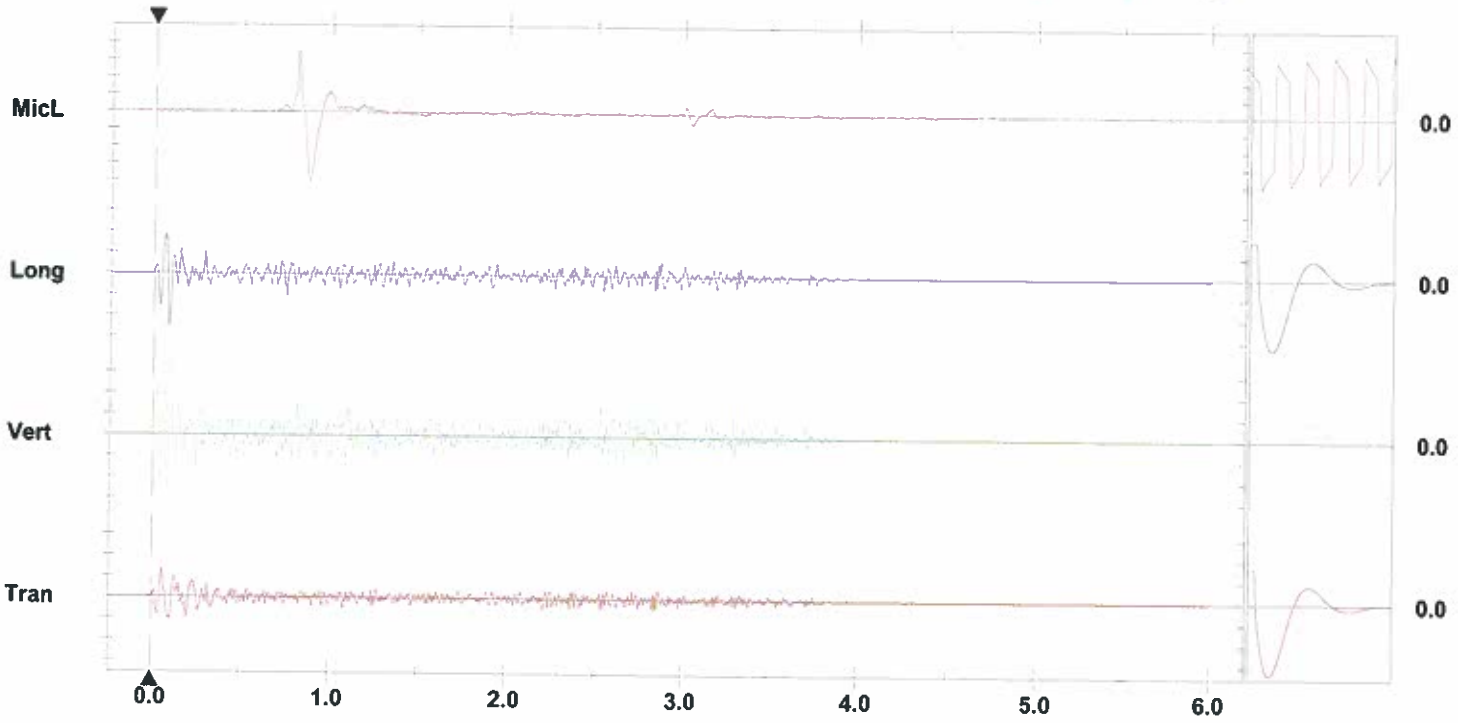
Microphone Linear Weighting
PSPL 395 pa.(L) at 0.875 sec
ZC Freq 5.1 Hz
Channel Test Passed (Freq = 20.1 Hz Amp = 562 mv)

	Tran	Vert	Long	
PPV	6.73	16.3	12.4	mm/s
ZC Freq	14.9	24.1	19.1	Hz
Time (Rel. to Trig)	0.057	0.100	0.087	sec
Peak Acceleration	0.159	0.265	0.212	g
Peak Displacement	0.0721	0.0975	0.0985	mm
Sensor Check	Passed	Passed	Passed	
Frequency	7.6	7.6	7.5	Hz
Overswing Ratio	3.8	3.4	3.6	

Peak Vector Sum 17.0 mm/s at 0.100 sec

USBM RI8507 And OSMRE





Time Scale: 0.50 sec/div **Amplitude Scale:** Geo: 5.00 mm/s/div Mic: 100.0 pa.(L)/div
Trigger = ▶ ◀

Sensor Check