# APPENDIX 22 2025 BLAST MONITORING REPORT

AGNICO EAGLE

**MELIADINE GOLD MINE**

# 2025 Blast Monitoring Report

In Accordance with NIRB Project Certificate No. 006

Prepared by:
Agnico Eagle Mines Limited – Meliadine Division

**MARCH 2026**

## TABLE OF CONTENTS



## LIST OF FIGURES



## LIST OF TABLES

## ACRONYMS

| | |
|---|---|
| Agnico Eagle | Agnico Eagle Mines Limited |
| DFO | Department of Fisheries and Oceans Canada |
| IPC | Instantaneous pressure change |
| NIRB | Nunavut Impact Review Board |
| PPV | Peak particle velocity |
| PVS | Peak vector sum |
| TIRI01 | Tiriganiaq Open pit 2 |
| TIRI02 | Tiriganiaq Open pit 2 |

## UNITS

| | |
|---|---|
| kg/t | Kilogram per ton |
| Kpa | Kilopascal |
| m | Meter |
| mm/s | Millimetre per second |
| t/m | Ton per meter |

# SECTION 1 • INTRODUCTION AND OBJECTIVES

In accordance with Term and Condition 11 of Project Certificate No.006 issued by the Nunavut Impact Review Board (NIRB), Agnico Eagle Mines Limited (Agnico Eagle) - Meliadine Division developed a Blast Monitoring Program which complies with *The Guidelines for the Use of Explosives In or Near Canadian Fisheries Water* (Wright and Hopky, 1998) as modified by the Department of Fisheries and Oceans Canada (DFO) for use in the North and adhere to guidance provided in Monitoring Explosive-Based Winter Seismic Exploration in Waterbodies (Cott and Hanna, 2005). As a result, Agnico Eagle conducts monitoring to evaluate blast related peak particle velocity (PPV) and overpressure to protect nearby fish bearing waters.

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, the Guidelines for the Use of Explosives In or Near Canadian Fisheries Water guidelines have been developed by DFO to protect fish and fish habitat from works or undertakings that involve explosives in or near fisheries waters. Guidance provided in Monitoring Explosive-Based Winter Seismic Exploration in Waterbodies (Cott and Hanna, 2005) was also followed. It includes the following requirements:

1. 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 Agnico Eagle use a value of 50 kPa instead of 100 kPa; and
2. 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 Meliadine mine, it takes place between August 15 and June 30).

PPV and overpressure monitoring data were recorded throughout 2025 during blasting activities at Meliadine. During 2025, three surface locations were monitored: Tiriganiaq Open pit 1 (TIR01), Pump 1 (PUMP01) and Pump 2 (PUMP02). No blasting activities occurred at Tiriganiaq Open Pit 2 (TIR02) in 2025. The location of the blast monitoring stations used in 2025 is shown in Table 1 & 2 and figure 1 & 2 below.

To improve vibration monitoring practices and data accuracy, two permanent monitoring installations were commissioned on August 20$^{th}$, 2020, allowing the seismograph to be directly anchored into the bedrock via attachment to a steel rod drilled through the tundra. These permanent stations thereafter replaced the temporary locations used previously. Since then, one of the permanent monitoring installations was decommissioned (Exploration Camp). However, because of the important distance between the remaining permanent monitoring installation and

Pump 1 & 2 Open pits, two temporary portable seismographs are used for PPV and overpressure monitoring.

**Table 1: Tiriganiaq Open pits 1 & 2 (TIR01 & TIR02) Surface blast monitoring station coordinates**

| LOCATION | EASTING | NORTHING | DESCRIPTION |
|---|---|---|---|
| Comm Tower P1 | 539803.785 | 6988836.212 | Permanent location used for TIR01 & TIR02 (installed 2020-08-20) |

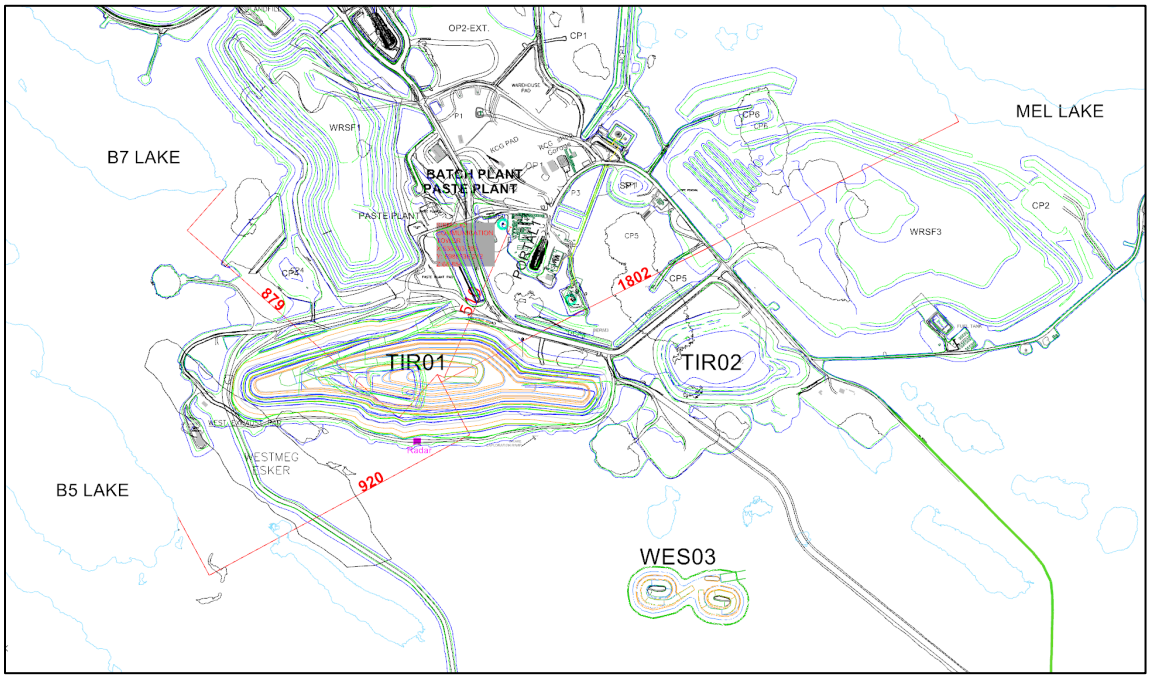


**Figure 1: Surface blast monitoring station locations used for TIRI01 blasts (distance in meters)**

**Table 2: Pump Open pits 1 & 2 (PUMP01 & PUMP02) Surface blast monitoring station coordinates**

| LOCATION | EASTING | NORTHING | DESCRIPTION |
|---|---|---|---|
| Portable Seismograph | 539126.169 | 6986905.380 | Temporary location used for PUMP01 |
| Portable Seismograph | 540158.804 | 6986943.785 | Temporary location used for PUMP02 |

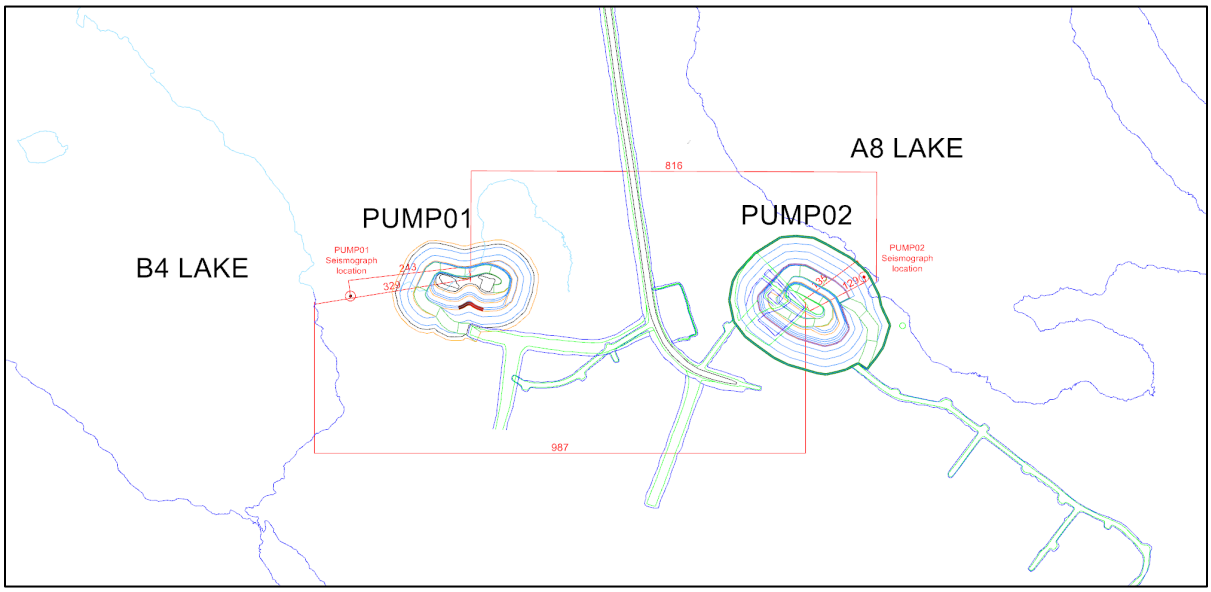


**Figure 2: Surface blast monitoring station locations used for PUMP01 & PUMP02 blasts (distance in meters)**

# SECTION 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 transducer is installed as per the model specifications. For additional details on seismograph instrumentation and monitoring program detail, please refer to the Blast Monitoring Program; all monitoring protocols set forth in this program are followed by Agnico Eagle.

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 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

## 2.2. Data Compilation and Analysis

The blast monitoring data is screened to ensure blast PPV and IPC monitoring results corresponded to a single blast event. As per the Blast Monitoring Program, Mining Engineers & Technicians have thoroughly documented all blasting activities from design concept to results – which include PPV and IPC measurements. If required, blasting procedure will be reviewed to ensure that the site remains within threshold limits and in continued compliance with regulations, as is part of the blast optimization process.

The following is a summary of the data collected for the 2025 Tiriganiaq Open pit 1 and Pump Open pit 1 & 2 operations. Tiriganiaq Open pit 1data were collected with respect to Meliadine Lake, Lake B5 and Lake B7 and Pump Open pit 1 & 2 data were collected with respect to Lake B4 and Lake A8. These lakes were identified as the closest accessible fish bearing lakes to the blasting activities that would occur throughout 2025. Guidance may change as the footprint of the site evolves over time.

It should be noted that Figures 3 to 6 and Table 3 & 4 below only present data from the *Comm Tower P1* monitoring station for TIR01 results, since the *Explo Camp* monitoring station is no longer in use. Furthermore, as the TIRI-01 pit deepens, the effect of blasting activities on surface monitoring points and nearby fish-bearing lakes diminishes. On several occasions, the seismographs do not activate. For PUMP01 & PUMP02 data, these come from temporary seismographs that are manually installed and retrieved before and after each blast.

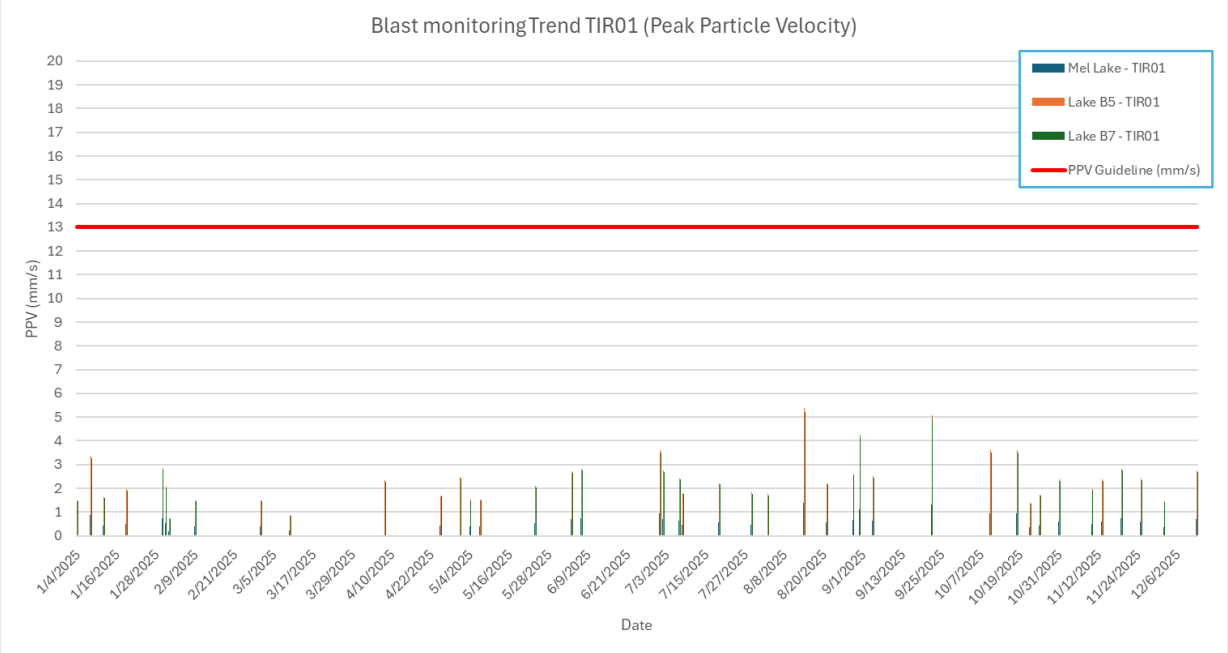


**Figure 3: PPV values over time for TIRI-01 blast monitoring**

As seen in the previous chart, there is no PPV value close to the PPV threshold guideline of 13 mm/s for TIR01. The average PPV value for 2025 was 1.77 mm/s, with a minimum of 0.19 mm/s (at Meliadine Lake) and a maximum of 5.37 mm/s (at Lake B5).

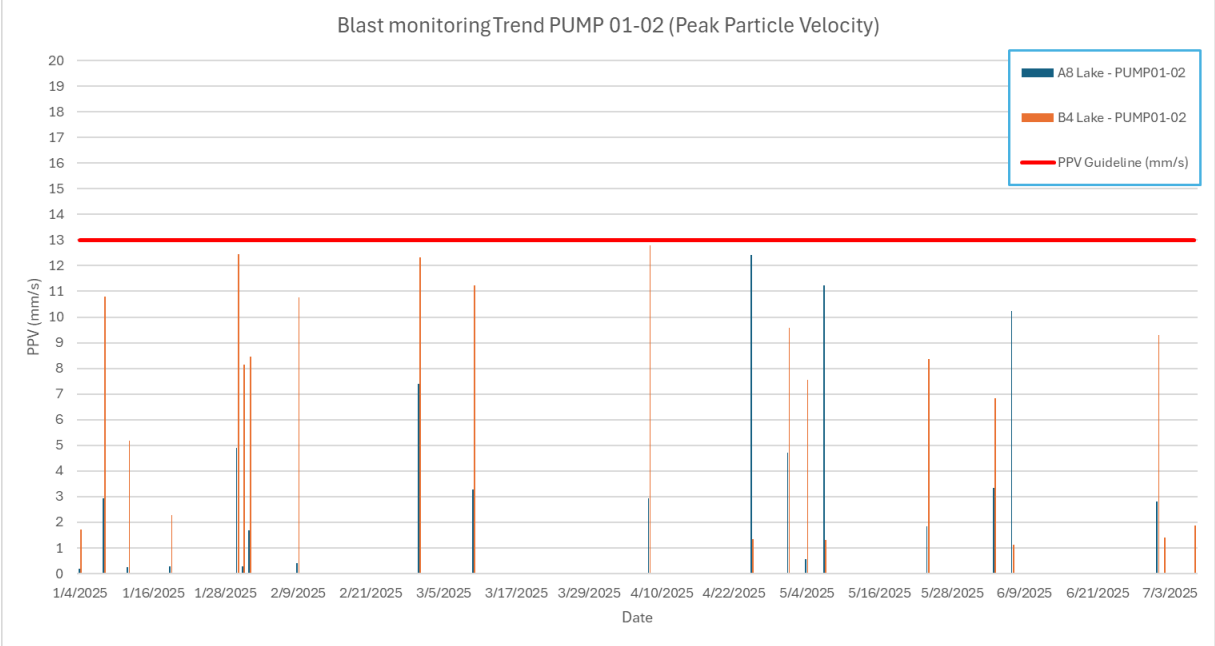


**Figure 4: PPV values over time for PUMP 01 & 02 blast monitoring**

For Pump 01 & 02, the values are still below the threshold. The average PPV value is 7.58 mm/s and the maximum value is 12.78 mm/s (at B4 Lake).

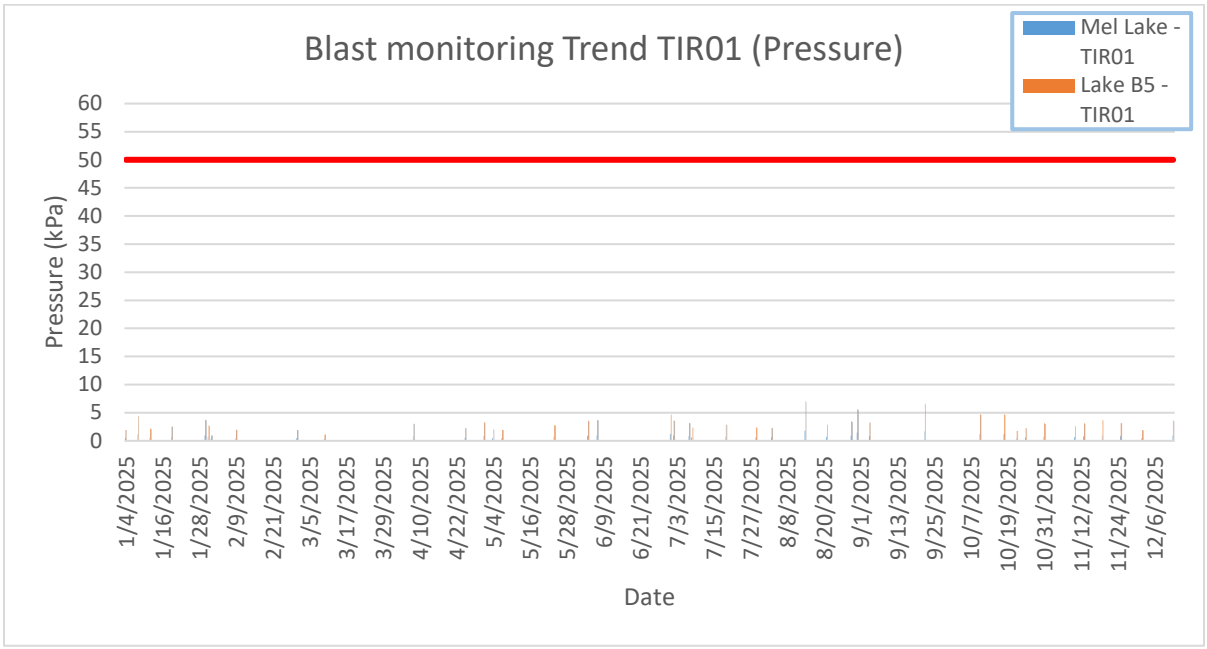


**Figure 5: Pressure values over time for Tiri-01 blast monitoring**

As seen in the previous chart, recorded values for Pressure are significantly below DFO guideline of 50 kPa. The average kPa value for 2025 was 2.32 kPa, with a minimum of 0.25 kPa (at Meliadine Lake) and a maximum of 7.05 kPa (at Lake B5).

In figure 6, recorded value for pressure at PUMP 01 & 02 are also below DFO guideline. The average is 9.75 kPa while the maximum is 48.06 kPa (at B4 Lake).

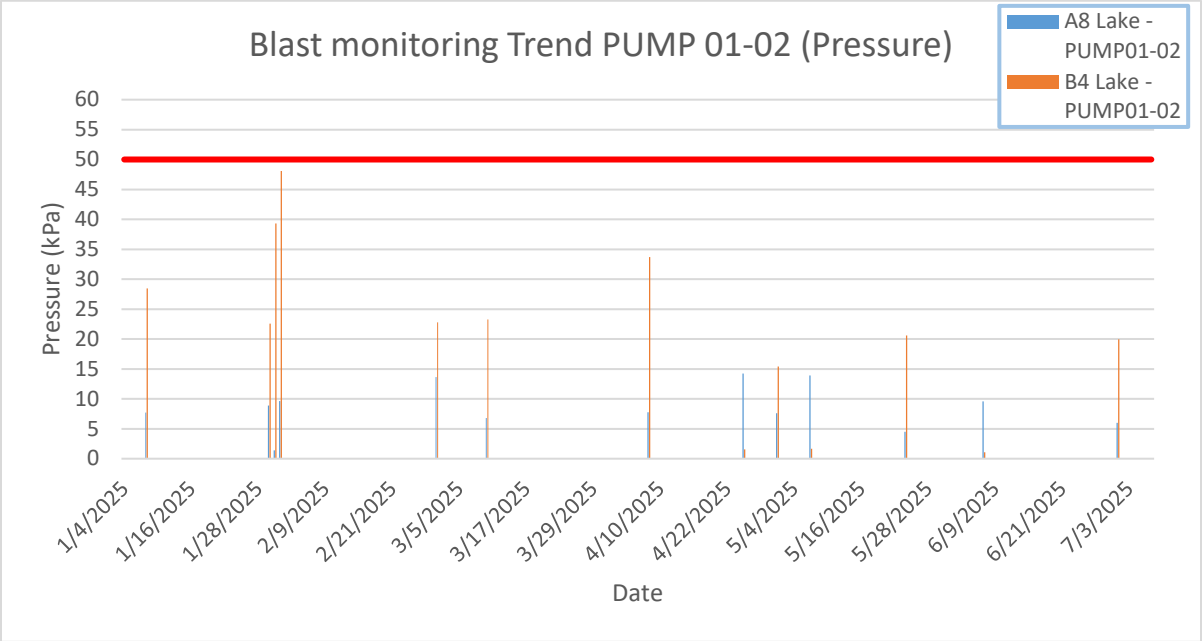


**Figure 6: Pressure values over time for PUMP 01 & 02 blast monitoring**

**Table 3: 2025 PPV and ICP Blast Monitoring Results – TIRI-01**

DFO Limits: Peak Particle Velocity - PPV = 13, Peak Sound Pressure - kPa = 50

| TIR01 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Date | SEISMO # | Location | PPV (mm/s) | | | Pressure Pw (kPa) | | |
| | | | Mel lake | Lake B5 | Lake B7 | Mel lake | Lake B5 | Lake B7 |
| 1/4/2025 | MP14206 | Comm tower P1 | 0.382 | 1.482 | 1.442 | 0.501 | 1.946 | 1.894 |
| 1/8/2025 | MP14206 | Comm tower P1 | 0.864 | 3.354 | 3.264 | 1.135 | 4.404 | 4.286 |
| 1/12/2025 | MP14206 | Comm tower P1 | 0.422 | 1.639 | 1.595 | 0.554 | 2.152 | 2.094 |
| 1/19/2025 | MP14206 | Comm tower P1 | 0.505 | 1.959 | 1.907 | 0.663 | 2.573 | 2.504 |
| 1/30/2025 | MP14206 | Comm tower P1 | 0.735 | 2.854 | 2.778 | 0.965 | 3.747 | 3.647 |
| 1/31/2025 | MP14206 | Comm tower P1 | 0.533 | 2.069 | 2.013 | 0.700 | 2.716 | 2.643 |
| 2/1/2025 | MP14206 | Comm tower P1 | 0.190 | 0.738 | 0.718 | 0.250 | 0.969 | 0.943 |
| 2/9/2025 | MP14206 | Comm tower P1 | 0.386 | 1.499 | 1.459 | 0.507 | 1.969 | 1.916 |
| 3/1/2025 | MP14206 | Comm tower P1 | 0.382 | 1.482 | 1.442 | 0.501 | 1.946 | 1.894 |
| 3/10/2025 | MP14206 | Comm tower P1 | 0.222 | 0.861 | 0.838 | 0.291 | 1.131 | 1.100 |
| 4/8/2025 | MP14206 | Comm tower P1 | 0.600 | 2.331 | 2.268 | 0.788 | 3.060 | 2.978 |
| 4/25/2025 | MP14206 | Comm tower P1 | 0.440 | 1.708 | 1.662 | 0.578 | 2.242 | 2.182 |
| 5/1/2025 | MP14206 | Comm tower P1 | 0.641 | 2.489 | 2.422 | 0.842 | 3.268 | 3.180 |
| 5/4/2025 | MP14206 | Comm tower P1 | 0.395 | 1.535 | 1.493 | 0.519 | 2.015 | 1.961 |
| 5/7/2025 | MP14206 | Comm tower P1 | 0.391 | 1.517 | 1.477 | 0.513 | 1.992 | 1.939 |
| 5/24/2025 | MP14206 | Comm tower P1 | 0.543 | 2.106 | 2.050 | 0.712 | 2.766 | 2.691 |
| 6/4/2025 | MP14206 | Comm tower P1 | 0.701 | 2.720 | 2.647 | 0.920 | 3.571 | 3.476 |
| 6/7/2025 | MP14206 | Comm tower P1 | 0.728 | 2.825 | 2.749 | 0.955 | 3.709 | 3.609 |
| 7/1/2025 | MP14206 | Comm tower P1 | 0.928 | 3.602 | 3.505 | 1.218 | 4.729 | 4.602 |
| 7/2/2025 | MP14206 | Comm tower P1 | 0.712 | 2.763 | 2.689 | 0.935 | 3.628 | 3.531 |
| 7/7/2025 | MP14206 | Comm tower P1 | 0.625 | 2.425 | 2.360 | 0.820 | 3.184 | 3.099 |
| 7/8/2025 | MP14206 | Comm tower P1 | 0.466 | 1.810 | 1.761 | 0.612 | 2.376 | 2.312 |
| 7/19/2025 | MP14206 | Comm tower P1 | 0.572 | 2.220 | 2.160 | 0.751 | 2.914 | 2.836 |
| 7/29/2025 | MP14206 | Comm tower P1 | 0.471 | 1.827 | 1.778 | 0.618 | 2.398 | 2.334 |
| 8/3/2025 | MP14206 | Comm tower P1 | 0.449 | 1.744 | 1.698 | 0.590 | 2.290 | 2.229 |
| 8/14/2025 | MP14206 | Comm tower P1 | 1.384 | 5.370 | 5.226 | 1.817 | 7.051 | 6.862 |
| 8/21/2025 | MP14206 | Comm tower P1 | 0.572 | 2.220 | 2.160 | 0.751 | 2.914 | 2.836 |
| 8/29/2025 | MP14206 | Comm tower P1 | 0.677 | 2.627 | 2.557 | 0.889 | 3.449 | 3.357 |
| 8/31/2025 | MP14206 | Comm tower P1 | 1.098 | 4.263 | 4.148 | 1.442 | 5.597 | 5.447 |
| 9/4/2025 | MP14206 | Comm tower P1 | 0.644 | 2.501 | 2.434 | 0.846 | 3.284 | 3.196 |
| 9/22/2025 | MP14207 | Comm tower P1 | 1.307 | 5.072 | 4.936 | 1.716 | 6.659 | 6.481 |
| 10/10/2025 | MP14207 | Comm tower P1 | 0.928 | 3.602 | 3.505 | 1.218 | 4.729 | 4.602 |
| 10/18/2025 | MP14207 | Comm tower P1 | 0.928 | 3.602 | 3.505 | 1.218 | 4.729 | 4.602 |
| 10/22/2025 | MP14207 | Comm tower P1 | 0.354 | 1.375 | 1.338 | 0.465 | 1.805 | 1.757 |
| 10/25/2025 | MP14207 | Comm tower P1 | 0.444 | 1.724 | 1.677 | 0.583 | 2.263 | 2.202 |
| 10/31/2025 | MP14207 | Comm tower P1 | 0.608 | 2.362 | 2.298 | 0.799 | 3.101 | 3.018 |
| 11/10/2025 | MP14207 | Comm tower P1 | 0.509 | 1.976 | 1.923 | 0.668 | 2.595 | 2.525 |
| 11/13/2025 | MP14207 | Comm tower P1 | 0.609 | 2.362 | 2.299 | 0.799 | 3.102 | 3.018 |
| 11/19/2025 | MP14207 | Comm tower P1 | 0.728 | 2.824 | 2.748 | 0.955 | 3.708 | 3.608 |
| 11/25/2025 | MP14207 | Comm tower P1 | 0.617 | 2.394 | 2.329 | 0.810 | 3.143 | 3.058 |
| 12/2/2025 | MP14207 | Comm tower P1 | 0.373 | 1.448 | 1.409 | 0.490 | 1.901 | 1.850 |
| 12/12/2025 | MP14207 | Comm tower P1 | 0.708 | 2.748 | 2.675 | 0.930 | 3.609 | 3.512 |

**Table 4: 2025 PPV and ICP Blast Monitoring Results – PUMP 01 & 02**

DFO Limits: Peak Particle Velocity - PPV = 13, Peak Sound Pressure - kPa = 50

| PUM01 & PUM02 | | | | | | |
|---|---|---|---|---|---|---|
| Date | SEISMO # | Location | PPV (mm/s) | | Pressure Pw (kPa) | |
| | | | A8 lake | B4 lake | A8 lake | B4 lake |
| 2/6/2025 | MP14207 | Sesimograph rod | 0.194 | 1.710 | 0.000 | 0.000 |
| 2/7/2025 | MP14207 | Sesimograph rod | 2.919 | 10.786 | 7.705 | 28.469 |
| 2/9/2025 | MP14207 | Sesimograph rod | 0.259 | 5.188 | 0.000 | 0.000 |
| 2/13/2025 | MP14207 | Sesimograph rod | 0.285 | 2.291 | 0.000 | 0.000 |
| 2/13/2025 | MP14207 | Sesimograph rod | 4.906 | 12.458 | 8.879 | 22.547 |
| 2/15/2025 | MP14207 | Sesimograph rod | 0.292 | 8.138 | 1.408 | 39.295 |
| 2/20/2025 | MP14207 | Sesimograph rod | 1.695 | 8.445 | 9.648 | 48.063 |
| 2/28/2025 | MP14207 | Sesimograph rod | 0.406 | 10.777 | 0.000 | 0.000 |
| 3/3/2025 | MP14207 | Sesimograph rod | 7.395 | 12.337 | 13.654 | 22.779 |
| 3/8/2025 | MP14207 | Sesimograph rod | 3.279 | 11.248 | 6.787 | 23.281 |
| 3/16/2025 | MP14207 | Sesimograph rod | 2.931 | 12.778 | 7.732 | 33.706 |
| 3/31/2025 | MP14207 | Sesimograph rod | 12.425 | 1.350 | 14.217 | 1.544 |
| 4/2/2025 | MP14207 | Sesimograph rod | 4.721 | 9.573 | 7.606 | 15.423 |
| 4/8/2025 | MP14207 | Sesimograph rod | 0.569 | 7.541 | 0.000 | 0.000 |
| 4/19/2025 | MP14207 | Sesimograph rod | 11.227 | 1.326 | 13.885 | 1.640 |
| 4/21/2025 | MP14207 | Sesimograph rod | 1.830 | 8.366 | 4.506 | 20.601 |
| 5/1/2025 | MP14207 | Sesimograph rod | 3.344 | 6.827 | 0.000 | 0.000 |
| 5/8/2025 | MP14207 | Sesimograph rod | 10.245 | 1.129 | 9.552 | 1.053 |
| 5/19/2025 | MP14207 | Sesimograph rod | 2.796 | 9.296 | 5.992 | 19.924 |
| 12/16/2025 | MP14206 | Sesimograph rod | N.A | 1.404 | N.A | 0.000 |
| 12/23/2025 | MP14206 | Sesimograph rod | N.A | 1.870 | N.A | 0.000 |