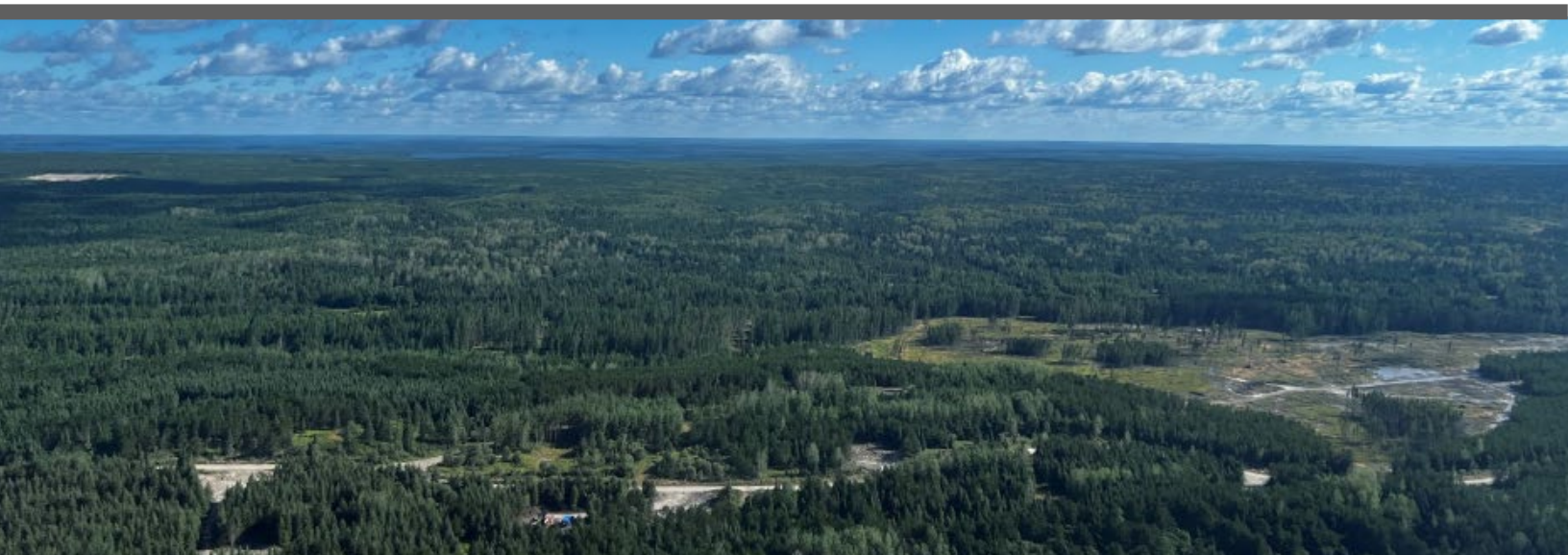
KINROSS Great Bear

Great Bear Gold Project
Impact Statement

Appendix E-2:

Sound and Vibration Baseline Report (Leaves Off)



2023 Sound and Vibration Baseline Report (Leaves Off Program)

Great Bear Project

Red Lake, Ontario

Project # OMGS21045

Prepared for:

Kinross Gold Corporation

25 York Street #17, Toronto, ON M5J 2V5

December 2023

2023 Sound and Vibration Baseline Report (Leaves-Off Program)

Great Bear Project
Red Lake, Ontario
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Prepared for:

Kinross Gold Corporation
25 York Street #17, Toronto, ON M5J 2V5

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December 2023

Executive Summary

Wood Group Asset Integrity Solutions Inc. operating as Wood VDN was engaged to prepare a baseline sound and vibration report for the Great Bear Project (the Project) for Kinross Gold Corporation.

The Project is located in an area of historic gold mining and exploration in the northwest of the province of Ontario approximately 24 km south of Red Lake, Ontario (Figure 1-1). The regional topography features low, rolling hills with numerous small lakes and spruce bogs. On the property, the terrain is gently sloping with an elevation range of 350 to 460 m above sea level. There are a few streams, including Dixie Creek, that have mature meandering courses. The project property is partially forested with mature stands and younger growth of black spruce, poplar, birch, and jack pine, typical of the boreal forest.

Four (4) monitoring locations were selected for the baseline sound and vibration investigation. The locations were selected to be representative of potential sensitive receptors based on proximity and directionality in relation to the proposed Project location. This report summarizes relevant sound and vibration data collected by Wood during the baseline monitoring field program conducted from November 14 to 21, 2023, timed for when leaves were off the trees. This report describes the baseline monitoring locations and dates of the monitoring program; outlines the baseline data collection methodology; and presents summaries of the baseline monitoring data.

The baseline sound levels were characterized using the hourly A-weighted equivalent sound level ($L_{Aeq-1hr}$) and the Day-Night Sound Level (L_{dn}) values. The baseline vibration levels were characterized using the peak particle velocity (PPV) (V_{PPV}) and root-mean-square (RMS) velocity (V_{RMS}) values.

The following findings, summarizing the four monitored locations, have been drawn from the baseline assessment presented in this report:

- The baseline sound level monitoring results showed average hourly $L_{Aeq-1hr}$ levels of under 35 dBA during daytime (07:00 to 23:00) and under 30 dBA during nighttime (23:00 to 07:00). The average L_{dn} levels at each monitoring location were found to be lower than 37 dBA.
- The baseline vibration monitoring results showed V_{PPV} values under 0.005 mm/s for more than 95% of the data collected at all four monitoring locations. The average V_{RMS} is approximately 0.001 mm/s at all four monitoring locations.

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1.0 Introduction

Wood Group Asset Integrity Solutions Inc. operating as Wood VDN was engaged to prepare a baseline sound and vibration report for the Great Bear Project (the Project) for Kinross Gold Corporation.

The Project is located in an area of historic gold mining and exploration in the northwest of the province of Ontario approximately 24 km south of Red Lake, Ontario (Figure 1-1). The regional topography features low, rolling hills with numerous small lakes and spruce bogs. On the property, the terrain is gently sloping with an elevation range of 350 to 460 m above sea level. There are a few streams, including Dixie Creek, that have mature meandering courses. The project property is partially forested with mature stands and younger growth of black spruce, poplar, birch, and jack pine, typical of the boreal forest.

Great Bear Resources Ltd. (GBR), a wholly owned subsidiary of Kinross Gold Corp. (KGC), is currently defining the mineral resource at the Project. Resource estimation work is in progress and GBR's development concept is a conventional open pit and underground gold mining and milling operation.

This report summarizes relevant sound and vibration data collected by Wood during the baseline monitoring field program conducted from November 14 to 21, 2023. This report describes the baseline monitoring locations and dates of the monitoring program; outlines the baseline data collection methodology; and presents summaries of the baseline monitoring data.

Four appendices have been attached to this report. Technical terms and definitions are provided in Appendix A. Calibration certificates for the equipment used on site are provided in Appendix B. Detailed sound and vibration monitoring results are presented in Appendices C and D, respectively.

420000 430000 440000 450000 460000 470000 480000 490000 500000

5650000 5640000 5630000 5620000 5610000

Red Lake

Red Lake

Keg Lake

Madsen

Gullrock Lake

Little Trout Lake

Bruce Lake

Pakwash Lake

Pakwash Lake

Wenasaga Lake

Fatty Lake

Longlegged Lake

Bluffy Lake

R1

R2

R3

R4

Red Lake

Ear Falls

MAP OVERVIEW

PROJECT LOCATION

500 km

IMAGERY EXTRACTED FROM ESRI

LEGEND

- Project Location
- Red Lake Municipality
- Ear Falls Township
- Highway 105
- Property Boundary
- Tuzyks Road (gravel)
- Power Line (115 kV)
- Baseline Receptors

0 5 10 15 20 km

Notes:
- "R" stands for monitoring "Receptor" #

KINROSS wood.

Great Bear Project

Project Location and Monitoring Locations

Datum & Projection: NAD83 / UTM zone 15N

PROJECT NO: OMGS21045	FIGURE 1-1
SCALE: 1:230946	DATE: December 2023

2.0 Baseline Monitoring Program

The leaves-off baseline sound and vibration monitoring field program was conducted from November 14 to 21, 2023. Details of the monitoring program are outlined in Table 2-1 which includes the UTM coordinates of the monitoring locations and the periods of monitoring at each location.

Figure 2-1 provides a geographical overview of the monitoring locations. The locations were selected to be representative of potential sensitive receptors based on proximity and directionality in relation to the Project location. The four representative receptors, R1, R2, R3 and R4 are located north, east, southwest, and west of the Project, respectively. The selection of these locations was mostly motivated by road accessibility.

For each monitoring station, photos have been included in this section to show the equipment setup (see Figure 2-2 to Figure 2-5).

Table 2-1: Baseline Monitoring Locations

Monitoring Location	Monitoring Station Identifier [2]	Start Date	End Date	UTM Coordinates [1]	
				Easting	Northing
R1	NMT1	November 14, 2023	November 21, 2023	458426	5639996
	VMT1	November 18, 2023	November 20, 2023		
R2	NMT2	November 14, 2023	November 21, 2023	464002	5633047
	VMT1	November 14, 2023	November 16, 2023		
R3	NMT3	November 14, 2023	November 21, 2023	454830	5631786
	VMT1	November 16, 2023	November 18, 2023		
R4	NMT4	November 14, 2023	November 21, 2023	448092	5635837
	VMT1	November 20, 2023	November 21, 2023		

Notes:

1. All coordinates in UTM coordinate system Zone 15N (NAD83)
2. NMT: Noise Monitoring Terminal
   VMT: Vibration Monitoring Terminal

445000 450000 455000 460000 465000

5640000

5635000

5630000

Procyk's Anglers Paradise Lodge

Snowshoe Rapids dam
Temporarily closed

Golden Hook Camp

R1

R2

R3

R4

Jette's Adventures

Snake Falls Camp & Flying Svc

IMAGERY EXTRACTED FROM ESRI

LEGEND

- Highway 105
- Property Boundary
- Tuzyks Road (gravel)
- Power Line (115 kV)
- Baseline Receptors

0 1 2 3 4 5 6 7 8 9 10 km

Notes:
- "R" stands for monitoring "Receptor" #

KINROSS wood.

Great Bear Project

Baseline Sound and Vibration Monitoring Locations

Datum & Projection: NAD83 / UTM zone 15N

PROJECT NO: OMGS21045 | FIGURE 2-1

SCALE: 1:55545 | DATE: December 2023

Figure 2-2: Monitoring Setup at R1

(a) Sound Level Meter #1 (SLM) Setup

(b) SLM #1 surroundings

Figure 2-3: Monitoring Setup at R2

(a) Sound Level Meter #2 (SLM) Setup

(b) SLM #2 surroundings

Figure 2-4: Monitoring Setup at R3

(a) Sound Level Meter #3 (SLM) Setup

(b) SLM #3 surroundings

Figure 2-5: Monitoring Setup at R4

(a) Sound Level Meter #4 (SLM) Setup

(b) SLM #4 surroundings

3.0 Measurement Methodology

3.1 Environmental Acoustics

Sound is mechanical energy transmitted by pressure waves through a medium such as air. There are several measurement scales that are used to describe the intensity or level of the environmental sound at a particular location. The most common is the A-weighted sound level expressed in the decibel unit (dBA). The dBA scale gives greater weight to the frequencies of sound to which the human ear is most sensitive. There is a relationship between the subjective noisiness or loudness of a sound and its intensity. Each 10 dB increase in sound level is perceived as approximately a doubling of loudness over a fairly wide range of intensities (Angevine, 1975).

The measurement of sound level with standard instruments equipped with an A-weighting filter results in a de-emphasis of the very low and very high frequency components of sound in a manner similar to the frequency response of the human ear. This correlates well with subjective reactions to noise. All sound levels in this report are A-weighted, unless indicated otherwise.

Because sound levels can vary noticeably over a short period of time, a method for describing the average character of the sound must be utilized. Most commonly, environmental sounds are described in terms of an average level that has the same acoustical energy as the summation of all the time-varying events. This energy equivalent sound descriptor is called the sound equivalent level (L_{eq}). The most common averaging period is hourly; however, L_{eq} can describe any series of noise events for any selected duration.

3.2 Sound Monitoring Stations

The equipment at each sound monitoring location included a Brüel & Kjær Type 1 integrating sound level meter (American National Standards Institute, 2006) (International Electrotechnical Commission, 2013) set to slow response, A-weighting, and programmed to measure 1-hour history data for the following metrics: L_{Aeq}, L_{ASmin}, and L_{ASmax}. The metrics collected will inform the assessment of potential effects with respect to:

- One-hour equivalent sound level $L_{Aeq-1hr}$ during the predictable worst-case hour of operation, as per MECP NPC-300 (Ontario Ministry of the Environment, Conservation and Parks (MECP), August 2013)
- Daytime sound Level (L_d), nighttime sound level (L_n) and day-night sound level (L_{dn}) as per Health Canada Noise Guideline (Health Canada, January 2017).

The sound level meters were each outfitted with a manufacturer approved pre-amplifier and free-field microphone. Each of the sound monitoring setups were installed in an environmental protection case with the microphone mounted on an external tripod and fitted with an appropriate windscreen. The microphones were set to a typical outdoor listening height of between 1.5 and 1.7 metres (m) above ground. Table 3-1 presents a summary of the equipment deployed on-site. Calibration certificates for the deployed equipment are provided in Appendix B.

Field calibrations were also conducted before and after the monitoring. An acoustical calibrator (International Electrotechnical Commission, 2003) from Brüel & Kjær (Type 4231) was used for field calibrations. The calibration variance, before and after the monitoring, was less than ± 0.5 decibel (dB).

3.3 Weather Information Collection

Sound levels and sound monitoring equipment can be affected by local meteorological conditions. To account for this influence, project-specific weather data captured by the deployed Vaisala weather station was used to identify periods when sound monitoring could have been affected.

Monitoring data collected during periods of inclement weather were excluded from the monitoring data set. The inclement weather conditions defined in NPC-103 (Ontario Ministry of the Environment, Conservation and Parks (MECP), 1977c) was considered for the purpose of this program, that occur when:

- Humidity levels are above 90%;
- Precipitation has occurred;
- Wind velocity has exceeded 20 kilometres per hour (km/h); or
- Temperature is outside the operating range defined by the manufacturer of the sound level meter (i.e., -10 degrees Celsius (°C) to +50°C).

Weather data recorded at the monitoring location R3 was used to determine periods of inclement weather. The Vaisala six parameter weather station with Brüel & Kjær Interface at R3 programed to collect the following metrics on a 1-hour basis:

- Wind speed (meter per second; m/s);
- Wind direction in degrees (°);
- Air temperature (degrees Celsius (°C));
- Relative humidity (%); and
- Total precipitation (millimeter; mm).

3.4 Vibration Monitoring Stations

The equipment used for baseline vibration monitoring included a Brüel & Kjær Type 2250 Vibration Analyzer set to measure 1-second history data of Peak Particle Velocity (PPV) (V_{PPV}) and Root-Mean-Square (RMS) velocity (V_{RMS}) along the vertical axis. Each of the monitor location was fitted with a PCB Piezotronics accelerometer to record at least 24 hours of data per location. One analyzer was used for all four locations. At each monitoring location the accelerometer was securely installed on the ground by use of a four-pronged plate mount which was pushed firmly into the ground to fix the unit in place.

The metrics collected correspond to the assessment of two distinct areas of potential impact:

- Peak Particle Velocity (PPV) (V_{PPV}) is used for assessment of potential damages to structure of buildings due to vibration, in particular from blasting, as outlined in NPC-119. (Ontario Ministry of the Environment, Conservation and Parks (MECP), 1977a)
- Root-Mean-Square (RMS) velocity (V_{RMS}) is used for assessment of potential impacts related to human perception of vibrations, as outlined in NPC-207. (Ontario Ministry of the Environment, Conservation and Parks (MECP), 1977b)

Table 3-2 presents a summary of the equipment deployed on-site. Calibration certificates can be found in Appendix B.

3.5 Field Inspection and Activities

Site activities in relation to inspection and maintenance of the monitoring stations were undertaken during the monitoring program. Notable sound and vibration velocity levels were recorded during the inspection period when the sound levels and ground vibrations were affected by these site activities (e.g., field transportation). However, these recordings were not considered as representative of the baseline levels. Monitoring data collected during the period of site inspection and maintenance was excluded from the dataset.

There were ongoing drilling activities for defining mineral resources at the Project site. Based on coordination provided by the client, all active drilling sites are located beyond 5 km from R1, R2, and R4 monitoring locations. Therefore, impact on recorded data from drilling sites is expected to be negligible for these locations. However, for the new location of R3 which is approximately 2.5km from the project site, sound emissions from site activities are expected to be recorded by the station. Nevertheless, the latter can be circumvented by analyzing the statistical metrics to define sound baseline levels at this receptor.

Table 3-1: List of Sound Monitoring Equipment Used on Site

Monitoring Location	Monitoring Station Identifier	Equipment Type	Model	Serial Number	Last Calibration Date
R1	NMT1	Sound Level Meter	2250	3023697	Jan 24, 2022
		Pre-amplifier	ZC-0032	26283	
		Microphone	4189	3100315	
R2	NMT2	Sound Level Meter	2250	3004786	Feb 18, 2022
		Pre-amplifier	ZC-0032	20299	
		Microphone	4189	2888637	
R3	NMT3	Sound Level Meter	2250	3004114	Sep 27, 2023
		Pre-amplifier	ZC-0032	19390	
		Microphone	4189	2877058	
R4	NMT4	Sound Level Meter	2250	3004068	Feb 18, 2022
		Pre-amplifier	ZC-0032	19685	
		Microphone	4189	2877087	
-	-	Acoustical Calibrator	4231	2094474	Sep 27, 2023

Table 3-2: List of Vibration Monitoring Equipment Used on Site

Monitoring Location	Monitoring Station Identifier	Equipment Type	Model	Serial Number	Last Calibration Date
R1, R2, R3, R4	VMT1	Vibration Analyzer	2250	3011887	July 18, 2022 [1]
		Accelerometer	PCB 393B04	53563	October, 7, 2021[2]
		Calibrator	4294	2500817	October,7, 2021[2]

Notes:

1. The vibration analyzer, i.e., Brüel & Kjær Type 2250, is compatible with various types of transducers and the calibration certificates provided by the equipment vendor are not specific to the listed accelerometer.
2. The accelerometer was calibrated by use of vibration calibrator from Bruel & Kjaer (Type 4294) by the equipment vendor prior to purchase.

4.0 Monitoring Results

4.1 Sound Monitoring Results

4.1.1 Hourly Sound Levels

Sound monitoring took place from November 14 (installation date) to November 21, 2023 (removal date) at the four locations (R1, R2, R3 and R4) identified in Table 2-1 and Figure 4-1. The leaves-off sound monitoring program utilized hourly A-weighted sound levels ($L_{Aeq-1hr}$) to process data collected over the entire monitoring period. Sounds not typical to the area, such as maintenance checks by operators, were excluded of the data processing.

Table 4-1 presents a summary of the collected sound data, including the number of complete hourly records[1] and the number of hourly records where the sound data was measured during inclement weather conditions. Sound monitoring data is presented for the daytime (07:00 to 23:00) and nighttime (23:00 to 07:00) periods as defined in NPC-300 (Ontario Ministry of the Environment, Conservation and Parks (MECP), August 2013). The metrics presented in Table 4-1 correspond to the arithmetic average of the hourly L_{Aeq}, minimum of the hourly value of L_{ASmin} and maximum of the hourly value of L_{ASmax}.

The monitoring results are also presented in bar graphs in Figure 4-1 which shows the range of minimum hourly L_{Asmin} to maximum hourly L_{Asmax} while the cross line indicates the average hourly L_{Aeq}. Hourly sound levels captured for each receptor are provided in Appendix C. The data suggests low background sound levels with the average hourly L_{Aeq} at 33 dBA during daytime and under 28 dBA during nighttime at the four monitoring locations. The highest range of (L_{Asmin} – L_{Asmax}) was recorded at R2 during daytime and at R1 during nighttime. The calculated L_{A90} value, which is commonly used to describe residual background sound level and defined as the sound level just exceeded for 90% of the time, shows the highest background sound levels of 27 dBA during daytime and 26 dBA during nighttime at R1 location.

[1] For the purposes of this report, hourly record corresponds to an hour of time where sound data has been collected with an integration time of 1 hour, starting at the top of each hour. Records collected that do not meet the criteria of integration time suggest interrupted measurement with possible causes such as equipment maintenance and have been discarded from this report.

4.1.2 Day-Night Sound Levels

The daytime sound level (L_d), nighttime sound level (L_n) and day-night sound level (L_{dn}) were calculated for each day of the monitoring period as defined in Health Canada Noise Guideline (Health Canada, January 2017). A summary of the calculation results is presented in Table 4-2 which shows the minimum, arithmetic average, and maximum values of the three metrics (i.e., L_d, L_n and L_{dn}).

Detailed daily day-night sound levels can be found in Table 4-3 and Table 4-4. The collected data points are also shown in Figure 4-2 with a boxplot presentation to show the overall variability of the sound levels (see Appendix A for definition of box plot and general legend). On average R1 have been identified with the highest baseline L_{dn} level of 39 dBA, followed by R2 and R4 with 38 dBA.

4.1.3 Statistical Review

The data collected was also used to assess the hourly L_{Aeq} statistics at each hour of the day over 24 hours. The results are presented in Figure 4-3 for R1, Figure 4-4 for R2, Figure 4-5 for R3, and Figure 4-6 for R4 these figures display statistical data from the whole data recorded. The results show that the sound levels during nighttime periods are typically lower than daytime.

4.2 Vibration Monitoring Results

4.2.1 Vibration Levels

Vibration monitoring took place from November 14 to 21, 2023 at the four locations identified in Table 2-1 and Figure 2-1. Vibration monitoring data is presented in terms of the Peak Particle Velocity (PPV) (V_{PPV}) and Root-Mean-Square (RMS) velocity (V_{RMS}) metrics recorded for 1-second intervals along the vertical axis. Baseline vibration conditions were summarized with respect to the V_{PPV} and V_{RMS} levels based on the following metrics:

- For the V_{PPV} metric the 95th percentile value of the measured PPV values, which is considered to represent the likely maximum value of V_{PPV} at a location. The outliers of the dataset may have been affected by random disturbance which are not considered typical baseline scenarios.
- For the V_{RMS} metric the arithmetic average of the V_{RMS} values.

A summary of the collected data is presented in Table 4-5. For all four locations, the 95th percentile of the measured V_{PPV} values are under 0.005 mm/s, which is notably low. Similar levels of average V_{RMS} are observed at four locations with the value rounded to 0.001 mm/s.

A summary for daytime (07:00 to 23:00) and nighttime (23:00 to 07:00) levels of the V_{PPV} metric is also included in Table 4-6. The results show that there is no notable difference between the vibration levels recorded during daytime and nighttime. 1-second time history data measured at each monitoring location is provided in Appendix D.

4.2.2 Statistical Review

Statistical analysis was carried out on the 1-second V_{PPV} and V_{RMS} metrics. Summaries of the statistical analysis are presented in terms of boxplots in Figure 4-7.

It was observed that more than 95% of the V_{PPV} values were recorded at a constant value of 0.002 mm/s when rounded to three decimal places at R1, R3, R4 and R2 with 0.003 mm/s. This constant value is

considered the lower measurement range of the instrument for V_{PPV} recording, and levels under range were recorded at the constant value. A review of the results also suggests that the vibration levels measured at all four locations are of similar magnitude.

Table 4-1: Sound Levels Summary

Monitoring Station	Number of Hourly Records [1]		Sound Metrics Collected (1-hour) [2]							
	Total	Inclement Weather	Daytime [07:00-23:00]				Nighttime [23:00-07:00]			
			L_{Asmin}	L_{Aeq}	L_{Asmax}	L_{AS90}	L_{Asmin}	L_{Aeq}	L_{Asmax}	L_{AS90}
R1	161	34	17	33	74	27	17	28	61	26
R2	161	34	17	31	82	24	17	27	59	24
R3	151	34	16	28	77	23	16	25	55	22
R4	161	34	17	31	76	24	17	25	57	23

Notes:

1. The number of records with length of measurement equal to 1:00 hour taken for the period indicated:
   Total: total number of hourly records; Inclement weather: total number of hourly records that fall within a period of inclement weather as defined in Section 3.3. Due to inclement weather (wind gusts), R3 microphone fell to the ground on the night of November 14th to 15th. On the morning of November 15th it was secured by weighting it down. As a result, Ten hours were omitted.
2. Denotes all metrics collected in terms of one-hour values, not coinciding with an hour where inclement weather conditions were observed. For each of the metrics the following processing was considered:
   L_{Asmin} – Denotes the minimum of the 1-hour L_{Asmin} collected.
   L_{Aeq} – Denotes the arithmetic average of the 1-hour L_{Aeq} collected.
   L_{Asmax} – Denotes the maximum of the 1-hour L_{Asmax} collected.
   L_{AS90} – Denotes the arithmetic average of the 1-hour L_{AS90} collected.

Table 4-2: Day-Night Sound Levels Summary

Monitoring Station	Sound Metrics Collected [1, 2]								
	L_d			L_n			L_{dn}		
	Min.	Avg.	Max.	Min.	Avg.	Max.	Min.	Avg.	Max.
R1	29	34	43	23	32	45	31	39	51
R2	28	34	41	22	31	45	30	38	51
R3	24	31	42	18	27	40	30	34	47
R4	25	36	43	19	29	45	27	38	51

Notes:

1. Denotes all metrics calculated based on one-hour values, not coinciding with an hour where inclement weather conditions were observed, and excluding data collected during periods of site inspection and maintenance. For each of the metrics the following processing was considered:
   L_d – Denotes the daytime equivalent sound level from 07:00 to 22:00
   L_n – Denotes the nighttime equivalent sound level from 22:00 to 07:00
   L_{dn} – Denotes the day-night sound level for a 24-hr period, with the night-time contributions adjusted by +10 dB.
2. Metrics presented: maximum, arithmetic average (mean), and minimum.

Table 4-3: Detailed Day-Night Sound Levels R1 and R2

Monitoring Period	Sound Metrics Collected [1,2]					
	Monitoring Location R1			Monitoring Location R2		
	L_d	L_n	L_{dn}	L_d	L_n	L_{dn}
Tue, 2023-11-14	43	45	51	41	45	51
Wed, 2023-11-15	35	38	44	38	41	47
Thu, 2023-11-16	29	28	35	35	26	36
Fri, 2023-11-17	34	31	38	32	28	35
Sat, 2023-11-18	30	26	33	32	25	33
Sun, 2023-11-19	29	23	31	28	22	30
Mon, 2023-11-20	39	31	40	33	25	34
Tue, 2023-11-21	-	36	-	-	37	-

Notes:

1. Denotes all metrics calculated based on one-hour values, not coinciding with an hour where inclement weather conditions were observed. For each of the metrics the following processing was considered:
   L_d – Denotes the daytime equivalent sound level from 07:00 to 22:00
   L_n – Denotes the nighttime equivalent sound level from 22:00 to 07:00
   L_{dn} – Denotes the day-night sound level for a 24-hr period, with the night-time contributions adjusted by +10 dB.
2. Where "-" stands for the metrics of periods with no data available due to inclement weather.

Table 4-4: Detailed Day-Night Sound Levels R3 and R4

Monitoring Period	Sound Metrics Collected [1,2]					
	Monitoring Location R3			Monitoring Location LR4		
	L_d	L_n	L_{dn}	L_d	L_n	L_{dn}
Tue, 2023-11-14	42	40	47	41	45	51
Wed, 2023-11-15	31	18	30	42	38	45
Thu, 2023-11-16	32	27	35	43	25	41
Fri, 2023-11-17	33	25	34	37	25	36
Sat, 2023-11-18	29	28	35	27	25	32
Sun, 2023-11-19	24	26	32	25	19	27
Mon, 2023-11-20	30	20	30	31	24	32
Tue, 2023-11-21	-	32	-	41	34	42

Notes:

1. Denotes all metrics calculated based on one-hour values, not coinciding with an hour where inclement weather conditions were observed. For each of the metrics the following processing was considered:
   L_d – Denotes the daytime equivalent sound level from 07:00 to 22:00
   L_n – Denotes the nighttime equivalent sound level from 22:00 to 07:00
   L_{dn} – Denotes the day-night sound level for a 24-hr period, with the night-time contributions adjusted by +10 dB.
2. Where "-" stands for the metrics of periods with no data available due to inclement weather.

Table 4-5: Vibration Levels Summary

Monitoring Station	Total Number of 1-second Records [1]	Vibration Metrics Collected (1-second) [2,3]	
		PPV [mm/s]	RMS [mm/s]
R1	168,432	0.002	0.001
R2	174,220	0.003	0.001
R3	174,568	0.002	0.001
R4	86,672	0.002	0.001

Notes:

1. The total number of 1-second records taken for the monitoring period, excluding data collected during site inspections
2. Denotes all metrics collected in terms of one-second values. For each of the metrics the following processing was considered:
   PPV: Denotes the 95th percentile value of PPV from all monitoring data along the vertical axis.
   RMS: Denotes the arithmetic average of RMS velocity from all monitoring data along the vertical axis.
3. The values presented are rounded to 3 decimal places.

Table 4-6: Day-Night Vibration Levels Summary

Monitoring Station	PPV Metrics Collected (1-second) [4,5]					
	Daytime [07:00-23:00]			Nighttime [23:00-07:00]		
	Min.	Avg.	95th	Min.	Avg.	95th
R1	0.002	0.003	0.002	0.002	0.002	0.002
R2	0.002	0.004	0.004	0.002	0.002	0.004
R3	0.002	0.002	0.002	0.002	0.002	0.002
R4	0.002	0.002	0.002	0.002	0.002	0.002

Notes:

4. Denotes PPV collected in terms of one-second values from monitoring data along the vertical axis excluding data during site inspections.
5. The values presented are rounded to 3 decimal places.

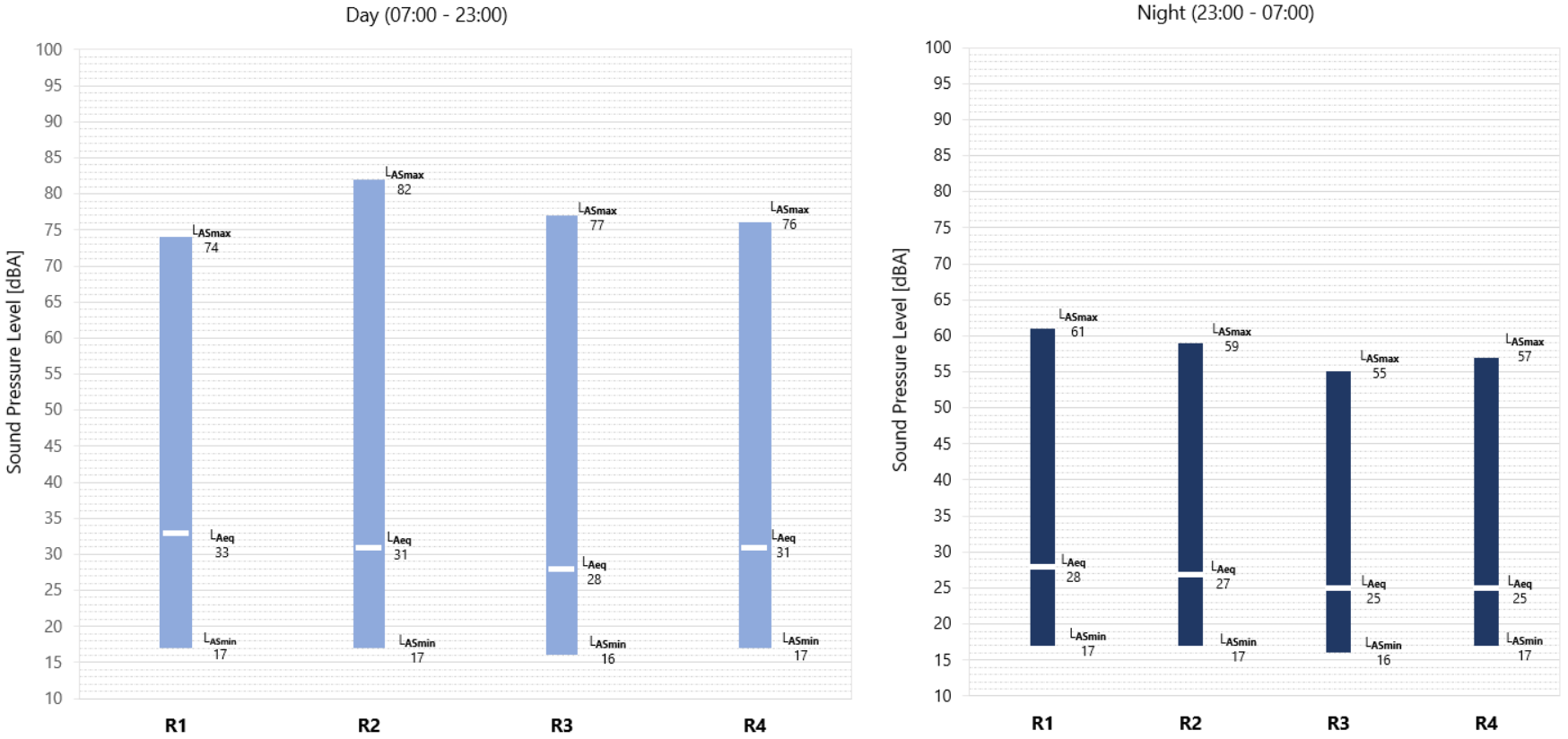

Figure 4-1: Sound Levels Summary

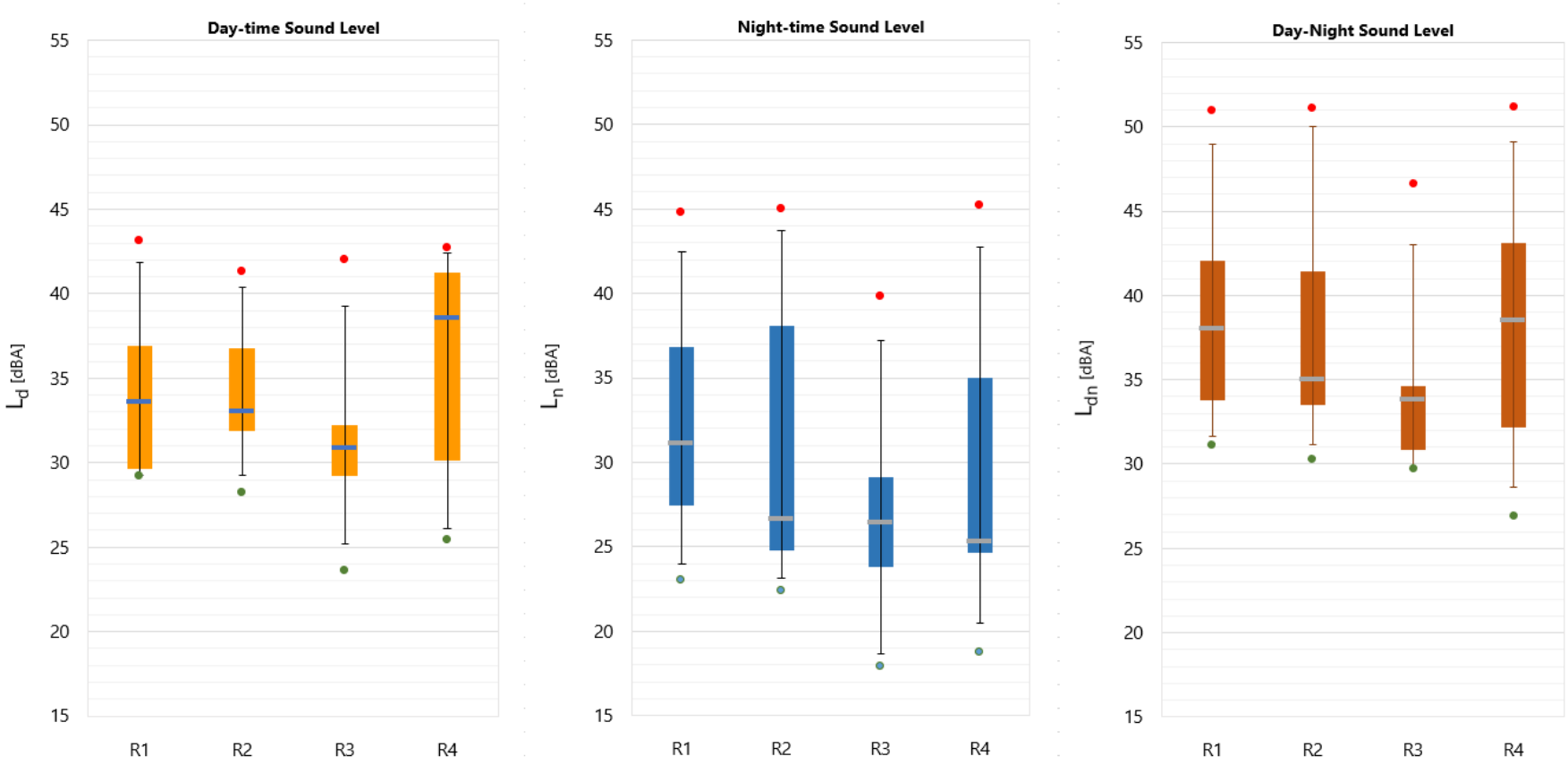

Figure 4-2: Day-Night Sound Levels Summary

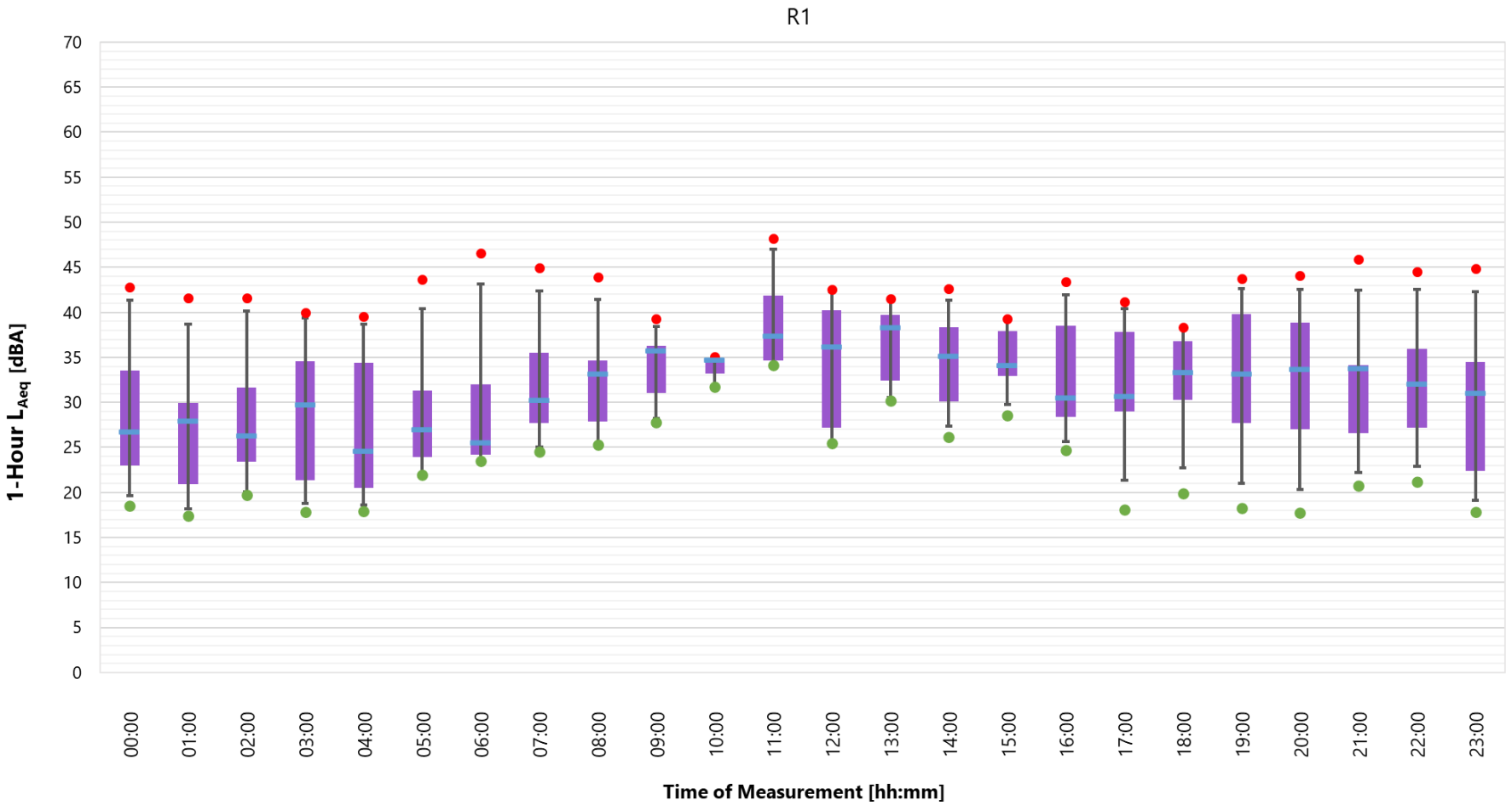

Figure 4-3: Hourly Review of L_{Aeq} (1-hour) for a 24-hour Period at R1

wood.

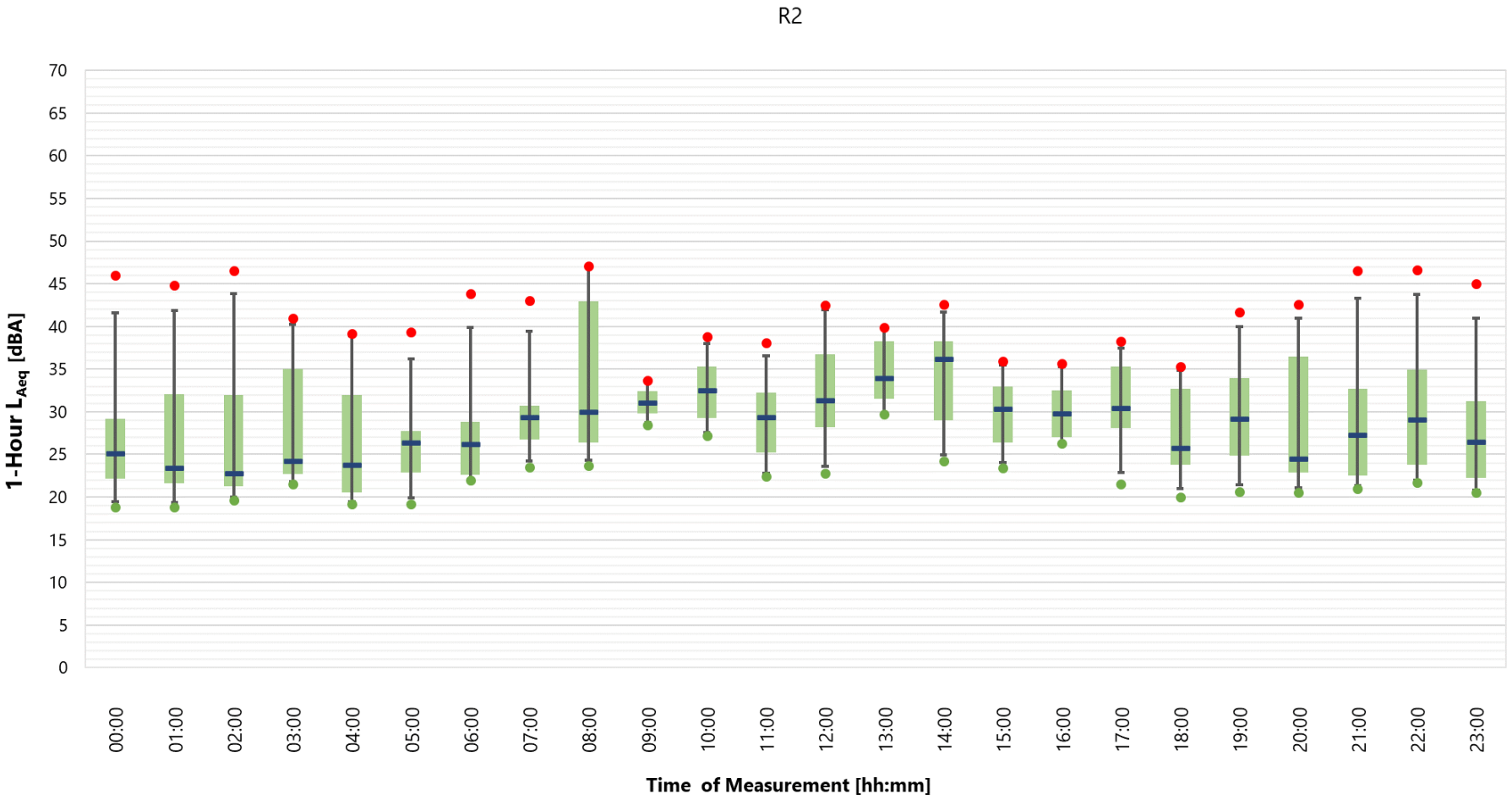

Figure 4-4: Hourly Review of L_{Aeq} (1-hour) for a 24-hour Period at R2

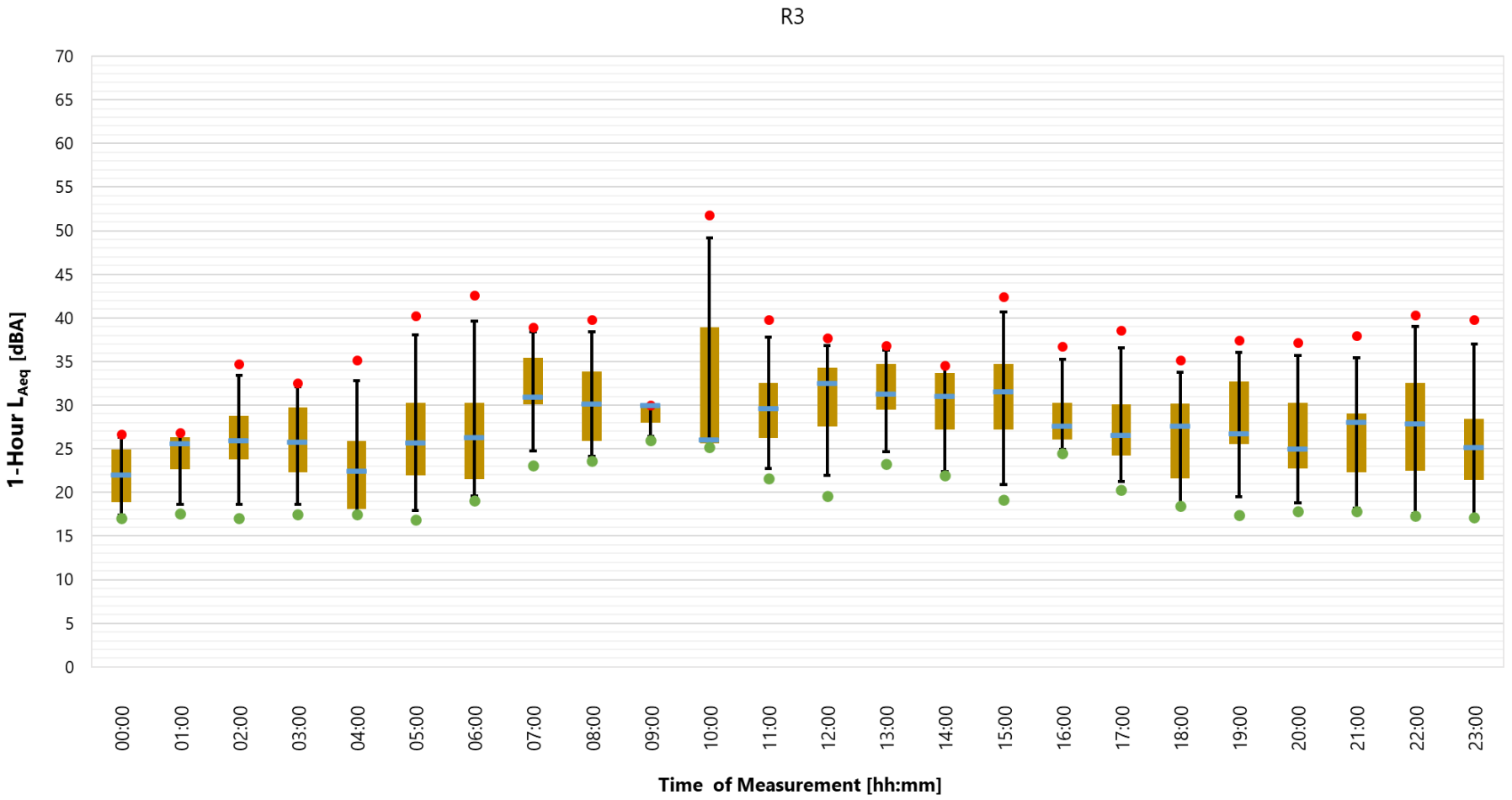

Figure 4-5: Hourly Re view of L_{Aeq} (1-hour) for a 24-hour Period at R3

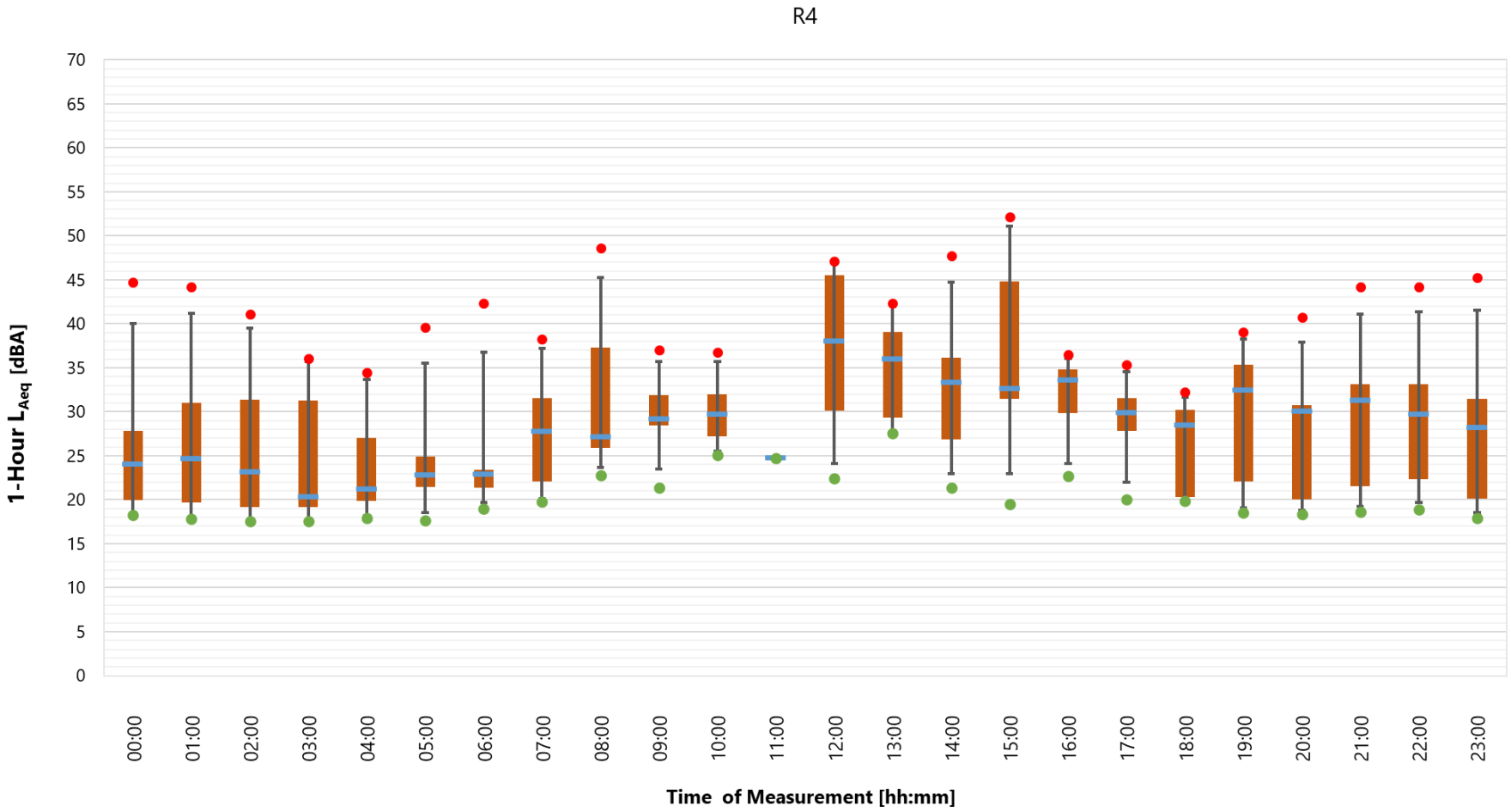

Figure 4-6: Hourly Review of L_{Aeq} (1-hour) for a 24-hour Period at R4

wood.

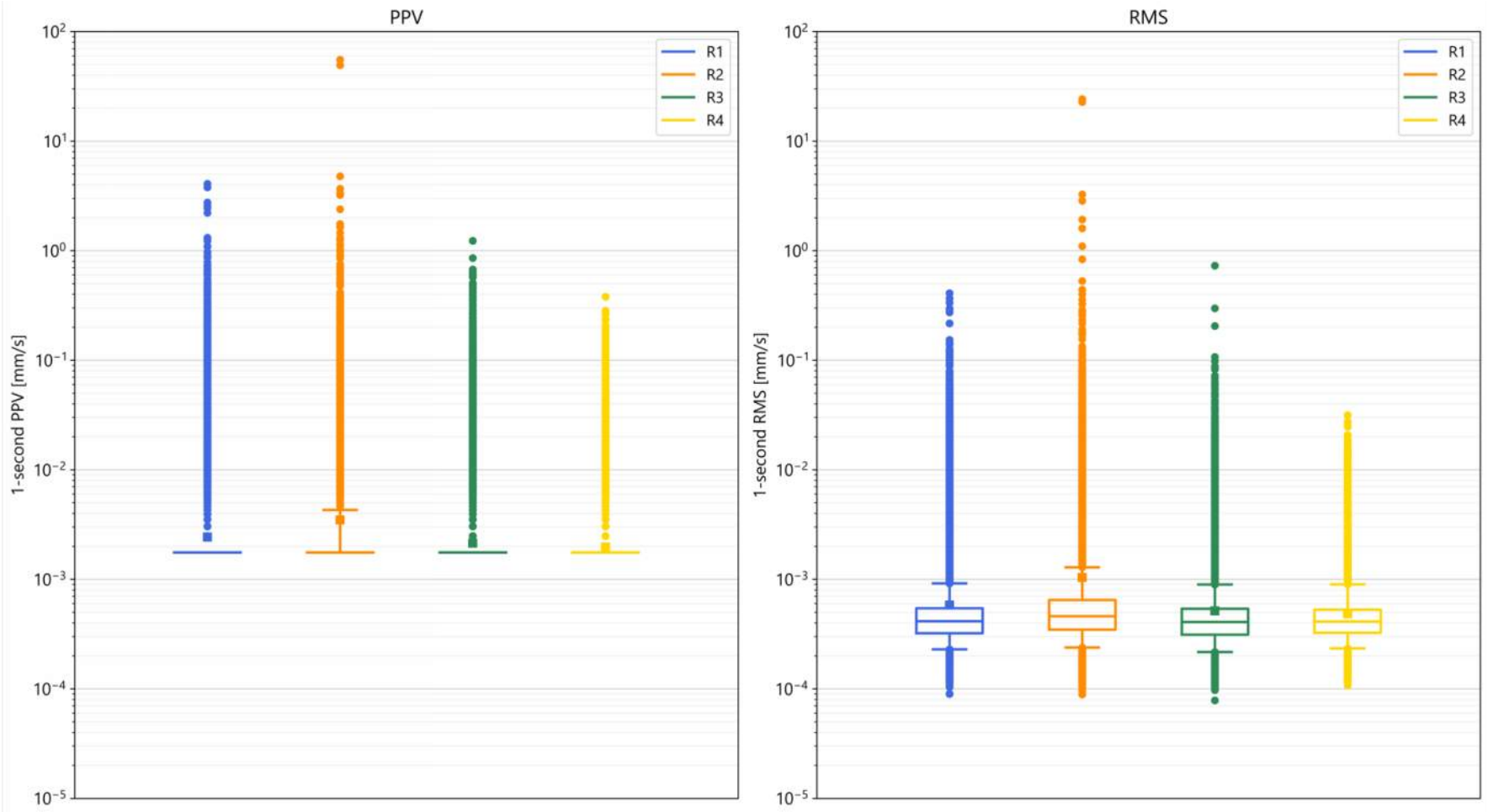

Figure 4-7: Vibration Levels Summary[1]

1 Notes on the boxplot presentation of V_{PPV} values: more than 95% of measured V_{PPV} values are under range, i.e., recorded as a constant value of around 0.002 mm/s for R1, R2, R3 and R4. As a result, elements of the boxplot are overlapping, i.e., overlapping minimum value, 5th percentile, second quartile, median, third quartile and 95th percentile.

5.0 Closing

This Sound and Vibration Baseline Report was prepared for Kinross Gold Corporation by Wood. The quality of information and conclusions contained herein is consistent with the level of effort involved in Wood's services and based on: i) information available at the time of preparation; ii) data supplied by outside sources; and iii) the assumptions, conditions and qualifications set forth in this report.
yours truly,

Wood Group Asset Integrity Solutions, Inc.
Vibration, Dynamics and Noise (VDN)

Prepared by:

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6.0 References

American National Standards Institute, 2006. *ANSI S1.4-1983 (R2006) plus Amendment S1.4A-1985 (R2006) – American National Standard Specification for Sound Level Meters,* Washington, D.C.: ANSI.

Angevine, O., 1975. Individual Differences in the Annoyance of Noise. *Sound and Vibration.*

Bell, L. H. & Bell, D. H., 1994. *Fundamentals of Industrial Noise Control.* New York: Marcel Dekker Incorporated.

Health Canada, January 2017. *Guidance for Evaluating Human Health Impacts in Environmental Assessment: NOISE,* s.l.: s.n.

International Electrotechnical Commission, 2003. *IEC 60942 – Electroacoustics – Sound calibrators,* Geneva: s.n.

International Electrotechnical Commission, 2013. *IEC 61672-1 – Electroacoustics – Sound level meters – Part 1: Specifications,* Geneva: International Electrotechnical Commission.

Ontario Ministry of the Environment, Conservation and Parks (MECP), 1977a. *Publication NPC-119 Blasting, published under the Model Municipal Noise Control Bylaw. Revision Oct. 1982,* s.l.: s.n.

Ontario Ministry of the Environment, Conservation and Parks (MECP), 1977b. *Publication NPC-207 Impulsive Vibration in Residential Buildings, published under the Model Municipal Noise Control Bylaw. Revision Jan. 1988,* s.l.: s.n.

Ontario Ministry of the Environment, Conservation and Parks (MECP), 1977c. *Publication NPC-103 Procedures, published under the Model Municipal Noise Control Bylaw,* s.l.: s.n.

Ontario Ministry of the Environment, Conservation and Parks (MECP), August 2013. *Publication NPC-300 Noise Assessment Criteria for Stationary Sources and for Land Use Planning,* s.l.: s.n.

Appendix A

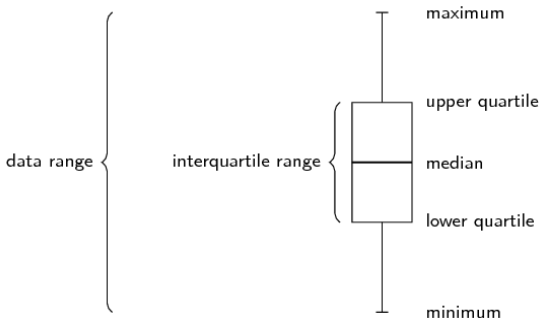
Technical Terms and Acoustical Descriptors

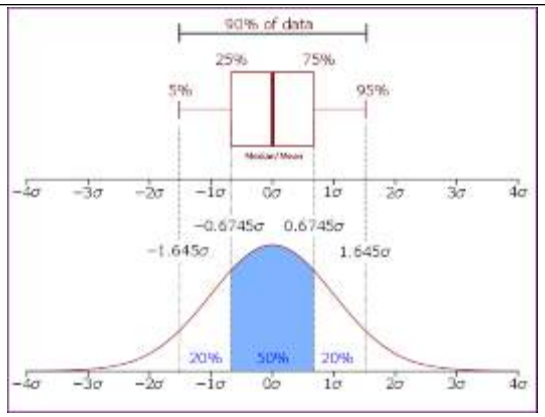
Technical Terms and Acoustical Descriptors

Frequency	Typically the rate in Hertz (Hz) - previously denoted cycles per second, at which an event is repeated. *Normal human hearing extends over a range of frequencies from about 15 Hz to about 15 kHz.*
A-Weighting Network	A frequency-response adjustment of a sound level meter that makes its reading conform to human response. The sensitivity of the human ear is frequency dependent. At low and high frequencies, the ear is not very sensitive, but between 500 Hz and 6 kHz the ear is very sensitive. The A-weighting filter is a broadband filter that covers the interval from 20 Hz to 20 kHz. The shape of the A-weighting curve approximates the frequency sensitivity of the human ear. So the A-weighted value of a noise source is an approximation to how the human ear perceives the noise. Written as dB(A) or dBA
Z-Weighting Network	Z for 'Zero' frequency weighting, which implies no frequency weighting. In reality the range is 10 Hz to 20 kHz ±1.5 dB. Introduced (IEC 61672 2003) to replace the Flat or Linear Filters. Written as dB(Z) or dBZ
Exponential Averaging	Generates a continuous running average where the most recently sampled levels have more influence on the average than older samples. This provides a convenient form to examine rapidly changing data with the benefit of some averaging to smooth the spectra.
Linear Averaging	The process of adding together a sequence of spectra measurements and then dividing the total by the number of samples. The result is a true arithmetic average on a sample-by-sample basis. Averaging smooths out random noise components in a spectrum.
Time Constants or Time Weightings	Time constants used for exponential averaging. Three-time constants can be used and are defined as: • Fast "F" time constant corresponds to 125 ms; • Slow "S" time constant corresponds to 1s; and • Impulse "I" time constant corresponding to 35 ms while the signal level is increasing and 1,500 ms while the signal level is decreasing.
P(t) – "Sound Pressure"	The instantaneous difference between the actual pressure and the average barometric pressure at a given location.

Sound Pressure Level (SPL)	A measurement of instantaneous sound pressure and equal to 20 times the logarithm (base 10) of the ratio of the instantaneous sound pressure of a sound divided by the reference sound pressure of 20 µPa (0 dB). Reported and measured in decibels (dB or dBA).
$L_{xeq}(T)$ – *"Equivalent continuous sound level* with a frequency weighting, x"	The equivalent continuous sound level (also called time-average sound level), $L_{xeq}(T)$, is defined as twenty times the logarithm to base ten of the ratio of a root-mean-square sound pressure during a time interval (T) to the reference sound pressure, sound pressure being obtained with a frequency weighting, x. x can be replaced by: • A for A-weighted; • B for B-weighted; • C for C-weighted; or • Z for Z-weighted.
$L_{xymax}(T)$ – *"Maximum sound level,* with a frequency weighting, x, and *with a* time-weighting, y"	The maximum time-weighted sound level, $L_{xymax}(T)$, is defined as the greatest time-weighted sound level, $L_{xy}(t)$, within a measurement interval (T). x can be replaced by: • A for A-weighted; • B for B-weighted; • C for C-weighted; or • Z for Z-weighted. • Y can be replaced by: • S for slow time weighting, or • F for fast time weighting.
$L_{xymin}(T)$ – *"Minimum sound level,* with a frequency weighting, x, and *with a* time-weighting, y"	The minimum time-weighted sound level, $L_{xymin}(T)$, is defined as the smallest time-weighted sound level, $L_{xy}(t)$, within a measurement interval (T). x can be replaced by: • A for A-weighted, • B for B-weighted, • C for C-weighted, or • Z for Z-weighted. • Y can be replaced by: • S for slow time weighting, or • F for fast time weighting.

L_{xyN} – *"N^{th} Exceedance level,* with a frequency weighting, x, and *with a* time-weighting, y*"* *where N is between 0.1 to 99.9*	Is the sound pressure level which is exceeded N percent of the measurement time. The sound pressure being obtained with a frequency weighting, x and a time-weighting, y. x can be replaced by: • A for A-weighted; • B for B-weighted; • C for C-weighted; or • Z for Z-weighted. • Y can be replaced by: • S for slow time weighting, or • F for fast time weighting.
$L_{xpeak}(T)$ – "Peak sound level"	The peak sound level, $L_{xpeak}(T)$, is defined as twenty times the logarithm to base ten of the ratio of the greatest absolute instantaneous sound pressure, $p_x(t)$, instantaneous sound pressure being obtained with a frequency weighting, x x can be replaced by: • A for A-weighted; • B for B-weighted; • C for C-weighted; or • Z for Z-weighted.
Octave Band	A band of frequencies where the upper limiting frequency (u.l.f.) is twice the lower limiting frequency (l.l.f.). *Octave bands are identified by their centre-frequencies. The octave bands standardized for acoustic measurements include those centered at 31.5, 63, 125, 250, 500, 1000, 2000, 4000, & 8000 Hz.*
Velocity	Rate of change in position, measured in distance per unit of time. When measuring vibration signals, velocity represents the rate of change in displacement. Units: Millimetres per second [mm/s].
Peak Particle Velocity (PPV)	Highest particle velocity which is recorded during a particular vibration event. Unit: Millimetres per second [mm/s].

Root Mean Square (RMS) Velocity	Square root of the average of the squared instantaneous vibration velocity (V) over a specified time interval or integration time (T) reported in millimeters per second (mm/s). For the purposes of vibration monitoring the integration time (T) is one second. Unit: Millimetres per second [mm/s].
1/N Octave Band	A band of frequencies integrally divided from an Octave Band. The u.l.f. equals $2^{1/N}$ times the l.l.f. *The most commonly used frequency band is the 1/3 octave band.*
Five-Number Summary	The five-number summary is a set of descriptive statistics that provide information about a dataset. It consists of the five most important sample percentiles: The sample minimum (smallest observation); The lower quartile or first quartile; The median (middle value); The upper quartile or third quartile; and The sample maximum (largest observation). 
Box plot Representation or Box plot Graph	Box plot (also known as a box-and-whisker plot) is a type of graph that is designed specifically to show the distribution of a set of data based on a five-number summary. The representation of the box plot and data varies depending on the used. Alternates of the Five-Number Summary are generally used. Box plots are uniform in their use of the box: the bottom and top of the box are always the first and third quartiles, and the band inside the box is always the median, but the ends of the whiskers can represent several possible alternative values.



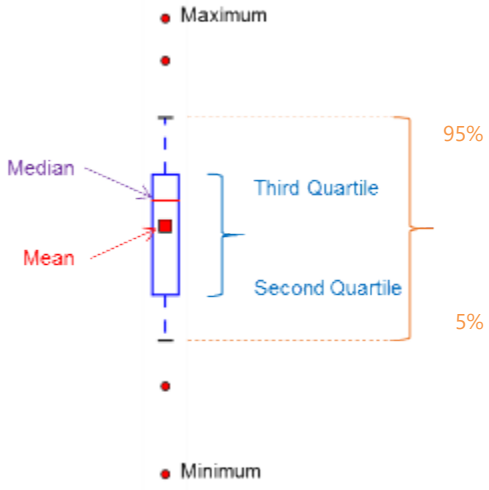
It should be noted that Box plots describe the sample and make no representation or assumptions regarding the population. Box plot data need not be normally distributed as represented in the figure above.

For the purpose of this report the type of representation chosen for the box plots represents a set of summary data that differs from the Five-Number Summary as follows:

The “whiskers” represent the 5 percentile and 95 percentile of the sample;

The red square indicated within the plot is the mean of the sample; and

The red dots represent any data points below or above the 5 and 95 percentiles respectively of the sample (including maximum and minimum of the sample).



Appendix B
Calibration Certificates

HBK
HOTTINGER BRÜEL & KJÆR

Calibration Certificate Number 1568.01

The Hottinger Bruel & Kjaer Calibration Laboratory
3079 Premiere Parkway Suite 120
Duluth, GA 30097
Telephone: 770/209-6907
Fax: 770/447-4033
Web site address: http://www.hbkworld.com

CERTIFICATE OF CALIBRATION

Certificate No: CAS-557606-Q2R6C8-101

CALIBRATION OF:

Sound Level Meter:	Brüel & Kjær	2250	Serial No: 3023697
Microphone:	Brüel & Kjær	4189	Serial No: 3100315
Preamplifier:	Brüel & Kjær	ZC-0032	Serial No: 26283
Software version:	BZ7130 Version 4.7.6		

CLIENT:

Xscala Rental Instruments Inc.
4819-3151 Lakeshore Blvd.
Kelowna, BC V1W 3S9 Canada

CALIBRATION CONDITIONS:

Preconditioning:	4 hours at 23 ± 3 °C
Environment conditions	See actual values in Environmental Condition sections

SPECIFICATIONS:

This document certifies that the instrument as listed under "Model/Serial Number" has been calibrated and unless otherwise indicated under "Final Data", meets acceptance criteria as prescribed by the referenced Procedure. The reported expanded uncertainty is based on the standard uncertainty multiplied by a coverage factor $k = 2$ providing a level of confidence of approximately 95%. Statements of compliance, where applicable, are based on calibration results falling within specified criteria with no reduction by the uncertainty of the measurement. The calibration of the listed instrumentation, was accomplished using a test system which conforms with the requirements of ISO/IEC 17025, ANSI/NCSL Z540-1, and ISO 10012-1. For "as received" and/or "final" data, see the attached page(s). Items marked with one asterisk (*) are not covered by the scope of the current A2LA accreditation This Certificate and attached data pages shall not be reproduced, except in full, without the written approval of the Hottinger Brüel & Kjær Calibration Laboratory-Duluth, GA. Results relate only to the items tested. This instrument has been calibrated using Measurement Standards with values traceable to the National Institute of Standards and Technology, National Measurement Institutes or derived from natural physical constants.

PROCEDURE:

Hottinger Brüel & Kjær Model 3630 Sound Level Meter Calibration System Software 7763 Version 8.3 - DB: 8.30 Test Collection 2250-4189.

RESULTS:

As Received Condition	As Received Data	Final Data
_X_ Received in good condition	_X_ Within acceptance criteria	_X_ Within acceptance criteria
___ Damaged - See attached report	___ Outside acceptance criteria	___ Limited test - See attached details
	___ Inoperative	
	___ Data not taken	

Date of Calibration: 24 Jan. 2022

Certificate issued: 25 Jan. 2022

John Avitabile
Calibration Technician

Kyle Chancey
Quality Representative

HBK
HOTTINGER BRÜEL & KJÆR

Calibration Certificate Number 1568.01

The Hottinger Bruel & Kjaer Calibration Laboratory
3079 Premiere Parkway Suite 120
Duluth, GA 30097
Telephone: 770/209-6907
Fax: 770/447-4033
Web site address: http://www.hbkworld.com

CERTIFICATE OF CALIBRATION

Certificate No: CAS-564551-F0Z8S6-101

CALIBRATION OF:

Sound Level Meter:	Brüel & Kjær	2250	Serial No: 3004786
Microphone:	Brüel & Kjær	4189	Serial No: 2888637
Preamplifier:	Brüel & Kjær	ZC-0032	Serial No: 20299
Software version:	BZ7222 Version 4.7.6		

CLIENT:

Xscala Rental Instruments Inc.
4819-3151 Lakeshore Blvd.
Kelowna, BC V1W 3S9 Canada

CALIBRATION CONDITIONS:

Preconditioning:	4 hours at 23 ± 3 °C
Environment conditions	See actual values in Environmental Condition sections

SPECIFICATIONS:

This document certifies that the instrument as listed under "Model/Serial Number" has been calibrated and unless otherwise indicated under "Final Data", meets acceptance criteria as prescribed by the referenced Procedure. The reported expanded uncertainty is based on the standard uncertainty multiplied by a coverage factor $k = 2$ providing a level of confidence of approximately 95%. Statements of compliance, where applicable, are based on calibration results falling within specified criteria with no reduction by the uncertainty of the measurement. The calibration of the listed instrumentation, was accomplished using a test system which conforms with the requirements of ISO/IEC 17025, ANSI/NCSL Z540-1, and ISO 10012-1. For "as received" and/or "final" data, see the attached page(s). Items marked with one asterisk (*) are not covered by the scope of the current A2LA accreditation This Certificate and attached data pages shall not be reproduced, except in full, without the written approval of the Hottinger Brüel & Kjær Calibration Laboratory-Duluth, GA. Results relate only to the items tested. This instrument has been calibrated using Measurement Standards with values traceable to the National Institute of Standards and Technology, National Measurement Institutes or derived from natural physical constants.

PROCEDURE:

Hottinger Brüel & Kjær Model 3630 Sound Level Meter Calibration System Software 7763 Version 8.3 - DB: 8.30 Test Collection 2250-4189.

RESULTS:

As Received Condition	As Received Data	Final Data
_X_ Received in good condition	_X_ Within acceptance criteria	_X_ Within acceptance criteria
___ Damaged - See attached report	___ Outside acceptance criteria	___ Limited test - See attached details
	___ Inoperative	
	___ Data not taken	

Date of Calibration: 18 Feb. 2022

Certificate issued: 18 Feb. 2022

John Avitabile
Calibration Technician

Kyle Chancey
Quality Representative

Pylon Electronics Inc.
147 Colonnade Road
Ottawa, ON K2E 7L9

CERTIFICATE OF CALIBRATION

Description	SOUND ANALYZER	**Work Order**	N1136661
Model Number	2250	**Serial Number**	3004114
Instrument Id	N/A	**Cal Procedure**	BE1713-16
Manufacturer	BRUEL & KJAER	**Cal Date**	27 Sep 2023
Customer Name	WESCAN CALIBRATION	**Recall Cycle**	52 Weeks
	2228 PEGASUS WAY NE	**Next Cal Date**	27 Sep 2024
		Purchase Order	20044359

Calibration Environment: Temperature 23.2 °C Relative Humidity 33.3 %RH

Received Condition: Within Tolerance

Completed Condition: Within Tolerance

Remarks: Calibrated with Microphone 4189 S/N 2877058

Standards Used to Establish Traceability

Instrument Type	Model	Asset #	Cal Due Date
SOUND LEVEL CALIBRATOR	4231	240-1151	25 Sep 2024

Pylon certifies that, at the time of calibration, the above listed instrument meets or exceeds all of the specifications defined on the Test Data Sheet (TDS), unless otherwise indicated. The Certificate received and completed conditions and the TDS specifications are based on the procedure(s) and/or specification(s) referenced on the TDS unless otherwise indicated. Any statement of compliance is made without taking measurement uncertainty into account and is based on the instrument's performance against the test limits documented on the test data sheet.

The above listed instrument has been calibrated using standards that are traceable to the International System of Units (SI) through a National Metrological Institute (such as NRC or NIST). Pylon's quality system meets the requirements of ISO/IEC 17025:2017. Unless otherwise specified, Pylon maintains a minimum of a 4:1 ratio between the equipment under test and the measurement system.

Test data As Found and Final (as left) results are the same unless reported otherwise. Certificate remarks identify if adjustments were performed.

HBK
HOTTINGER BRÜEL & KJÆR

Calibration Certificate Number 1568.01

The Hottinger Bruel & Kjaer Calibration Laboratory
3079 Premiere Parkway Suite 120
Duluth, GA 30097
Telephone: 770/209-6907
Fax: 770/447-4033
Web site address: http://www.hbkworld.com

CERTIFICATE OF CALIBRATION

Certificate No: CAS-564551-F0Z8S6-103

CALIBRATION OF:

Sound Level Meter:	Brüel & Kjær	2250	Serial No: 3004068
Microphone:	Brüel & Kjær	4189	Serial No: 2877087
Preamplifier:	Brüel & Kjær	ZC-0032	Serial No: 19685
Software version:	BZ7222 Version 4.7.6		

CLIENT:

Xscala Rental Instruments Inc.
4819-3151 Lakeshore Blvd.
Kelowna, BC V1W 3S9 Canada

CALIBRATION CONDITIONS:

Preconditioning:	4 hours at 23 ± 3 °C
Environment conditions	See actual values in Environmental Condition sections

SPECIFICATIONS:

This document certifies that the instrument as listed under "Model/Serial Number" has been calibrated and unless otherwise indicated under "Final Data", meets acceptance criteria as prescribed by the referenced Procedure. The reported expanded uncertainty is based on the standard uncertainty multiplied by a coverage factor $k = 2$ providing a level of confidence of approximately 95%. Statements of compliance, where applicable, are based on calibration results falling within specified criteria with no reduction by the uncertainty of the measurement. The calibration of the listed instrumentation, was accomplished using a test system which conforms with the requirements of ISO/IEC 17025, ANSI/NCSL Z540-1, and ISO 10012-1. For "as received" and/or "final" data, see the attached page(s). Items marked with one asterisk (*) are not covered by the scope of the current A2LA accreditation This Certificate and attached data pages shall not be reproduced, except in full, without the written approval of the Hottinger Brüel & Kjær Calibration Laboratory-Duluth, GA. Results relate only to the items tested. This instrument has been calibrated using Measurement Standards with values traceable to the National Institute of Standards and Technology, National Measurement Institutes or derived from natural physical constants.

PROCEDURE:

Hottinger Brüel & Kjær Model 3630 Sound Level Meter Calibration System Software 7763 Version 8.3 - DB: 8.30 Test Collection 2250-4189.

RESULTS:

As Received Condition	As Received Data	Final Data
_X_ Received in good condition	_X_ Within acceptance criteria	_X_ Within acceptance criteria
___ Damaged - See attached report	___ Outside acceptance criteria	___ Limited test - See attached details
	___ Inoperative	
	___ Data not taken	

Date of Calibration: 18 Feb. 2022

Certificate issued: 18 Feb. 2022

John Avitabile
Calibration Technician

Kyle Chancey
Quality Representative

Pylon Electronics Inc.
147 Colonnade Road
Ottawa, ON K2E 7L9

CERTIFICATE OF CALIBRATION

Description	SOUND LEVEL CALIBRATOR	**Work Order**	N1136662
Model Number	4231	**Serial Number**	2094474
Instrument Id	N/A	**Cal Procedure**	33K3-4-2871-1
Manufacturer	BRUEL & KJAER	**Cal Date**	27 Sep 2023
Customer Name	WESCAN CALIBRATION	**Recall Cycle**	52 Weeks
	2228 PEGASUS WAY NE	**Next Cal Date**	27 Sep 2024
		Purchase Order	20044359

Calibration Environment: Temperature 23.1 °C Relative Humidity 35.0 %RH

Received Condition: Within Tolerance

Completed Condition: Within Tolerance

Standards Used to Establish Traceability

Instrument Type	Model	Asset #	Cal Due Date
3550 B&K, SIGNAL ANALYZER	3550	240-1176	16 May 2024
4220 BRUEL&KJAER PISTONPHONE	4220	240-1378	26 Jan 2024
MICROPHONE PREAMP	2639	240-312	12 Jul 2024
1/2" MICROPHONE	4166	240-709	13 Jun 2024

Pylon certifies that, at the time of calibration, the above listed instrument meets or exceeds all of the specifications defined on the Test Data Sheet (TDS), unless otherwise indicated. The Certificate received and completed conditions and the TDS specifications are based on the procedure(s) and/or specification(s) referenced on the TDS unless otherwise indicated. Any statement of compliance is made without taking measurement uncertainty into account and is based on the instrument's performance against the test limits documented on the test data sheet.

The above listed instrument has been calibrated using standards that are traceable to the International System of Units (SI) through a National Metrological Institute (such as NRC or NIST). Pylon's quality system meets the requirements of ISO/IEC 17025:2017. Unless otherwise specified, Pylon maintains a minimum of a 4:1 ratio between the equipment under test and the measurement system.

Test data As Found and Final (as left) results are the same unless reported otherwise. Certificate remarks identify if adjustments were performed.

Metrologist : *146* Quality Assurance: *330* Date of Issue: 27 Sep 2023

4294

HBK HOTTINGER BRÜEL & KJÆR

The Hottinger Brüel & Kjær Inc. Calibration Laboratory
3079 Premiere Parkway Suite 120
Duluth, GA 30097
Telephone: 770-209-6907
Fax: 770-447-4033
Web site address: http://www.hbkworld.com

A2LA ACCREDITED

Calibration Certificate # 1568.01

CERTIFICATE OF CALIBRATION

No.: CAS-541789-K8K9R5-101

CALIBRATION OF:

Calibration Exiter:	B&K	Type	4294	Serial No.	2500817

CUSTOMER:

Xscala Rental Instruments Inc.
4819-3151 Lakeshore Road
Kelowna, BC V1W3S9

CALIBRATION CONDITIONS:

Environment conditions:	Air temperature:	23	°C
	Air pressure:	982	mBars
	Relative Humidity:	52	%RH

SPECIFICATIONS:

This document certifies that the instrument as listed under "Type" has been calibrated and unless otherwise indicated under "Final Data", meets acceptance criteria as prescribed by the referenced Procedure. Statements of compliance, where applicable, are based on calibration results falling within specified criteria with no reduction by the uncertainty of the measurements. The calibration of the listed transducer was accomplished using a test system which conforms with the requirements of ISO/IEC 17025, ANSI/NCSL Z540-1, and guidelines of ISO 10012-1. For "as received" and "final" data, see the attached page(s). Items marked with one asterisk (*) are not covered by the scope of the current A2LA accreditation. This Certificate and attached data pages shall not be reproduced, except in full, without written approval of the Hottinger Brüel & Kjær Calibration Laboratory-Duluth, GA. Results relate only to the items tested. The transducer has been calibrated using Measurement Standards with values traceable to the National Institute of Standards and Technology, National Measurement Institutes or derived from natural physical constants.

PROCEDURE:

The measurements have been performed with the assistance of Hottinger Brüel & Kjær Accelerometer Calibration System B&K 3629 with application software 5308 version 3.0.1.230 using calibration procedure: 4294 New (Serial Number above 1466533)

RESULTS:

[X] "As Received" Data: Within Acceptance Criteria
[ ] "As Received" Data: Outside Acceptance Criteria
[X] "Final" Data : Within Acceptance Criteria
[ ] "Final" Data : Outside Acceptance Criteria

The reported expanded uncertainty is based on the standard uncertainty multiplied by a coverage factor $k=2$ providing a level of confidence of approximately 95%. The uncertainty evaluation has been carried out in accordance with EA-4/02 from elements originating from standards, calibration method, effect of environmental conditions and any short term contribution from the device under calibration.

Date of Calibration: 10/7/2021

Certificate issued: 10/7/2021

John Avitabile

Calibration Technician

Harold Williams

Harold Williams
Quality Representative

Appendix C

Sound Monitoring Results

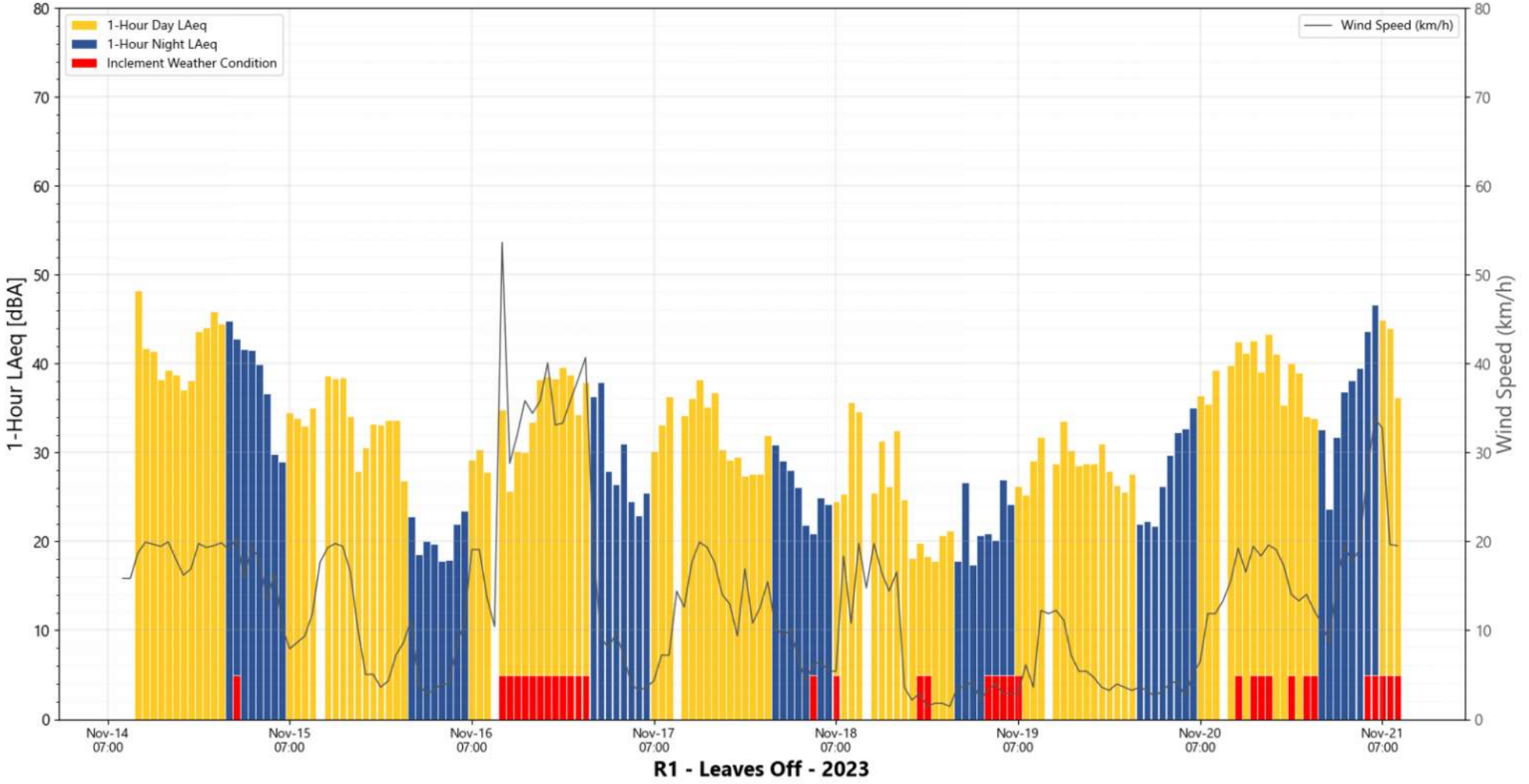


Figure C-1: Sound Levels at R1 (1-hour L_{Aeq})

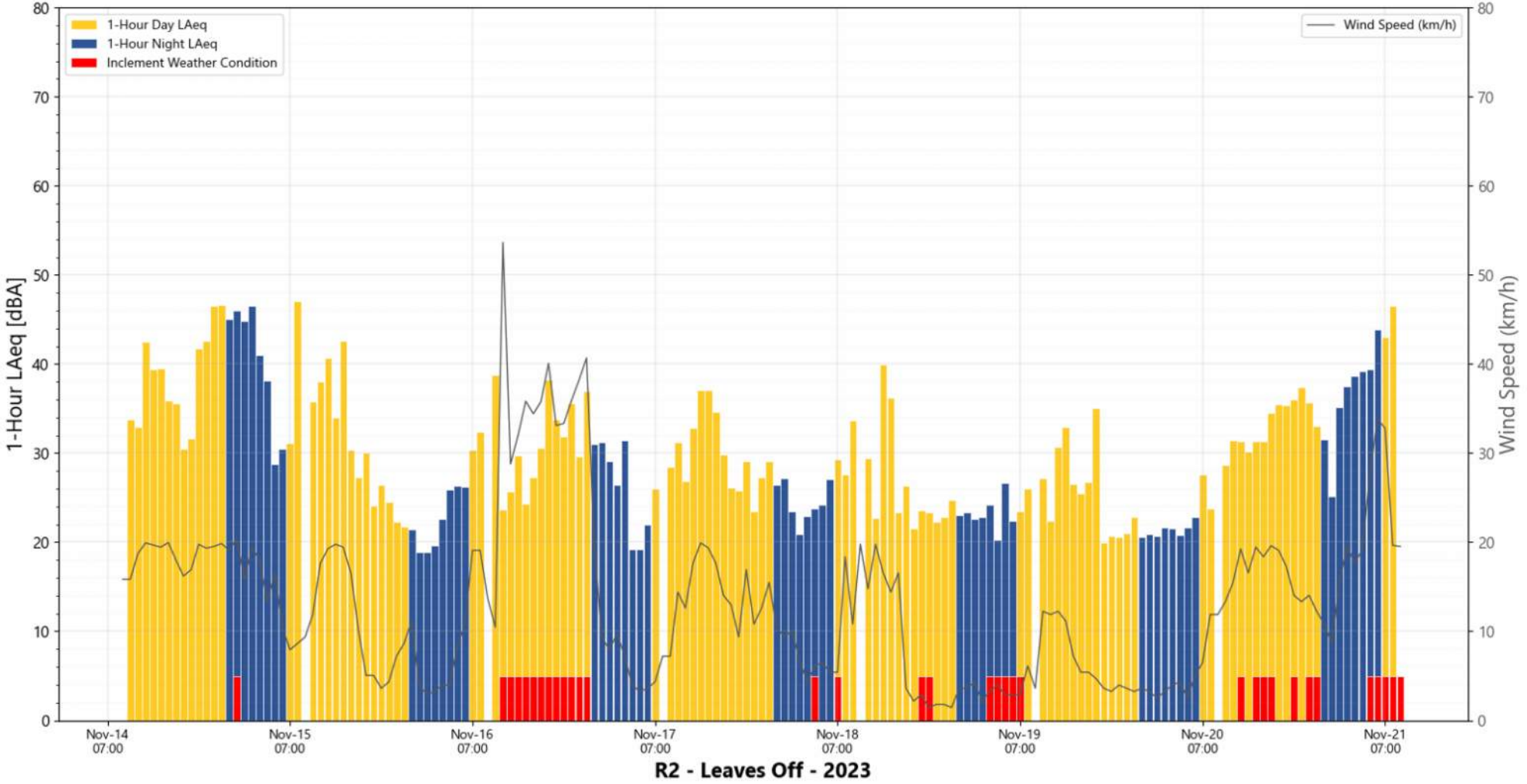


Figure C-2: Sound Levels at R2 (1-hour L_{Aeq})

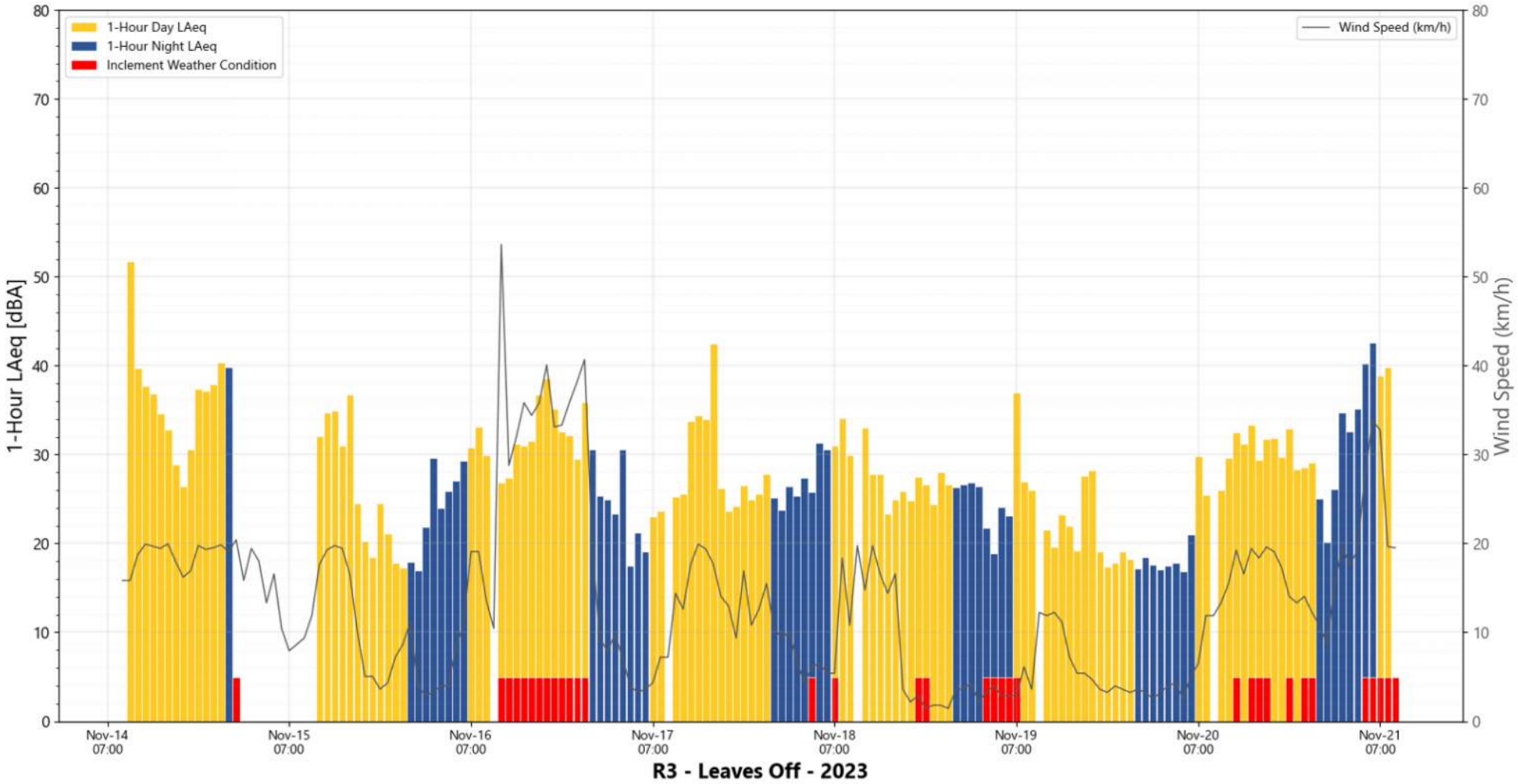


Figure C-3: Sound Levels at R3 (1-hour L_{Aeq}). Microphone dropped around 12AM on November 15th due to wind gusts, restored to original position at approximately 10AM.

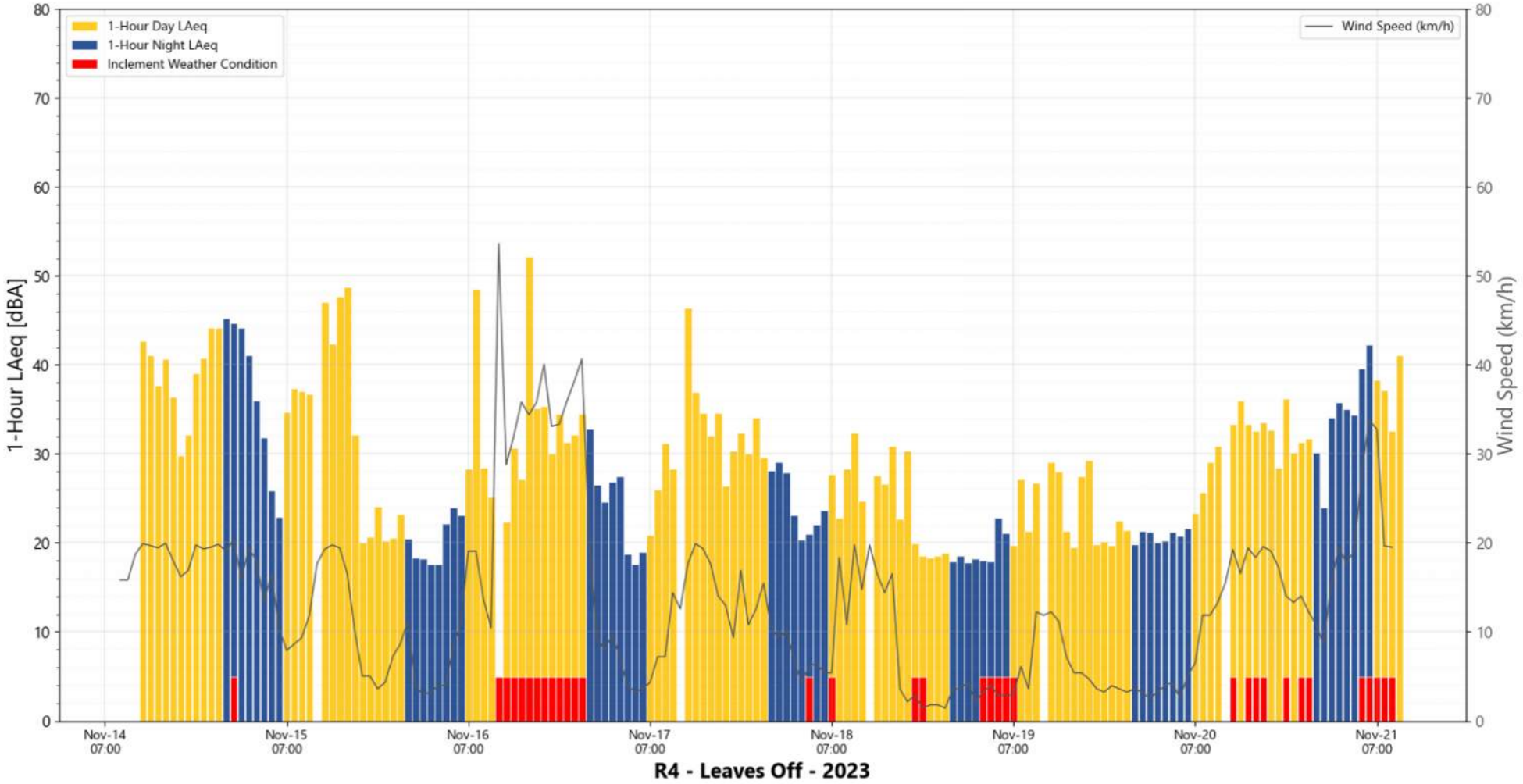


Figure C-4: Sound Levels at R4 (1-hour L_{Aeq})

Appendix D

Vibration Monitoring Results

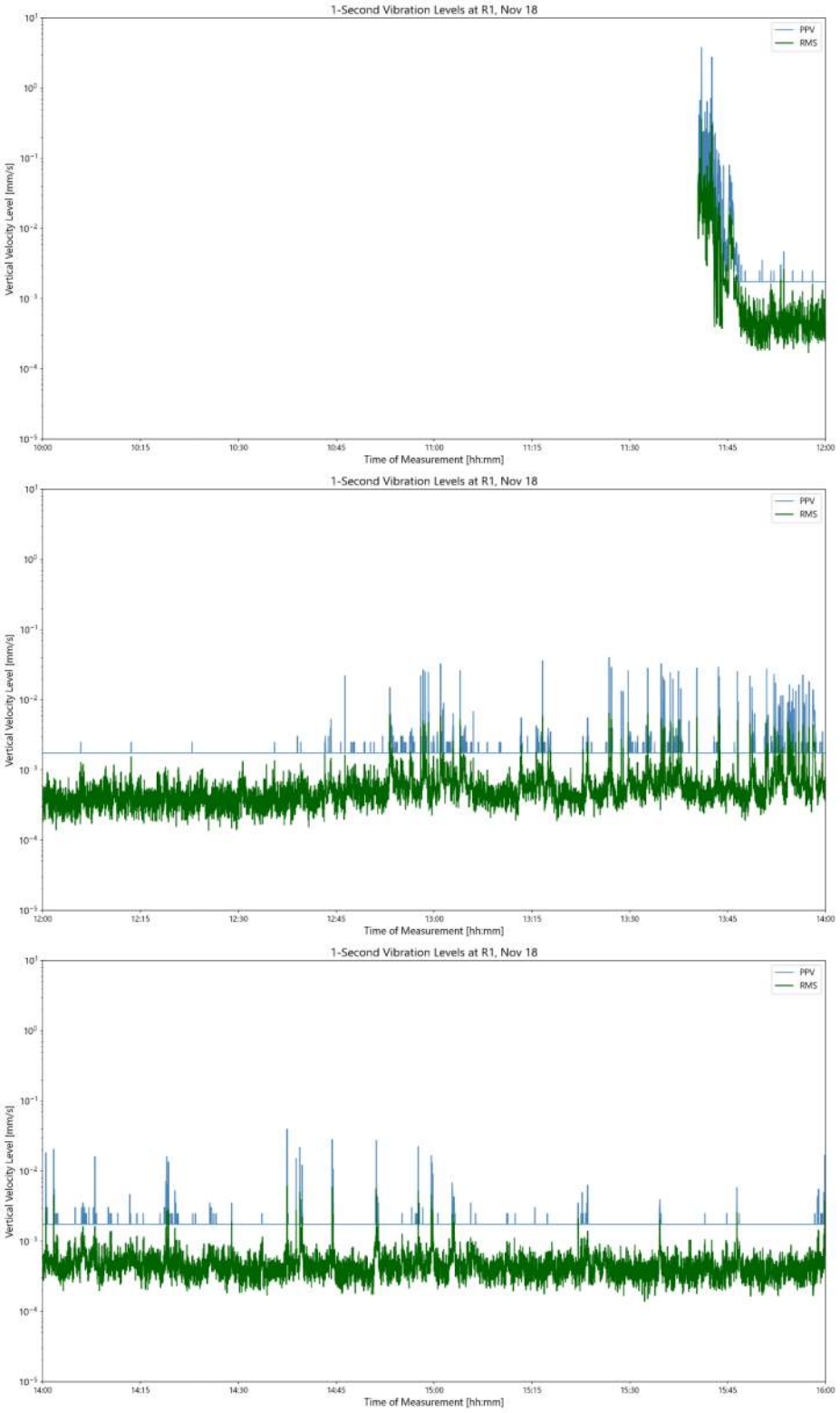


Figure D-1: R1 1-Second Velocity History

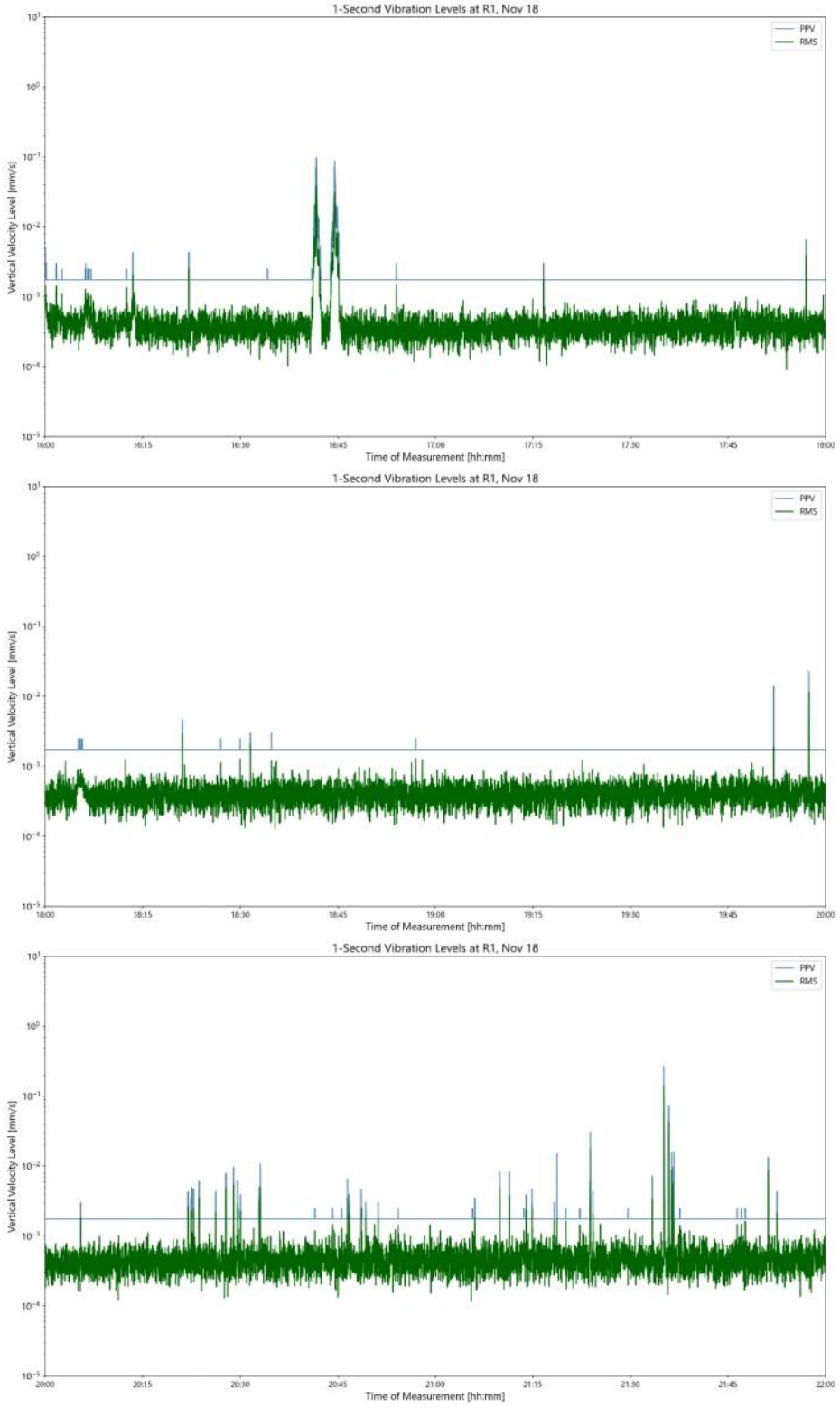


Figure D-2: R1 1-Second Velocity History

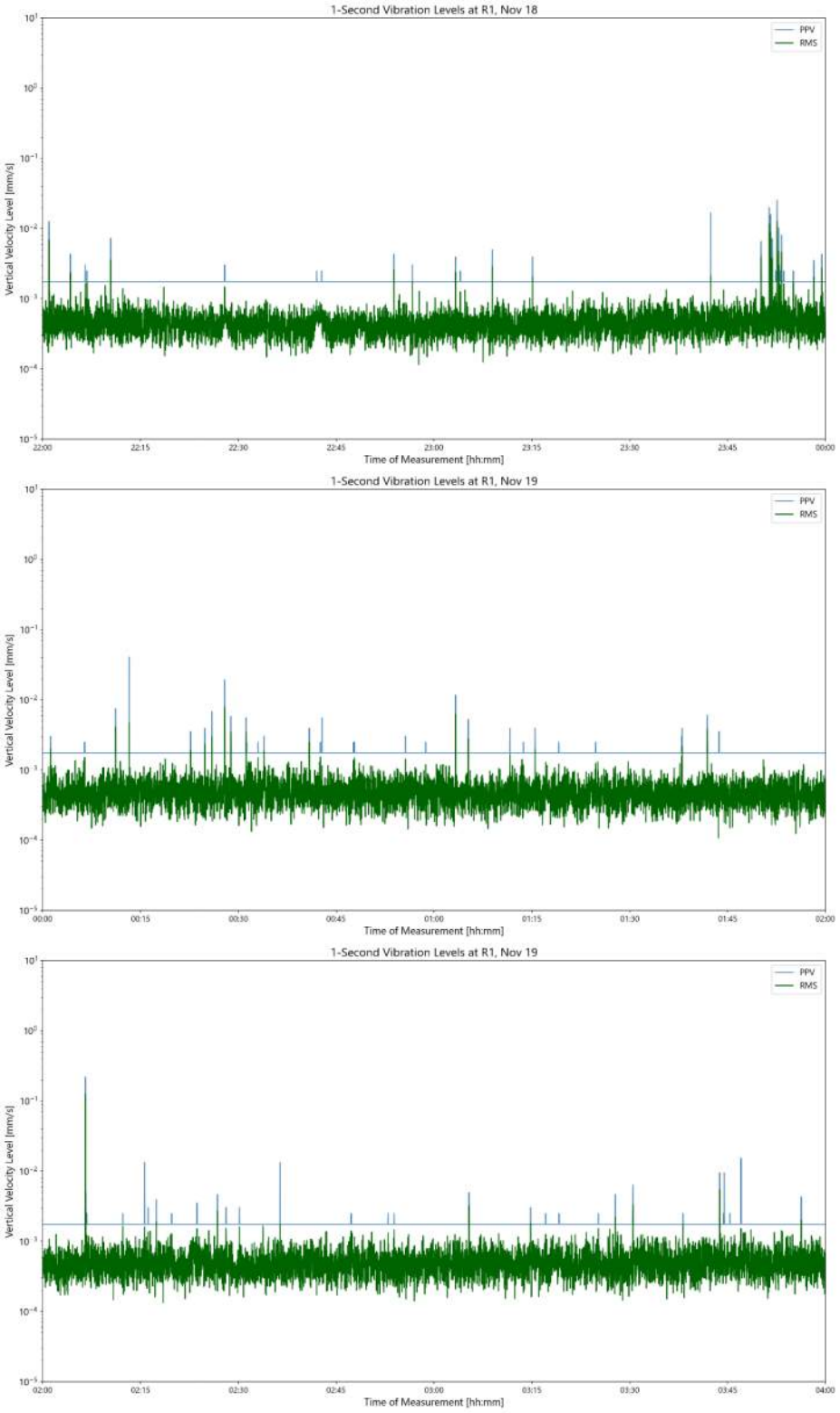


Figure D-3: R1 1-Second Velocity History

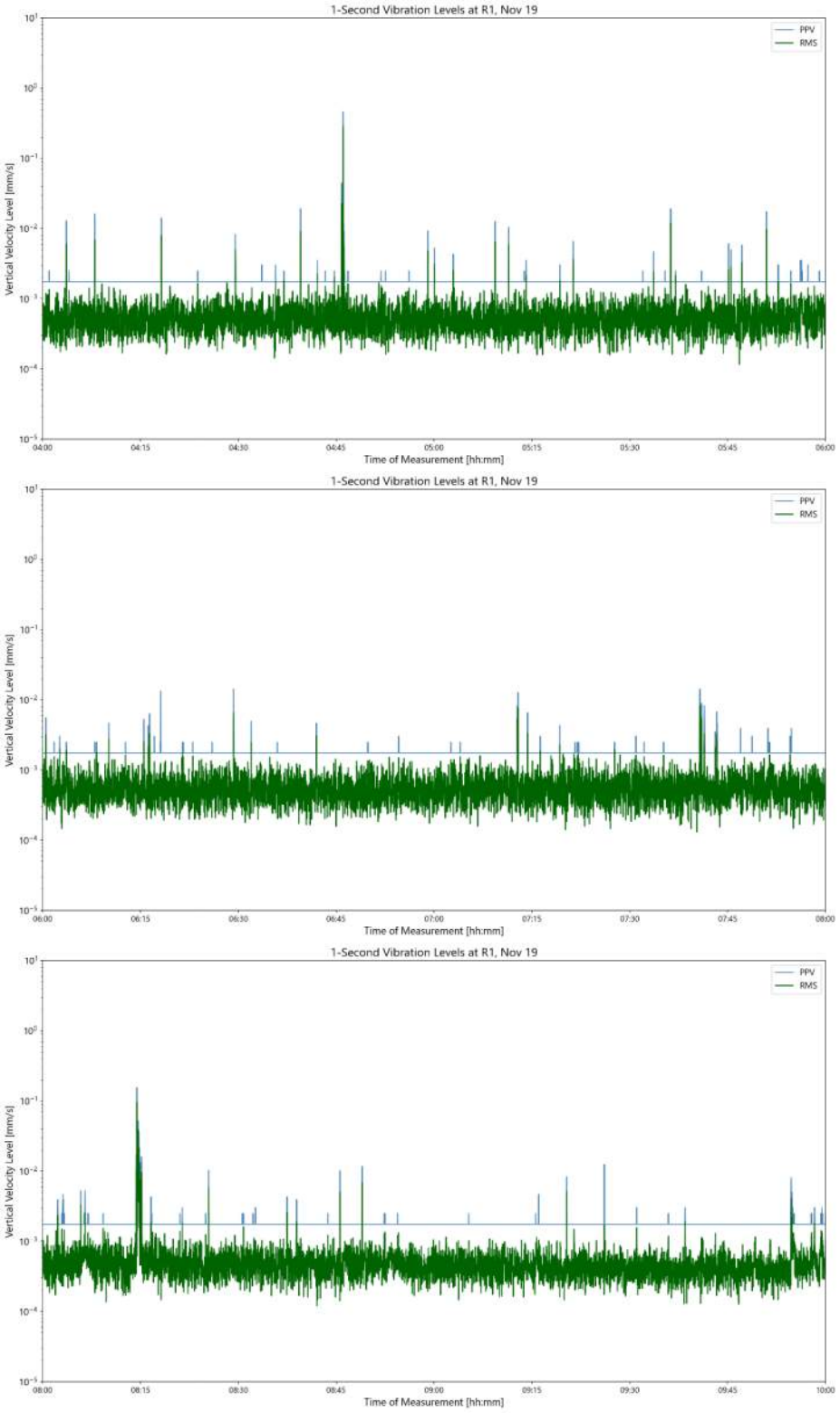


Figure D-4: R1 1-Second Velocity History

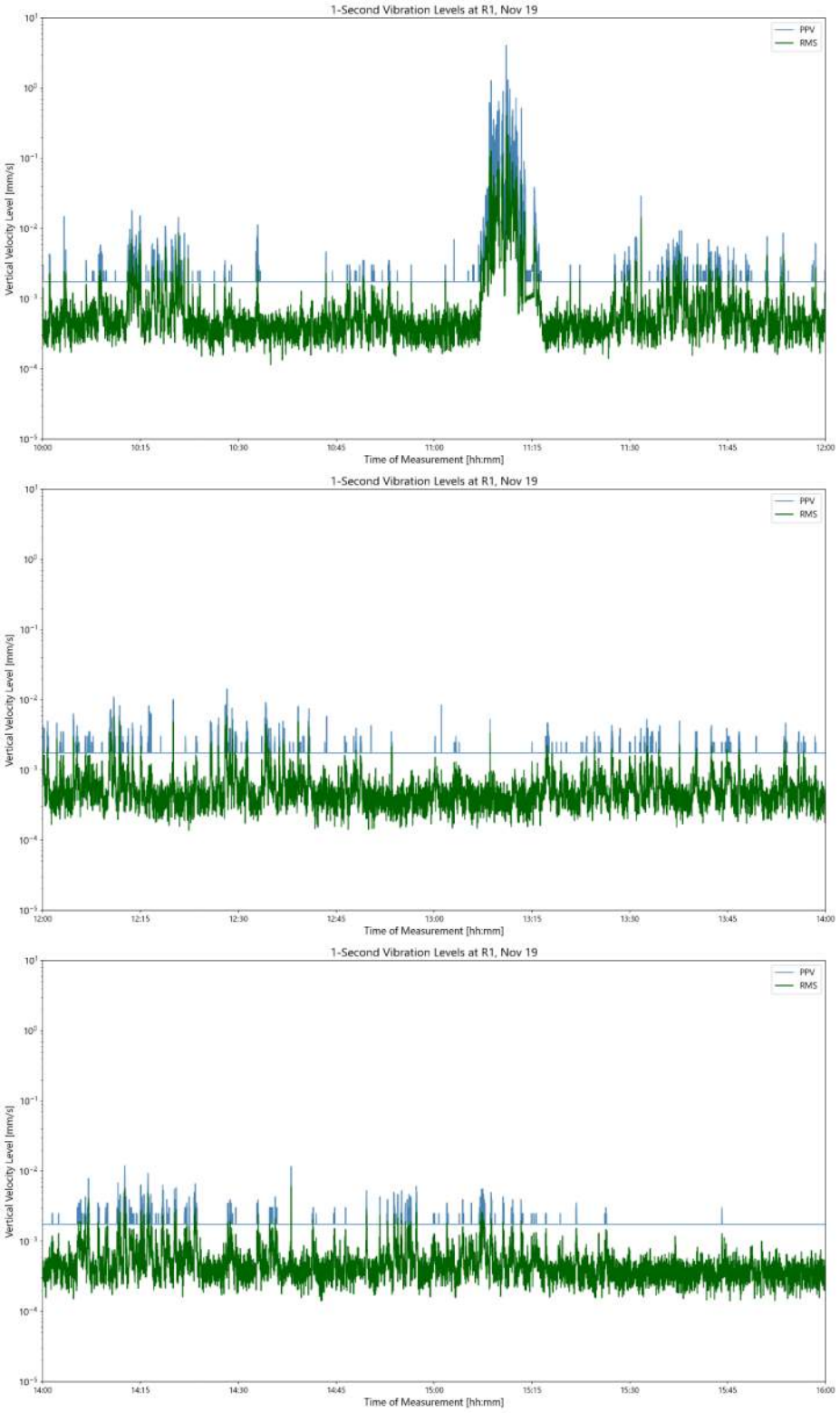


Figure D-5: R1 1-Second Velocity History

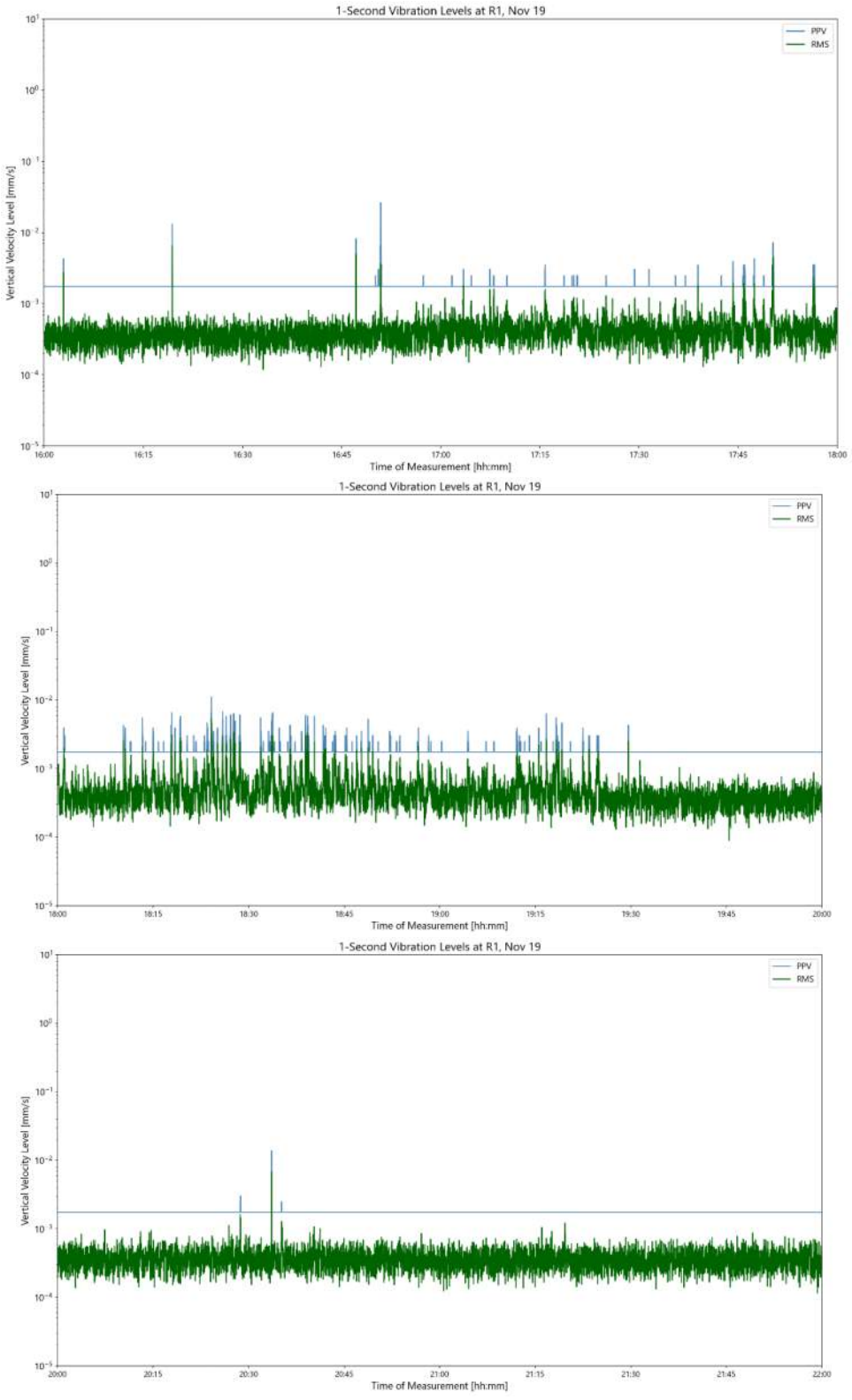


Figure D-6: R1 1-Second Velocity History

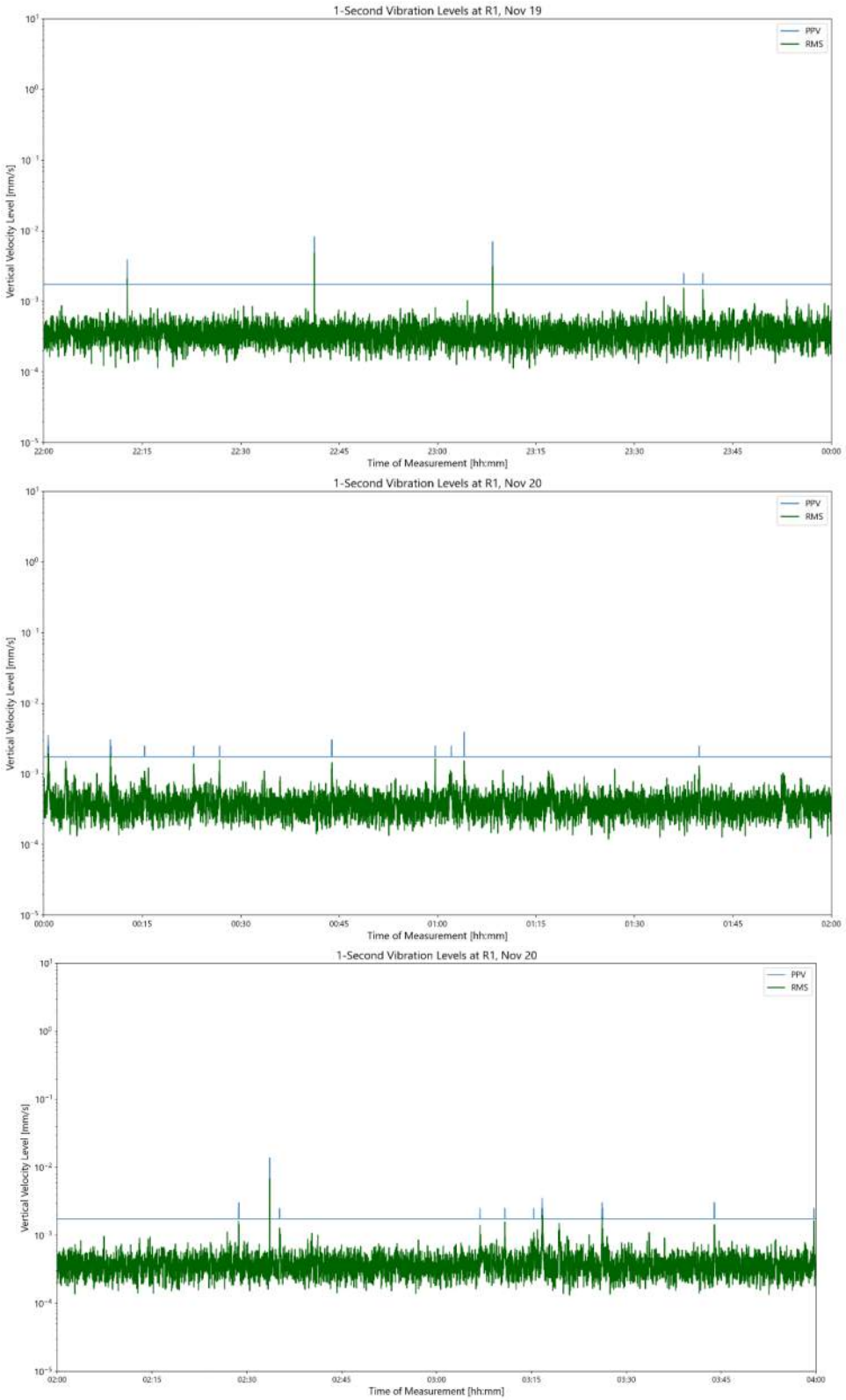


Figure D-7: R1 1-Second Velocity History

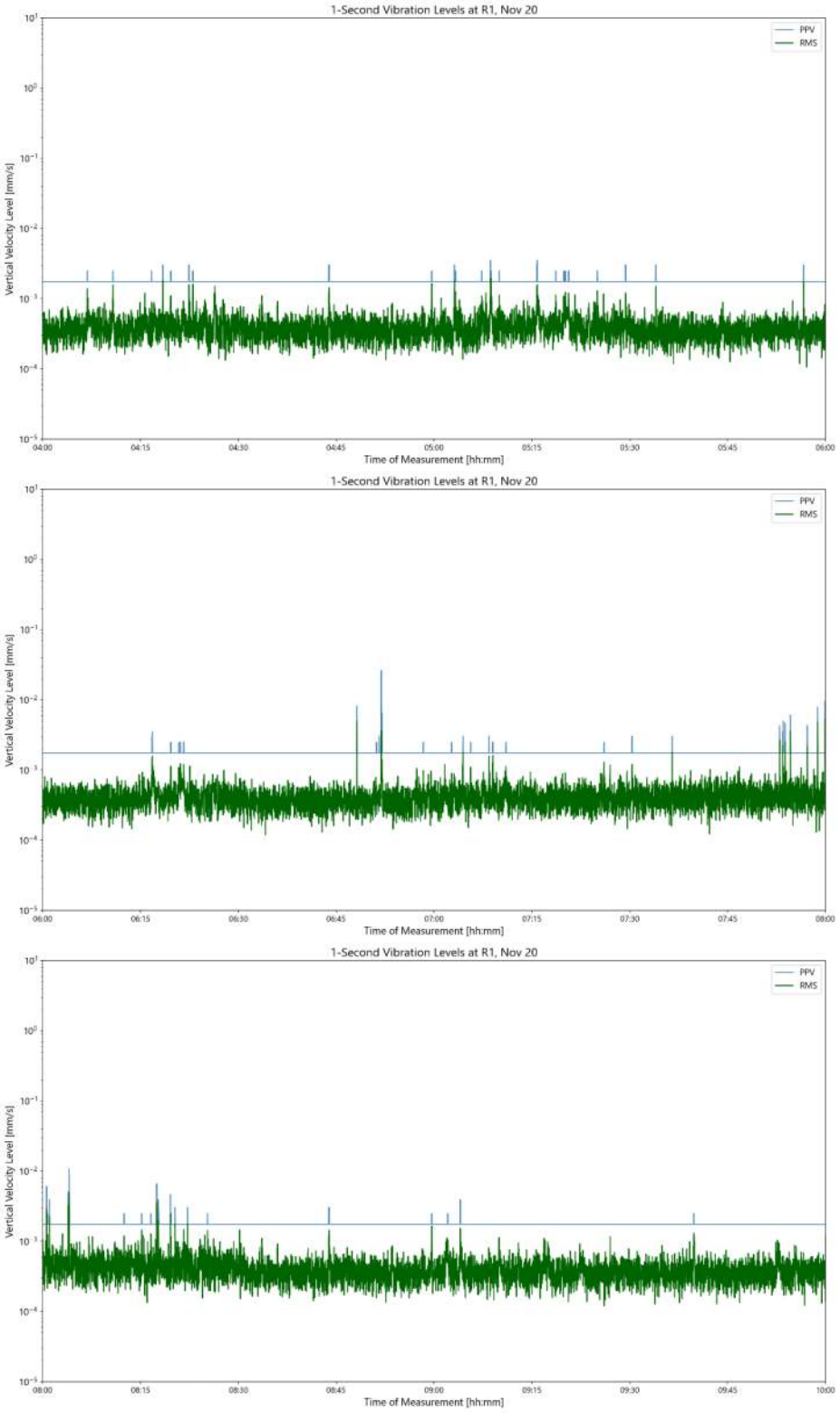


Figure D-8: R1 1-Second Velocity History

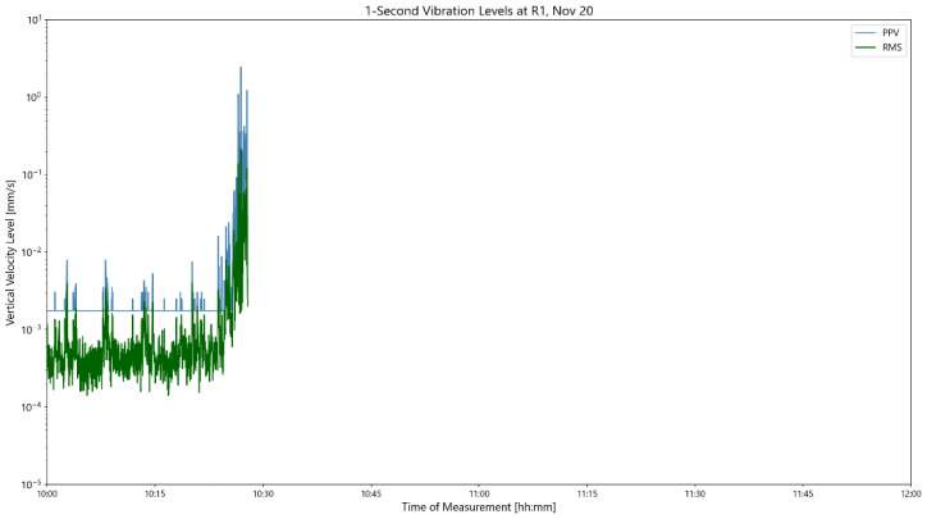


Figure D-9: R1 1-Second Velocity History

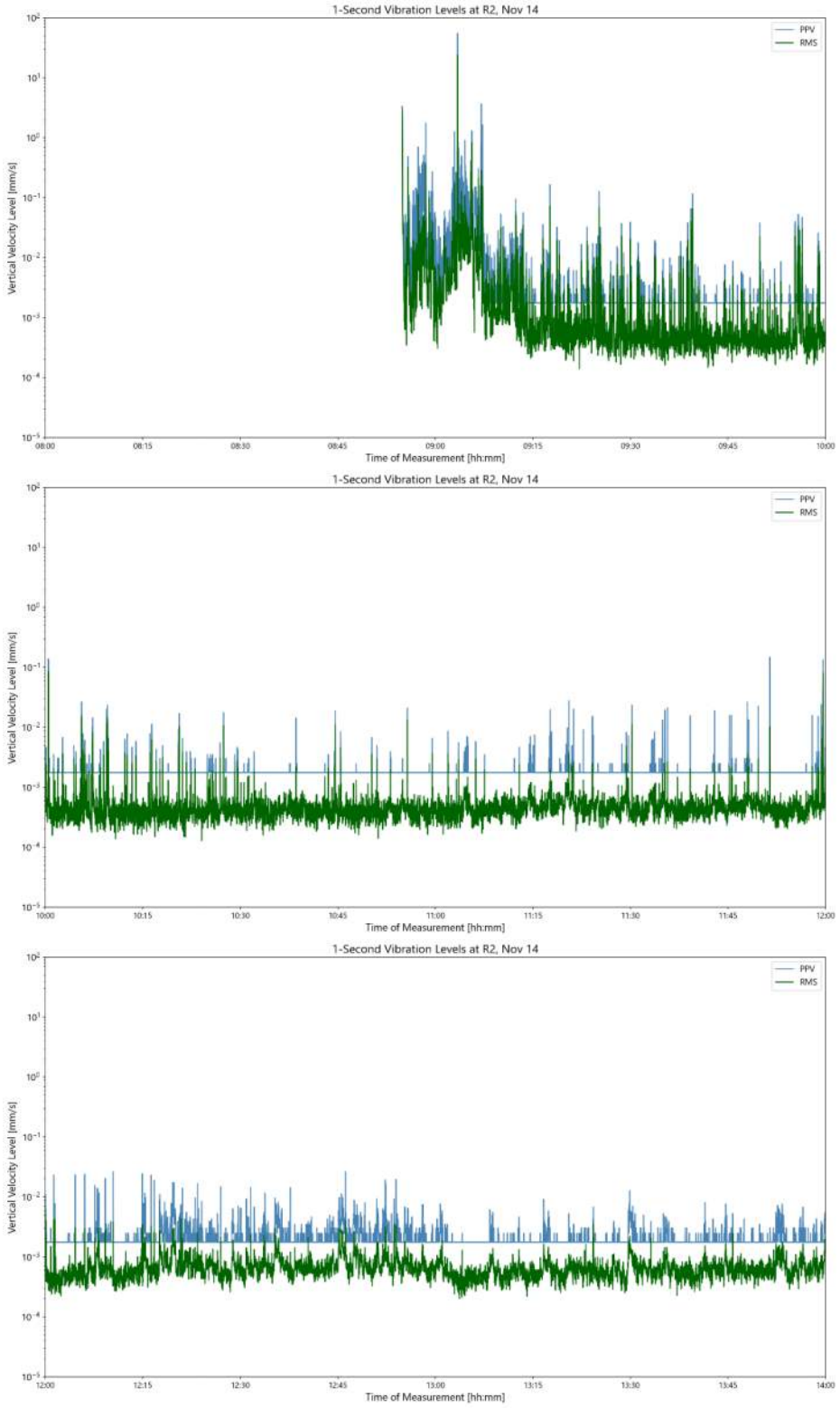


Figure D-10: R2 1-Second Velocity History

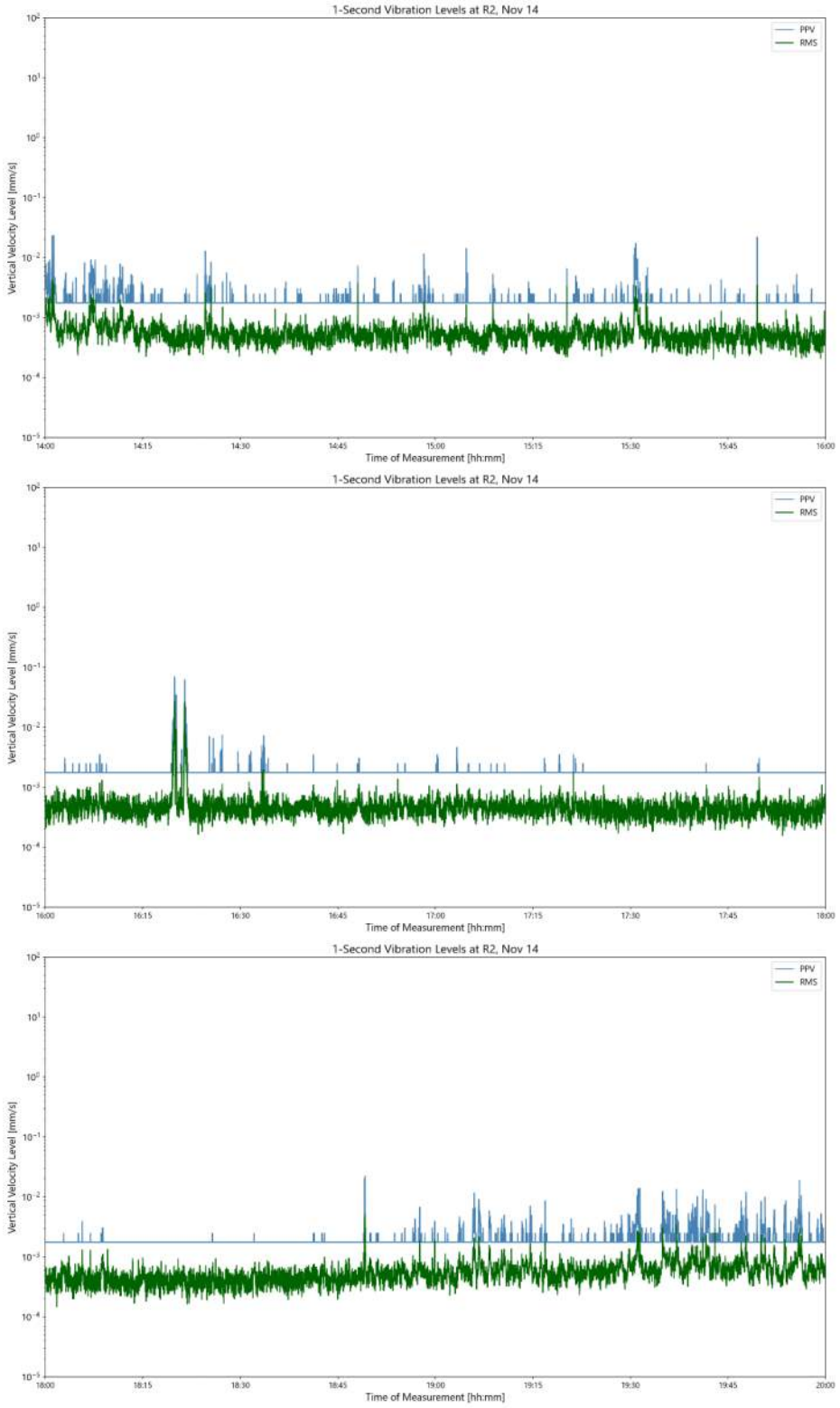


Figure D-11: R2 1-Second Velocity History

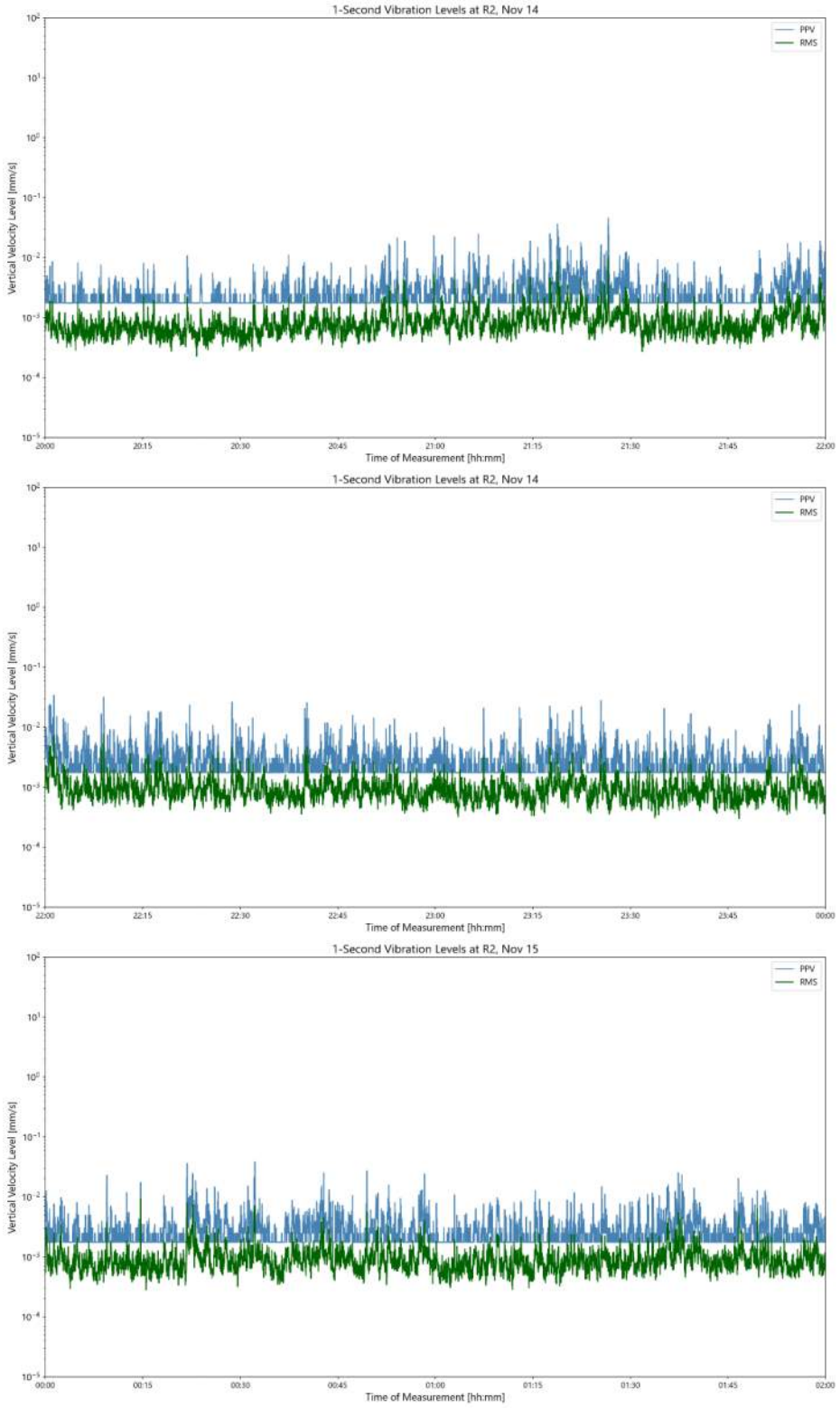


Figure D-12: R2 1-Second Velocity History

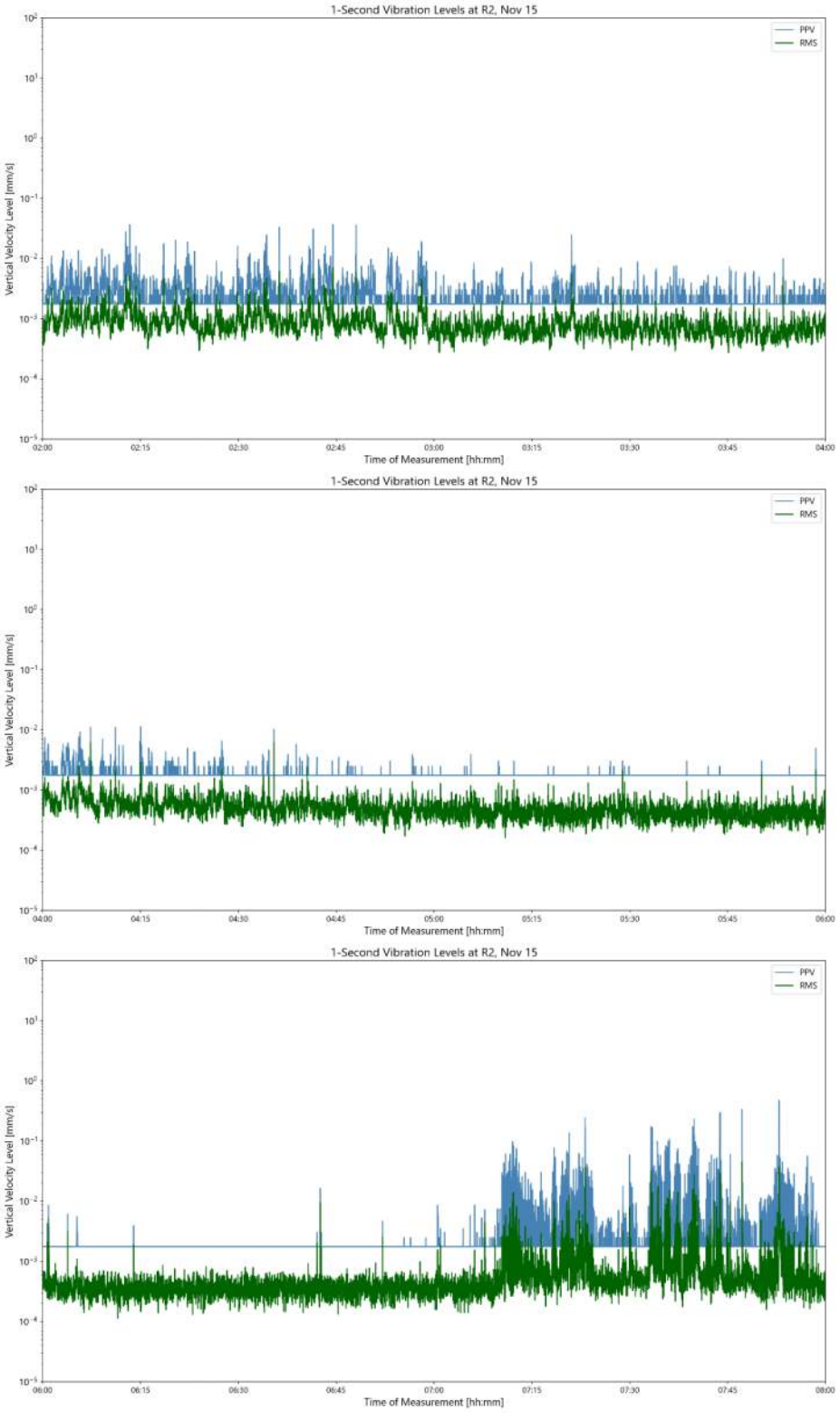


Figure D-13: R2 1-Second Velocity History

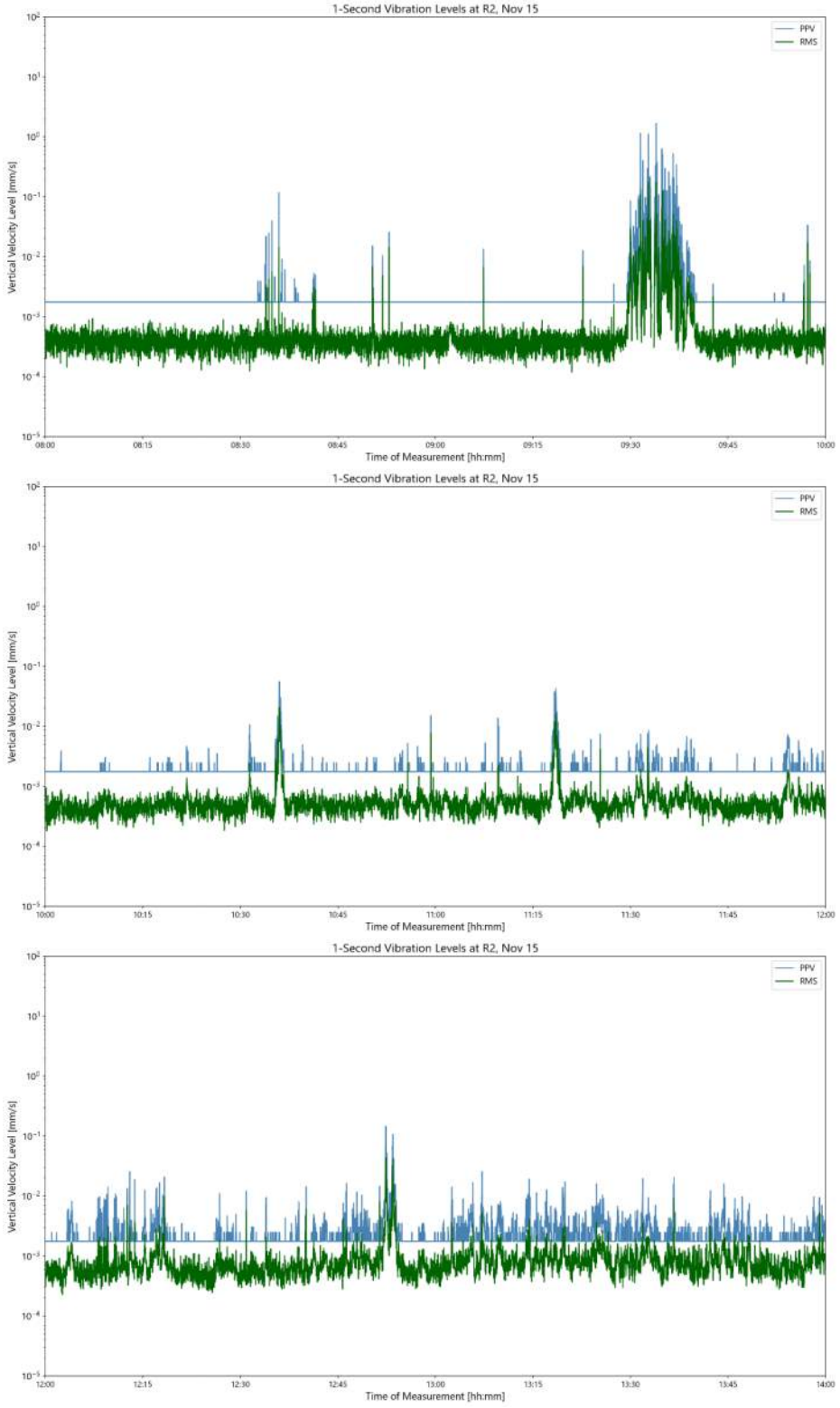


Figure D-14: R2 1-Second Velocity History

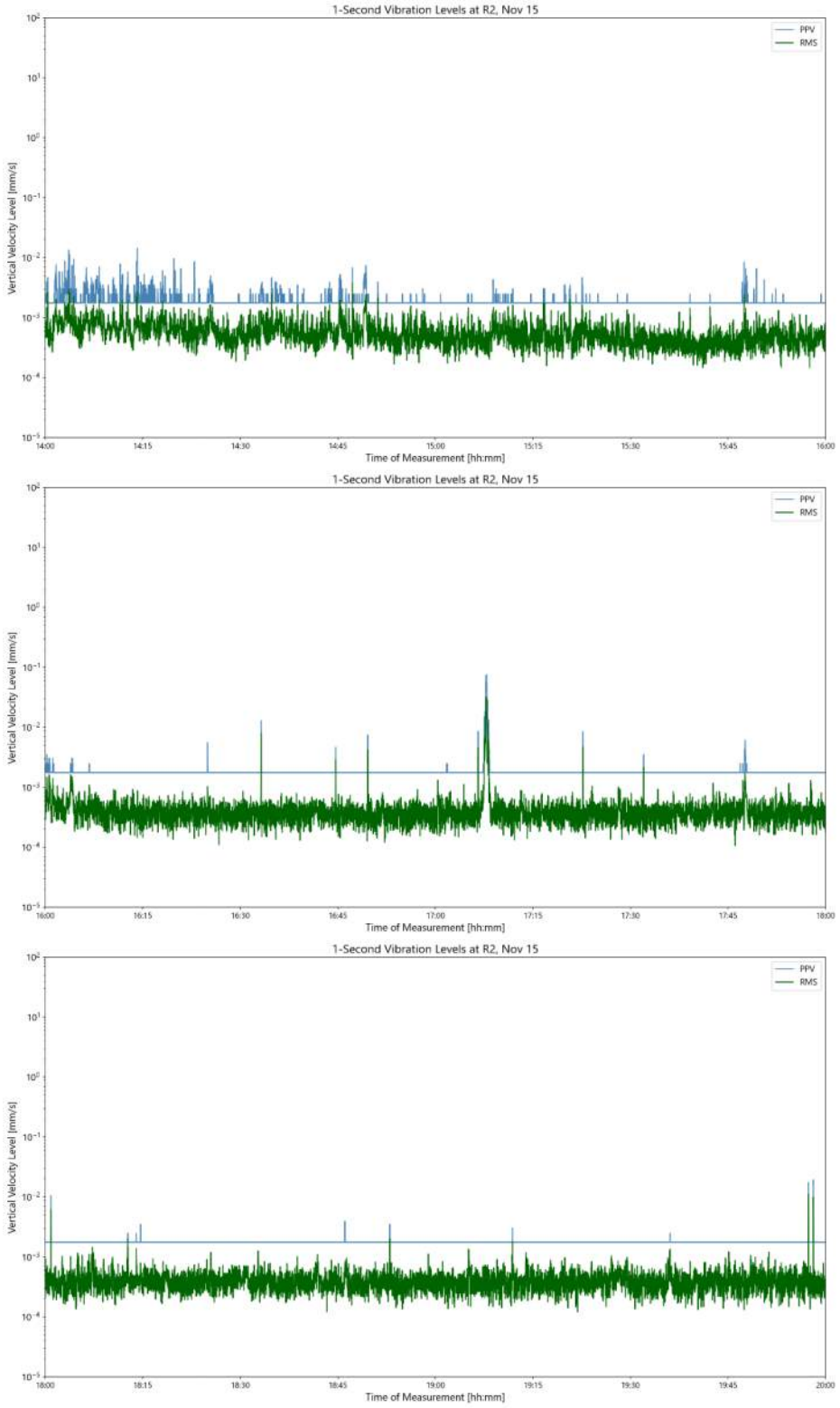


Figure D-15: R2 1-Second Velocity History

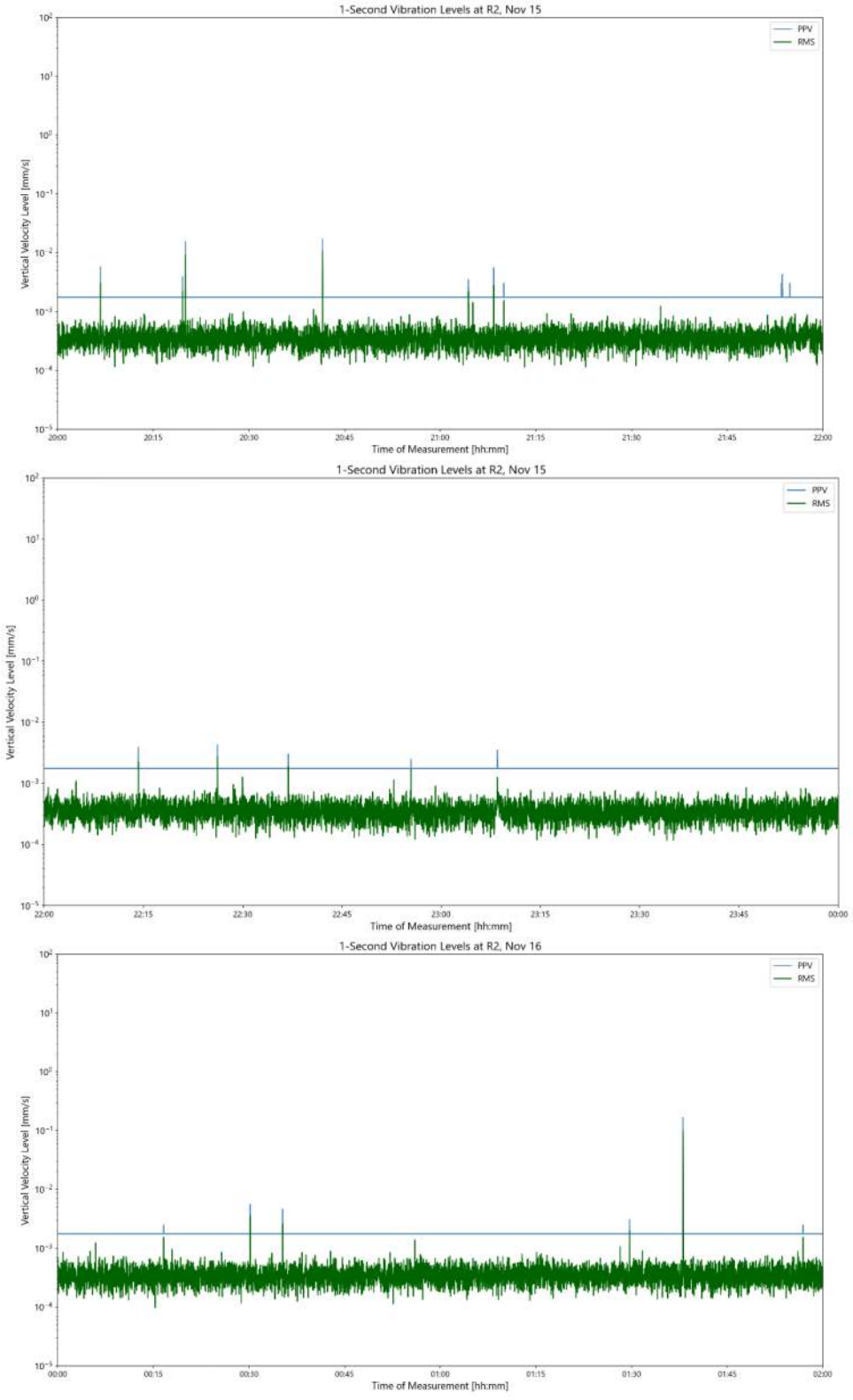


Figure D-16: R2 1-Second Velocity History

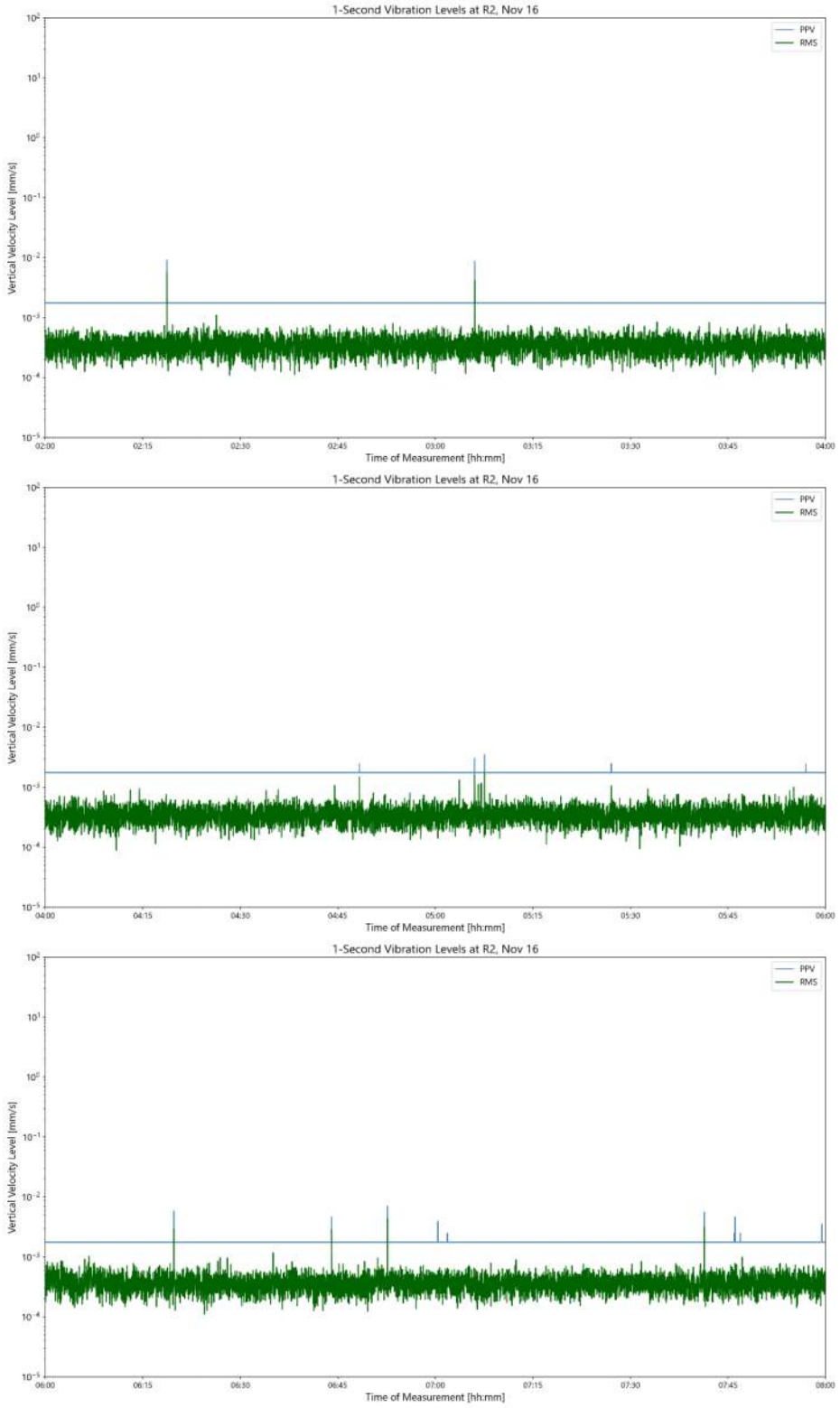


Figure D-17: R2 1-Second Velocity History

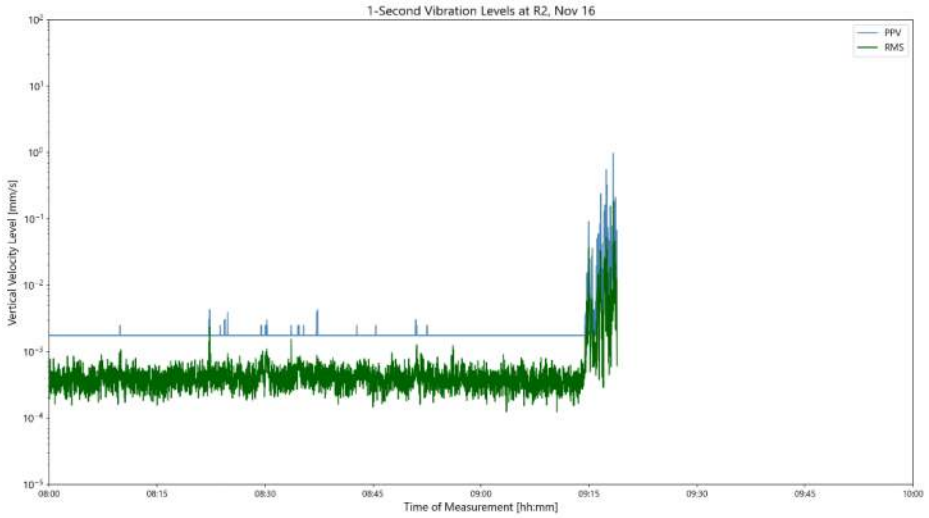


Figure D-18: R2 1-Second Velocity History

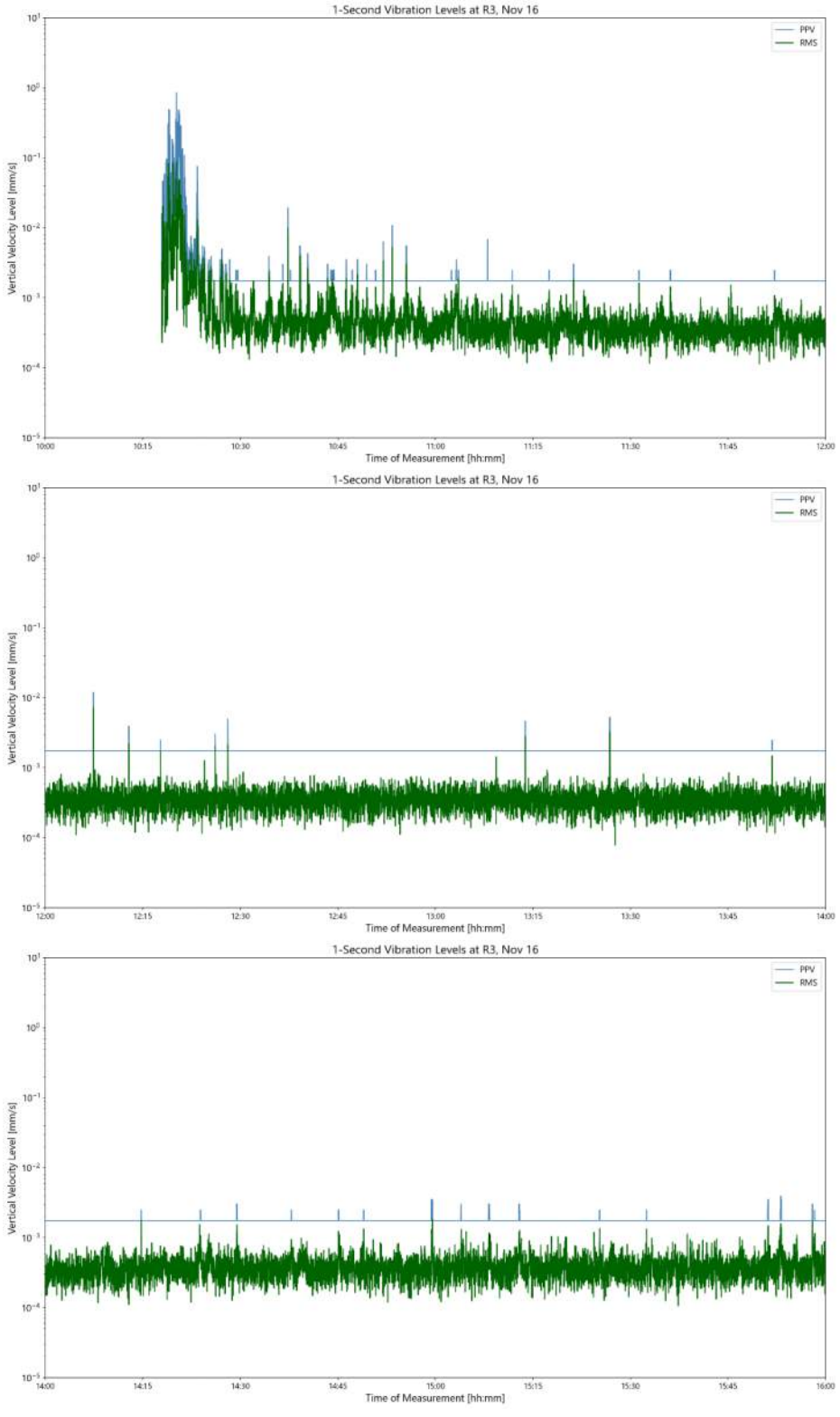


Figure D-19: R2 1-Second Velocity History

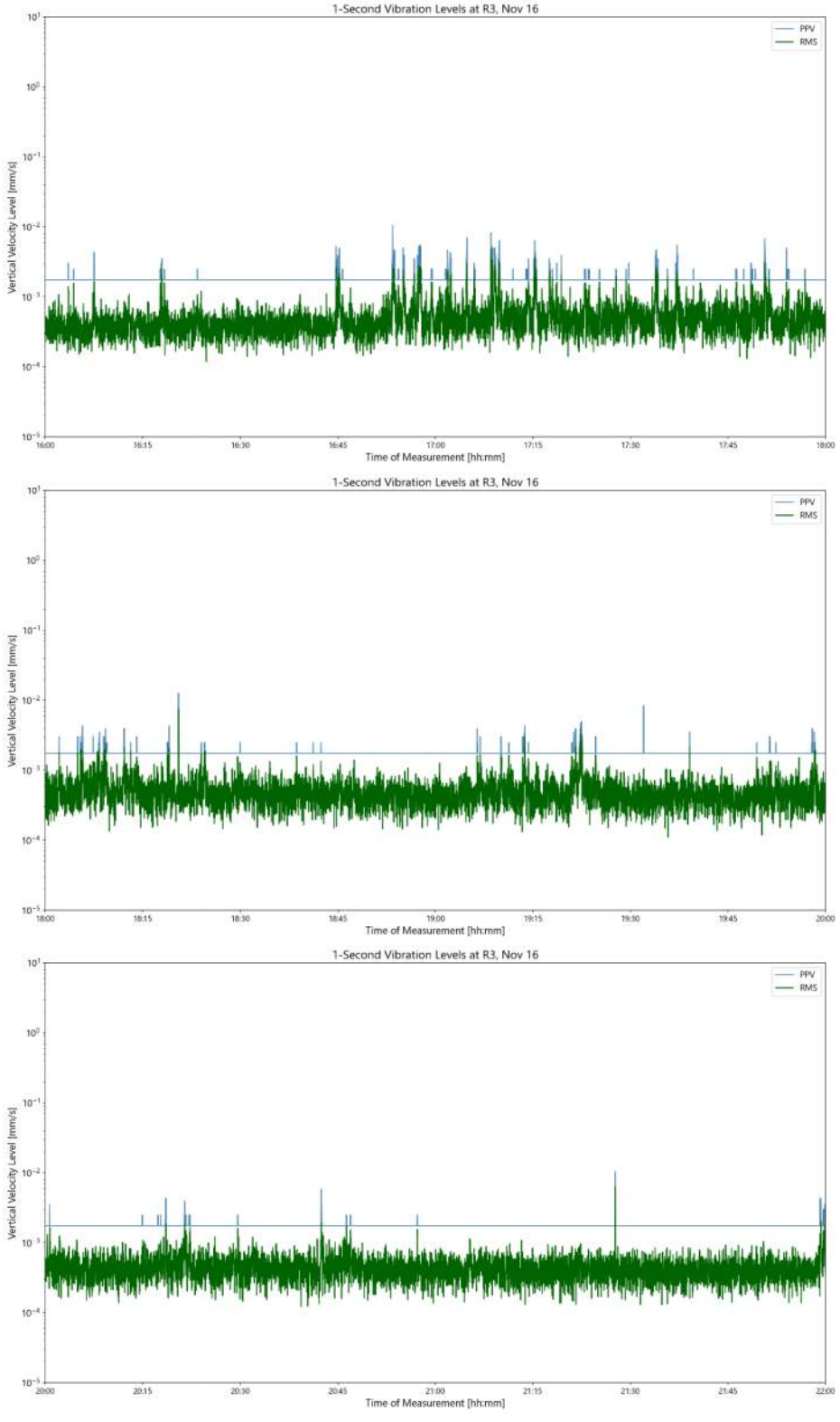


Figure D-20: R3 1-Second Velocity History

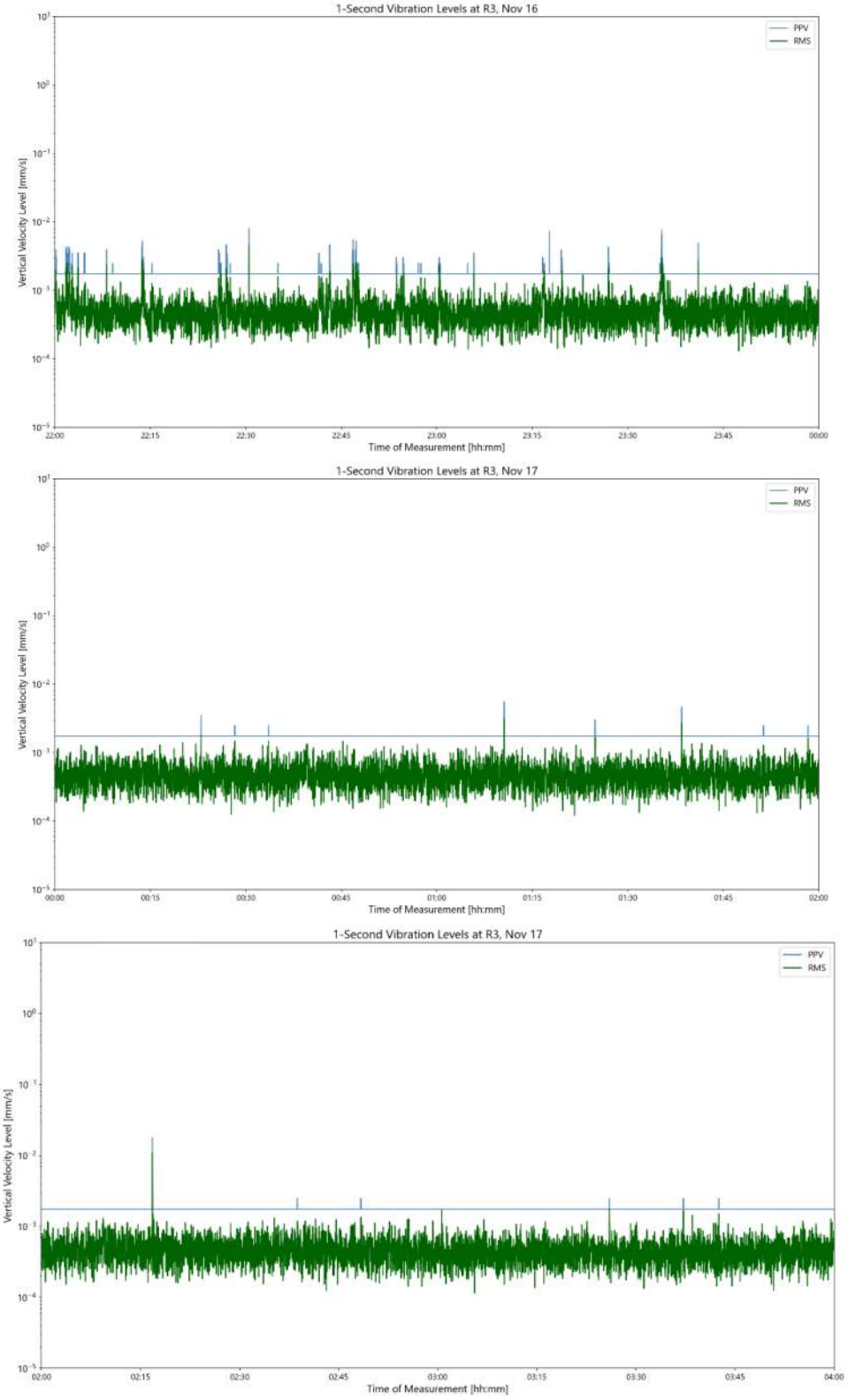


Figure D-21: R3 1-Second Velocity History

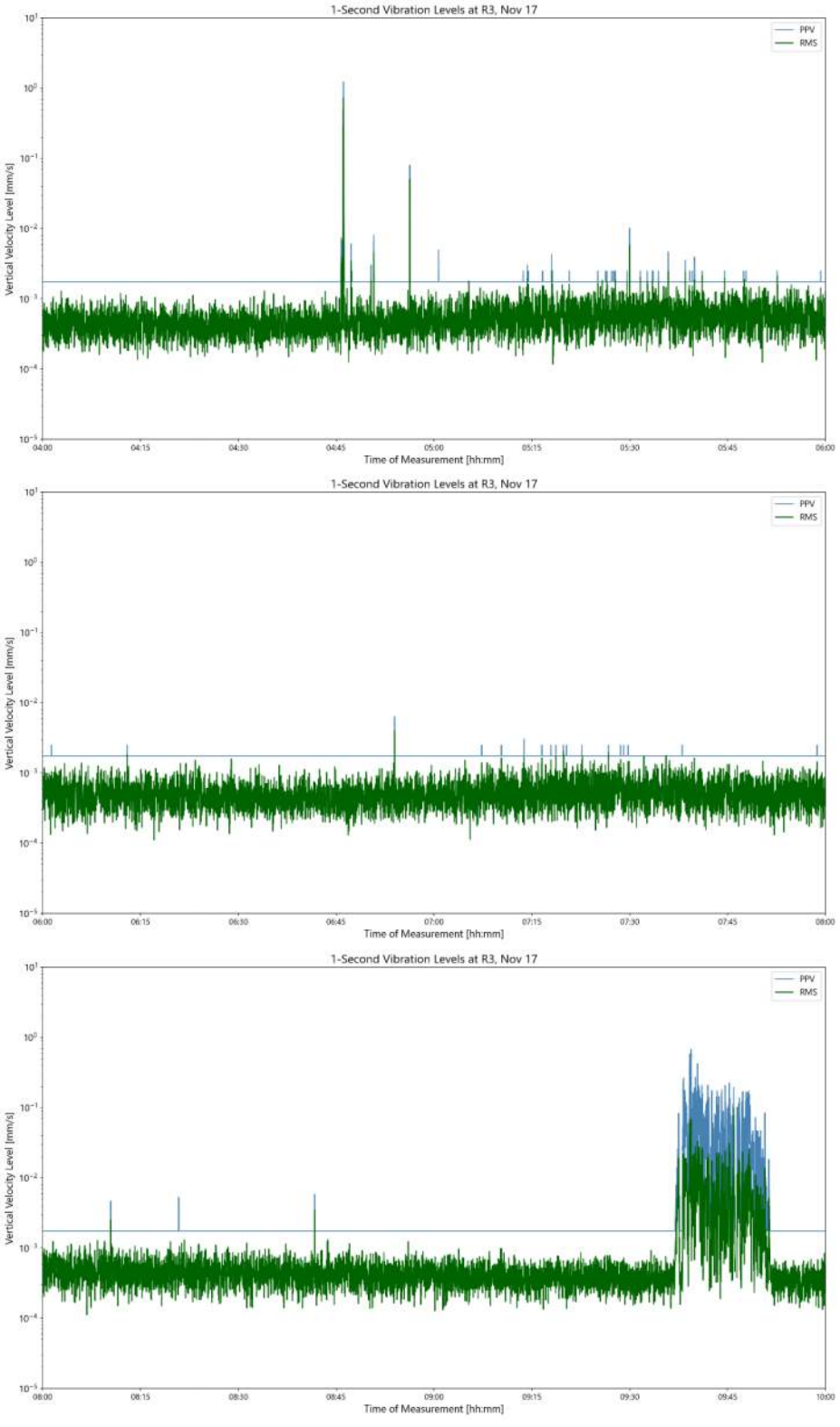


Figure D-22: R3 1-Second Velocity History

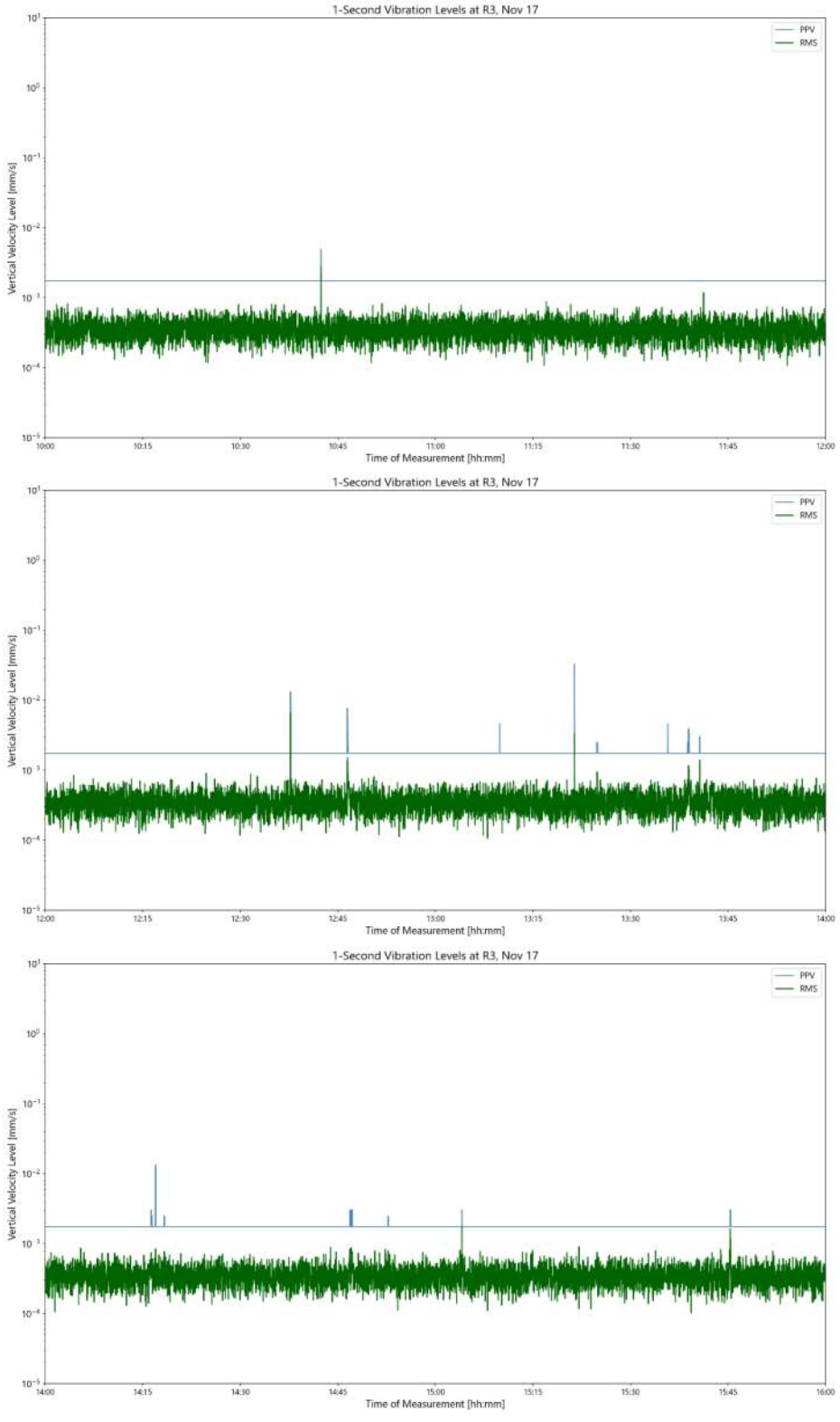


Figure D-23: R3 1-Second Velocity History

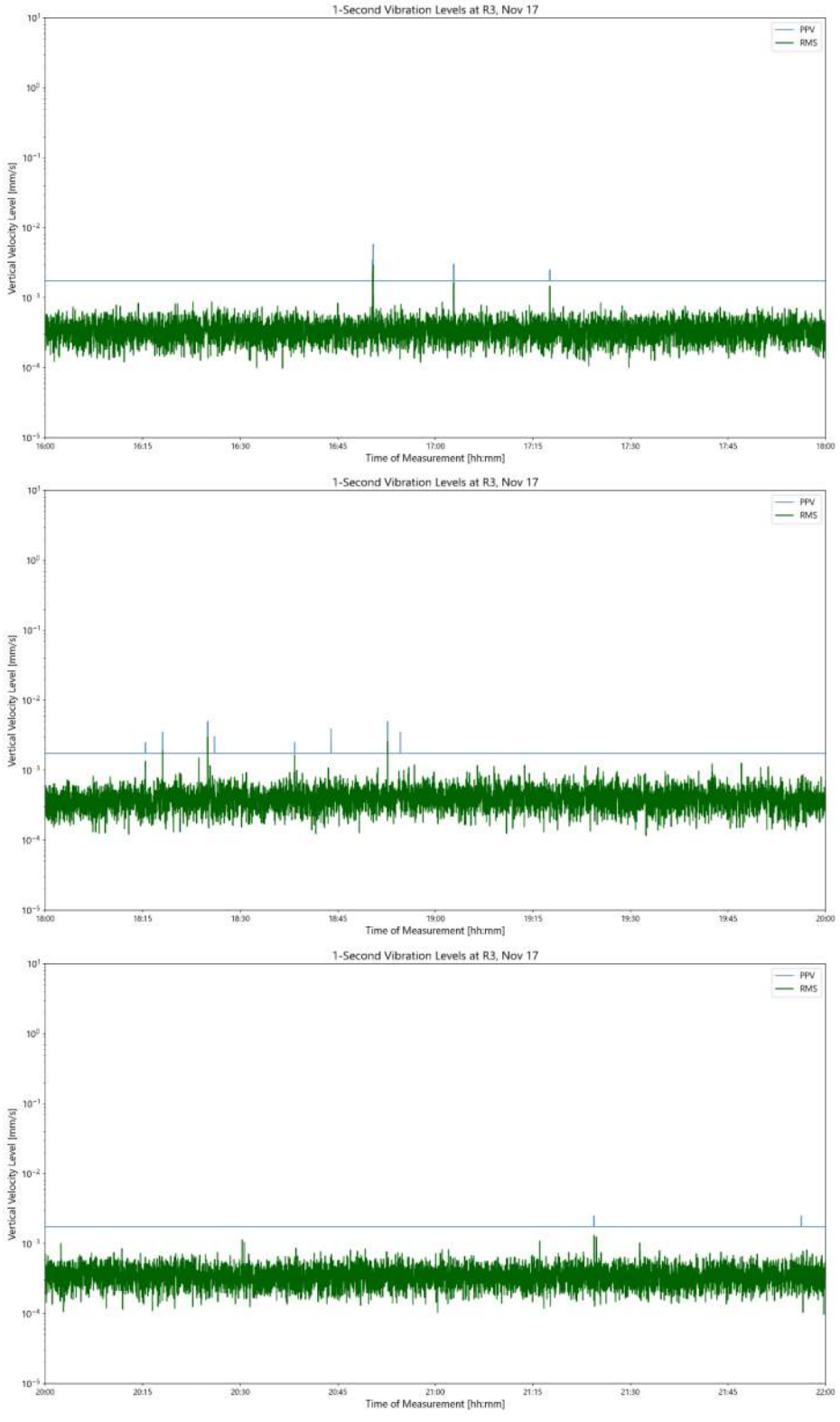


Figure D-24: R3 1-Second Velocity History

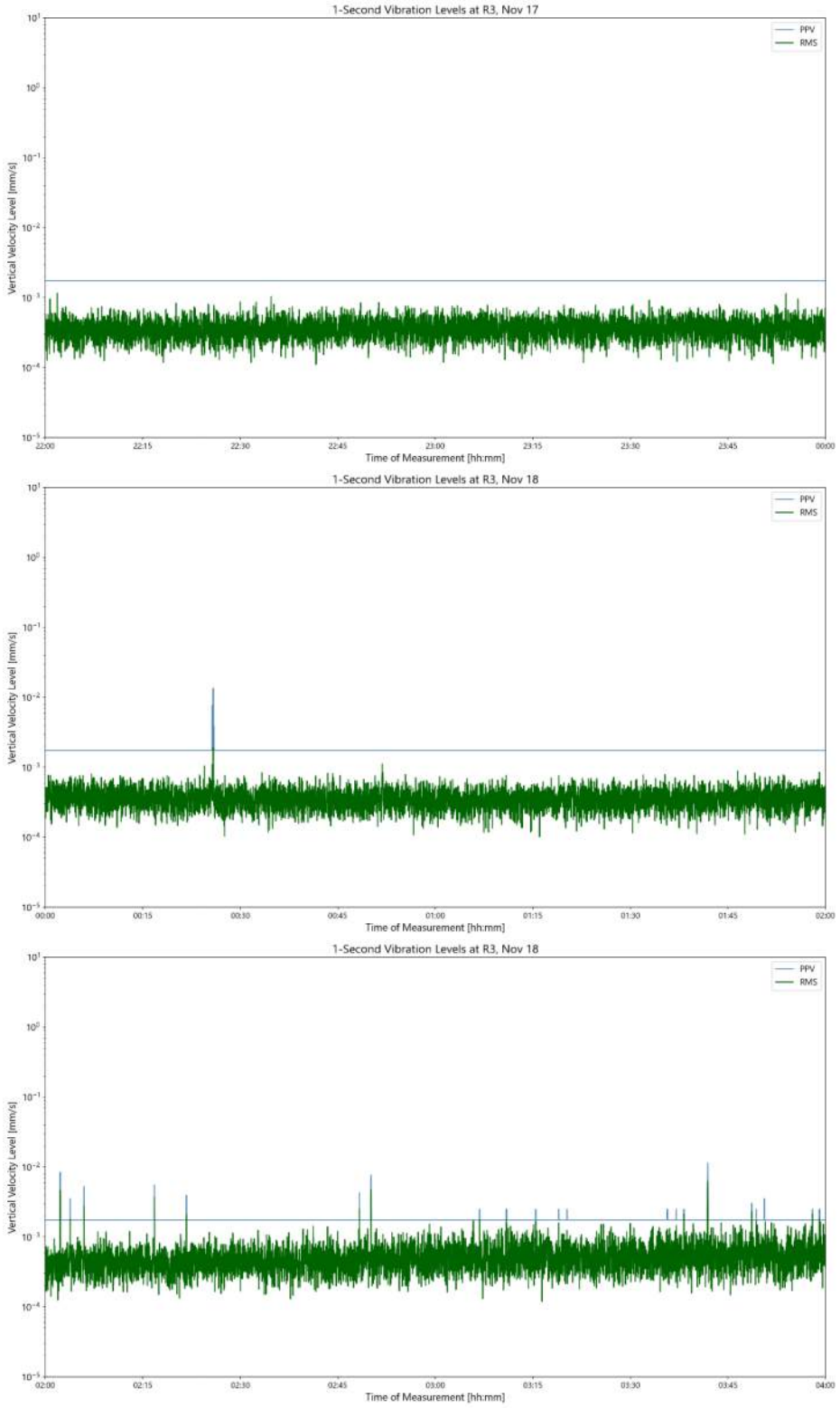


Figure D-25: R3 1-Second Velocity History

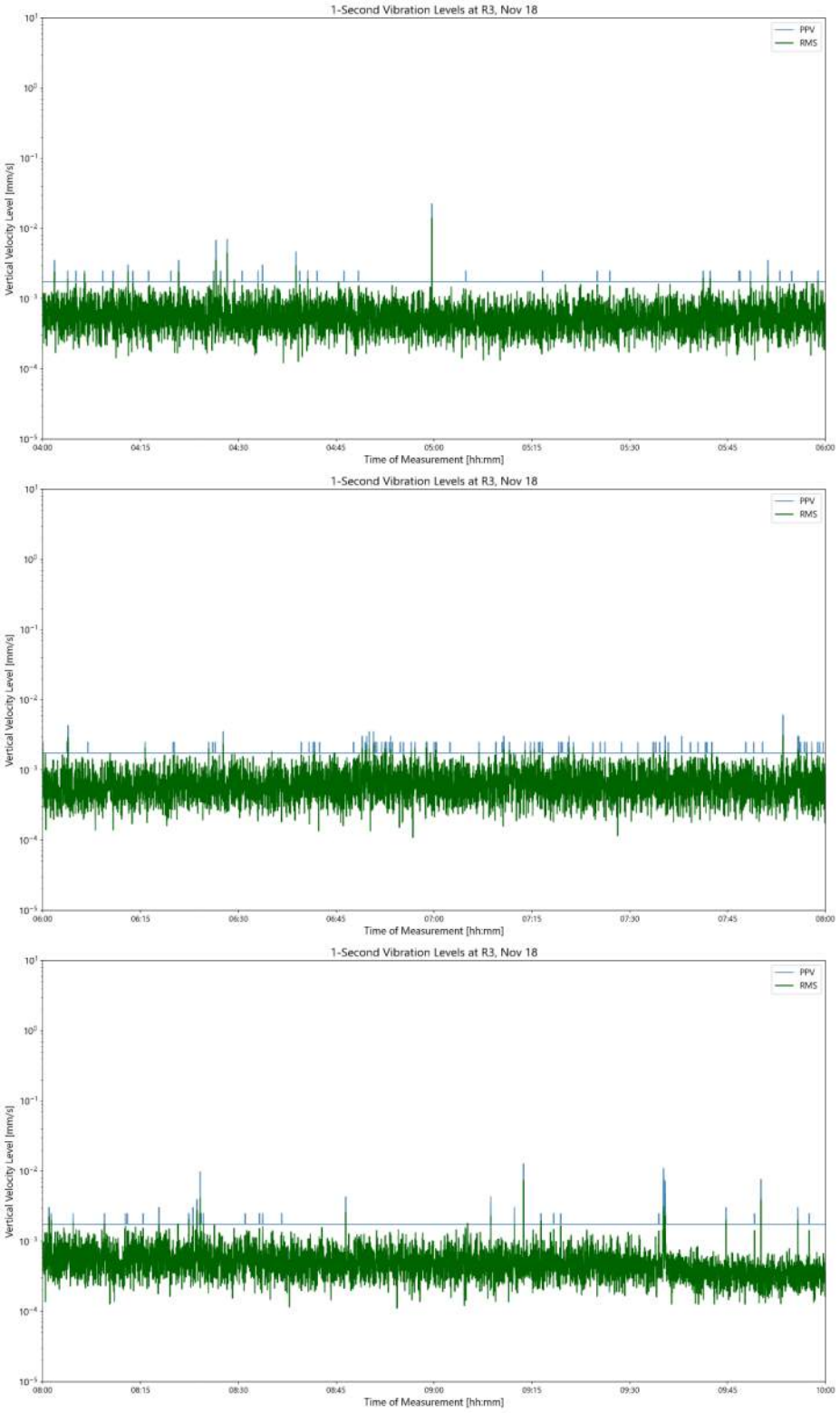


Figure D-26: R3 1-Second Velocity History

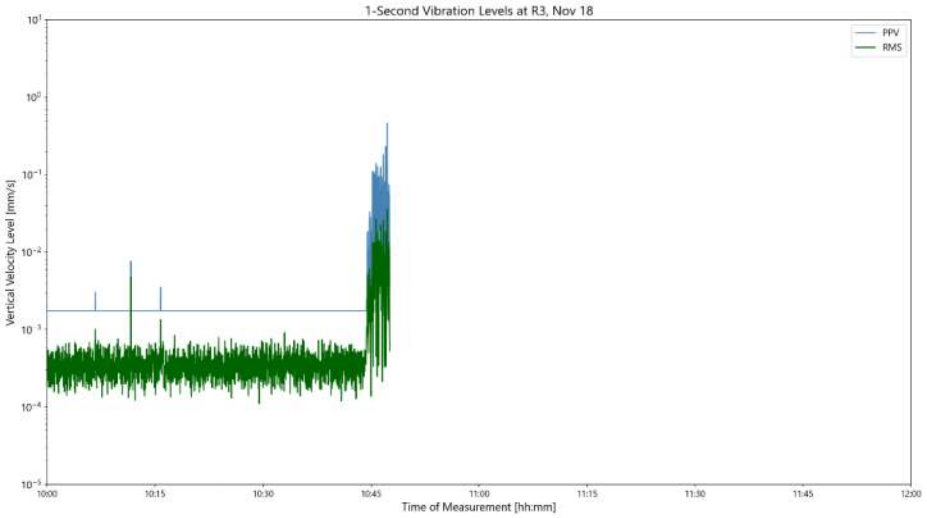


Figure D-27: R3 1-Second Velocity History

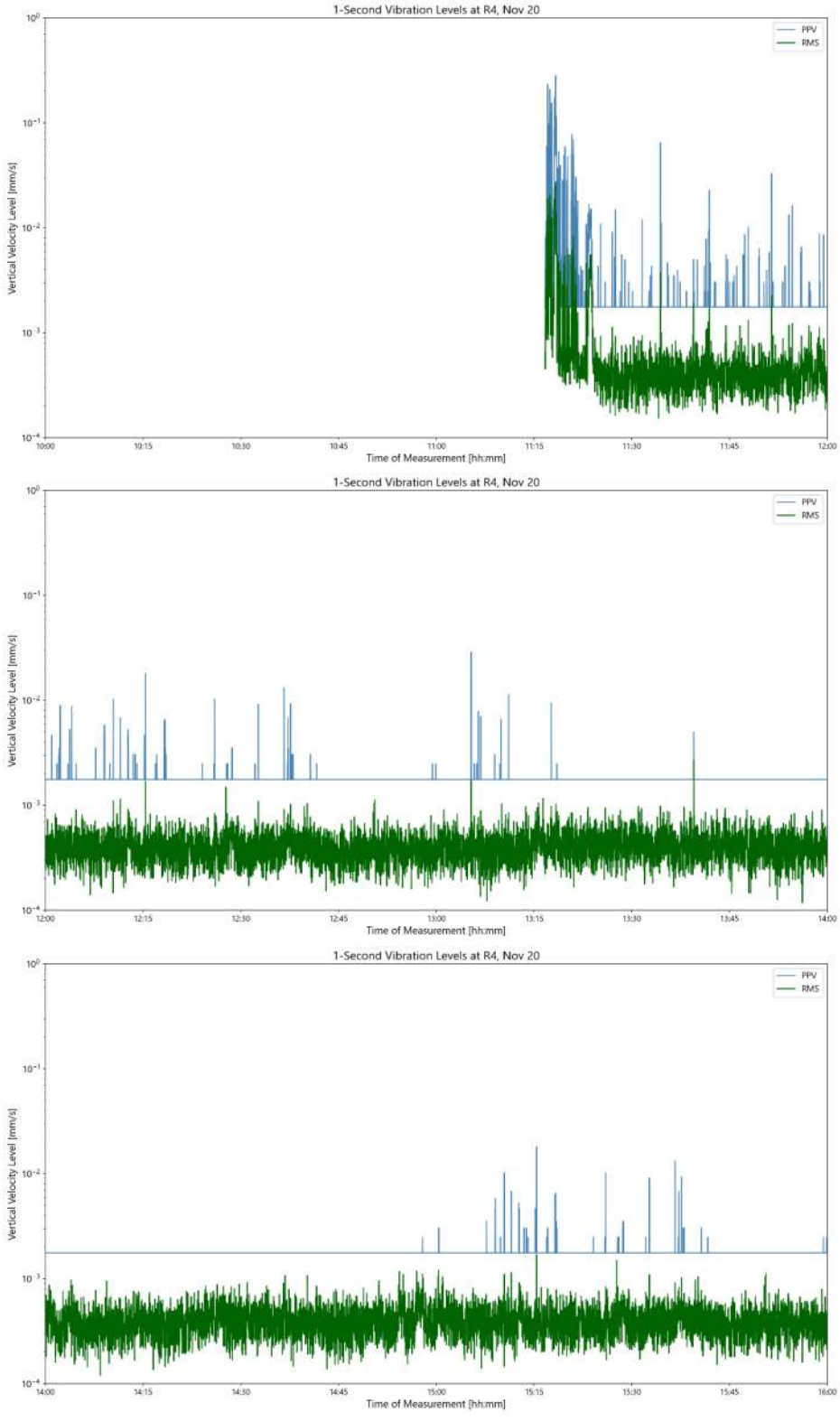


Figure D-28: R4 1-Second Velocity History

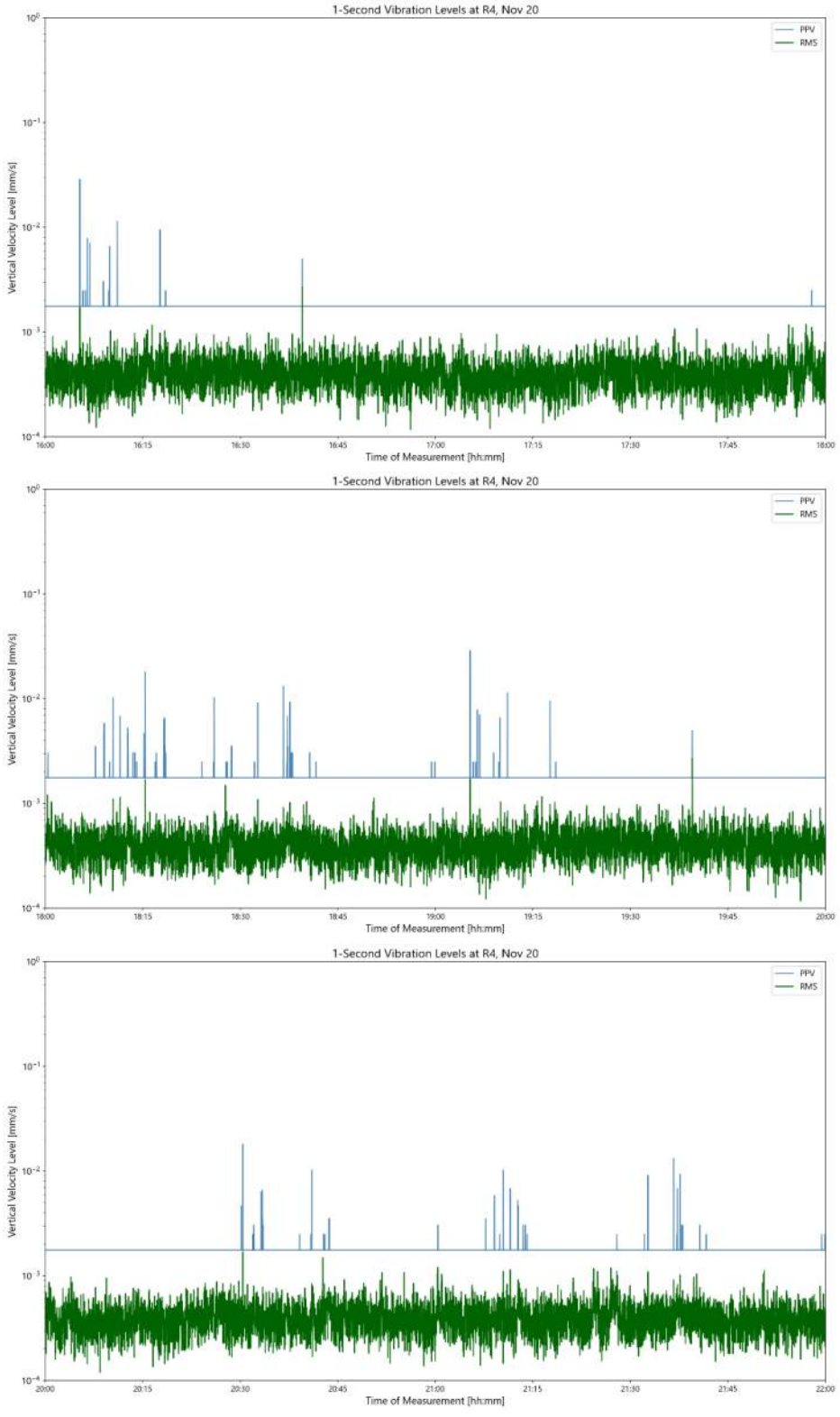


Figure D-29: R4 1-Second Velocity History

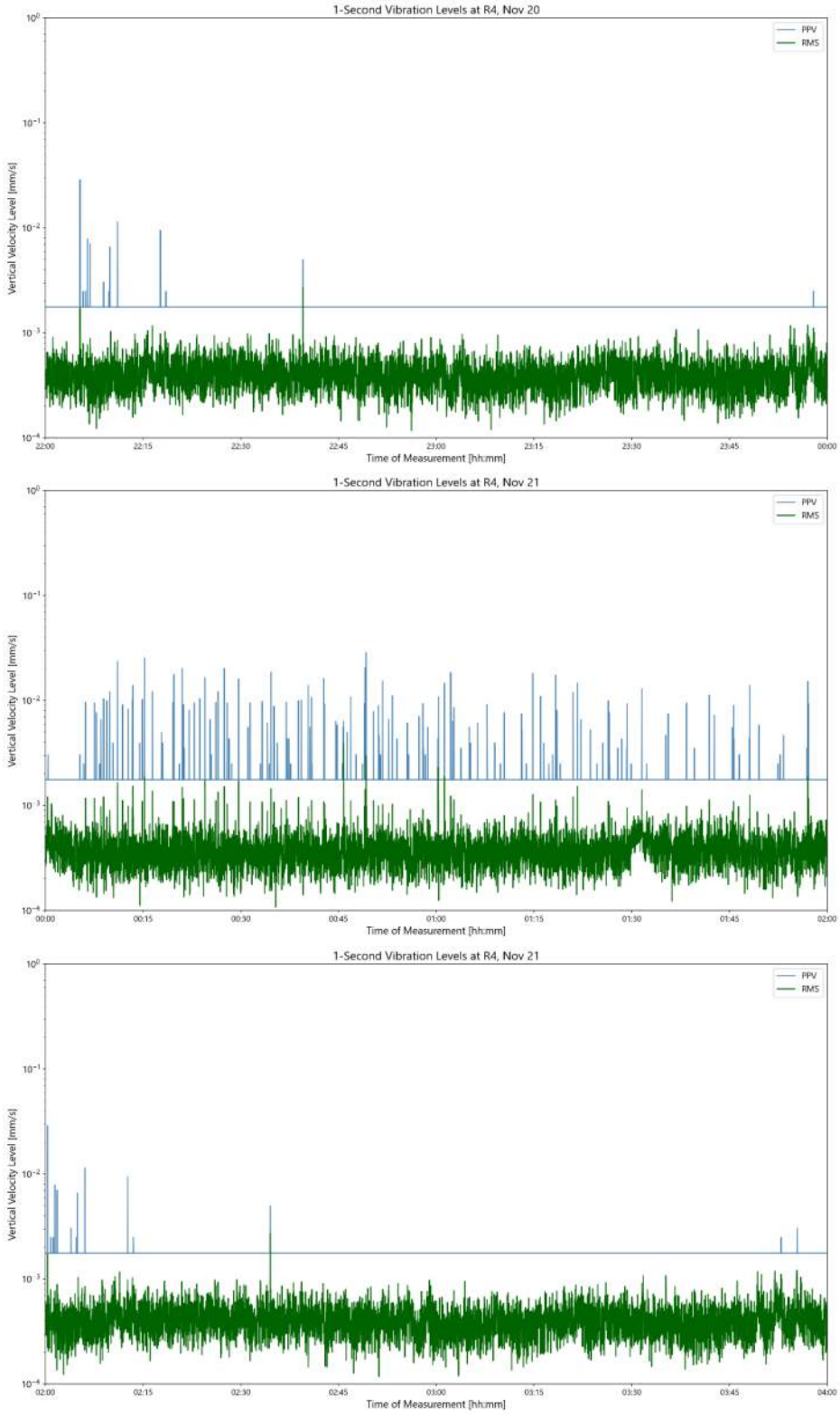


Figure D-30: R4 1-Second Velocity History. Data omitted due to bad weather (heavy rain) from approx. 21:30 to 6:00 of the following day.

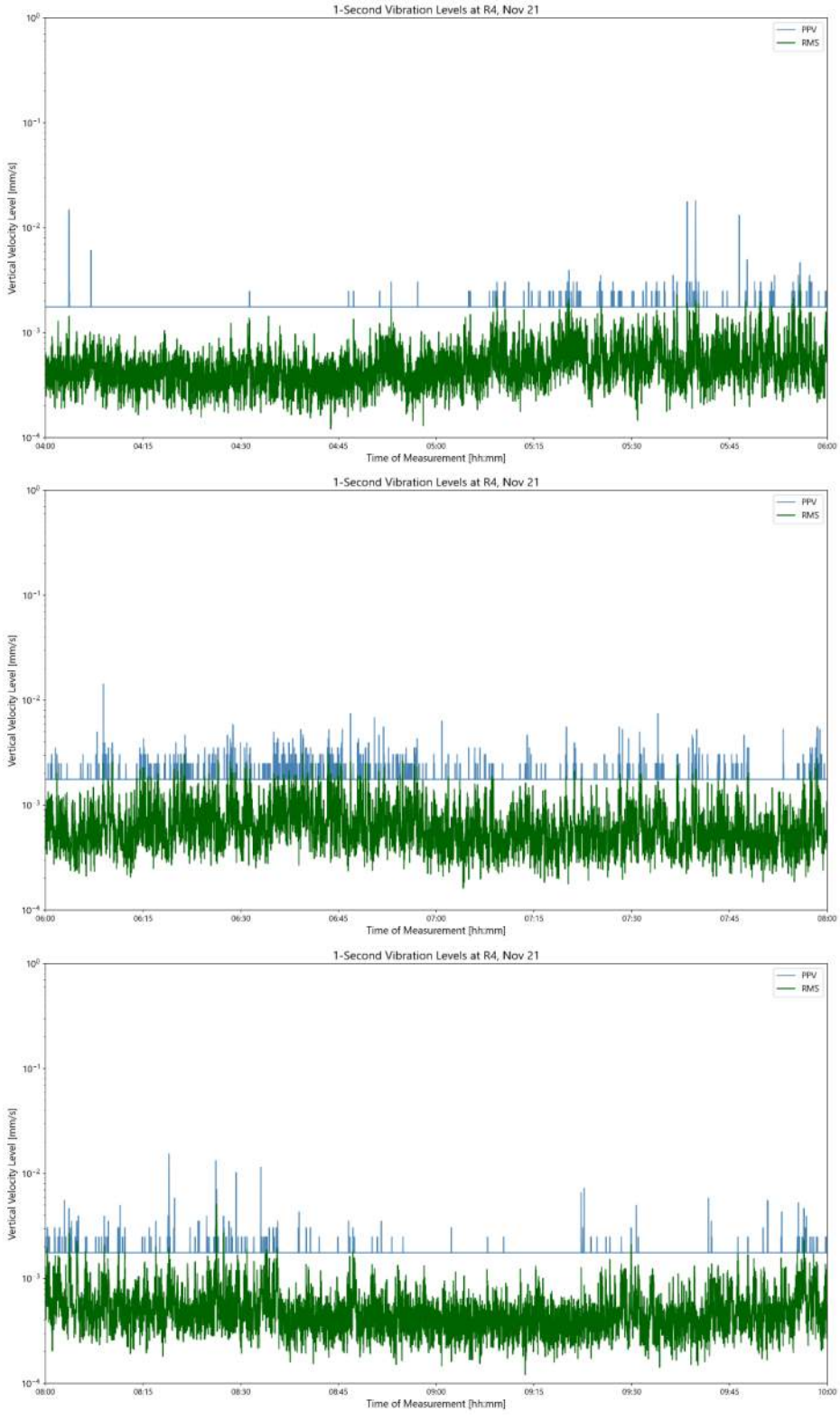


Figure D-31: R4 1-Second Velocity History

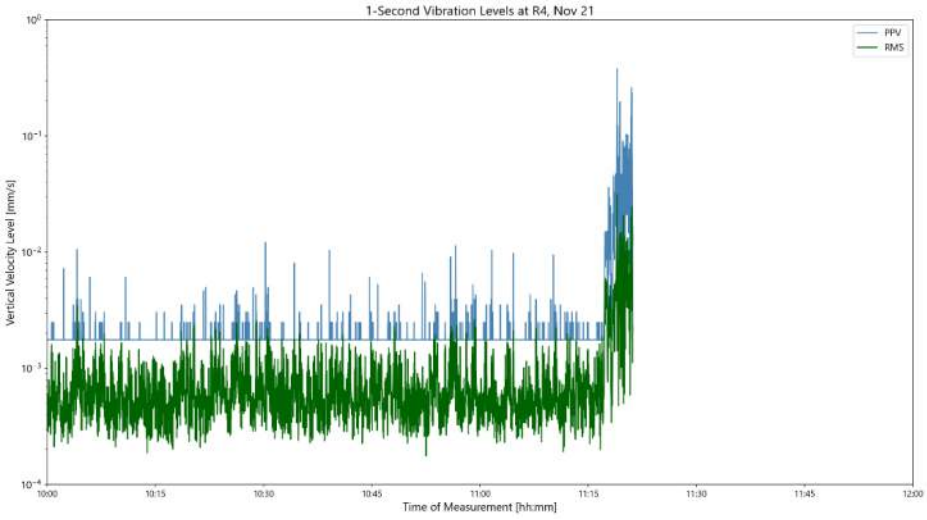


Figure D-32: R4 1-Second Velocity History

Limitations

Limitations

1. The work performed in the preparation of this report and the conclusions presented are subject to the following:
    a. The Standard Terms and Conditions which form a part of our Professional Services Contract;
    b. The Scope of Services;
    c. Time and Budgetary limitations as described in our Contract; and
    d. The Limitations stated herein.
2. No other warranties or representations, either expressed or implied, are made as to the professional services provided under the terms of our Contract, or the conclusions presented.
3. The conclusions presented in this report were based, in part, on visual observations of the Site and attendant structures. Our conclusions cannot and are not extended to include those portions of the Site or structures, which are not reasonably available, in Wood's opinion, for direct observation.
4. The environmental conditions at the Site were assessed, within the limitations set out above, having due regard for applicable environmental regulations as of the date of the inspection. A review of compliance by past owners or occupants of the Site with any applicable local, provincial or federal bylaws, orders-in-council, legislative enactments and regulations was not performed.
5. The Site history research included obtaining information from third parties and employees or agents of the owner. No attempt has been made to verify the accuracy of any information provided, unless specifically noted in our report.
6. Where testing was performed, it was carried out in accordance with the terms of our contract providing for testing. Other substances, or different quantities of substances testing for, may be present on-site and may be revealed by different or other testing not provided for in our contract.
7. Because of the limitations referred to above, different environmental conditions from those stated in our report may exist. Should such different conditions be encountered, Wood must be notified in order that it may determine if modifications to the conclusions in the report are necessary.
8. The utilization of Wood's services during the implementation of any remedial measures will allow Wood to observe compliance with the conclusions and recommendations contained in the report. Wood's involvement will also allow for changes to be made as necessary to suit field conditions as they are encountered.
9. This report is for the sole use of the party to whom it is addressed unless expressly stated otherwise in the report or contract. Any use which any third party makes of the report, in whole or the part, or any reliance thereon or decisions made based on any information or conclusions in the report is the sole responsibility of such third party. Wood accepts no responsibility whatsoever for damages or loss of any nature or kind suffered by any such third party as a result of actions taken or not taken or decisions made in reliance on the report, or anything set out therein.
10. This report is not to be given over to any third party for any purpose whatsoever without the written permission of Wood.
11. Provided that the report is still reliable, and less than 12 months old, Wood will issue a third-party reliance letter to parties that the client identifies in writing, upon payment of the then current fee for such letters. All third parties relying on Wood's report, by such reliance agree to be bound by our proposal and Wood's standard reliance letter. Wood's standard reliance letter indicates that in no event shall Wood be liable for any damages, howsoever arising, relating to third-party reliance on Wood's report. No reliance by any party is permitted without such agreement.