Northern Bus Garage
Noise, Vibration, and Dust Monitoring Report (January 2025)

Noise, Vibration, and Dust levels were monitored as part of the reconstruction of Northern Bus Garage, 4615 14th Street NW, Washington, DC, for the month of January 2025.

The following memorandum identifies the monitoring points and instruments, presents the data, and provides a brief analysis of the results per monthly monitoring report attached by Geo Instruments for Clark Construction. The report is organized by medium: noise, vibration, and dust. Figures and graphs are attached. The red dashed line on each of the graphs represents the monitoring thresholds, which are summarized below for each instrument.

Noise Monitoring

Five noise monitors are positioned around the perimeter of the project site. (See Figure 1) Under DC regulations, the regulatory standard is 80 dBA, measured 25 ft from the property line (20 DCMR 2802.1). Because the noise monitoring devices are placed on the property line (rather than a 25 ft offset), the monitoring threshold for site activities is adjusted to 85 dBA (assuming the noise level will dissipate). Noise levels and vibration levels were measured automatically with Micromate and Geophone Instrument.

No operating issue with the monitoring instruments was identified.

There were numerous noise level exceedances at all hours of the day and all days of the week. Mic2 and Mic5 recorded their loudest exceedances outside of working hours. Mic1, Mic2, and Mic5 recorded over 40% of their exceedances out of working hours. Please see Table 1 (The "Work Hours" category includes all weekend shifts and evening shifts that were worked during the month).

Vibration Monitoring

Five vibration monitors are positioned around the perimeter of the project site. (See Figure 1) Vibration thresholds are based the WMATA Design Criteria. Monitors VM-1 and VM-2 are set at a lower vibration threshold due to their proximity to the historic façade, which is more sensitive to any movement. Noise levels and vibration levels were measured automatically with Micromate and Geophone Instrument.

Table 2

Instrument Type	Monitoring Threshold
Vibration Monitor (VM-1)	0.2 in/sec
Vibration Monitor (VM-2)	0.2 in/sec
Vibration Monitor (VM-3)	2.0 in/sec
Vibration Monitor (VM-4)	2.0 in/sec
Vibration Monitor (VM-5)	2.0 in/sec

VM3 exhibited a single anomalous exceedance on January 2 at 09:30. Clark responded to the alert saying that no construction activities were ongoing in that area at the time. Larry Leone (Geo-Instruments) reviewed the details of the event and determined that it was most likely caused by electrical noise and does not represent a physical vibration that would have been felt around the local area.

In regard to the VM3 anomalous exceedance on January 2, there are spikes of lower amplitudes present on VM1 and VM2 that appear to be at the same time when viewing the Vibration Monitor on a monthly scale. Upon investigation, it was determined that while these spikes also occurred on January 2, they did not occur at 09:30, and thus would not be attributed to the electrical noise exceedance.

Following the original submission of this report, Geo-Instruments was made aware of a pattern in the behavior of VM3, where after January 15 the ambient vibration level decreased and regular vibration spikes below the threshold appeared. Upon further investigation, Geo-Instruments discovered that the sensor check began failing at that time. A site visit on February 11 found that the unit had been vandalized with the wires having been pulled out of the geophone sensor. This unit was replaced on February 12. An alarm has now been activated on the sensor check function so that Geo-Instruments personnel will be alerted if another failure occurs.

Graphs showing monitoring results are presented in Graphs 1 to 5.

There was one exceedance in the month of January. Geo-Instruments reviewed the details of the event and determined that it was most likely caused by electrical noise and does not represent a physical vibration that would have been felt around the

local area.

- VM3 – Exceedance with a reading of 4.56 in/sec on January 2 at 09:20.

Dust Monitoring Threshold Values and Exceedances:

Three dust monitors are positioned at the project site. (See Figure 2) EPA regulatory thresholds are based on a 24-hour monitoring period; the project has adopted thresholds to monitor site levels and provide an indication of when EPA standards might be exceeded. (See Table 3) Dust measurements were monitored using Aeroqual Dust Sentry Pro.

Table 3

Dust Monitoring Measurement	Monitoring Threshold
Particulates (PM2.5)	40 µg/m^3
Particulates (PM10)	50 µg/m^3

No operating issue with the monitoring instruments was identified.

Graphs showing monitoring results are presented in Graphs 6 to 11.

There were no air quality exceedances in the month of January.

Figure 1: Vibration and Noise Monitor Location Plan

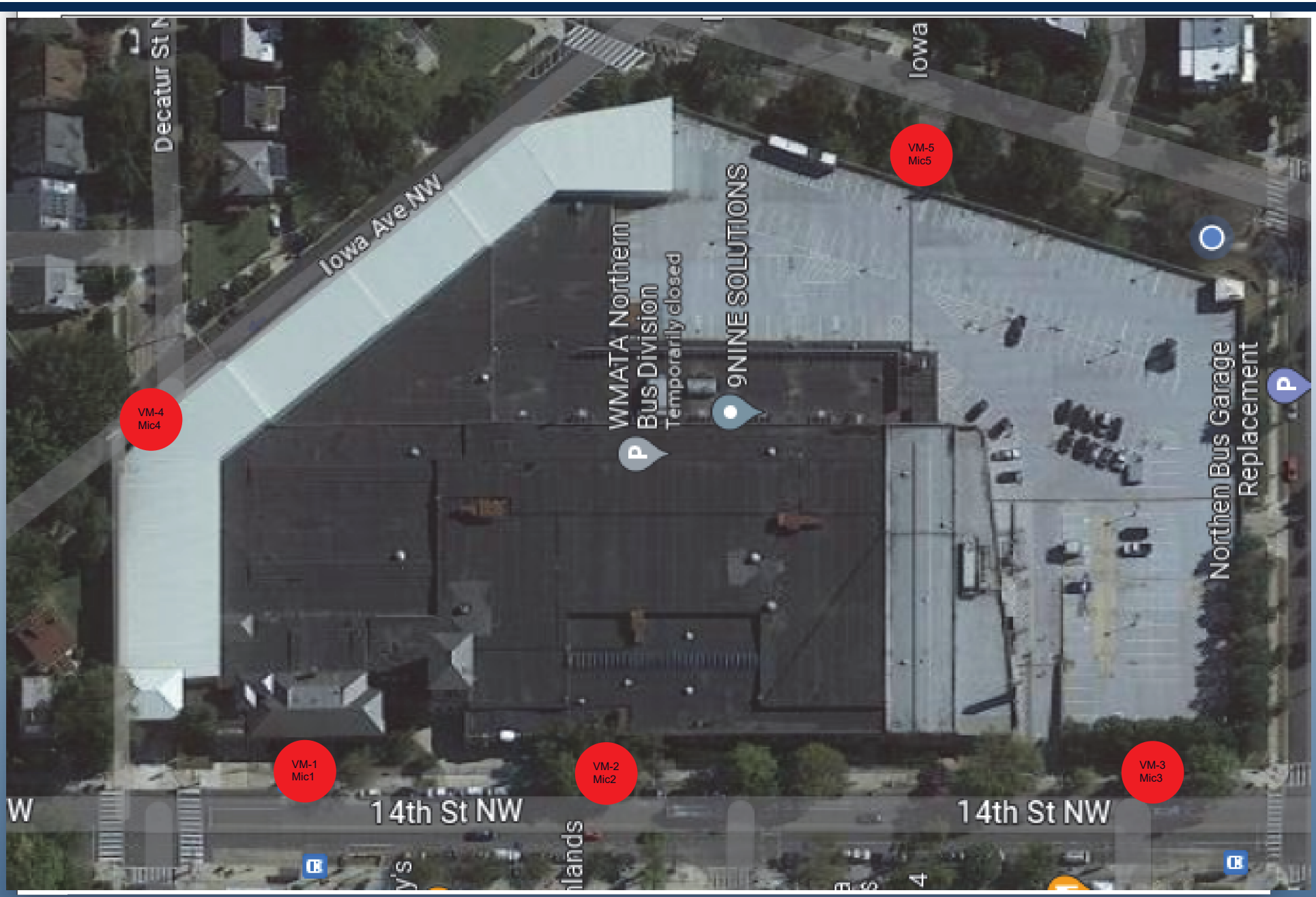


Figure 2: Dust Monitor Location Plan

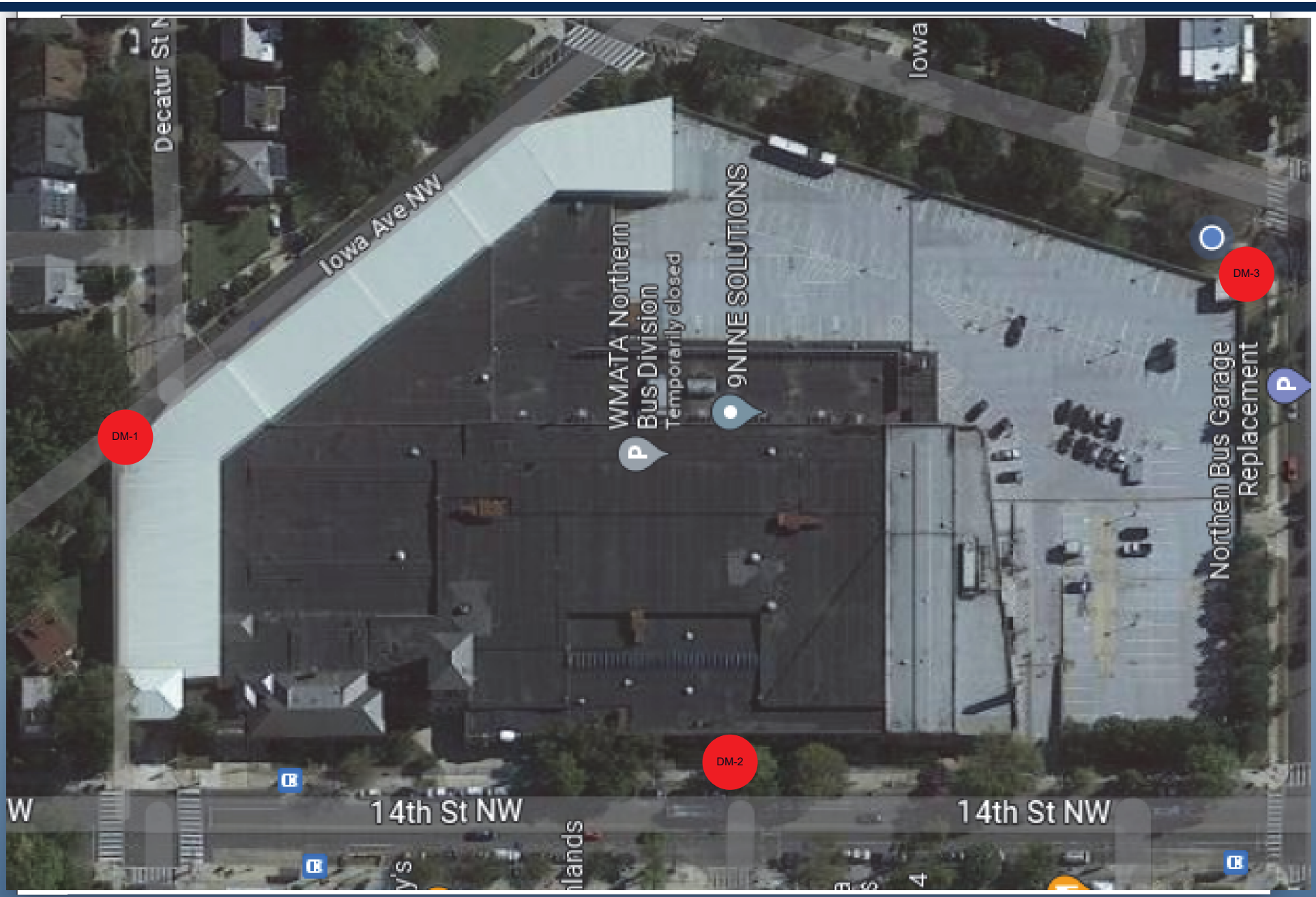


Table 1: Noise Summaries

VM1-MIC		
	Exceedance	Percentage
Work hours	424	50.48%
After hours	221	26.31%
Weekends	195	23.21%
Total	840	100%

VM1-MIC			
	Work hours	After hours	Weekends
Lmax (dBA)	114	110.7	109.4
Lmin (dBA)	65.5	64.3	61.6
L10 (dBA)	83	83	75
L90 (dBA)	68	68	64
Leq (dBA)	81.4	79.7	76

VM2-MIC		
	Exceedance	Percentage
Work hours	267	58.55%
After hours	99	21.71%
Weekends	90	19.74%
Total	456	100%

VM2-MIC			
	Work hours	After hours	Weekends
Lmax (dBA)	107.3	110.7	107
Lmin (dBA)	73.1	62.2	51.6
L10 (dBA)	83	77	75
L90 (dBA)	74	66	55
Leq (dBA)	83.9	80.1	79.2

VM3-MIC		
	Exceedance	Percentage
Work hours	528	72.53%
After hours	84	11.54%
Weekends	116	15.93%
Total	728	100%

VM3-MIC			
	Work hours	After hours	Weekends
Lmax (dBA)	118.1	106.1	107
Lmin (dBA)	93.9	53.4	52.1
L10 (dBA)	100	81	74
L90 (dBA)	96	55	56
Leq (dBA)	98.6	76.1	77.7

VM4-MIC		
	Exceedance	Percentage
Work hours	548	93.20%
After hours	19	3.23%
Weekends	21	3.57%
Total	588	100%

VM4-MIC			
	Work hours	After hours	Weekends
Lmax (dBA)	114.4	100.6	102.3
Lmin (dBA)	70	46.4	55.9
L10 (dBA)	91	67	67
L90 (dBA)	77	51	58
Leq (dBA)	86.1	73.8	63.6

VM5-MIC		
	Exceedance	Percentage
Work hours	145	59.92%
After hours	51	21.07%
Weekends	46	19.01%
Total	242	100%

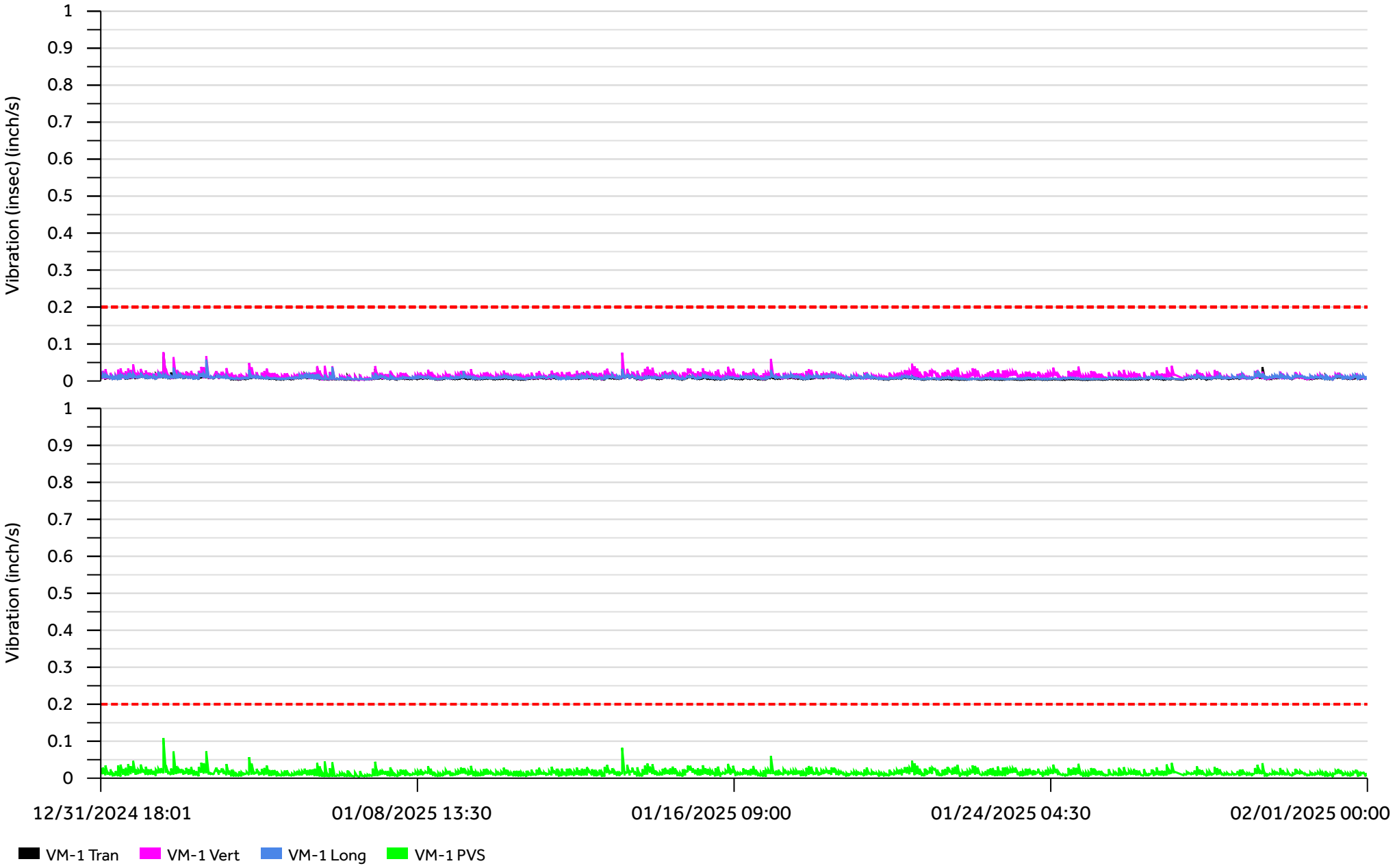
VM5-MIC			
	Work hours	After hours	Weekends
Lmax (dBA)	108.1	108.3	110.1
Lmin (dBA)	60.3	48.1	50.8
L10 (dBA)	73	65	71
L90 (dBA)	64	51	53
Leq (dBA)	78.7	74.7	79.4

Summary tables contain values for working hours, after hours, and weekend time periods:

- Lmax: Highest Maximum Noise Level recorded for the month, in dBA.
- Lmin: Highest Minimum Noise Level recorded for the month, in dBA.
- L10: Highest noise level that was exceeded 10% of the time of all recording periods this month, in dBA.
- L90: Highest noise level that was exceeded 90% of the time of all recording periods this month, in dBA.
- Leq: Highest Equivalent Continuous Sound Level, or 'average' of all recording periods this month, in dBA.

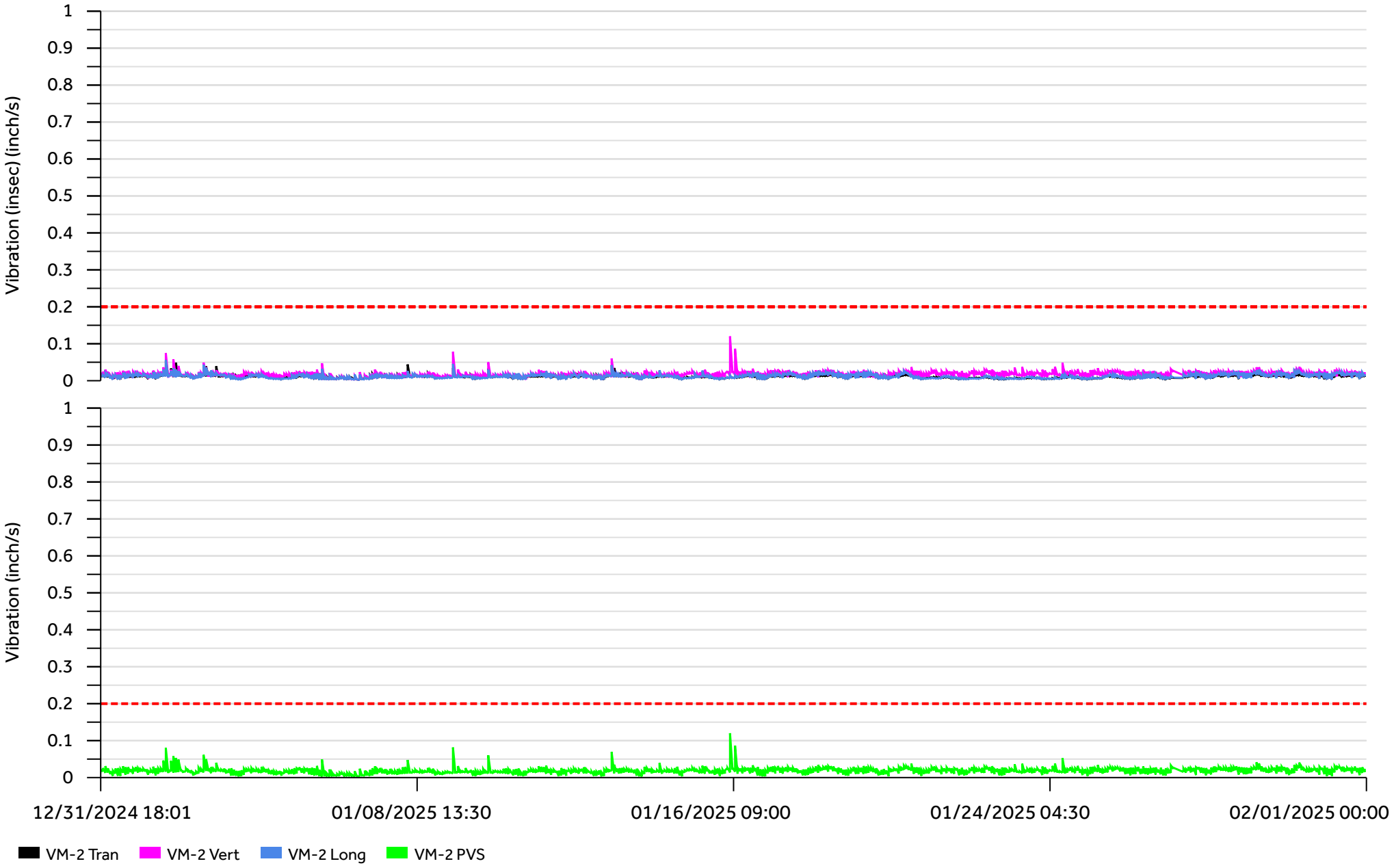
Graph 1

VM-1- Vibration Monitor



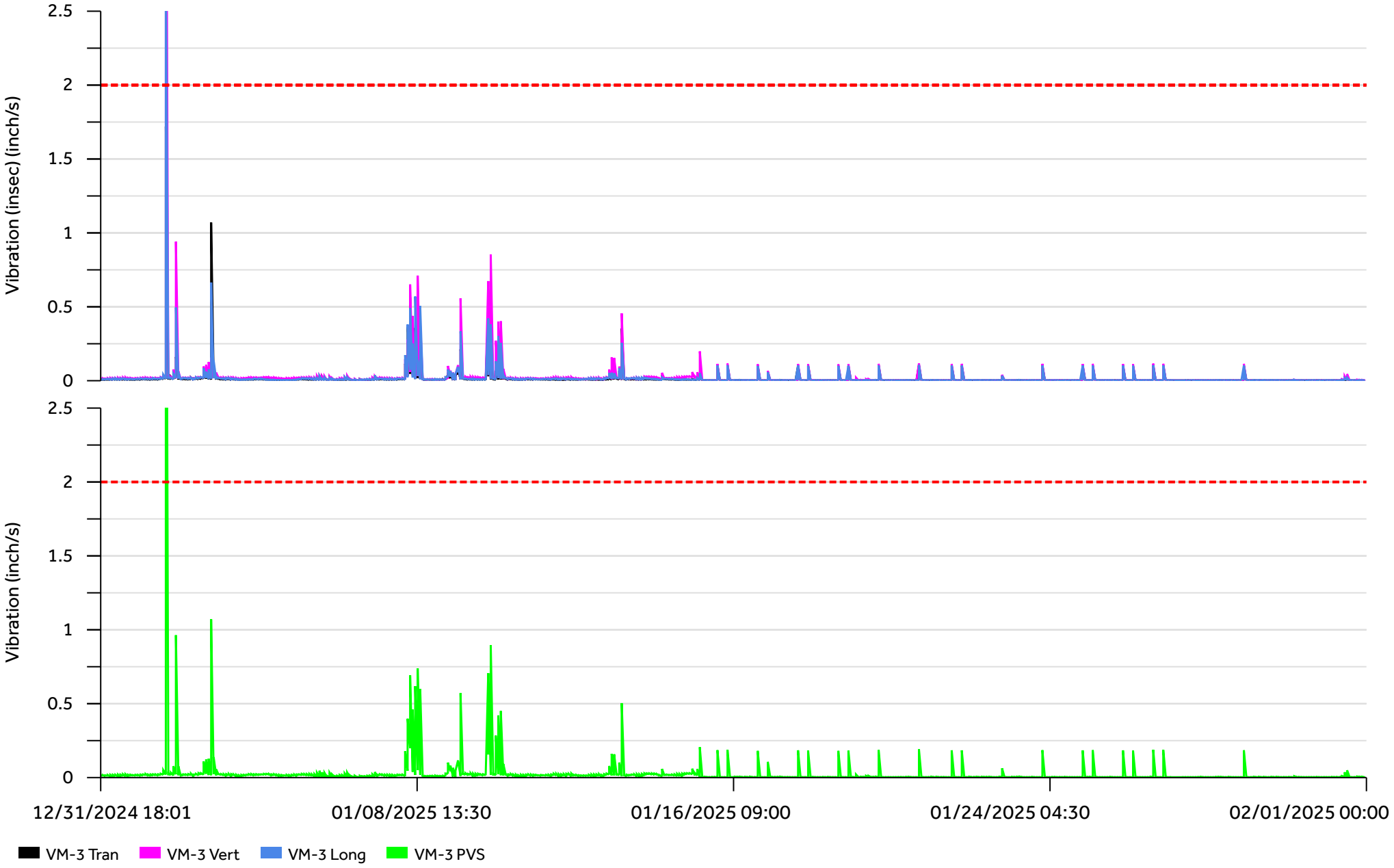
Graph 2

VM-2- Vibration Monitor



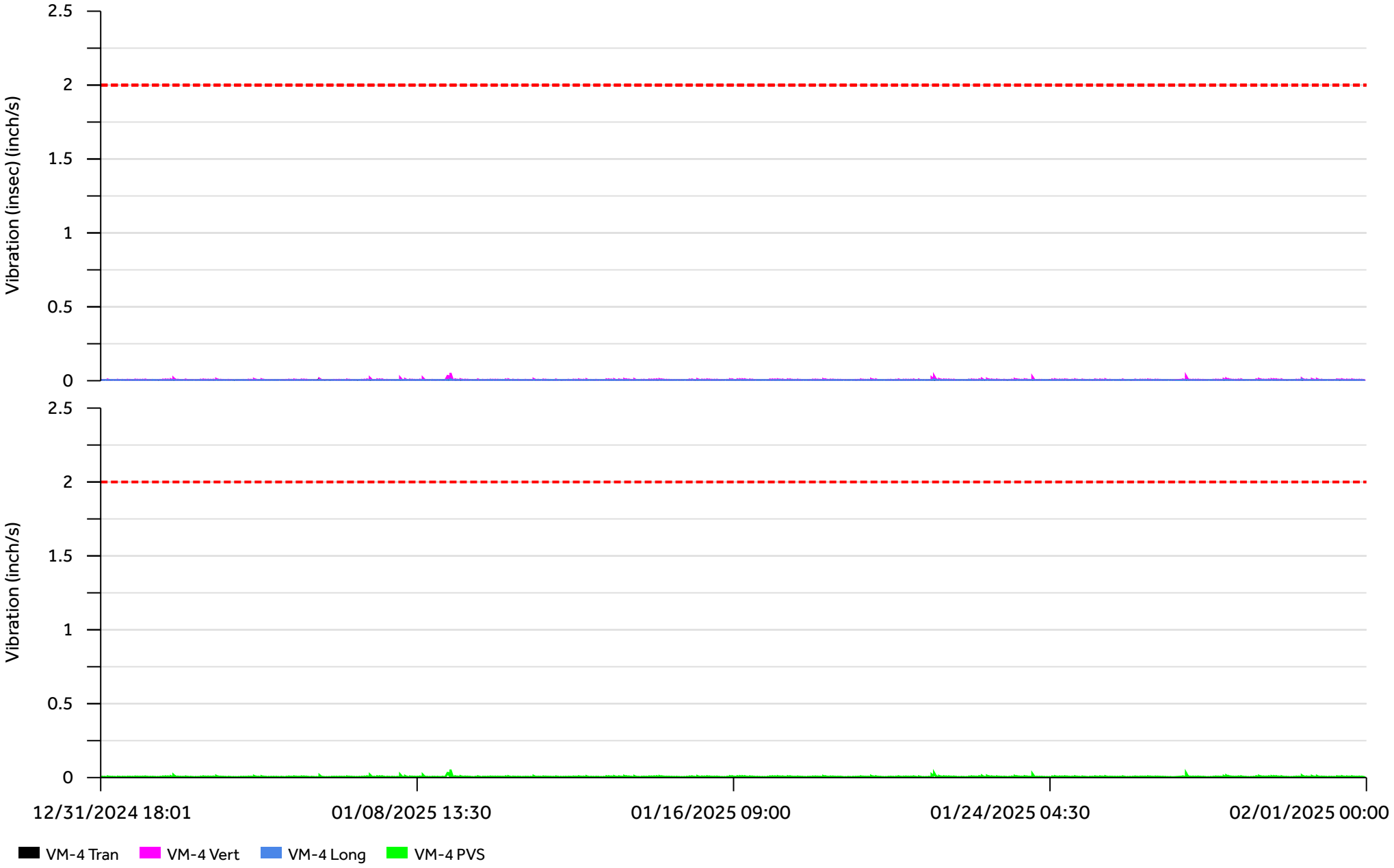
Graph 3

VM-3- Vibration Monitor



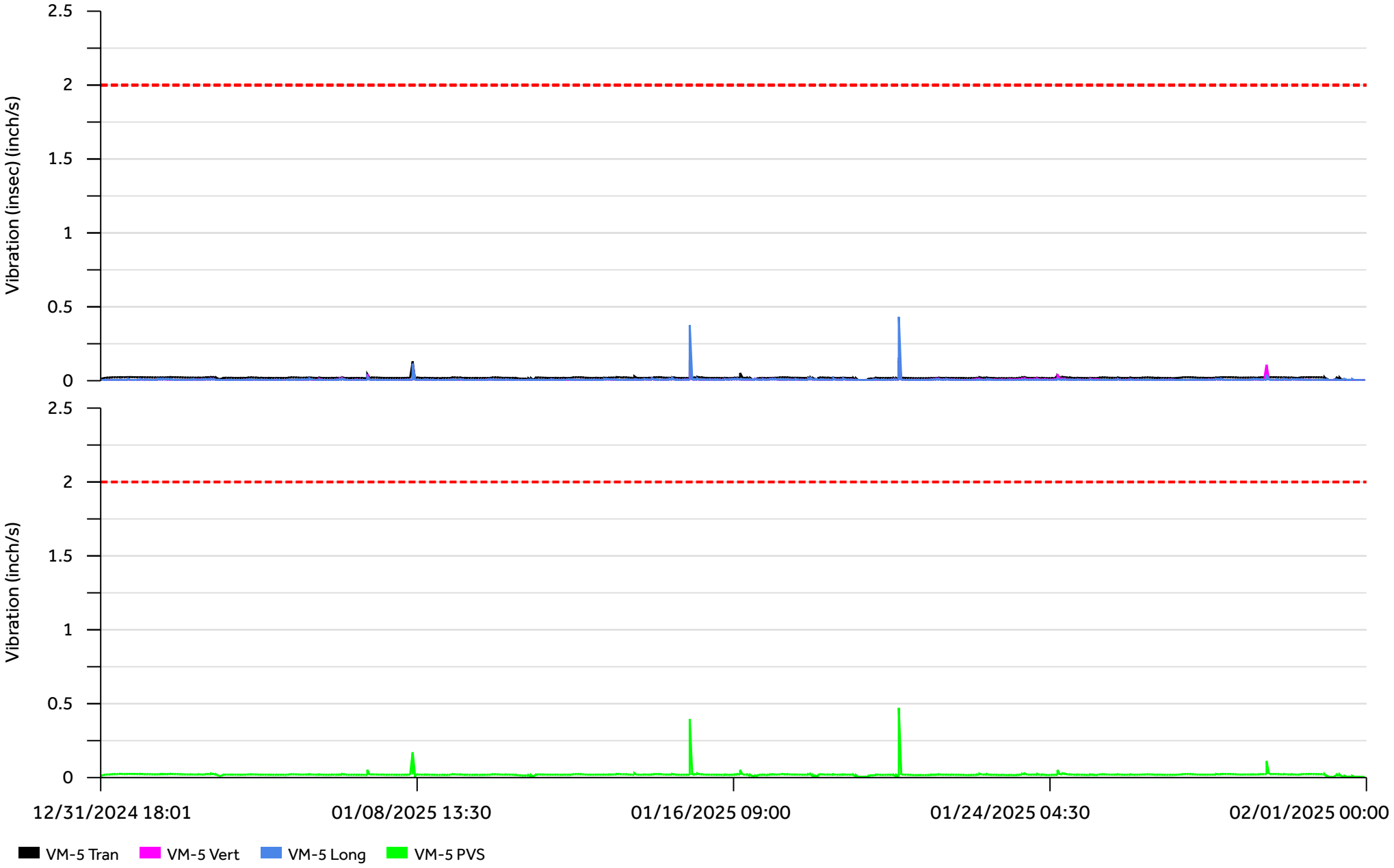
Graph 4

VM-4- Vibration Monitor



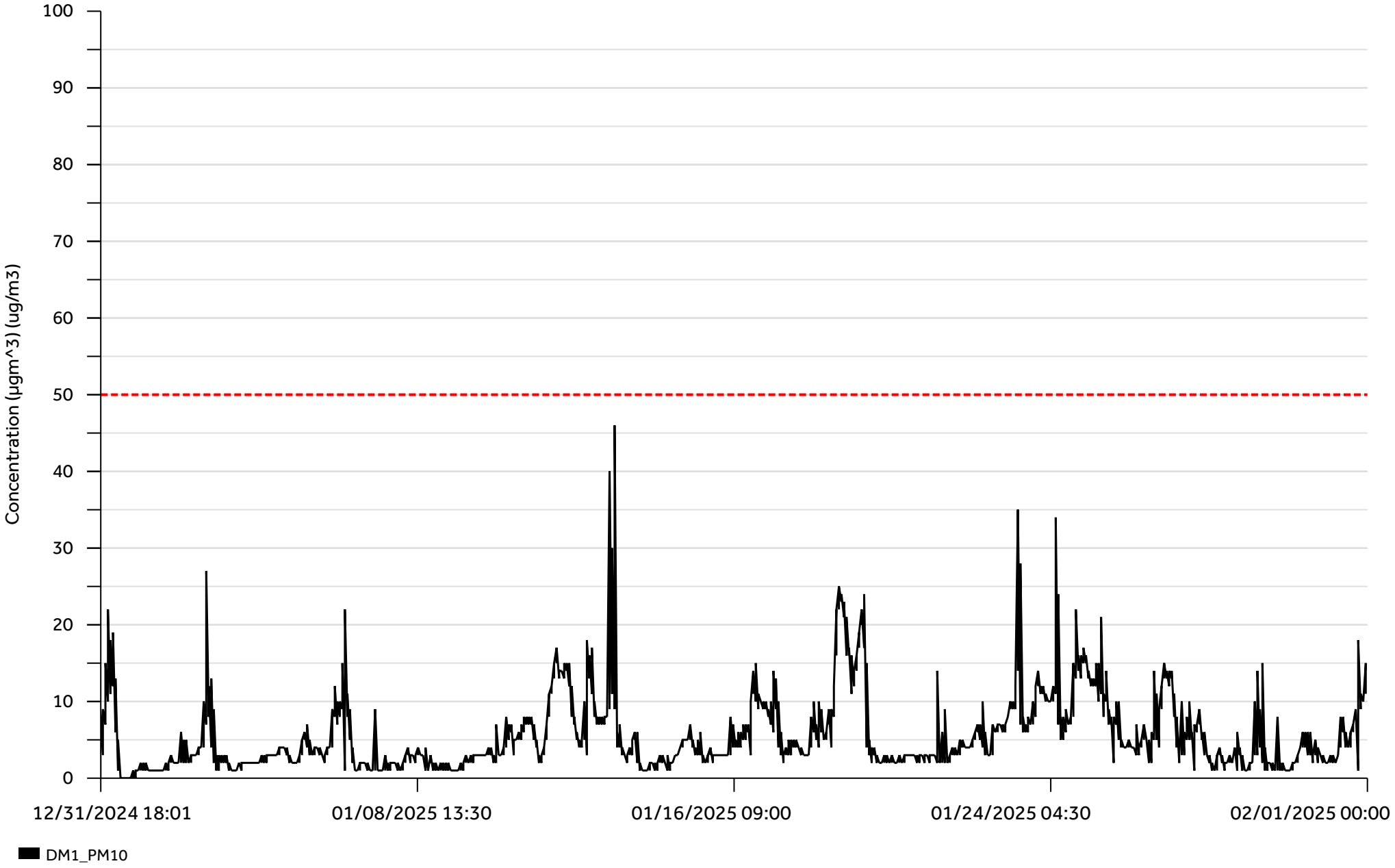
Graph 5

VM-5- Vibration Monitor



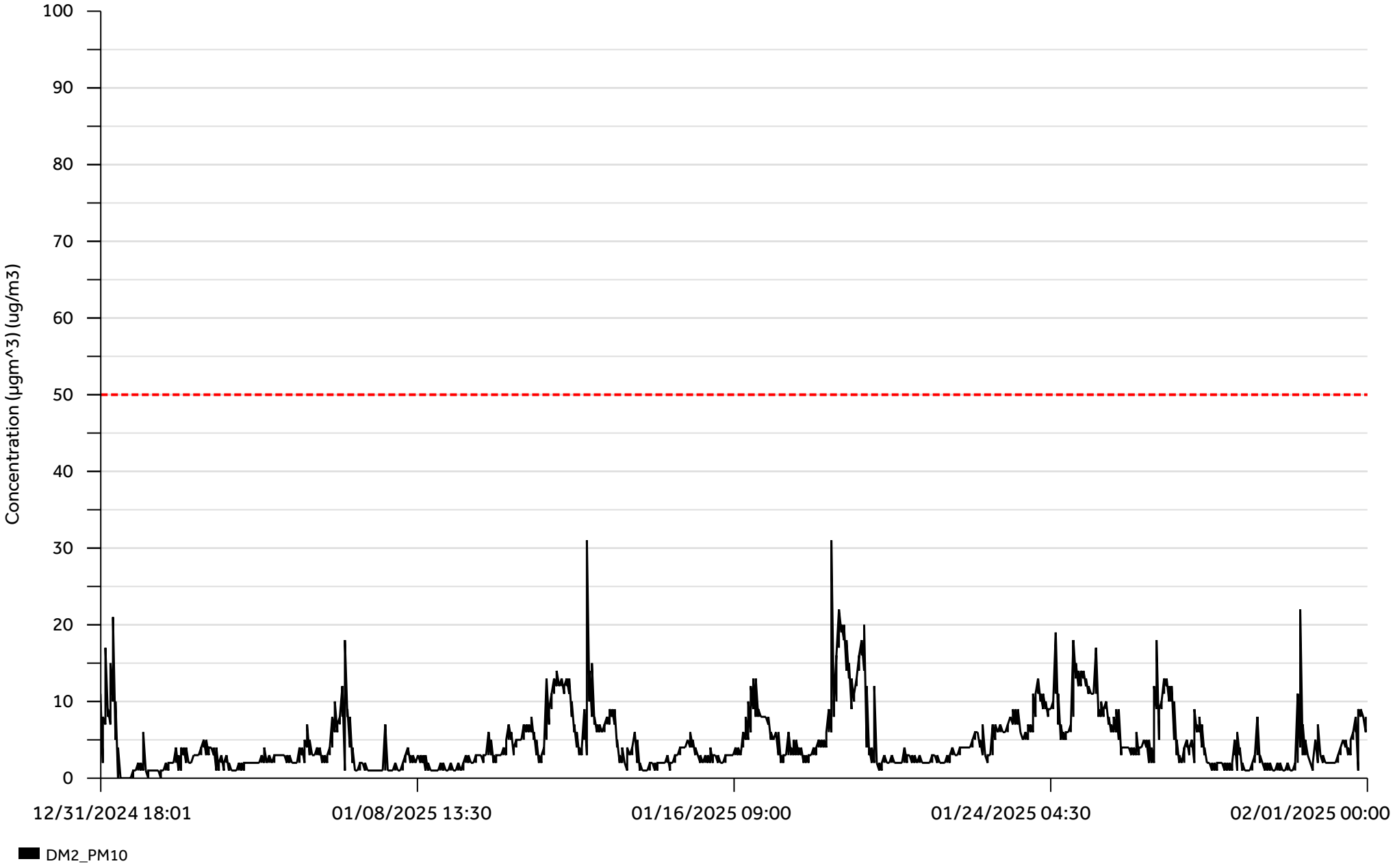
Graph 6

DM1 - PM10



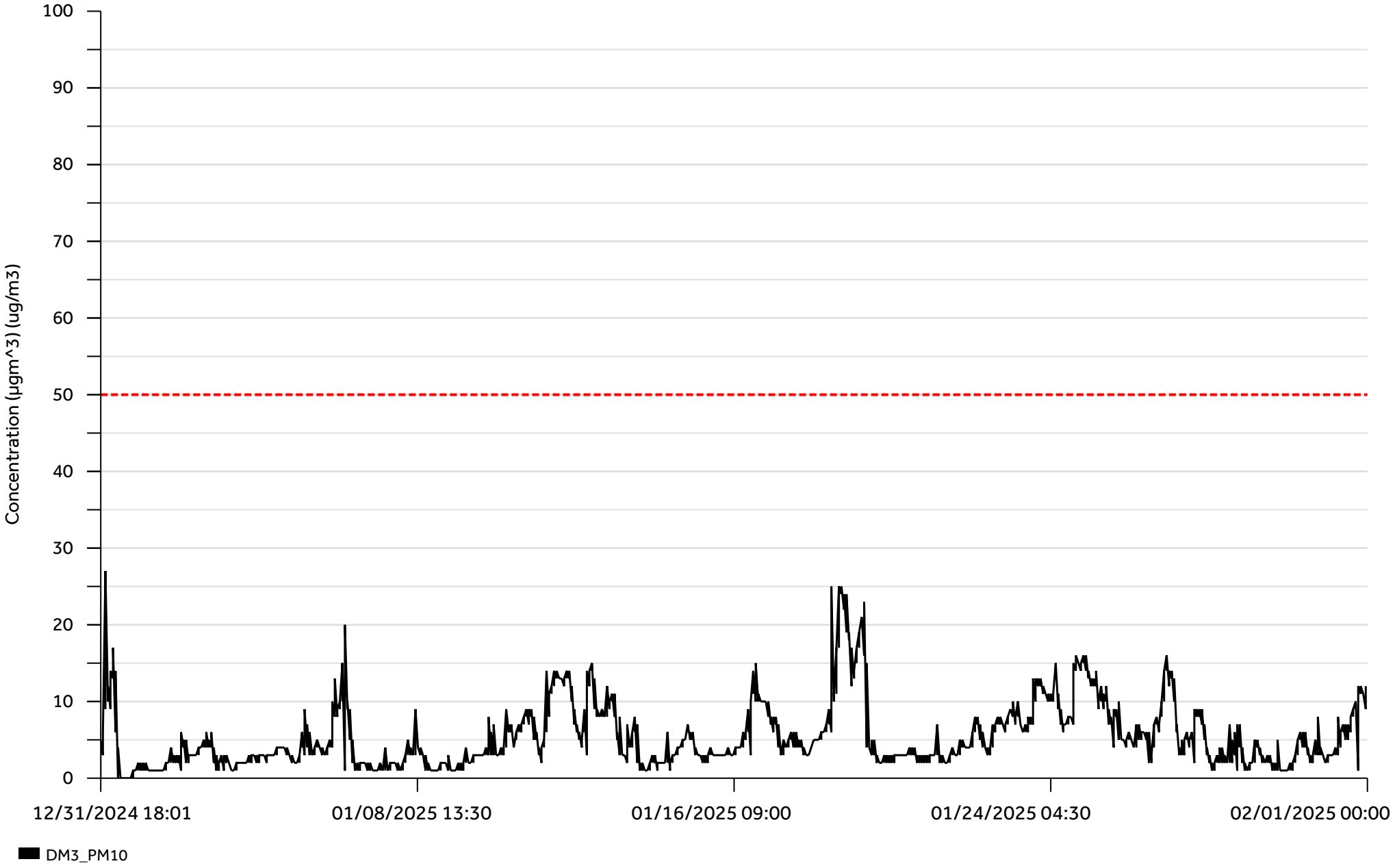
Graph 7

DM2-PM10



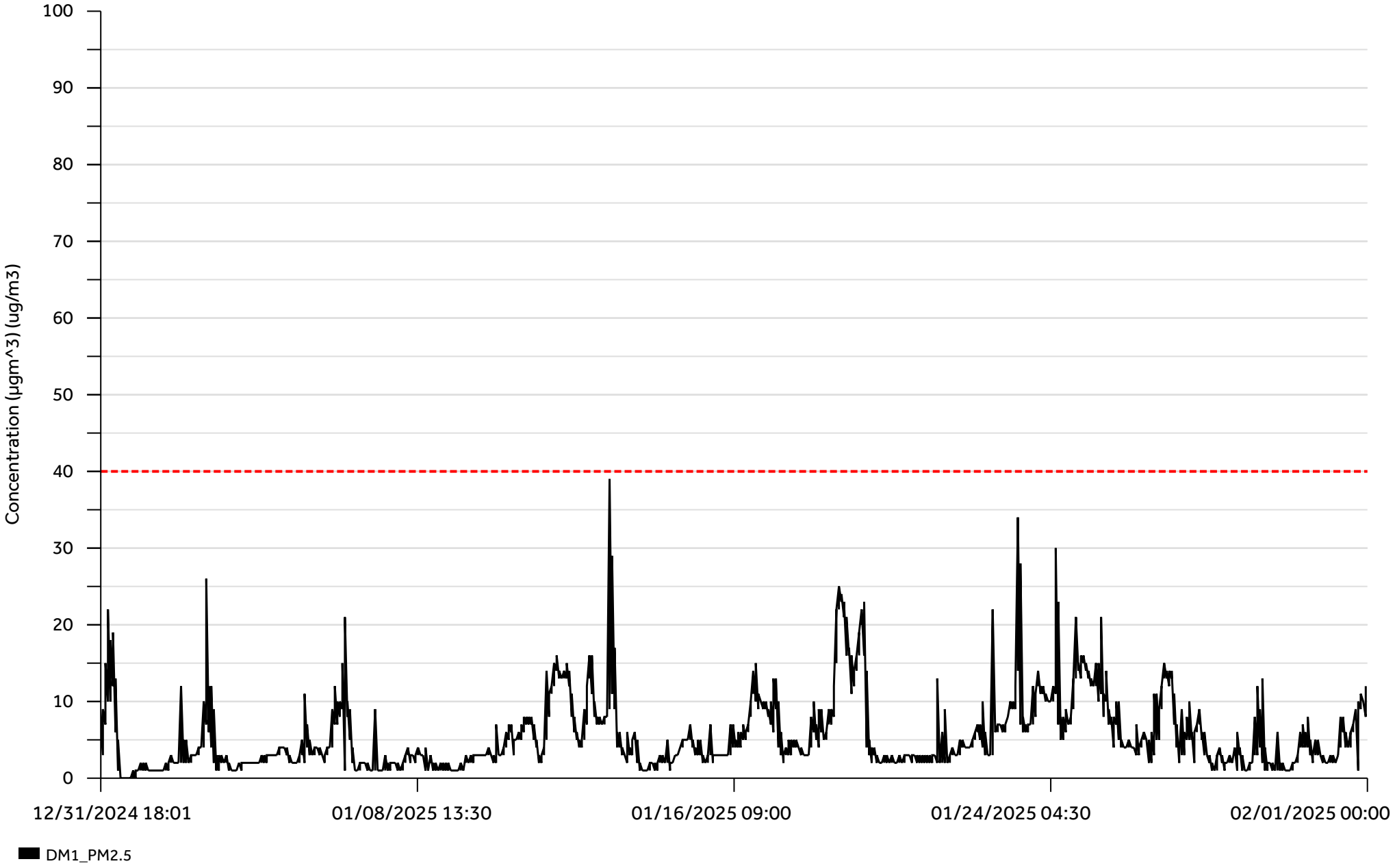
Graph 8

DM3-PM10



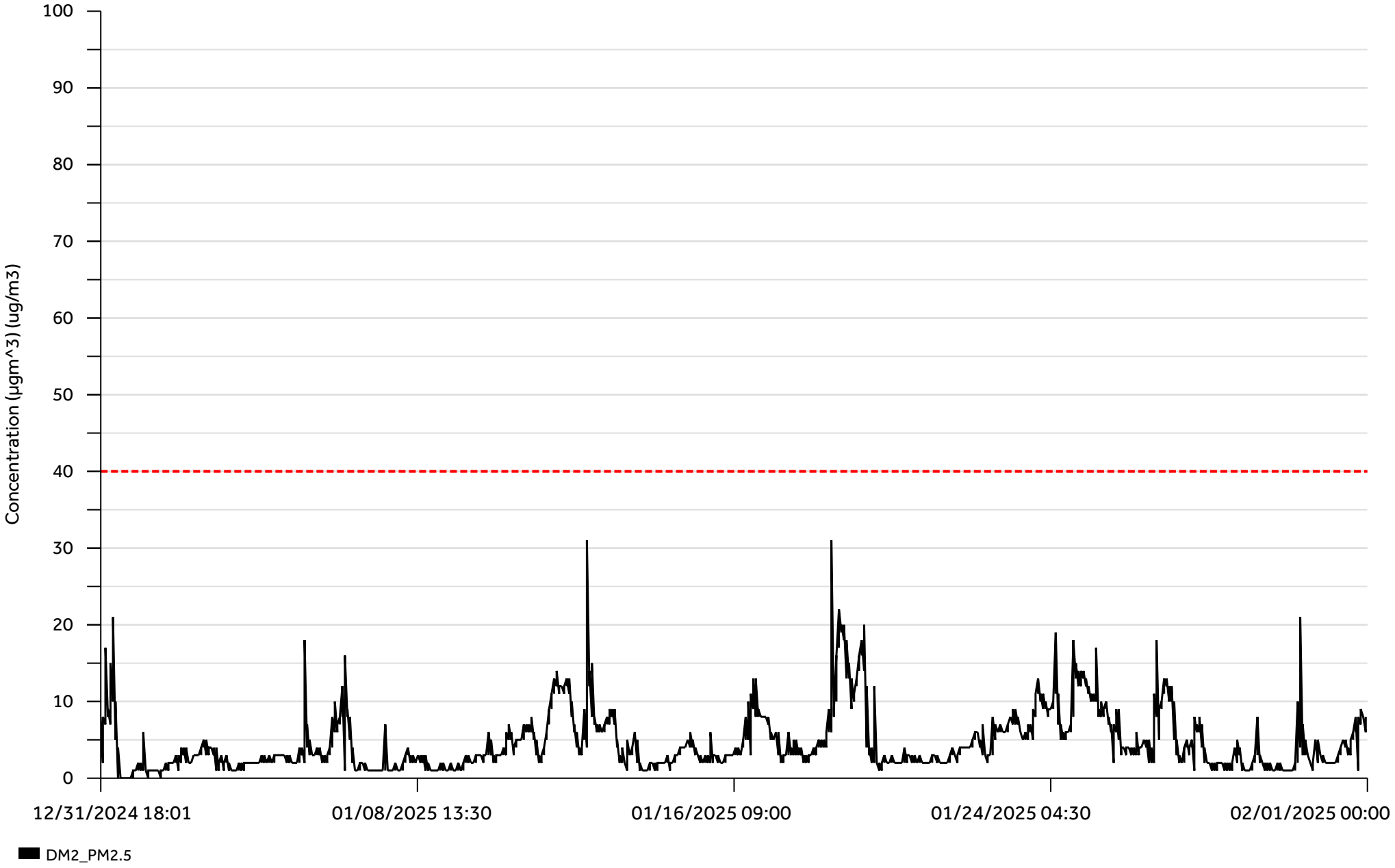
Graph 9

DM1-PM2.5



Graph 10

DM2-PM2.5



Graph 11

DM3-PM2.5