Northern Bus Garage
Noise, Vibration, and Dust Monitoring Report (February 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 February 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. Mic1 recorded its loudest exceedance outside of working hours. Mic1, Mic3, 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 sensor cable was found to be damaged and was replaced on February 11th. This is the reason for the pattern in the behavior of VM3 prior to that date.

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

There were no vibration exceedances in the month of February 2025.

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 February 2025.

Figure 1: Vibration and Noise Monitor Location Plan

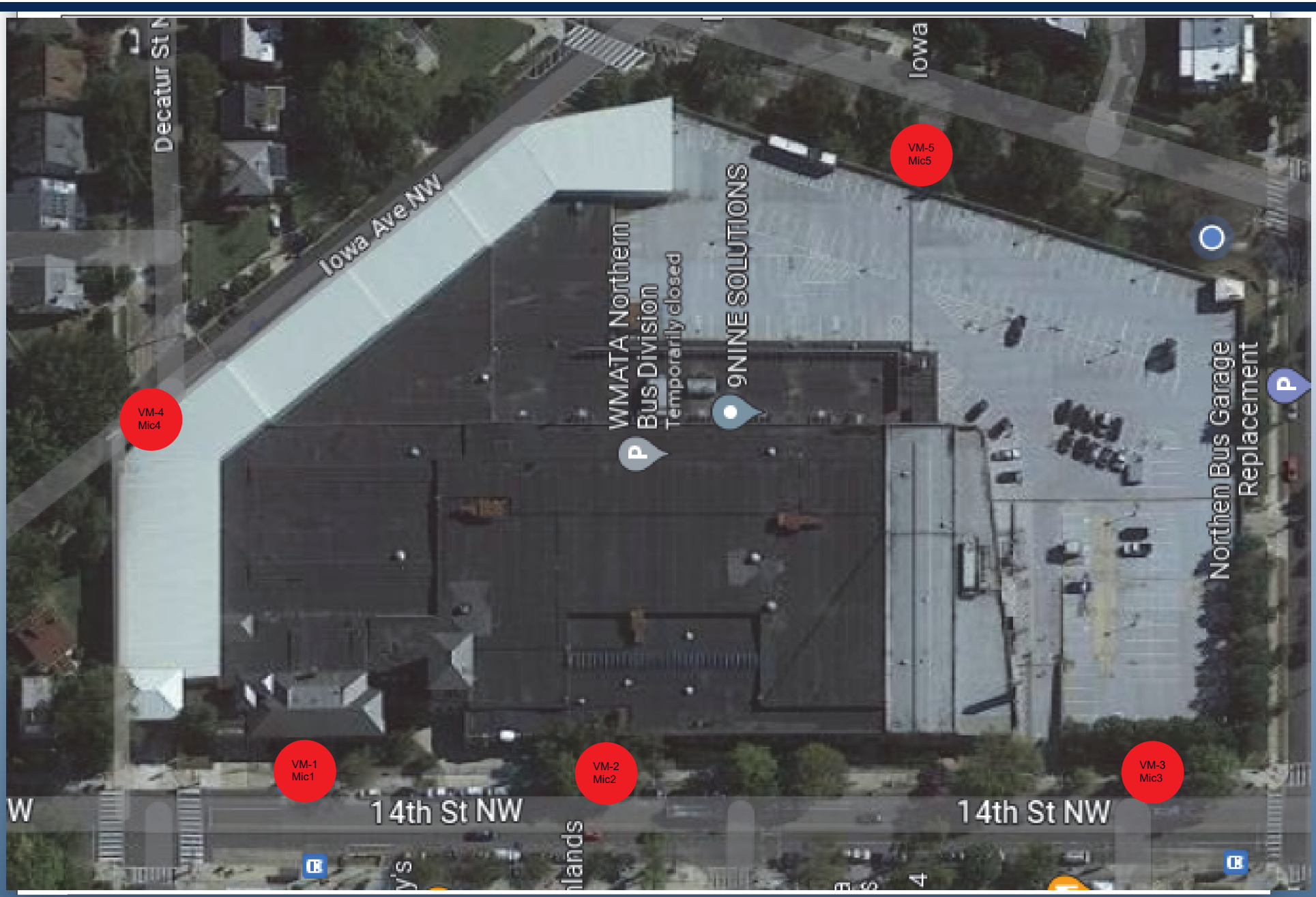


Figure 2: Dust Monitor Location Plan

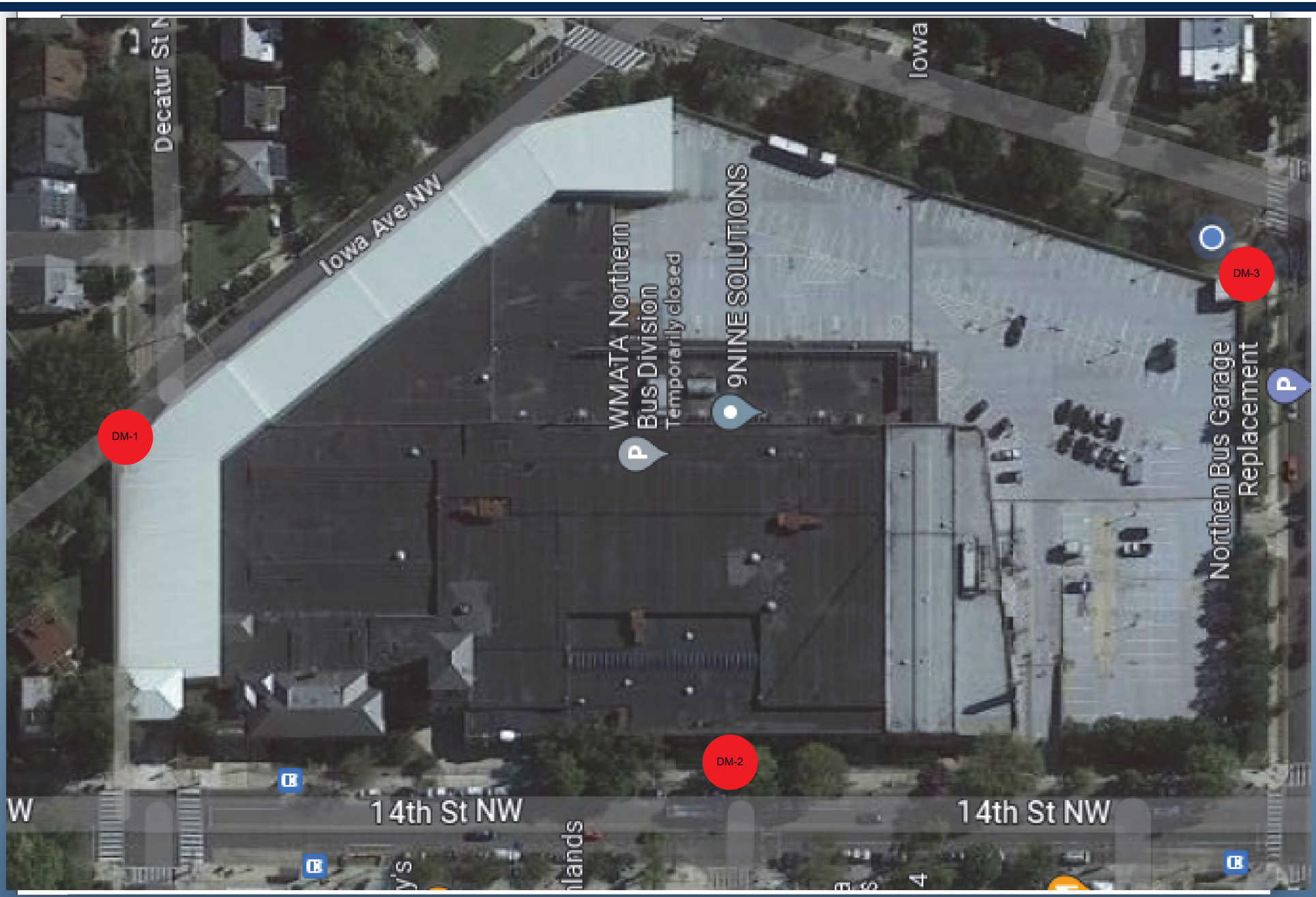


Table 1: Noise Summaries

VM1-MIC		
	Exceedance	Percentage
Work hours	341	50.44%
After hours	174	25.74%
Weekends	161	23.82%
Total	676	100%

VM1-MIC			
	Work hours	After hours	Weekends
Lmax (dBA)	108.7	108.6	114
Lmin (dBA)	67.9	53.1	51.8
L10 (dBA)	79	74	74
L90 (dBA)	70	58	56
Leq (dBA)	81.4	80.5	82.2

VM2-MIC		
	Exceedance	Percentage
Work hours	274	62.70%
After hours	89	20.37%
Weekends	74	16.93%
Total	437	100%

VM2-MIC			
	Work hours	After hours	Weekends
Lmax (dBA)	111.3	106.6	106.8
Lmin (dBA)	66.9	50.1	54.3
L10 (dBA)	85	73	74
L90 (dBA)	70	54	61
Leq (dBA)	81.2	77.5	77.8

VM3-MIC		
	Exceedance	Percentage
Work hours	523	58.76%
After hours	207	23.26%
Weekends	160	17.98%
Total	890	100%

VM3-MIC			
	Work hours	After hours	Weekends
Lmax (dBA)	111.3	106.6	110
Lmin (dBA)	85.1	53.8	51.8
L10 (dBA)	102	73	71
L90 (dBA)	87	64	56
Leq (dBA)	97.2	79.5	80.5

VM4-MIC		
	Exceedance	Percentage
Work hours	558	90.88%
After hours	29	4.72%
Weekends	27	4.40%
Total	614	100%

VM4-MIC			
	Work hours	After hours	Weekends
Lmax (dBA)	102.7	99.9	97
Lmin (dBA)	73.4	47.9	68.6
L10 (dBA)	87	67	74
L90 (dBA)	75	50	70
Leq (dBA)	82.2	70	75.8

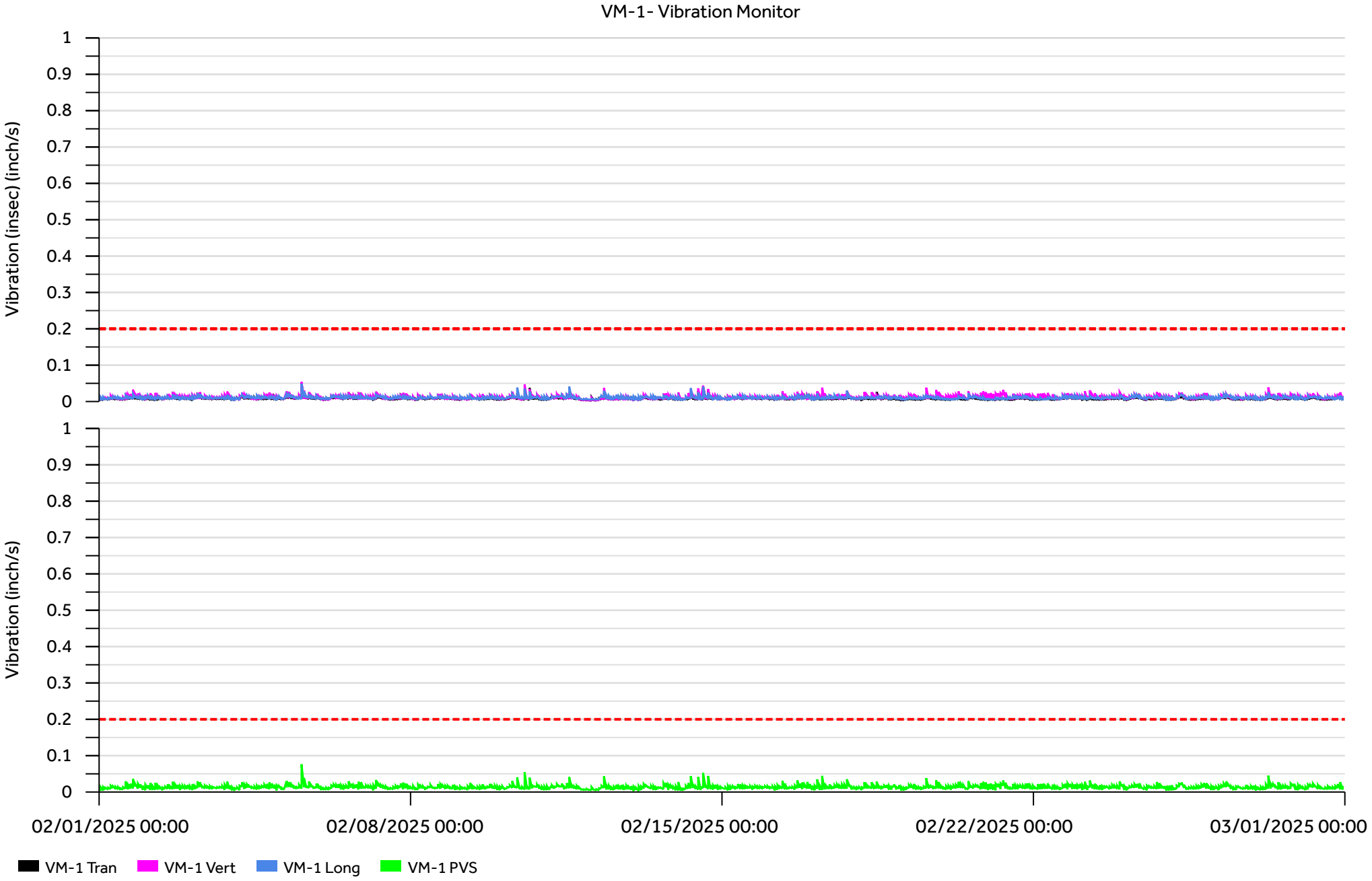
VM5-MIC		
	Exceedance	Percentage
Work hours	119	57.77%
After hours	40	19.42%
Weekends	47	22.82%
Total	206	100%

VM5-MIC			
	Work hours	After hours	Weekends
Lmax (dBA)	109.6	108.8	105.9
Lmin (dBA)	57.1	49.7	60.2
L10 (dBA)	82	68	72
L90 (dBA)	73	51	62
Leq (dBA)	82.5	80.1	75.3

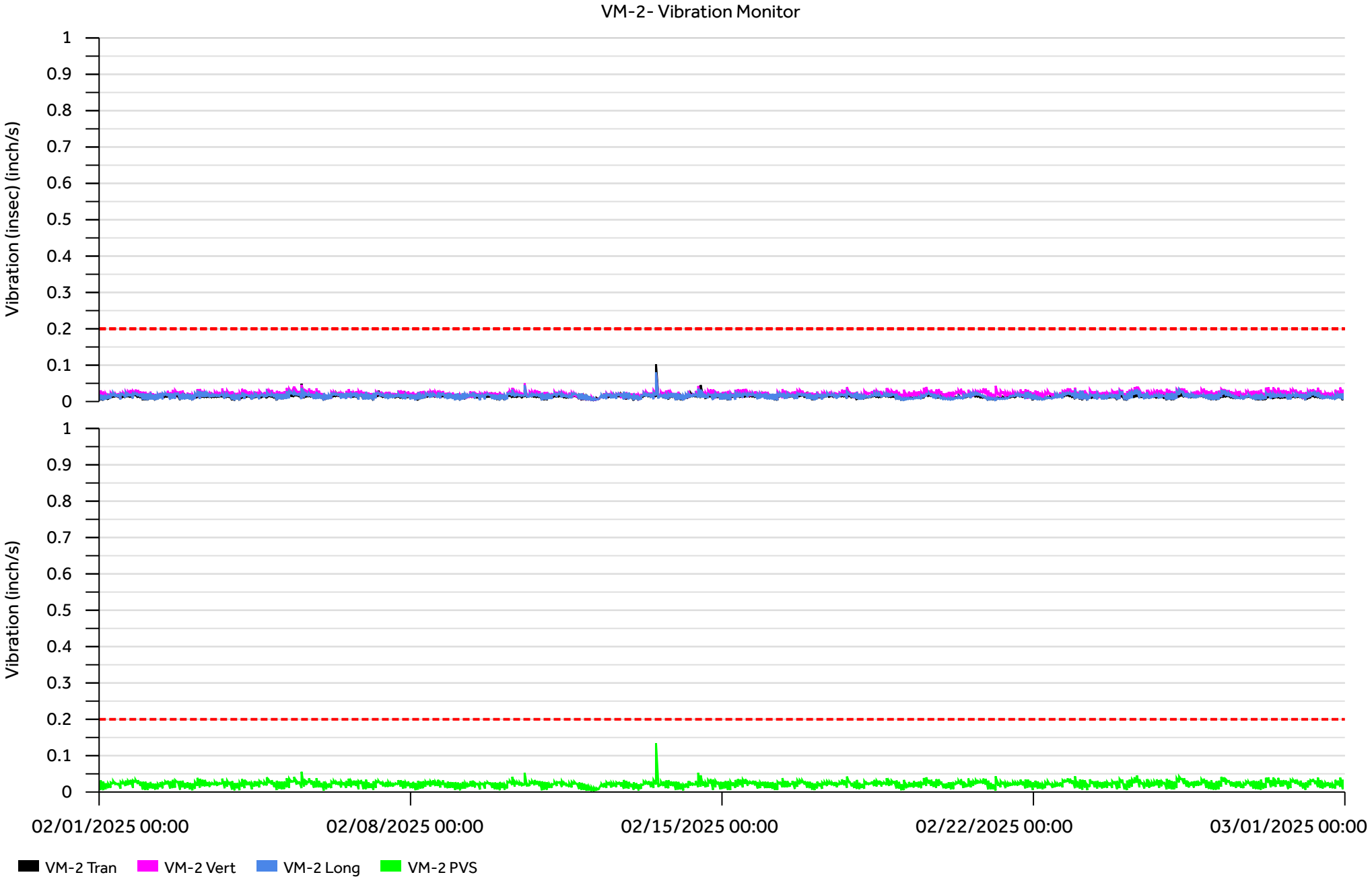
Summary tables contain values for working hours, after hours, and weekend time periods:

- 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.

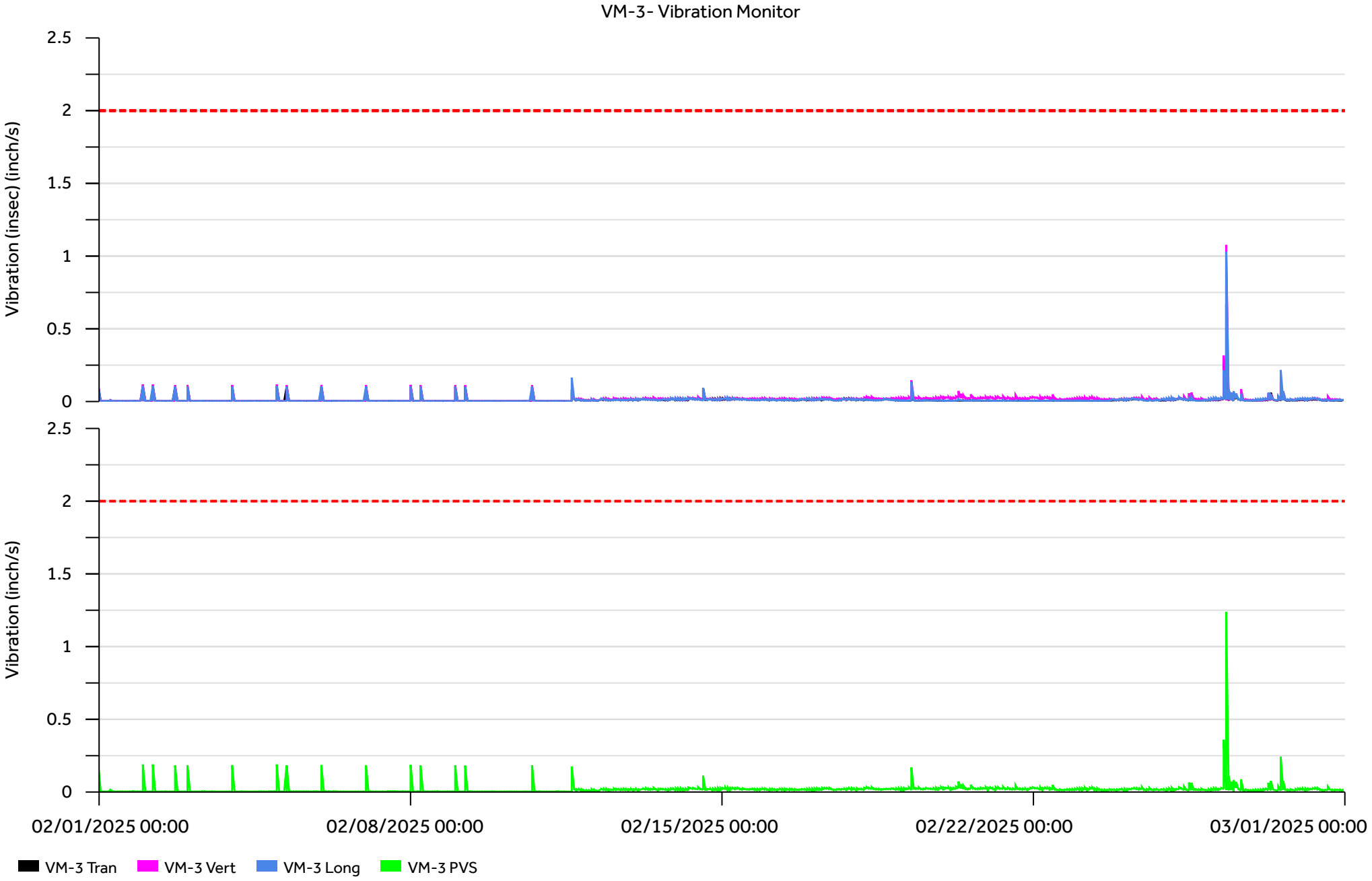
Graph 1


VM-1- Vibration Monitor
Vibration (insec) (inch/s)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
Vibration (inch/s)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
02/01/2025 00:00
02/08/2025 00:00
02/15/2025 00:00
02/22/2025 00:00
03/01/2025 00:00
VM-1 Tran
VM-1 Vert
VM-1 Long
VM-1 PVS

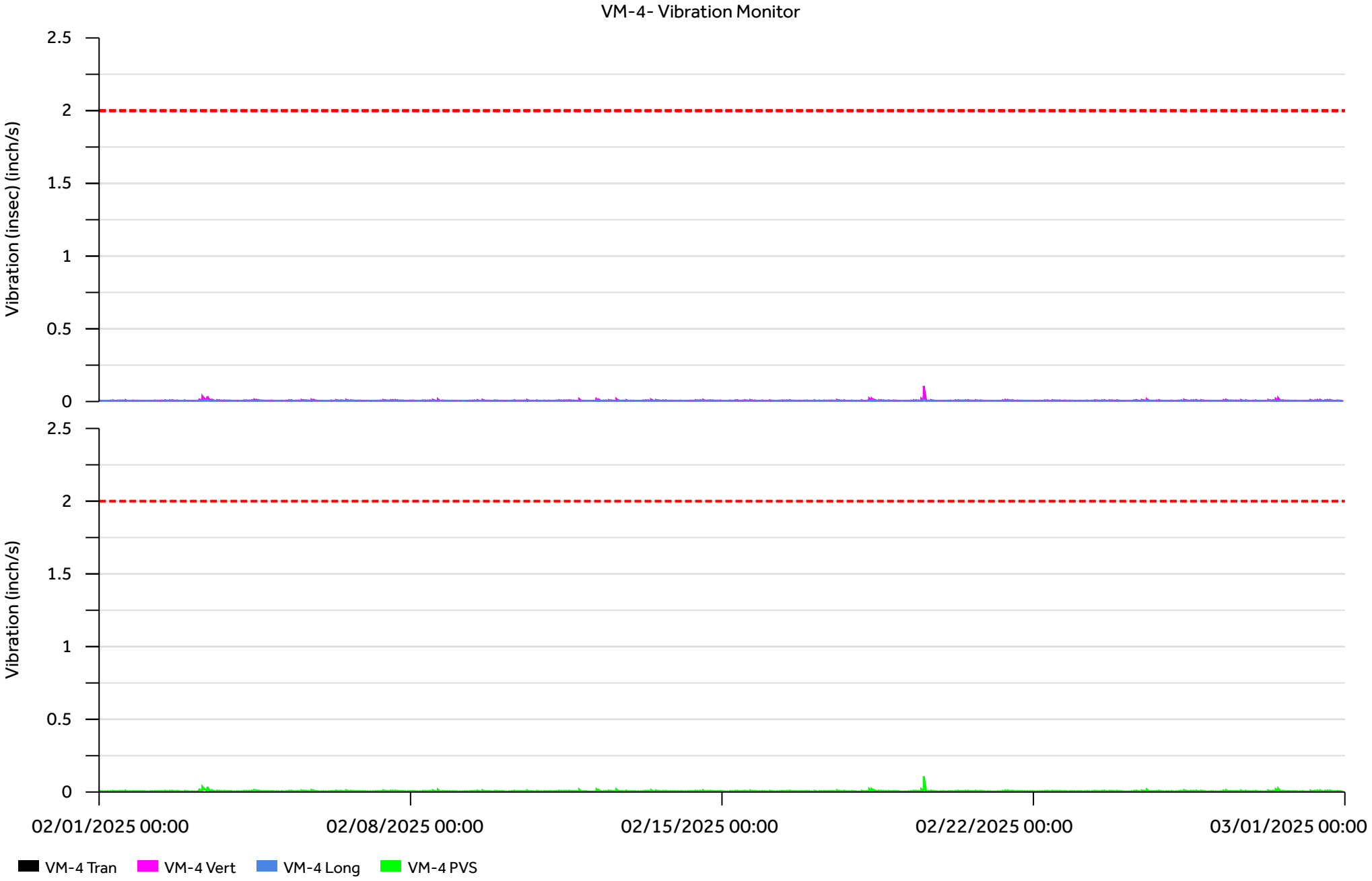
Graph 2


VM-2- Vibration Monitor
Vibration (insec) (inch/s)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
Vibration (inch/s)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
02/01/2025 00:00
02/08/2025 00:00
02/15/2025 00:00
02/22/2025 00:00
03/01/2025 00:00
VM-2 Tran
VM-2 Vert
VM-2 Long
VM-2 PVS

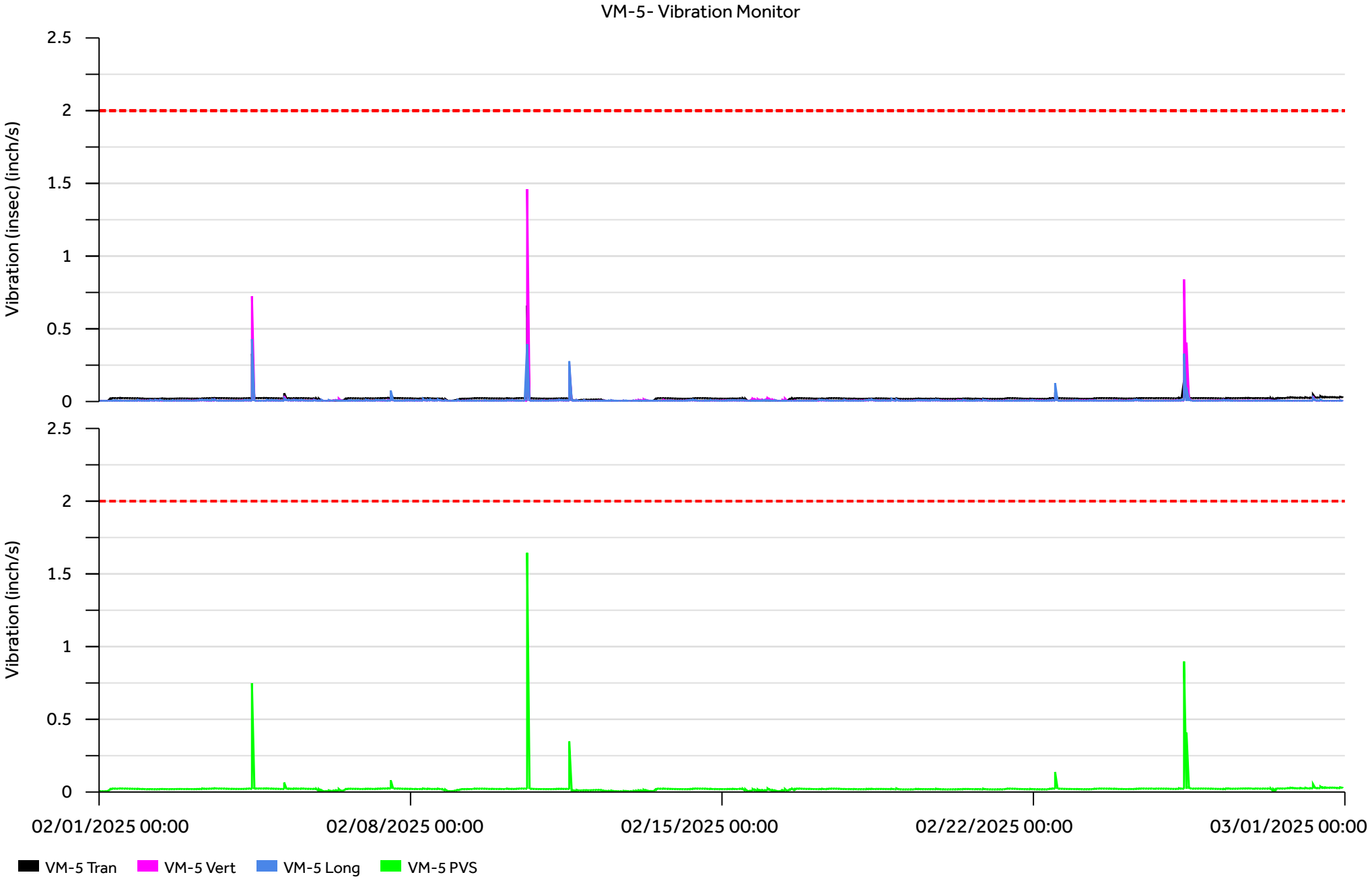
Graph 3


VM-3- Vibration Monitor
Vibration (insec) (inch/s)
2.5
2
1.5
1
0.5
0
Vibration (inch/s)
2.5
2
1.5
1
0.5
0
02/01/2025 00:00
02/08/2025 00:00
02/15/2025 00:00
02/22/2025 00:00
03/01/2025 00:00
VM-3 Tran
VM-3 Vert
VM-3 Long
VM-3 PVS

Graph 4

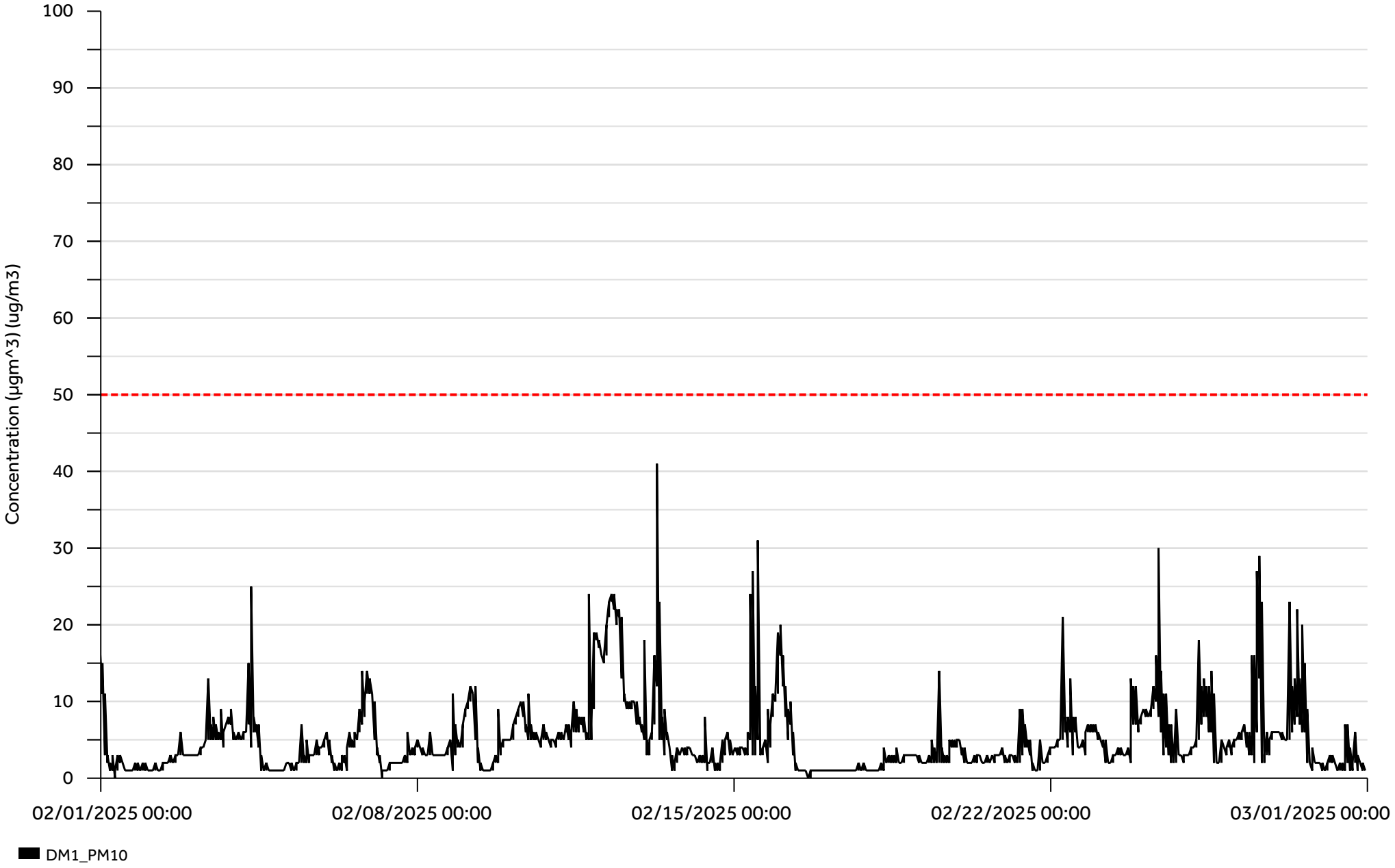

VM-4- Vibration Monitor
Vibration (insec) (inch/s)
2.5
2
1.5
1
0.5
0
Vibration (inch/s)
2.5
2
1.5
1
0.5
0
02/01/2025 00:00
02/08/2025 00:00
02/15/2025 00:00
02/22/2025 00:00
03/01/2025 00:00
VM-4 Tran
VM-4 Vert
VM-4 Long
VM-4 PVS

Graph 5


VM-5- Vibration Monitor
Vibration (insec) (inch/s)
2.5
2
1.5
1
0.5
0
Vibration (inch/s)
2.5
2
1.5
1
0.5
0
02/01/2025 00:00
02/08/2025 00:00
02/15/2025 00:00
02/22/2025 00:00
03/01/2025 00:00
VM-5 Tran
VM-5 Vert
VM-5 Long
VM-5 PVS

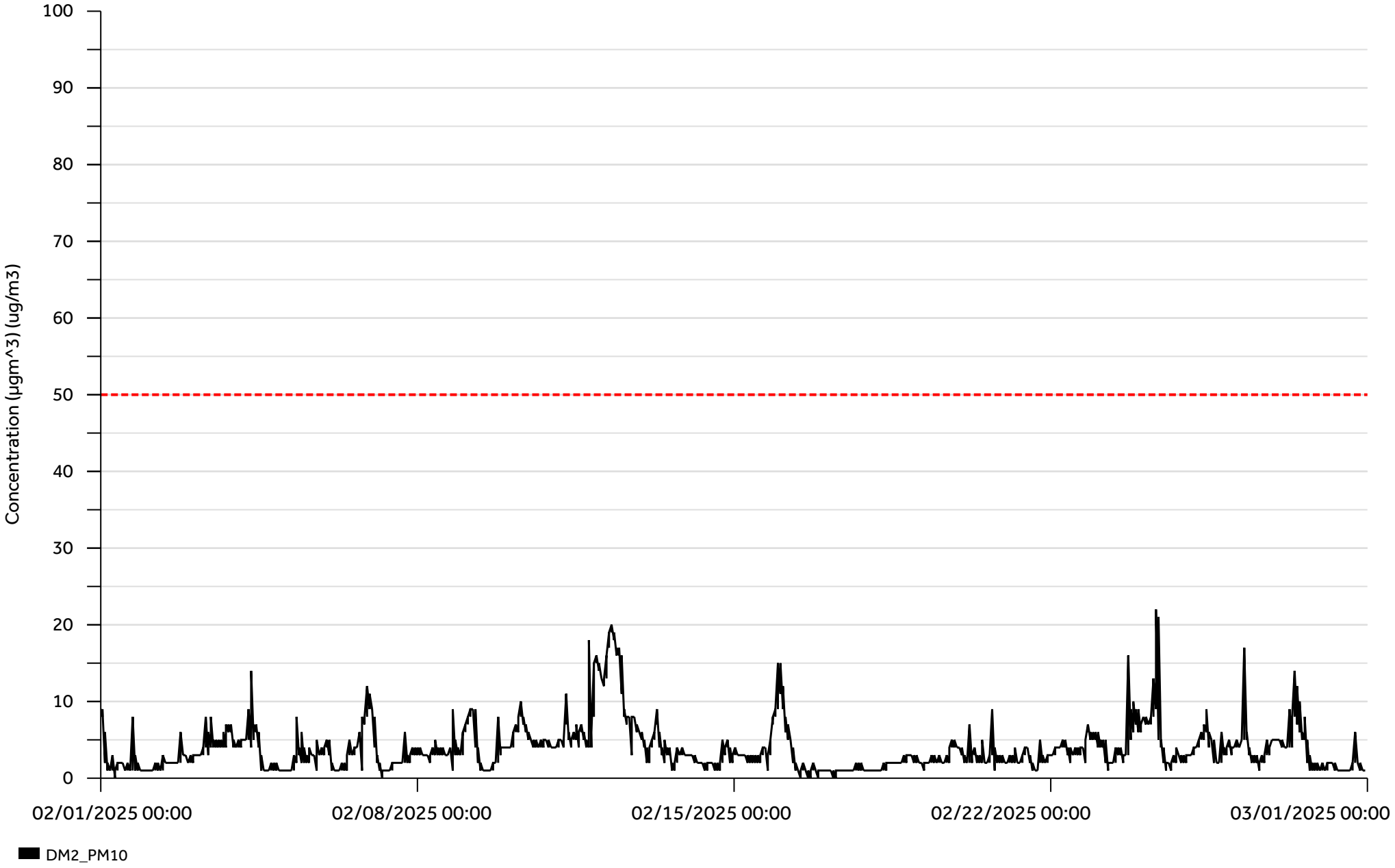
Graph 6

DM1 - PM10



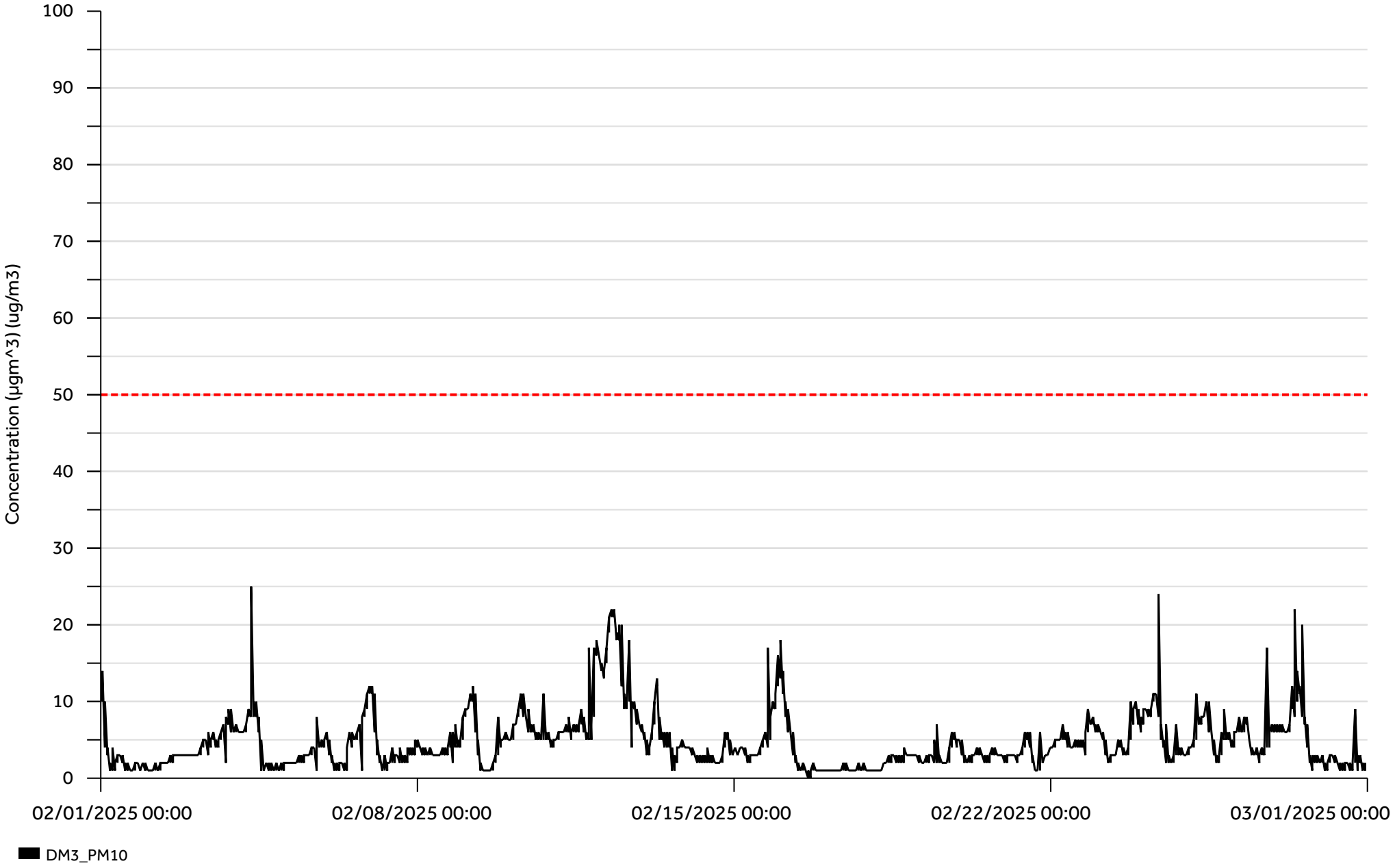
Graph 7

DM2-PM10



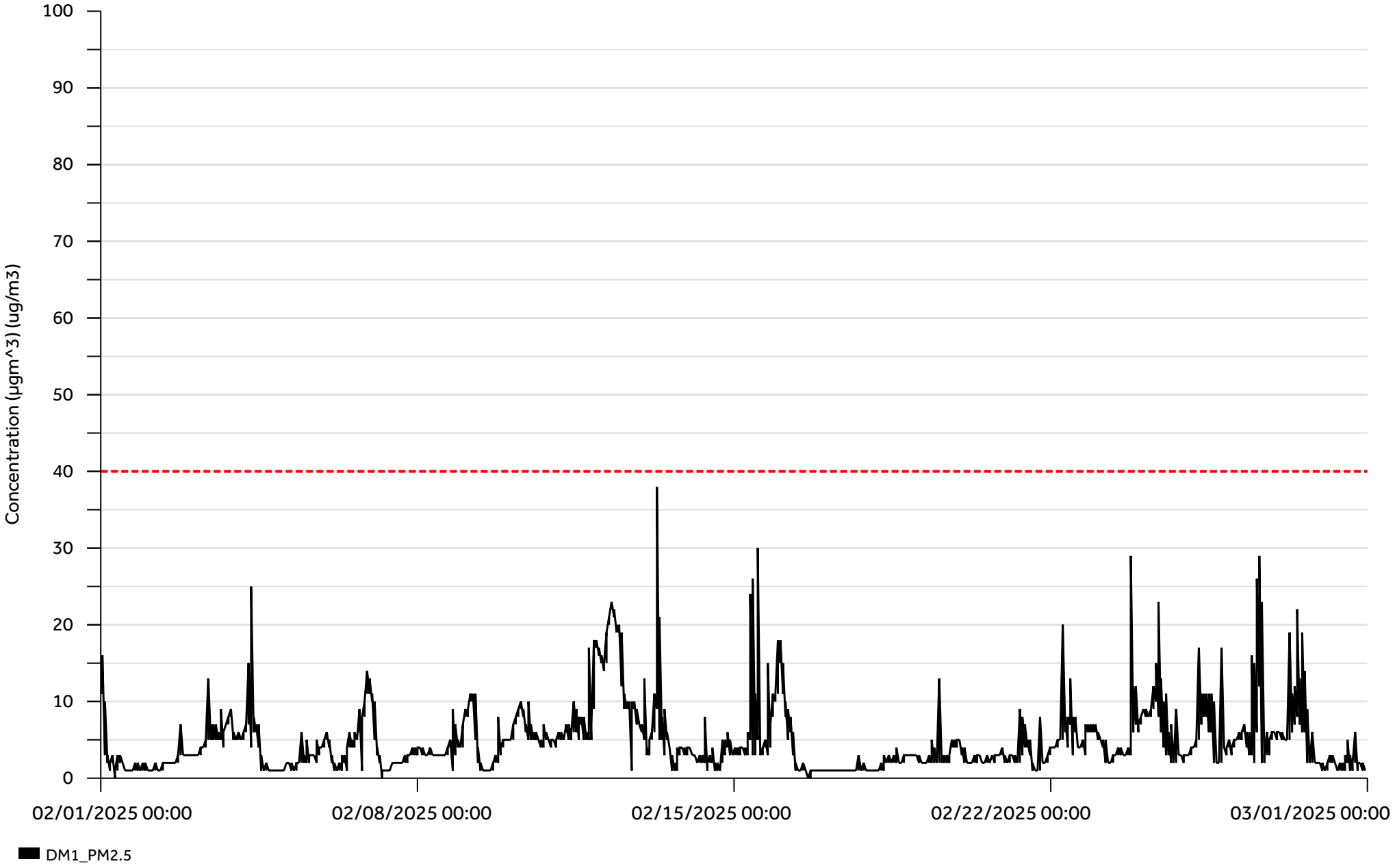
Graph 8

DM3-PM10



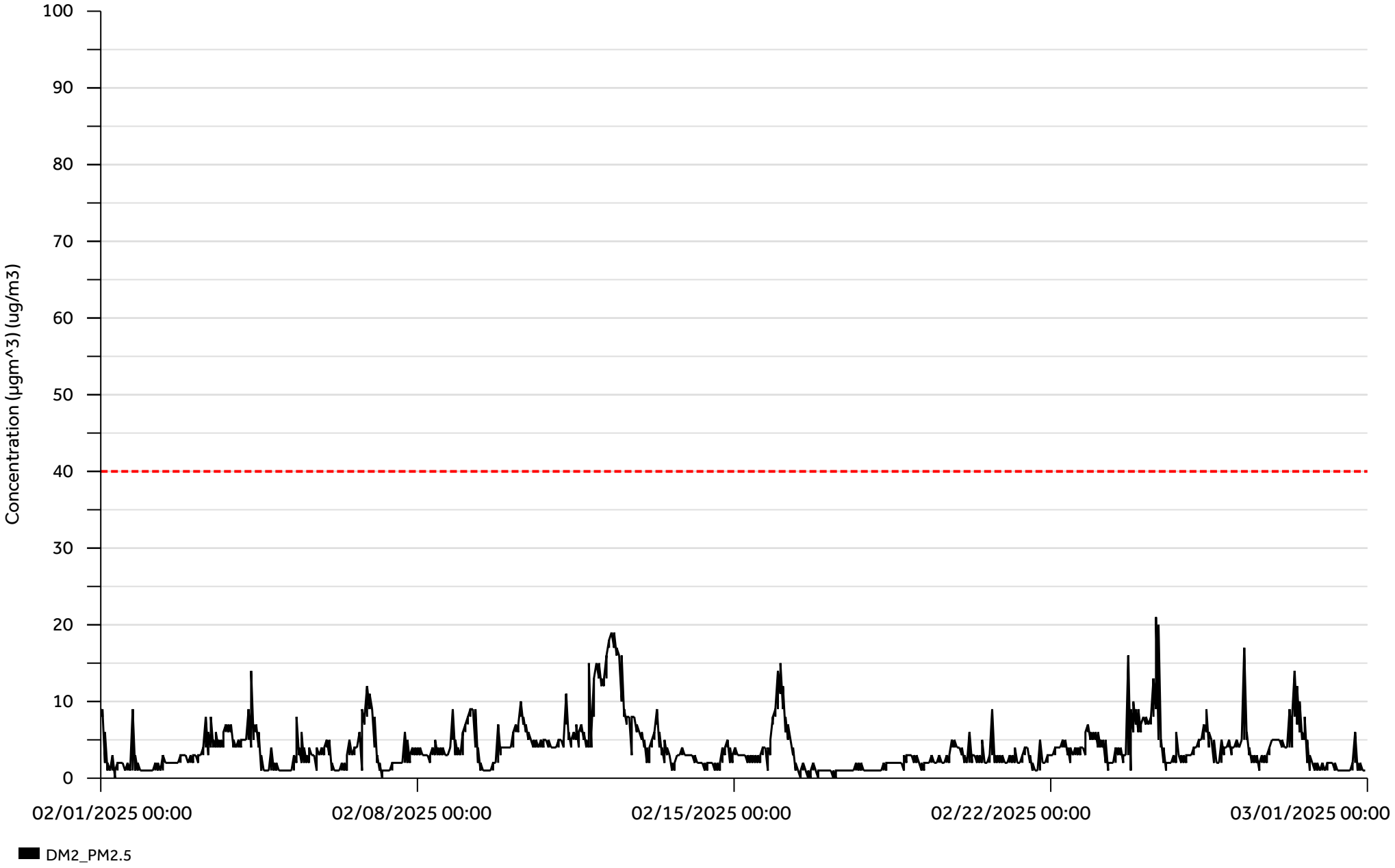
Graph 9

DM1-PM2.5



Graph 10

DM2-PM2.5



Graph 11

DM3-PM2.5