Northern Bus Garage
Noise, Vibration, and Dust Monitoring Report (March 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 March 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.

Numerous noise level exceedances at all hours of the day and all days of the week. Mic4 and Mic5 recorded their loudest exceedances 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

No operating issue with the monitoring instruments was identified.

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

There were 47 vibration exceedances in the month of March. Utility subcontractor was doing roadway repair along 14th St, throughout the month of March. Repair includes backfilling/vibratory rolling of new fill material. This operation took place in proximity to monitoring stations along 14th Street on the dates with exceedances at VM1, VM2, and VM3 (3/5, 3/11, 3/12, 3/13, 3/14, 3/18, 3/19, 3/21, 3/25, 3/26, 3/31). The exceedances at VM4 are a result of moving the fence/barrier at the location of the monitor to enable utility subcontractor's work on Iowa Avenue. This occurred on 3/4 and 3/12.

- VM1 – Exceedance with a reading of 0.216 in/sec on March 5 at 10:00.
- VM1 – Exceedance with a reading of 0.257 in/sec on March 13 at 09:00.
- VM1 – Exceedance with a reading of 0.307 in/sec on March 13 at 09:04.
- VM1 – Exceedance with a reading of 0.279 in/sec on March 13 at 09:11.
- VM1 – Exceedance with a reading of 0.319 in/sec on March 13 at 09:12.
- VM1 – Exceedance with a reading of 0.272 in/sec on March 13 at 09:19.
- VM1 – Exceedance with a reading of 0.412 in/sec on March 13 at 09:20.
- VM1 – Exceedance with a reading of 1.18 in/sec on March 13 at 15:07.
- VM1 – Exceedance with a reading of 0.221 in/sec on March 21 at 09:12.

- VM1 – Exceedance with a reading of 0.289 in/sec on March 21 at 09:13.
- VM2 – Exceedance with a reading of 1.03 in/sec on March 5 at 05:42.
- VM2 – Exceedance with a reading of 0.426 in/sec on March 11 at 07:25.
- VM2 – Exceedance with a reading of 0.231 in/sec on March 12 at 08:05.
- VM2 – Exceedance with a reading of 0.253 in/sec on March 12 at 08:22.
- VM2 – Exceedance with a reading of 0.357 in/sec on March 12 at 08:23.
- VM2 – Exceedance with a reading of 0.368 in/sec on March 12 at 14:08.
- VM2 – Exceedance with a reading of 0.206 in/sec on March 14 at 14:16.
- VM2 – Exceedance with a reading of 0.283 in/sec on March 19 at 12:00.
- VM2 – Exceedance with a reading of 2.36 in/sec on March 19 at 12:01.
- VM2 – Exceedance with a reading of 6.28 in/sec on March 19 at 12:02.
- VM2 – Exceedance with a reading of 0.280 in/sec on March 19 at 12:03.
- VM2 – Exceedance with a reading of 1.09 in/sec on March 19 at 12:04.
- VM2 – Exceedance with a reading of 1.24 in/sec on March 19 at 12:05.
- VM2 – Exceedance with a reading of 0.325 in/sec on March 19 at 12:06.
- VM2 – Exceedance with a reading of 0.389 in/sec on March 19 at 12:07.
- VM2 – Exceedance with a reading of 0.246 in/sec on March 19 at 12:07.
- VM2 – Exceedance with a reading of 0.236 in/sec on March 19 at 12:08.
- VM2 – Exceedance with a reading of 0.811 in/sec on March 19 at 12:09.
- VM2 – Exceedance with a reading of 1.20 in/sec on March 25 at 07:34.
- VM2 – Exceedance with a reading of 0.359 in/sec on March 26 at 07:26.
- VM2 – Exceedance with a reading of 0.272 in/sec on March 26 at 07:27.
- VM2 – Exceedance with a reading of 0.394 in/sec on March 26 at 07:28.
- VM2 – Exceedance with a reading of 0.237 in/sec on March 31 at 06:54.
- VM3 – Exceedance with a reading of 3.70 in/sec on March 19 at 11:46.
- VM3 – Exceedance with a reading of 2.97 in/sec on March 19 at 11:47.
- VM4 – Exceedance with a reading of 8.18 in/sec on March 4 at 12:03.
- VM4 – Exceedance with a reading of 8.18 in/sec on March 4 at 12:15.
- VM4 – Exceedance with a reading of 4.39 in/sec on March 4 at 13:13.
- VM4 – Exceedance with a reading of 2.05 in/sec on March 4 at 13:17.
- VM4 – Exceedance with a reading of 4.22 in/sec on March 4 at 13:17.
- VM4 – Exceedance with a reading of 3.53 in/sec on March 4 at 13:17.
- VM4 – Exceedance with a reading of 4.25 in/sec on March 4 at 13:17.
- VM4 – Exceedance with a reading of 3.39 in/sec on March 4 at 13:23.
- VM4 – Exceedance with a reading of 3.34 in/sec on March 4 at 13:23.
- VM4 – Exceedance with a reading of 2.22 in/sec on March 4 at 13:24.
- VM4 – Exceedance with a reading of 7.99 in/sec on March 4 at 13:25.
- VM4 – Exceedance with a reading of 3.54 in/sec on March 12 at 09:12.

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 twenty (20) Air Quality exceedances in the month of March. The exceedances at DM1 are due to soil being loaded

and stored in proximity to DM1. The exceedances at DM2 are due to the utility subcontractor performing roadway repair along 14th Street. This operation can create dust when the dry asphalt is swept.

- DM1 – Exceedance of the PM2.5 limit with a reading of 63 µg/m^3 on March 10 at 09:38.
- DM1 – Exceedance of the PM2.5 limit with a reading of 42 µg/m^3 on March 11 at 09:08.
- DM1 – Exceedance of the PM2.5 limit with a reading of 43 µg/m^3 on March 13 at 15:53.
- DM1 – Exceedance of the PM10 limit with a reading of 56 µg/m^3 on March 9 at 20:00.
- DM1 – Exceedance of the PM10 limit with a reading of 65 µg/m^3 on March 10 at 09:38.
- DM1 – Exceedance of the PM10 limit with a reading of 92 µg/m^3 on March 12 at 07:23.
- DM2 – Exceedance of the PM2.5 limit with a reading of 145 µg/m^3 on March 10 at 13:07.
- DM2 – Exceedance of the PM2.5 limit with a reading of 56 µg/m^3 on March 11 at 09:22.
- DM2 – Exceedance of the PM2.5 limit with a reading of 59 µg/m^3 on March 11 at 09:37.
- DM2 – Exceedance of the PM2.5 limit with a reading of 67 µg/m^3 on March 11 at 10:37.
- DM2 – Exceedance of the PM2.5 limit with a reading of 40 µg/m^3 on March 12 at 07:22.
- DM2 – Exceedance of the PM2.5 limit with a reading of 132 µg/m^3 on March 13 at 11:37.
- DM2 – Exceedance of the PM2.5 limit with a reading of 122 µg/m^3 on March 19 at 09:22.
- DM2 – Exceedance of the PM10 limit with a reading of 160 µg/m^3 on March 10 at 13:07.
- DM2 – Exceedance of the PM10 limit with a reading of 57 µg/m^3 on March 11 at 09:22.
- DM2 – Exceedance of the PM10 limit with a reading of 60 µg/m^3 on March 11 at 09:37.
- DM2 – Exceedance of the PM10 limit with a reading of 68 µg/m^3 on March 11 at 10:37.
- DM2 – Exceedance of the PM10 limit with a reading of 63 µg/m^3 on March 12 at 07:22.
- DM2 – Exceedance of the PM10 limit with a reading of 140 µg/m^3 on March 13 at 11:37.
- DM2 – Exceedance of the PM10 limit with a reading of 130 µg/m^3 on March 19 at 09:22.

Figure 1: Vibration and Noise Monitor Location Plan

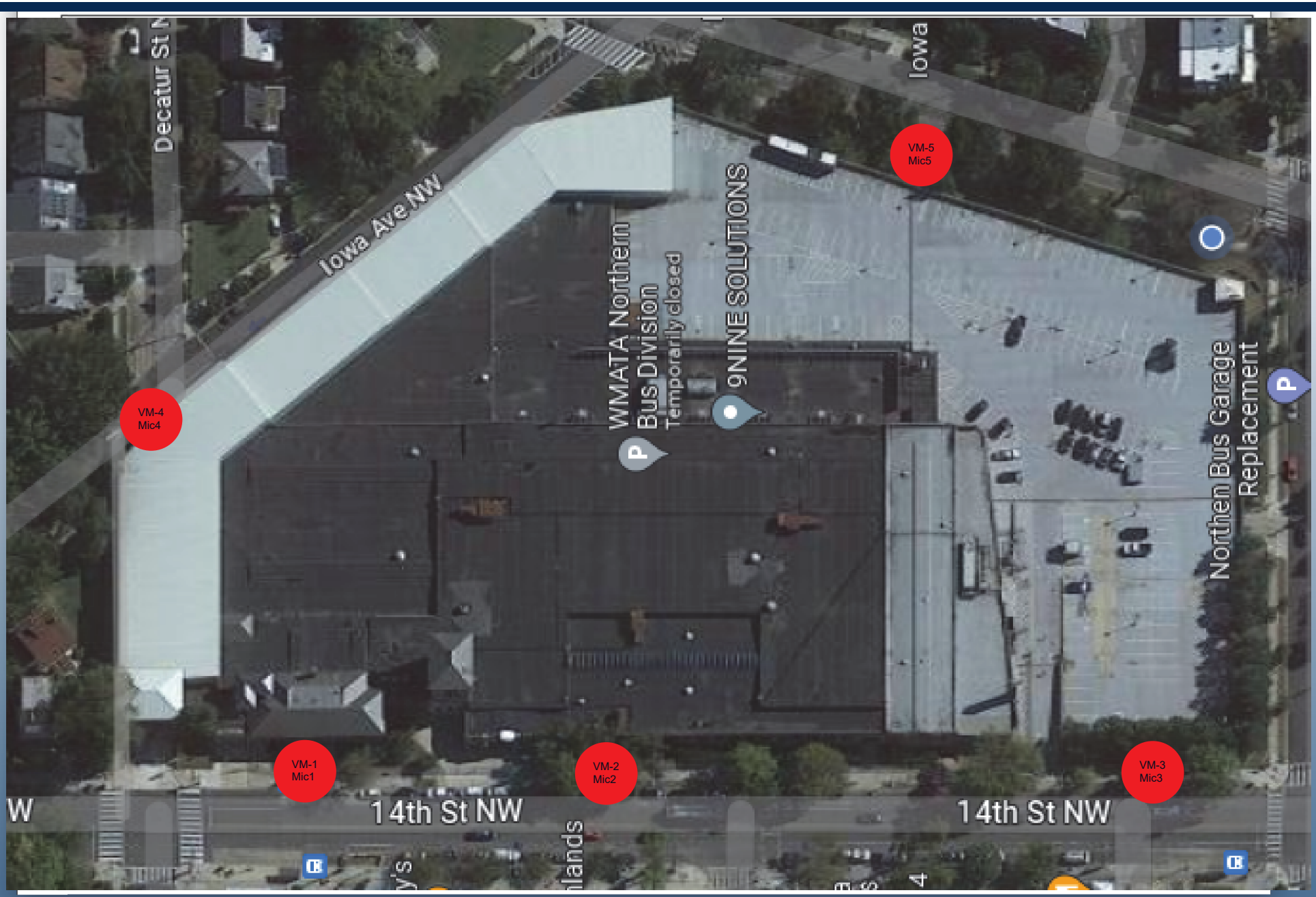


Figure 2: Dust Monitor Location Plan

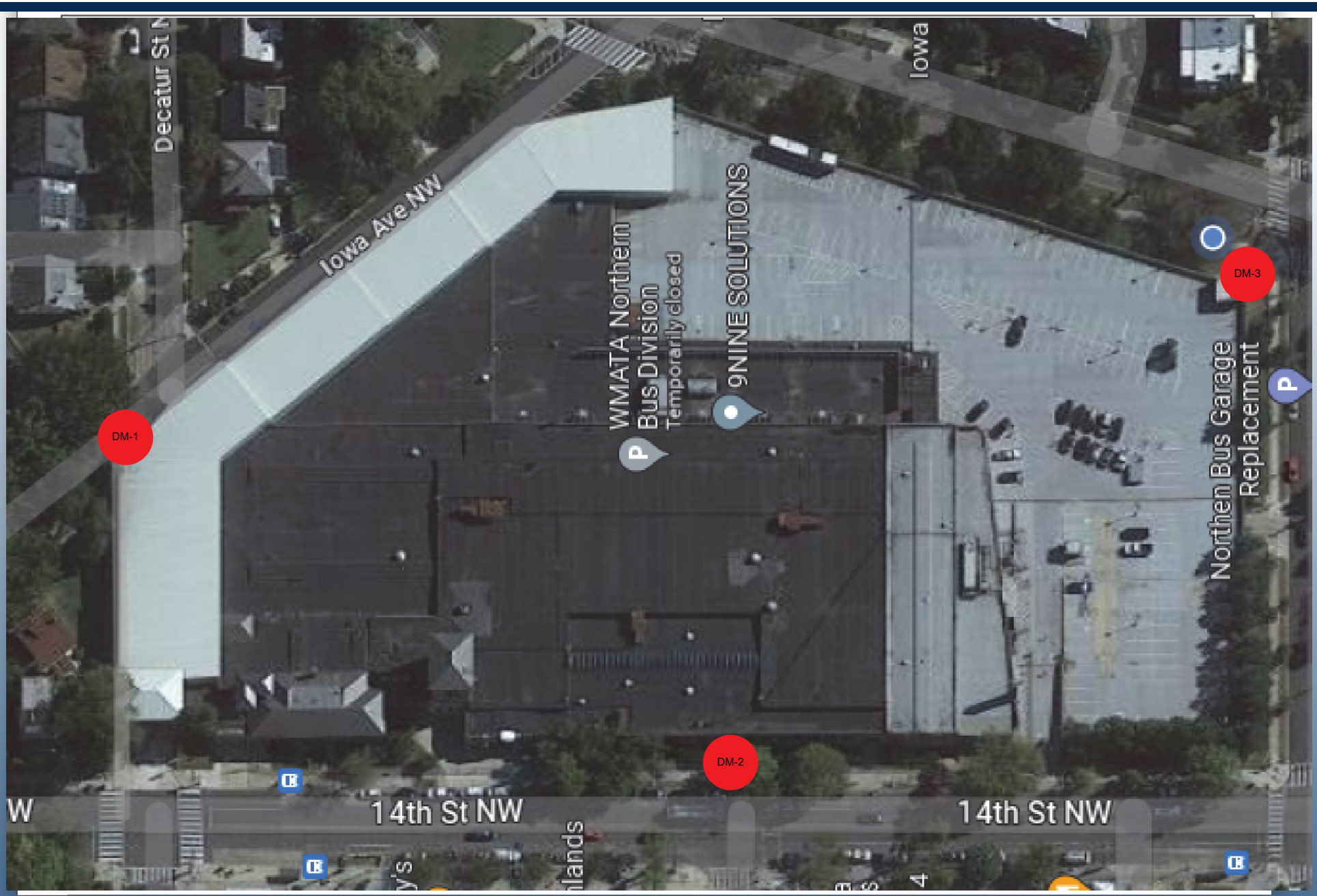


Table 1: Noise Summaries

VM1-MIC		
	Exceedance	Percentage
Work hours	648	58.17%
After hours	248	22.26%
Weekends	218	19.57%
Total	1114	100%

VM1-MIC			
	Work hours	After hours	Weekends
Lmax (dBA)	117.9	108.4	109.8
Lmin (dBA)	88.5	53.8	50.7
L10 (dBA)	103	79	73
L90 (dBA)	90	57	65
Leq (dBA)	96.6	76.3	80.1

VM2-MIC		
	Exceedance	Percentage
Work hours	483	72.41%
After hours	104	15.59%
Weekends	80	11.99%
Total	667	100%

VM2-MIC			
	Work hours	After hours	Weekends
Lmax (dBA)	115	107.6	107.7
Lmin (dBA)	83.9	62.3	52.1
L10 (dBA)	100	74	69
L90 (dBA)	87	65	54
Leq (dBA)	94.9	79.1	77.3

VM3-MIC		
	Exceedance	Percentage
Work hours	577	57.47%
After hours	222	22.11%
Weekends	205	20.42%
Total	1004	100%

VM3-MIC			
	Work hours	After hours	Weekends
Lmax (dBA)	113.5	106.3	109.1
Lmin (dBA)	87.1	53.2	48.9
L10 (dBA)	95	76	71
L90 (dBA)	88	56	53
Leq (dBA)	89.6	77.7	82.4

VM4-MIC		
	Exceedance	Percentage
Work hours	756	92.65%
After hours	34	4.17%
Weekends	26	3.19%
Total	816	100%

VM4-MIC			
	Work hours	After hours	Weekends
Lmax (dBA)	111	112	100.6
Lmin (dBA)	95.5	69.6	50.2
L10 (dBA)	102	82	64
L90 (dBA)	97	71	55
Leq (dBA)	97.9	80.8	70.3

VM5-MIC		
	Exceedance	Percentage
Work hours	143	52.00%
After hours	64	23.27%
Weekends	68	24.73%
Total	275	100%

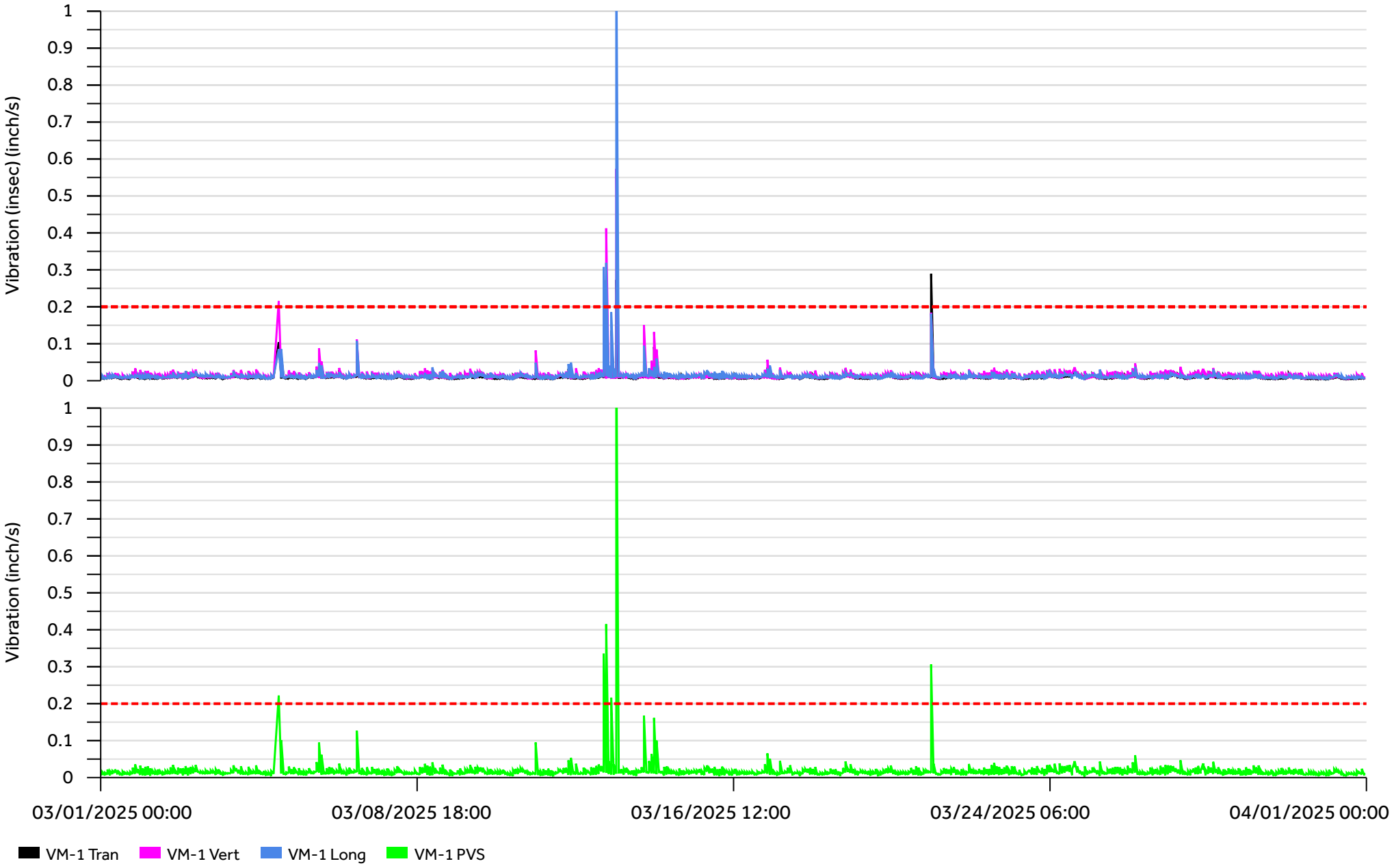
VM5-MIC			
	Work hours	After hours	Weekends
Lmax (dBA)	109.3	110.5	111.7
Lmin (dBA)	63	53.8	44
L10 (dBA)	85	70	66
L90 (dBA)	81	58	50
Leq (dBA)	82.7	81	79.7

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.

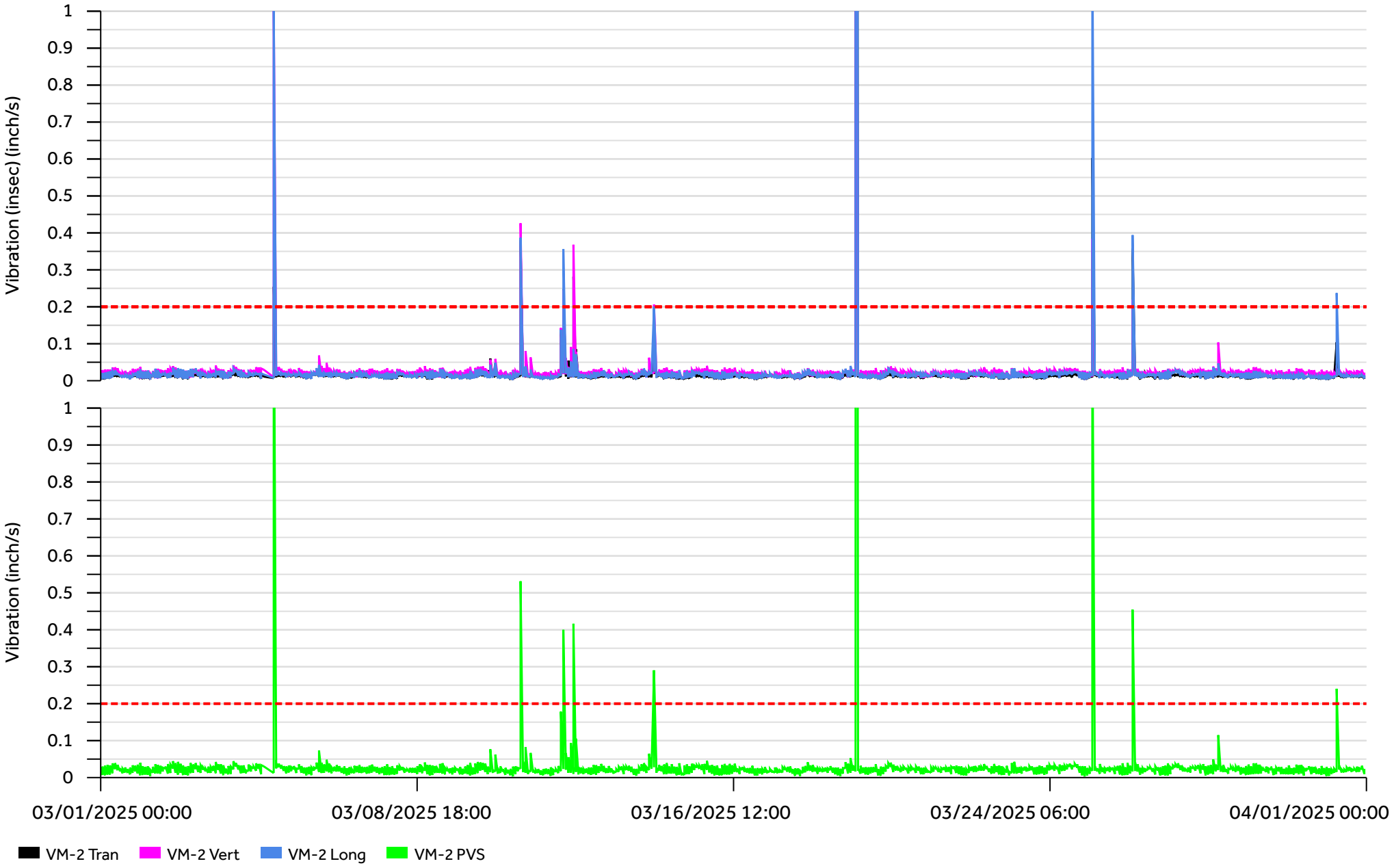
Graph 1

VM-1- Vibration Monitor



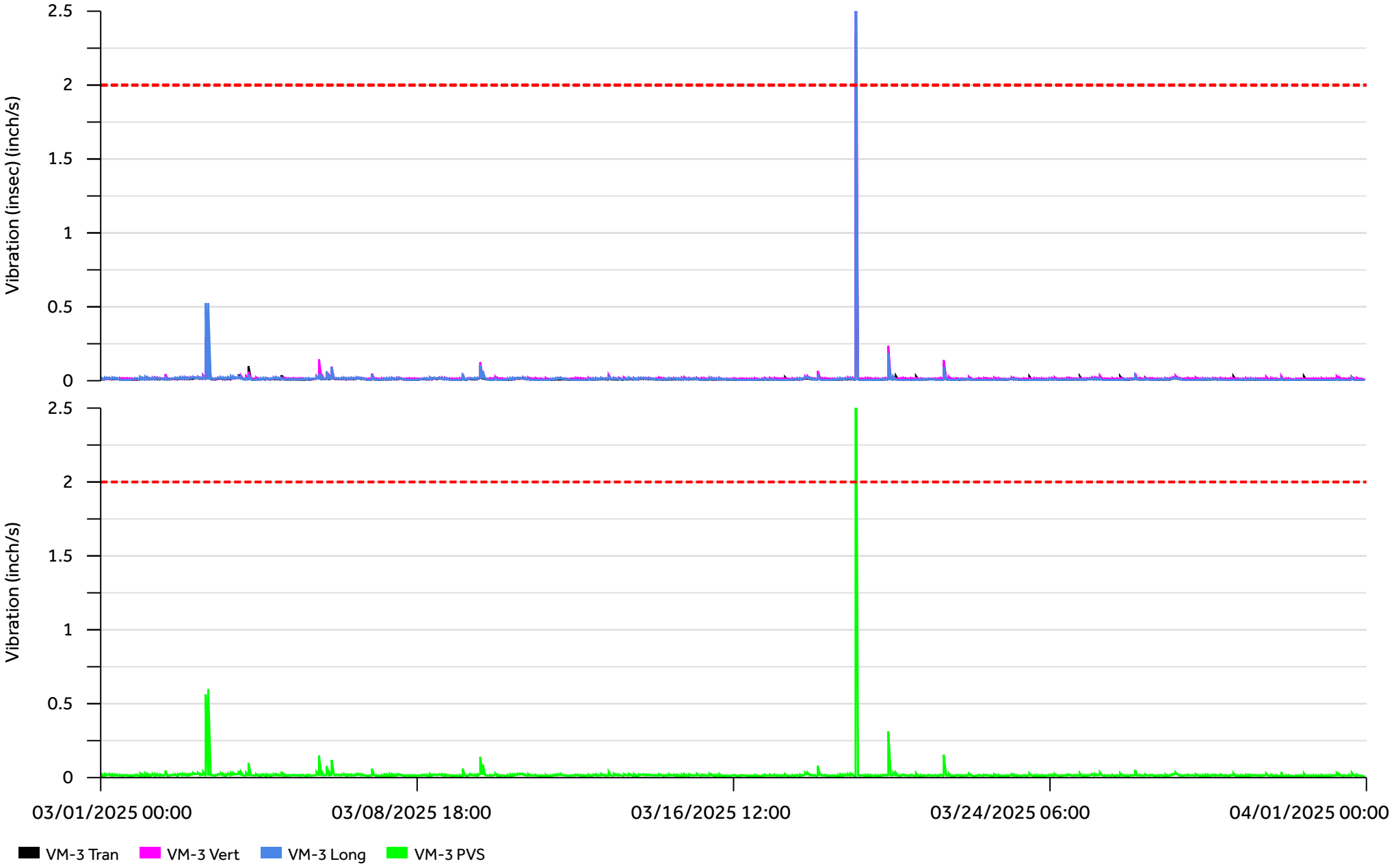
Graph 2

VM-2- Vibration Monitor



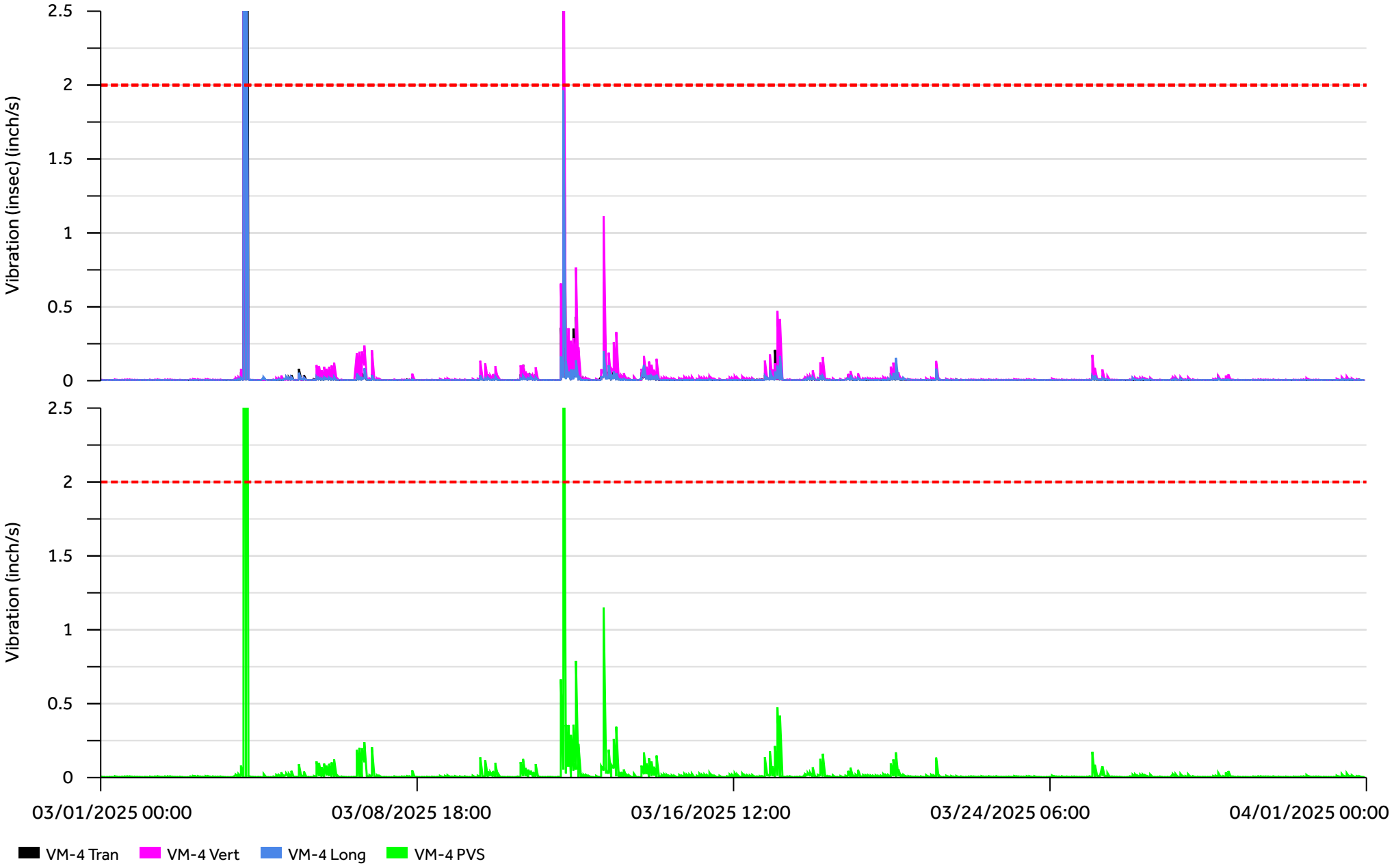
Graph 3

VM-3- Vibration Monitor



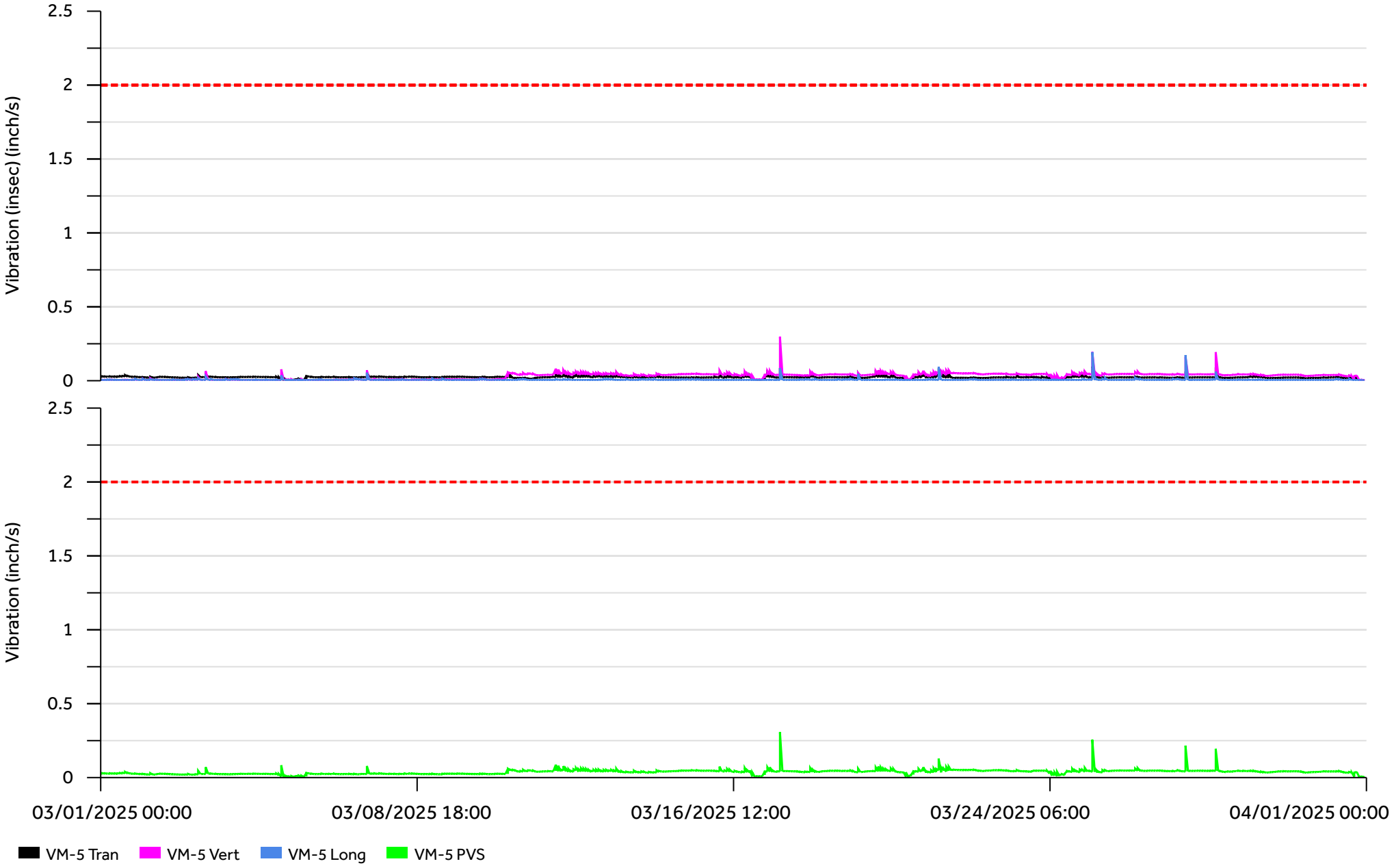
Graph 4

VM-4- Vibration Monitor



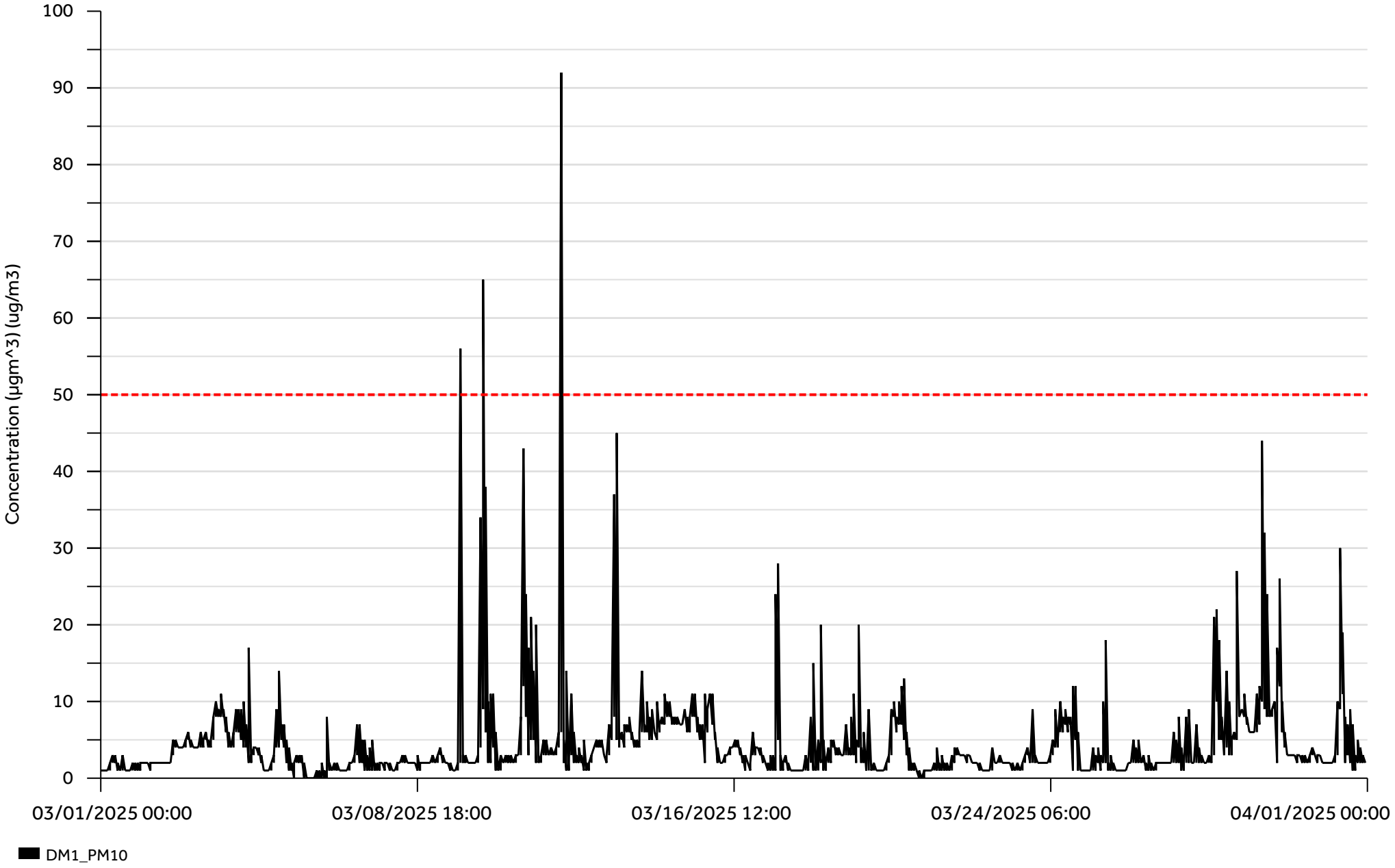
Graph 5

VM-5- Vibration Monitor



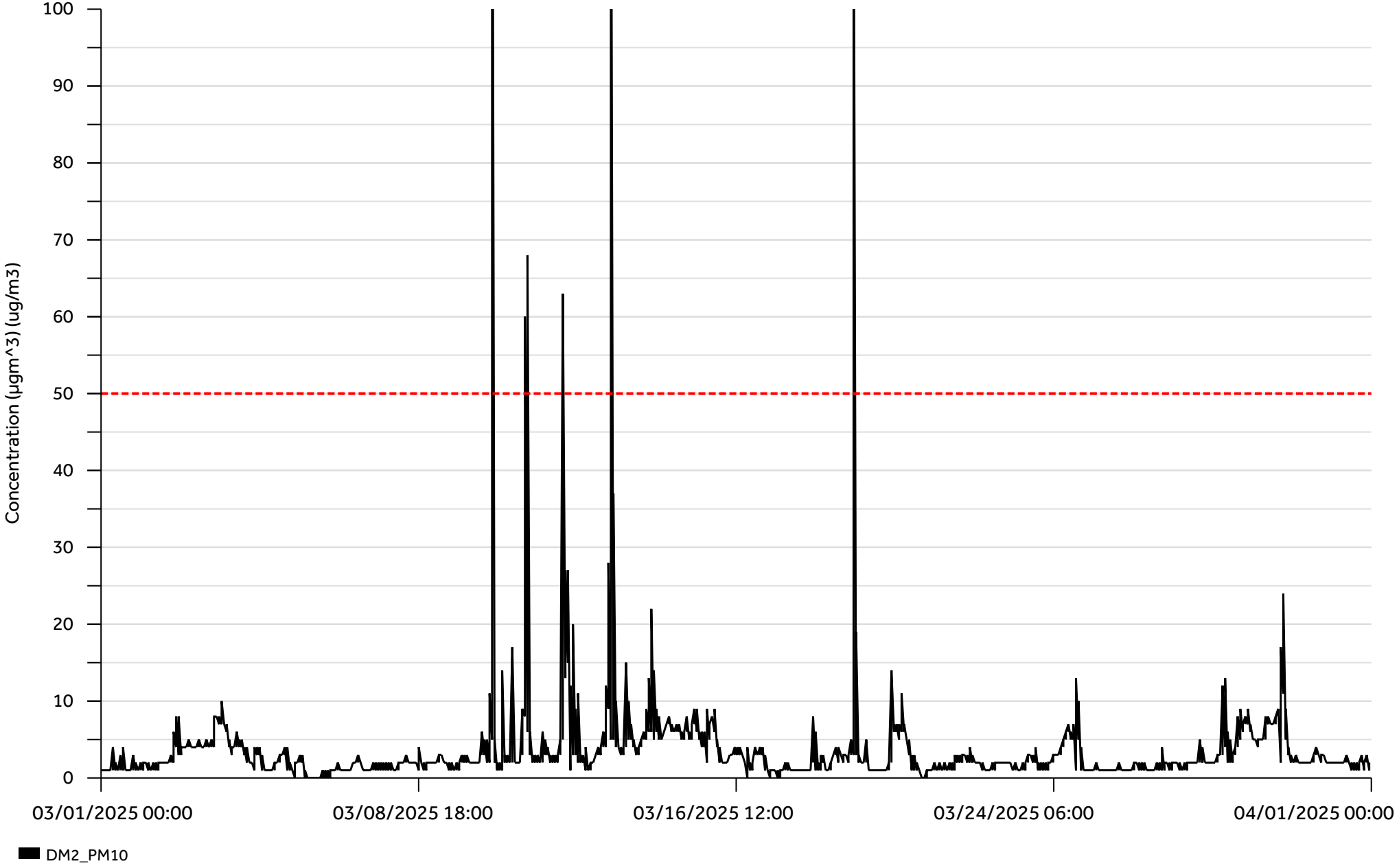
Graph 6

DM1 - PM10



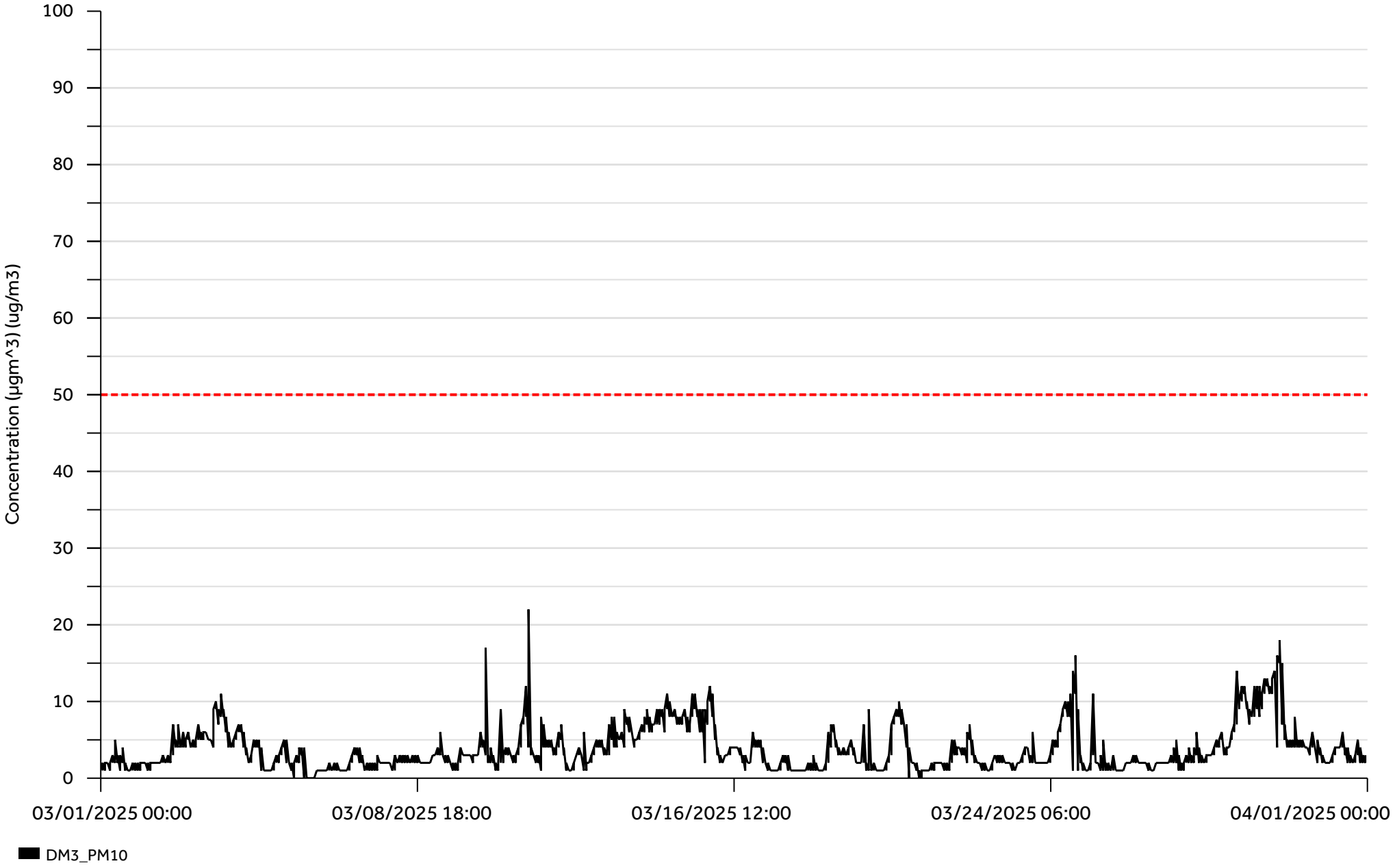
Graph 7

DM2-PM10



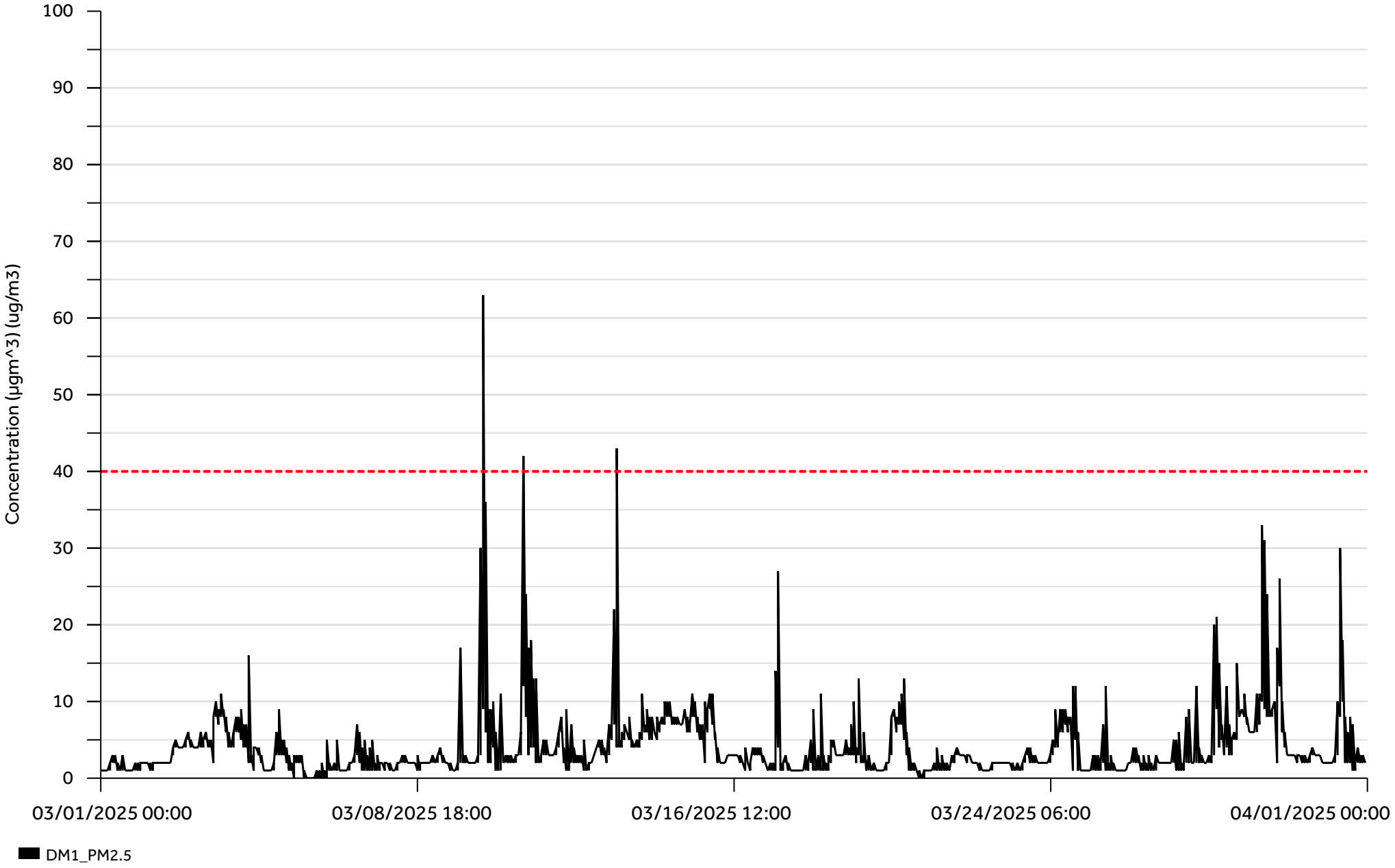
Graph 8

DM3-PM10



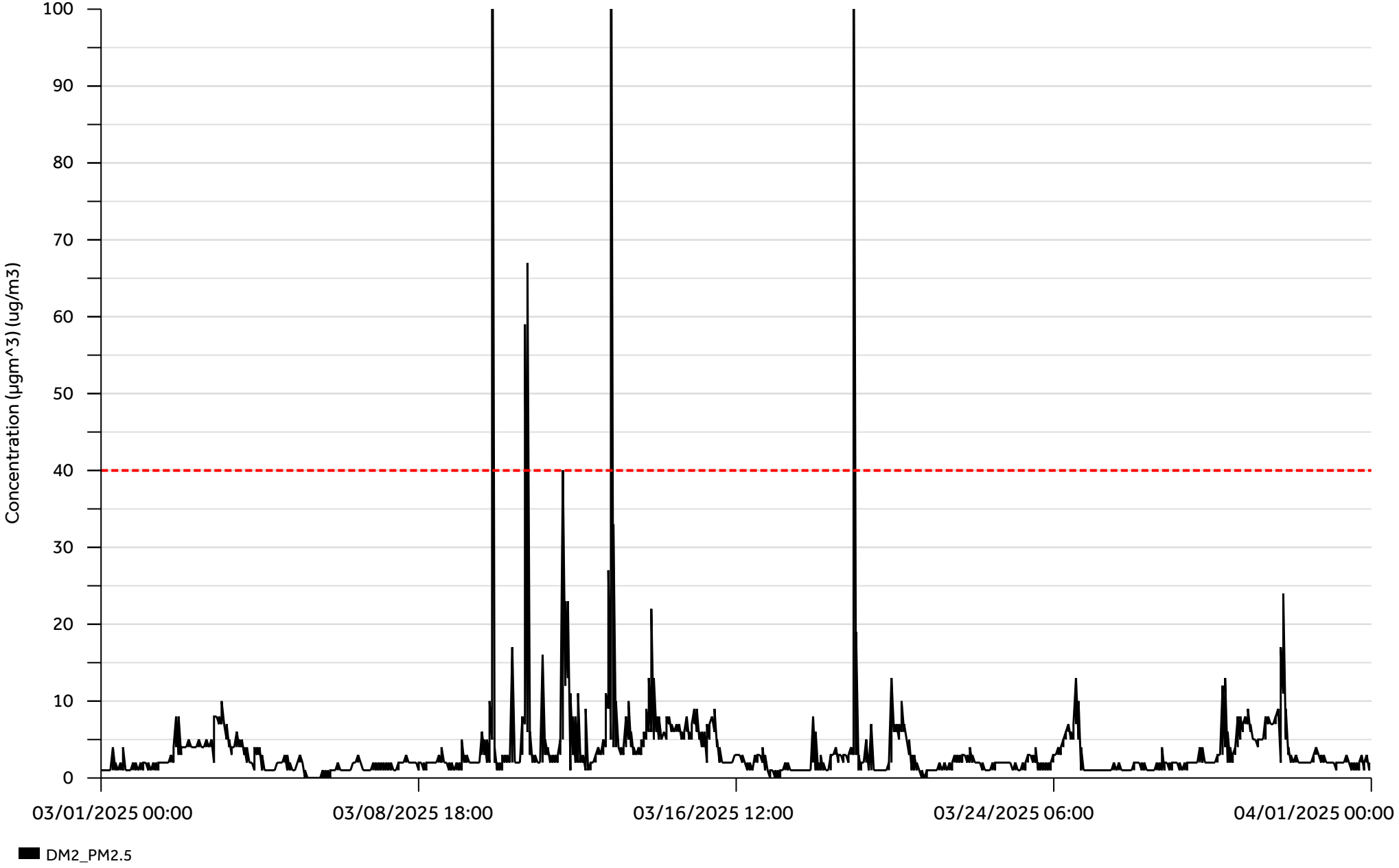
Graph 9

DM1-PM2.5



Graph 10

DM2-PM2.5



Graph 11

DM3-PM2.5