Sequence III Surveillance Panel Meeting

Teleconference
Thursday July 20, 2017 12:00 – 01:00 CST
WebEx sent separately

Agenda

As the host, I have not in the past and will not in the future record any ASTM meeting and there are no "authorized persons" that may record an ASTM meeting. As a reminder to everyone the recording of ASTM meetings is prohibited.

1.0) Attendance

2.0) Chairman Comments

3.0) Approval of minutes

3.1) Minutes from 06/22/2017 WebEx Conference Meeting

Approved without comment.

4.0) IIIH Action Items

4.1) Lab Severity Task Force Report – **Bowden**

Jason updated the surveillance panel about the task force actions. There were two action items that were closed by task force last week:

1. One lab will insulate their exhaust system and will present data in the next TF meeting.
2. Blow-by collection was closed out.

There was a motion passed in the task force meeting regarding blow-by data reporting:

MOTION 1: Ankit Chaudhry / Ed Altman – The IIIH Severity Task Force recommends the Seq. III Surveillance Panel modify the IIIH test procedure regarding the collection of JTEC blow-by data. New Section 11.8.7.2 - Leave valve open for a minimum of 2 minutes and then average the final 30 seconds of 1 second data and report. Passed Unanimous at Task force

There was some discussions around the topic of data sampling frequency and when the actual averaging of the blowby started. The wording was adjusted and a revised motion was presented by Jason:

Motion: Jason Bowden / Ankit Chaudhry - New Section 11.8.7.2 to be added to the procedure – Open valve for a minimum of 1 minute 30 seconds to stabilize conditions, after stabilization then report average of the next 30 seconds data (minimum of 1 second data frequency). Effective next reference test in each stand.

Motion passed with 2 waives.

4.2) IIIF to IIIH correlation update - **Stockwell**

Operational data review of tests and recommendation on whether or not the tests are operationally valid.

Bill Buscher presented Intertek operational data on 433-2 and 1006-2. The RO 1006-2 did not complete full 90 hours due to significant viscosity increase. Ankit Chaudhry presented SwRI's operational data on 433-2 and 1006-2. All four tests had positive QI's for all of the critical parameters.

There was a discussion if the test at Intertek or SwRI were representative of actual IIIH test since there the tests were run on different batch codes. Concerns were raised that Intertek's tests were run on the BC3 pistons and the Southwest tests on BC4. Intertek's tests ran on BC3 hardware using a stand that was calibrated with BC2 hardware. Additionally, there were concerns that the 1006-2 test at IAR did not go full length so it really can't be considered a valid test although it was conducted ion a valid manner up to the point of termination. The end goal is to correlate the IIIF to the IIIH test so the group wants to make sure that the data that is used is representative.

There was some discussion around extracting useful information regarding the 1006-2 runs. Despite the fact that the IAR run terminated early we could conclude that both oils exhibited a viscosity "break". Unfortunately the engine oil pressure curves from the two tests did not show the tell-tale "dip" which has been used in the past to confirm the break. Pat Lang mentioned that you can also determine if an oil breaks by looking at the FTIP oxidation/nitration trends.

Bill Buscher stated that he would discuss with his management the possibility of Intertek rerun their tests on the BC4 hardware at no charge to the industry. Robert Stockwell expressed his appreciation for this offer but commented that Intertek ran the original tests exactly the way that they were asked; unfortunately the timing was off with the piston batch change in the middle of the two testing groups.

Jim Rutherford and Kevin O'Malley did express their concerns on what the stats group could actually conclude from the current data set. Thom Smith (Chairman of CLOG) stated that his preference is that the tests that we run on the BC-3 pistons at Intertek be rerun. Bob Campbell also stated that his preference would be for IAR to rerun their two tests.

This topic will be discussed further in the next meeting which is schedule for August 3rd.

The meeting was ended at this point due to time and the need for others to attend the LSPI/TCW conference call that had already started.

4.3) ASTM Procedure (seems like a few of our updates from earlier this year did not make it into the balloted procedure)

5.0) Old Business

?

6.0) New Business

?

7.0) Review / Update Scope and Objectives

8.0) Next Meeting

August 3rd, 2017.

9.0) Meeting Adjourned

ASTM Sequence III Surveillance Panel (22 Voting members) date: 7-20-2017

Signature RT Stockwell

Name/Address		Phone/Fax/Email		
✓ Jorge Agudelo	Y	jorge.agudelo@bp.com	Voting Member	Present____
? BOB Ed Altman	Y	ed.altman@aftonchemical.com	Voting Member	Present____
✓ Jeff Betz	Y	jeff.betz@fcagroup.com	Voting Member	Present____
✓ Jason Bowden	Y	jhbowden@ohtech.com	Voting Member	Present____
✓ Richard Grundza	W	reg@astmtmc.cmu.edu	Voting Member	Present____
? RICHARD ✓ Jeff Hsu, PE	Y	j.hsu@shell.com	Voting Member	Present____
✓ Teri Kowalski	Y	teri.kowalski@tema.toyota.com	Voting Member	Present____
✓ Dan Lanctot	Y	dlanctot@tei-net.com	Voting Member	Present____
✓ Patrick Lang	Y	plang@swri.org	Voting Member	Present____
✓ Dave Passmore	Y	dpassmore@imtsind.com	Voting Member	Present____
? MERYN Michael Raney		michael.p.raney@gm.com	Voting Member	Present____
✓ Andrew Ritchie	Y	andrew.ritchie@infineum.com	Voting Member	Present____
Ron Romano		rromano@ford.com	Voting Member	Present____
Cliff Salvesen		clifford.r.salvesen@exxonmobil.com	Voting Member	Present____
✓ Amol Savant	Y	acsavant@valvoline.com	Voting Member	Present____
SUB Addison Schweitzer	Y	addison.schweitzer@intertek.com	Voting Member	Present____
Greg Shank		greg.shank@volvo.com	Voting Member	Present____
Kaustav Sinha, Ph.D.	Y	LFNQ@chevron.com	Voting Member	Present____
Scott Stap		scott.stap@tgidirect.com	Voting Member	Present____
✓ George Szappanos	Y	george.szappanos@lubrizol.com	Voting Member	Present____
✓ Haiying Tang	Y	HT146@chrysler.com	Voting Member	Present____
✓ Prasad Tumati	W	ptumati@jhaltermann.com	Voting Member	Present____

Blowby 30 hour avg

ASTM Sequence III Surveillance Panel (22 Voting members) date:

Name/Address	Phone/Fax/Email		Signature
✓ Ricardo Affinito	affinito@chevron.com	N-V Member	Present_____
Art Andrews	arthur.t.andrews@exxonmobil.com	N-V Member	Present_____
Robert Bacchi	robert.bacchi@basf.com	N-V Member	Present_____
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✓ Doyle Boese	doyle.boese@infineum.com	N-V Member	Present_____
Adam Bowden	adbowden@ohtech.com	N-V Member	Present_____
Dwight H. Bowden	dhbowden@ohtech.com	N-V Member	Present_____
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✓ Jerome A. Brys	jerome.brys@lubrizol.com	N-V Member	Present_____
Jessica Buchanan	jessica.buchanan@lubrizol.com	N-V Member	Present_____
✓ Bill Buscher III	william.buscher@intertek.com	N-V Member	Present_____
✓ Bob Campbell	bob.campbell@aftonchemical.com	N-V Member	Present_____
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✓ Lisa Dingwell	Lisa.Dingwell@AftonChemical.com	N-V Member	Present_____
✓ Todd Dvorak	todd.dvorak@aftonchemical.com	N-V Member	Present_____
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Joe Franklin	joe.franklin@intertek.com	N-V Member	Present_____
✓ Gordon Farnsworth	gordon.farnsworth@infineum.com	N-V Member	Present_____
Rolfe Hartley	rolfehartley@gmail.com	N-V Member	Present_____
✓ Karin E. Haumann	karin.haumann@shell.com	N-V Member	Present_____

1/27/17

ASTM Sequence III Surveillance Panel (22 Voting members) date:

Name/Address	Phone/Fax/Email		Signature
Martin Heimrich	martin.heimrich@swri.org	N-V Member	Present_____
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Eric Johnson	eric.r.johnson@gm.com	N-V Member	Present_____
✓ Travis Kostan	travis.kostan@swri.org	N-V Member	Present_____
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Hirano Satoshi	satoshi_hirano_aa@mail.toyota.co.jp	N-V Member	Present_____
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Chris Taylor	chris.taylor@vpracingfuels.com	N-V Member	Present_____

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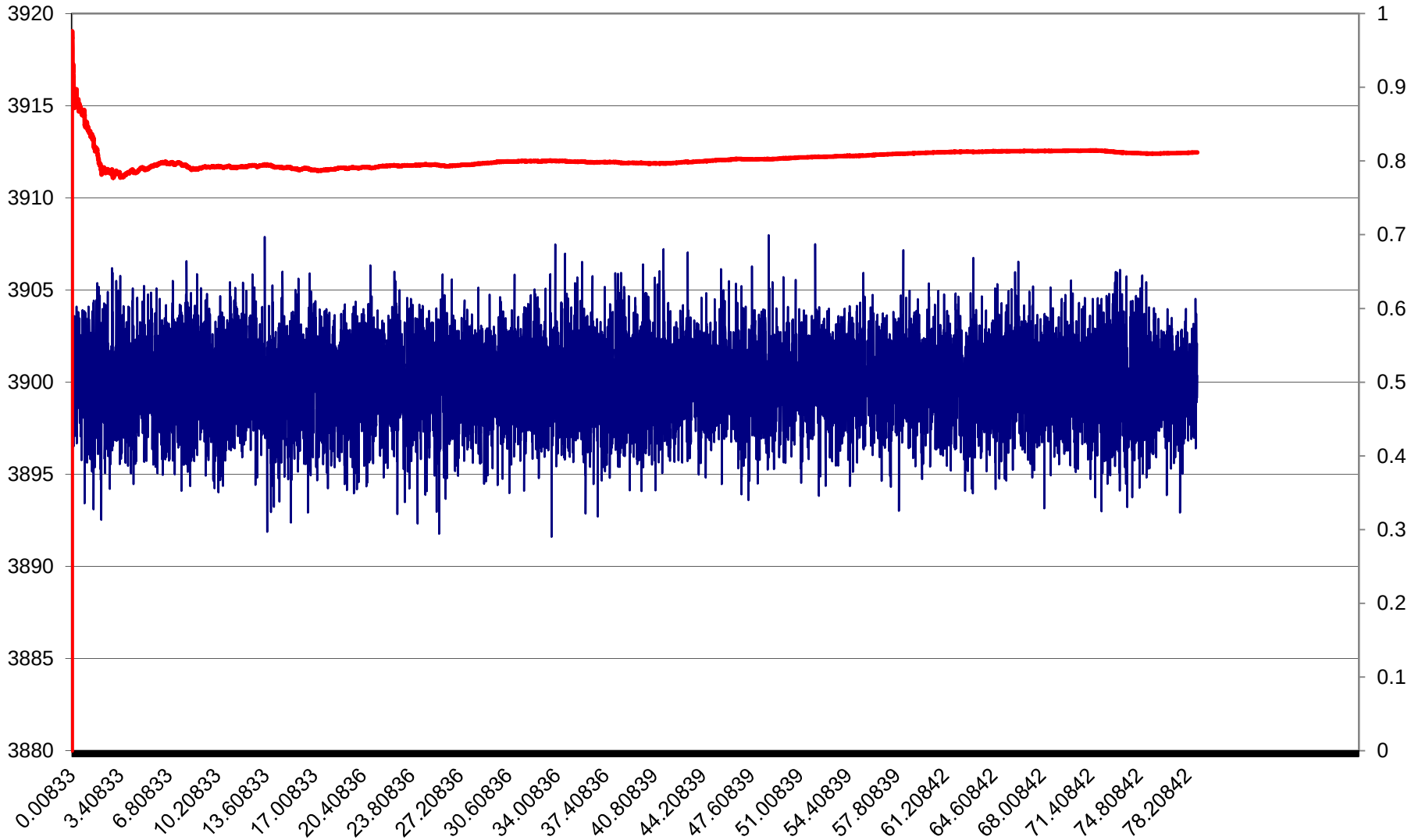
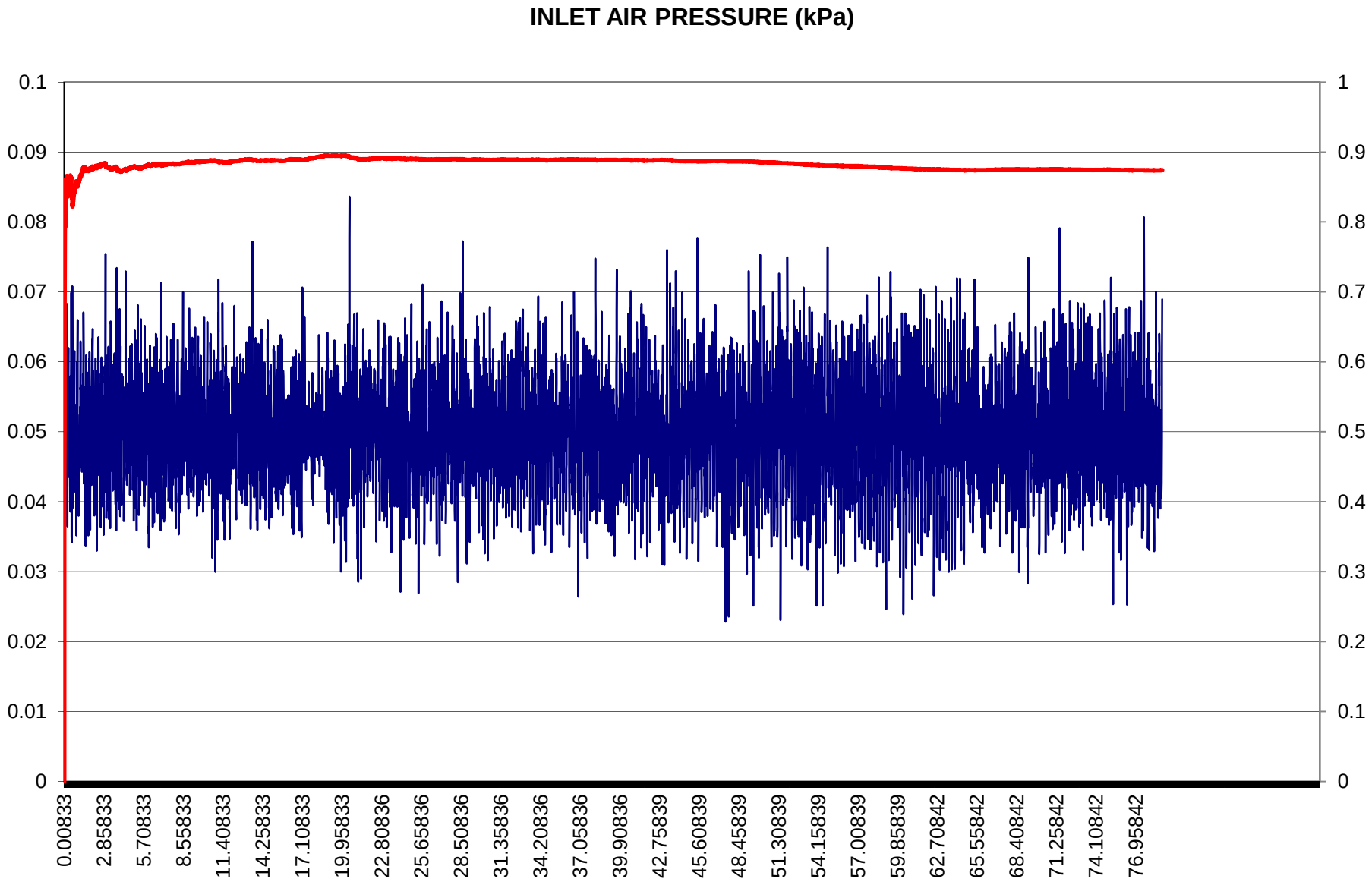
Name/Address	Phone/Fax/Email	Signature	
Ben Weber	bweber1@sat.rr.com	N-V Member	Present_____
Angela Willis	angela.p.willis@gm.com	N-V Member	Present_____

Updated 20170602

v Mervyn

ENGINE SPEED (RPM)




INLET AIR PRESSURE (kPa)
0.1
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0.00833
2.85833
5.70833
8.55833
11.40833
14.25833
17.10833
19.95833
22.80836
25.65836
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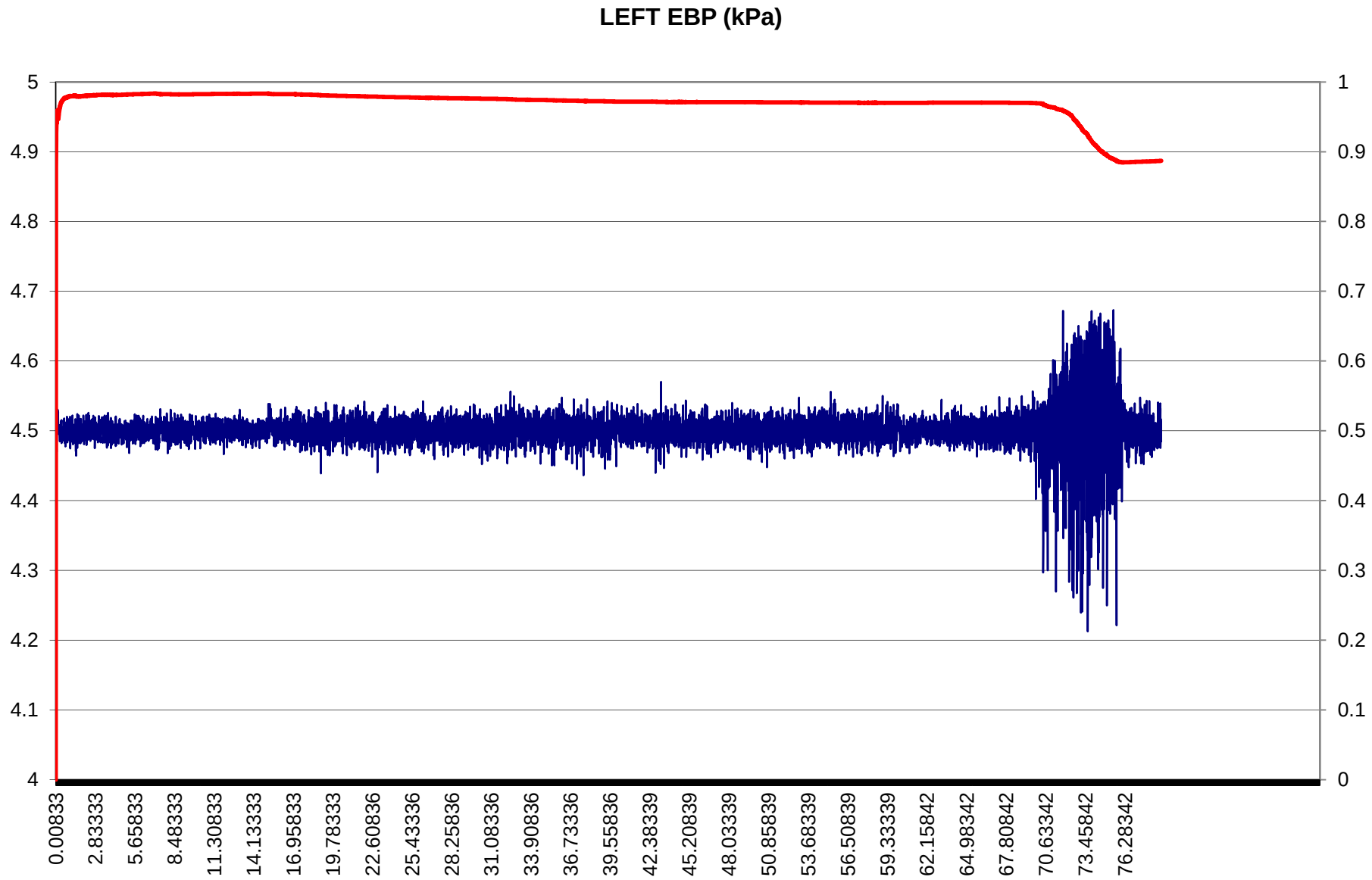
LEFT EBP (kPa)
5
4.9
4.8
4.7
4.6
4.5
4.4
4.3
4.2
4.1
4
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0.00833
2.83333
5.65833
8.48333
11.30833
14.13333
16.95833
19.78333
22.60836
25.43336
28.25836
31.08336
33.90836
36.73336
39.55836
42.38339
45.20839
48.03339
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64.98342
67.80842
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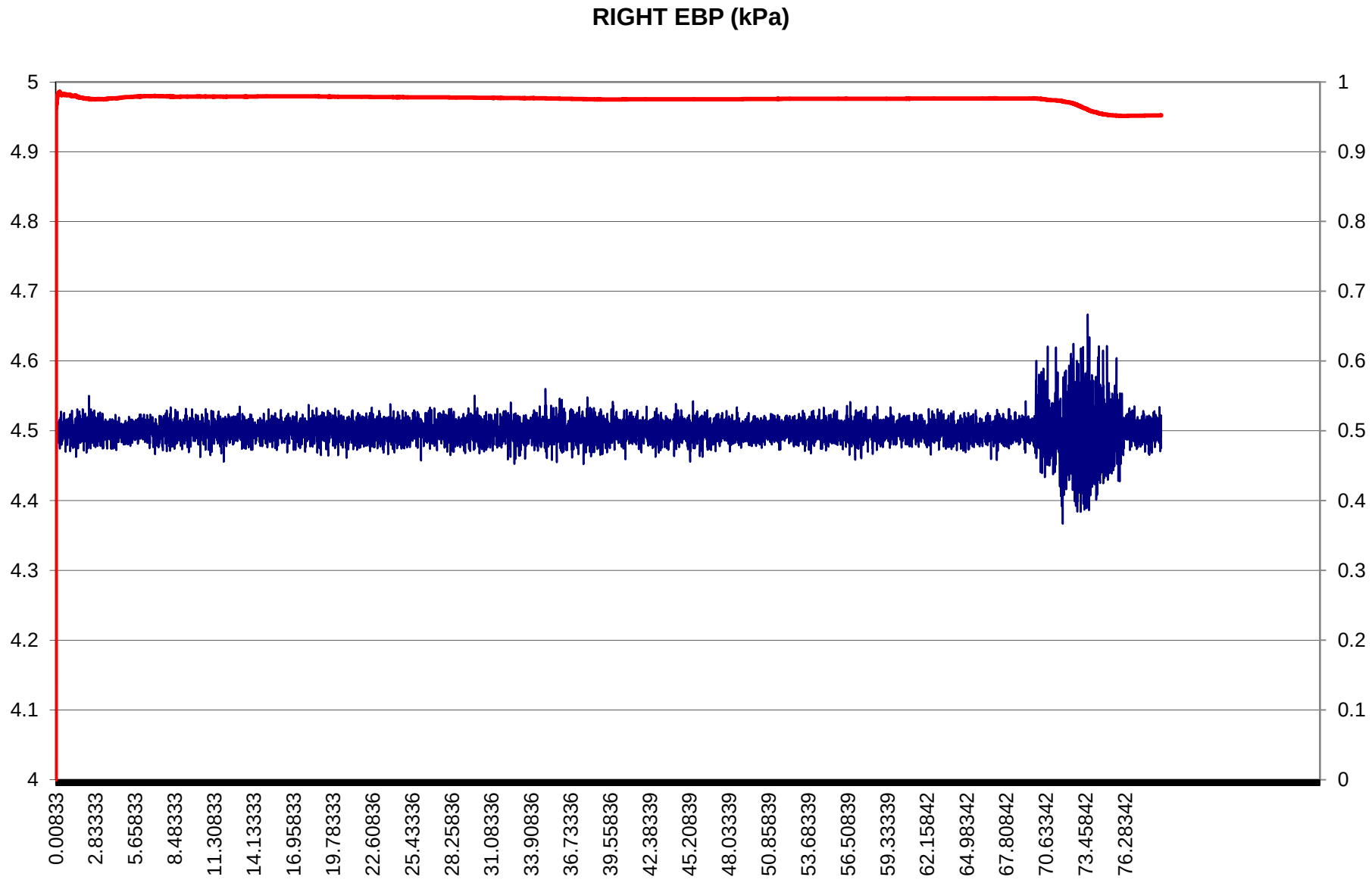
76.28342


RIGHT EBP (kPa)
5
4.9
4.8
4.7
4.6
4.5
4.4
4.3
4.2
4.1
4
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0.00833
2.83333
5.65833
8.48333
11.30833
14.13333
16.95833
19.78333
22.60836
25.43336
28.25836
31.08336
33.90836
36.73336
39.55836
42.38339
45.20839
48.03339
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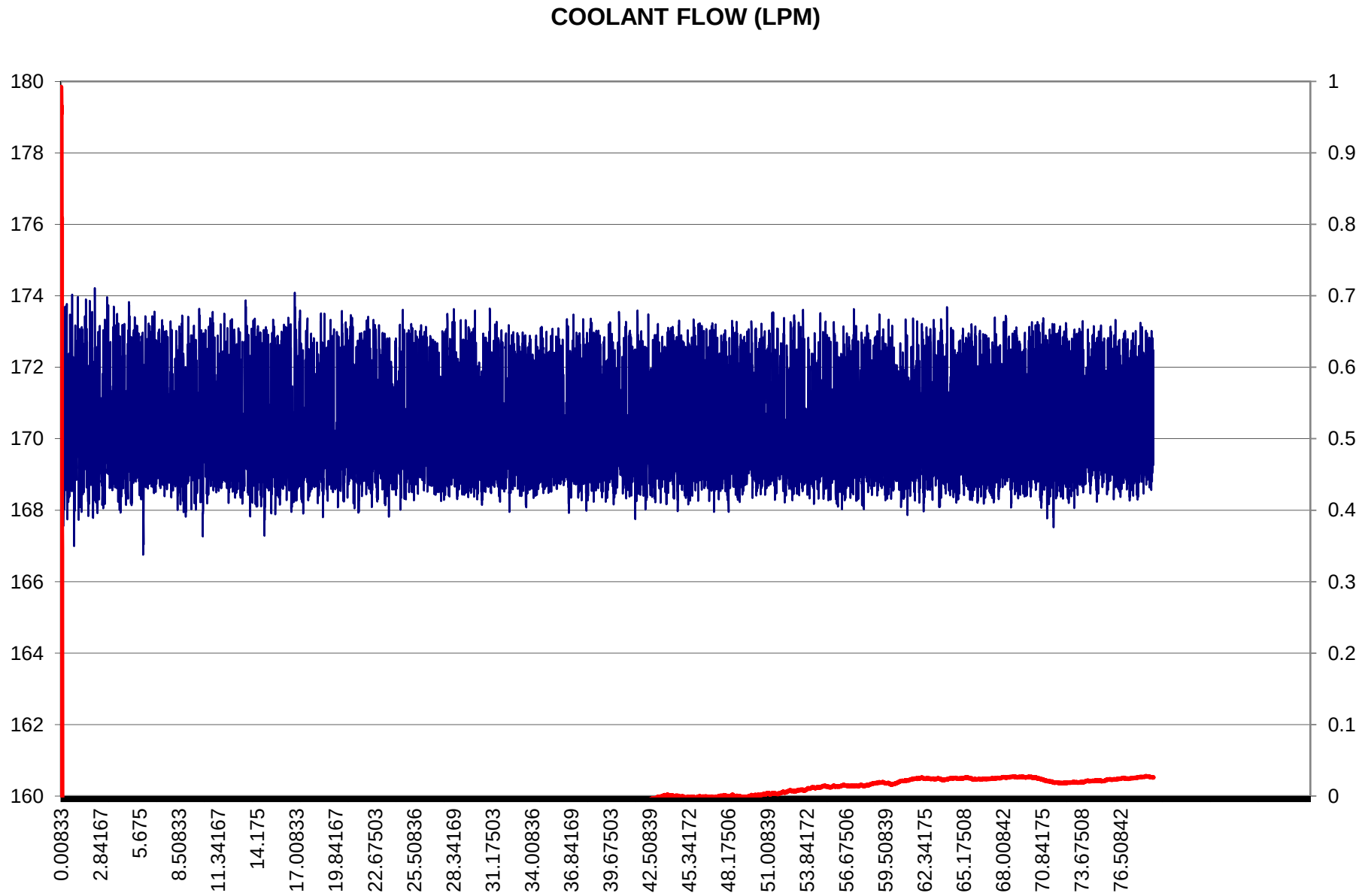
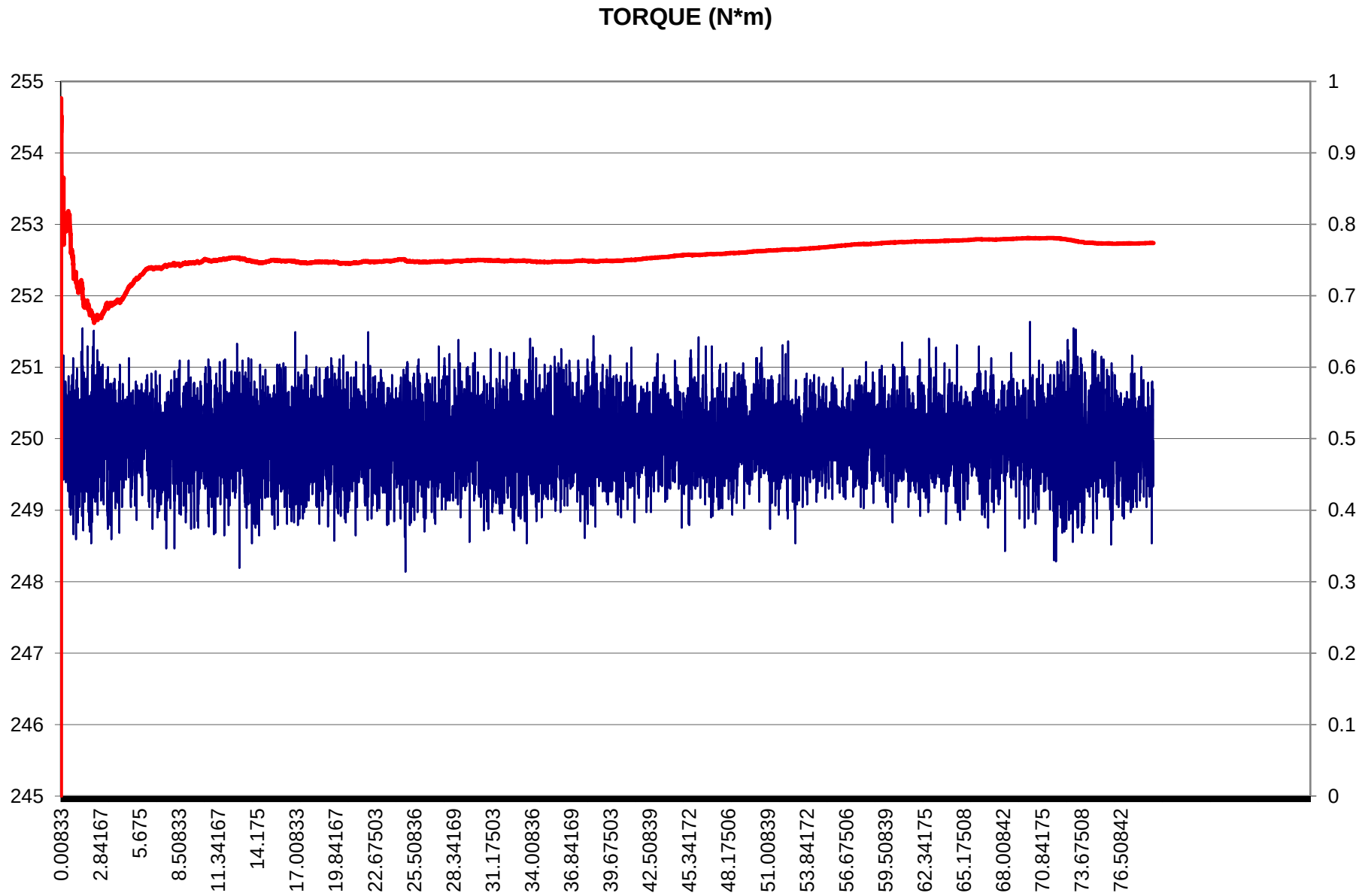
73.45842
76.28342


COOLANT FLOW (LPM)
180
178
176
174
172
170
168
166
164
162
160
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0.00833
2.84167
5.675
8.50833
11.34167
14.175
17.00833
19.84167
22.67503
25.50836
28.34169
31.17503
34.00836
36.84169
39.67503
42.50839
45.34172
48.17506
51.00839
53.84172
56.67506
59.50839
62.34175
65.17508
68.00842
70.84175
73.67508
76.50842


TORQUE (N*m)
255
254
253
252
251
250
249
248
247
246
245
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0.00833
2.84167
5.675
8.50833
11.34167
14.175
17.00833
19.84167
22.67503
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28.34169
31.17503
34.00836
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42.50839
45.34172
48.17506
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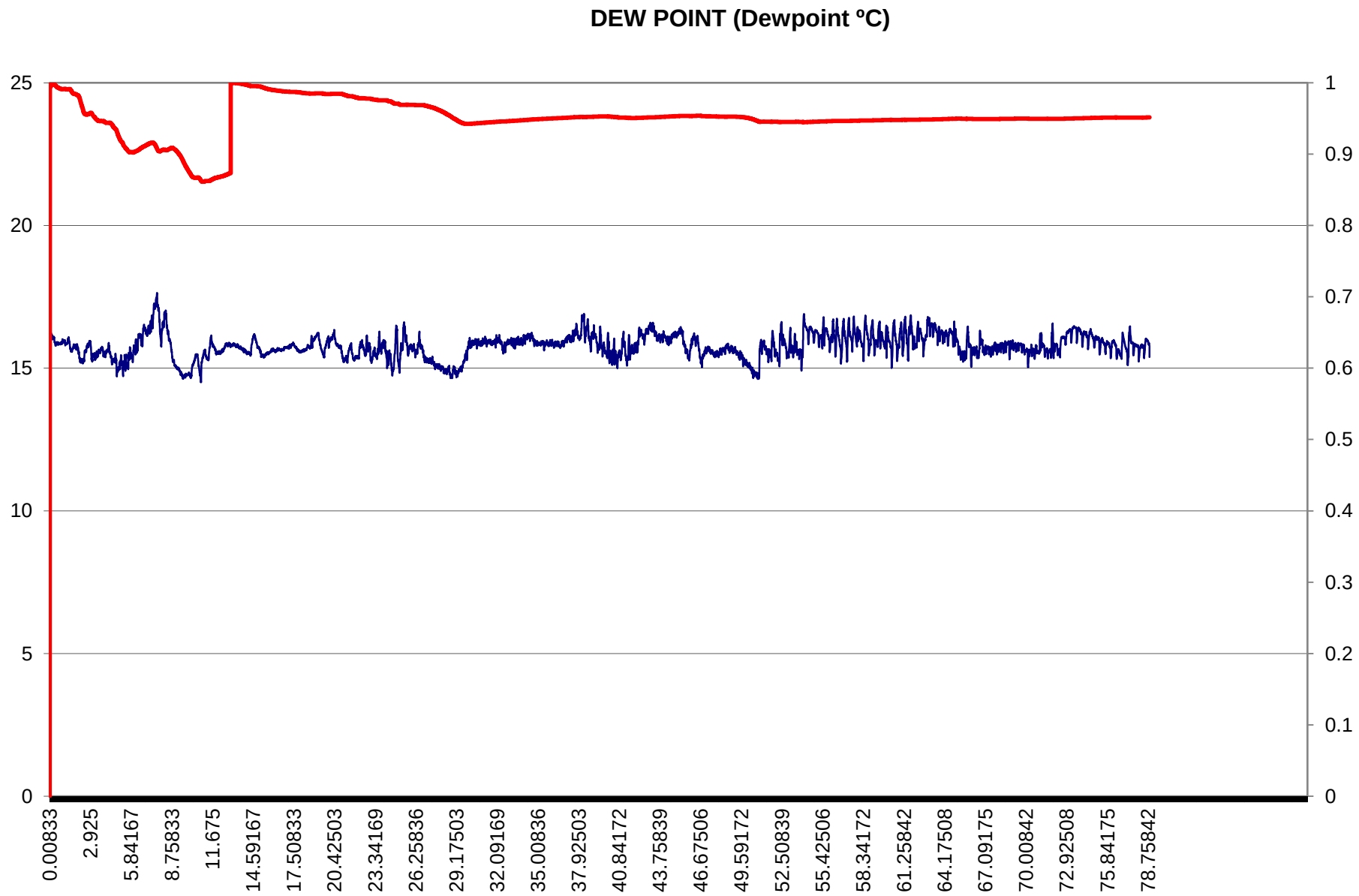
73.67508
76.50842


DEW POINT (Dewpoint ºC)
25
20
15
10
5
0
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0.00833
2.925
5.84167
8.75833
11.675
14.59167
17.50833
20.42503
23.34169
26.25836
29.17503
32.09169
35.00836
37.92503
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43.75839
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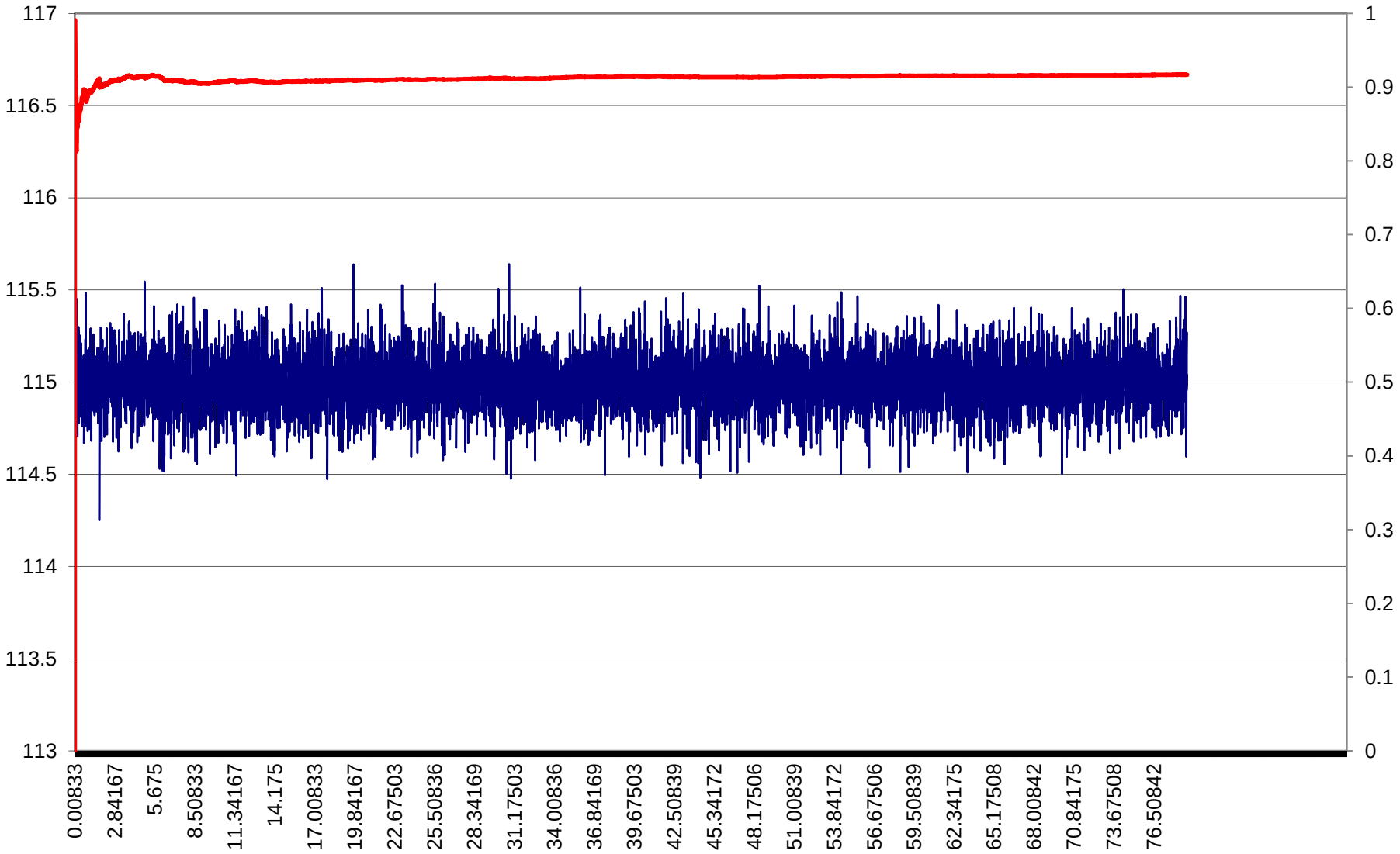
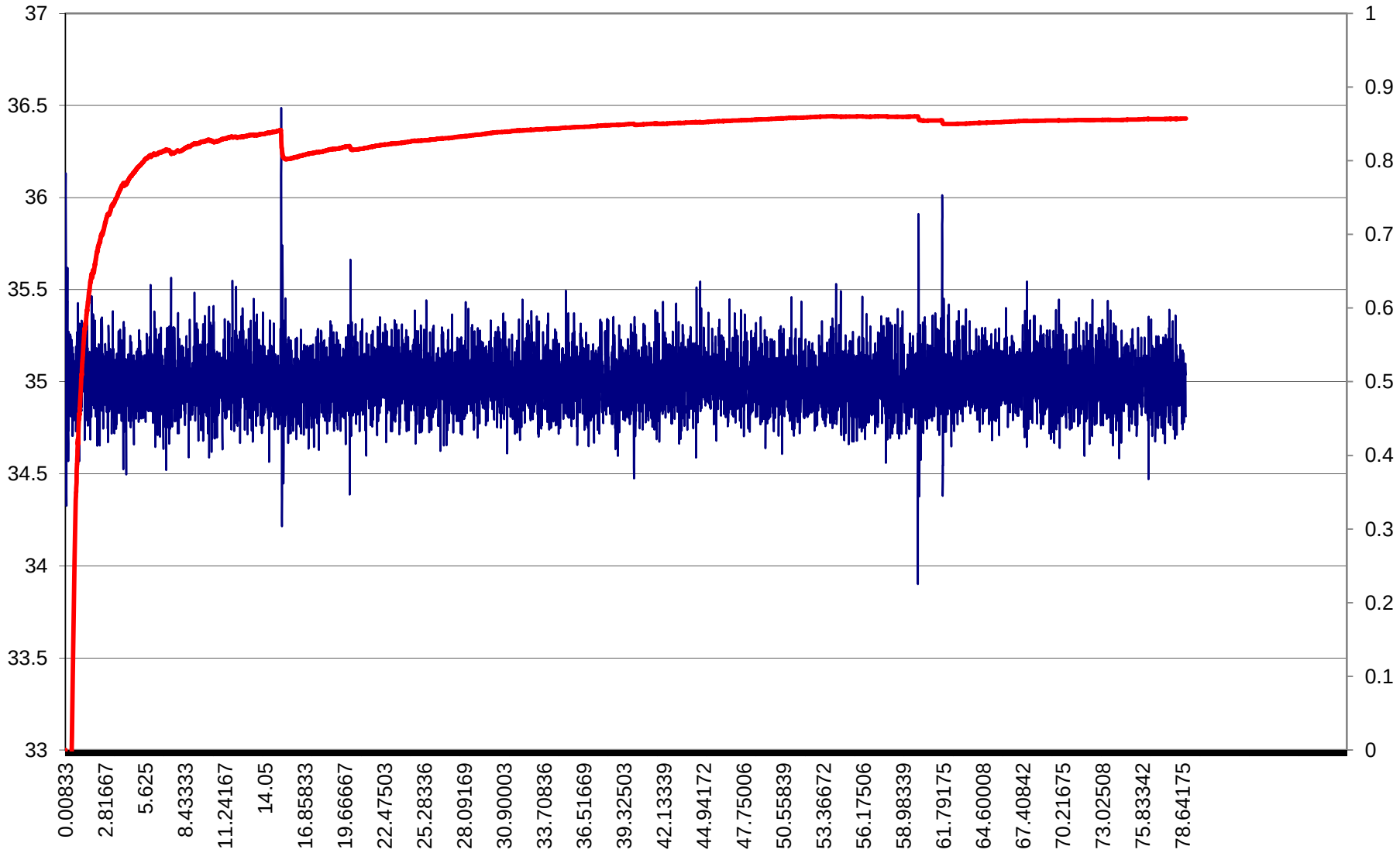
49.59172
52.50839
55.42506
58.34172
61.25842
64.17508
67.09175
70.00842
72.92508
75.84175
78.75842

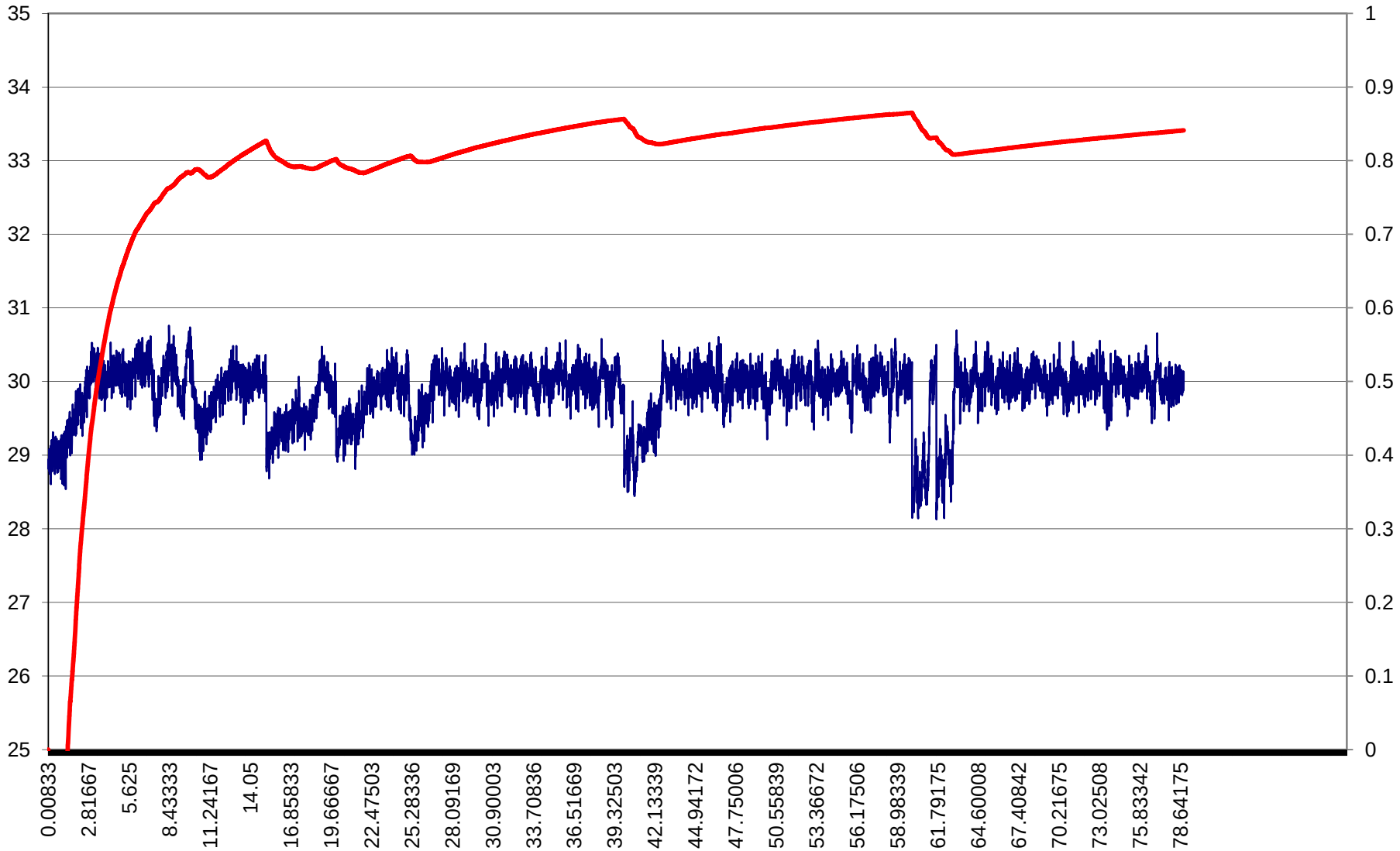
COOLANT OUT TEMPERATURE (DEGREES C)

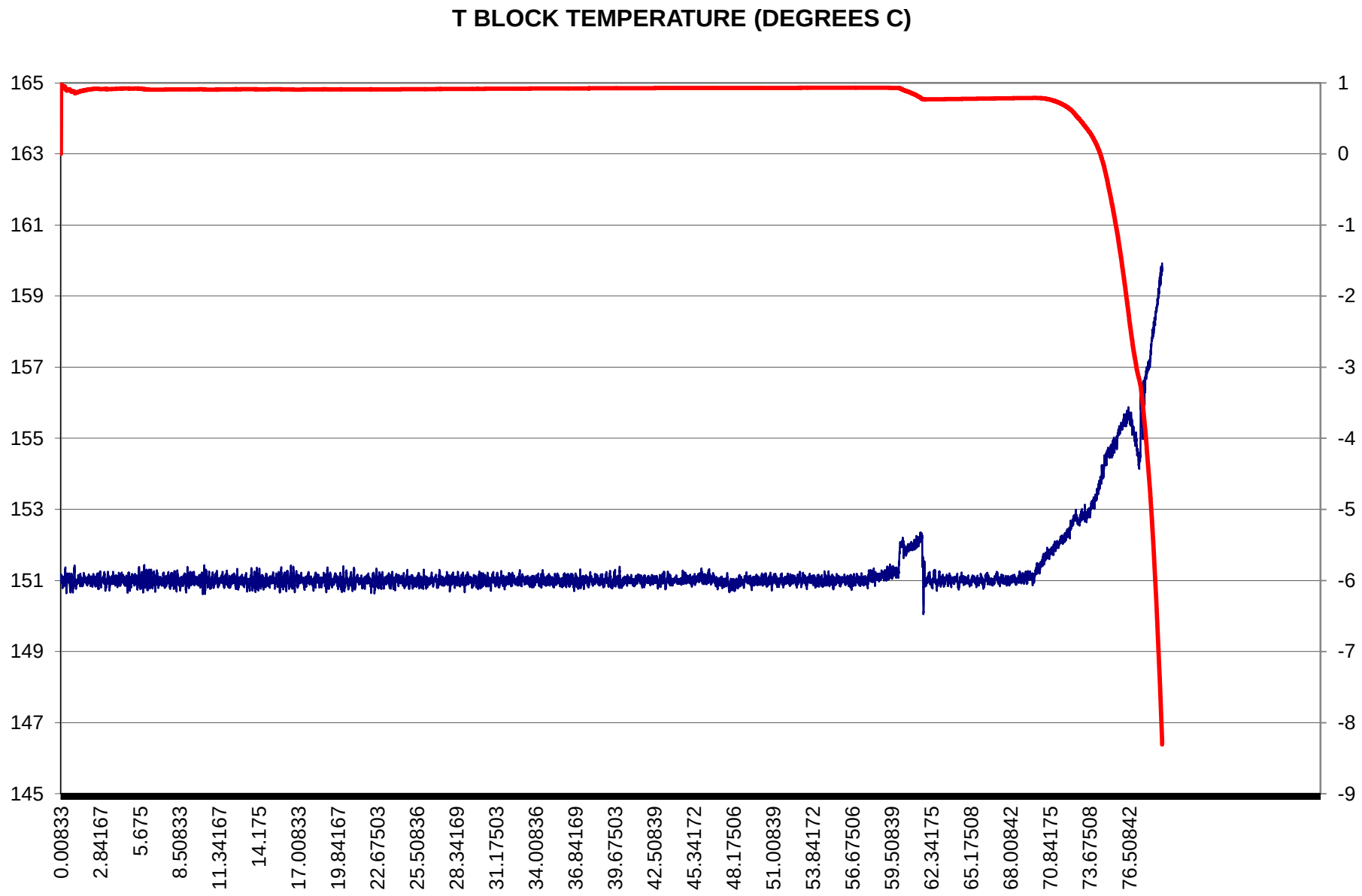


INTAKE AIR TEMPERATURE (DEGREES C)



FUEL TEMPERATURE (DEGREES C)




T BLOCK TEMPERATURE (DEGREES C)
165
163
161
159
157
155
153
151
149
147
145
1
0
-1
-2
-3
-4
-5
-6
-7
-8
-9
0.00833
2.84167
5.675
8.50833
11.34167
14.175
17.00833
19.84167
22.67503
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53.84172
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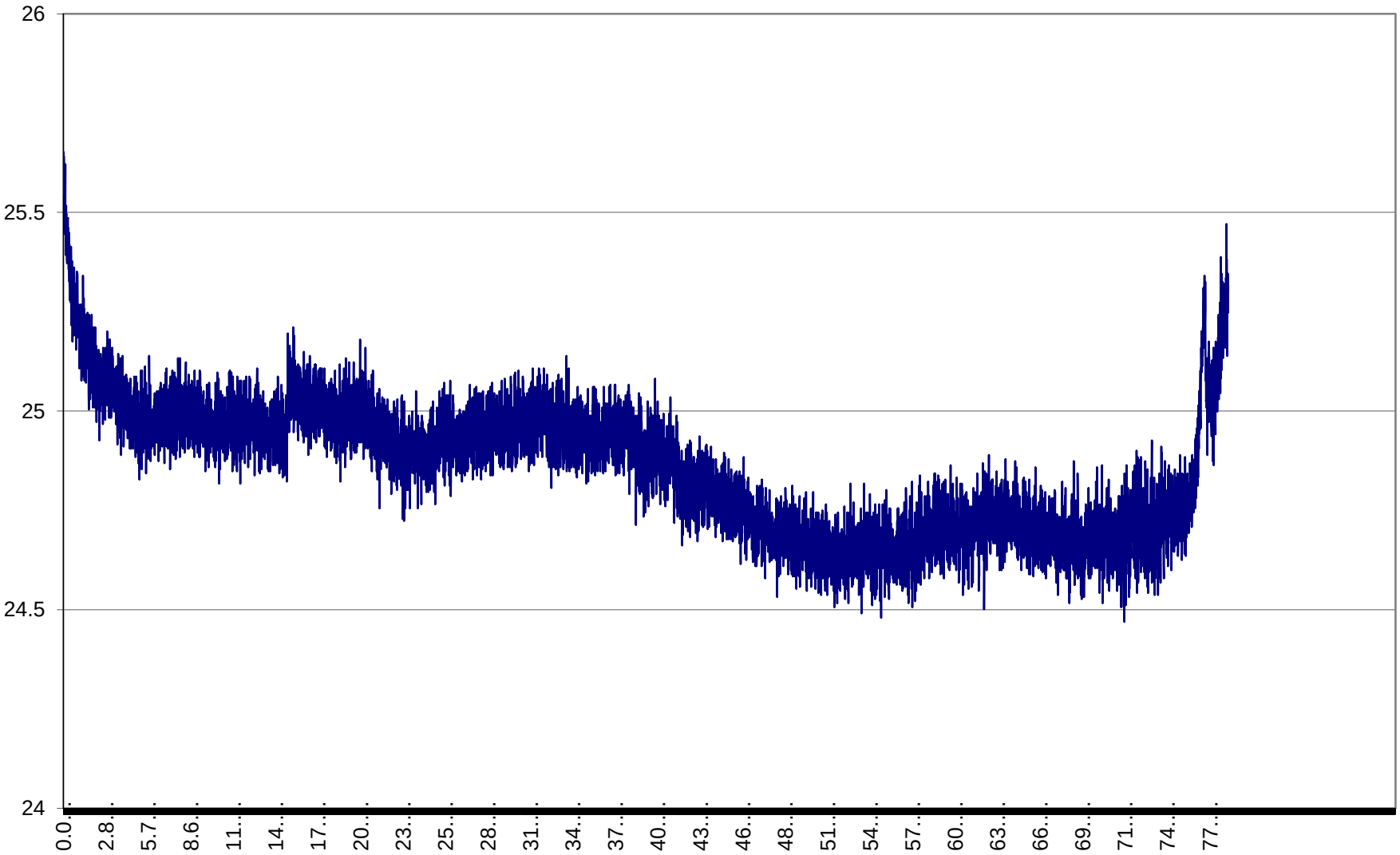
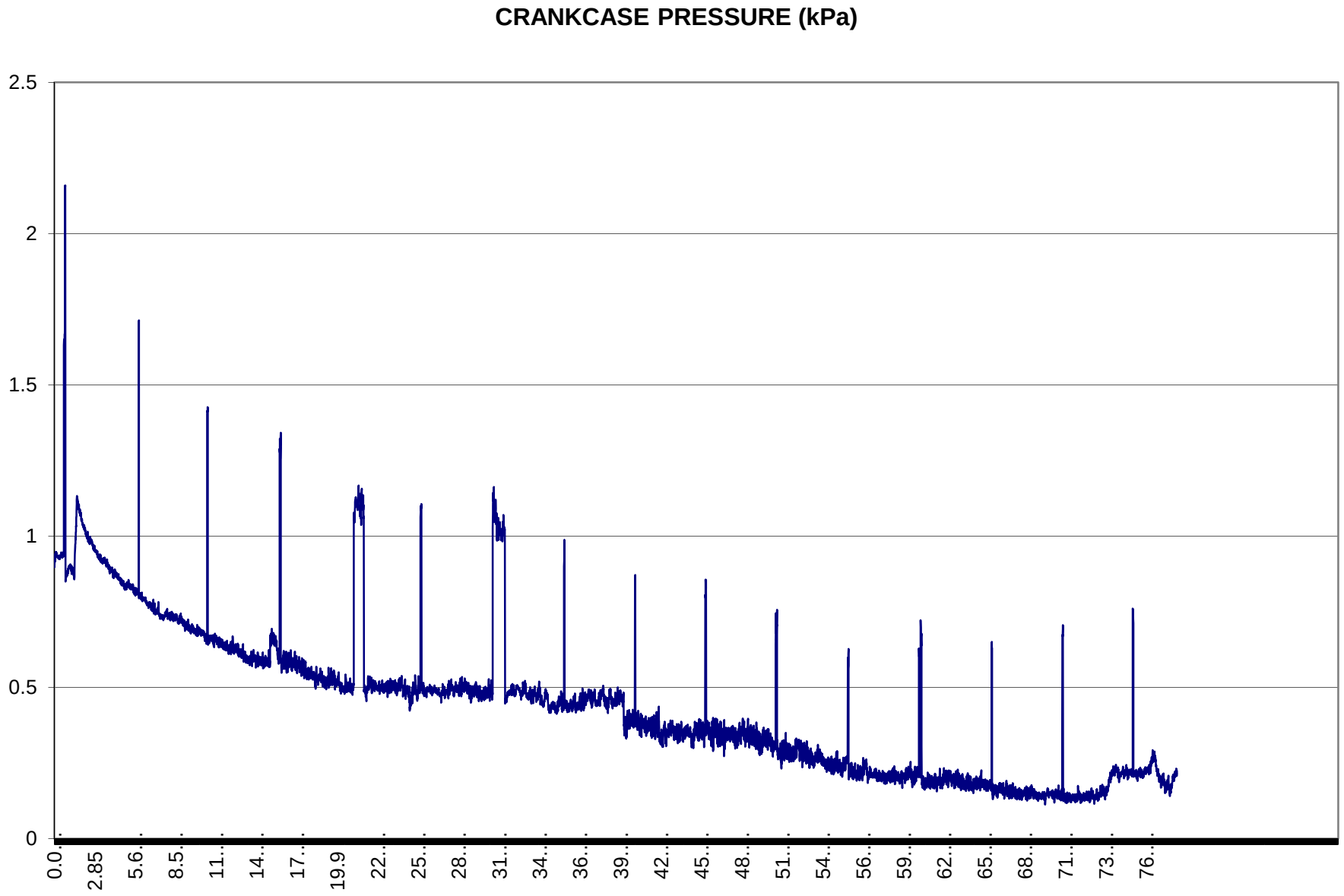
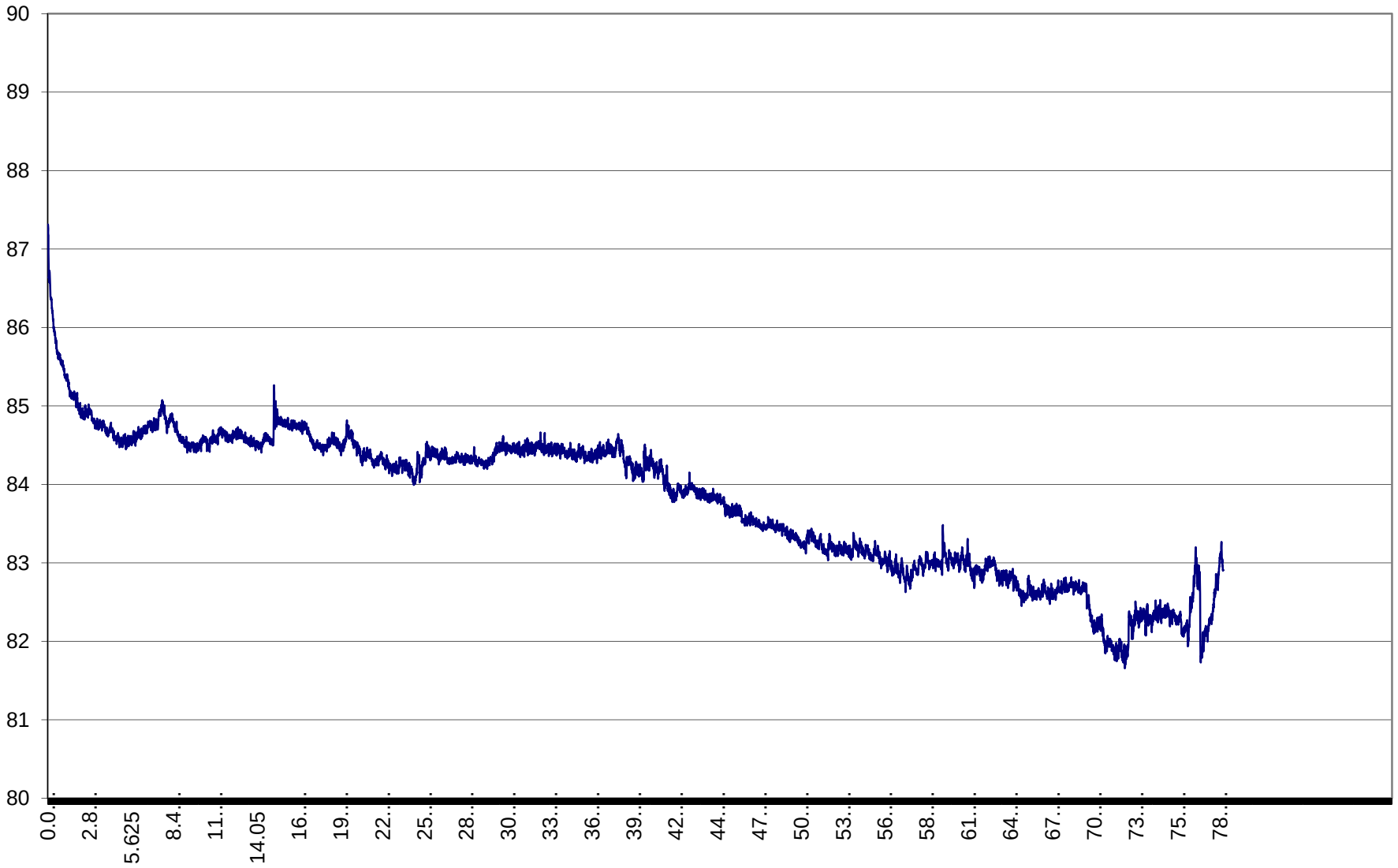
70.84175
73.67508
76.50842

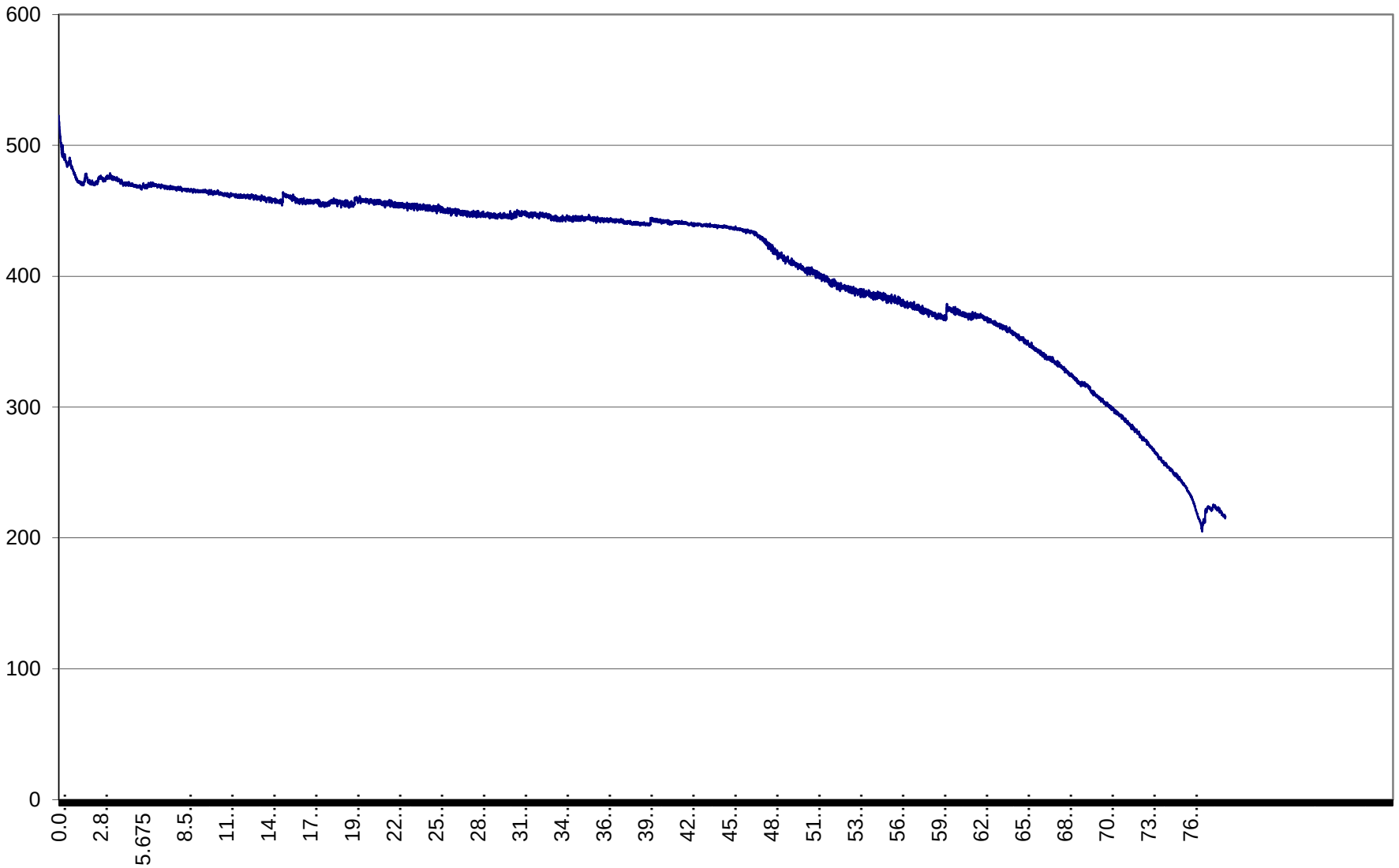
FUEL FLOW (kg/hr)




CRANKCASE PRESSURE (kPa)
2.5
2
1.5
1
0.5
0
0.0
2.85
5.6
8.5
11
14
17
19.9
22
25
28
31
34
36
39
42
45
48
51
54
56
59
62
65
68
71
73
76

INTAKE MANIFOLD ABSOLUTE PRESSURE (kPaA)




OIL GALLERY PRESSURE (kPa)
600
500
400
300
200
100
0
0.0..
2.8..
5.675
8.5..
11..
14..
17..
19..
22..
25..
28..
31..
34..
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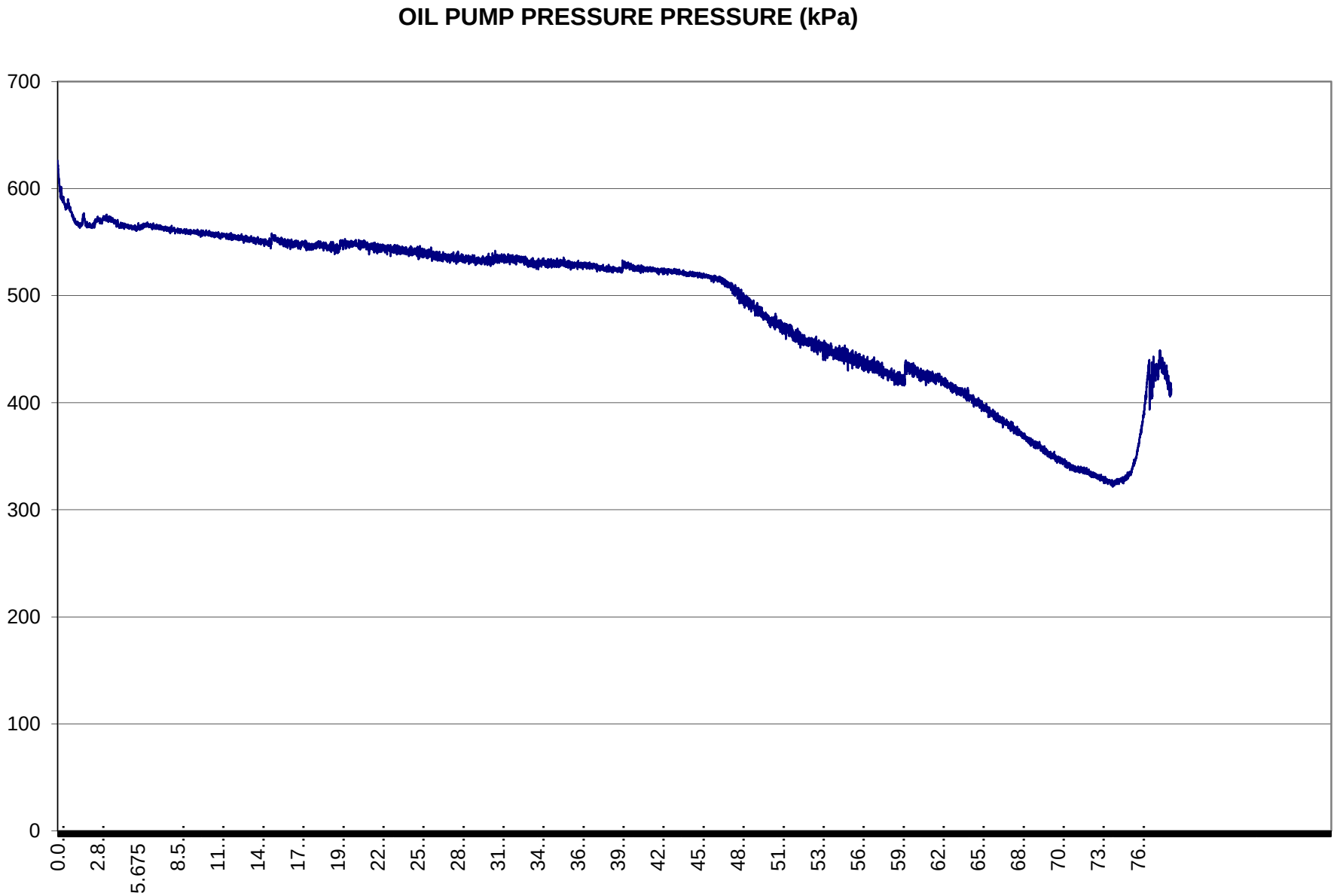
68..
70..
73..
76..


OIL PUMP PRESSURE PRESSURE (kPa)
700
600
500
400
300
200
100
0
0.0..
2.8..
5.675
8.5..
11..
14..
17..
19..
22..
25..
28..
31..
34..
36..
39..
42..
45..
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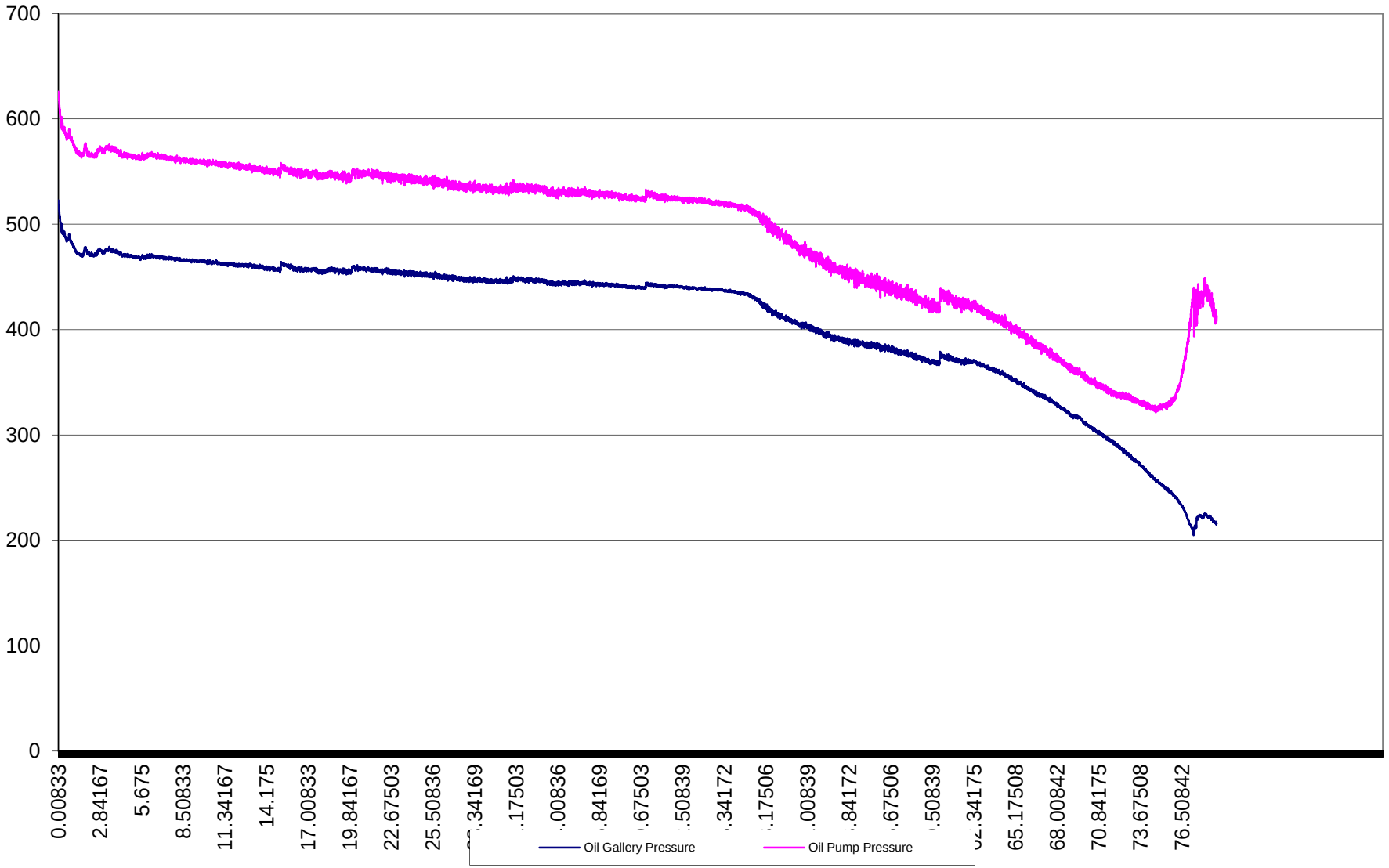
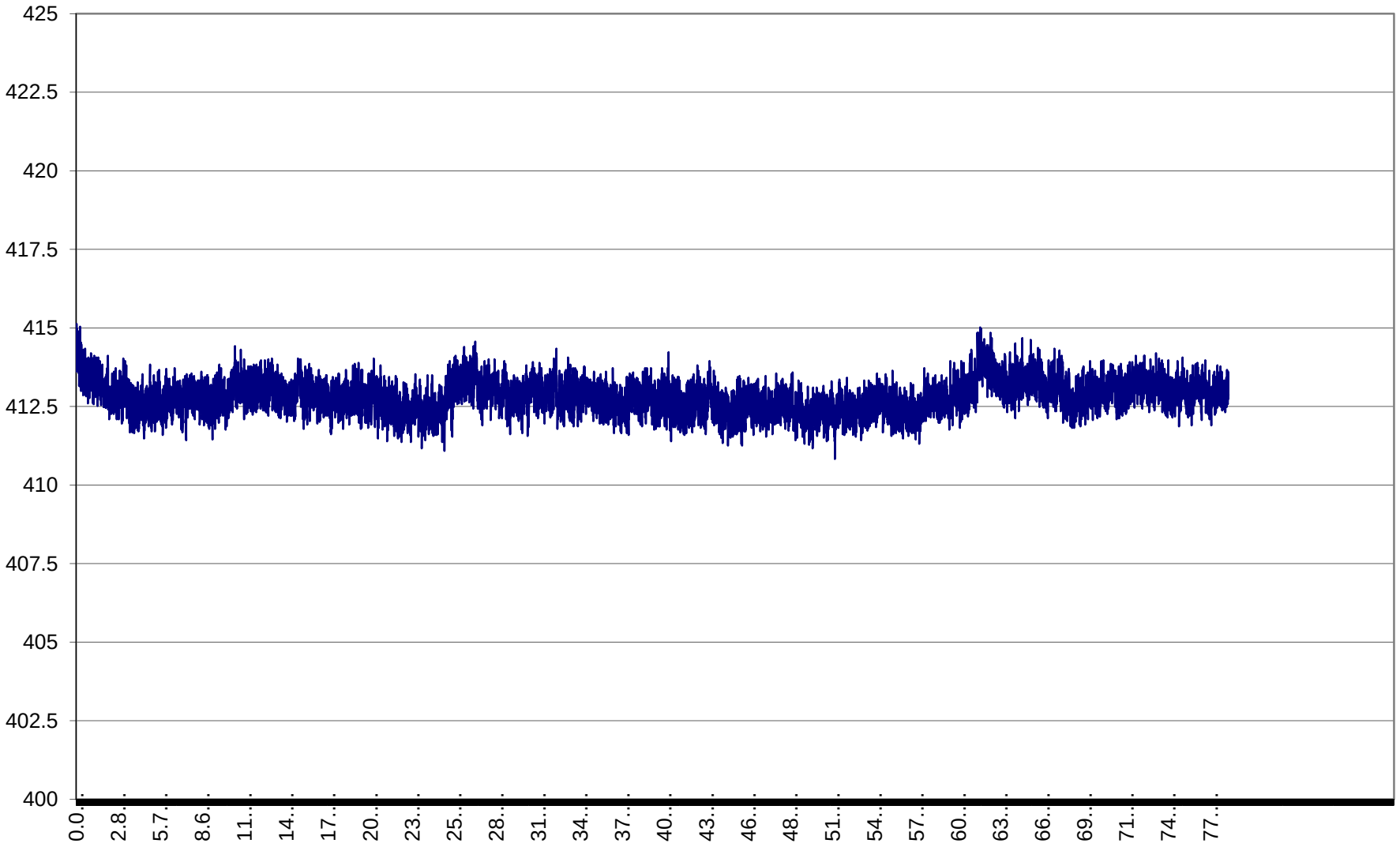
73..
76..

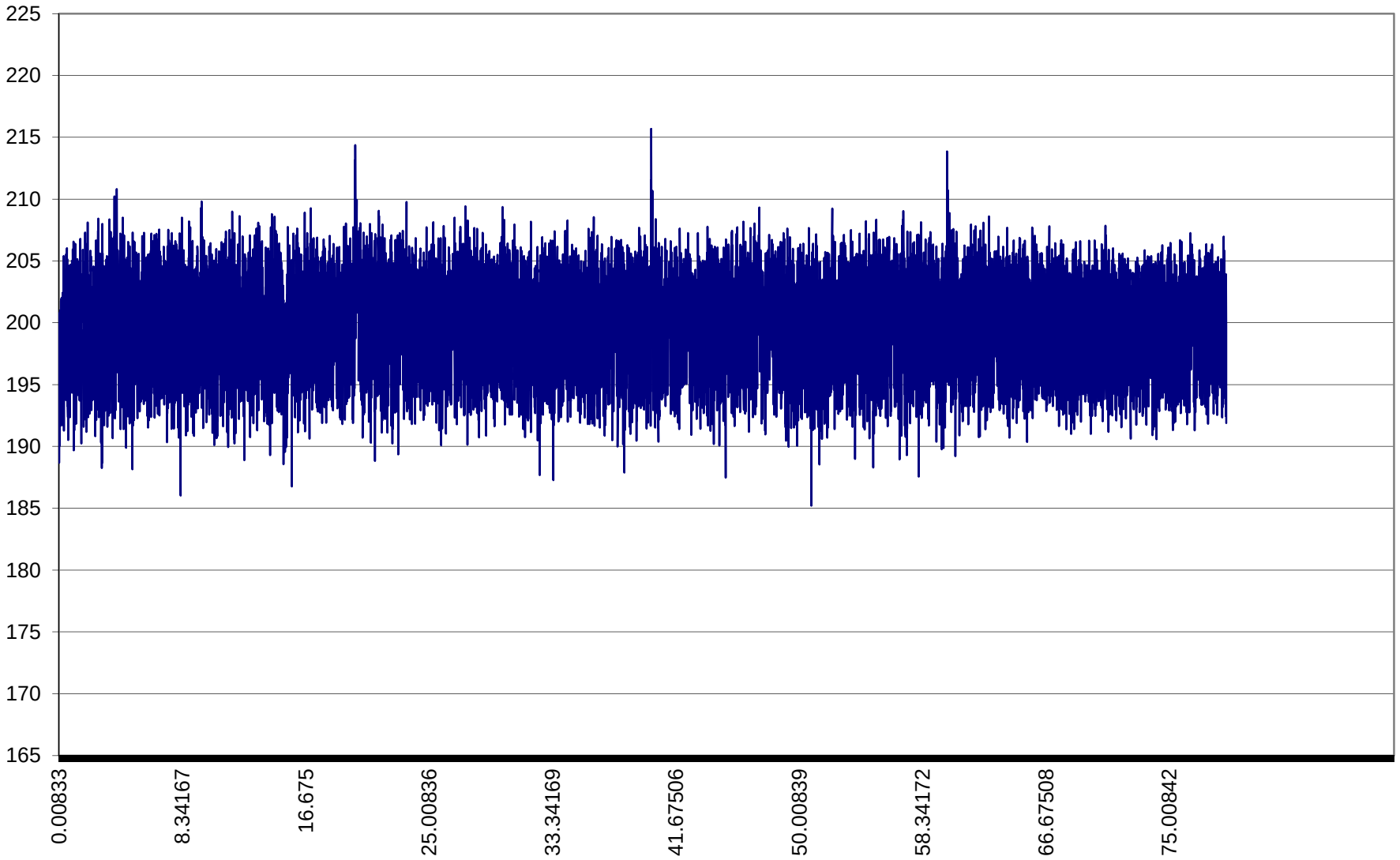
OIL GALLERY-OIL FILTER INLET PRESSURE (kPa)



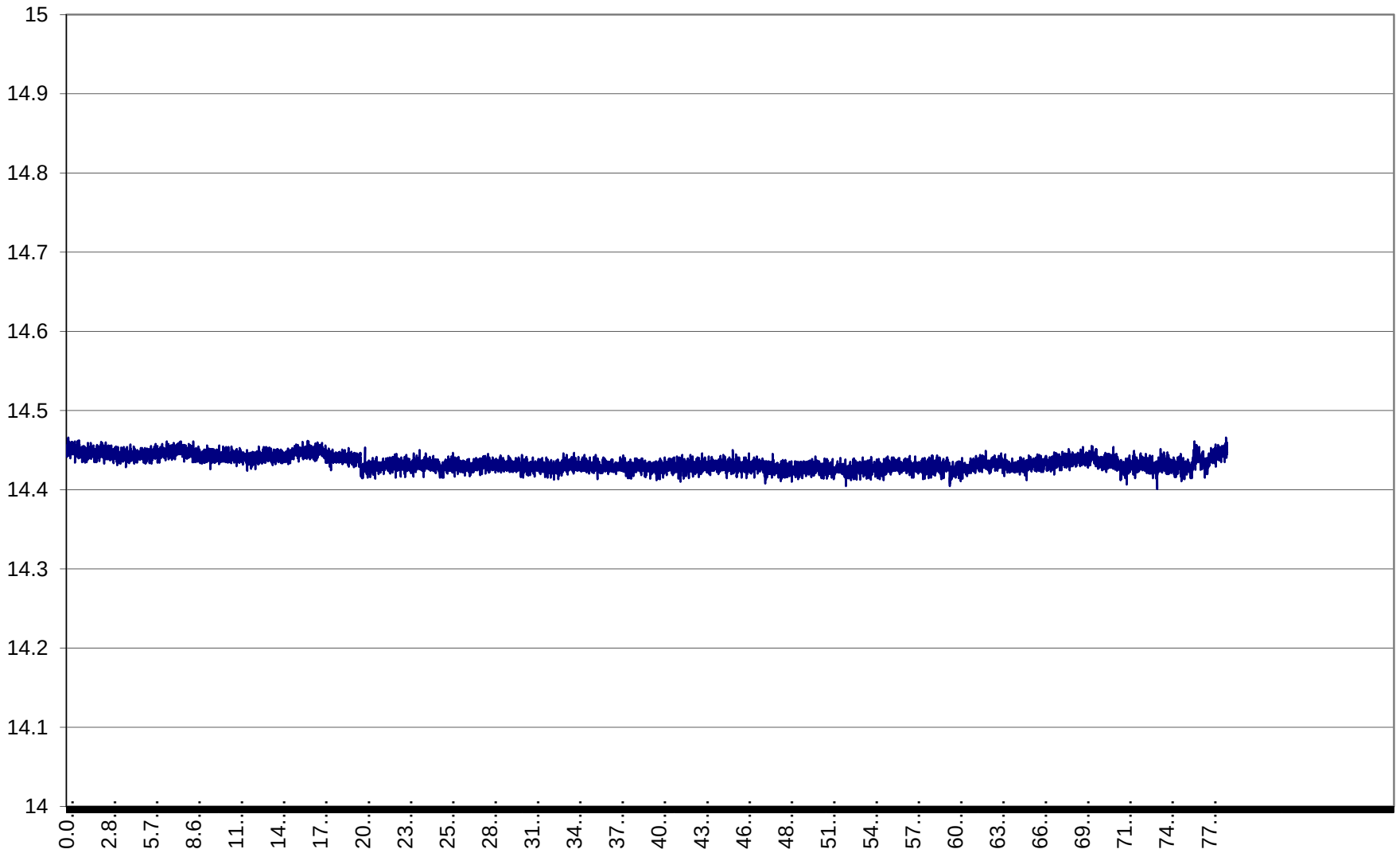
FUEL RAIL PRESSURE (kg/hr)



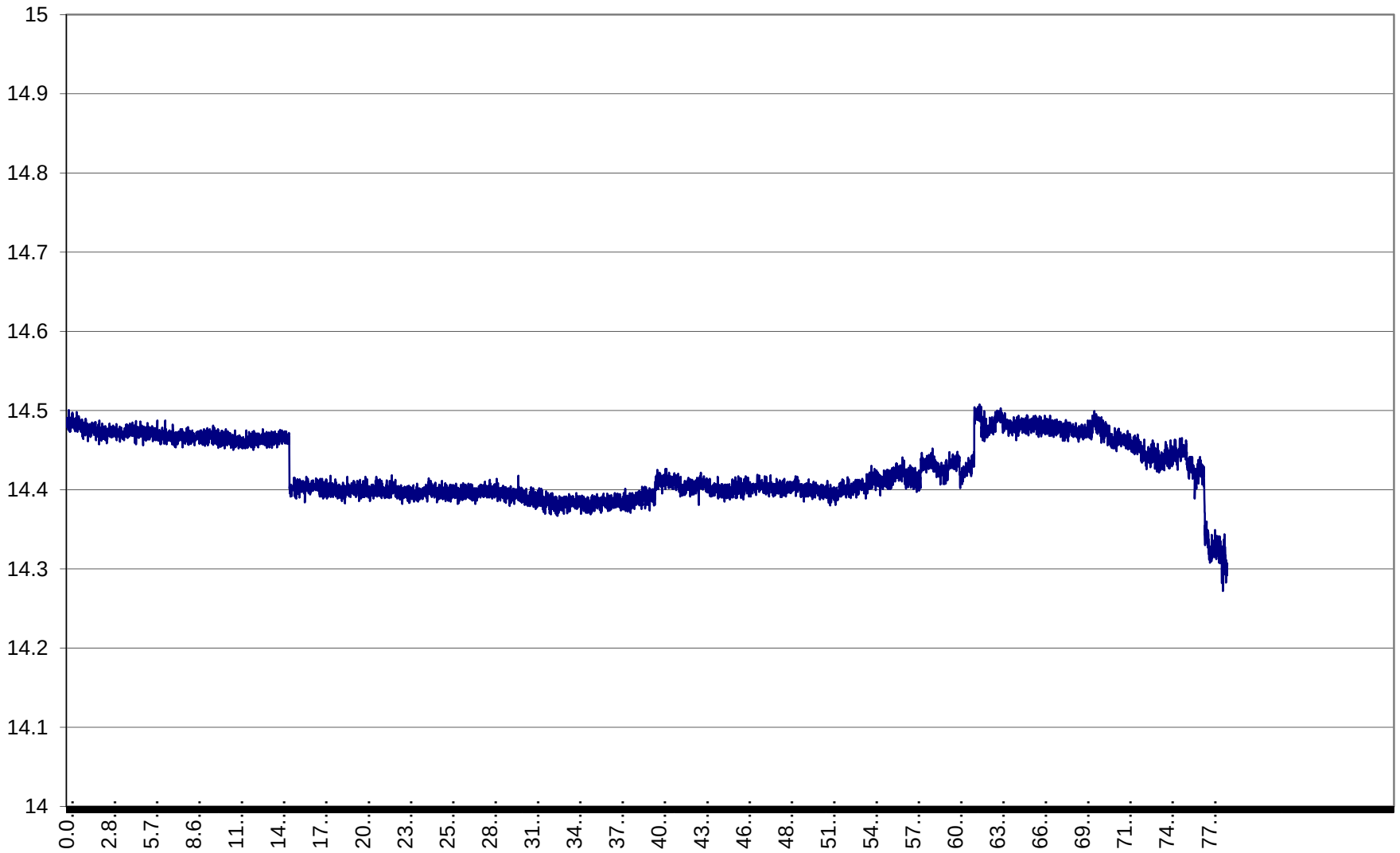
COOLANT OUT PRESSURE (kPa)



LEFT AFR


15
14.9
14.8
14.7
14.6
14.5
14.4
14.3
14.2
14.1
14
0.0..
2.8..
5.7..
8.6..
11..
14..
17..
20..
23..
25..
28..
31..
34..
37..
40..
43..
46..
48..
51..
54..
57..
60..
63..
66..
69..
71..
74..
77..

RIGHT AFR


15
14.9
14.8
14.7
14.6
14.5
14.4
14.3
14.2
14.1
14
0.0
2.8
5.7
8.6
11
14
17
20
23
25
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34
37
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57
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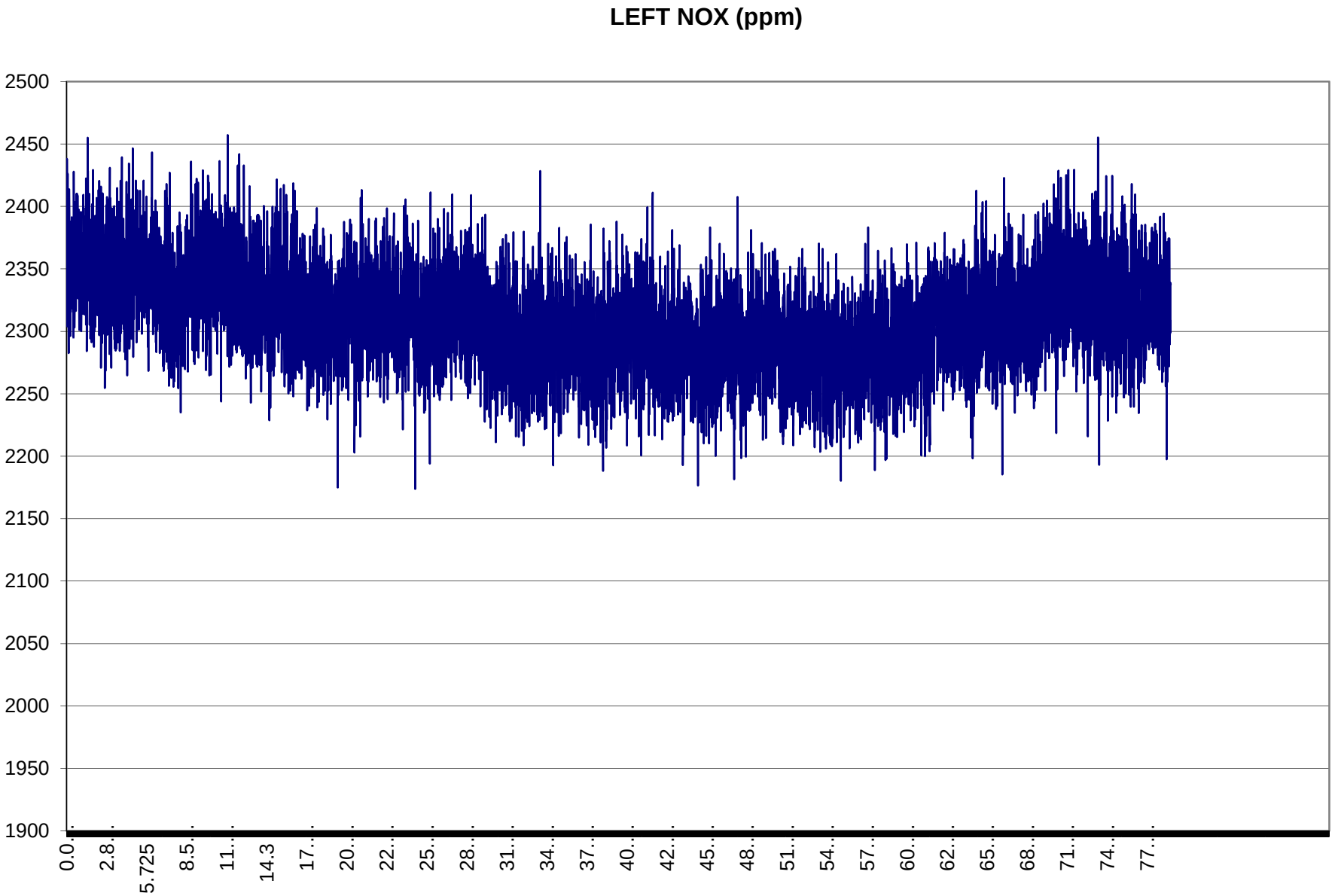
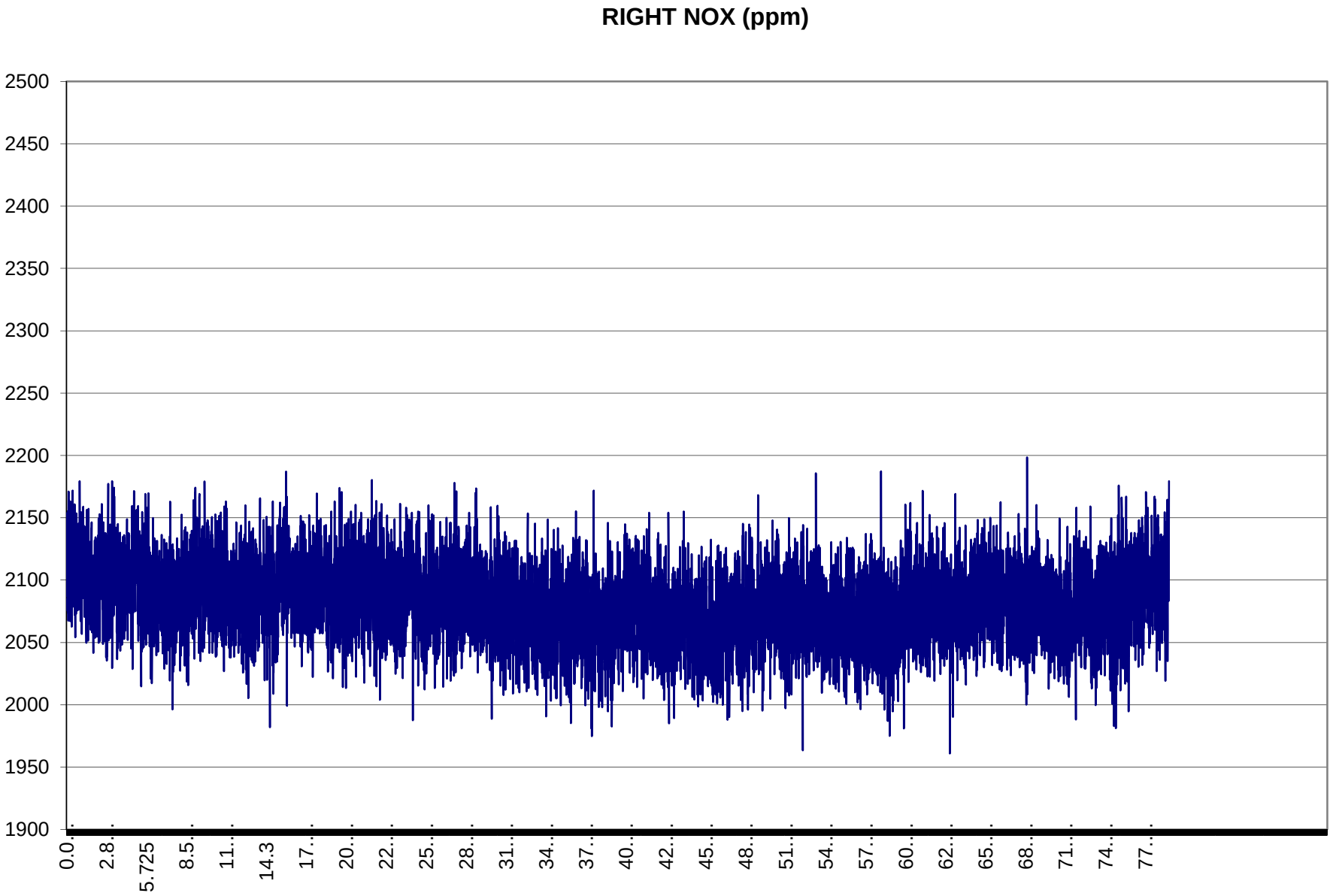
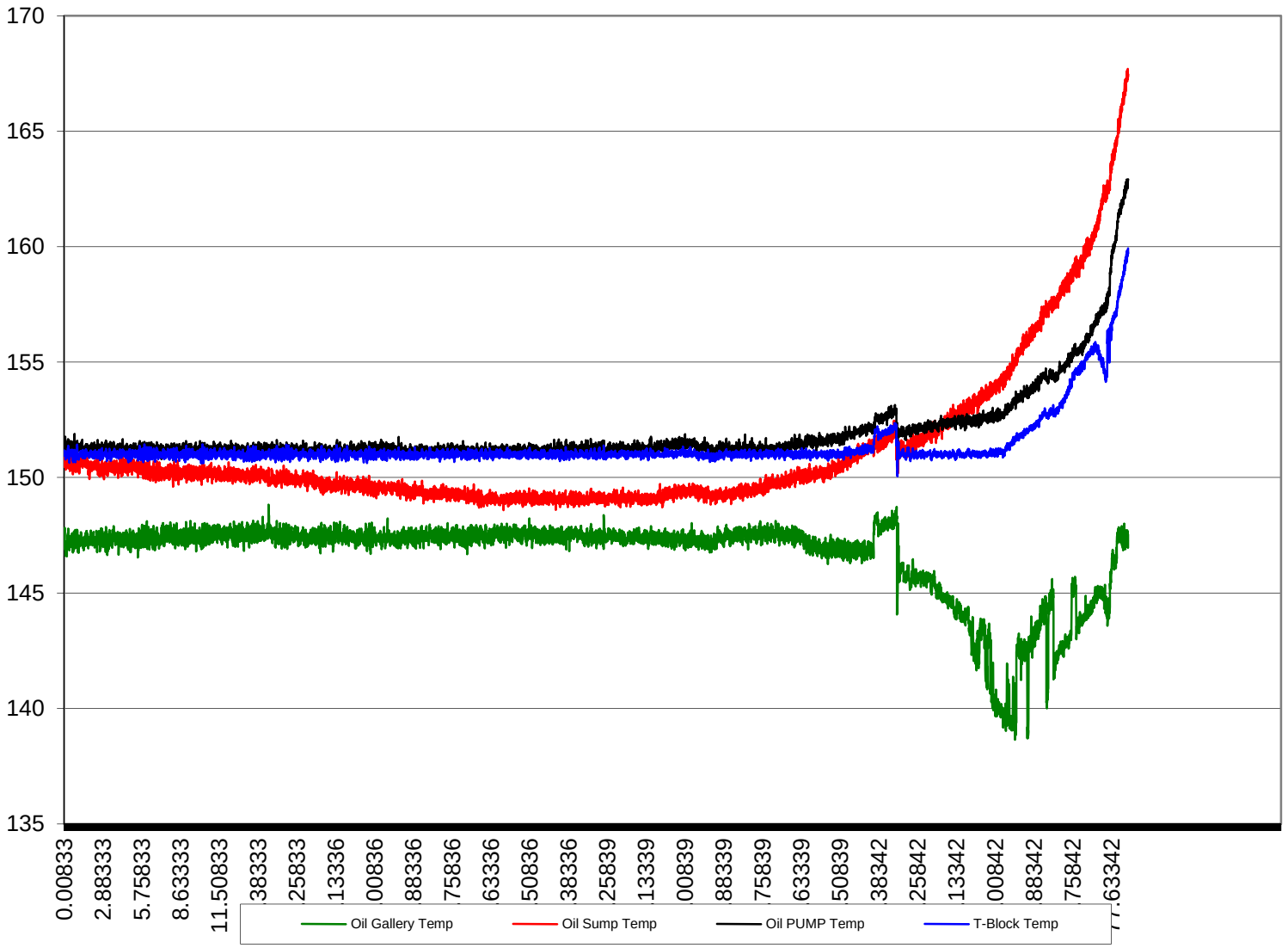
69
71
74
77

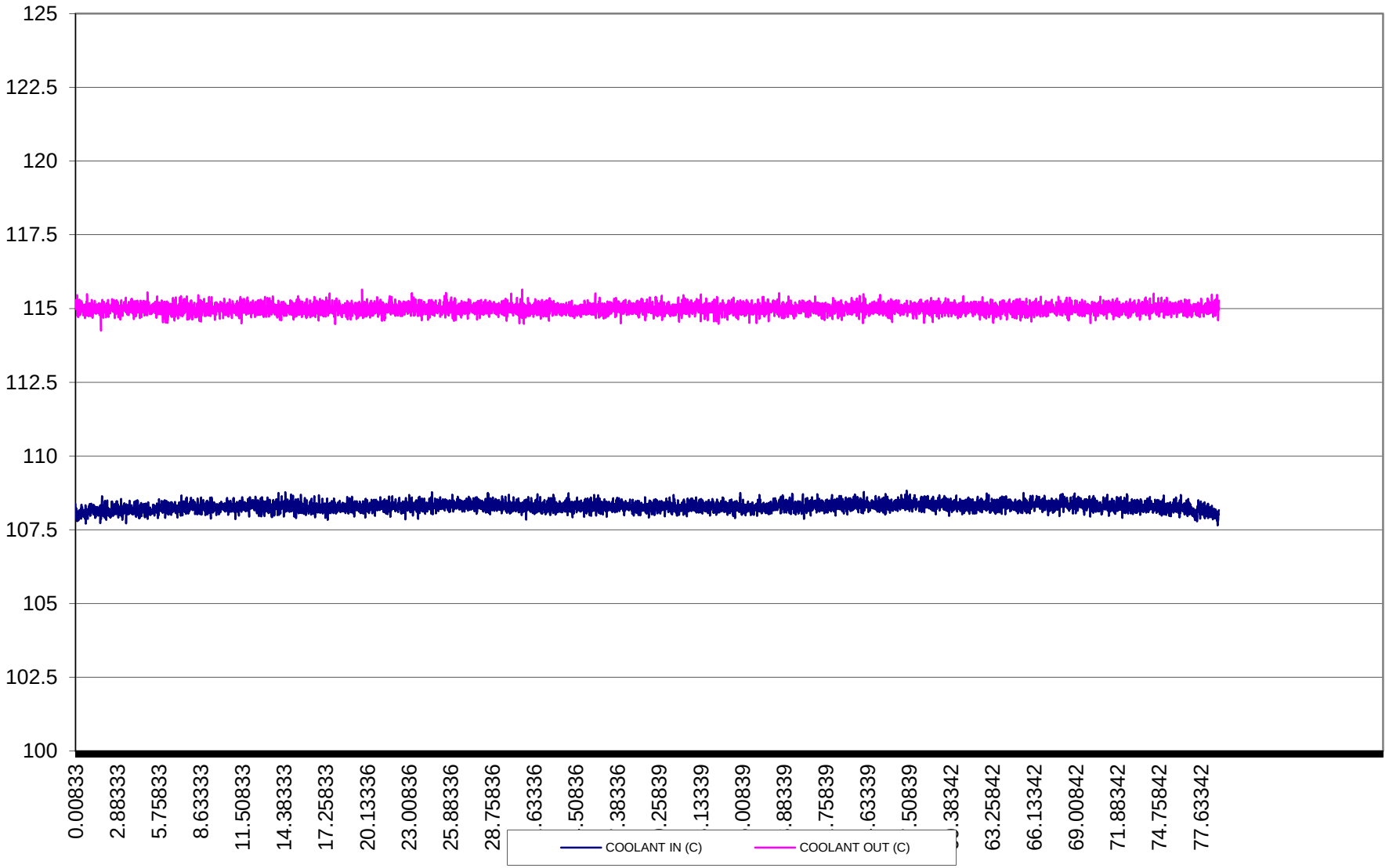

LEFT NOX (ppm)
2500
2450
2400
2350
2300
2250
2200
2150
2100
2050
2000
1950
1900
0.0..
2.8..
5.725
8.5..
11..
14.3
17..
20..
22..
25..
28..
31..
34..
37..
40..
42..
45..
48..
51..
54..
57..
60..
62..
65..
68..
71..
74..
77..


RIGHT NOX (ppm)
2500
2450
2400
2350
2300
2250
2200
2150
2100
2050
2000
1950
1900
0.0..
2.8..
5.725
8.5..
11..
14.3
17..
20..
22..
25..
28..
31..
34..
37..
40..
42..
45..
48..
51..
54..
57..
60..
62..
65..
68..
71..
74..
77..

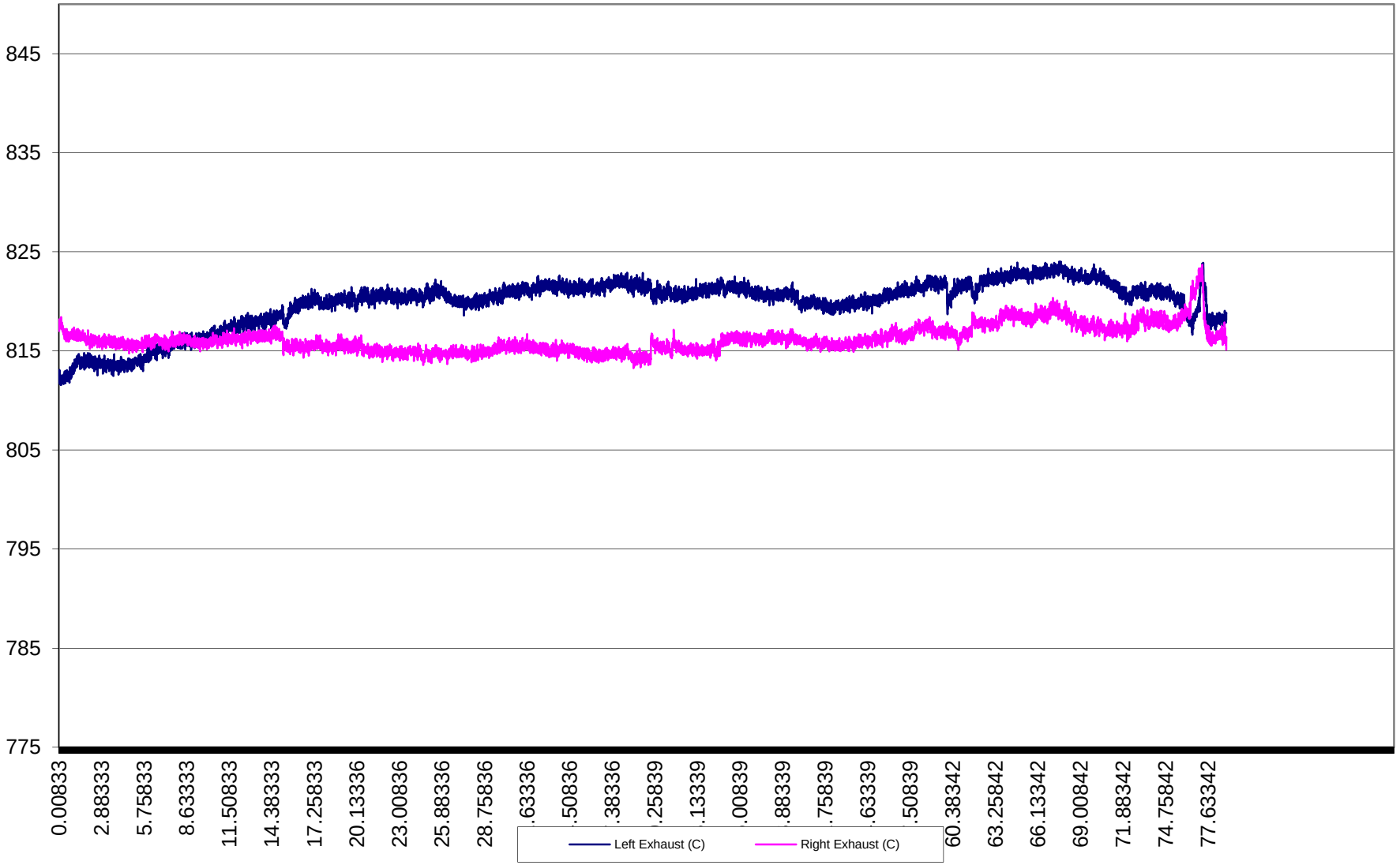
OIL TEMPERATURES (DEGREES C)



COOLANT IN-OUT TEMPERATURE (DEGREES C)



LEFT-RIGHT EXHAUST COLLECTOR TEMPERATURE (DEGREES C)



RO 1006-2
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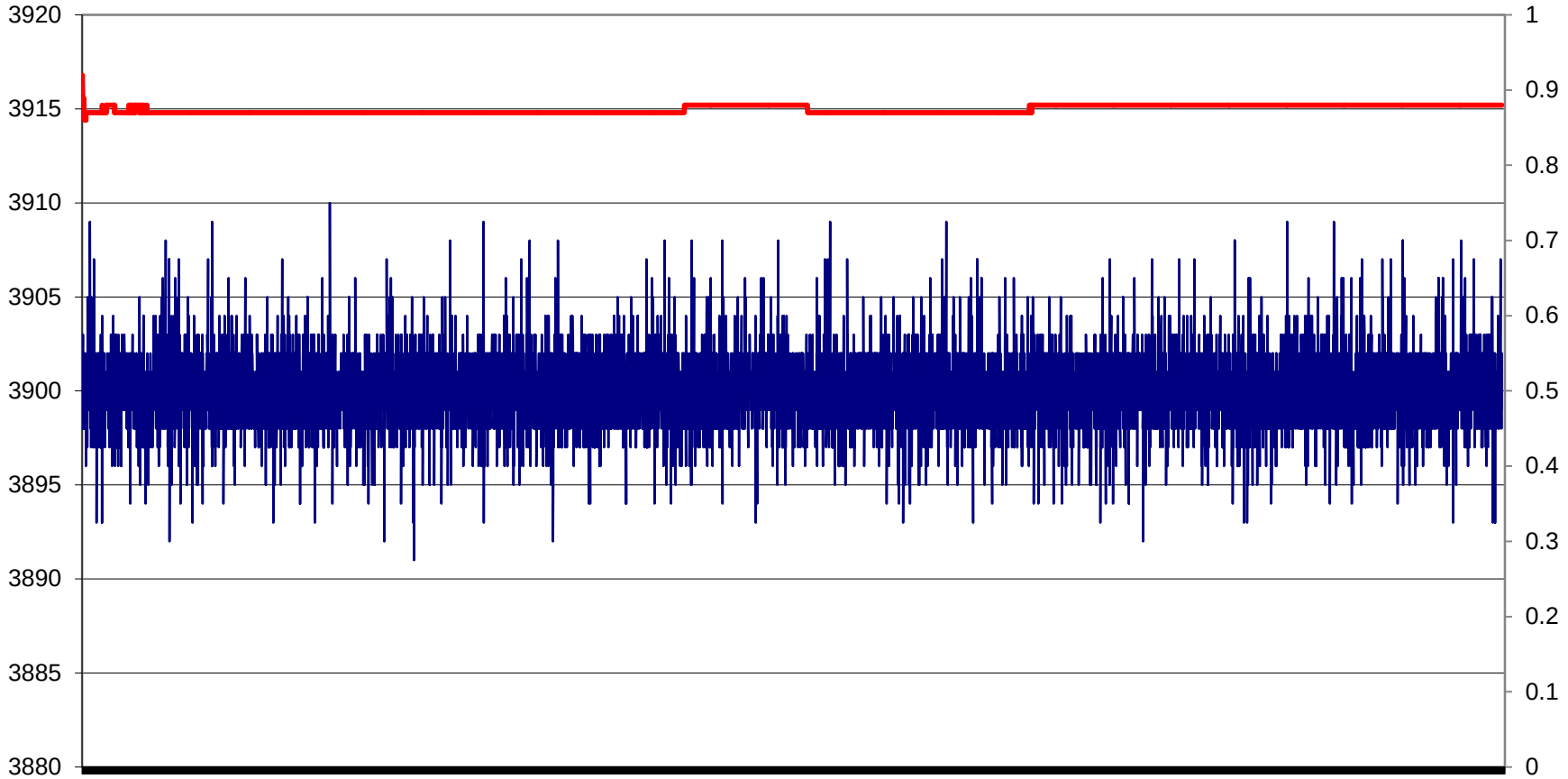
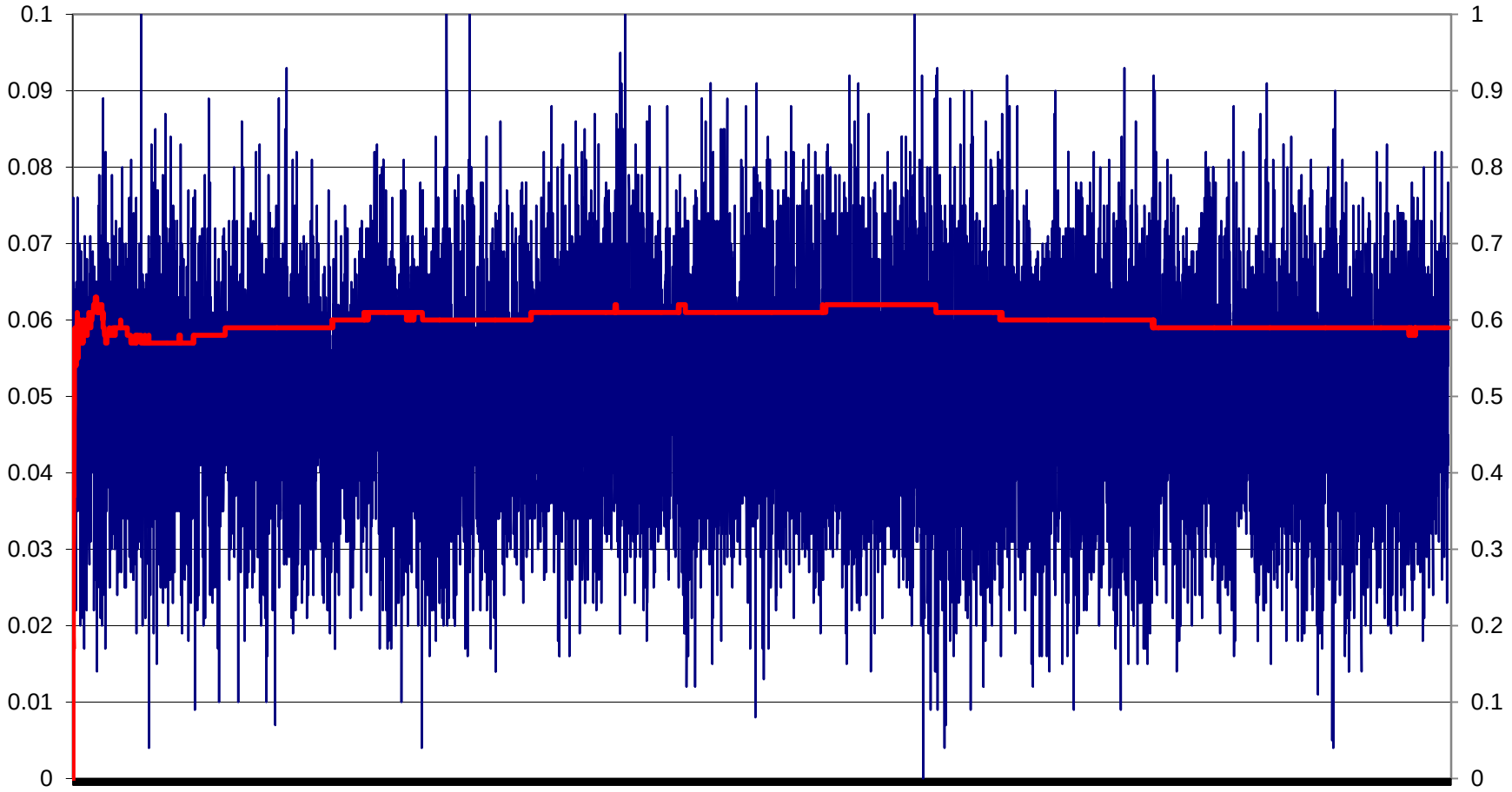
Ankit Chaudhry

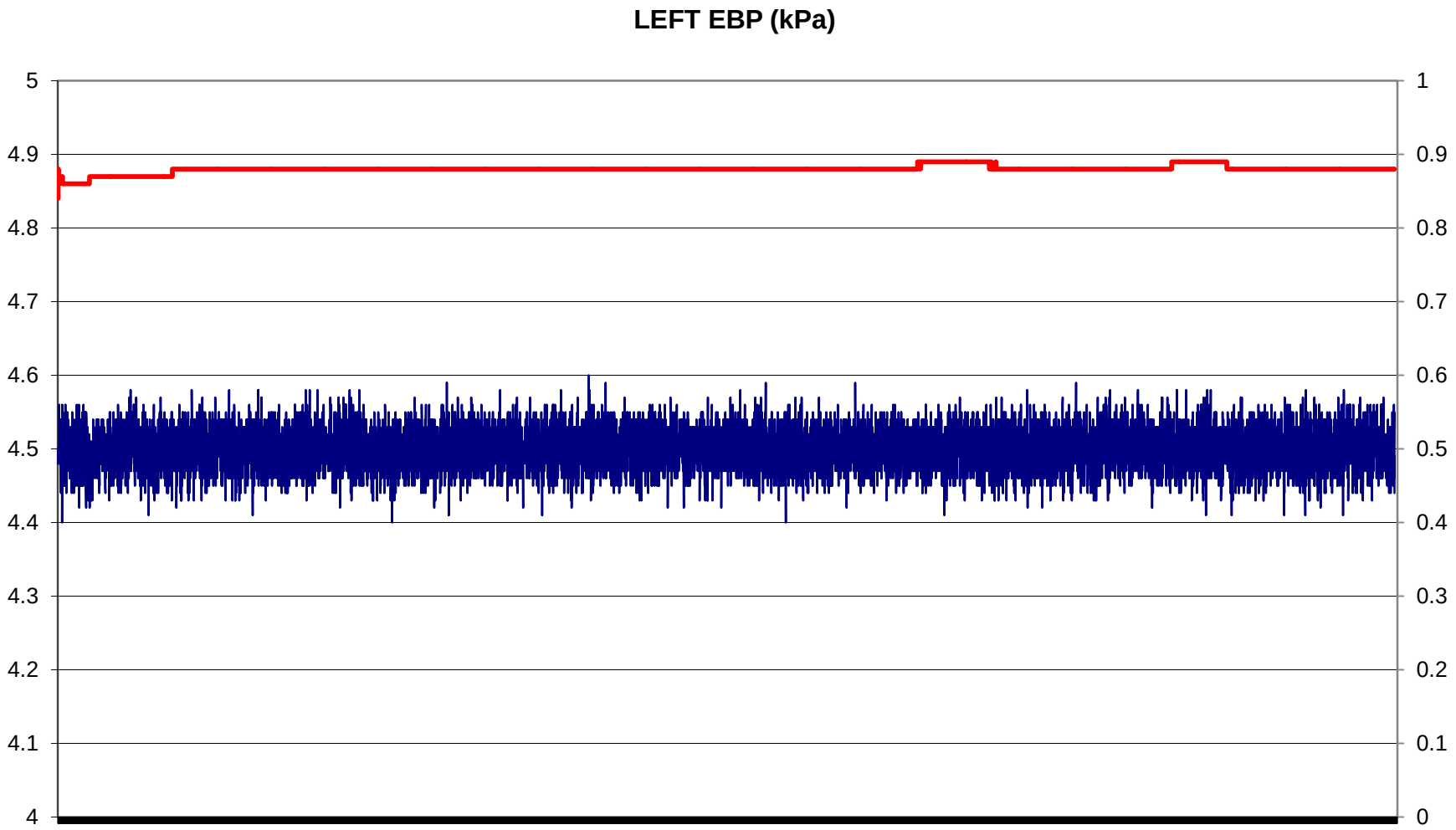
Project Engineer

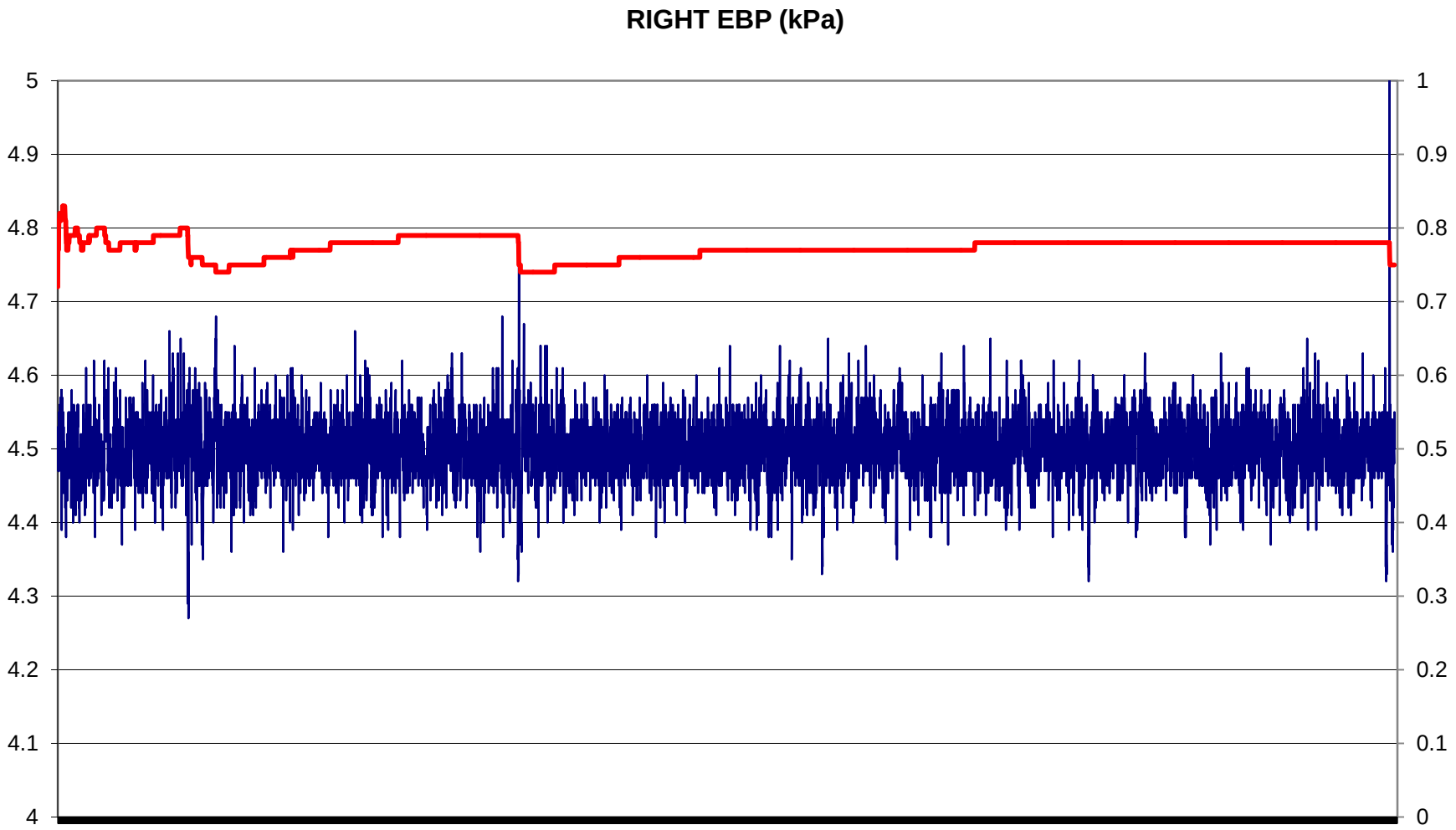
ENGINE SPEED (RPM)



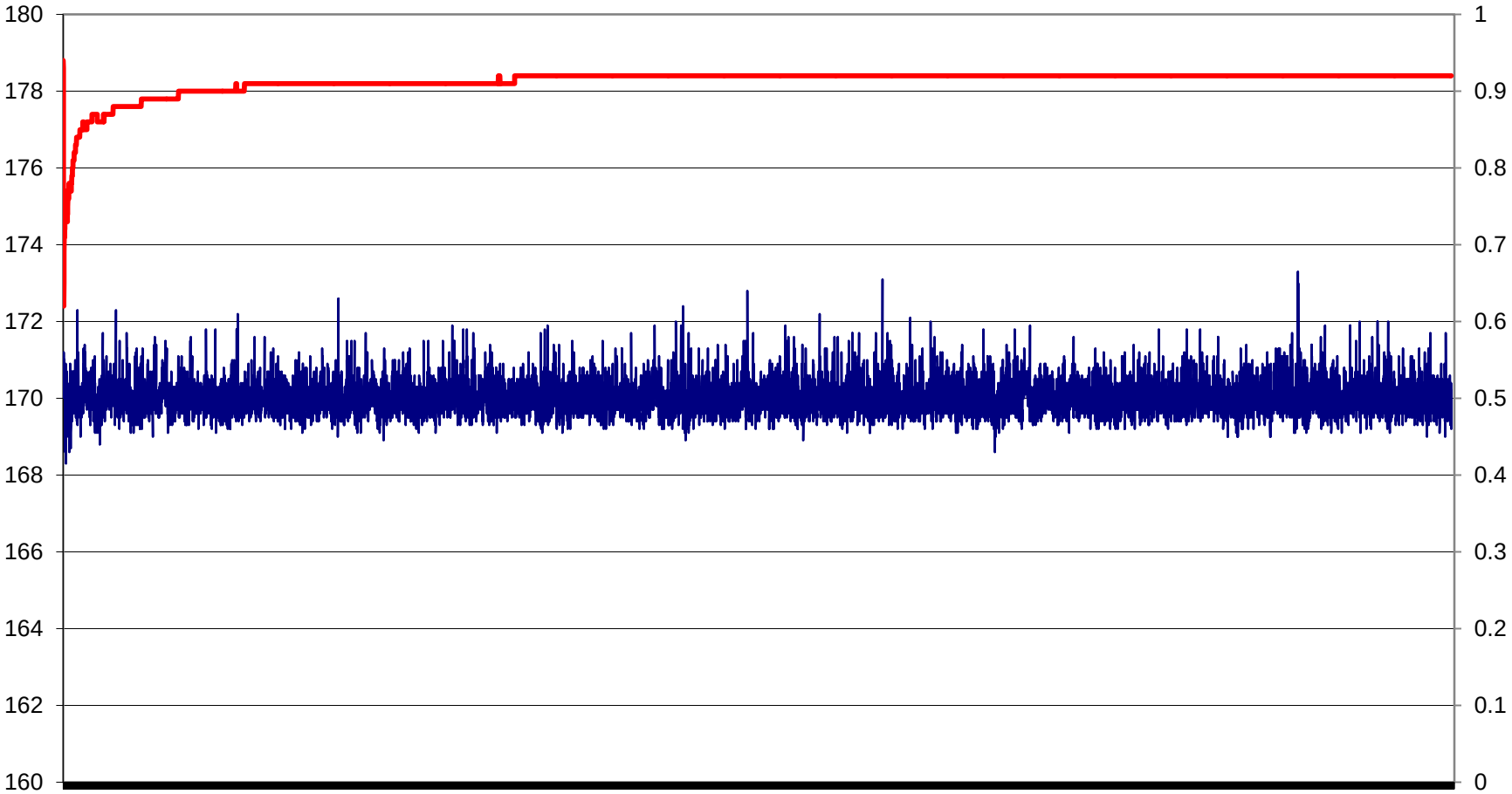
INLET AIR PRESSURE (kPa)

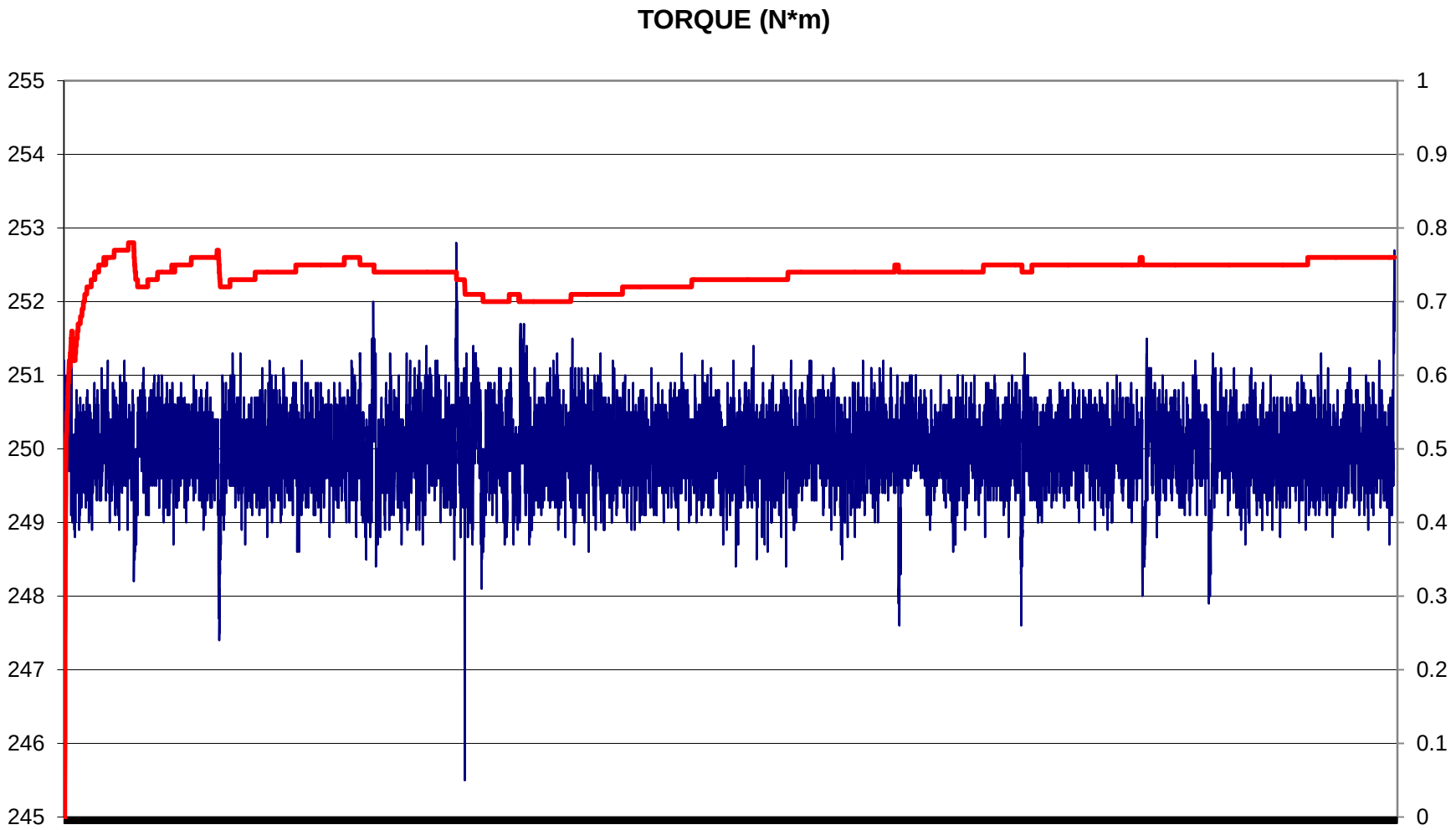


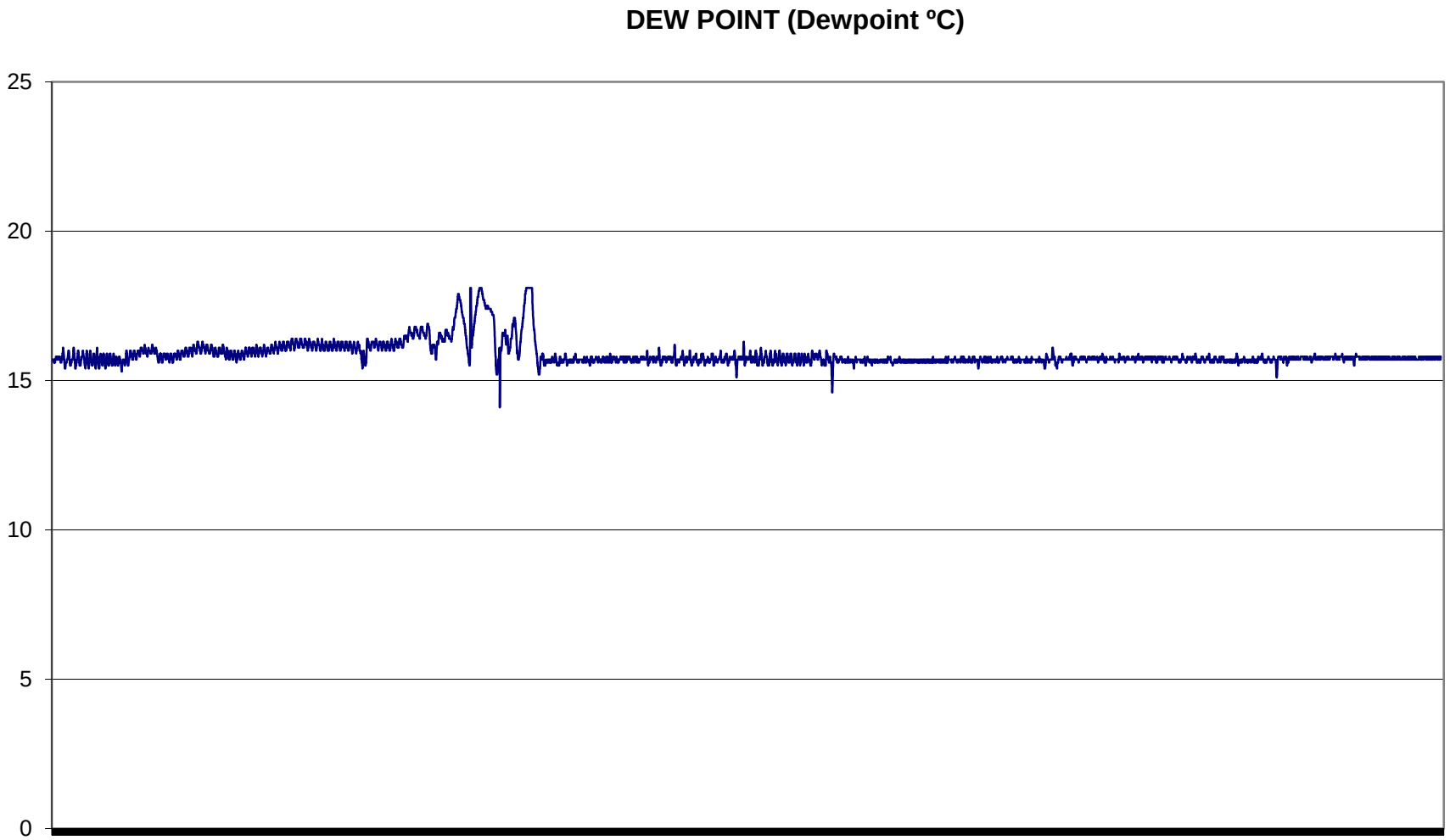




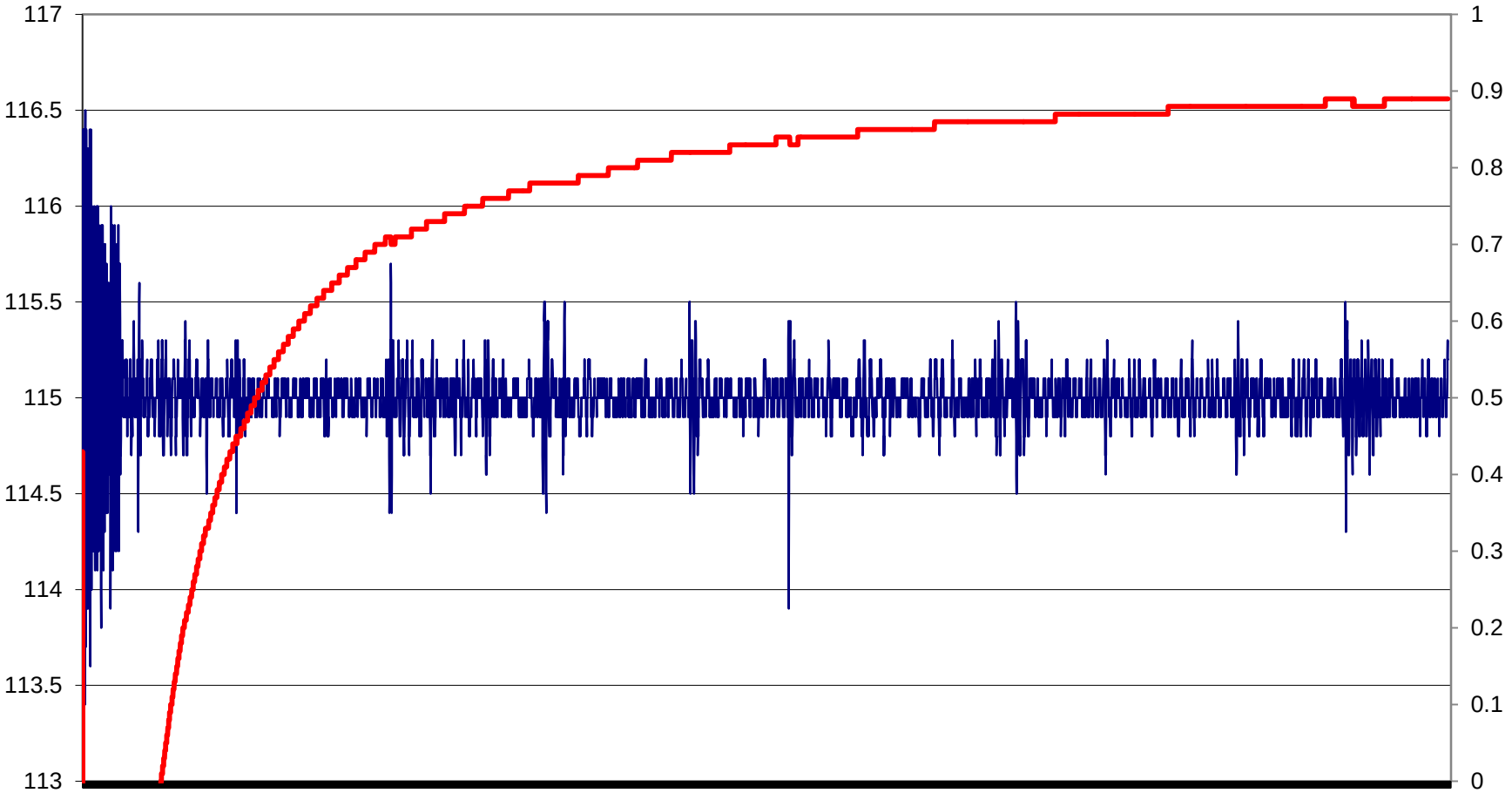
COOLANT FLOW (LPM)

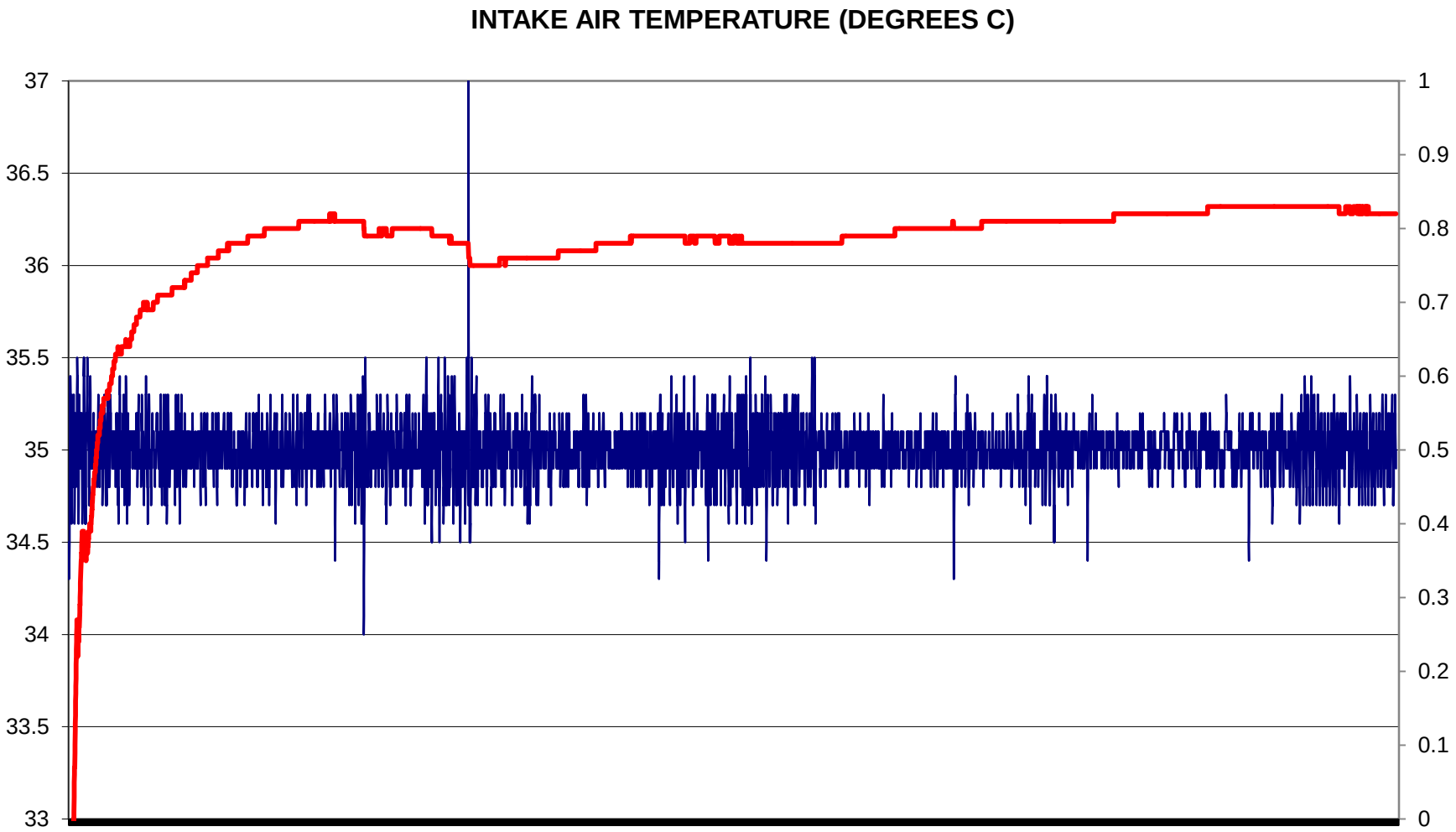




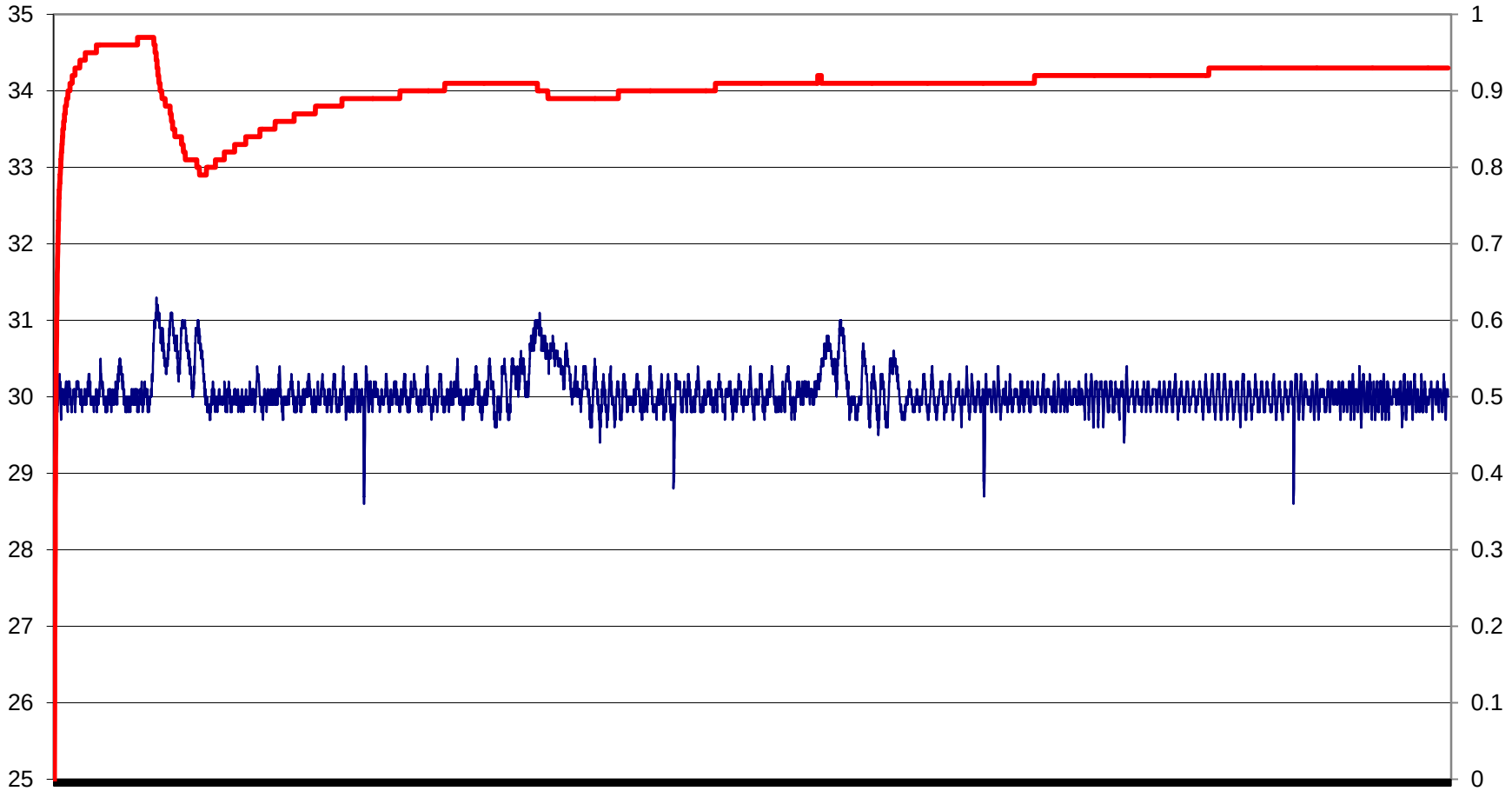


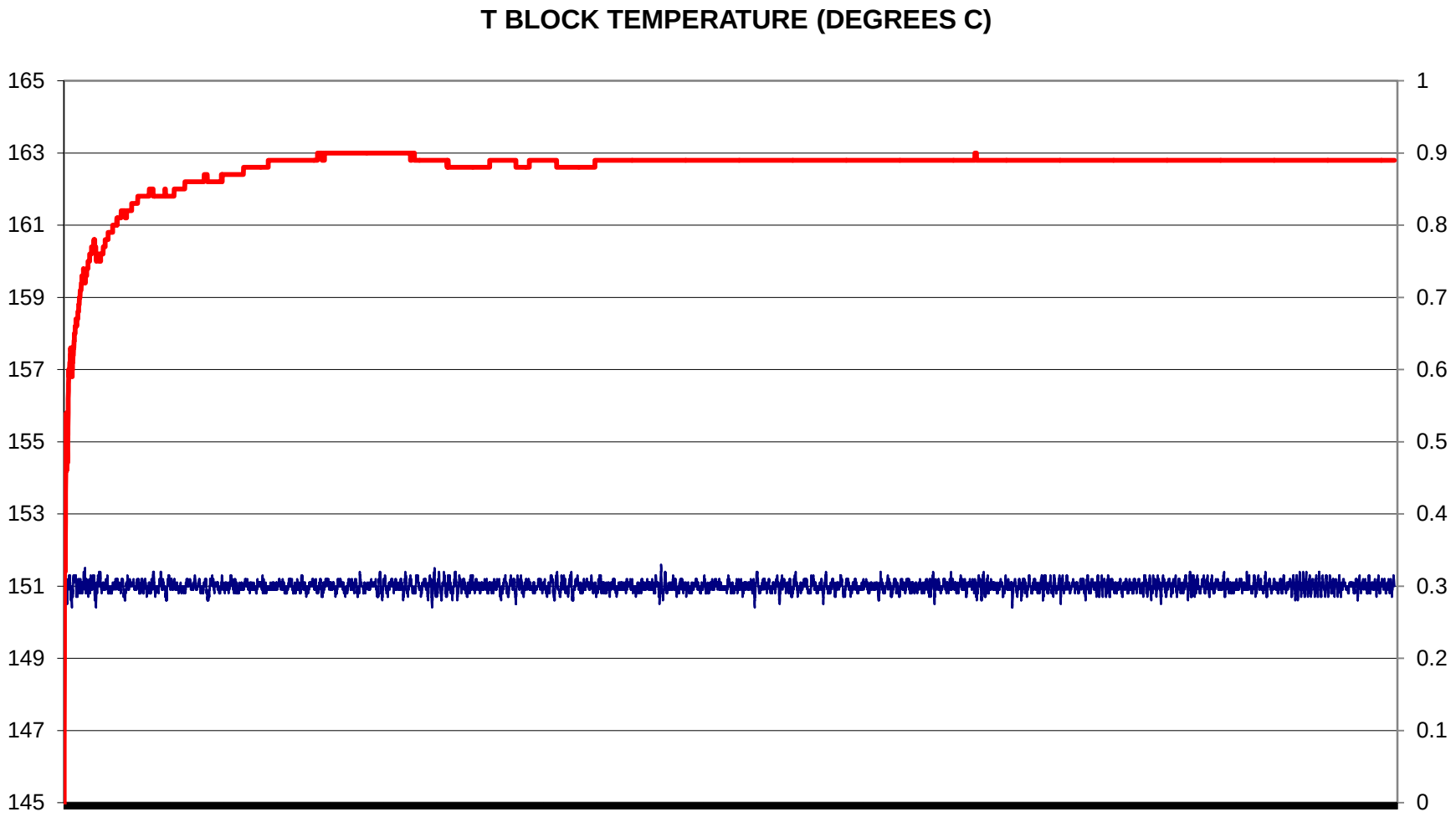
COOLANT OUT TEMPERATURE (DEGREES C)



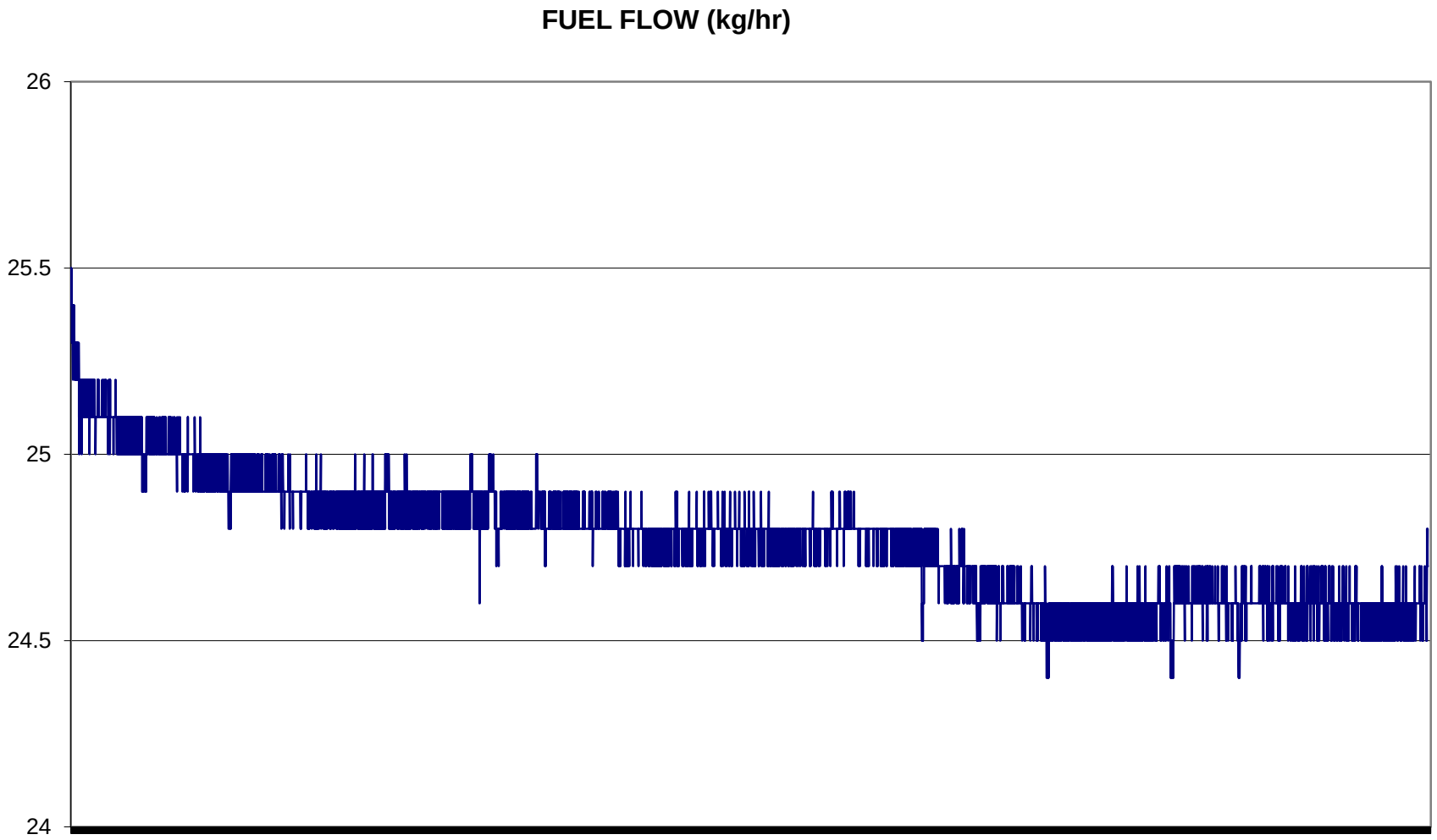


FUEL TEMPERATURE (DEGREES C)

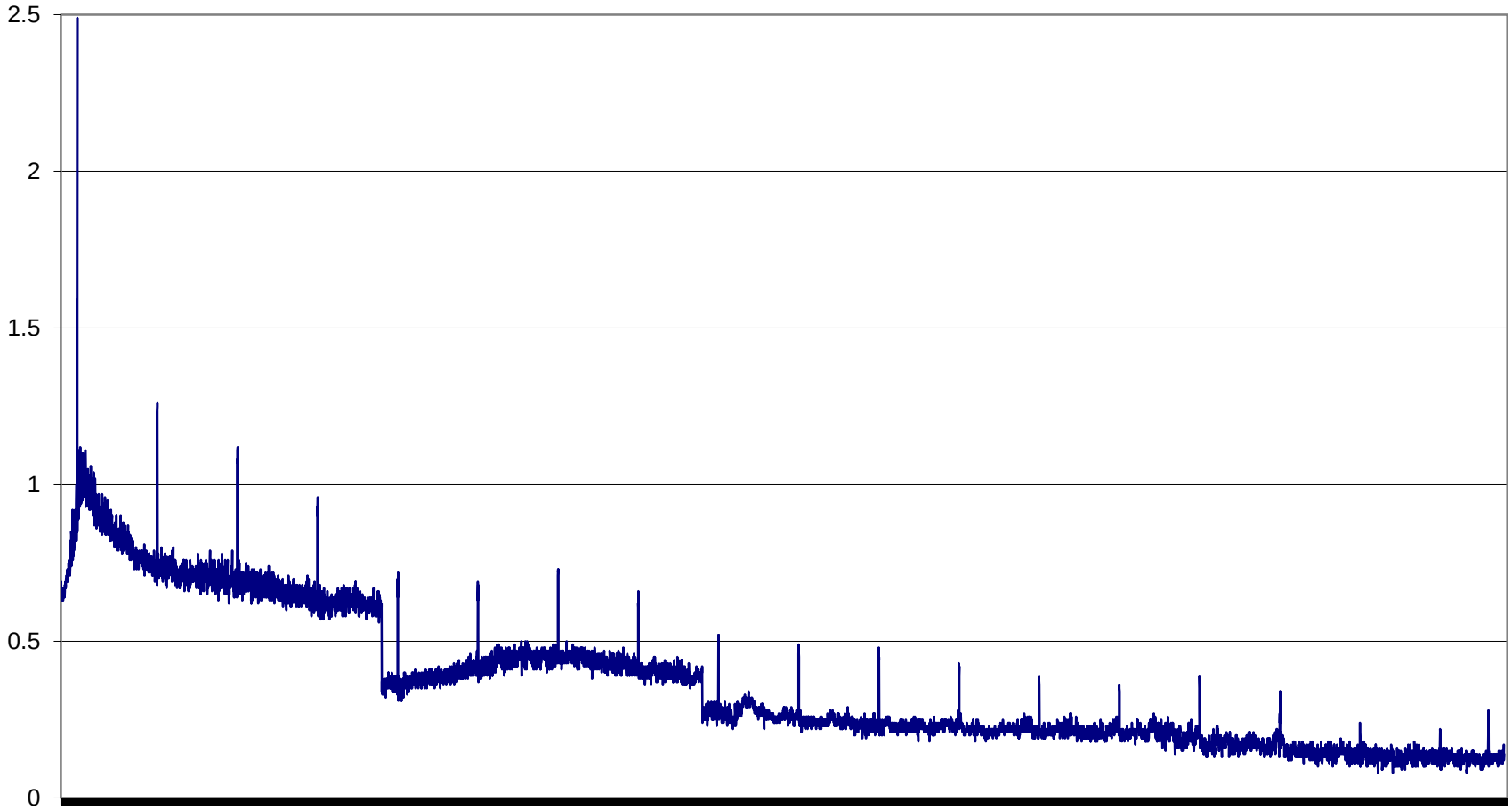




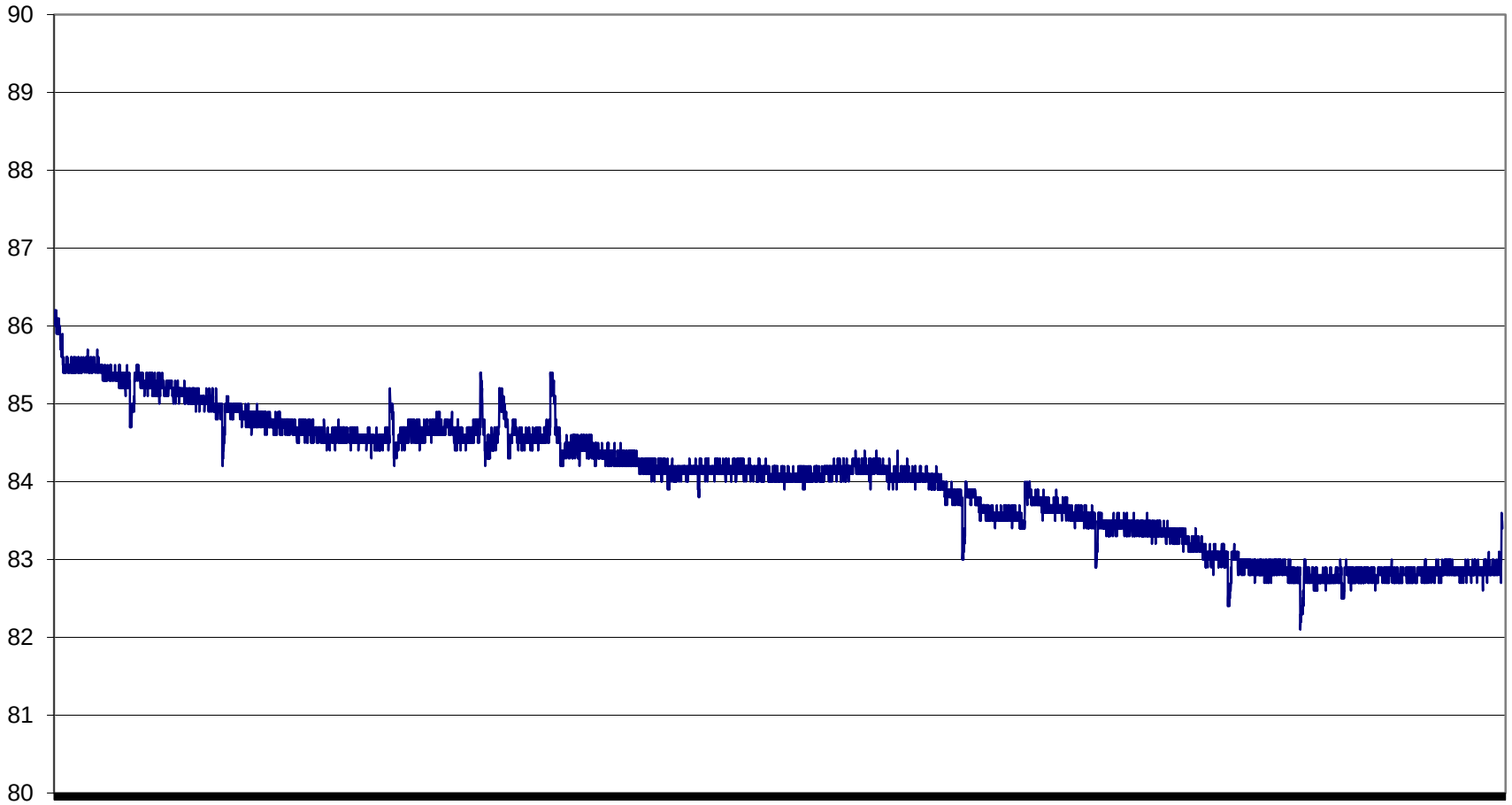
UNCONTROLLED DATA



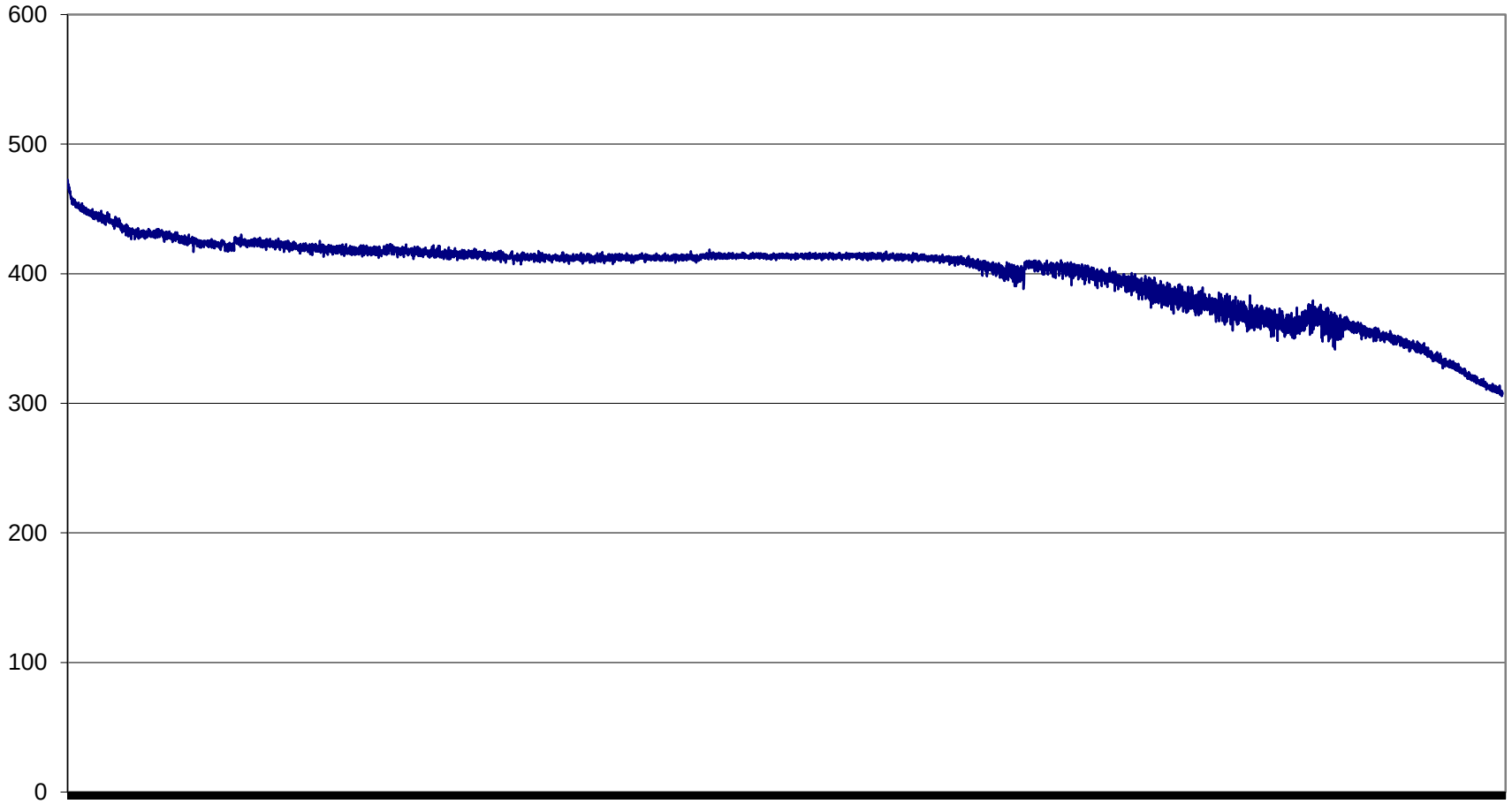
CRANKCASE PRESSURE (kPa)

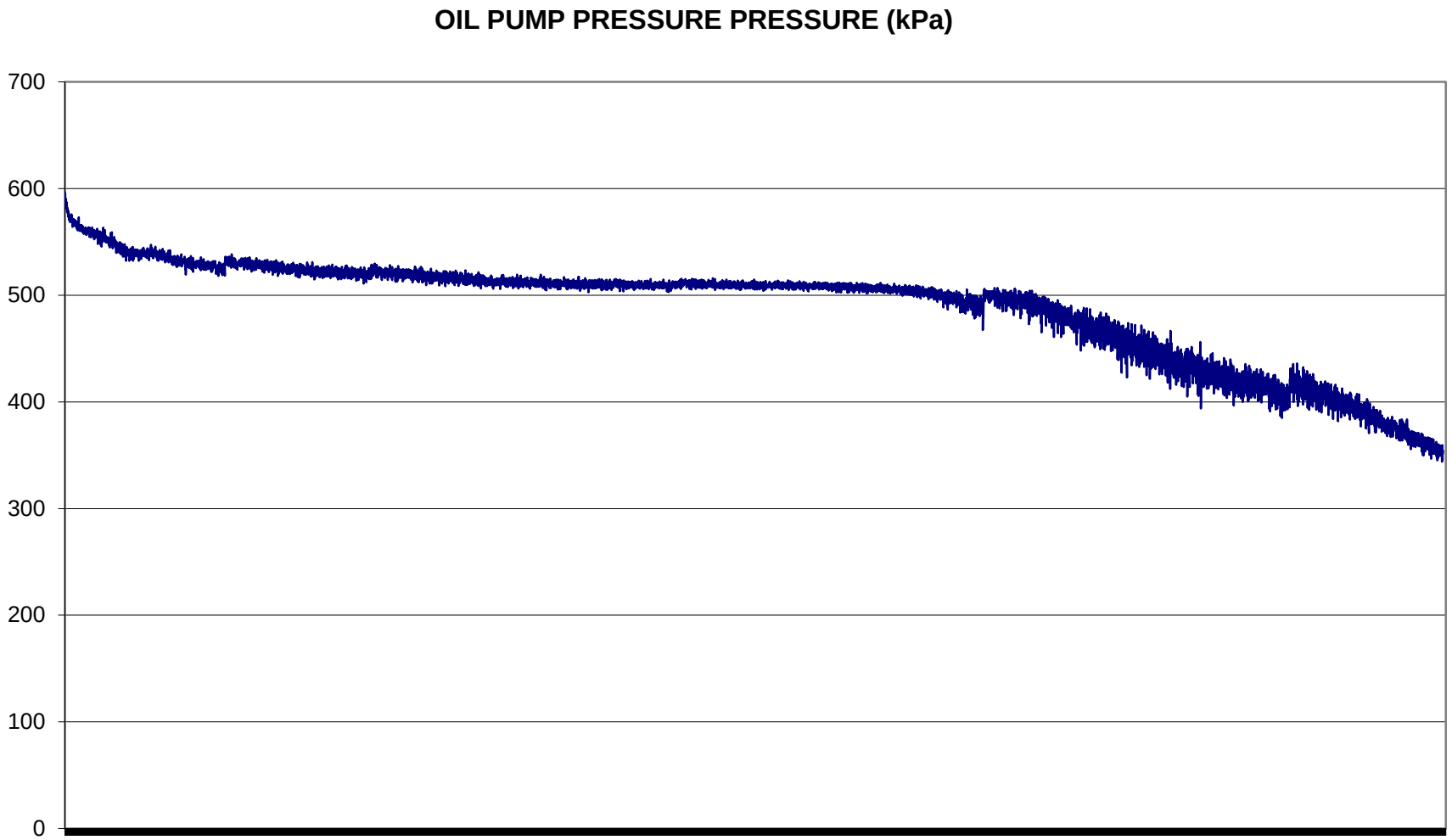


INTAKE MANIFOLD ABSOLUTE PRESSURE (kPaA)

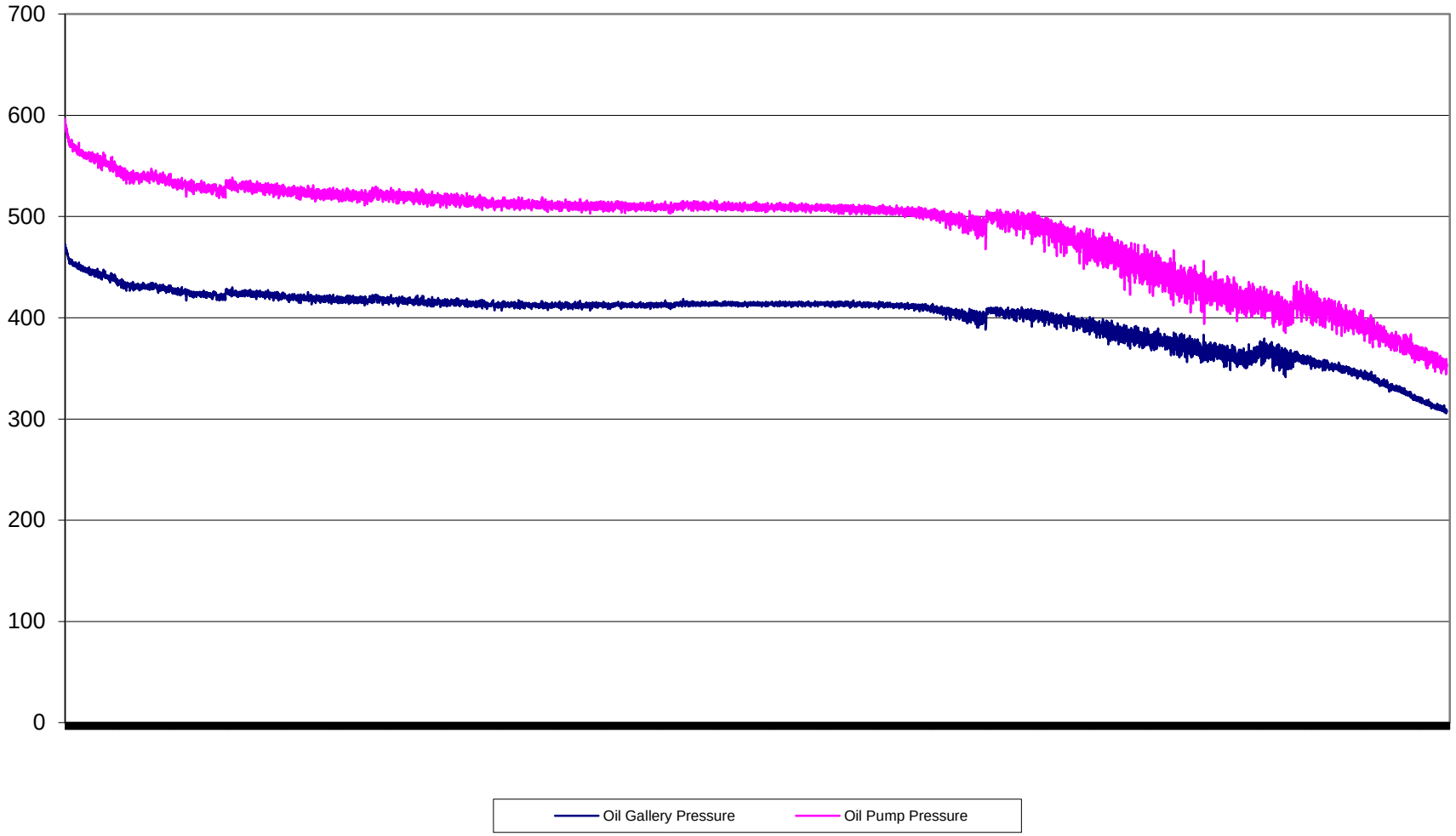


OIL GALLERY PRESSURE (kPa)

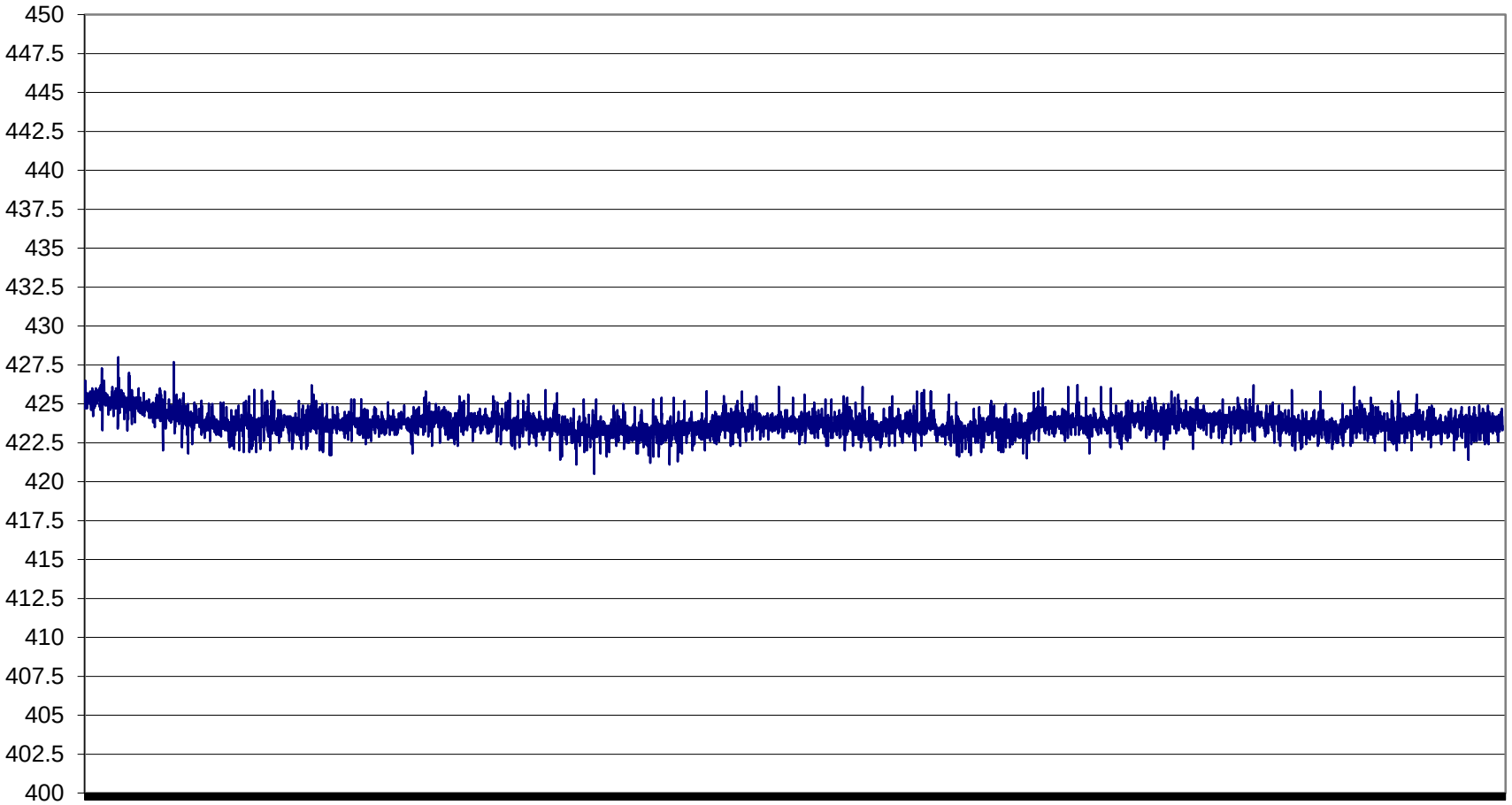




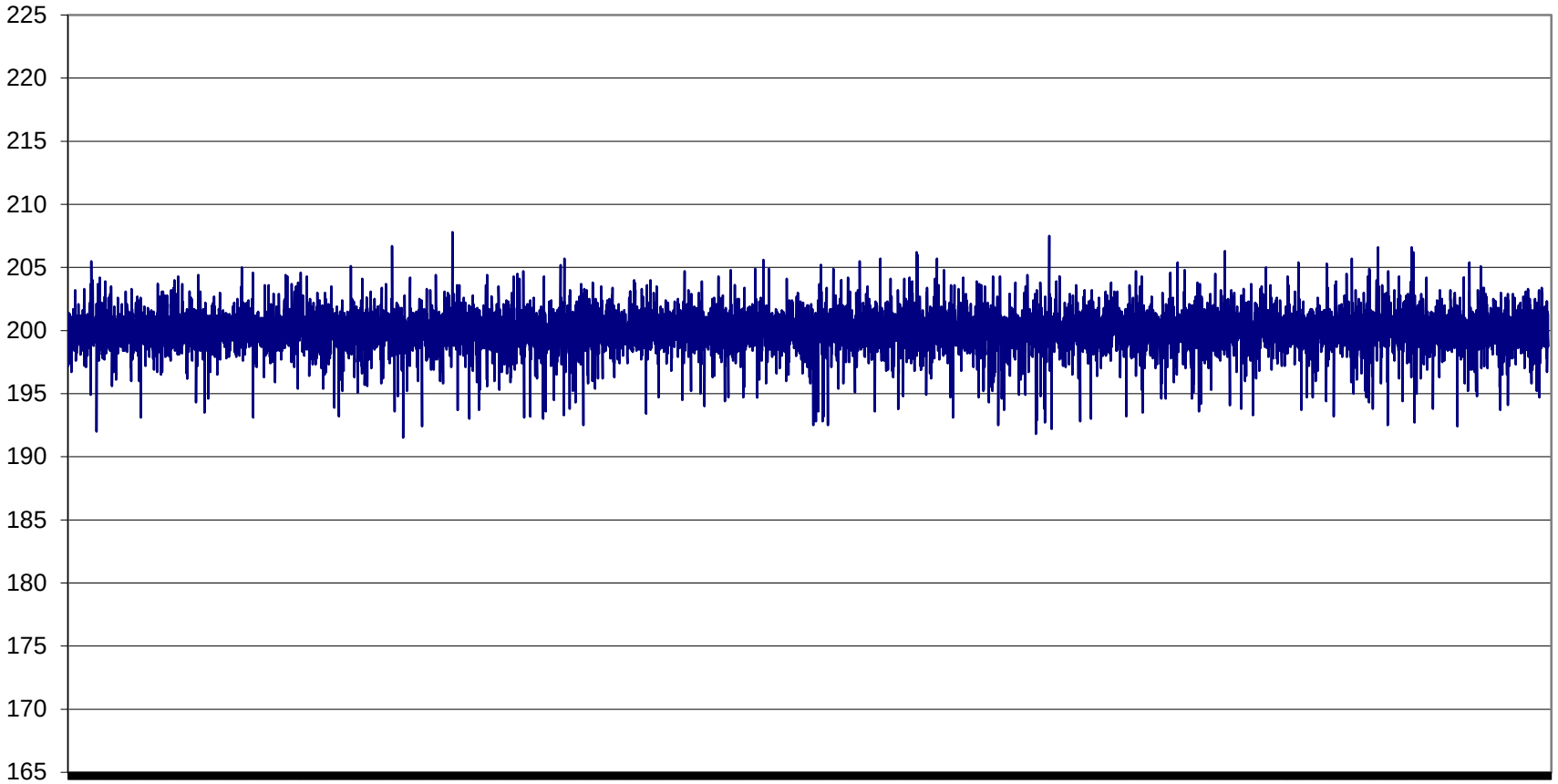
OIL GALLERY-OIL FILTER INLET PRESSURE (kPa)



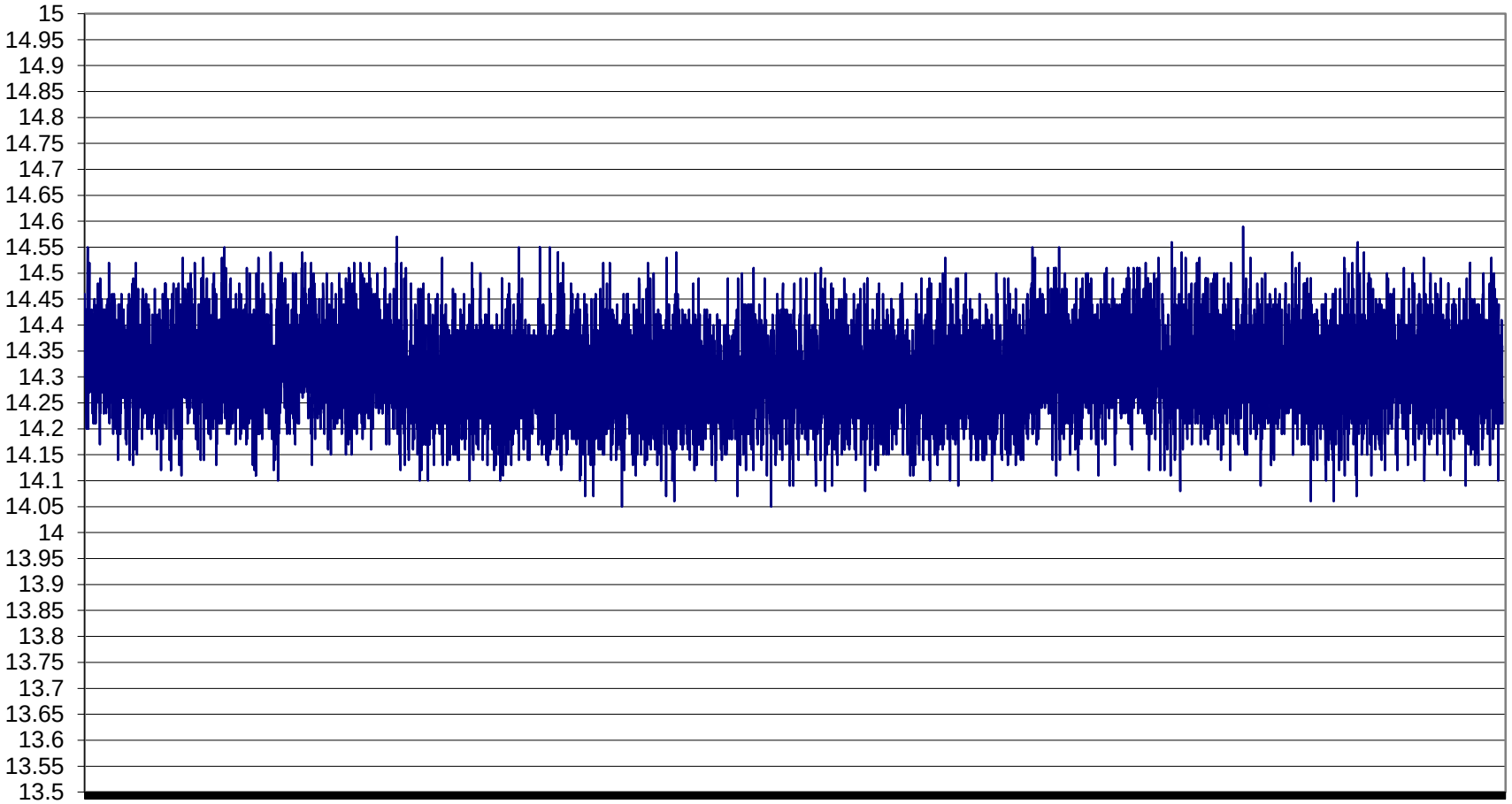
FUEL RAIL PRESSURE (kg/hr)



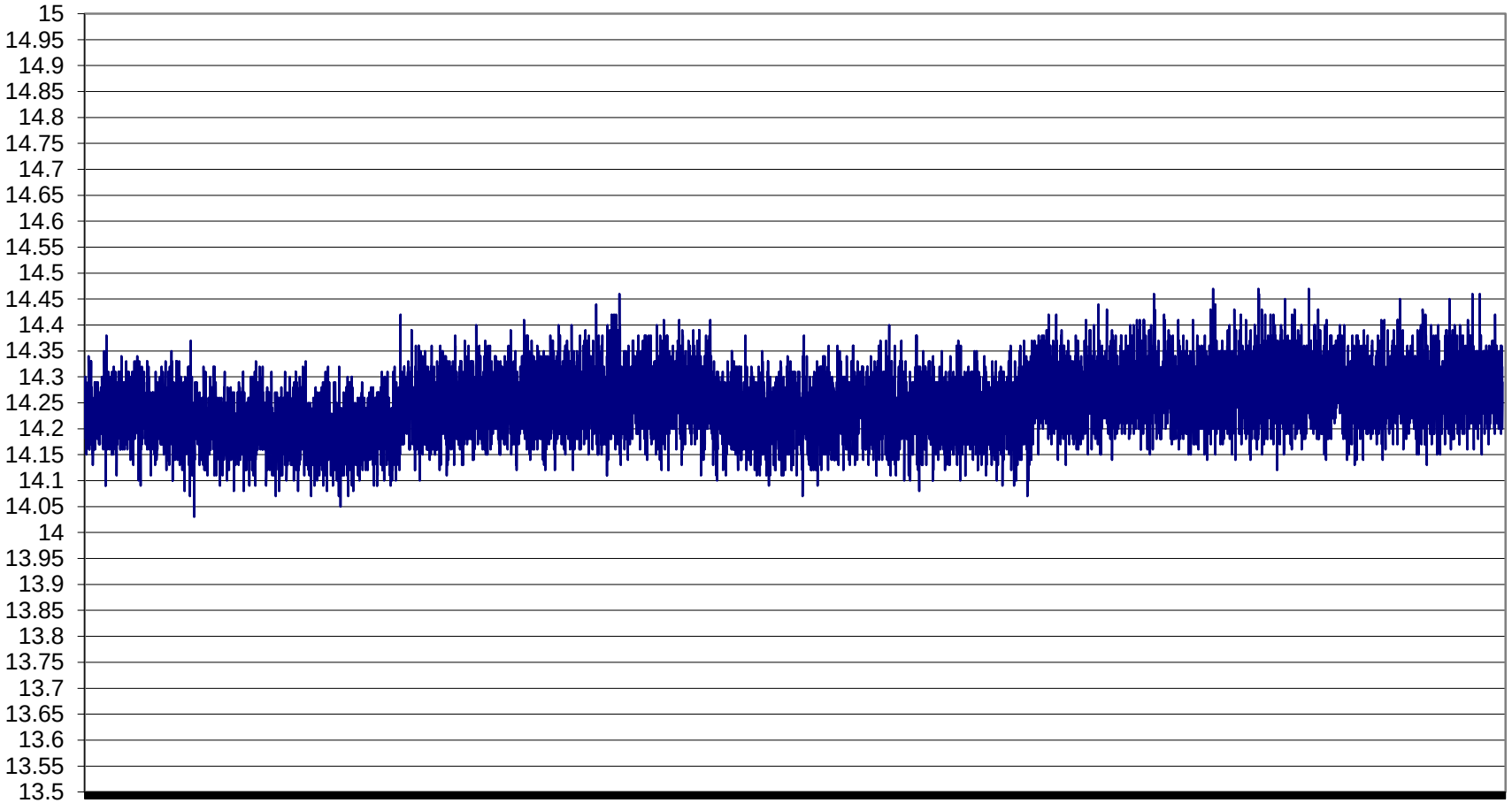
COOLANT OUT PRESSURE (kPa)

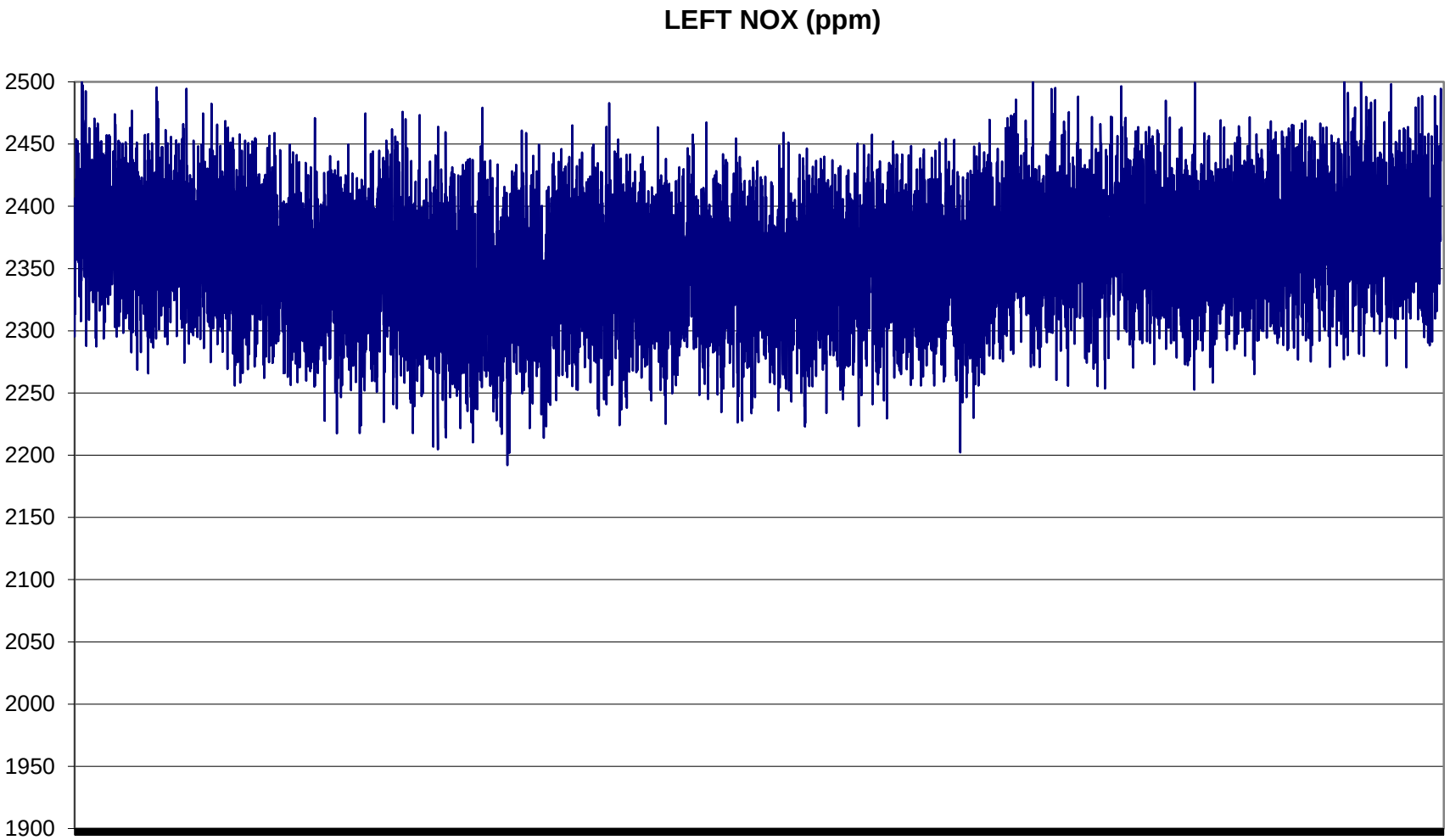


LEFT AFR

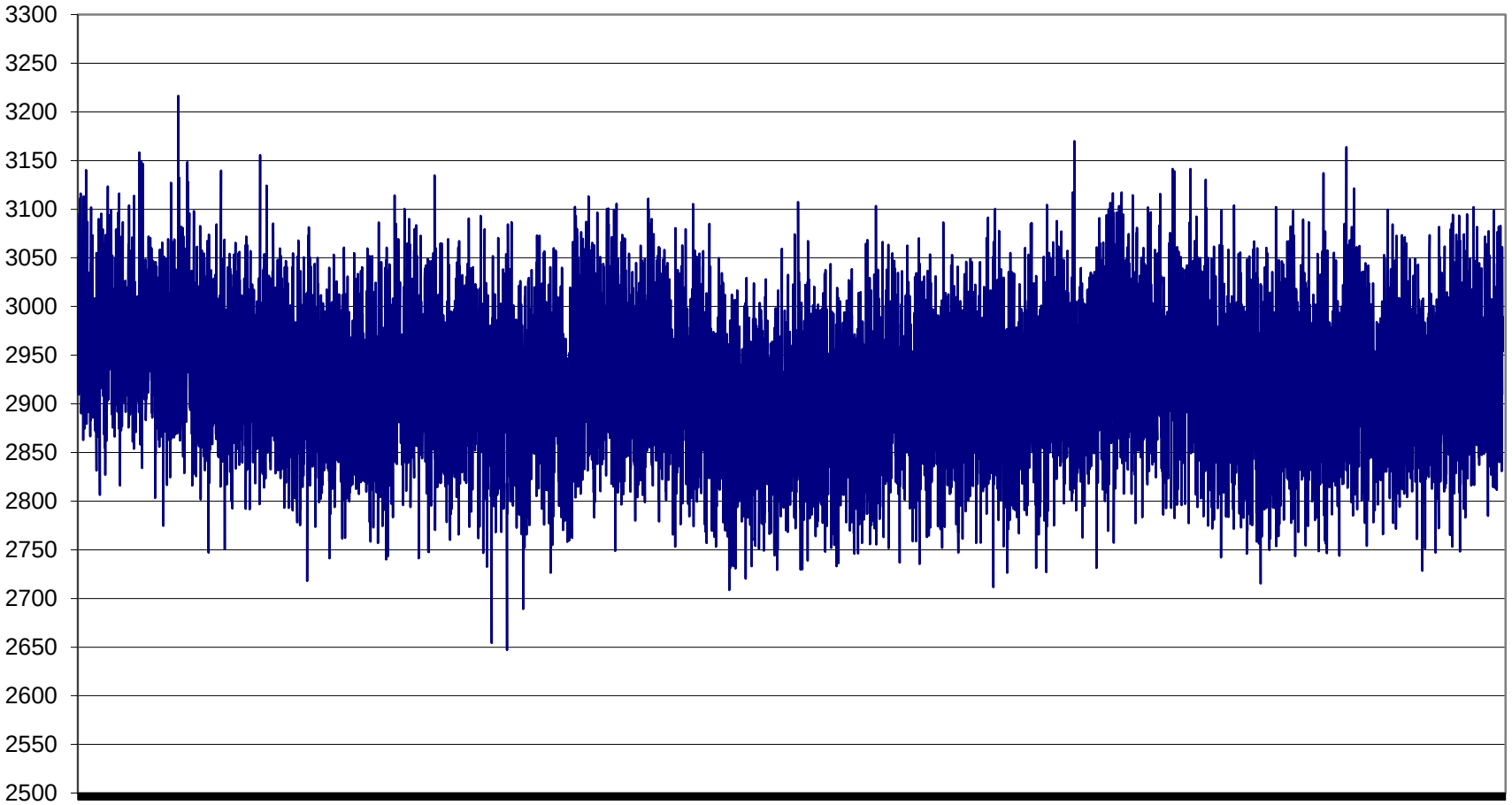


RIGHT AFR

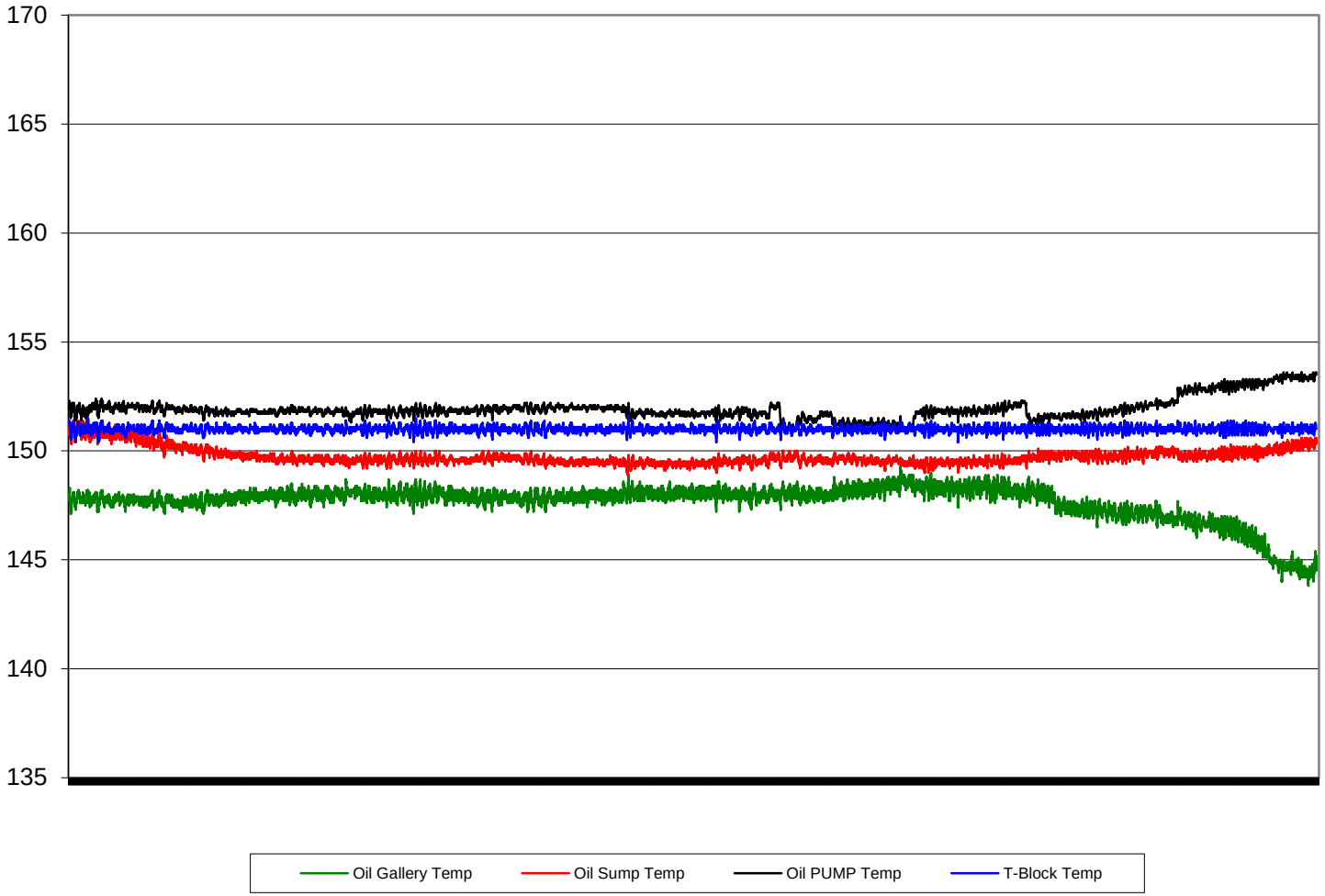




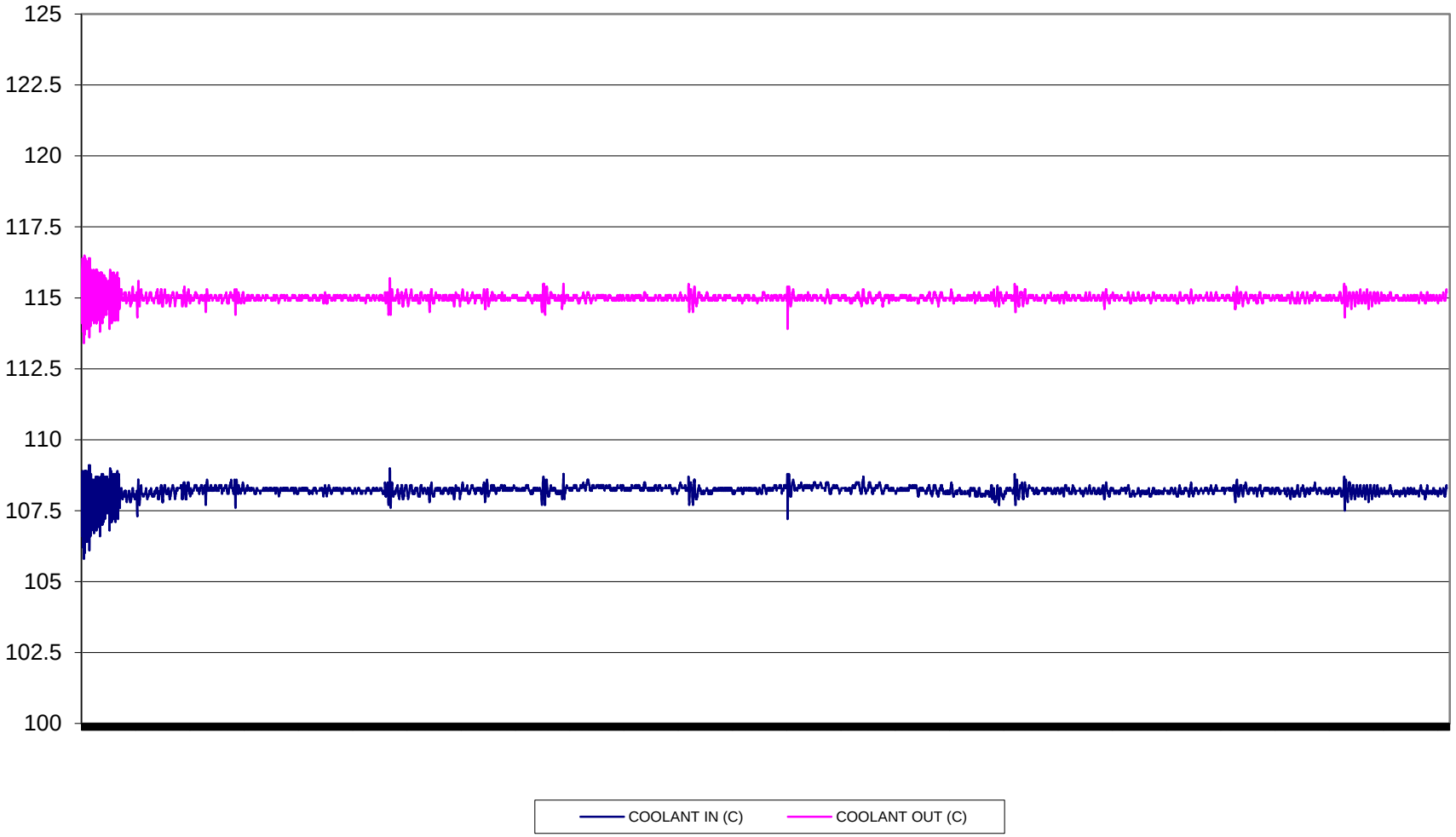
RIGHT NOX (ppm)



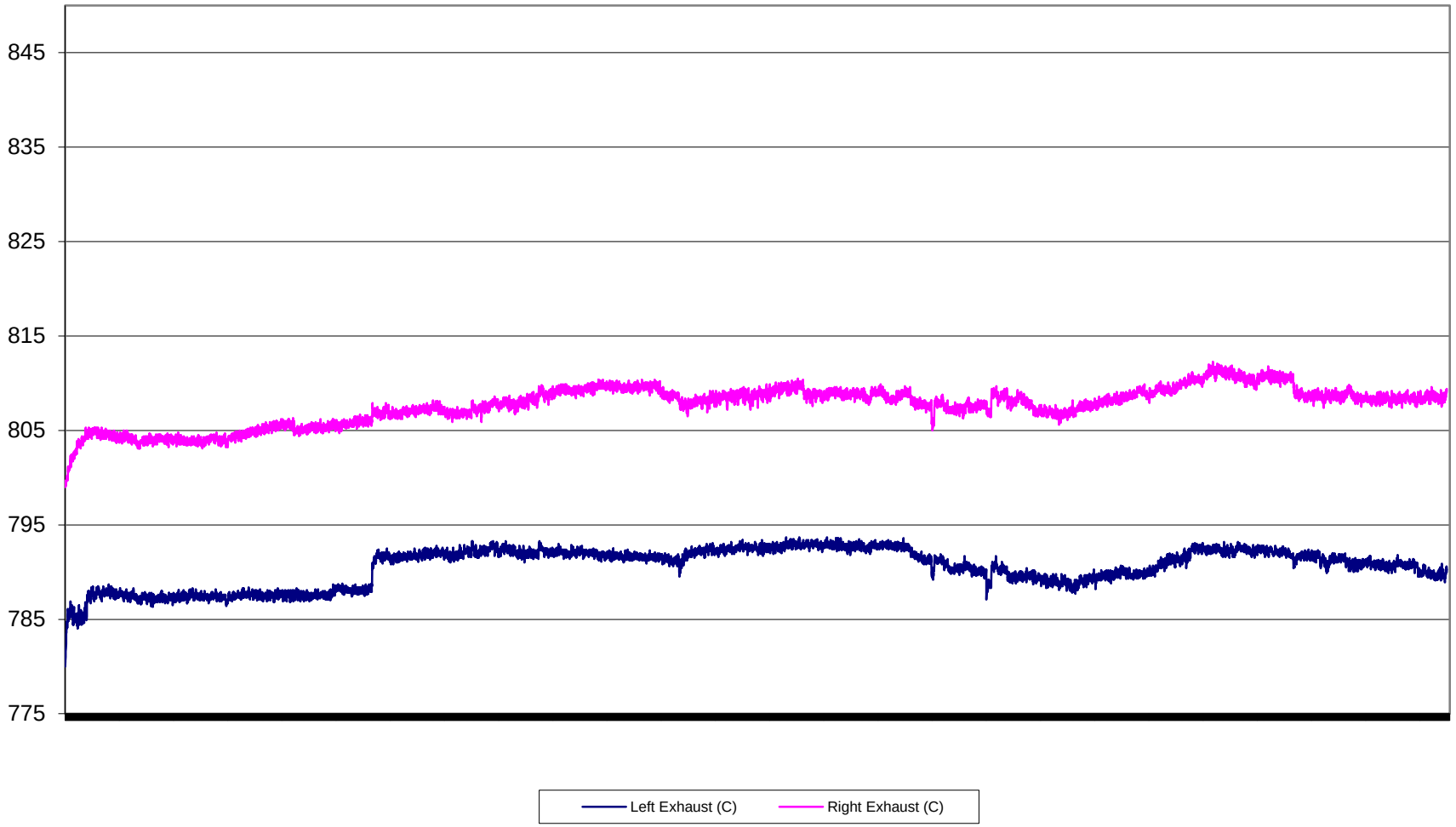
OIL TEMPERATURES (DEGREES C)



COOLANT IN-OUT TEMPERATURE (DEGREES C)



LEFT-RIGHT EXHAUST COLLECTOR TEMPERATURE (DEGREES C)



For Additional Information

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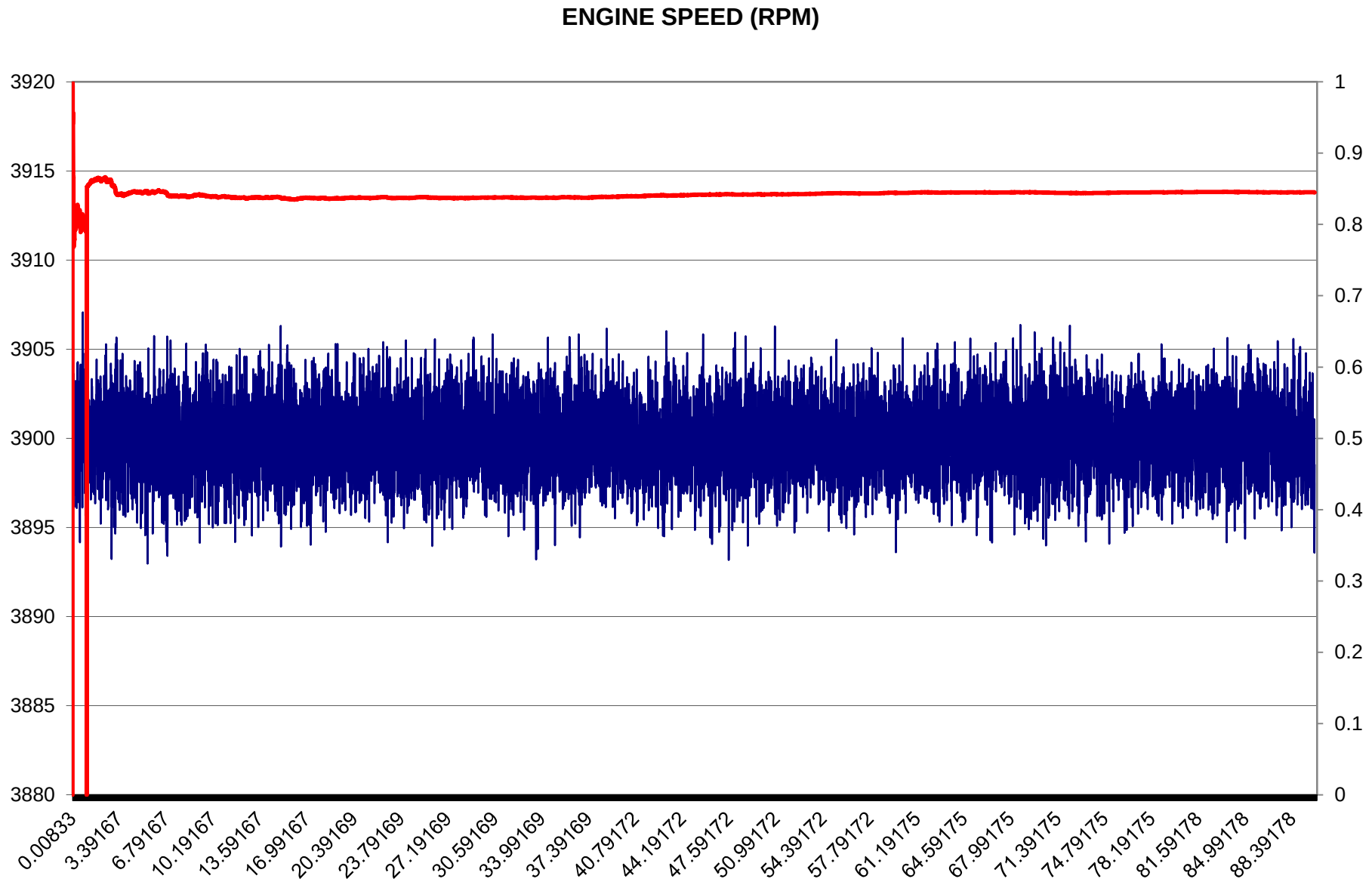
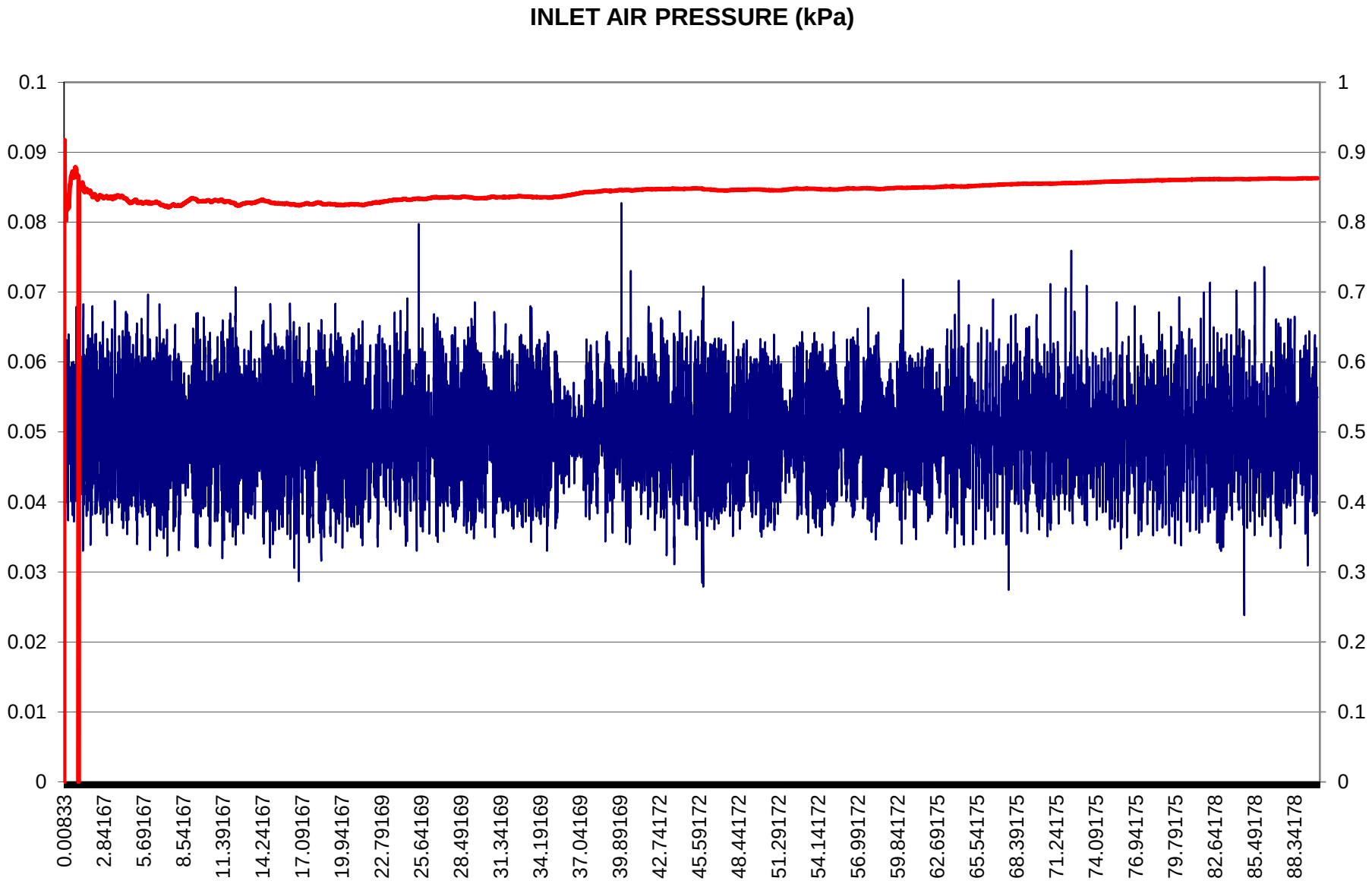
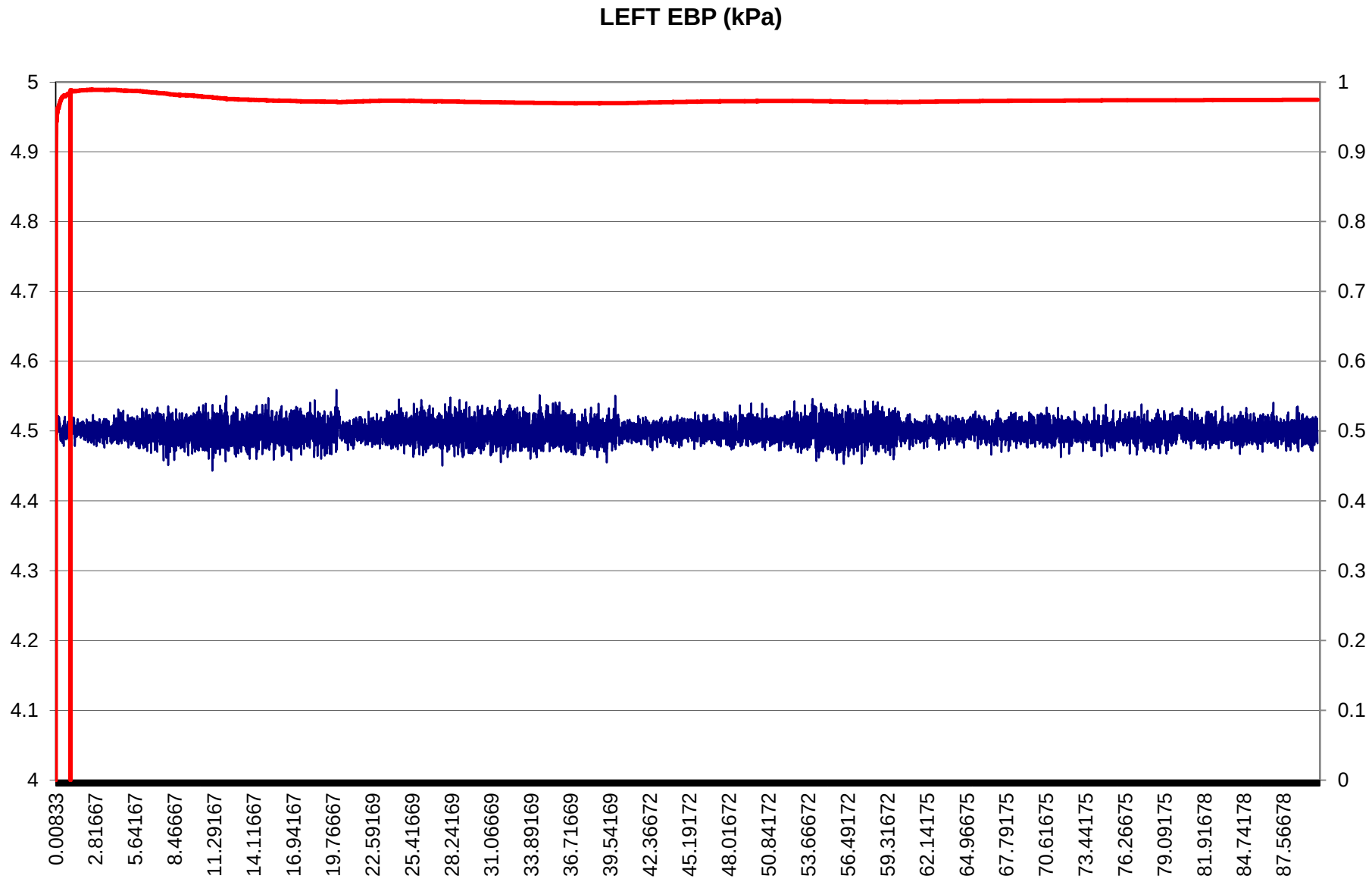
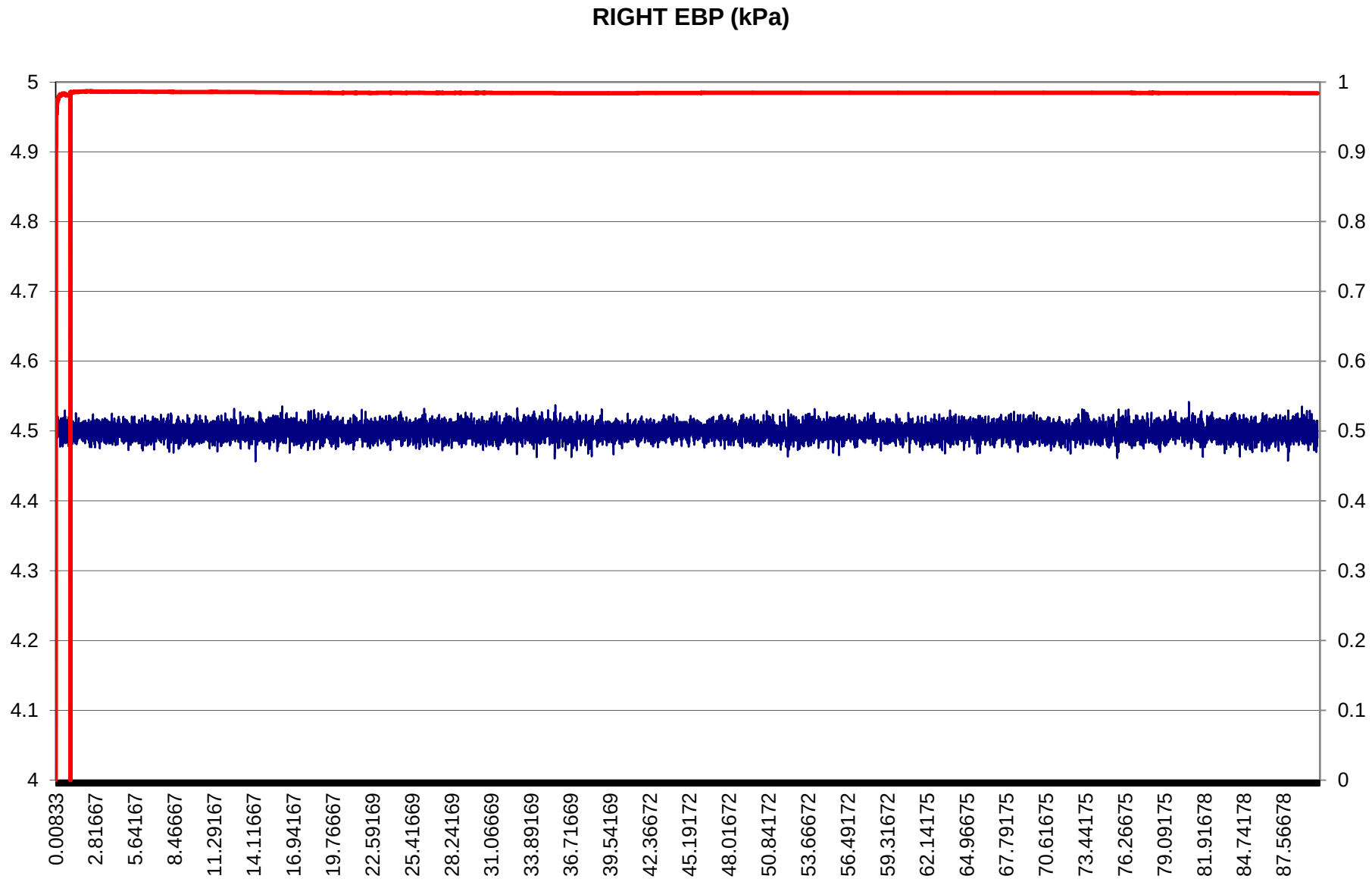
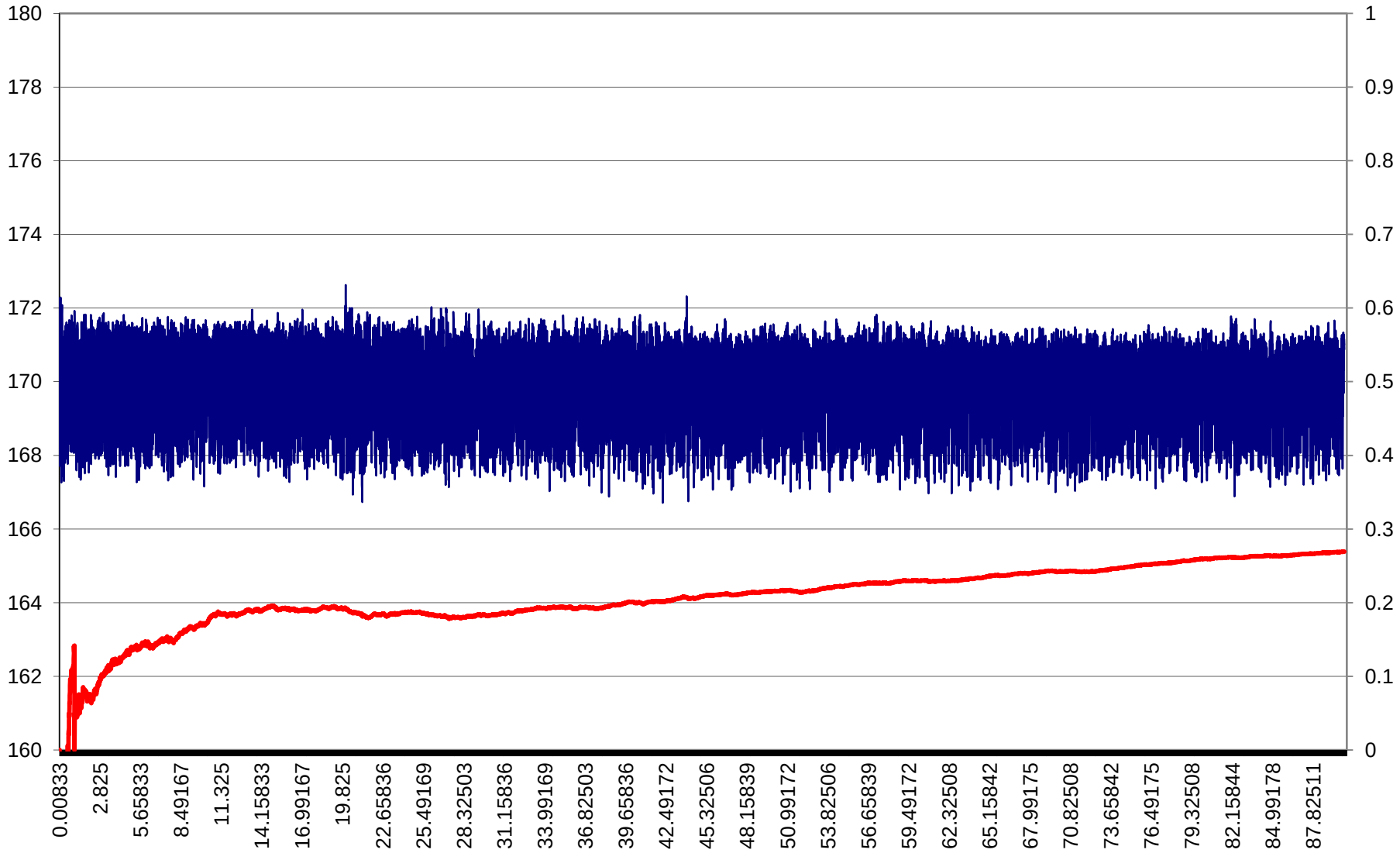

ENGINE SPEED (RPM)
3920
3915
3910
3905
3900
3895
3890
3885
3880
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0.00833
3.39167
6.79167
10.19167
13.59167
16.99167
20.39169
23.79169
27.19169
30.59169
33.99169
37.39169
40.79172
44.19172
47.59172
50.99172
54.39172
57.79172
61.19175
64.59175
67.99175
71.39175
74.79175
78.19175
81.59178
84.99178
88.39178


INLET AIR PRESSURE (kPa)
0.1
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0.00833
2.84167
5.69167
8.54167
11.39167
14.24167
17.09167
19.94167
22.79169
25.64169
28.49169
31.34169
34.19169
37.04169
39.89169
42.74172
45.59172
48.44172
51.29172
54.14172
56.99172
59.84172
62.69175
65.54175
68.39175
71.24175
74.09175
76.94175
79.79175
82.64178
85.49178
88.34178

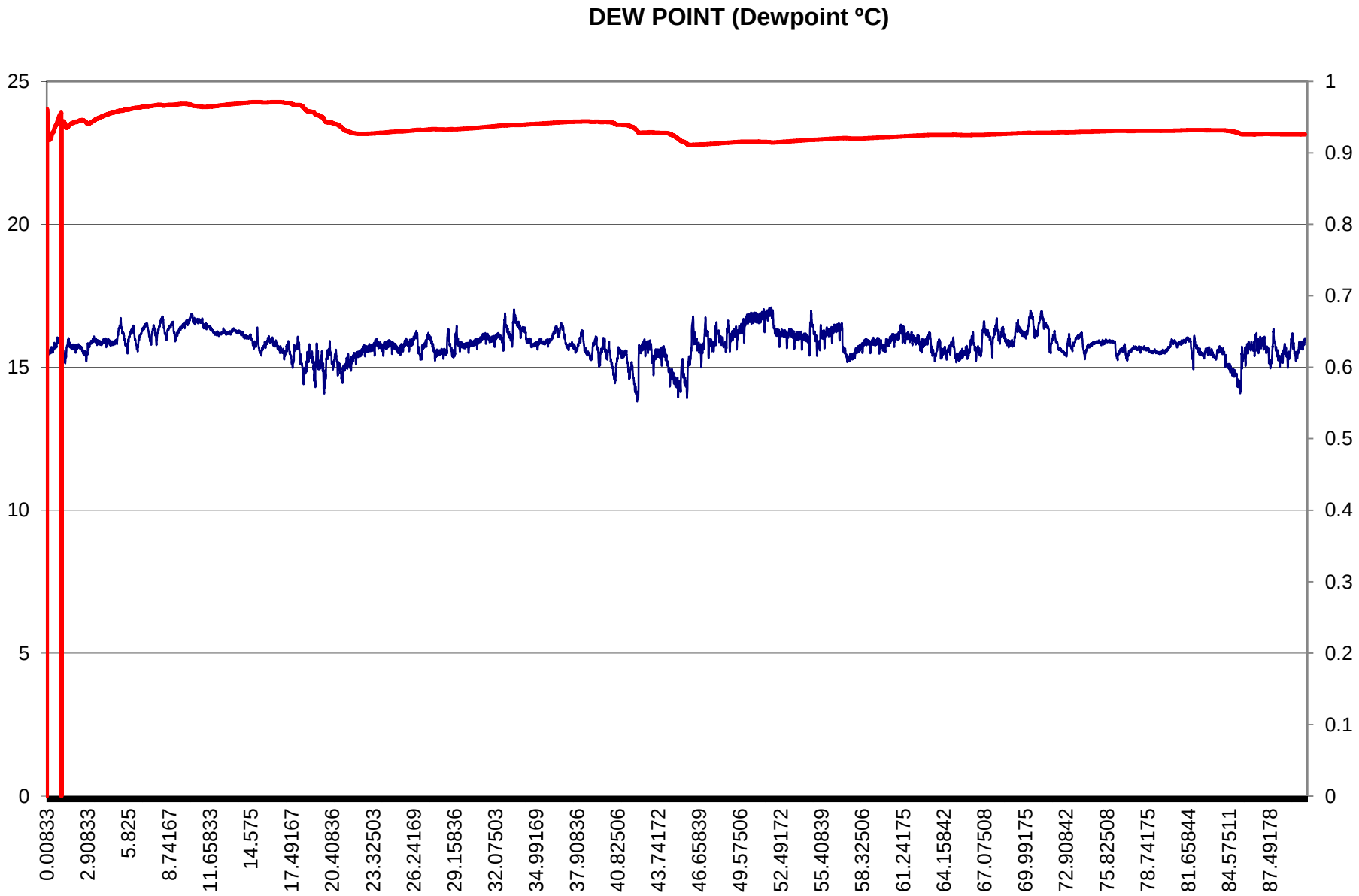

LEFT EBP (kPa)
5
4.9
4.8
4.7
4.6
4.5
4.4
4.3
4.2
4.1
4
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0.00833
2.81667
5.64167
8.46667
11.29167
14.11667
16.94167
19.76667
22.59169
25.41669
28.24169
31.06669
33.89169
36.71669
39.54169
42.36672
45.19172
48.01672
50.84172
53.66672
56.49172
59.31672
62.14175
64.96675
67.79175
70.61675
73.44175
76.26675
79.09175
81.91678
84.74178
87.56678


RIGHT EBP (kPa)
5
4.9
4.8
4.7
4.6
4.5
4.4
4.3
4.2
4.1
4
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0.00833
2.81667
5.64167
8.46667
11.29167
14.11667
16.94167
19.76667
22.59169
25.41669
28.24169
31.06669
33.89169
36.71669
39.54169
42.36672
45.19172
48.01672
50.84172
53.66672
56.49172
59.31672
62.14175
64.96675
67.79175
70.61675
73.44175
76.26675
79.09175
81.91678
84.74178
87.56678

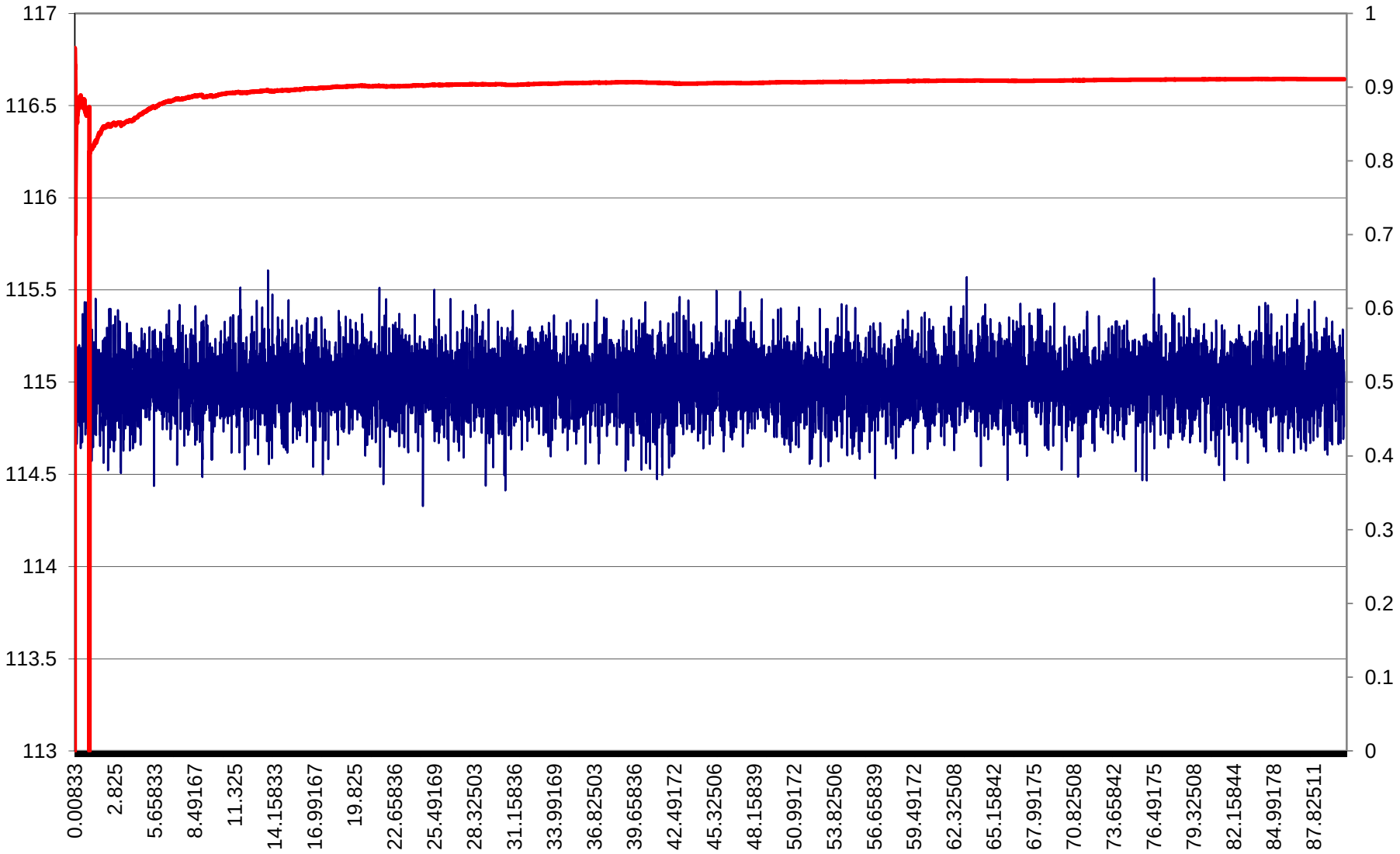
COOLANT FLOW (LPM)



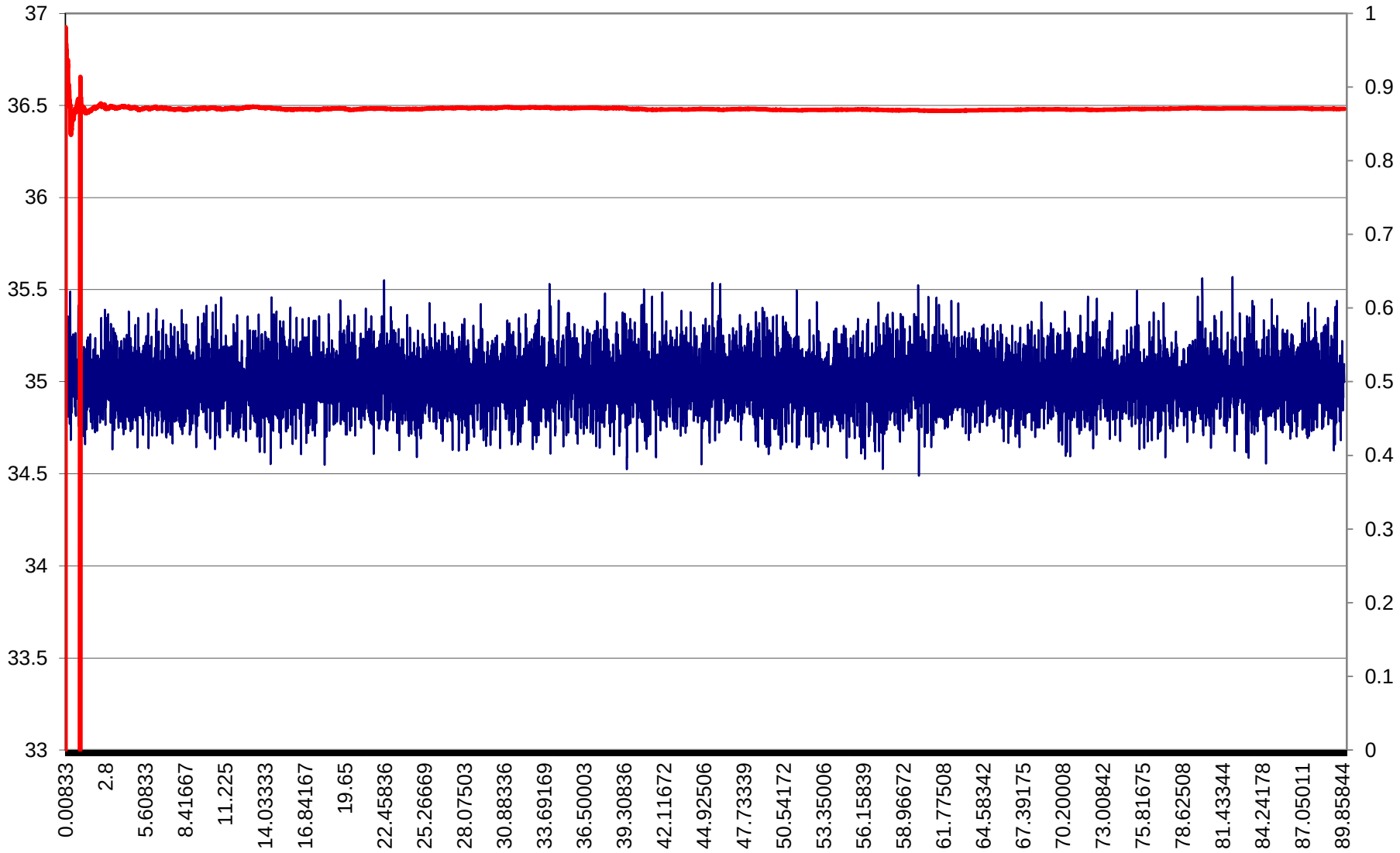

TORQUE (N*m)
255
254
253
252
251
250
249
248
247
246
245
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0.00833
2.825
5.65833
8.49167
11.325
14.15833
16.99167
19.825
22.65836
25.49169
28.32503
31.15836
33.99169
36.82503
39.65836
42.49172
45.32506
48.15839
50.99172
53.82506
56.65839
59.49172
62.32508
65.15842
67.99175
70.82508
73.65842
76.49175
79.32508
82.15844
84.99178
87.82511


DEW POINT (Dewpoint ºC)
25
20
15
10
5
0
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0.00833
2.90833
5.825
8.74167
11.65833
14.575
17.49167
20.40836
23.32503
26.24169
29.15836
32.07503
34.99169
37.90836
40.82506
43.74172
46.65839
49.57506
52.49172
55.40839
58.32506
61.24175
64.15842
67.07508
69.99175
72.90842
75.82508
78.74175
81.65844
84.57511
87.49178

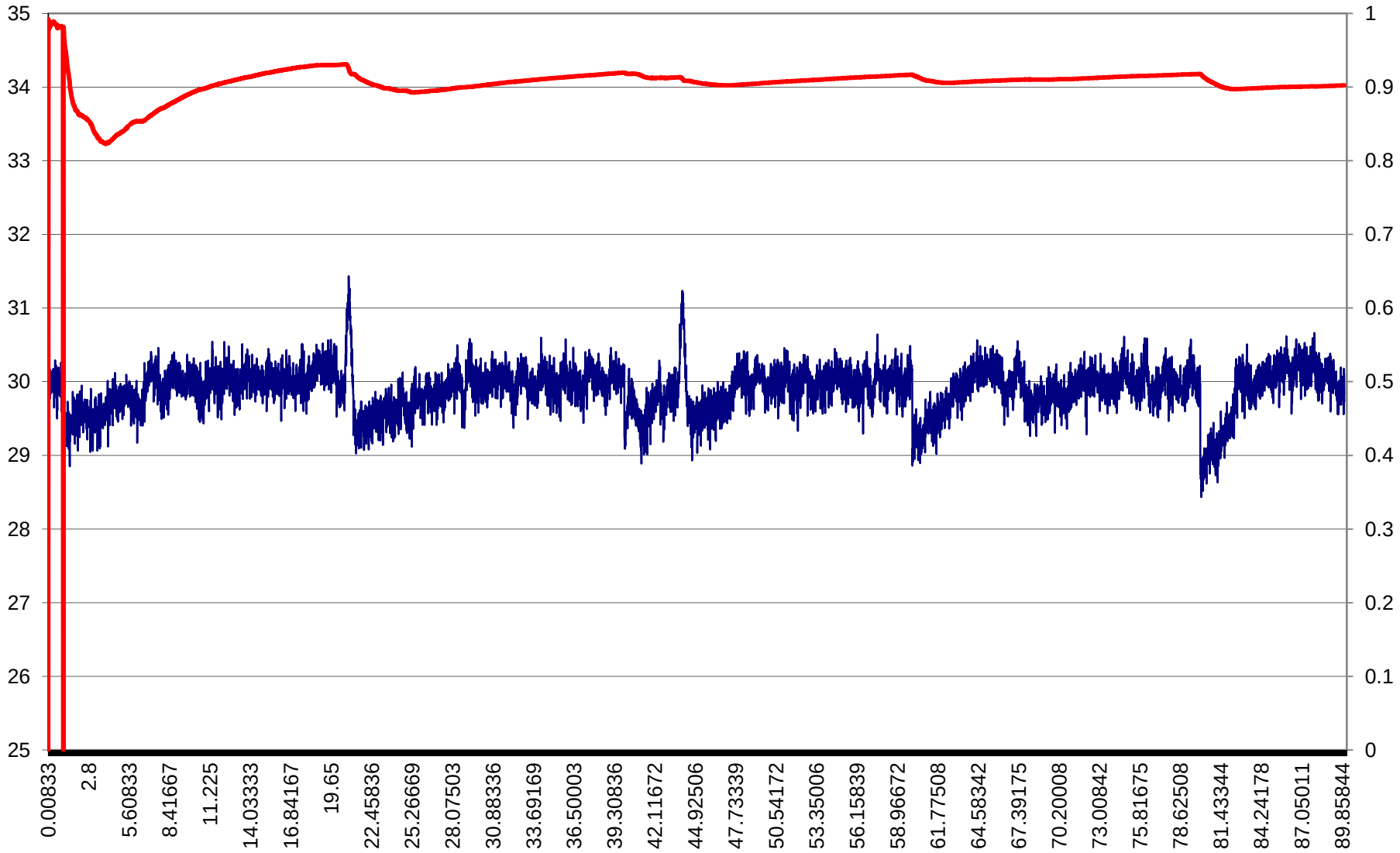
COOLANT OUT TEMPERATURE (DEGREES C)



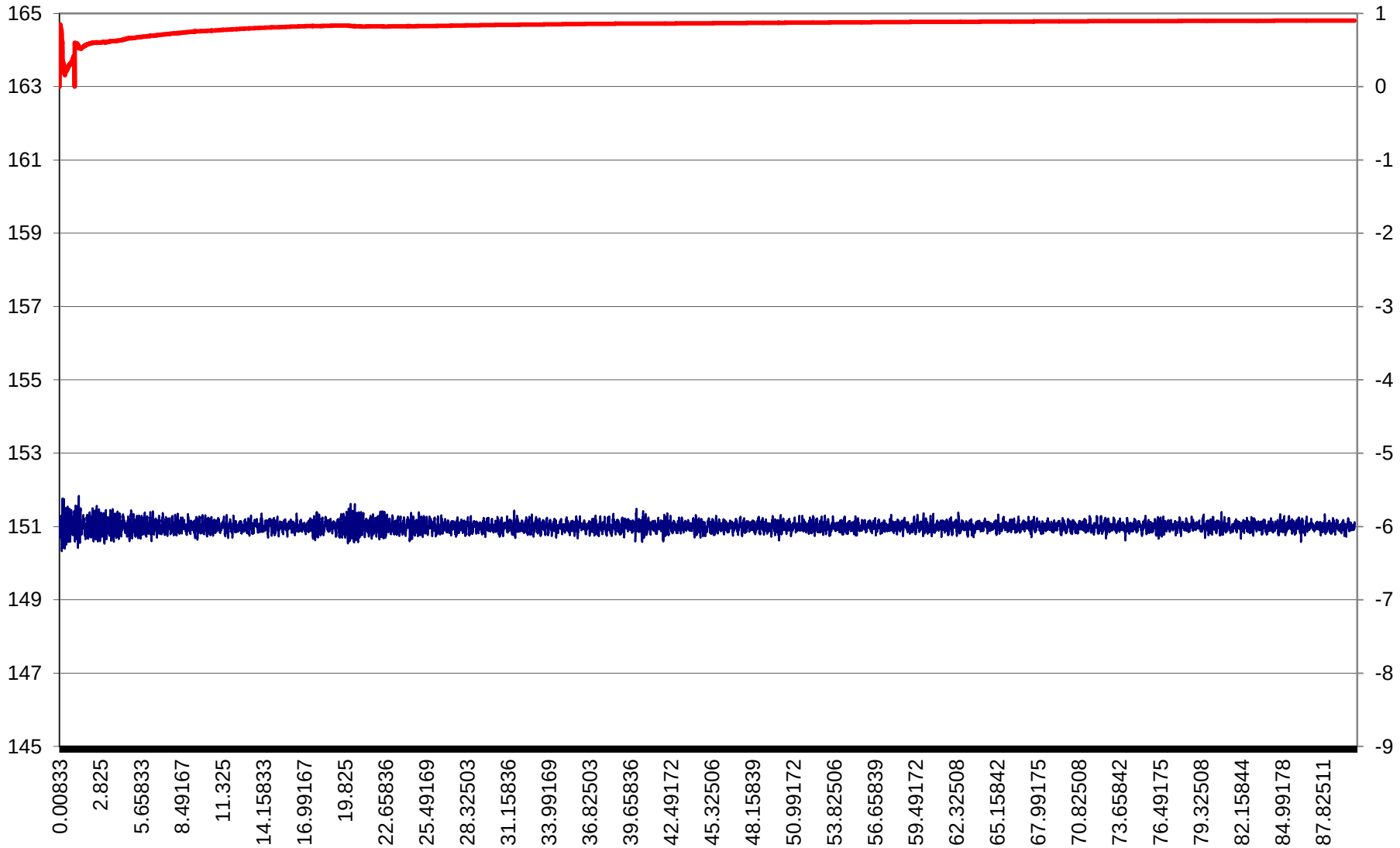
INTAKE AIR TEMPERATURE (DEGREES C)

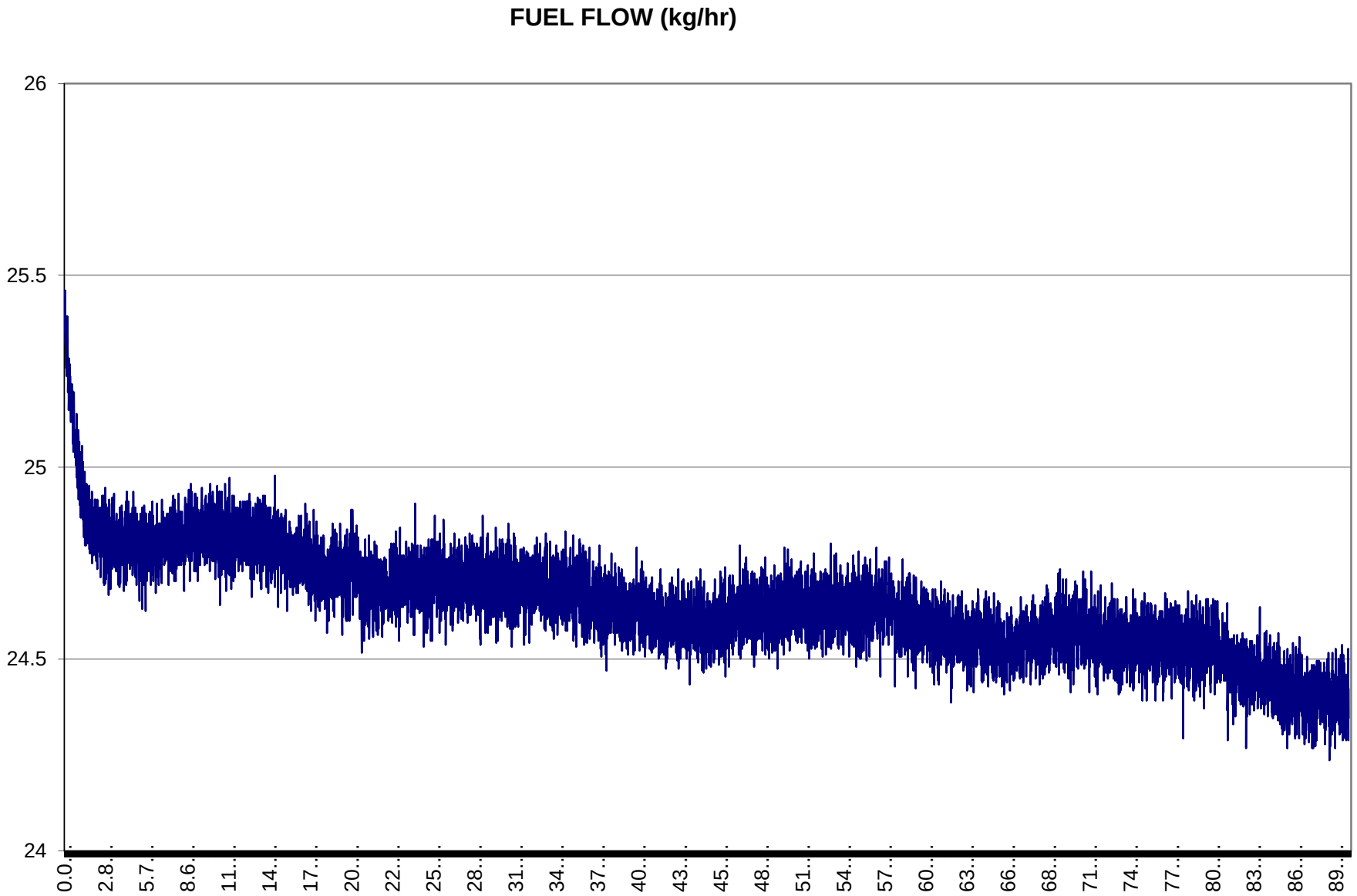


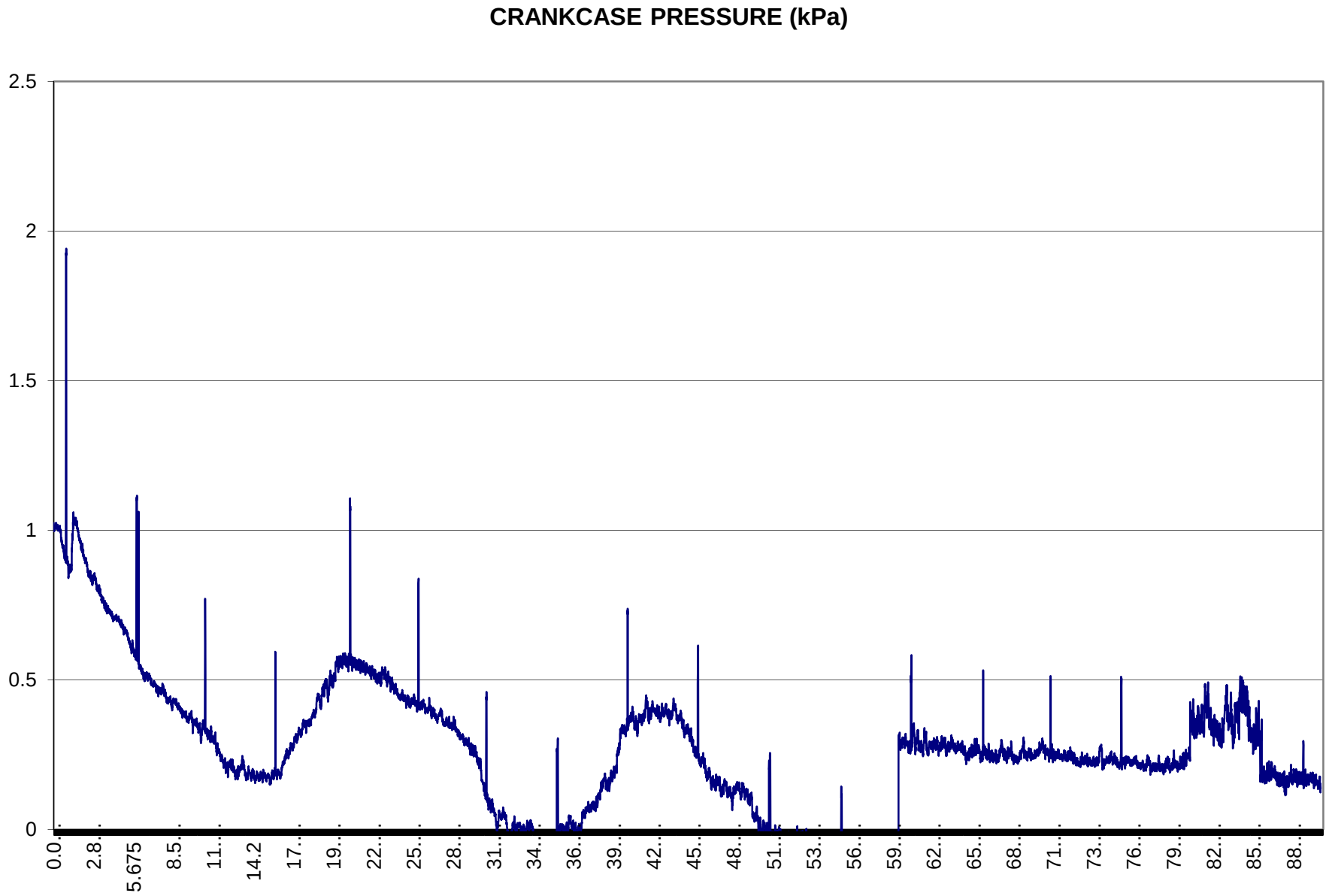
FUEL TEMPERATURE (DEGREES C)



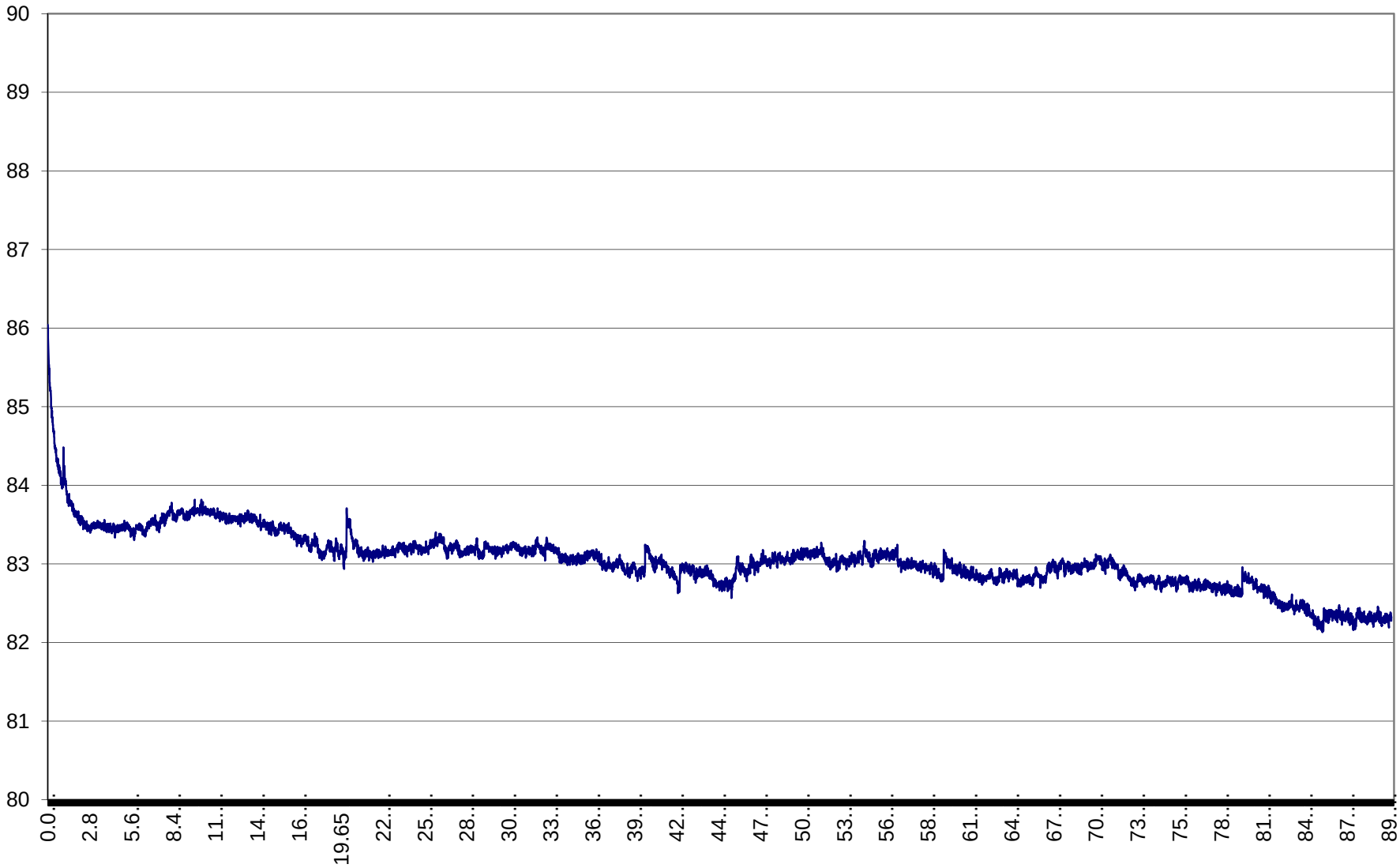
T BLOCK TEMPERATURE (DEGREES C)



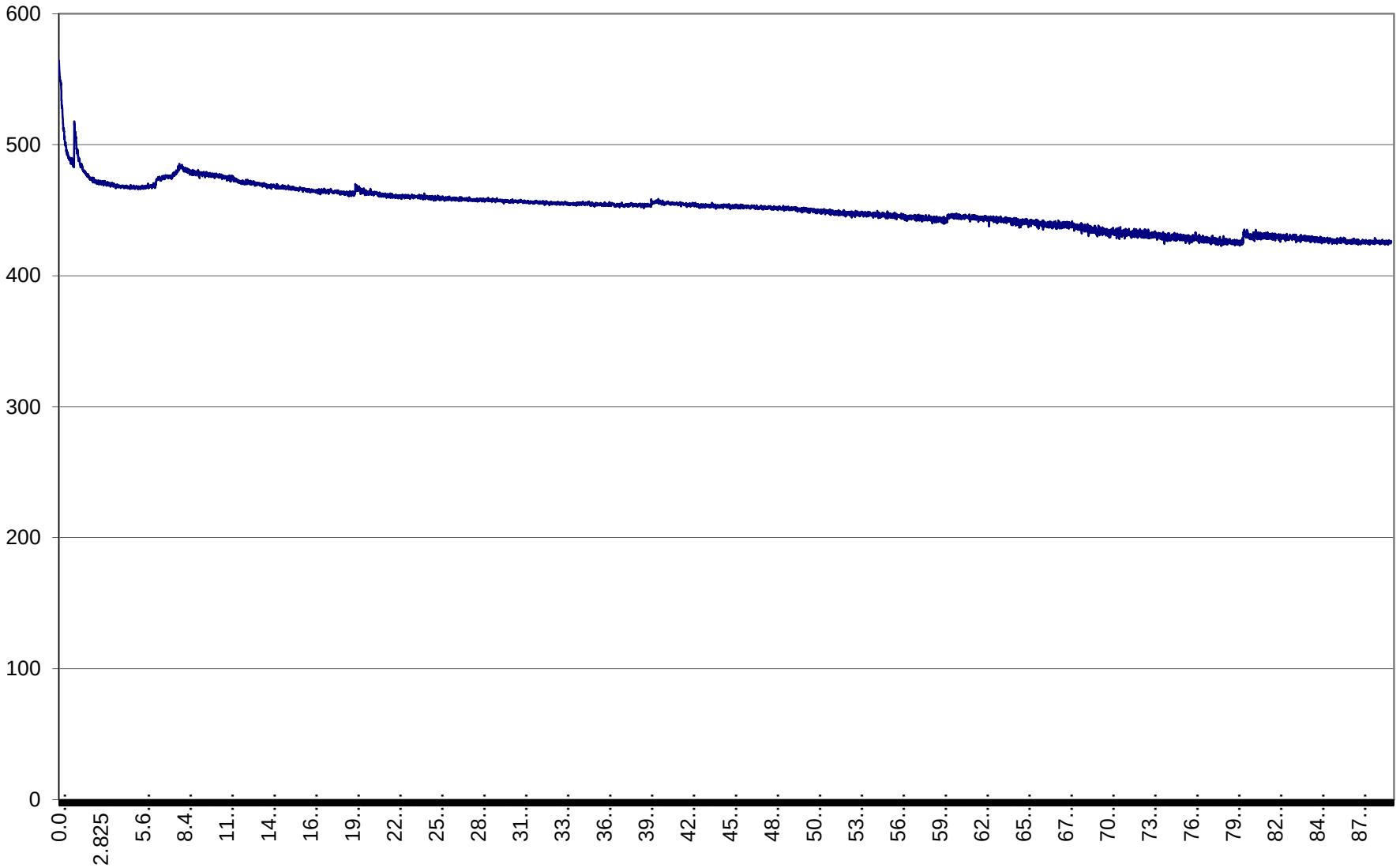

FUEL FLOW (kg/hr)
26
25.5
25
24.5
24
0.0
2.8
5.7
8.6
11
14
17
20
22
25
28
31
34
37
40
43
45
48
51
54
57
60
63
66
68
71
74
77
80
83
86
89

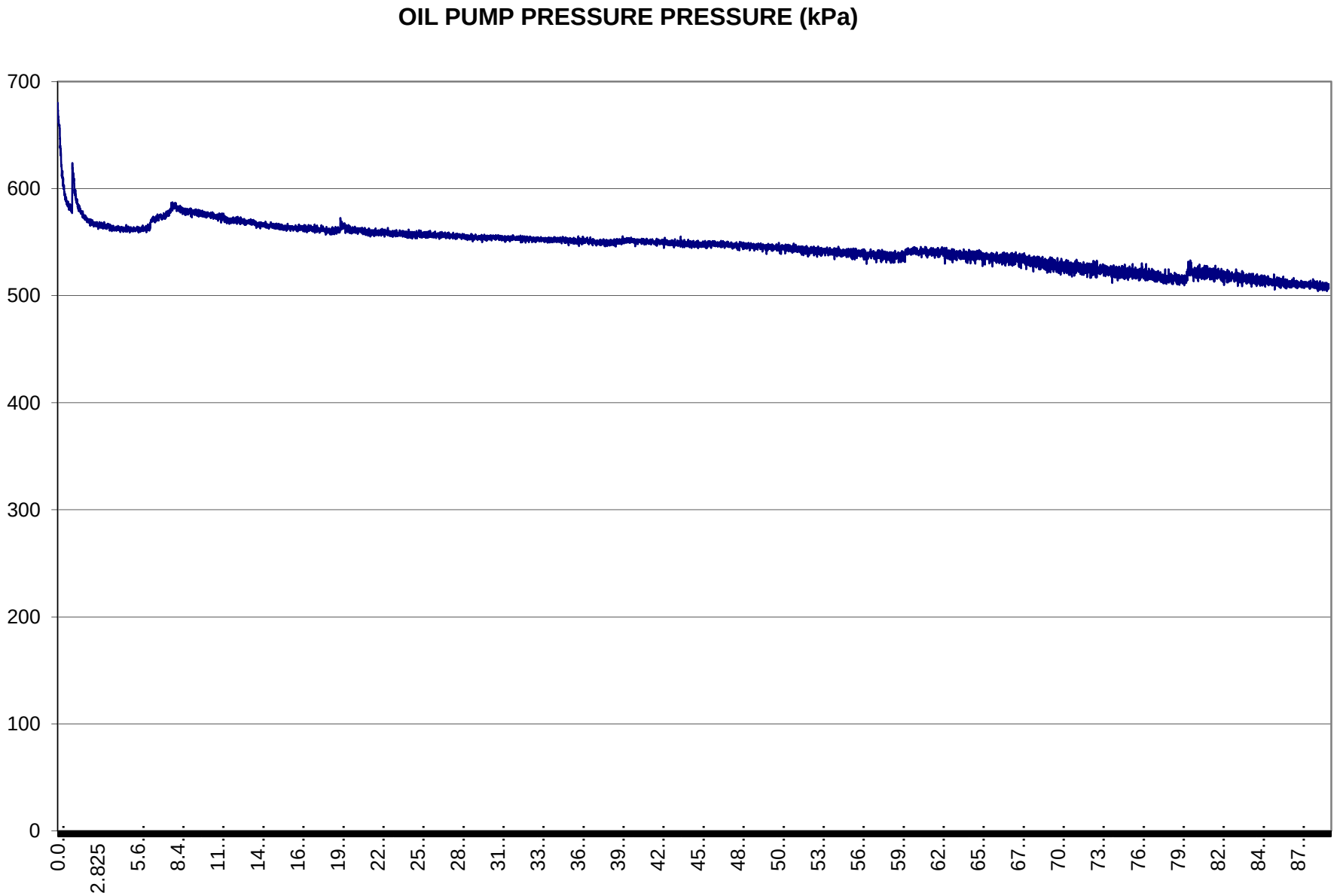

CRANKCASE PRESSURE (kPa)
2.5
2
1.5
1
0.5
0
0.0..
2.8..
5.675
8.5..
11..
14.2
17..
19..
22..
25..
28..
31..
34..
36..
39..
42..
45..
48..
51..
53..
56..
59..
62..
65..
68..
71..
73..
76..
79..
82..
85..
88..

INTAKE MANIFOLD ABSOLUTE PRESSURE (kPaA)

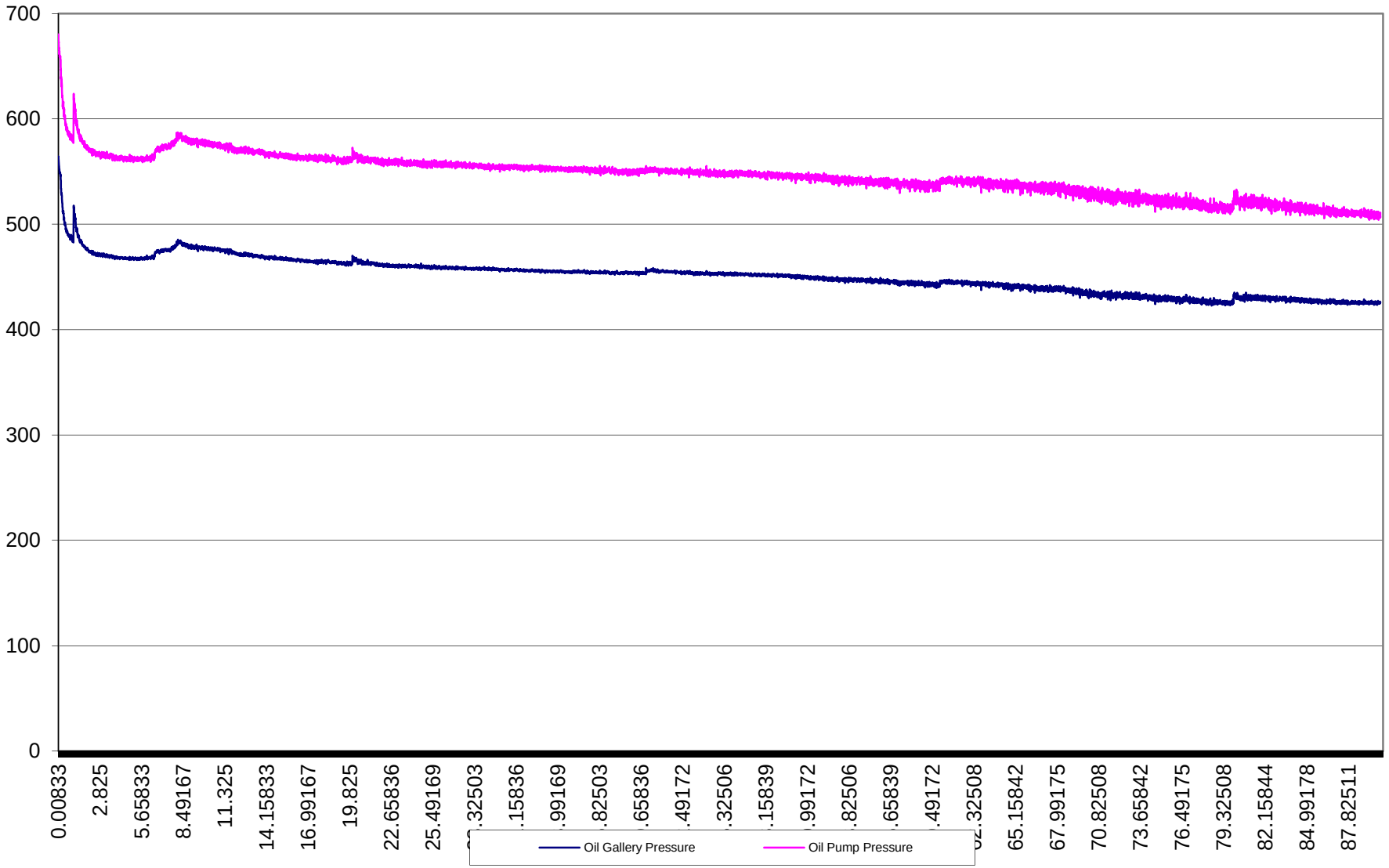


OIL GALLERY PRESSURE (kPa)

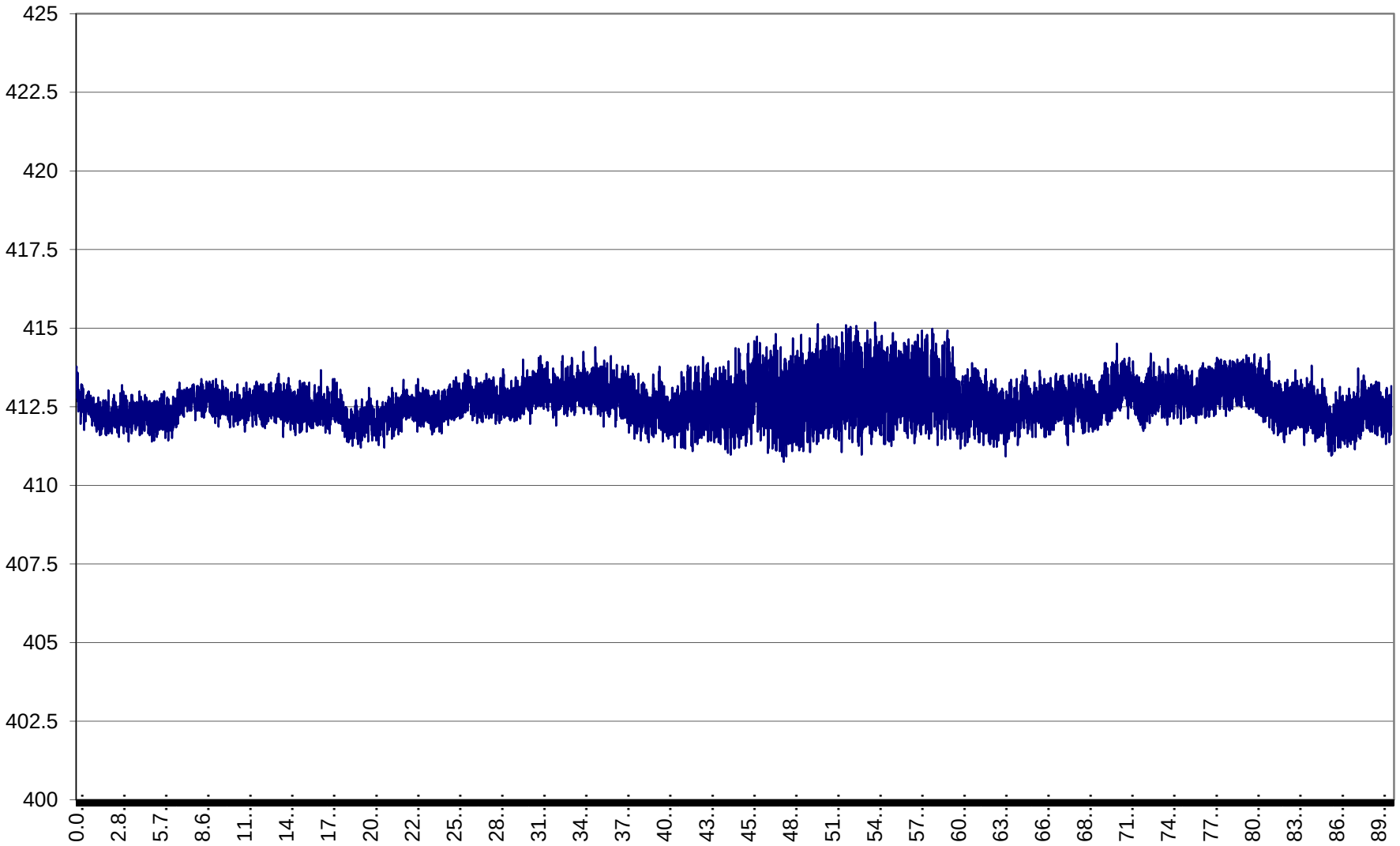



OIL PUMP PRESSURE PRESSURE (kPa)
700
600
500
400
300
200
100
0
0.0..
2.825
5.6..
8.4..
11..
14..
16..
19..
22..
25..
28..
31..
33..
36..
39..
42..
45..
48..
50..
53..
56..
59..
62..
65..
67..
70..
73..
76..
79..
82..
84..
87..

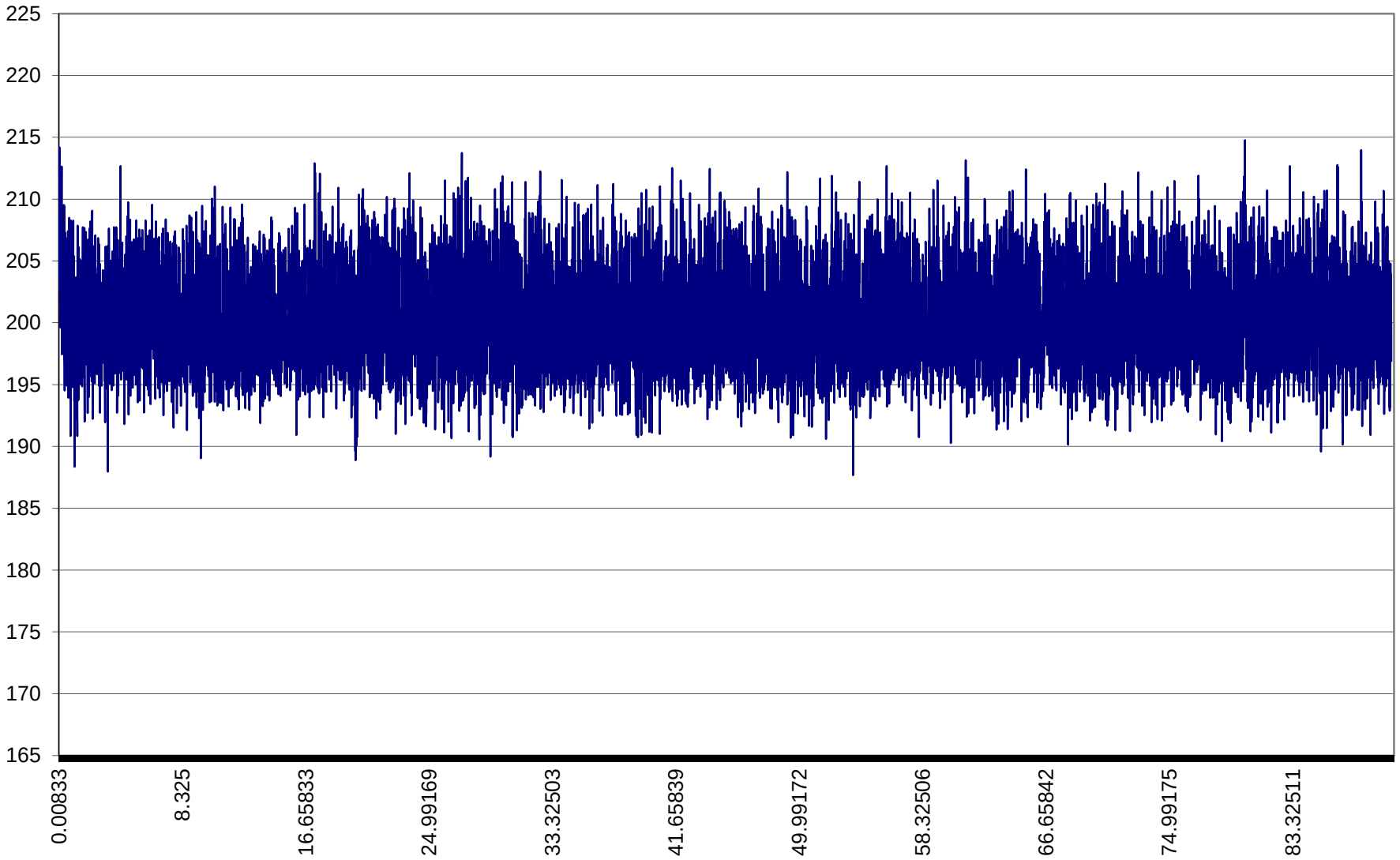
OIL GALLERY-OIL FILTER INLET PRESSURE (kPa)



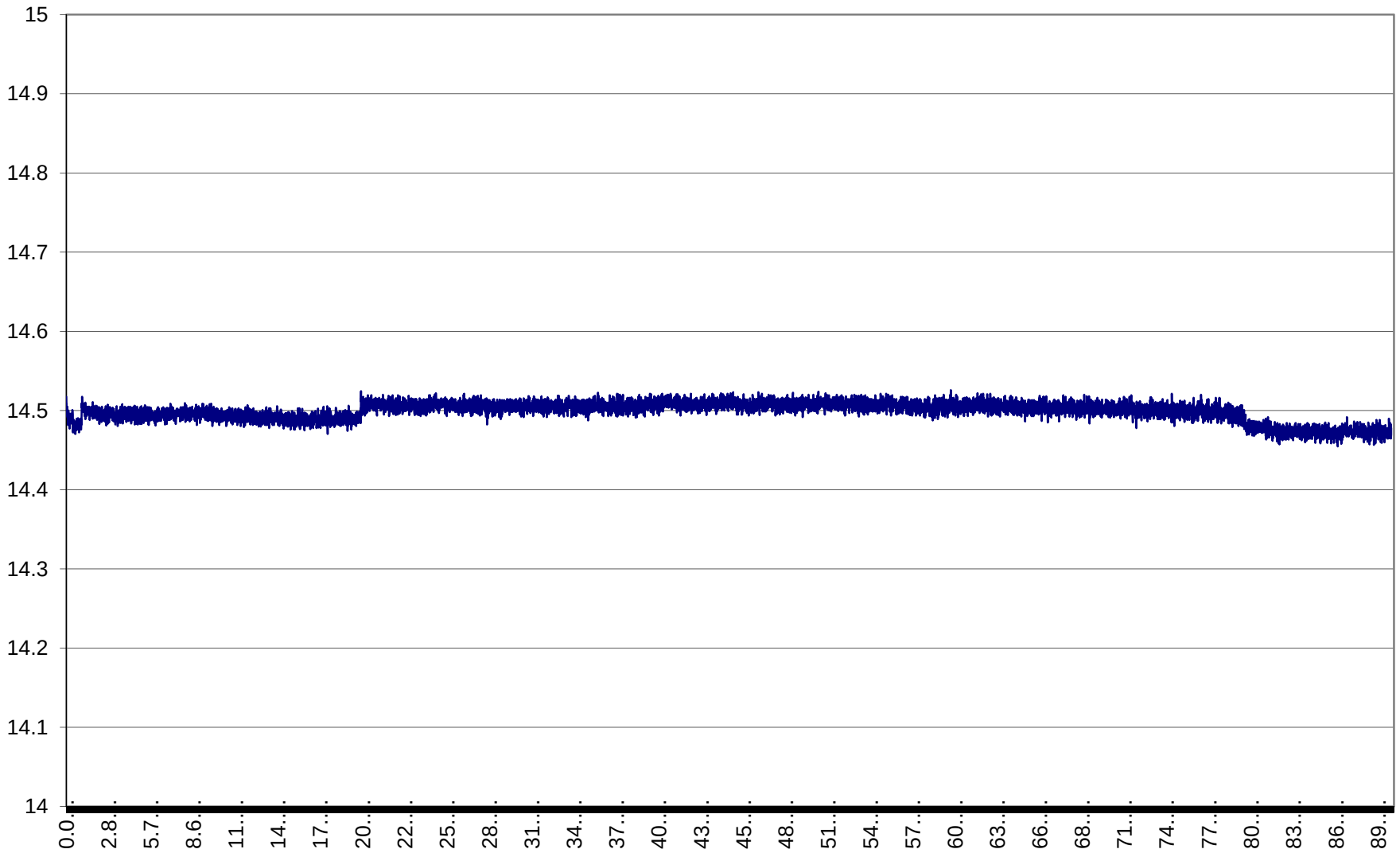
FUEL RAIL PRESSURE (kg/hr)



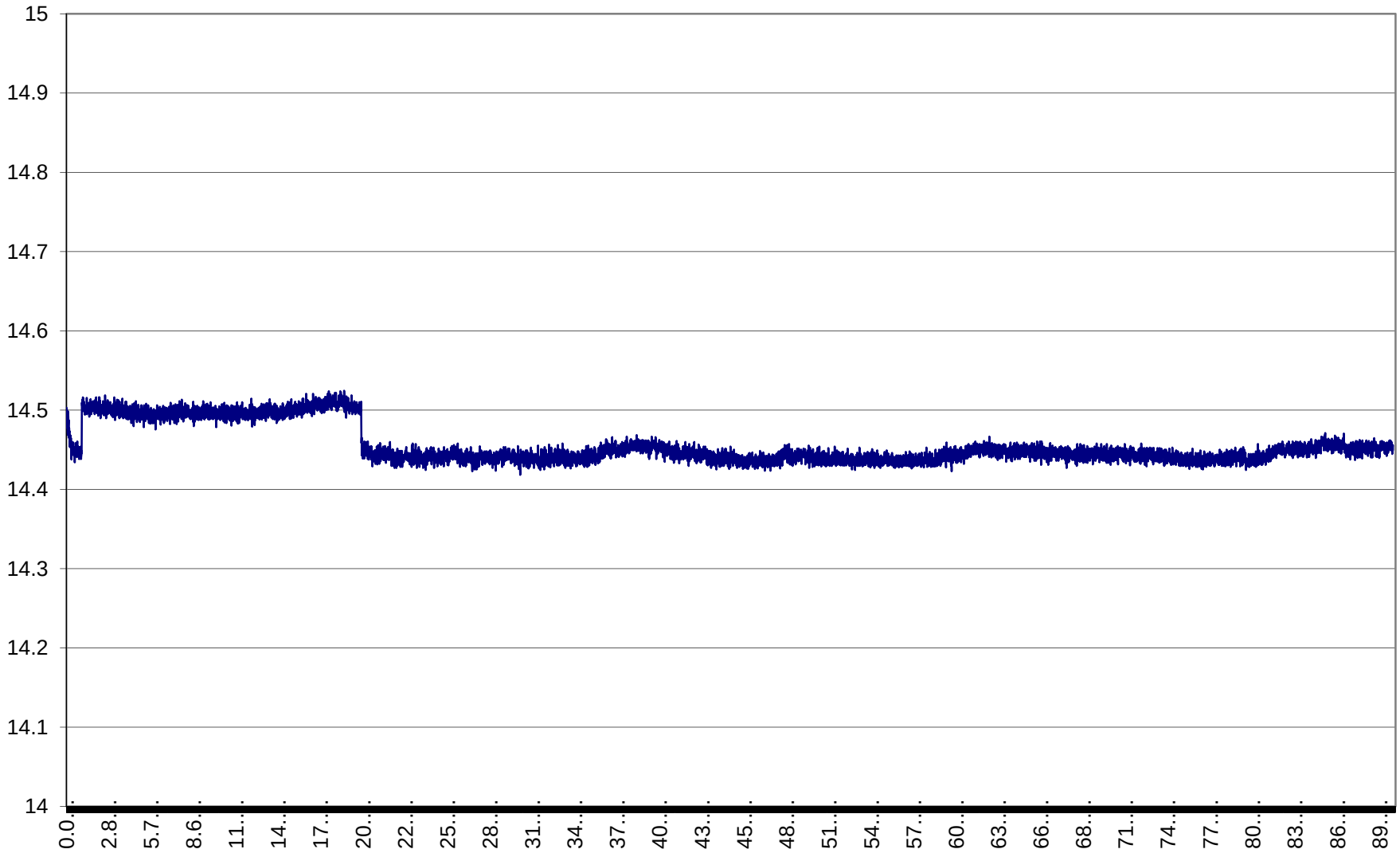
COOLANT OUT PRESSURE (kPa)

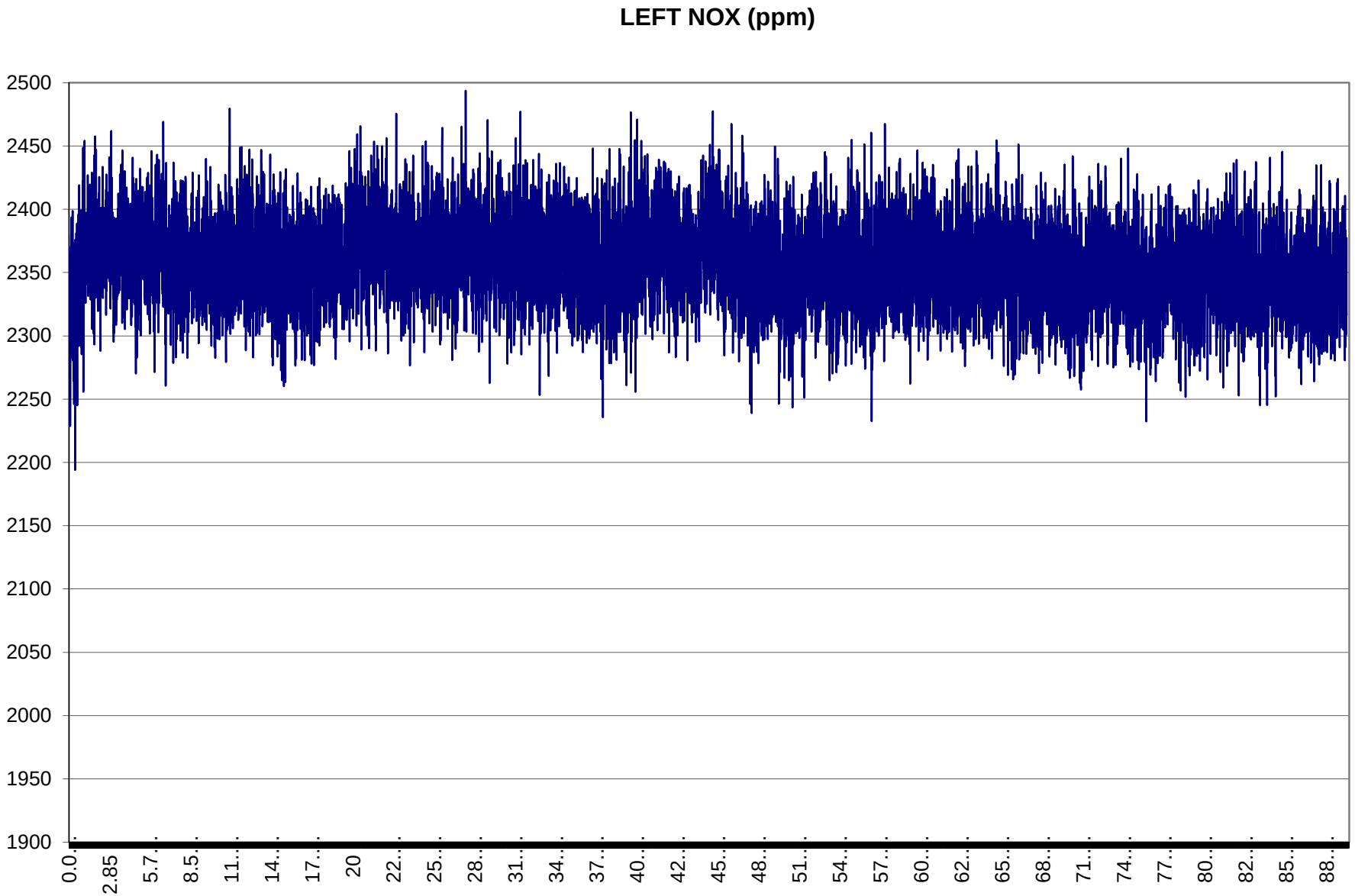


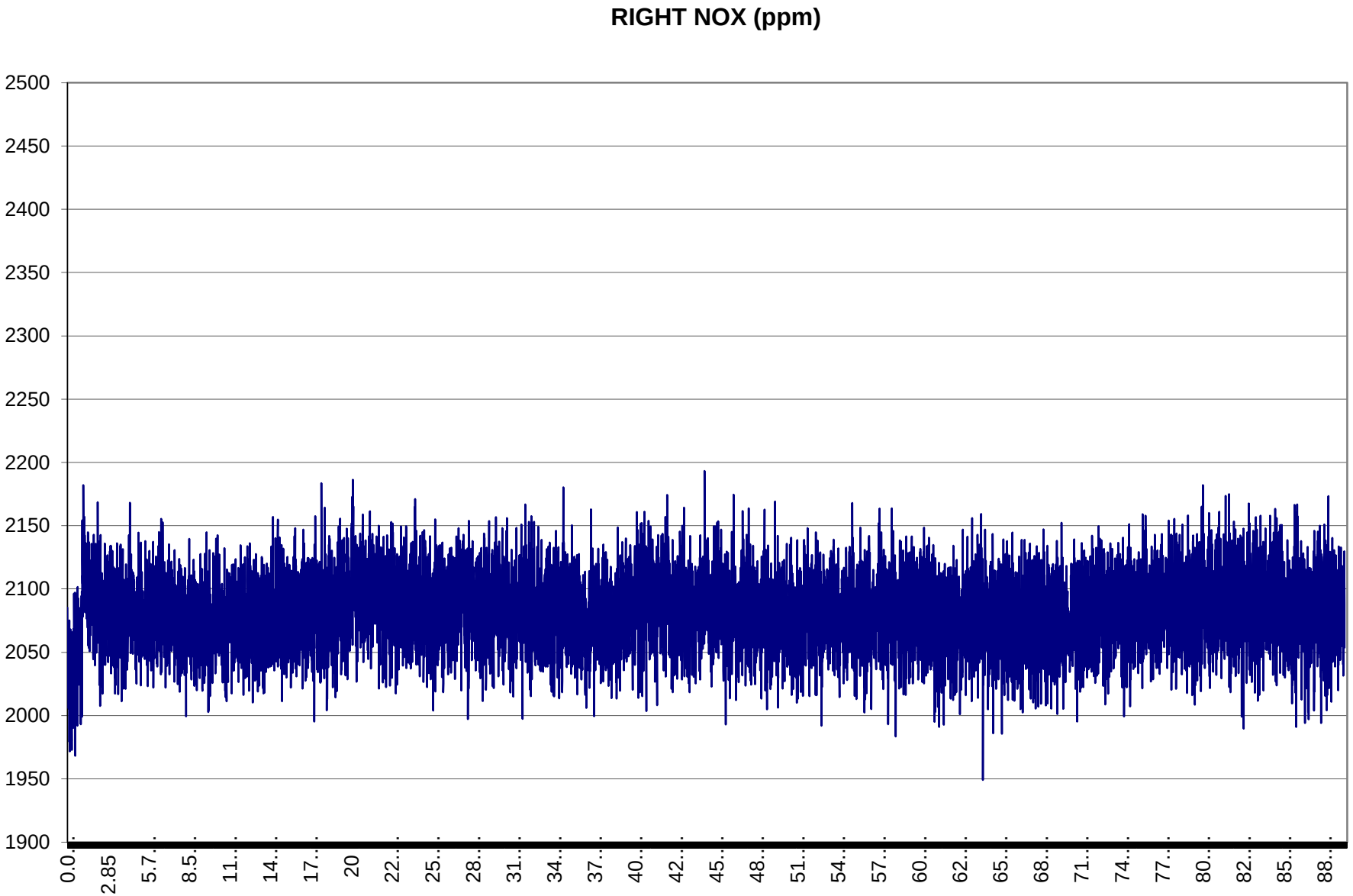
LEFT AFR


15
14.9
14.8
14.7
14.6
14.5
14.4
14.3
14.2
14.1
14
0.0..
2.8..
5.7..
8.6..
11..
14..
17..
20..
22..
25..
28..
31..
34..
37..
40..
43..
45..
48..
51..
54..
57..
60..
63..
66..
68..
71..
74..
77..
80..
83..
86..
89..

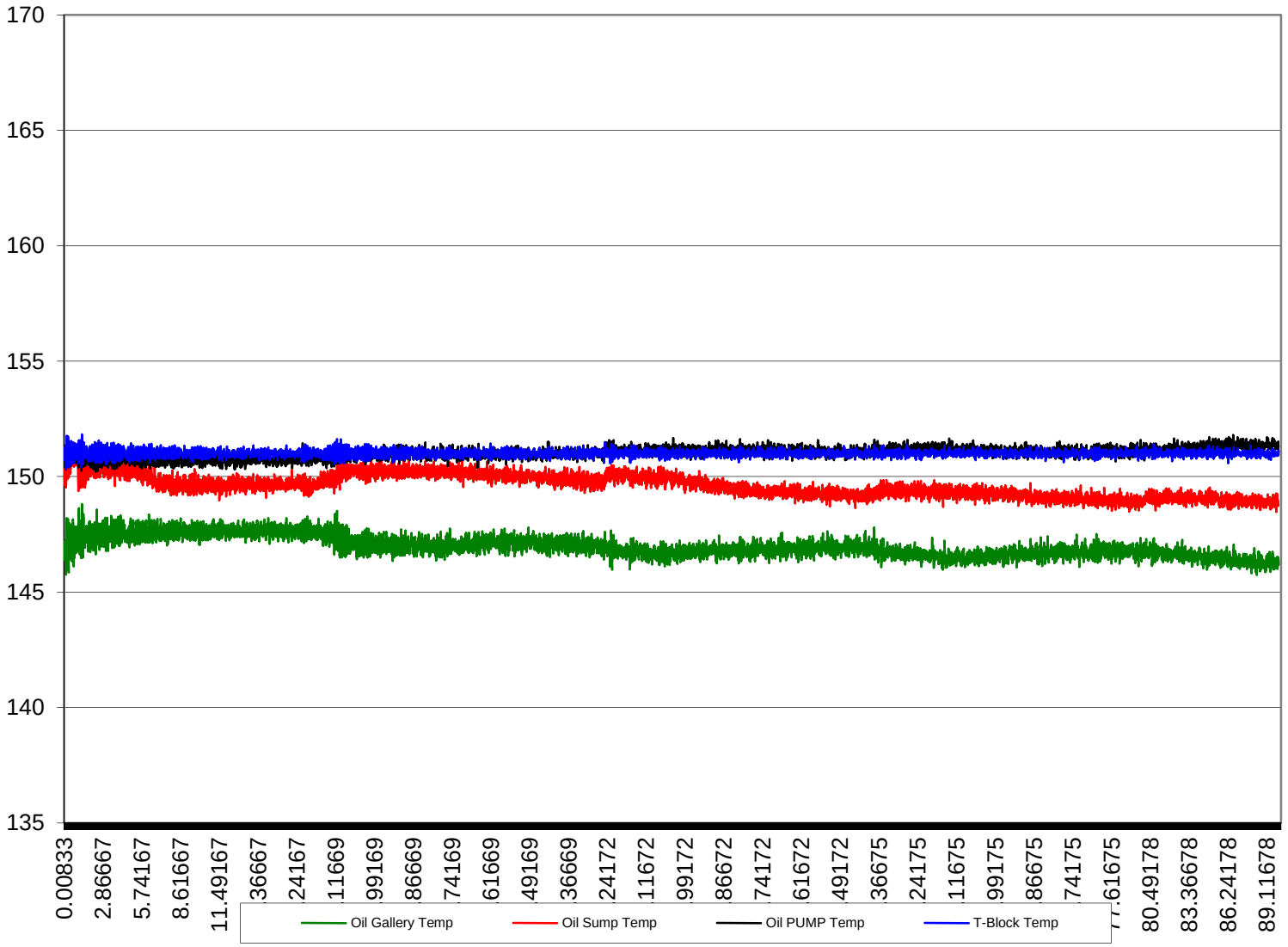
RIGHT AFR


15
14.9
14.8
14.7
14.6
14.5
14.4
14.3
14.2
14.1
14
0.0..
2.8..
5.7..
8.6..
11..
14..
17..
20..
22..
25..
28..
31..
34..
37..
40..
43..
45..
48..
51..
54..
57..
60..
63..
66..
68..
71..
74..
77..
80..
83..
86..
89..

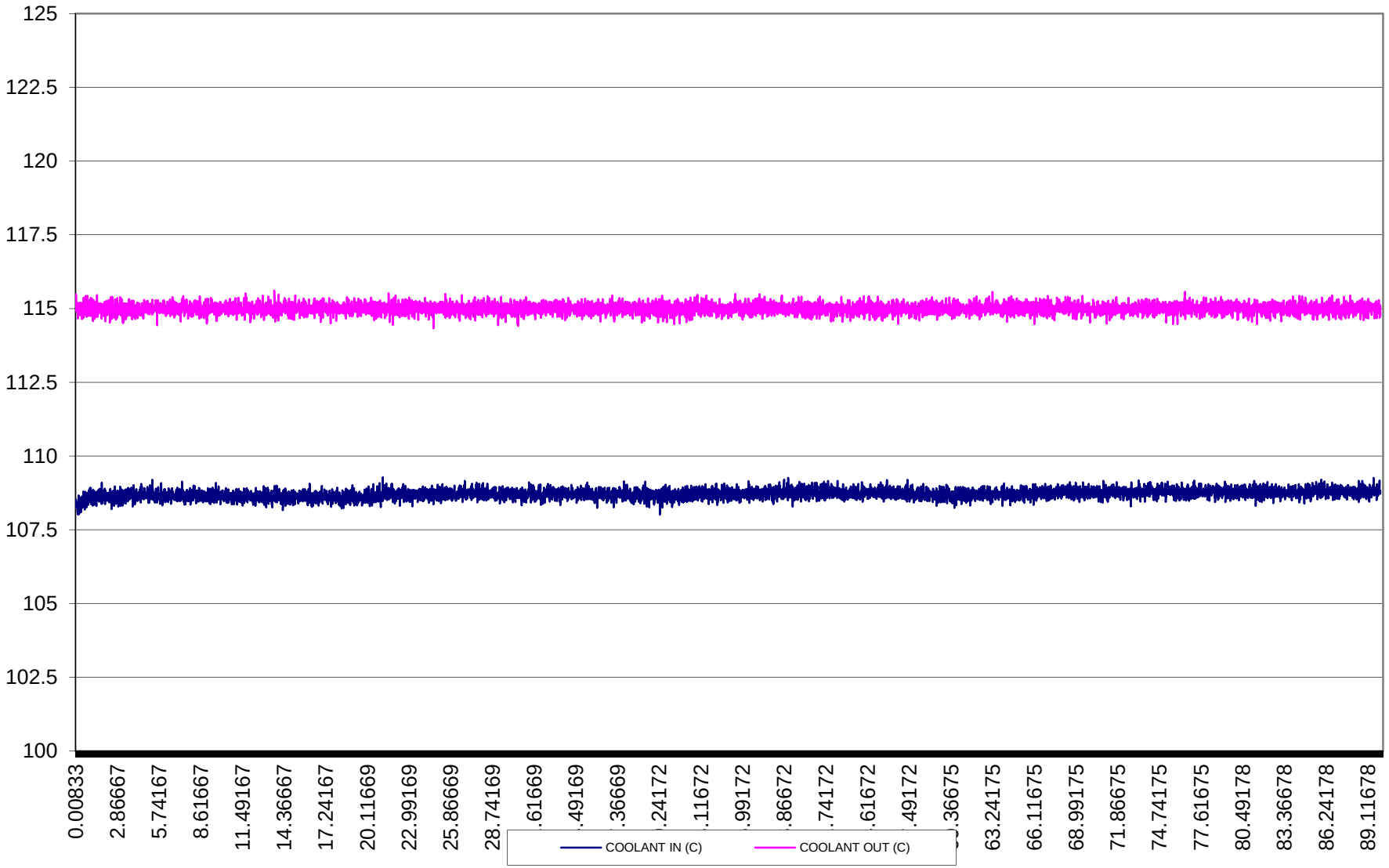

LEFT NOX (ppm)
2500
2450
2400
2350
2300
2250
2200
2150
2100
2050
2000
1950
1900
0.0..
2.85
5.7..
8.5..
11..
14..
17..
20
22..
25..
28..
31..
34..
37..
40..
42..
45..
48..
51..
54..
57..
60..
62..
65..
68..
71..
74..
77..
80..
82..
85..
88..


RIGHT NOX (ppm)
2500
2450
2400
2350
2300
2250
2200
2150
2100
2050
2000
1950
1900
0.0..
2.85
5.7..
8.5..
11..
14..
17..
20
22..
25..
28..
31..
34..
37..
40..
42..
45..
48..
51..
54..
57..
60..
62..
65..
68..
71..
74..
77..
80..
82..
85..
88..

OIL TEMPERATURES (DEGREES C)



COOLANT IN-OUT TEMPERATURE (DEGREES C)



LEFT-RIGHT EXHAUST COLLECTOR TEMPERATURE (DEGREES C)