



Received EGLE/AQD
January 24, 2022

January 20, 2022

Ms. Sharon LeBlanc
Environmental Quality Analyst
EGLE Air Quality Division
Gaylord District Office
2100 West M-32
Gaylord, MI 49735

Subject: Response to Violation Notice
A&L Iron & Metal, Inc.; PTI 173-08B; SRN N7508

Dear Ms. LeBlanc,

A&L Iron & Metal, Inc. (A&L) has prepared this response to the Violation Notice (VN) dated January 4, 2022 that was issued to the Gaylord facility located at 2000 Millbocker Road for emission unit EUGENERATOR. A scheduled air emissions test for EUGENERATOR occurred on October 5, 2021. Based on its observations during the test event and review of the test report, the Michigan Department of Environment, Great Lakes, and Energy (EGLE) Air Quality Division (AQD) issued to A&L Iron the VN alleging four (4) violations and has requested a reply by January 25, 2021. Each violation is individually referenced and addressed below.

1. EUGENERATOR Operating Load

- a. PTI No. 173-08B, Special Condition (SC) I.1, 1.2, 1.3

The VN indicates that testing was conducted below normal operating loads identified in the approved test plan.

Following our review of the data recorded during the test, it was determined that the generator load during the 2021 test event was similar to the generator load during the 2018 test event; approximately 20% of maximum generator capacity for both events. The test plan incorrectly indicated that the generator would be operated between 50 and 60% of its rated load of 2.6 MW. The error in the test plan occurred because the kW data reported in the test report for the 2018 test event was not accurately calculated as explained below.

The generator load is dependent on the electricity demand for the facility; it cannot be independently operated at a set maximum rate. Based on the design of the facility, the connected operations do not have the capacity to consistently draw 50 to 60% of 2.6 MW. During the 2018 test event, operations staff recorded the data from the kilowatt-hour totalizer at 15-minute intervals. A summary of the recorded data is presented in the following table.

Summary of EUGENERATOR operating data during 2018 test event

	Test Run 1	Test Run 2	Test Run 3
kWh meter; Begin	1232	2930	3539
kWh meter; End	1996	3407	3969
kWh production	764	477	430
Duration (minutes)	71	70	60
Avg kW	646	409	430
Generator Load (%)	25%	16%	17%

1. Average kW = (kWh production) x (60 minutes) / (duration, minutes)

For reasons that are not clear, the operator calculated that the corresponding kW values ranged between 2,030 kW and 2,577 during the test periods. These erroneous kW values were reported in the 2018 test report. However, these are not correct. The generator actually operated in the range of 400 to 700 kW as presented in the table above. These rates are consistent with the rates that are observed throughout the year.

For the October 5, 2021 test event, the kWh readings and calculated average kW is correct as presented below and in the test report.

Summary of EUGENERATOR operating data during 2021 test event

	Test Run 1	Test Run 2	Test Run 3
kWh meter; Begin	489	1368	1840
kWh meter; End	1119	1793	2358
kWh production	630	425	518
Duration (minutes)	60	60	60
Avg kW	630	425	518
Generator Load (%)	27%	16%	20%

2. Carbon Monoxide Concentration Spikes

- a. PTI No. 173-08B, SC I.1, I.2, I.3

The VN indicates that carbon monoxide (CO) spikes outside of instrument range occurred during testing and were not recorded by the DAS. Actual values are unknown.

This is correct and was acknowledged in the submitted test report. Additional information is provided by the testing contractor (Impact Compliance & Testing; ICT) in the attached letter.

3. Carbon Monoxide Destruction Efficiency Calculations

- a. PTI No. 173-08B, SC I.1, I.2, I.3; 40 CFR 63.6603, Subpart ZZZZ

The VN indicates that CO DE calculations were not per 40 CFR 63.6603, Subpart ZZZZ.

As explained in the attached letter from ICT, there were two (2) one-minute periods during the three hours of testing in which the CO concentration exceeded the instrument range on the catalyst outlet and five (5) one-minute periods during which the CO concentration exceeded the instrument range on the catalyst inlet. Since the objective of the test was to determine the CO reduction efficiency of the catalyst (DE or "R"):

- The reduction efficiency (R) was calculated for each one-minute period;
- A reduction efficiency value of 0% was substituted for any period in which the reduction efficiency was less than zero due to the instrument over-range, which is a worst-case assumption (a reduction efficiency less than zero is not possible).
- The calculated R values were averaged (including the worst case zero values) for the one-hour test period to determine average CO reduction efficiency.

The procedure used to determine reduction efficiency based on the average of the one-minute reduction efficiency values may be unconventional but is not necessarily prohibited by the procedures of Subpart ZZZZ.

4. Emission Limitation Exceedance

- a. PTI No. 173-08B, SC I.1, I.2, I.3; 40 CFR 63.6603, Subpart ZZZZ

The VN indicates that EGLE-AQD's calculations determined the CO emissions exceeded the PTI and 40 CFR 63.6603 limits.

This is factually incorrect; the results do not support a CO emission exceedance. The CO spikes that were observed during the test event result in two (2) one-minute periods where the outlet CO concentration values exceed the instrument range. Regulated facilities have the option of demonstrating compliance using catalyst

reduction efficiency. As explained in this correspondence and the attachment prepared by ICT, a technically sound alternative was used to calculate CO reduction efficiency for each one-minute period and average those values for the one-hour test run.

It is unclear how AQD arrived at the conclusion that "the CO emissions exceeded the PTI and 40 CFR 63.6603 limits". If it is based on recalculating the results using the outlet instrument range during the over-range data periods, then this would inherently assume that the catalyst was generating additional CO during these periods, which is impossible, and inaccurately skews the reduction efficiency calculation.

At the worst, based on this information, AQD could only assert that there were test method deviations during the test event, not that there was an exceedance of the required minimum reduction efficiency.

Corrective Actions

As presented in this correspondence, the EUGENERTOR operating conditions during the test event were not unusual for the facility's normal operation and were similar to the conditions during the 2018 test event. The CO emission peaks during the 2021 test event were higher than those observed during the 2018 test event and resulted in a limited number of one-minute periods where the CO concentration exceeded the range on the emission analyzers. The reduction efficiency calculation assumed 0% reduction efficiency (worst case scenario) for these periods and still resulted an overall average greater than 70%. While AQD may assert that there were certain test method deviations, there are no data supporting that the facility is in violation of the minimum required reduction efficiency.

Sincerely,

A&L IRON & METAL, INC.



Brian Miller
Operations Manager

Cc: Jenine Camilleri, Enforcement Unit Supervisor at EGLE

Attachments

Supporting Testing Information

Violation Notice, Comment 2 – Carbon Monoxide Concentration Spikes

Impact Compliance & Testing, Inc. (ICT) acknowledges that, due to the highly variable loads required by EUGENERATOR, Carbon Monoxide (CO) concentration spikes were recorded as null values due to the concentrations being higher than the range of the inlet and outlet CO instruments.

The CO concentrations exceeded the instrument ranges on five (5) 1-minute averages throughout the three (3) test runs. Of these five (5) instances there were two (2) 1-minute periods during the three (3) hours of testing in which the CO concentration exceeded the instrument range on the catalyst outlet, and five (5) one-minute periods in which the CO concentration exceeded the instrument range on the catalyst inlet.

Additionally, these over range spikes were discussed during the test event with EGLE representatives. It was decided that high CO concentration gases would be introduced to the inlet and outlet sampling systems at the end of three test runs to certify the CO instrument's upper range accuracy.

3,938 ppm CO was introduced to the CO outlet sampling system and the instrument responded with 4,122 ppm. 1,969 ppm CO was introduced to the CO inlet sampling system and the instrument responded with 1,922 ppm. Both instruments were within 5% of calibration bias.

Violation Notice, Comment 3 – CO Destruction Efficiency Calculations

The CO concentration spikes that resulted in null values within the raw data file were replaced manually with the concentration at which the instrument was set (5,000 ppm CO outlet, and 2,000 ppm CO inlet). Any manually entered data points have been highlighted in yellow within the raw data file.

Also, the CO and O₂ inlet concentrations were recorded by the data logger two (2) minutes later than the CO and O₂ outlet concentrations as a result of a longer system response time. The inlet CO and O₂ channels have been moved forward by two (2) minutes to account for the difference in the separate inlet system response time. This allowed for Destruction Efficiency (DE) to be calculated at each 1-minute average within the raw data file.

However, on data points that exceeded instrument ranges where catalyst inlet and outlet concentrations were manually entered at the set instrument range (5,000 ppm CO Outlet, and 2,000 ppm CO Inlet) the DE calculation resulted in a negative DE. Because negative DE is not possible (i.e. the catalyst cannot create CO), these negative DE data points have been set to 0% DE and then were included in the 1-run average DE calculation.

The CO concentration spikes were not reported as zeros. Only the 1-minute negative DE calculations were reported as zeros. This presents a worst-case DE calculation.

Raw data files are presented Attachment 1.

Violation Notice, Comment 3 - CO DE Calcs. were not per 40 CFR 63.6603, Subpart ZZZZ

Part 63.6603 requires compliance with the numerical emission limitations based on the results of testing the average of three 1-hour runs using the testing requirements and procedures in § 63.6620 and Table 4 to the subpart. Subsection 63.6620 specifies:

(d) You must conduct three separate test runs for each performance test required in this section, as specified in § 63.7(e)(3). Each test run must last at least 1 hour, unless otherwise specified in this subpart.

(1) You must use Equation 1 of this section to determine compliance with the percent reduction requirement:

$$(C_i - C_o) / (C_i) \times 100 = R$$

Where: C_i = concentration of CO at the control device inlet, C_o = concentration of CO at the control device outlet, and R = percent reduction of CO emissions.

(2) You must normalize the CO concentrations at the inlet and outlet of the control device to a dry basis and to 15 percent oxygen ...

Subsection 63.7(e)(3) specifies:

Unless otherwise specified in a relevant standard or test method, each performance test shall consist of three separate runs using the applicable test method. Each run shall be conducted for the time and under the conditions specified in the relevant standard. For the purpose of determining compliance with a relevant standard, the arithmetic mean of the results of the three runs shall apply.

ICT calculations followed the rules in subpart ZZZZ by calculating the DE for each 1-minute average within each 1-hour test run and then averaging the 60 1-minute averages. The 1-minute average calculation followed the formula presented in § 63.6620(d)(1). Compliance was determined by averaging the results of the three test runs. Subpart ZZZZ does not specify that DE calculations must be calculated based on the 1-hour test run concentrations.

The summary of the violation notice indicates the calculations were not completed per the Method. In review, USEPA Reference Method 7E, as referenced in Method 10, does specify that effluent gas concentration will follow:

For each test run, calculate C_{avg} , the arithmetic average of all valid ... concentration values (e.g., 1-minute averages). Then adjust the value of C_{avg} for bias ...

ICT bias corrected each 1-minute average before calculating the 1-hour average. It is agreed that this does not follow the method by the excerpt above. Calculations were performed this way so data points with negative DE could be set to 0% DE.

1-minute DE calculations are presented in Attachment 2.

Attachment 1 – Raw Data File

Test ID	Time	VOC	NOX	NO	NO2	CO (Outlet)	O2 (Inlet)	O2 (Outlet)	CO2	CO (Inlet)
Run 1	0942-1042	9.79	1319.52	1044.36	274.65	125.27	13.39	13.06	5.51	426.53
Run 2	1134-1234	15.22	985.65	804.45	180.96	156.88	14.47	13.82	4.96	450.69
Run 3	1309-1409	13.97	1083.85	900.09	183.16	164.16	14.08	13.46	5.32	448.11

· Both CO-L and O2 columns have been moved back 2 minutes to account for difference in the separate inlet system response time.

· Individual data points that exceeded instrument range and resulted in a null value have been manually typed in as the set system range (2000 ppm inlet, 5000 ppm outlet).

· Data points that yield a negative Destruction Efficiency (DE) have been manually set to 0% DE.

Date	Hour	NMOC	NOX	NO	NO2	CO	O2		CO-L	
							21.55	21.54	O2_SERVO	CO2_SERV
10/05/21	6:19	0.24	0.52	-0.08	0.12	6.92	21.55	22.53	0	-47.53
10/05/21	6:20	0.24	0.54	-0.04	0.14	7.13	21.55	22.53	0	-47.47
10/05/21	6:21	0.24	1.01	-0.06	0.63	6.54	21.55	22.53	0	-47.01
10/05/21	6:22	0.24	3.39	-0.1	3.1	8.42	21.54	22.53	0	-47.07
10/05/21	6:23	0.24	0.47	-0.05	0.12	9.5	21.54	22.53	0	-45.99
10/05/21	6:24	0.24	0.51	-0.09	0.12	12.07	21.54	22.52	0	-999
10/05/21	6:25	-999	-999	-999	-999	-999	21.54	-999	-999	-45.64
10/05/21	6:26	0.24	0.5	-0.06	0.05	15.96	21.54	22.52	0	-37.87
10/05/21	6:27	0.23	0.49	-0.06	0.07	22.09	21.54	22.52	0	-36.09
10/05/21	6:28	0.23	0.5	0.02	-0.06	107.49	21.55	12.84	1.31	-30.85
10/05/21	6:29	0.23	0.46	0.04	-0.3	367.37	21.54	5	3.45	-31.98
10/05/21	6:30	0.23	0.44	-0.03	0.01	10.69	21.54	1.13	0	-30.18
10/05/21	6:31	0.23	0.47	-0.04	0	7.45	21.53	1.11	0	-33.13
10/05/21	6:32	0.23	0.44	-0.04	0.02	6.45	21.52	1.11	0	-15.94
10/05/21	6:33	0.23	0.45	-0.03	0	6.66	21.53	1.1	0	4.03
10/05/21	6:34	0.23	0.43	-0.04	-0.02	5.61	21.52	1.1	0	-20.06
10/05/21	6:35	0.23	0.4	-0.04	-0.02	5.95	21.52	1.08	0	-29.16
10/05/21	6:36	0.23	0.44	-0.06	-0.02	11.22	21.52	0.04	0.03	-14.69
10/05/21	6:37	0.23	0.46	-0.01	-0.06	1381.21	21.52	22.18	20.99	-23.97
10/05/21	6:38	0.23	0.44	-0.04	-0.03	1590.06	21.52	23.24	22.96	-31.17
10/05/21	6:39	0.23	0.42	-0.04	-0.09	1589.17	21.52	21.41	23.32	-29.59
10/05/21	6:40	0.23	0.44	-0.03	-0.11	1518.59	21.51	21.41	23.54	-27.72
10/05/21	6:41	0.23	0.43	-0.02	-0.12	1506.64	21.51	21.41	23.55	-24.35
10/05/21	6:42	0.23	0.39	-0.03	-0.13	1236.06	21.51	17.42	19.15	-19.68
10/05/21	6:43	0.23	0.4	-0.02	-0.09	1182.79	21.51	16.91	18.57	-16.02
10/05/21	6:44	0.23	0.39	-0.04	-0.13	903.06	21.51	12.54	13.73	-15.46
10/05/21	6:45	0.23	0.39	-0.06	-0.15	586.41	21.51	8.26	8.98	-20.99
10/05/21	6:46	0.23	0.38	-0.02	-0.11	594.98	21.51	8.25	8.97	-19.64
10/05/21	6:47	0.23	0.4	-0.05	-0.14	667.44	21.51	9.38	10.19	-19.18
10/05/21	6:48	0.23	0.4	-0.03	-0.15	742.29	21.5	10.31	11.27	-25.64
10/05/21	6:49	0.23	0.39	0	-0.14	742.29	21.5	10.31	11.26	-27.11
10/05/21	6:50	0.23	0.36	-0.01	-0.1	326.69	21.51	4.33	4.32	-28.21
10/05/21	6:51	0.23	235.64	406.08	-75.56	7.05	21.5	0.73	0	-29.05
10/05/21	6:52	0.23	765.64	2008.44	-265.31	6.06	21.51	0	0	-21.04
10/05/21	6:53	0.23	339.68	870.91	-74.32	6.71	21.5	0	0	-18.25
10/05/21	6:54	0.23	108.92	182.65	-74.48	5.75	21.5	0	0	-21.73
10/05/21	6:55	0.23	21.95	44.94	-23.49	5.56	21.5	0	0	-24.07
10/05/21	6:56	20.46	5.35	10.73	-6.2	5.22	21.5	0	0	-24.7
10/05/21	6:57	36.62	34.87	36.97	36.34	5.25	21.51	0	0	-24.64
10/05/21	6:58	1.83	21.92	21.56	17.51	5.32	21.5	0	0	-24.66
10/05/21	6:59	1.72	46.58	46.61	46.71	4.81	21.5	0	0	-21.25
10/05/21	7:00	1.87	1.05	1.83	-1.22	16.41	21.51	15.96	0	-22.38
10/05/21	7:01	2.72	0.34	-0.04	-0.2	21.32	21.5	21.05	0	-19.04
10/05/21	7:02	2.15	0.36	0.12	-0.22	11.58	21.5	10.85	0	-20.67
10/05/21	7:03	1.8	1.68	1.22	-1.39	5.39	21.49	0	0	-21.66
10/05/21	7:04	1.46	1.69	29.88	-30.26	4.81	21.49	0	0	-18.68
10/05/21	7:05	1.07	825.61	1660.88	-205.85	4.77	21.5	0	0	-17.24
10/05/21	7:06	1.11	893.87	2103.03	-265.34	4.7	21.5	0	0	-19.2
										-20.35

10/05/21	7:07	1	870.5	2103.97	-265.33	4.76	21.48	0	0	-16.81
10/05/21	7:08	0.91	845.87	2103.12	-265.36	3.65	21.5	0	0	-13.7
10/05/21	7:09	0.96	817.65	2100.22	-265.34	4.43	21.5	0	0	-22.89
10/05/21	7:10	1.01	789.78	2098.41	-265.35	4.02	21.51	0	0	-26.04
10/05/21	7:11	0.89	761.94	2095.75	-265.35	3.28	14.73	0	0	202.85
10/05/21	7:12	0.78	730.36	2085.83	-265.32	3.6	4.34	0	0	321.33
10/05/21	7:13	0.7	700.92	2077.28	-265.33	3.87	7.17	0	0	281.29
10/05/21	7:14	0.56	636.68	1938.97	-265.33	3.57	21.72	0	0	1505.94
10/05/21	7:15	0.57	290.99	650.26	-264.46	3.96	21.42	0	0	1504.77
10/05/21	7:16	0.57	189.05	392.98	-204.61	3.68	-999	0	0	-999
10/05/21	7:17	0.49	185.53	362.33	-177.25	3.35	21.03	0.34	0	1510.73
10/05/21	7:18	-999	-999	-999	-999	-999	16.35	-999	-999	1287.54
10/05/21	7:19	0.62	226.3	343.14	-116.21	3.88	10.02	5.86	0	741.25
10/05/21	7:20	0.69	237.9	345.01	-106.39	3.29	10.3	8.96	0	737.47
10/05/21	7:21	0.85	248.78	328.8	-79.78	3.53	10.37	11.49	0	737.44
10/05/21	7:22	0.62	257.31	320.15	-62.33	3.67	8.22	13.52	0	660.26
10/05/21	7:23	0.51	262.07	304	-42.72	3.61	0.02	15.08	0	27.38
10/05/21	7:24	0.46	274.33	291.09	-17.94	3.85	0.01	16.31	0	3.34
10/05/21	7:25	0.54	275.53	266.46	7.78	4.03	0	17.29	0	3.25
10/05/21	7:26	0.36	265.51	229.98	33.95	3.67	0	18.02	0.01	3.67
10/05/21	7:27	0.3	253.1	205.05	46.21	4.65	0	16.87	0.01	4.08
10/05/21	7:28	0.29	594.2	594.29	45.72	66.08	6.79	2.56	0.82	8.51
10/05/21	7:29	0.33	1984.4	1909.79	74.32	6.4	21.66	0	0	20.83
10/05/21	7:30	0.29	2006.71	1878.35	128.84	5.29	21.64	0	0	13.25
10/05/21	7:31	0.28	2006.36	2028.25	-21.12	4.62	21.63	0	0	20.13
10/05/21	7:32	0.27	1964.23	2052.24	-86.8	3.54	21.63	0	0	24.6
10/05/21	7:33	0.23	1943.31	2096.2	-152.74	3.67	21.63	0	0	24.65
10/05/21	7:34	0.28	1882.96	1990.47	-106.8	6.49	21.62	6.53	0	19.82
10/05/21	7:35	0.28	2004.38	1827.83	176.65	2.5	21.62	7.22	0	20.22
10/05/21	7:36	0.27	2039.03	1826.11	213	2.61	21.62	7.22	0	22.4
10/05/21	7:37	0.23	2042.19	1820.92	222.14	1.65	21.62	7.88	0	21.11
10/05/21	7:38	0.23	1303.03	1161.21	141.04	1.5	21.62	9.66	0	18.72
10/05/21	7:39	0.23	1022.25	933.18	88.35	1.62	21.62	9.66	0	25.01
10/05/21	7:40	0.23	1026.14	929.53	95.99	1.05	21.61	10.36	0	36.41
10/05/21	7:41	0.23	252.46	239	12.75	1.07	21.62	12.11	0	39.19
10/05/21	7:42	0.28	5.5	0.94	4.06	0.97	21.63	12.11	0	21.22
10/05/21	7:43	0.37	3.56	-0.09	2.54	0.34	21.62	12.11	0	16.56
10/05/21	7:44	0.39	49.56	22.96	25.55	0.45	21.62	12.1	0	34.21
10/05/21	7:45	0.23	34.48	17.89	16.35	4.28	21.61	17.8	0	42.34
10/05/21	7:46	0.32	26.69	2.71	23.16	418.99	21.61	13.55	6.94	31.01
10/05/21	7:47	0.31	11.05	2.07	8.49	369.22	21.61	4.55	5.02	30.25
10/05/21	7:48	0.27	2.95	-0.11	1.22	25.63	21.62	0.37	0.48	31.35
10/05/21	7:49	0.23	2.26	-0.13	1.22	673.86	21.61	9.65	10.78	50.69
10/05/21	7:50	0.23	1.63	-0.11	0.99	723.07	21.61	9.98	11.15	44.61
10/05/21	7:51	0.23	1.62	-0.1	1.02	722.15	21.62	9.97	11.18	44.89
10/05/21	7:52	0.23	1.69	-0.12	1	598.09	21.61	8.14	9.1	39.54
10/05/21	7:53	0.23	1.67	-0.1	1	580.47	21.62	7.96	8.92	34.13
10/05/21	7:54	0.23	1.69	-0.12	0.96	518.31	21.61	6.92	7.61	26.07
10/05/21	7:55	0.23	1.66	-0.09	1.02	15.08	21.61	0.04	0.04	26.66
10/05/21	7:56	0.23	1.62	-0.09	1.01	1.61	21.61	0	0	33.97
10/05/21	7:57	0.23	1.63	-0.09	0.2	7.17	21.6	3.84	0	52.39
10/05/21	7:58	0.23	601.36	627.91	-26.71	2.15	21.61	9.72	0.03	36.67
10/05/21	7:59	0.23	1015.21	910.75	104.3	1.5	21.61	9.72	0	24.89
10/05/21	8:00	0.23	1023.33	913	110.22	1.41	21.6	9.91	0	40.23
10/05/21	8:01	0.23	668.11	661.92	6.35	1.71	21.6	18.75	0	52.59
10/05/21	8:02	65.73	34.06	9.09	24.48	1.02	21.58	20.39	0	39.28
10/05/21	8:03	78.65	16.73	4.45	12.13	0.97	21.58	20.39	0	29.08
10/05/21	8:04	83.06	11.27	2.46	8.43	0.79	21.58	20.39	0	26.58
10/05/21	8:05	83.18	8.29	1.37	6.28	0.67	21.58	20.39	0	22.35
10/05/21	8:06	83.35	6.12	1.2	4.34	0.8	21.58	20.39	0	23.12
10/05/21	8:07	85.2	4.46	0.97	3.44	0.85	21.58	20.39	0	25.49
10/05/21	8:08	85.2	3.37	-0.1	2.37	0.29	21.58	20.39	0	23.55
10/05/21	8:09	85.2	2.92	-0.1	1.91	0.82	21.6	20.38	0	22.57

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10/05/21	8:10	84.93	2.1	-0.09	1.02	0.86	21.61	20.38	0	22.54
10/05/21	8:11	84.94	1.7	-0.06	1.01	0.26	21.61	20.21	0	24.06
10/05/21	8:12	85.52	1.7	-0.1	1.01	0.33	21.61	20.14	0	24.53
10/05/21	8:13	52.58	1.68	-0.08	1.04	0.33	21.62	20.14	0	20.64
10/05/21	8:14	50.32	1.68	-0.08	1.03	0.4	21.61	20.14	0	19.6
10/05/21	8:15	50.4	1.7	-0.12	0.16	0.12	21.61	20.11	0	22.31
10/05/21	8:16	50.48	1.27	-0.1	-0.22	0.26	21.61	20.02	0	21.69
10/05/21	8:17	34.65	0.39	-0.09	-0.23	0.32	21.61	20.02	0	19.6
10/05/21	8:18	33.58	0.38	-0.1	-0.24	0.18	21.31	20.02	0	67.99
10/05/21	8:19	33.6	0.36	-0.14	-0.22	1.65	16.92	20.18	0	288.06
10/05/21	8:20	33.52	2.11	1.13	0.24	3.03	10.83	20.43	0	749.7
10/05/21	8:21	2.96	1.69	0.51	-0.19	1.71	10.72	20.43	0	763.39
10/05/21	8:22	0.23	1.71	0.1	0.02	2.03	5.81	20.43	0	497.2
10/05/21	8:23	0.23	1.52	-0.11	0.26	2.83	0.29	20.43	0	28.36
10/05/21	8:24	0.23	1.49	0.7	-0.18	5.71	-0.01	20.43	0	-0.45
10/05/21	8:25	0.23	1.73	1.16	-0.19	2.98	-0.01	20.43	0	-0.63
10/05/21	8:26	0.23	1.72	1.14	0	2.47	-0.01	20.43	0	-0.91
10/05/21	8:27	0.23	1.52	0.93	-0.24	3.86	0.12	20.43	0	2.59
10/05/21	8:28	0.23	1.72	1.13	0.41	4.3	8.43	20.43	0	510.81
10/05/21	8:29	0.23	1.1	0.12	-0.21	4.75	10.31	20.43	0	734.36
10/05/21	8:30	0.23	1.72	0.5	-0.19	5.05	10.35	20.43	0	737.58
10/05/21	8:31	0.23	1.72	1.16	-0.2	2.61	10.36	20.43	0	738.16
10/05/21	8:32	0.23	1.74	1.13	-0.23	2.47	10.38	20.43	0	737.25
10/05/21	8:33	0.23	1.51	0.52	-0.19	1.62	13.06	20.44	0	620
10/05/21	8:34	0.23	1.75	0.31	-0.2	1.63	20.88	20.44	0	47.58
10/05/21	8:35	0.23	117.95	79.93	37.09	40.64	21.21	17.59	1.99	3.97
10/05/21	8:36	9.98	538.39	479.65	58.94	55.48	21.26	16.51	2.72	1.74
10/05/21	8:37	16.2	552.99	479.28	74.18	60.29	21.27	16.49	2.74	1.42
10/05/21	8:38	16.2	556.87	480.28	76.55	60.36	21.28	16.5	2.74	1.14
10/05/21	8:39	16.55	561.49	481.15	80.22	60.45	21.28	16.5	2.75	0.4
10/05/21	8:40	16.77	563.37	478.2	85.06	64.41	21.28	16.5	2.74	0.33
10/05/21	8:41	16.77	562.66	476.19	86.52	64.01	21.29	16.5	2.76	0.32
10/05/21	8:42	15.52	562.19	475.19	86.78	64.58	21.29	16.51	2.74	0.33
10/05/21	8:43	14.71	563.28	476.25	87.23	66.1	21.28	16.5	2.74	0.32
10/05/21	8:44	14.71	561.97	473.88	87.86	66.67	21.28	16.5	2.75	1.14
10/05/21	8:45	15.45	562.66	476.47	86.11	64.46	21.29	16.5	2.76	1.04
10/05/21	8:46	15.93	561.34	476.24	85.01	66.13	21.29	16.5	2.75	0.89
10/05/21	8:47	15.92	560.9	473.68	87.22	66.92	21.29	16.52	2.74	0.89
10/05/21	8:48	15.77	558.55	472.36	86.14	70.74	21.29	16.52	2.74	0.57
10/05/21	8:49	15.67	559.62	473.67	85.93	71.33	21.29	16.51	2.75	0.61
10/05/21	8:50	15.67	561.16	475.41	85.67	72.25	21.29	16.52	2.74	0.61
10/05/21	8:51	17.51	548.39	450.4	98.4	59.88	21.3	17.05	2.28	0.98
10/05/21	8:52	18.71	544.92	406.53	137.25	73.29	21.3	16.39	2.82	0.91
10/05/21	8:53	18.71	571.74	486.22	85.37	77.69	21.3	16.38	2.83	0.57
10/05/21	8:54	17.86	575.27	488.84	86.3	72.87	21.3	16.38	2.84	0.78
10/05/21	8:55	17.31	579.13	491.81	87.42	71.21	21.29	16.39	2.84	0.46
10/05/21	8:56	17.31	579.78	490.79	88.99	75.17	21.29	16.39	2.85	1.75
10/05/21	8:57	18.09	582.34	492.74	89.41	73.58	21.29	16.4	2.84	1.37
10/05/21	8:58	18.56	581.01	491.43	89.59	71.02	21.3	16.4	2.84	0.72
10/05/21	8:59	18.55	578.29	489.7	88.51	77.33	21.3	16.4	2.84	0.32
10/05/21	9:00	19	578.09	488.37	89.41	74.56	21.29	16.41	2.84	0.33
10/05/21	9:01	19.28	575.62	486.78	88.84	73.61	21.29	16.41	2.84	0.77
10/05/21	9:02	19.28	577.7	488.89	88.76	73.44	21.3	16.42	2.83	0.88
10/05/21	9:03	19.22	571.5	485.17	85.7	76.76	21.3	16.41	2.84	1.05
10/05/21	9:04	19.18	573.38	486.02	86.97	77.06	21.3	16.41	2.84	0.66
10/05/21	9:05	19.18	571.28	483.98	86.78	74.22	21.3	16.41	2.84	0.34
10/05/21	9:06	19.37	574.72	486.31	88.1	71.99	21.3	16.42	2.84	0.89

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10/05/21	9:07	19.49	574.77	487.41	87.5	75.98	21.3	16.4	2.84	0.89
10/05/21	9:08	19.49	569.83	480.1	89.25	85.36	21.3	16.61	2.64	0.89
10/05/21	9:09	21.99	551.75	461.83	90.84	89	21.3	16.54	2.74	0.72
10/05/21	9:10	23.59	555.6	475.36	80.55	92.97	21.3	16.54	2.75	0.41
10/05/21	9:11	23.6	555.57	475.77	80.12	94.21	21.31	16.53	2.76	0.31
10/05/21	9:12	21.1	558.64	476.68	81.85	97.59	21.3	16.53	2.75	0.32
10/05/21	9:13	19.49	558.24	479.47	78.59	93.3	21.3	16.53	2.75	0.81
10/05/21	9:14	19.49	560.58	479.17	81.46	90.36	21.31	16.53	2.75	0.71
10/05/21	9:15	19.75	563.19	482.25	80.76	88.04	21.31	16.53	2.75	0.88
10/05/21	9:16	19.91	561.28	480.52	80.6	96.18	21.31	16.53	2.76	0.86
10/05/21	9:17	19.91	560.64	480.75	80.13	86.46	21.3	16.54	2.75	0.88
10/05/21	9:18	19.59	562.22	482.05	80.39	88.44	21.3	16.53	2.76	0.89
10/05/21	9:19	19.39	562.8	481.83	80.53	88.06	21.3	16.54	2.75	2.03
10/05/21	9:20	19.39	555.18	474.98	80.53	97.83	21.31	16.54	2.75	1.58
10/05/21	9:21	23.35	553.75	476.64	77.46	98.84	21.31	16.53	2.75	1.14
10/05/21	9:22	25.89	555.91	478.41	78.14	92.71	21.3	16.53	2.76	0.93
10/05/21	9:23	25.89	555.95	478.41	77.47	96.31	21.3	16.54	2.76	0.94
10/05/21	9:24	24.84	554.4	474.36	80.58	93.87	21.31	16.54	2.76	2.18
10/05/21	9:25	24.17	550.62	473.3	77.75	86.04	21.31	17.43	2.11	1.6
10/05/21	9:26	24.17	245.02	142.91	102.09	6.49	21.31	20.48	0	1.61
10/05/21	9:27	9.56	23.92	5.92	17.56	4.74	19.78	20.49	0	105.17
10/05/21	9:28	0.23	16.63	3.4	12.85	4.78	17.59	20.49	0	337.66
10/05/21	9:29	0.23	17.43	29.47	-12.68	46.78	17.37	18.51	1.39	392.93
10/05/21	9:30	12.08	482.06	450.16	32.09	87.9	17.37	16.49	2.79	383.52
10/05/21	9:31	19.76	549.89	485.93	63.83	86.8	17.35	16.48	2.8	382.7
10/05/21	9:32	19.76	554.92	487.94	67.4	81.19	17.36	16.48	2.8	370.92
10/05/21	9:33	18.36	559.7	488.4	71.27	91.46	17.35	16.48	2.8	399.14
10/05/21	9:34	17.46	559.7	486.47	73.56	81.91	17.37	16.49	2.8	379.94
10/05/21	9:35	17.46	563.44	487.97	75.47	82.32	17.34	16.5	2.79	374.7
10/05/21	9:36	18	563.86	488.93	75.29	514.4	16.4	15.56	3.51	594.66
10/05/21	9:37	18.34	922.92	794.51	127.9	550.07	12.14	11.04	7.03	1178.99
10/05/21	9:38	18.34	1468.47	1237.74	229.85	303.89	11.85	11.28	6.89	691.5
10/05/21	9:39	17.48	1452.13	1223.76	226.97	629.79	11.58	10.88	7.16	-999
10/05/21	9:40	16.93	1676.62	1369.79	305.98	129.23	11.88	11.43	6.79	461.9
10/05/21	9:41	16.93	1768.89	1420.9	347.59	126.45	11.93	11.35	6.81	366.97

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10/05/21	9:42	12.9	1790.34	1423.57	366.58	120.41	12.06	11.44	6.72	328.47
10/05/21	9:43	10.28	1804.49	1435.7	368.7	127.85	12.3	11.53	6.62	314.2
10/05/21	9:44	10.28	1815.55	1405.54	409.48	116.68	12.26	11.55	6.7	303.71
10/05/21	9:45	10.25	1810.32	1428.69	381.5	89.34	12.34	11.78	6.42	284.74
10/05/21	9:46	10.23	1491.01	1218.5	271.88	644.81	13.09	12.46	6.02	783.78
10/05/21	9:47	10.23	1270.24	1004.89	263.73	149.23	14.99	14.58	4.32	448.8
10/05/21	9:48	10.2	1141.35	902.41	238.78	898.19	11.81	10.63	7.25	2000.00
10/05/21	9:49	10.18	1702.36	1356.41	345.74	73.34	12.23	11.72	6.49	304.59
10/05/21	9:50	10.18	1652.05	1340.67	311.26	129.95	11.77	11.16	7.03	411.62
10/05/21	9:51	9.12	1748.19	1388.79	358.78	72.72	12.6	12.06	6.17	262.82
10/05/21	9:52	8.44	1503.54	1144.41	357.81	155.86	12.36	11.54	6.65	617.1
10/05/21	9:53	8.44	1659.02	1339.8	318.84	121.29	12.22	11.37	6.86	448.41
10/05/21	9:54	9.49	1787.33	1414.5	372.61	107.14	12.32	11.46	6.7	277.12
10/05/21	9:55	10.17	1800.31	1418.07	382.12	102.38	12.38	11.69	6.59	286.09
10/05/21	9:56	10.17	1604.25	1210.79	392.64	297.62	13.92	13.48	5.14	315.29
10/05/21	9:57	10.95	1318.74	1048.76	268.67	631.15	11.9	11.52	6.58	2000.00
10/05/21	9:58	11.47	1494.24	1205.01	288.63	109.53	12.14	11.94	6.38	484.28
10/05/21	9:59	11.47	1547.05	1272.23	273.65	123.95	11.85	11.6	6.67	577.92
10/05/21	10:00	10.53	1695.03	1335.64	358.8	94.17	12.13	11.93	6.41	323.99
10/05/21	10:01	9.92	1689.26	1319.36	368.83	45.74	12.79	12.98	5.63	218.97
10/05/21	10:02	9.92	1359.38	1073.09	285.1	203.98	11.77	11.43	6.74	750.39
10/05/21	10:03	8.98	1669.45	1317.46	351.76	76.34	12.04	12.01	6.27	339.32
10/05/21	10:04	8.38	1623.75	1316.16	306.57	76.03	12.01	11.86	6.52	327.79
10/05/21	10:05	8.38	1664.7	1290.12	373.78	49.77	12.5	12.56	5.9	264.06
10/05/21	10:06	8.13	1297	993.79	302.31	44.48	13.36	13.3	5.42	302.82
10/05/21	10:07	7.96	1208.68	923.29	284.41	54.13	12.56	12.12	6.23	358.14
10/05/21	10:08	7.96	1509.91	1147.25	361.73	45.75	12.42	12.56	5.91	280.08

10/05/21	10:09	8.37	1315.72	1032.94	281.17	100.54	12.46	12.13	6.21	455.5
10/05/21	10:10	8.64	1463.17	1136.8	324.8	60.32	12.47	12.54	5.97	368.84
10/05/21	10:11	8.64	1196.25	931.62	264.21	39.91	13.62	13.61	5.08	305.54
10/05/21	10:12	8.97	1227.95	938.28	287.87	45.18	12.7	12.59	5.83	320.62
10/05/21	10:13	9.18	1201.23	950.1	249.92	47	12.71	12.51	5.88	311.52
10/05/21	10:14	9.18	1329.61	1035.55	292.6	45.31	12.64	12.73	5.87	312.65
10/05/21	10:15	8.95	1121.15	876.39	244.29	39.65	13.79	13.73	4.95	299.24
10/05/21	10:16	8.8	1125.08	887.48	237.73	48.95	12.51	12.28	6.04	358.88
10/05/21	10:17	8.8	1370.08	1090.64	278.35	57.59	11.98	11.97	6.46	305.67
10/05/21	10:18	8.94	1536.38	1243.2	292.38	65.09	11.77	12.02	6.42	352.39
10/05/21	10:19	9.02	1461.66	1131.58	329.5	52.94	12.64	12.73	5.76	265.27
10/05/21	10:20	9.02	1404.41	1118.82	284.42	158.62	11.68	11.59	6.71	951.2
10/05/21	10:21	8.7	1579	1260.67	318.21	56.55	12.17	12.31	6.06	300.82
10/05/21	10:22	8.49	1337.15	1053.1	283.27	357.42	12.55	12.33	6.03	652.52
10/05/21	10:23	8.49	1492.64	1183.93	307.49	108.81	11.46	11.57	6.69	615.62
10/05/21	10:24	8.62	1698.81	1352.57	345.64	87.49	11.95	11.87	6.41	317.4
10/05/21	10:25	8.7	1700.58	1356.27	343.82	78.47	12.28	12.17	6.28	352.39
10/05/21	10:26	8.7	1535.41	1193.87	340.42	50.95	13.63	12.45	5.92	192.96
10/05/21	10:27	8.32	1443.46	1171.78	270.93	59.93	14.09	12.38	6.16	272.63
10/05/21	10:28	8.07	1385.62	1095.44	288.87	59.26	13.25	12.25	6.07	323.14
10/05/21	10:29	8.07	1329.53	997.96	331.31	32.04	14.09	14.97	4.01	286.9
10/05/21	10:30	8.04	787.67	583.43	204.85	31.39	16.93	16.97	2.5	249.65
10/05/21	10:31	8.02	603.24	470.79	132.79	36.27	17.71	17.09	2.46	276.97
10/05/21	10:32	8.02	554.68	446.11	108.88	42.83	17.77	17.09	2.41	319.08
10/05/21	10:33	10.81	532.61	436.84	96.33	43.07	17.73	17.07	2.41	331.52
10/05/21	10:34	12.62	520.56	432.6	88.58	47.17	17.71	17.08	2.43	334.55
10/05/21	10:35	12.62	505.43	423.96	81.9	48.57	17.81	17.1	2.41	344.93
10/05/21	10:36	12.47	496.01	419.54	77.19	53.68	17.91	17.1	2.41	323.66
10/05/21	10:37	12.36	491.27	428.44	63.6	51.88	17.92	16.24	3.07	341.05
10/05/21	10:38	12.36	705.14	593.32	111.97	48.54	17.09	14.9	4.07	337.51
10/05/21	10:39	13.19	810.67	694.29	116.84	675.36	16.25	13.22	5.41	344.88
10/05/21	10:40	13.72	937.1	772.61	164.21	73.9	15.44	13.19	5.53	449.45
10/05/21	10:41	13.71	1012.79	808.08	205.02	35.44	15.22	15.76	3.43	883.19
10/05/21	10:42	11.69	620.97	482.3	139.32	39.36	15.56	16.72	2.7	410.31
10/05/21	10:43	10.38	717.76	598.71	119.79	57.88	17.89	15.28	3.82	230.41

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10/05/21	10:44	10.38	764.05	619.98	144.71	59.23	17.6	13.6	5.17	259.95
10/05/21	10:45	10.28	867.39	695.32	172.43	153.69	16.85	14.47	5.08	390.96
10/05/21	10:46	10.22	360.6	212.83	147.26	720.83	17.73	10.12	11.16	299.55
10/05/21	10:47	10.22	69.19	27.43	40.71	726.82	21	10.09	11.21	29.61
10/05/21	10:48	4.12	45.03	15.98	28.28	727.44	21.21	10.09	11.22	4.17
10/05/21	10:49	0.23	73.52	37	35.64	402.97	21.25	14.68	6.51	0.8
10/05/21	10:50	0.23	314.82	195.65	118.76	81.58	21.27	16.99	0.96	-0.27
10/05/21	10:51	0.23	929.88	797.13	132.66	4.66	21.28	15.9	0	0.1
10/05/21	10:52	0.23	985.48	830.62	154.11	3.72	21.28	15.9	0	0.74
10/05/21	10:53	0.23	993.63	834.19	158.61	3.91	21.28	15.91	0	-0.06
10/05/21	10:54	0.23	998.05	834.86	161.92	5.86	21.28	15.82	0	-1.14
10/05/21	10:55	0.23	735.47	528.49	206.51	481.2	21.28	8.38	7.7	-1.66
10/05/21	10:56	0.23	57.57	20.31	36.66	583.29	21.29	8.11	8.9	-1.85
10/05/21	10:57	0.23	34.4	11.04	22.83	583.97	21.29	8.11	8.92	-1.67
10/05/21	10:58	0.23	23.26	6.56	16.38	583.93	21.28	8.1	8.92	-1.28
10/05/21	10:59	0.23	16.96	4.24	12.2	159.64	21.29	1.96	1.93	-1.29
10/05/21	11:00	0.23	12.63	2.7	9.24	4.4	21.29	0.08	0	-1.71
10/05/21	11:01	0.23	9.21	1.66	7.15	3.57	21.29	0.07	0	-1.79
10/05/21	11:02	0.23	7.26	1.22	5.56	8.18	21.29	6.81	0	-1.28
10/05/21	11:03	2.4	6.57	1.21	4.71	4.51	21.29	20.26	0.01	-1.17
10/05/21	11:04	3.8	4.49	0.79	3.55	3.42	21.28	20.29	0	0.11
10/05/21	11:05	3.79	4.08	-0.02	2.49	3.61	21.29	20.3	0	0.34
10/05/21	11:06	31.09	3.01	-0.02	2.54	3.86	21.28	20.3	0	0.62
10/05/21	11:07	49.28	3.02	-0.04	2.54	3.28	21.29	20.31	0	0.35
10/05/21	11:08	49.28	2.95	-0.03	1.22	3.53	21.33	20.31	0	0.55
10/05/21	11:09	49.58	2.16	-0.06	1.19	3.47	21.35	20.31	0	-1.17
10/05/21	11:10	49.76	1.73	0.15	1.2	3.81	18.35	20.46	0	231.64
10/05/21	11:11	49.76	2.79	1.25	1.22	4.57	11.48	20.61	0	647.89
10/05/21	11:12	19.79	2.13	0.15	1.19	4.25	10.42	20.62	0	732.68
10/05/21	11:13	0.64	1.71	-0.02	1.22	6.7	10.38	20.62	0	734.66
10/05/21	11:14	0.64	1.77	-0.01	1.2	3.74	10.36	20.61	0	735.28
10/05/21	11:15	0.39	1.76	-0.03	1.16	3.84	10.35	20.61	0	735.48
10/05/21	11:16	0.23	1.76	0	1.23	4.14	4.72	20.61	0	422.08
10/05/21	11:17	0.23	25.26	33.02	-8.35	44.39	-0.02	18.37	1.58	5.95
10/05/21	11:18	9.13	469.37	454.25	15.38	79.01	-0.11	16.6	2.78	-3.84
10/05/21	11:19	15.07	524.03	471.32	52.83	82.74	-0.13	16.58	2.8	-5.1
10/05/21	11:20	15.07	531.53	472.61	58.66	82.16	-0.13	16.57	2.81	-5.7
10/05/21	11:21	17.37	561.5	495.03	66.66	193.95	0.81	15.48	3.65	5.46
10/05/21	11:22	18.86	752.03	692.21	60.6	106.83	12.67	13.21	5.43	479.81
10/05/21	11:23	18.86	1012.95	865.77	146.5	115.44	13.01	11.61	6.65	583.16
10/05/21	11:24	17.01	1346.25	1151.84	193.23	114.54	11.7	11.27	7.04	644.8
10/05/21	11:25	15.82	1462.85	1250.88	211.06	73.63	12.03	12.26	6.16	433.64
10/05/21	11:26	15.82	1191.33	989.62	201.28	64.87	13.21	13.39	5.3	393.07
10/05/21	11:27	13.53	930.44	741.37	189.34	46.36	15.31	14.94	4.08	324.16
10/05/21	11:28	12.04	914.41	737.05	177.27	51.4	14.96	13.71	5.09	365.37
10/05/21	11:29	12.04	985.37	816.34	168.51	47.43	14.5	14.5	4.43	381.64
10/05/21	11:30	13.73	917.54	762.86	155.04	45.29	14.89	13.97	4.85	337.56
10/05/21	11:31	14.81	923.94	743.32	180.47	42.15	15.31	15.22	3.89	309.91
10/05/21	11:32	14.81	819.18	639.98	179.26	52.5	15.49	14.03	4.79	357.71
10/05/21	11:33	14.05	981.97	815.35	166.54	49.06	14.28	14.18	4.77	376.36

Run 2 (1134-1234)

10/05/21	11:34	13.56	826.52	651.37	175.25	43.29	16.33	16.28	3.04	319.94
10/05/21	11:35	13.56	625.66	505.85	120.62	53.29	17.05	16.04	3.2	323.63
10/05/21	11:36	16.61	820.41	670.66	149.08	59.29	14.6	13.72	5.04	450.07
10/05/21	11:37	18.55	852.5	676.77	176.31	46.35	15.89	15.59	3.55	336.94
10/05/21	11:38	18.55	722.07	590.94	131.36	47.32	16.5	16	3.25	334.92
10/05/21	11:39	15.77	712.49	591.94	121.09	104.66	14.59	12.67	5.86	558.53
10/05/21	11:40	13.97	1274.5	1132.17	141.67	128.09	11.86	11.35	6.94	679.83
10/05/21	11:41	13.97	1388.13	1132.71	254.45	76.69	12.33	11.72	6.6	386.79
10/05/21	11:42	13.37	1331.98	1077.29	253.97	59.8	13.09	12.88	5.69	350.16
10/05/21	11:43	12.98	1031.89	825.69	206.17	48.54	14.87	14.58	4.33	361.21
10/05/21	11:44	12.98	820.49	649.47	171.43	5000.00	15.18	13.83	4.84	2000.00
10/05/21	11:45	32.49	1163.81	968.26	194.34	118.79	12.52	12.29	6.12	2000.00

10/05/21	11:46	44.95	1094.83	893.06	201	56.78	13.92	13.4	5.27	378.73
10/05/21	11:47	44.95	1160.36	963.69	194.77	69.09	12.61	11.9	6.48	402.33
10/05/21	11:48	25.38	1210.65	953.05	256.7	46.16	14.33	14.4	4.48	309.17
10/05/21	11:49	12.68	878.67	707.02	172.01	45.48	15.39	14.52	4.32	314.52
10/05/21	11:50	12.68	982.2	795.66	186.28	44.55	14.5	14.19	4.74	343.47
10/05/21	11:51	13.34	790.94	633.32	157.53	80.61	15.7	14.47	4.5	373.75
10/05/21	11:52	13.77	1126.93	971.79	153.94	115.2	11.6	11.13	7.05	682.07
10/05/21	11:53	13.77	1476.63	1199.2	276.52	71.32	12.25	11.93	6.39	384.48
10/05/21	11:54	13.64	1248.81	1019.86	228.33	53.2	14.11	14.1	4.7	321.68
10/05/21	11:55	13.56	944.73	770.24	174.41	57.24	14.73	13.35	5.32	343.75
10/05/21	11:56	13.56	991.93	817.43	173.57	40.67	14.72	14.12	4.67	297.61
10/05/21	11:57	12.48	940.91	744.29	196.54	42.06	15.27	14.49	4.42	302.74
10/05/21	11:58	11.79	980.63	802.77	177.73	53.7	13.58	12.78	5.83	373.89
10/05/21	11:59	11.79	1075.43	888.96	185.14	47.62	13.97	13.52	5.18	340.51
10/05/21	12:00	10.84	905.45	722.05	183.55	41.33	16.4	15.97	3.26	293.51
10/05/21	12:01	10.23	753.4	619.39	133.95	53.73	15.52	14.33	4.51	379.88
10/05/21	12:02	10.23	983	831.37	151.01	54.1	14.01	13.34	5.39	410.68
10/05/21	12:03	11.82	1012.41	814.1	198.14	48.27	14.38	13.72	5.09	351.35
10/05/21	12:04	12.83	974.71	804.8	170.01	58.82	13.99	12.89	5.63	365.62
10/05/21	12:05	12.83	1256.17	1016.94	238.64	245.61	12.3	11.77	6.57	465.23
10/05/21	12:06	12.16	1293.5	1124.9	167.8	919.93	11.42	11.09	7.01	2000.00
10/05/21	12:07	11.73	1481.29	1199.82	280.6	68.93	12.62	12.36	6.11	359.66
10/05/21	12:08	11.73	1163.03	928.25	233.91	64.36	13.07	12.54	6.04	368.35
10/05/21	12:09	11	1099.96	908.79	190.3	47.66	14.44	14.38	4.52	319.09
10/05/21	12:10	10.54	842.56	664.7	178.63	46.73	16.05	15.64	3.56	333.47
10/05/21	12:11	10.54	783.21	637.47	146.28	48.5	15.28	14.66	4.26	355.51
10/05/21	12:12	13.29	978.76	820.17	158.37	71.93	12.68	11.89	6.51	455.47
10/05/21	12:13	15.07	1170.63	959.53	210.33	60.72	12.82	12.47	6.04	377.27
10/05/21	12:14	15.07	1109.17	894.15	214.2	54.39	13.26	12.86	5.72	334.83
10/05/21	12:15	13.07	1103.35	887.2	215.2	51.63	14.67	13.29	5.42	285.88
10/05/21	12:16	11.79	896.18	699.62	196.91	41.78	16.54	15.9	3.3	272.12
10/05/21	12:17	11.79	831.67	678.91	153	50.25	14.75	13.56	5.15	348.85
10/05/21	12:18	13.69	1010.05	823.49	186.04	58.63	13.65	12.8	5.74	396.22
10/05/21	12:19	14.87	1049.62	831.21	217.72	51.77	14.55	14.29	4.6	378.24
10/05/21	12:20	14.87	810.41	639.79	171.65	48.57	15.86	14.81	4.18	334.81
10/05/21	12:21	15.19	988.79	809.45	179.39	70.96	13	11.93	6.47	438.51
10/05/21	12:22	15.41	1154.61	942.93	211.29	50.09	14.28	14.15	4.7	344.05
10/05/21	12:23	15.4	866.09	696.32	169.27	42.83	16.11	15.54	3.71	289.04
10/05/21	12:24	14.66	692.11	554.92	137.38	47.62	17.25	16.59	2.85	309.73
10/05/21	12:25	14.23	597.97	487.77	110.38	63.19	17.03	15.99	3.3	354.15
10/05/21	12:26	14.23	755.94	657.52	98.14	54.62	14.66	13.76	4.96	402.06
10/05/21	12:27	14.17	922.97	748.18	175.24	50.74	14.4	13.93	4.97	366.65
10/05/21	12:28	14.13	865.56	710.75	155.12	49.73	15.27	14.4	4.44	333.14
10/05/21	12:29	14.13	924.21	751.39	173.24	52.48	14.81	14.18	4.67	374.79
10/05/21	12:30	15.88	926.9	745.85	180.92	52.5	14.92	14.31	4.57	375.77
10/05/21	12:31	16.94	903.71	737.3	166.34	48.64	15.36	14.87	4.21	356.82
10/05/21	12:32	16.94	805.08	659.74	146.27	51.2	15.99	15.26	3.78	356.77
10/05/21	12:33	16.31	836.52	675.08	161.57	53.26	15.67	14.92	4.1	352.82
10/05/21	12:34	15.93	901.83	754.01	147.61	84.12	13.96	13.19	5.51	483.28
10/05/21	12:35	15.93	887.68	711.87	176.21	863.57	15.52	15.01	4.16	590.34

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10/05/21	12:36	15.07	387.2	347.84	39.48	824.55	15.2	10.28	10.96	-999
10/05/21	12:37	14.55	76.83	31.57	44.48	732.11	21.16	10.14	11.21	28.01
10/05/21	12:38	14.55	48.11	17.66	29.68	699.54	21.34	9.63	10.64	0.6
10/05/21	12:39	6.62	33.42	11.06	21.47	589.19	21.37	8.14	8.95	-2.87
10/05/21	12:40	1.33	23.87	7.21	16.31	587.63	21.37	8.13	8.95	-3.98
10/05/21	12:41	1.22	17.76	4.66	12.55	183.14	21.38	2.22	2.23	-3.73
10/05/21	12:42	1.02	13.62	3.14	9.76	8.21	21.38	0.11	0	-7.81
10/05/21	12:43	1.07	10.59	2.49	7.87	6.82	21.38	0.11	0	-8.26
10/05/21	12:44	1.07	8.67	3.13	4.65	46.98	21.38	7.26	0.57	-9.24
10/05/21	12:45	1.16	848.68	510.34	338.5	8.54	21.38	15.94	0	-9.63
10/05/21	12:46	1.31	962.92	824.79	137.49	7.64	21.38	15.94	0	-10.17
10/05/21	12:47	0.75	976.5	828.96	146.99	8.09	21.38	15.95	0	-10.34
10/05/21	12:48	0.68	982.71	813.17	168.73	7.47	21.38	17.71	0	-10.55
10/05/21	12:49	17.94	199.76	179.97	19.57	7.12	21.38	20.34	0	-10.2
10/05/21	12:50	48.6	40.71	14.62	25.91	7.15	21.38	20.34	0	-9.51
10/05/21	12:51	48.7	26.66	8.27	18.03	7.21	21.38	20.35	0	-10.28
10/05/21	12:52	48.63	19.23	5.93	12.78	9.25	15.32	20.56	0	161.89
10/05/21	12:53	31.25	15.07	4.82	9.96	13.7	10.55	20.66	0	697.86
10/05/21	12:54	1.27	11	2.9	7.93	9.28	10.46	20.66	0	723.11
10/05/21	12:55	0.8	8.19	2.08	5.95	12.71	10.44	20.66	0	724.27
10/05/21	12:56	0.4	6.46	1.19	4.83	10.36	10.42	20.66	0	724.78
10/05/21	12:57	0.23	5.58	1.2	3.93	8.52	10.4	20.66	0	724.5
10/05/21	12:58	1.06	7.18	31.15	-23.97	44.73	3.22	18.76	1.3	299.92
10/05/21	12:59	25.46	361.41	369.06	-7.04	70.17	0.06	17.32	2.21	-4.41
10/05/21	13:00	19.95	515.65	466.2	49.92	85.15	0	16.67	2.79	-9.78
10/05/21	13:01	17.46	530.08	472.85	56.68	88.28	-0.01	16.66	2.8	-10.92
10/05/21	13:02	17.46	533.5	472.83	60.71	92.62	0	16.65	2.82	-11.32
10/05/21	13:03	20.57	536.92	473.53	63.81	86.19	0.02	16.66	2.81	-11.85
10/05/21	13:04	24.74	540.99	473.73	67.82	86.84	12.84	16.67	2.8	-11.33
10/05/21	13:05	24.74	540.1	471.57	69.12	93.44	18.49	16.66	2.81	199.94
10/05/21	13:06	22.76	541.2	472.27	69.62	101.17	17.41	16.65	2.82	382.58
10/05/21	13:07	20.24	544.59	474.53	71.04	102.94	17.36	16.53	2.89	376.82
10/05/21	13:08	20.24	720.58	659.71	61.12	256.82	13.73	12.04	6.42	832.81

Run 3 (1309-1409)

10/05/21	13:09	20.28	1059.63	915.24	144.94	63.05	14.99	14.93	4.12	435.9
10/05/21	13:10	20.34	675.56	566.08	109.85	56.18	17.29	16.66	2.8	317.22
10/05/21	13:11	20.34	627.35	528.01	99.79	61.39	16.37	15.13	3.96	339.81
10/05/21	13:12	20.16	823.93	690.7	133.79	65.65	15.16	13.99	4.96	376.57
10/05/21	13:13	19.92	957.99	786.5	172.15	72.5	14.07	13.27	5.52	434.54
10/05/21	13:14	19.91	967.92	777.94	189.84	77.4	14.88	13.96	4.94	374.49
10/05/21	13:15	19.1	968.3	803.57	163.34	70.78	14.25	13.69	5.19	499.96
10/05/21	13:16	18.08	957.72	772.55	185.18	53.73	14.85	14.33	4.55	337.31
10/05/21	13:17	18.08	995.74	842.78	153.02	80.83	13.34	12.35	6.2	431.92
10/05/21	13:18	16.49	1101.05	877.7	223.6	57.01	15.05	14.98	4.08	335.14
10/05/21	13:19	14.39	979.38	818.3	160.44	97.93	13.02	11.92	6.53	519.11
10/05/21	13:20	14.39	1158.83	953.16	202.84	53.72	14.71	14.71	4.31	305.43
10/05/21	13:21	14.42	903.87	745.46	158.64	65.21	14.25	13.19	5.49	360.34
10/05/21	13:22	14.45	1124.36	914.39	209.13	69.03	13.29	12.99	5.72	396.11
10/05/21	13:23	14.45	1108.09	908.97	198.15	70.89	13.35	13	5.73	394.58
10/05/21	13:24	14.07	999.04	808.54	189.12	47.78	15.5	15.38	3.81	292.16
10/05/21	13:25	13.56	804.84	662.23	142.5	74.48	14.91	13.73	5.03	421.23
10/05/21	13:26	13.56	1076.81	910.98	164.97	88.63	13.03	12.61	5.97	413.92
10/05/21	13:27	12.9	1216.16	995.74	217.77	700.97	12.24	11.5	6.81	1003.23
10/05/21	13:28	11.99	1407.07	1162.79	242.96	87.33	12.43	12.06	6.39	407.47
10/05/21	13:29	11.99	1331.02	1084.53	245.8	75.59	12.55	12.15	6.45	344.33
10/05/21	13:30	11.78	1282.97	1068.09	211.78	63.43	13.43	12.9	5.79	288.66
10/05/21	13:31	11.47	1109.23	905.37	201.8	54.57	14.36	13.83	4.98	316.91
10/05/21	13:32	11.47	1017.54	840.29	176.55	51.96	14.85	14.32	4.66	332.11
10/05/21	13:33	12.9	954.69	789.72	164.46	48.93	15.58	15.03	4.19	315.88
10/05/21	13:34	14.76	973.4	792.6	180.02	72.53	13.51	12.26	6.24	423.69
10/05/21	13:35	14.76	1147.91	968.91	178.33	54.6	13.98	13.89	4.99	339.9
10/05/21	13:36	13.9	1018.38	825.26	193.35	53.32	14.25	13.55	5.24	323.5
10/05/21	13:37	12.73	981.18	811.47	169.43	51.52	14.99	14.32	4.6	319.57

10/05/21	13:38	12.73	1001.92	829.02	172.6	54.28	14.18	13.57	5.29	354.88
10/05/21	13:39	12.51	1002.17	827.64	173.96	48.11	14.99	14.6	4.46	303.88
10/05/21	13:40	12.22	907.23	751.8	157.12	50.38	15.07	14.28	4.68	332.65
10/05/21	13:41	12.21	953.25	801.42	151.27	51.24	14.78	14.12	4.77	331.89
10/05/21	13:42	13.02	980.74	819.16	161.51	49.45	14.89	14.74	4.44	338.03
10/05/21	13:43	14.13	790.37	645.19	142.72	48.76	16.78	16.53	2.93	300.54
10/05/21	13:44	14.13	615.31	513.54	102.21	57.23	16.72	15.84	3.41	351.63
10/05/21	13:45	15.43	835.98	720.54	117.43	5000.00	13.57	12.59	5.89	2000.00
10/05/21	13:46	17.19	1115.08	995.32	119.49	103.71	12.72	12.29	6.18	2000.00
10/05/21	13:47	17.19	1171.7	990.15	180.76	98.8	12.28	11.64	6.72	444.73
10/05/21	13:48	15.58	1471.86	1279.17	193.89	108.38	11.54	11.51	6.87	485.3
10/05/21	13:49	13.4	1522.08	1255.03	267.79	87.32	11.86	11.6	6.79	323.75
10/05/21	13:50	13.4	1543.85	1268.65	275.28	80.5	12.64	12.11	6.4	300.84
10/05/21	13:51	12.98	1308.99	1057.23	251.03	62.14	14	14.14	4.71	337.49
10/05/21	13:52	12.42	879.19	744.91	127.11	79.18	14.22	12.72	5.9	415.09
10/05/21	13:53	12.42	1326.18	1109.1	216.53	72.66	12.62	12.2	6.24	384.19
10/05/21	13:54	12.24	1342.21	1138.42	205.75	92.2	12.08	11.62	6.81	394.27
10/05/21	13:55	11.99	1378.3	1141.02	235.67	211.65	12.85	12.31	6.22	576.32
10/05/21	13:56	11.99	1278.23	1060.82	218.42	98.56	12.26	11.72	6.76	438.29
10/05/21	13:57	10.92	1406.95	1163.58	241.7	88.34	12.17	11.7	6.66	422.49
10/05/21	13:58	9.56	1588.76	1334.33	255.72	151.95	11.28	10.91	7.32	477.59
10/05/21	13:59	9.56	1783.31	1467.86	315.19	107.26	11.85	11.6	6.78	344.06
10/05/21	14:00	9.69	1634.77	1331.58	303.14	68.03	12.94	12.88	5.81	267.31
10/05/21	14:01	9.87	1075.08	863.05	205.22	46.79	16.05	16.01	3.29	283.82
10/05/21	14:02	9.87	747.41	626.85	120.86	48.95	16.08	15.19	3.9	313.13
10/05/21	14:03	11.77	876.47	752.92	124.62	139	14.54	13.38	5.35	451.11
10/05/21	14:04	14.18	1083.09	914.63	168.41	83.13	13.21	12.93	5.76	650.65
10/05/21	14:05	14.18	1000	822.64	175.6	47.46	15.12	15.2	3.98	314.58
10/05/21	14:06	13.07	719.57	597.4	120.62	52.14	16.14	15.27	3.85	315.05
10/05/21	14:07	11.63	935.37	790.1	145.13	59.28	13.72	13.14	5.59	398.96
10/05/21	14:08	11.63	1044.19	866.02	176.44	66.03	13.29	12.75	5.8	401.24
10/05/21	14:09	12.25	1065.29	898.65	165.73	59.61	13.38	13.07	5.6	357.9
10/05/21	14:10	13.1	1103.4	896.45	207.9	242.46	12.73	11.38	7.62	396.42
10/05/21	14:11	13.1	409.16	330.71	74.2	733.1	19.48	10.19	11.22	119.59
10/05/21	14:12	8.59	81.1	34.26	45.93	734.35	21.28	10.18	11.23	-8.52
10/05/21	14:13	1.83	51.47	20.03	31.09	617.66	21.32	8.5	9.3	-10.73
10/05/21	14:14	1.83	35.07	12.52	22.47	591.42	21.34	8.18	8.95	-12.18
10/05/21	14:15	1.44	25.81	7.88	16.75	311.31	21.35	4.02	4.19	-10.92
10/05/21	14:16	0.9	19.16	5.54	13.23	11.09	21.36	0.16	0	-7.32
10/05/21	14:17	0.9	14.69	3.99	10.15	42.43	21.36	5.8	0.49	-7.15
10/05/21	14:18	0.93	630.71	540.07	91.76	10.72	21.36	15.96	0	-10.69
10/05/21	14:19	0.97	954.89	821.13	133.36	10.89	21.36	15.98	0	-11.74
10/05/21	14:20	0.97	968.68	824.39	143.69	10.49	21.36	15.99	0	-11.85
10/05/21	14:21	0.97	975.87	826.64	148.83	10.35	21.36	16	0	-11.59
10/05/21	14:22	0.97	981.73	828.12	153.51	10.37	21.36	16	0	-12.4
10/05/21	14:23	0.97	984.33	829.18	155.03	10.57	21.36	15.98	0	-12.84
10/05/21	14:24	0.66	838.18	566.63	275.26	10.36	21.36	19.58	0	-12.1
10/05/21	14:25	0.23	65.8	25.7	39.66	9.54	21.36	20.39	0	-11.51
10/05/21	14:26	0.23	36.89	12.54	23.3	9.91	21.36	20.39	0	-9.06
10/05/21	14:27	20.03	24.75	7.73	17.06	9.8	21.36	20.39	0	-12.36
10/05/21	14:28	48.9	17.77	4.91	12.37	9.38	21.36	20.39	0	-12.92
10/05/21	14:29	48.9	12.93	3.18	9.38	9.88	21.35	20.4	0	-13
10/05/21	14:30	48.9	9.92	2.47	7.46	55.84	21.36	13.23	0	-11.98
10/05/21	14:31	48.9	8.14	1.68	5.91	3643.02	21.36	0.39	0	-12.38
10/05/21	14:32	48.9	6.2	1.27	4.86	4118.4	21.36	0.18	0	-13
10/05/21	14:33	28.16	5.16	1.24	3.9	4121.58	21.35	0.17	0	-12.99
10/05/21	14:34	0.23	4.3	1.02	3.29	3987.66	21.3	0.97	0	-12.93
10/05/21	14:35	0.23	4.32	0.57	2.62	288.17	12.7	19.87	0	-999
10/05/21	14:36	0.53	3.29	0.84	2.61	22.15	10.54	20.67	0	-999
10/05/21	14:37	0.97	2.99	-0.01	2.2	22.33	10.45	20.68	0	737.52
10/05/21	14:38	0.97	2.96	0.17	1.32	19.39	10.43	20.68	0	727.04
10/05/21	14:39	0.66	2.99	-0.05	1.3	24.03	10.42	20.69	0	724.35
10/05/21	14:40	0.23	2.16	-0.07	1.31	19.24	10.42	20.69	0	723.35

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10/05/21	14:41	0.23	1.72	-0.04	1.31	16.85	10.42	20.7	0	723.22
10/05/21	14:42	0.23	1.7	-0.05	1.29	14	9.47	20.7	0	689.64
10/05/21	14:43	0.23	1.7	-0.05	1.29	27.81	0.99	20.7	0	111.08
10/05/21	14:44	0.23	1.71	-0.02	1.29	36.82	0.04	20.69	0	-9.25
10/05/21	14:45	0.23	1.72	-0.04	1.28	21.38	0	20.7	0	-12.33
10/05/21	14:46	0.23	1.7	-0.01	1.27	32.11	0	20.71	0	-13.4
10/05/21	14:47	0.23	1.71	0	1.31	29.39	-0.01	20.7	0	-13.55
10/05/21	14:48	0.23	1.73	0	1.32	21.62	-0.02	20.7	0	-13.78
10/05/21	14:49	0.23	1.74	-0.02	1.33	31.41	0.05	20.7	0	842.17
10/05/21	14:50	0.23	1.68	-0.01	1.34	24.94	-0.01	20.7	0	1894.87
10/05/21	14:51	0.23	1.71	-0.03	1.33	19.21	-0.01	20.7	0	1918.47
10/05/21	14:52	0.23	1.71	-0.05	1.3	29.06	-0.01	20.7	0	1922.45
10/05/21	14:53	0.23	1.74	-0.03	1.31	19.13	-0.02	20.7	0	1923.87
10/05/21	14:54	0.23	1.74	-0.04	1.3	14.05	0	20.7	0	1923.1
10/05/21	14:55	0.23	1.75	-0.08	1.13	12.94	7.98	20.71	0	1423.91
10/05/21	14:56	0.23	1.73	-0.06	-0.02	26.09	21.18	20.71	0	53.3
10/05/21	14:57	0.23	1.78	-0.03	0	30.38	21.37	20.7	0	-5.79
10/05/21	14:58	0.23	1.77	-0.03	0	24.45	21.38	20.71	0	-10.03
10/05/21	14:59	0.23	1.75	-0.05	-0.01	15.98	21.38	20.7	0	-4.06
10/05/21	15:00	0.23	1.79	-0.04	-0.01	20.74	-999	20.7	0	-999
10/05/21	15:01	1.78	51.8	52.66	52.65	58.91	-999	20.7	0	-999
10/05/21	15:02	-999	-999	-999	-999	-999	-999	-999	-999	-999
10/05/21	15:03	-999	-999	-999	-999	-999	-999	-999	-999	-999
10/05/21	15:04	-999	-999	-999	-999	-999	-999	-999	-999	-999
10/05/21	15:05	-999	-999	-999	-999	-999	-999	-999	-999	-999
10/05/21	15:06	-999	-999	-999	-999	-999	-999	-999	-999	-999
10/05/21	15:07	-999	-999	-999	-999	-999	-999	-999	-999	-999
10/05/21	15:08	-999	-999	-999	-999	-999	-999	-999	-999	-999
10/05/21	15:09	-999	-999	-999	-999	-999	-999	-999	-999	-999
10/05/21	15:10	-999	-999	-999	-999	-999	-999	-999	-999	-999

Attachment 2 – DE Calculations

One-Minute Average Concentration Correction for Calibration and Zero Drift Values

CO Inlet

Average pre-test and post-test instrument zero	=	2.75	-1.92	-9.52	ppmvd
Average pre-test and post-test instrument calibration	=	734.97	727.90	725.08	ppmvd
Midrange calibration gas concentration	=	742.50	742.50	742.50	ppmvd

CO Outlet

Average pre-test and post-test instrument zero	=	3.01	6.31	9.65	ppmvd
Average pre-test and post-test instrument calibration	=	581.88	586.24	590.31	ppmvd
Midrange calibration gas concentration	=	594.00	594.00	594.00	ppmvd

O2 Inlet

Average pre-test and post-test instrument zero	=	-0.02	-0.01	0.02	ppmvd
Average pre-test and post-test instrument calibration	=	10.40	10.44	10.45	ppmvd
Midrange calibration gas concentration	=	10.51	10.51	10.51	ppmvd

O2 Outlet

Average pre-test and post-test instrument zero	=	0.04	0.04	0.08	ppmvd
Average pre-test and post-test instrument calibration	=	10.04	10.12	10.17	ppmvd
Midrange calibration gas concentration	=	10.51	10.51	10.51	ppmvd

Concentration Corrected for Calibration and Zero Drift Formula

$$C_d = (\text{conc.} - \text{Avg. zero}) \times (\text{Cal. gas conc.}) / (\text{Avg. cal.} - \text{Avg. zero})$$

CO Concentration, Corrected (Corr.) to 15% O2 Formula

$$(\text{CO conc.}) * ((20.9 - 15.0) / (20.9 - \text{O2 measured}))$$

Destruction Efficiency (DE) Formula

Destruction Efficiency
 $((C_{in} - C_{out}) / C_{in}) * 100$

Where: C = CO concentration corrected for drift

Three-Run Averages

CO DE	79.27 %
O2 - Inlet	14.10 %
O2 - Outlet	14.00 %
CO - Inlet	451.18 ppmvd
CO - Outlet	145.91 ppmvd
CO @ 15%	403.01 ppmvd
CO @ 15%	122.05 ppmvd

Run 1 (0942-1042) Calibration Corrections and DE Calculations

Time	CO Inlet Corr. (ppm)	CO Outlet Corr. (ppm)	O2 Inlet Corr. (%)	O2 Outlet Corr. (%)	CO Inlet @ 15% O2	CO Outlet @ 15% O2	DE
9:42	330.30	120.47	12.19	11.99	223.61	79.71	64.35%
9:43	315.82	128.11	12.43	12.08	219.93	85.54	61.10%
9:44	305.19	116.65	12.39	12.10	211.51	78.26	63.00%
9:45	285.95	88.59	12.47	12.34	200.08	61.61	69.21%
9:46	792.00	658.57	13.22	13.06	608.80	485.25	20.29%
9:47	452.32	150.05	15.14	15.29	463.46	156.92	66.14%
9:48	2025.30	918.57	11.93	11.14	1332.56	542.72	59.27%
9:49	306.08	72.17	12.36	12.28	211.38	50.21	76.25%
9:50	414.61	130.26	11.89	11.69	271.58	83.27	69.34%
9:51	263.72	71.54	12.73	12.64	190.45	51.94	72.73%
9:52	622.98	156.85	12.49	12.09	436.94	104.41	76.10%
9:53	451.92	121.38	12.35	11.91	311.73	79.63	74.45%
9:54	278.22	106.86	12.45	12.01	194.21	71.09	63.39%
9:55	287.32	101.97	12.51	12.25	202.00	69.83	65.43%
9:56	316.93	302.31	14.06	14.13	273.46	259.47	5.12%
9:57	2025.30	644.56	12.02	12.07	1346.20	421.79	68.67%
9:58	488.29	109.31	12.27	12.51	333.67	77.05	76.91%
9:59	583.25	124.11	11.97	12.16	385.49	83.63	78.31%
10:00	325.75	93.55	12.26	12.50	222.34	66.16	70.24%
10:01	219.26	43.85	12.92	13.61	162.14	37.00	77.18%
10:02	758.14	206.23	11.89	11.98	496.59	134.87	72.84%
10:03	341.30	75.25	12.16	12.59	230.53	54.18	76.50%
10:04	329.61	74.93	12.13	12.43	221.86	52.95	76.13%
10:05	264.98	47.99	12.63	13.17	189.02	37.96	79.92%
10:06	304.28	42.56	13.50	13.94	242.51	37.72	84.44%
10:07	360.38	52.46	12.69	12.70	258.97	38.96	84.96%
10:08	281.23	43.86	12.55	13.17	198.67	34.90	82.43%
10:09	459.11	100.08	12.59	12.71	325.91	72.45	77.77%
10:10	371.23	58.81	12.60	13.14	263.85	45.89	82.61%
10:11	307.04	37.87	13.76	14.27	253.70	35.51	86.00%
10:12	322.33	43.28	12.83	13.20	235.69	34.60	85.32%
10:13	313.11	45.14	12.84	13.11	229.23	35.61	84.47%
10:14	314.25	43.41	12.77	13.34	228.07	35.38	84.49%
10:15	300.65	37.60	13.93	14.40	254.53	35.96	85.87%
10:16	361.13	47.15	12.64	12.87	257.93	35.97	86.05%
10:17	307.17	56.01	12.10	12.54	206.05	40.67	80.26%
10:18	354.55	63.71	11.89	12.60	232.23	46.25	80.08%
10:19	266.21	51.24	12.77	13.34	193.20	41.34	78.60%
10:20	961.77	159.68	11.80	12.15	623.68	106.90	82.86%
10:21	302.26	54.94	12.30	12.90	207.27	41.72	79.87%
10:22	658.90	363.68	12.68	12.92	472.91	264.37	44.10%
10:23	621.48	108.57	11.58	12.12	393.41	73.15	81.41%
10:24	319.07	86.69	12.07	12.44	213.29	61.01	71.40%
10:25	354.55	77.44	12.41	12.76	246.31	56.84	76.92%
10:26	192.88	49.20	13.77	13.05	159.60	38.29	76.01%
10:27	273.67	58.41	14.23	12.98	242.21	44.62	81.58%
10:28	324.89	57.72	13.39	12.84	255.10	43.37	83.00%
10:29	288.14	29.79	14.23	15.70	255.02	36.35	85.75%
10:30	250.37	29.13	17.10	17.80	388.68	59.79	84.62%
10:31	278.07	34.13	17.89	17.93	544.46	72.02	86.77%
10:32	320.77	40.87	17.95	17.93	640.94	85.04	86.73%
10:33	333.39	41.11	17.91	17.91	657.17	84.92	87.08%
10:34	336.46	45.32	17.89	17.92	658.78	93.33	85.83%
10:35	346.99	46.76	17.99	17.94	702.93	96.78	86.23%
10:36	325.42	52.00	18.09	17.94	682.90	106.96	84.34%
10:37	343.05	50.15	18.10	17.03	722.50	79.19	89.04%
10:38	339.46	46.72	17.26	15.63	550.38	54.30	90.13%
10:39	346.94	689.92	16.41	13.86	456.23	565.93	0.00%
10:40	452.97	72.75	15.60	13.83	503.87	61.65	87.76%
10:41	892.81	33.28	15.37	16.53	953.23	47.85	94.98%
10:42	413.28	37.30	15.72	17.54	470.46	69.10	85.31%

Average 437.46 125.46 13.64 13.69 382.32 99.02 74.72% Average

Run 2 (1134-1234) Calibration Corrections and DE Calculations

Time	CO Inlet Corr. (ppm)	CO Outlet Corr. (ppm)	O2 Inlet Corr. (%)	O2 Outlet Corr. (%)	CO Inlet @ 15% O2	CO Outlet @ 15% O2	DE
11:34	327.45	37.88	16.43	16.94	432.58	64.52	85.09%
11:35	331.21	48.12	17.16	16.69	522.20	74.70	85.70%
11:36	459.84	54.27	14.69	14.27	437.16	52.77	87.93%
11:37	344.75	41.02	15.99	16.22	414.37	58.45	85.89%
11:38	342.69	42.01	16.60	16.65	470.73	65.68	86.05%
11:39	570.19	100.74	14.68	13.18	541.19	79.94	85.23%
11:40	693.60	124.74	11.94	11.80	456.63	83.03	81.82%
11:41	395.46	72.09	12.41	12.18	274.85	51.91	81.11%
11:42	358.20	54.79	13.18	13.39	273.58	47.01	82.82%
11:43	369.44	43.26	14.97	15.17	367.29	49.96	86.40%
11:44	2036.72	5114.81	15.28	14.39	2137.14	4528.29	0.00%
11:45	2036.72	115.21	12.60	12.78	1448.13	86.30	94.04%
11:46	387.26	51.70	14.01	13.94	331.62	48.11	85.49%
11:47	411.27	64.31	12.69	12.37	295.64	47.80	83.83%
11:48	316.49	40.82	14.42	14.98	288.27	46.00	84.04%
11:49	321.94	40.13	15.49	15.11	350.99	46.31	86.81%
11:50	351.39	39.17	14.59	14.76	328.73	42.82	86.98%
11:51	382.20	76.11	15.80	15.05	442.17	81.34	81.60%
11:52	695.88	111.54	11.68	11.57	445.14	72.84	83.64%
11:53	393.11	66.59	12.33	12.40	270.65	49.52	81.70%
11:54	329.22	48.03	14.20	14.67	289.96	50.36	82.63%
11:55	351.68	52.17	14.82	13.88	341.52	48.14	85.90%
11:56	304.73	35.20	14.81	14.69	295.45	38.63	86.93%
11:57	309.95	36.62	15.37	15.07	330.56	42.59	87.11%
11:58	382.34	48.54	13.67	13.29	311.92	41.63	86.65%
11:59	348.38	42.32	14.06	14.06	300.51	41.09	86.33%
12:00	300.56	35.87	16.50	16.62	403.41	56.94	85.88%
12:01	388.43	48.58	15.62	14.91	433.98	52.90	87.81%
12:02	419.77	48.95	14.10	13.87	364.24	45.43	87.53%
12:03	359.41	42.98	14.47	14.27	329.92	42.96	86.98%
12:04	373.93	53.79	14.08	13.40	323.50	46.30	85.69%
12:05	475.27	245.11	12.38	12.24	329.14	167.26	49.18%
12:06	2036.72	935.78	11.50	11.53	1277.78	579.07	54.68%
12:07	367.86	64.14	12.70	12.85	264.76	50.53	80.91%
12:08	376.70	59.46	13.16	13.04	286.97	48.31	83.17%
12:09	326.59	42.36	14.53	14.96	302.63	47.33	84.36%
12:10	341.22	41.41	16.15	16.27	424.02	59.59	85.95%
12:11	363.64	43.22	15.38	15.25	388.52	50.66	86.96%
12:12	465.34	67.22	12.76	12.36	337.40	49.70	85.27%
12:13	385.78	55.73	12.90	12.97	284.64	45.16	84.14%
12:14	342.60	49.25	13.35	13.37	267.59	42.64	84.07%
12:15	292.80	46.42	14.76	13.82	281.55	43.04	84.71%
12:16	278.80	36.34	16.65	16.54	386.59	56.60	85.36%
12:17	356.86	45.01	14.84	14.10	347.71	43.62	87.45%
12:18	405.06	53.59	13.74	13.31	333.70	45.58	86.34%
12:19	386.77	46.57	14.64	14.87	364.73	50.61	86.12%
12:20	342.58	43.29	15.96	15.41	409.25	52.18	87.25%
12:21	448.08	66.22	13.08	12.40	338.27	49.27	85.43%
12:22	351.98	44.85	14.37	14.72	318.12	47.81	84.97%
12:23	296.01	37.41	16.21	16.17	372.59	53.42	85.66%
12:24	317.06	42.32	17.36	17.26	528.31	77.28	85.37%
12:25	362.26	58.26	17.14	16.64	568.11	87.49	84.60%
12:26	411.00	49.49	14.75	14.31	394.56	48.92	87.60%
12:27	374.97	45.51	14.49	14.49	345.29	46.70	86.47%
12:28	340.88	44.48	15.37	14.98	363.54	49.56	86.37%
12:29	383.26	47.29	14.91	14.75	377.19	50.35	86.65%
12:30	384.25	47.32	15.02	14.89	385.28	51.51	86.63%
12:31	364.97	43.36	15.46	15.47	395.71	52.85	86.64%
12:32	364.92	45.98	16.09	15.88	447.79	60.14	86.57%
12:33	360.90	48.09	15.77	15.52	415.08	58.43	85.92%
12:34	493.63	79.70	14.05	13.72	425.18	69.10	83.75%
Average	462.18	154.22	14.56	14.37	429.77	138.02	83.02% Average

Run 3 (1309-1409) Calibration Corrections and DE Calculations

Time	CO Inlet Corr. (ppm)	CO Outlet Corr. (ppm)	O2 Inlet Corr. (%)	O2 Outlet Corr. (%)	CO Inlet @ 15% O2	CO Outlet @ 15% O2	DE
13:09	450.21	54.63	15.09	15.48	457.35	68.58	85.00%
13:10	330.25	47.60	17.41	17.28	558.44	91.53	83.61%
13:11	353.09	52.93	16.48	15.68	471.67	69.44	85.28%
13:12	390.24	57.29	15.26	14.50	408.48	60.49	85.19%
13:13	448.84	64.29	14.16	13.75	393.16	59.79	84.79%
13:14	388.14	69.31	14.98	14.46	386.90	70.96	81.66%
13:15	514.96	62.53	14.35	14.18	463.58	62.18	86.59%
13:16	350.56	45.09	14.95	14.85	347.67	52.40	84.93%
13:17	446.19	72.82	13.43	12.79	352.35	58.78	83.32%
13:18	348.37	48.45	15.15	15.53	357.61	62.61	82.49%
13:19	534.32	90.31	13.11	12.34	404.47	67.49	83.31%
13:20	318.34	45.08	14.81	15.25	308.39	56.06	81.82%
13:21	373.84	56.84	14.35	13.66	336.53	53.16	84.20%
13:22	409.99	60.74	13.38	13.45	321.59	54.70	82.99%
13:23	408.45	62.65	13.44	13.46	322.98	56.25	82.58%
13:24	304.92	39.01	15.61	15.94	339.84	56.89	83.26%
13:25	435.38	66.32	15.01	14.23	436.23	65.83	84.91%
13:26	427.99	80.80	13.12	13.06	324.41	66.68	79.45%
13:27	1023.65	707.21	12.32	11.90	703.88	459.59	34.71%
13:28	421.48	79.47	12.51	12.48	296.43	61.23	79.34%
13:29	357.66	67.46	12.63	12.58	255.23	53.59	79.00%
13:30	301.39	55.02	13.52	13.36	240.92	49.64	79.40%
13:31	329.94	45.95	14.46	14.33	302.13	49.00	83.78%
13:32	345.30	43.28	14.95	14.84	342.45	50.59	85.23%
13:33	328.90	40.18	15.69	15.58	372.23	54.26	85.42%
13:34	437.87	64.33	13.60	12.69	353.89	52.14	85.27%
13:35	353.18	45.98	14.07	14.39	305.26	49.50	83.78%
13:36	336.60	44.67	14.35	14.04	303.01	45.84	84.87%
13:37	332.63	42.83	15.09	14.84	337.90	50.16	85.16%
13:38	368.32	45.66	14.28	14.06	328.03	46.81	85.73%
13:39	316.77	39.34	15.09	15.13	321.79	49.21	84.71%
13:40	345.85	41.67	15.17	14.80	356.28	48.72	86.33%
13:41	345.08	42.55	14.88	14.63	338.22	48.23	85.74%
13:42	351.29	40.71	14.99	15.28	350.77	51.89	85.21%
13:43	313.39	40.01	16.90	17.14	461.87	76.58	83.42%
13:44	365.03	48.67	16.84	16.42	529.97	75.44	85.77%
13:45	2031.15	5105.04	13.66	13.04	1655.33	3751.84	0.00%
13:46	2031.15	96.22	12.80	12.72	1480.13	74.84	94.94%
13:47	459.14	91.20	12.36	12.05	317.20	65.85	79.24%
13:48	500.14	101.00	11.61	11.91	317.77	71.14	77.61%
13:49	336.85	79.46	11.94	12.01	221.73	57.92	73.88%
13:50	313.70	72.48	12.72	12.54	226.34	56.79	74.91%
13:51	350.74	53.70	14.09	14.65	304.05	58.68	80.70%
13:52	429.18	71.13	14.32	13.17	384.58	60.46	84.28%
13:53	397.94	64.46	12.70	12.63	286.42	51.84	81.90%
13:54	408.13	84.45	12.16	12.03	275.46	61.30	77.75%
13:55	592.14	206.64	12.93	12.75	438.60	153.13	65.09%
13:56	452.63	90.95	12.34	12.13	311.97	66.31	78.74%
13:57	436.66	80.50	12.25	12.11	297.80	59.29	80.09%
13:58	492.35	145.57	11.35	11.29	304.23	93.25	69.35%
13:59	357.38	99.85	11.93	12.01	234.97	71.15	69.72%
14:00	279.81	59.72	13.03	13.34	209.64	53.09	74.68%
14:01	296.49	37.99	16.16	16.60	369.11	64.22	82.60%
14:02	326.12	40.20	16.19	15.75	408.60	56.04	86.28%
14:03	465.58	132.32	14.64	13.86	438.70	116.50	73.44%
14:04	667.27	75.17	13.30	13.39	517.85	65.32	87.39%
14:05	327.58	38.68	15.22	15.76	340.46	54.45	84.01%
14:06	328.06	43.47	16.25	15.83	416.38	60.68	85.43%
14:07	412.87	50.77	13.81	13.61	343.66	47.98	86.04%
14:08	415.18	57.68	13.38	13.20	325.66	50.62	84.46%
14:09	371.37	51.11	13.47	13.54	294.86	47.77	83.80%
Average	453.90	158.06	14.10	13.94	396.94	129.13	80.07% Average