metrovancouver

Monthly Operating Reports

January 2020

The following January 2020 operating report was sent to the Ministry of Environment and Climate Change Strategy on March 6, 2020.

Metro Vancouver - Waste-to-Energy Facility
CONTINUOUS EMISSION MONITORING SYSTEM

January 2020

1. Monthly Summary Report

Parameter	Compliance Limit (mg/dscm)	Compliance Period	Maximum Measurement (mg/dscm)		
			Unit 1	Unit 2	Unit 3
CO	50	24 hr	45.5	37.0	44.4
SO_2	200	24 hr	113.1	121.7	83.4
NOx	190	24 hr	130.5	133.7	133.7
THC	10	24 hr	0.70	0.16	0.54
			Monthly Average (mg/dscm)		
			Unit 1	Unit 2	Unit 3
Opacity			0.82	0.74	0.97
CO			30.9	30.5	36.5
THC			0.20	0.04	0.28
SO_2			41.1	42.6	43.9
NOx			128.0	129.9	130.2

Interim Discharge Limits will apply until and including the following dates, at which point the Discharge Limits and Response Limits will apply

a. HCl – December 31, 2022

b. SO_2 – December 31, 2022

2. Monthly Exceedance Report

2.a. Discharge Limit Exceedances

Unit	Compliance Parameter	Discharge Limit (mg/dscm)	Date	Exceedance Level
	Reason/Action Taken			

2.b. Response Limit Exceedances

Compliance Parameter: Carbon Monoxide
Response Limit: 100 mg/dscm 1/2 hour average
Unit No. 1

Date / Time	Duration	Exceedance (mg/dscm)	Action Taken
1-Jan 08:30	30 min	100.9	Started gas burners, adjusted airflow, modified feed rate.
7-Jan 13:30	30 min	155.0	Started gas burners, adjusted airflow, modified feed rate.
7-Jan 17:00	30 min	187.9	Started gas burners, adjusted airflow, modified feed rate.
7-Jan 17:30	30 min	124.7	Started gas burners, adjusted airflow, modified feed rate.
7-Jan 18:00	30 min	136.4	Started gas burners, adjusted airflow, modified feed rate.
7-Jan 21:30	30 min	101.0	Unburnt refuse fell into ash discharger, started gas burners, adjusted airflow, modified feed rate.
8-Jan 22:00	30 min	143.9	Adjusted airflow, modified feed rate.
12-Jan 23:00	30 min	102.1	Started gas burners, adjusted airflow, modified feed rate.
15-Jan 09:00	30 min	146.9	Adjusted airflow, modified feed rate.
17-Jan 07:30	30 min	113.8	Started gas burners, adjusted airflow, modified feed rate.
21-Jan 13:30	30 min	144.1	Adjusted airflow, modified feed rate.
29-Jan 13:30	30 min	238.9	Volatile fuel, started gas burners, adjusted airflow, modified feed rate.

Compliance Parameter: Carbon Monoxide
Response Limit: 100 mg/dscm 1/2 hour average
Unit No. 2

Date / Time	Duration	Exceedance (mg/dscm)	Action Taken
7-Jan 17:00	30 min	140.9	Started gas burners, adjusted airflow, modified feed rate.
23-Jan 13:30	30 min	136.0	Volatile fuel, started gas burners, adjusted airflow.

Compliance Parameter: Carbon Monoxide
Response Limit: 100 mg/dscm 1/2 hour average
Unit No. 3

Date / Time	Duration	Exceedance (mg/dscm)	Action Taken
2-Jan 11:30	30 min	103.4	Started gas burners, adjusted airflow, modified feed rate, checked instrumentation.
8-Jan 13:00	30 min	123.4	Started gas burners, adjusted airflow, modified feed rate.
8-Jan 14:30	30 min	135.4	Power interuption, started gas burners, adjusted airflow.
15-Jan 09:00	30 min	103.5	Adjusted airflow, modified feed rate.
19-Jan 22:30	30 min	129.0	Volatile fuel, started gas burners, adjusted boiler airflow, modified feed rate, checked instrumentation.
24-Jan 12:00	30 min	198.4	Online boiler wash, started gas burners, adjusted airflow, modified feed rate.
29-Jan 17:30	30 min	107.5	Started gas burners, adjusted airflow, modified feed rate, checked instrumentation.

2.c. Transient Conditions

Gas burners unavailable and unable to close feed chute damper during shutdown

Unit	Duration	Date	Time	
#3	16 minutes	7-Jan-20	14:50 - 15:06	

Cause

Auxiliary burners on unit 3 were unavailable, due to a safety permissive, to maintain the secondary combustion zone temperature during a boiler shutdown period as required. The operator was unable to close the feed chute damper during the shutdown as required.

Unit 3 was placed in shutdown mode at 2020-01-07 14:50 following a BC Hydro power failure which tripped the induced draft fan and forced draft fans. The operator was unable to close the feed chute damper as the refuse was above the damper in the feed chute. The Provincial Boiler Pressure Vessel Safety Act and the Provincial Gas Act required a boiler purge following the restart of the fans as the boiler temperature was below the safety permissive. The auxiliary burners were unavailable for a period of 16 minutes between 2020-01-07 14:50 and 2020-01-07 15:06.

Action Taken to Restore Steady State Conditions

Covanta restarted the induced draft fan at 2020-01-07 14:56 and the forced draft fan at 2020-01-07 14:59. Once the fans were operational, the boiler was purged as required by the Safety Act. The natural gas burners were back online at 2020-01-07 15:06. The shutdown was completed at 2020-01-07 15:34.

Remedial Action Planned and/or Taken

None identified

Gas burners unavailable and unable to close feed chute damper during shutdown

Unit	Duration	Date	Time	
#2	14 minutes	11-Jan-20	01:59- 02:13	

Cause

Auxiliary burners on unit 2 were unavailable, due to a safety permissive, to maintain the secondary combustion zone temperature during a boiler shutdown period as required. The operator was unable to close the feed chute damper during the shutdown as required.

Unit 2 was placed in shutdown mode at 2020-01-11 01:59 following a BC Hydro power failure which tripped the induced draft fan and forced draft fans. The operator was unable to close the feed chute damper as the refuse was above the damper in the feed chute. The Provincial Boiler Pressure Vessel Safety Act and the Provincial Gas Act required a boiler purge following the restart of the fans as the boiler temperature was below the safety permissive. The auxiliary burners were unavailable for a period of 14 minutes between 2020-01-11 01:59 and 2020-01-11 02:13.

Action Taken to Restore Steady State Conditions

Covanta restarted the induced draft fan at 2020-01-11 02:04 and the forced draft fan at 2020-01-11 02:04. Once the fans were operational, the boiler was purged as required by the Safety Act. The natural gas burners were back online at 2020-01-11 02:13. The shutdown was completed at 2020-01-11 02:53.

Remedial Action Planned and/or Taken

None identified.

Gas burners unavailable and unable to close feed chute damper during shutdown

Unit	Duration	Date/Time	Time	
#3	39 minutes	11-Jan-20	01:59-02:27	

Cause

Auxiliary burners on unit 3 were unavailable, due to a safety permissive, to maintain the secondary combustion zone temperature during a boiler shutdown period as required. The operator was unable to close the feed chute damper during the shutdown as required.

Unit 3 was placed in shutdown mode at 2020-01-11 01:59 following a BC Hydro power failure which tripped the induced draft fan and forced draft fans. The operator was unable to close the feed chute damper as the refuse was above the damper in the feed chute. The Provincial Boiler Pressure Vessel Safety Act and the Provincial Gas Act required a boiler purge following the restart of the fans as the boiler temperature was below the safety permissive. The auxiliary burners were unavailable for a period of 39 minutes between 2020-01-11 01:59 and 2020-01-11 02:38.

Action Taken to Restore Steady State Conditions

Covanta restarted the induced draft fan at 2020-01-11 02:00 and the forced draft fan at 2020-01-11 02:01. Once the fans were operational, the boiler was purged as required by the Safety Act. The natural gas burners were back online at 2020-01-11 02:27. The shutdown was completed at 2020-01-11 02:38.

Remedial Action Planned and/or Taken

None identified.

3. CEMS Availability

Analyzer	Required Availability (% hours per quarter)	Averaging Period	Monthly Availability		
			Unit 1	Unit 2	Unit 3
Opacity	90	Hour	100	100	100
Oxygen	90	Hour	99	99	99
CO	90	Hour	99	99	99
SO_2	90	Hour	99	99	99
NOx	90	Hour	99	99	99
THC	90	Hour	99	99	99
Stack Flow	90	Hour	99	99	99

4. Shutdown Report

Unit 1

Duration in Hours	Reason	Date
3.70	Primary economizer outlet plugged	January 3
0.37	BC Hydro power interuption	January 7
0.92	BC Hydro power interuption	January 11
2.68	Refuse crane out of service	January 22
15.85	Boiler wash	January 23
5.25	Poor refuse quality	January 24
0.92	Induced draft fan trip	January 24
5.37	Ash discharger plug	January 25
3.00	Sootblower blocked	January 27
11.83	Ash discharger plug	Jan 28 - 29
0.67	Poor refust quality	January 31

Unit 2

Duration in Hours	Reason	Date
0.67	Feedwater pump trip	January 3
0.58	Ash discharger plug	January 5
0.77	BC Hydro power interuption	January 7
0.92	BC Hydro power interuption	January 11
0.82	Low drum level trip	January 12
0.42	Turbine trip	January 13
0.38	Turbine trip	January 14
0.45	Low drum level trip	January 14
2.42	Refuse crane out of service	January 22
23.53	Boiler generating bank fouled	Jan 24 - 25

Unit 3

Duration in Hours	Reason	Date
0.80	BC Hydro power interuption	January 7
0.60	BC Hydro power interuption	January 8
0.77	BC Hydro power interuption	January 10
0.67	BC Hydro power interuption	January 11
0.48	BC Hydro power interuption	January 11
0.60	Low drum level trip	January 12
0.33	Ash discharger plug	January 12
0.83	Ash discharger plug	January 12
0.37	Fabric filter bag changed	January 14
2.48	Fabric filter bag changed	January 14
2.45	Refuse crane out of service	January 22
2.85	Ash discharger plug	January 24

5. Facility Bypass and Emergency/spill Event Report

Date/Time	Cause	Duration
	Action Taken	

6. Other Data

		UNIT 1	UNIT 2	UNIT 3
Waste Received	tonnes/day		25,469	
Waste Processed	tonnes/day	242	245	245
Maximum Waste Processed	tonnes/day	265	283	262
		Units 1, 2, and 3		
Natural Gas Consumed	m^3/day	5,140		
	m^3/month	159,340		
Fly ash disposed	tonnes	841		
Bottom ash disposed	tonnes	3,475		

7. Complaints and Responses

Date/Time	Complaint	Action Taken

January 2020 - Monthly CEMS Data

	Boiler #1								Boiler #2								Boiler #3							
	Stack	O_2	SO_2	NO_x	CO	THC	Opacity	Furnace	Stack	O_2	SO_2	NO_x	CO	THC	Opacity	Furnace	Stack	O_2	SO_2	NO_x	CO	THC	Opacity	Furnace
Date	Temp	(%)	(mg/m^3)	(mg/m^3)	(mg/m^3)	(mg/m^3)	(%)	Temp	Temp	(%)	(mg/m^3)	(mg/m^3)	(mg/m^3)	(mg/m^3)	(%)	Temp	Temp	(%)	(mg/m^3)	(mg/m^3)	(mg/m^3)	(mg/m^3)	(%)	Temp
1/1/20	151	9.6	23.1	124.9	34	0.21	0.63	918	154	8.9	22.1	130	33.3	0.02	0.84	931	147	9.3	35.1	127.7	41.6	0.29	1.08	914
1/2/20	151	10.1	22.2	127.2	29.9	0.19	0.63	909	154	8.9	22.8	129.6	35	0.04	1.65	932	148	9.5	37.6	129.8	37.5	0.27	1.41	923
1/3/20	151	10.2	19.3	125.6	29.8	0.25	0.68	900	150	9.1	19.7	129	31.7	0.04	0.32	913	145	10	27.3	130.4	35.9	0.34	1.22	895
1/4/20	154	10	26.5	129.4	26.5	0.20	0.70	913	151	9.2	24.2	129.8	27	0.03	0.64	917	145	10	30.8	129.4	33.6	0.27	1.29	903
1/5/20	156	9.5	29.7	128.8	28.1	0.17	0.69	923	153	8.7	29.2	129.5	32.7	0.04	0.73	928	146	9.4	37.4	131.2	37.5	0.28	1.41	929
1/6/20	155	9.6	28.3	127.3	33.6	0.23	0.73	928	153	8.7	19.9	129.2	32.5	0.02	0.88	932	148	9.4	30.9	130.2	36.3	0.28	1.50	924
1/7/20	157	9.5	63.7	126.9	45.5	0.70	0.68	914	152	9	50.6	130.5	34.4	0.03	0.37	910	151	9.5	48.3	129.9	36.4	0.33	1.37	912
1/8/20	156	9.8	32.7	130.5	30.5	0.23	0.66	918	154	9.3	31.4	133.7	29.9	0.02	0.99	907	151	10.1	49.6	131.9	39	0.36	1.44	899
1/9/20	156	10.1	32.8	128.6	34.2	0.20	0.74	899	151	9.1	28.1	129.3	29.6	0.02	1.08	918	150	10.2	48.6	130.6	35.5	0.31	1.62	903
1/10/20	155	9.6	30.1	129.8	32.4	0.17	0.82	925	153	8.8	34.3	129.6	31	0.05	1.29	935	149	9.7	44.3	130.4	43.2	0.33	1.51	923
1/11/20	155	9.7	44.6	128.8	31.7	0.14	0.74	923	153	8.8	57.4	129.2	25.7	0.03	0.92	945	146	9.6	56.2	128.1	44.4	0.18	1.30	901
1/12/20	154	9.6	41.3	129.3	28.6	0.21	0.78	923	152	8.8	45.8	131.3	29.4	0.02	1.21	936	147	10	48.8	130.2	42.5	0.22	1.69	890
1/13/20	155	9.8	30.6	127.5	30	0.14	0.89	910	154	9.2	33.6	133.4	32.3	0.03	2.53	924	149	9.6	45.6	127.4	39.1	0.21	2.50	922
1/14/20	152	9.8	25.6	128	29.4	0.15	1.01	922	152	9.1	40.2	131.3	29.6	0.02	1.06	917	151	9.8	43.1	128.5	37.4	0.19	2.23	912
1/15/20	155	9.9	33.9	128.8	34.2	0.14	1.09	908	151	9.2	32.8	130.4	31.5	0.03	0.12	918	149	10	43.6	129.7	39.7	0.17	2.49	912
1/16/20	155	9.4	26.8	125.7	33.6	0.10	1.01	935	151	8.6	32.7	128.1	27.5	0.03	0.57	946	147	9.7	37	130.8	33.4	0.17	1.76	913
1/17/20	155	9.2	22.4	128.2	36.1	0.08	1.03	943	153	8.8	27.4	128.9	33.3	0.02	1.24	945	142	10.3	37.1	129.7	36.4	0.21	0.14	923
1/18/20	156	9.2	24	127.5	30.3	0.18	1.01	943	153	8.7	31.6	127.4	33.2	0.05	0.94	950	149	9.7	40.6	129.5	39.5	0.31	0.16	935
1/19/20	158	9.4	26.7	127.9	36.3	0.19	0.93	935	154	8.9	29.3	128.5	35	0.03	0.41	934	152	9.7	43.6	129.8	38.8	0.35	0.16	917
1/20/20	155	9.4	20.2	128.9	27	0.13	0.87	941	154	9.3	20.3	130.8	32.8	0.03	0.19	925	150	9.4	33.8	130.9	29.4	0.24	0.18	917
1/21/20	154	9.9	16.1	126.3	30.6	0.12	0.83	911	153	9.4	23.9	131.2	32.6	0.01	0.18	918	149	9.6	34	130.6	33.8	0.27	0.13	902
1/22/20	154	9.7	24.8	129.5	29.8	0.16	0.89	930	154	9	32.8	128.2	28.2	0.02	0.33	938	149	9.7	34.9	131.2	30.9	0.21	0.19	912
1/23/20									154	8.9	29.2	128.3	37	0.12	0.20	942	148	9.6	31	131.4	41.4	0.41	0.16	888
1/24/20																	147	10	51.8	130.5	31.1	0.54	0.19	885
1/25/20	151	9.9	111.8	130.2	32.5	0.23	0.81	910									149	9.8	75.5	131.2	35.7	0.32	0.38	912
1/26/20	151	9.6	113.1	126.4	24	0.19	0.51	937	154	9.1	121.7	130.1	27.4	0.09	0.09	917	149	9.6	83.4	130.1	33.1	0.25	0.36	915
1/27/20	152	9.6	88.3	127.2	23	0.13	0.81	936	153	8.7	92.6	129.6	20.7	0.03	0.15	936	147	9.8	48.5	130.5	32	0.23	0.41	921
1/28/20	155						0.97	910	155	8.9	82.9	131	29	0.07	0.50	921	148	9.9	37.5	129.7	31.8	0.28	0.25	896
1/29/20									154	8.6	72.2	130	25.1	0.09	0.67	943	150	10.1	61.2	133.7	39	0.30	0.35	896
1/30/20	154	9.7	79.6	126.8	28	0.23	0.94	906	156	8.7	80	129.1	28.5	0.00	0.82	926	150	10.1	40.1	131.6	35.5	0.29	0.40	903
1/31/20	157	9.8	71.5	130.3	25.7	0.21	0.95	904	156	8.9	65.7	130.5	27.3	0.16	0.62	922	149	9.7	43.6	129.5	29.8	0.26	0.68	907
Average	154.3	9.7	41.1	128.0	30.9	0.20	0.82	920.5	153.1	8.9	42.6	129.9	30.5	0.04	0.74	928.5	148.3	9.8	43.9	130.2	36.5	0.28	0.97	909.8
Min	151.0	9.2	16.1	124.9	23.0	0.08	0.51	899.0	150.0	8.6	19.7	127.4	20.7	0.00	0.09	907.0	142.0	9.3	27.3	127.4	29.4	0.17	0.13	885.0
Max	158.0	10.2	113.1	130.5	45.5	0.70	1.09	943.0	156.0	9.4	121.7	133.7	37.0	0.16	2.53	950.0	152.0	10.3	83.4	133.7	44.4	0.54	2.50	935.0
St Dev	2.02	0.26	27.77	1.52	4.48	0.11	0.15	13.25	1.46	0.22	25.49	1.42	3.53	0.03	0.53	11.83	2.10	0.26	12.35	1.25	3.99	0.08	0.75	12.48

Blank days have less than 18 hours of valid data due to unit shut downs.
According to standard guidelines used by Metro Vancouver Air Quality Policy and Environment Division, a minimum of 18 hours of valid data is required to generate a valid 24hr average.