metrovancouver

Monthly Operating Reports

October 2019

The following October 2019 operating report was sent to the Ministry of Environment and Climate Change Strategy on November 29, 2019.

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

October 2019

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	34.6	26.9	42.0
SO_2	200	24 hr	175.7	106.6	190.2
NOx	190	24 hr	131.4	131.3	158.5
THC	10	24 hr	0.69	0.15	0.44
			Monthly Average (mg/dscm)		
			Unit 1	Unit 2	Unit 3
Opacity			0.52	1.38	1.42
CO			23.9	21.3	30.7
THC			0.28	0.08	0.32
SO_2			94.6	74.8	100.5
NOx			127.5	129.8	135.6

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

a. THC – December 31, 2018

b. HCl – December 31, 2022

c. 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
12-Oct 03:00	30 min	110.2	Adjusted airflow, modified feed rate, checked instrumentation
17-Oct 10:30	30 min	174.8	Started gas burners, adjusted airflow, modified feed rate.
29-Oct 09:00	30 min	110.8	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
3-Oct 11:30	30 min	100.6	Feeder hang-up, started gas burners, adjusted airflow, modified feed rate.
3-Oct 12:00	30 min	129.0	Started gas burners, adjusted airflow, modified feed rate.
4-Oct 11:00	30 min	136.0	Feeder hang-up, started gas burners, adjusted airflow, modified feed rate.
4-Oct 11:30	30 min	120.5	Started gas burners, adjusted airflow.
5-Oct 14:00	30 min	159.3	Started gas burners, adjusted airflow, modified feed rate.
9-Oct 15:00	30 min	108.4	High amp trip, started gas burners, adjusted airflow, modified feed rate.
10-Oct 11:00	30 min	136.5	Started gas burners, adjusted airflow, modified feed rate.
21-Oct 03:00	30 min	211.3	Feeder hang-up, started gas burners, adjusted airflow, modified feed rate.

2.c. Transient Conditions

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

Unit	Duration	Date	Time	
#1	59 minutes	7-Oct-19	19:08 - 20:07	

Cause

Auxiliary burners on unit 1 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 1 was placed in shutdown mode at 2019-10-07 19:08 following a BC Hydro power failure which tripped the induced draft fan and forced draft fans on all three boilers. 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. During the purge the induced draft fan and forced draft fan tripped which delayed the restart. The auxiliary burners were unavailable for a period of 59 minutes between 2019-10-07 19:08 and 2019-10-07 20:07.

Action Taken to Restore Steady State Conditions

Covanta restarted the induced draft fan at 2019-10-07 19:20 and the forced draft fan at 2019-10-07 19:21. Once the fans were operational, the boiler was purged as required by the Safety Act. During the restart, the induced draft fan and forced draft fan tripped. The induced draft fan was restarted at 2019-10-07 19:44 and forced draft fan was restarted at 2019-10-07 19:47. The natural gas burners were back online at 2019-10-07 20:07. The shutdown was completed at 2019-10-07 20:10.

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	103 minutes	7-Oct-19	19:08 - 20:51	

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 2019-10-07 19:08 following a BC Hydro power failure which tripped the induced draft fan and forced draft fans on all three boilers. 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. During the purge the induced draft fan and forced draft fan tripped which delayed the restart. The auxiliary burners were unavailable for a period of 1 hour and 43 minutes between 2019-10-07 19:08 and 2019-10-07 20:51.

Action Taken to Restore Steady State Conditions

Covanta restarted the induced draft fan at 2019-10-07 19:17 and the forced draft fan at 2019-10-07 19:19. Once the fans were operational, the boiler was purged as required by the Safety Act. During the restart, the induced draft fan and forced draft fan tripped. The induced draft fan was restarted at 2019-10-07 19:45 and forced draft fan was restarted at 2019-10-07 19:46. The natural gas burners were back online at 2019-10-07 20:51. The shutdown was completed at 2019-10-07 21:25.

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	11 minutes	7-Oct-19	19:08 - 19:19	

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 2019-10-07 19:08 following a BC Hydro power failure which tripped the induced draft fan and forced draft fans on all three boilers. The operator was unable to close the feed chute damper as the refuse was above the damper in the feed chute. The auxiliary burners were unavailable for a period of 11 minutes between 2019-10-07 19:08 and 2019-10-07 19:19.

Action Taken to Restore Steady State Conditions

Covanta restarted the induced draft fan at 2019-10-07 19:14 and the forced draft fan at 2019-10-07 19:16. The natural gas burners were back online at 2019-10-07 19:19. The shutdown was completed at 2019-10-07 20:48.

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	19 minutes	21-Oct-19	15:22 - 15:41	

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.

Unit 3 was placed in shutdown mode at 2019-10-21 15:22 following a feed chute hang up. The forced draft fan was shutdown at 2019-10-21 15:22 to allow an inspection of the feed chute to determine the cause of the hang up. 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 19 minutes between 2019-10-21 15:22 and 2019-10-21 15:41.

Action Taken to Restore Steady State Conditions

Covanta restarted the forced draft fan at 2019-10-21 15:28. Once the fan was operational, the boiler was purged as required by the Safety Act. The natural gas burners were back online at 2019-10-21 15:41. The shutdown was completed at 2019-10-21 16:27.

Remedial Action Planned and/or Taken

Metro Vancouver's facility operator (Covanta) reviewed the outage with the operators.

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	96	99	99

4. Shutdown Report

Unit 1

Duration in Hours	Reason	Date
0.95	BC Hydro power outage	October 7
0.42	High furnace pressure trip	October 24

Unit 2

Duration in Hours	Reason	Date
1.00	Ash discharger plugged	October 1
2.03	BC Hydro power outage	October 7
0.25	Induced draft fan trip	October 10
0.52	BC Hydro power outage	October 14
346.57	Annual major maintenance outage	Oct 14 - 29
7.97	Fabric filter baghouse screw conveyor jammed	October 30

Unit 3

Duration in Hours	Reason	Date
58.77	Annual minor outage	October 1-3
0.23	Induced draft fan trip	October 5
0.42	BC Hydro power outage	October 7
0.15	Induced draft fan trip	October 9
3.27	Fabric filter baghouse plugged	October 12
0.23	BC Hydro power outage	October 14
1.00	Feed chute plugged	October 21
2.58	Poor refuse quality	October 21

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	19,525		
Waste Processed	tonnes/day	267	120	236
Maximum Waste Processed	tonnes/day	282	246	271
		Units 1, 2, and 3		
Natural Gas Consumed	m^3/day	4,782		
	m^3/month	148,227		
Fly ash disposed	tonnes	806		
Bottom ash disposed	tonnes	3,117		

7. Complaints and Responses

Date/Time	Complaint	Action Taken

October 2019 - 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
10/1/19	149	9.8	117.9	127.7	21.6	0.25	0.60	917	157	9.2	90	130.3	22	0.03	1.26	924								
10/2/19	150	10	102.9	131.4	24.3	0.24	0.60	913	157	8.9	64.3	129.8	20.1	0.10	0.99	937								
10/3/19	149	10.1	129	129	23.1	0.21	0.52	912	158	8.9	90.3	131.3	23.9	0.04	0.85	936								
10/4/19	150	9.7	115.2	129.1	20.7	0.22	0.51	928	158	9.2	82	130	16	0.06	1.03	938	143	9.6	111.8	155.5	42	0.44	1.29	878
10/5/19	153	9.5	99.2	127.9	14.9	0.23	0.53	930	158	9.3	72.7	129.2	16.4	0.07	1.10	931	144	10.3	111.2	158.5	35.5	0.40	1.28	882
10/6/19	153	9.6	77.3	130	17.9	0.26	0.54	930	158	9.6	69.2	130.9	17.8	0.08	1.30	929	146	10	119.5	141.3	37.4	0.34	1.32	910
10/7/19	153	9.7	82.3	127.9	23.5	0.29	0.54	922	158	9.7	42.1	129	23.8	0.07	1.11	909	144	9.7	86.1	137	30	0.36	1.27	906
10/8/19	154	9.8	82.5	131	18.3	0.28	0.52	922	154	9.9	48	127.7	22.7	0.07	1.13	899	143	9.8	85.2	133.8	29.1	0.26	1.30	913
10/9/19	152	9.8	99	129.9	22.6	0.20	0.60	936	153	9.9	48.4	129	23.2	0.11	1.94	916	144	10.1	96.4	135	32.3	0.38	1.44	915
10/10/19	152	9.9	100.5	129.9	34.6	0.24	0.61	923	155	10	78.3	131.2	25.3	0.08	1.69	913	145	10.2	105.2	142.3	36.9	0.34	1.51	926
10/11/19	153	9.9	84.3	126.6	34.2	0.31	0.61	936	153	9.6	60.8	127.7	23	0.15	1.19	924	146	10	93.3	133.2	37.3	0.33	1.43	935
10/12/19	156	9.8	99.6	129.2	17.7	0.29	0.53	929	155	9.7	82.5	130	20	0.05	1.91	919	145	9.6	104.6	134.7	27.1	0.36	1.44	933
10/13/19	155	10	109.1	129.8	21.5	0.32	0.46	920	157	9.3	89.8	129.5	19.9	0.08	1.98	913	149	9.7	111.6	132	30.2	0.31	1.40	918
10/14/19	154	9.7	114	126.4	23.6	0.25	0.49	932	155	9.3	106.6	130.9	23.2	0.13	2.45	908	146	9.5	122.7	132.9	28.4	0.29	1.43	938
10/15/19	153	9.5	93.8	125.5	27.4	0.26	0.48	931									147	9.6	102.3	132	33.1	0.37	1.43	923
10/16/19	151	9.4	112.6	123.9	26.6	0.21	0.50	942									147	9	109	131.4	32.2	0.30	1.40	943
10/17/19	152	9.3	94	124.2	30.7	0.23	0.46	934									146	8.9	79.8	131.6	30.6	0.33	1.39	939
10/18/19	153	9.6	91.9	125.4	28	0.26	0.45	926									147	9.2	98.9	131.6	28	0.30	1.42	925
10/19/19	152	9.9	91.9	126.6	22.8	0.22	0.47	937									147	9.1	94.1	131.5	25.9	0.29	1.47	936
10/20/19	152	10.1	175.7	127.2	21.1	0.30	0.43	920									148	9.4	190.2	129.4	24.4	0.26	1.60	923
10/21/19	151	10.4	115.7	120.6	14.6	0.29	0.47	936									148	10	105.5	128.6	23.4	0.33	1.51	909
10/22/19	155	10.4	58.4	129.1	24.6	0.26	0.50	909									150	10	82	134.5	36.7	0.40	1.39	887
10/23/19	153	10.2	85.8	128.5	26.5	0.29	0.52	921									149	10.1	94.7	133	32.9	0.28	1.42	884
10/24/19	154	10.2	59.4	127.7	29.6	0.37	0.52	920									148	9.7	85	132	31.8	0.35	1.34	905
10/25/19	153	10.1	72.4	127.5	27.1	0.25	0.45	933									147	9.7	74.6	131.1	31.7	0.30	1.30	909
10/26/19	154	10.3	79.2	128.4	21.8	0.37	0.49	954									148	9.8	91.5	133.3	28.2	0.28	1.43	927
10/27/19	155	10.5	67.8	130.1	21.4	0.28	0.57	935									148	9.5	82.3	135.3	28.4	0.23	1.46	917
10/28/19	155	10.1	118.1	126.5	21.8	0.69	0.55	942									147	9.8	126.5	133.7	26.7	0.30	1.50	915
10/29/19	153	9.9	63.3	125	24.7	0.33	0.56	947	152	9.1	74.8	129.5	16.8	0.07	1.33	875	150	9.8	73.8	133	26.8	0.28	1.73	929
10/30/19	154	10.2	86.9	126.9	25	0.33	0.57	931									150	9.8	96.3	141.1	25.2	0.27	1.67	932
10/31/19	155	10.1	54.1	124.9	27.6	0.28	0.57	941	150	9.2	96.2	131.2	26.9	0.02	0.76	896	150	9.6	78.7	136.7	27.4	0.25	1.14	926
Average	152.8	9.9	94.6	127.5	23.9	0.28	0.52	929.3	155.5	9.4	74.8	129.8	21.3	0.08	1.38	916.7	146.9	9.7	100.5	135.6	30.7	0.32	1.42	917.3
Min	149.0	9.3	54.1	120.6	14.6	0.20	0.43	909.0	150.0	8.9	42.1	127.7	16.0	0.02	0.76	875.0	143.0	8.9	73.8	128.6	23.4	0.23	1.14	878.0
Max	156.0	10.5	175.7	131.4	34.6	0.69	0.61	954.0	158.0	10.0	106.6	131.3	26.9	0.15	2.45	938.0	150.0	10.3	190.2	158.5	42.0	0.44	1.73	943.0
St Dev	1.79	0.30	24.68	2.36	4.80	0.09	0.05	10.45	2.53	0.35	18.47	1.14	3.29	0.03	0.48	17.03	2.10	0.35	22.74	6.90	4.55	0.05	0.12	17.75

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.