metrovancouver

Monthly Operating Reports

February 2020

The following February 2020 operating report was sent to the Ministry of Environment and Climate Change Strategy on April 9, 2020.

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

February 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	36.4	36.5	42.2
SO_2	200	24 hr	96.7	110.2	116.9
NOx	190	24 hr	130.5	134.1	134.1
THC	10	24 hr	0.26	0.49	0.63
			Monthly Average (mg/dscm)		
			Unit 1	Unit 2	Unit 3
Opacity			0.56	0.73	0.34
CO			28.5	26.6	32.5
THC			0.19	0.14	0.28
SO_2			56.4	63.2	65.9
NOx			127.2	129.6	130.4

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
2-Feb 11:30	30 min	133.7	Volatile fuel hang-up, adjusted airflow, modified feed rate.
5-Feb 15:00	30 min	100.6	Started gas burners, adjusted airflow, modified feed rate.
8-Feb 12:30	30 min	100.6	Poor refuse quality, started gas burners, adjusted airflow, modified feed rate.
11-Feb 18:00	30 min	114.0	Started gas burners, adjusted airflow, modified feed rate.
13-Feb 08:30	30 min	203.0	Started gas burners, adjusted airflow, modified feed rate.
15-Feb 10:30	30 min	105.0	Adjusted airflow, checked instrumentation.
15-Feb 22:00	30 min	120.7	Started gas burners, adjusted airflow, modified feed rate.
16-Feb 11:30	30 min	101.3	Started gas burners, adjusted airflow, modified feed rate.
16-Feb 16:30	30 min	189.6	Started gas burners, adjusted airflow, modified feed rate.
20-Feb 11:30	30 min	116.9	Feeder hang up, started gas burners, adjusted airflow, modified feed rate, cleared hang up.
21-Feb 12:00	30 min	140.0	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
5-Feb 08:00	30 min	117.0	Started gas burners, adjusted airflow, modified feed rate.

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

Date / Time	Duration	Exceedance (mg/dscm)	Action Taken
4-Feb 12:00	30 min	158.0	Poor refuse quality, started gas burners, adjusted airflow, modified feed rate.
4-Feb 12:30	30 min	229.0	Poor refuse quality, started gas burners, adjusted airflow, modified feed rate.
5-Feb 09:00	30 min	123.7	Started gas burners, adjusted airflow, modified feed rate.
5-Feb 17:00	30 min	227.0	Started gas burners, adjusted airflow, modified feed rate.
9-Feb 02:30	30 min	157.1	Poor refuse quality, started gas burners, adjusted airflow, modified feed rate.
9-Feb 03:00	30 min	304.8	Poor refuse quality, started gas burners, adjusted airflow, modified feed rate.
9-Feb 03:30	30 min	106.2	Poor refuse quality, started gas burners, adjusted airflow, modified feed rate.
13-Feb 07:30	30 min	108.0	Adjusted airflow, modified feed rate.
20-Feb 08:30	30 min	114.9	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	
2	28 minutes	3-Feb-20	14:30 - 14:58	

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 2020-02-03 14:30 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 28 minutes between 2020-02-03 14:30 and 2020-02-03 14:58.

Action Taken to Restore Steady State Conditions

Covanta restarted the induced draft fan at 2020-02-03 14:45 and the forced draft fan at 2020-02-03 14:46. Once the fans were operational, the boiler was purged as required by the Safety Act. The natural gas burners were back online at 2020-02-03 14:58. The shutdown was completed at 2020-02-03 15:07.

Remedial Action Planned and/or Taken

None identified

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

Unit	Duration	Date	Time	
#1	26 minutes	6-Feb-20	20:25 - 20:51	

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 2020-02-06 20:25 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 26 minutes between 2020-02-06 20:25 and 2020-02-06 20:51.

Action Taken to Restore Steady State Conditions

Covanta restarted the induced draft fan at 2020-02-06 20:02 and the forced draft fan at 2020-02-06 20:25. The natural gas burners were back online at 2020-02-06 20:51. The shutdown was completed at 2020-02-06 21:01.

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	31 minutes	6-Feb-20	20:21 - 20:52	

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 2020-02-06 20:21 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 31 minutes between 2020-02-06 20:21 and 2020-02-06 20:52.

Action Taken to Restore Steady State Conditions

Covanta restarted the induced draft fan at 2020-02-06 20:27 and the forced draft fan at 2020-02-06 20:30. The shutdown was completed at 2020-02-06 20:52.

Remedial Action Planned and/or Taken

None identified.

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

Unit	Duration	Date	Time	
#1	35 minutes	Feb 6-7, 2020	23:50 - 00:25	

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 2020-02-06 23:50 following a induced draft fan trip due to high motor amperage. 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 35 minutes between 2020-02-06 23:50 and 2020-02-07 00:25.

Action Taken to Restore Steady State Conditions
Covanta restarted the induced draft fan at 2020-02-06 23:55 and the forced draft fan at 2020-02-06 23:56. The natural gas burners were back online at 2020-02-07 00:25. The shutdown was completed at 2020-02-07 01:35.
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	
#2	23 minutes	18-Feb-20	8:35 - 8:58	

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 2020-02-18 08:35 following a induced draft fan trip. The boiler safety logic shut down the forced draft fan following the loss of the induced draft fan to prevent pressure build up in the boiler. 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 23 minutes between 2020-02-18 08:35 and 2020-02-18 08:58
Action Taken to Restore Steady State Conditions
Covanta restarted the induced draft fan at 2020-02-18 08:41 and the forced draft fan at 2020-02-18 08:42. The natural gas burners were back online at 2020-02-18 08:58. The shutdown was completed at 2020-02-18 09:18.
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	
#2	23 minutes	22-Feb-20	13:21 - 13:44	

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. Unit 2 was placed in shutdown mode at 2020-02-22 13:21 following a induced draft fan trip. The boiler safety logic shut down the forced draft fan following the loss of the induced draft fan to prevent pressure build up in the boiler. 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 23 minutes between 2020-02-22 13:21 and 2020-02-22 13:44.
Action Taken to Restore Steady State Conditions
Covanta restarted the induced draft fan at 2020-02-22 13:28 and the forced draft fan at 2020-02-22 13:29. The natural gas burners were back online at 2020-02-22 13:44. The shutdown was completed at 2020-02-22 14:06.
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	4 h 55 m	26-Feb-20	12:25 - 17:20	

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 2020-02-26 12:25 following a forced draft fan outage due to a failed variable frequency drive. The failed forced draft fan tripped a circuit breaker which tripped all power to the boiler including the induced draft fan. 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 4 hours and 55 minutes between 2020-02-26 12:25 and 2020-02-26 17:20.

Action Taken to Restore Steady State Conditions

Covanta restored power to the boiler and started the induced draft fan at 2020-02-26 13:22. Covanta replaced the failed variable frequency drive and started the forced draft fan at 2020-02-26 17:15. The natural gas burners were back online at 2020-02-26 17:20. The shutdown was completed at 2020-02-26 18:21.

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	99	100
Oxygen	90	Hour	100	99	100
CO	90	Hour	100	99	100
SO_2	90	Hour	100	99	100
NOx	90	Hour	100	99	100
THC	90	Hour	100	98	100
Stack Flow	90	Hour	100	99	100

4. Shutdown Report

Unit 1

Duration in Hours	Reason	Date
12.42	Fabric filter compartment bridged	February 1
0.30	BC Hydro power interuption	February 3
2.55	Ash discharger plug	February 6
0.17	Poor refuse quality	February 6
0.58	BC Hydro power interuption	February 6
1.50	Induced draft fan motor tripped	February 7

February 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/m³)	(mg/m³)	(mg/m³)	(mg/m³)	(%)	Temp	Temp	(%)	(mg/m³)	(mg/m³)	(mg/m³)	(mg/m³)	(%)	Temp	Temp	(%)	(mg/m³)	(mg/m³)	(mg/m³)	(mg/m³)	(%)	Temp
2/1/20									154	9.1	55.5	130.1	21.7	0.04	0.57	923	149	9.5	44	129.3	30.5	0.26	0.50	911
2/2/20	157	9.5	83.6	127.8	32.9	0.22	0.97	914	155	8.9	53.6	129.3	25.2	0.05	1.05	934	151	9.6	42.9	130.5	33.5	0.22	0.48	915
2/3/20	154	9.5	48.7	127.2	29	0.20	1.02	927	153	9.1	41.8	130	24.2	0.05	0.78	924	148	9.9	31.5	130.3	33.3	0.28	0.38	900
2/4/20	157	9.7	69.6	128.8	30.6	0.18	1.04	899	152	9.1	51.2	129.1	25.7	0.02	0.36	918	149	10.4	30.4	130.1	41.8	0.63	0.37	880
2/5/20	156	10	74.3	127.4	33.4	0.26	1.09	885	155	9.6	68.6	130.6	36.5	0.07	0.60	890	148	9.9	46.2	131.4	42.2	0.59	0.46	873
2/6/20	155	9.7	70.3	125.8	34.1	0.19	1.01	892	154	9.6	52.9	130.9	29.4	0.07	0.49	900	148	9.7	47.4	131.5	35.9	0.28	0.48	877
2/7/20	155	9.6	66.9	126.4	29.8	0.23	1.02	904	154	9.4	53.8	129.5	25.2	0.03	0.21	906	150	9.5	44.6	130.3	34.2	0.25	0.55	904
2/8/20	155	9.6	66.4	128.6	30.7	0.21	1.04	916	154	9.3	59.1	130.3	27.9	0.06	0.21	898	148	9.4	53	131	34.8	0.27	0.62	915
2/9/20	156	10	63.9	130.5	22.6	0.16	1.04	905	155						0.67	907	149	9.8	52.4	132.3	39	0.07	0.55	906
2/10/20	156	10	38.6	128.7	27.6	0.24	1.07	909	155	9.8	25.2	134.1	26.1	0.49	0.58	907	148	10.1	37.7	131.1	28.2	0.33	0.60	897
2/11/20	155	9.6	60.1	128.7	30.7	0.18	1.07	927	155	9.3	62.7	128.6	29.4	0.20	0.21	930								
2/12/20	154	9.5	96.7	129.2	29.1	0.20	0.64	934	155	9.6	110.2	131	29.4	0.16	0.31	916								
2/13/20	155	9.4	71.1	125.1	36.4	0.18	0.12	931	154	9.2	78.3	128.4	27.2	0.16	0.35	935	149	9.6	116.9	132.4	30.7	0.29	0.02	932
2/14/20	156	9.4	62.9	129	27.2	0.23	0.16	928	153	9.2	61.5	128.8	29	0.22	0.54	938	146	9.6	88.6	129.4	31.3	0.29	0.05	934
2/15/20	155	9.8	60.5	126.5	33.3	0.17	0.18	921	155	9.3	75.6	130.4	28.8	0.17	0.71	926	146	9.8	91.1	129.5	30.8	0.22	0.04	925
2/16/20	155	10	60.7	126.5	34.2	0.21	0.17	910	155	9.5	78.4	129.5	29.8	0.18	0.80	918	147	9.9	106.7	130.1	29.1	0.30	0.03	924
2/17/20	155	9.6	53.3	129	25.6	0.12	0.22	926	156	9.3	65.1	131	25.7	0.20	1.29	927	144	9.8	78.5	129	29.3	0.25	0.05	917
2/18/20	157	9.6	48.9	129.1	26.3	0.20	0.25	923	155	9.1	69.1	128.3	23.2	0.17	1.39	932	148	9.7	78	130	29.2	0.23	0.02	924
2/19/20	157	9.3	50.5	127.9	25.3	0.16	0.29	938	156	8.8	60	129.6	27.9	0.21	0.92	943	148	9.6	84.9	132	30.2	0.22	0.20	925
2/20/20	153	9.4	36.1	127.2	29.1	0.16	0.32	931	155	9	53	129.8	27.8	0.17	0.53	949	147	9.8	68.8	131.6	28.5	0.36	0.37	922
2/21/20	151	9.7	38.9	128.1	31.4	0.18	0.34	936	154	8.9	61.3	128.8	26.2	0.20	0.58	959	146	9.8	69.8	134.1	30.8	0.22	0.39	925
2/22/20	152	9.6	50.7	124.9	28.6	0.22	0.34	944	158	8.8	75	128.8	24.8	0.12	1.31	959	144	9.3	68.7	129	30.7	0.30	0.40	943
2/23/20	151	9.6	54.5	125.7	24.4	0.21	0.36	949	153	8.9	78.7	129.3	22.8	0.12	1.15	945	145	9.1	77.7	130.4	30.7	0.23	0.38	943
2/24/20	153	9.9	56.1	127.2	20.8	0.10	0.36	936	155	9.1	78.2	130.5	20.2	0.17	1.15	942	147	9.8	78.1	131	33.5	0.22	0.37	921
2/25/20	152	9.8	42.4	125.1	21.2	0.08	0.33	947	152	8.9	53.4	128.8	22.3	0.20	0.95	948	147	9.8	61.9	129.7	28.4	0.21	0.40	935
2/26/20	155	9.8	60.2	126.6	21.5	0.12	0.31	943	155	9	82.7	128.8	24.8	0.04	0.97	940	148	9.7	81.5	129	32.6	0.32	0.40	919
2/27/20	154	9.8	34.4	126	21.7	0.18	0.31	945	154	8.9	51.4	127.5	27.3	0.13	0.71	931	148	9.5	71.4	128.6	32.6	0.23	0.39	918
2/28/20	153	9.6	23.7	123.4	30.7	0.21	0.34	935	154	9.2	61.8	128.8	27.6	0.06	0.79	938	148	9.7	63.5	128.2	32.3	0.17	0.39	916
2/29/20	150	9.6	36.5	124.7	28.7	0.19	0.36	924	154	9.1	51.9	129.2	28.3	0.16	0.90	929	147	9.5	61.9	129.2	32.1	0.20	0.37	918
Average	154.4	9.7	56.4	127.2	28.5	0.19	0.56	924.3	154.4	9.2	63.2	129.6	26.6	0.14	0.73	928.0	147.5	9.7	65.9	130.4	32.5	0.28	0.34	915.5
Min	150.0	9.3	23.7	123.4	20.8	0.08	0.12	885.0	152.0	8.8	25.2	127.5	20.2	0.02	0.21	890.0	144.0	9.1	30.4	128.2	28.2	0.07	0.02	873.0
Max	157.0	10.0	96.7	130.5	36.4	0.26	1.09	949.0	158.0	9.8	110.2	134.1	36.5	0.49	1.39	959.0	151.0	10.4	116.9	134.1	42.2	0.63	0.62	943.0
St Dev	1.93	0.20	16.12	1.70	4.34	0.04	0.37	16.91	1.21	0.27	15.83	1.25	3.22	0.09	0.34	17.74	1.63	0.25	21.92	1.36	3.70	0.11	0.19	17.97

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.