Durham York Energy Centre

Long-Term Sampling System

Quarterly (Q1) Report

January 1, 2021 to March 31, 2021

Prepared by

The Regional Municipality of Durham

Table of Contents

1. Introduction 3
2. Background 3
3. Cartridge Replacement Schedule 4
4. Laboratory Analysis 4
5. Durham and York Regions and Covanta Monthly Data and Operations Review 4
6. Oversight of AMESA Results 5
7. AMESA Performance 5
8. AMESA relative to most current Source Testing Dioxin and Furan Results 6
9. Ambient Air Dioxin and Furan Results – First Quarter (Q1) 7
10. References 7
11. Durham York Energy Centre Inquiries 8

1. Introduction

This report provides additional details with respect to the reporting of data related to the Long-Term Sampling System (LTSS) at the Durham York Energy Centre (DYEC).

This report covers the first quarter of 2021 and includes AMESA data collected from December 10, 2020 until April 14, 2021.

2. Background

To meet the requirements of Environmental Compliance Approval (ECA) Condition 7(3), a continuous sampling system (the Adsorption Method for Sampling Dioxins and Furans (AMESA) LTSS), is installed on each of the two boilers at the DYEC to sample dioxins and furans.

The operation of the AMESA system was initiated in 2015 and has been maintained in accordance with current guidance from the AMESA manufacturer, Environment S.A. Deutschland (ESAD), the European manufacturer of the AMESA system, the North American vendor ENVEA and the AMESA Technical Manual.

The AMESA system is used only for the purpose stated in ECA Condition 7(3), which relates to Dioxins and Furans emissions trend analysis and evaluation of Air Pollution Control equipment performance. The AMESA results themselves do not constitute a compliance point for the facility operations.

ECA Condition 7(3). Testing, Monitoring and Auditing Long-Term Sampling for Dioxins and Furans states:

> (a) The Owner shall develop, install, maintain and update as necessary a long-term sampling system, with a minimum monthly sampling frequency, to measure the concentration of Dioxins and Furans in the Undiluted Gases leaving the Air Pollution Control (APC) Equipment associated with each Boiler. The performance of this sampling system will be evaluated during the annual Source Testing programs in accordance with the principles outlined by 40 CFR 60, Appendix B, Specification 4.[1]
>
> (b) The Owner shall evaluate the performance of the long-term sampling system in determining Dioxins and Furans emission trends and/or fluctuations as well as demonstrating the ongoing performance of the APC Equipment associated with the Boilers.

[1] 40 CFR Part 60 refers to the Code of Federal Regulations – Standards of Performance for New Stationary Sources

AMESA results are available at the site when requested by the Ministry of Environment, Conservation and Parks (MECP) and reported to the MECP as part of the Annual Report required by ECA Approval Condition 15 and posted to the DYEC website.

3. Cartridge Replacement Schedule

Boiler #	Run #	Start Date	End Date	Duration (days)
1	56	10-Dec-20	11-Jan-21	27
2	56	10-Dec-20	11-Jan-21	27
1	57	11-Jan-21	10-Feb-21	19
2	57	11-Jan-21	10-Feb-21	30
1		10-Feb-21	26-Feb-21	*spacer
2	58	10-Feb-21	26-Feb-21	16
1	59	17-Mar-21	14-Apr-21	27
2	59	18-Mar-21	14-Apr-21	26

* A spacer cartridge was placed in unit 1 following run #57 due to required repairs of a defective AMESA condensate pump.

4. Laboratory Analysis

There were no issues identified with the sample cartridges or the analysis at the laboratory.

5. Durham and York Regions and Covanta Monthly Data and Operations Review

Staff from Durham and York Regions meet with Covanta both weekly and monthly on an established scheduled to discuss facility operations, and review environmental monitoring results, trends and calculations where required for all monitoring programs and the available AMESA results.

Run #57 for boiler #1 was not fitted with an AMESA sample cartridge. A spacer cartridge (cartridge which does collect sample from the flue gas) was put in place due to a defective AMESA condensate pump. A condensate alarm was triggered at the control cabinet for the AMESA system and instrumentation technicians determined the condensate pump had failed. The pump was replaced and the system was placed back online. After a thorough investigation, the technicians deduced the tubing was sized incorrectly on the new pump. The pump was replaced and the LTSS was back online after #1 Boiler Spring Major Outage (February 28 to March 14, 2021).

There was no result during this reported time period of January through March 2021 which triggered the AMESA Investigation Checklist.

6. Oversight of AMESA Results

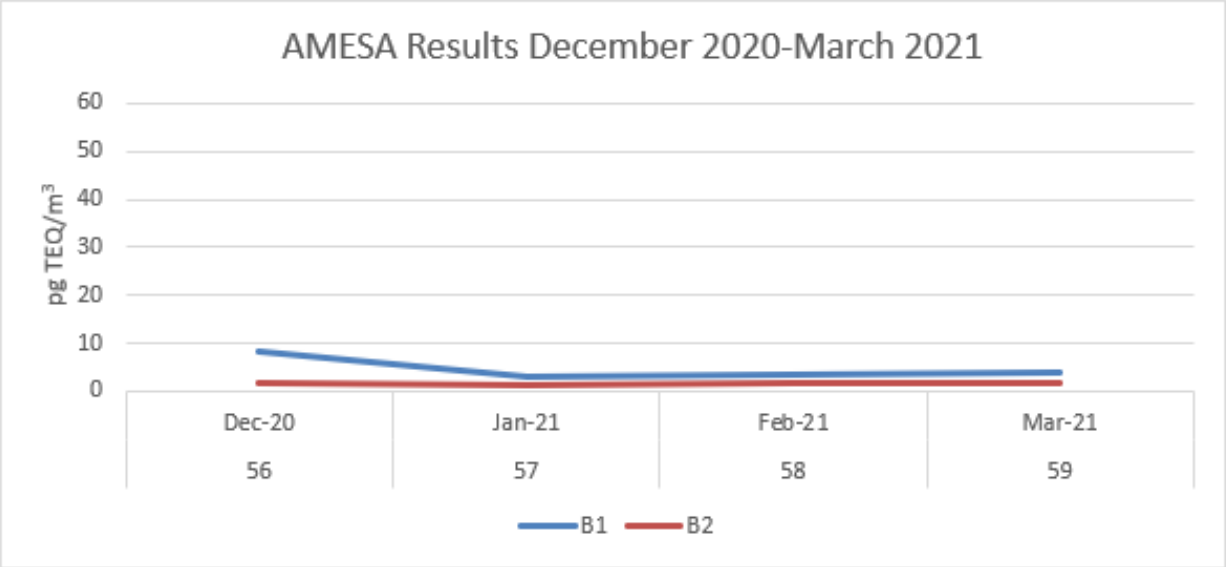
Durham and York Region staff and Covanta meet with the MECP on a quarterly basis to discuss all items pertinent to the ECA and the Environmental Monitoring Programs and facility operations. Any concerns which are not determined to be reportable incidents in accordance with the ECA may be discussed along with day-to-day operations and monitoring.

Any events, which the ECA deems reportable, are done in accordance with the appropriate ECA condition.

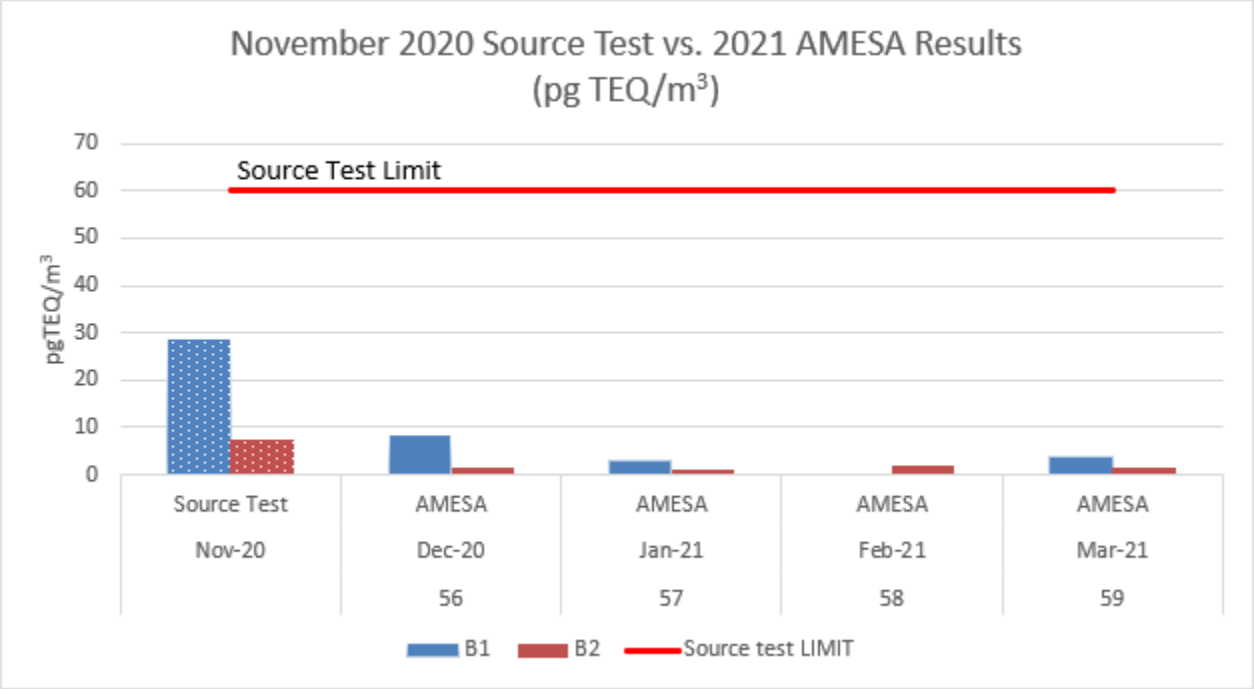
Results of the AMESA LTSS are reported to the MECP in the DYEC Annual Reports and posted to the DYEC website. AMESA trends of validated data are presented as a 12-month rolling average together with an analysis to demonstrate the ongoing performance of the APC Equipment. The MECP has no concerns with the AMESA results detailed in the 2020 Annual Report as posted via this link: MECP Review of the DYEC 2020 Annual Report.

7. AMESA Performance

Unit #	Run #	Start Date	End Date	Calculated Result
1	56	10-Dec-20	11-Jan-21	8.433
2	56	10-Dec-20	11-Jan-21	1.480
1	57	11-Jan-21	10-Feb-21	2.770
2	57	11-Jan-21	10-Feb-21	1.118
1		10-Feb-21	26-Feb-21	spacer
2	58	10-Feb-21	26-Feb-21	1.729
1	59	17-Mar-21	14-Apr-21	3.867
2	59	18-Mar-21	14-Apr-21	1.527



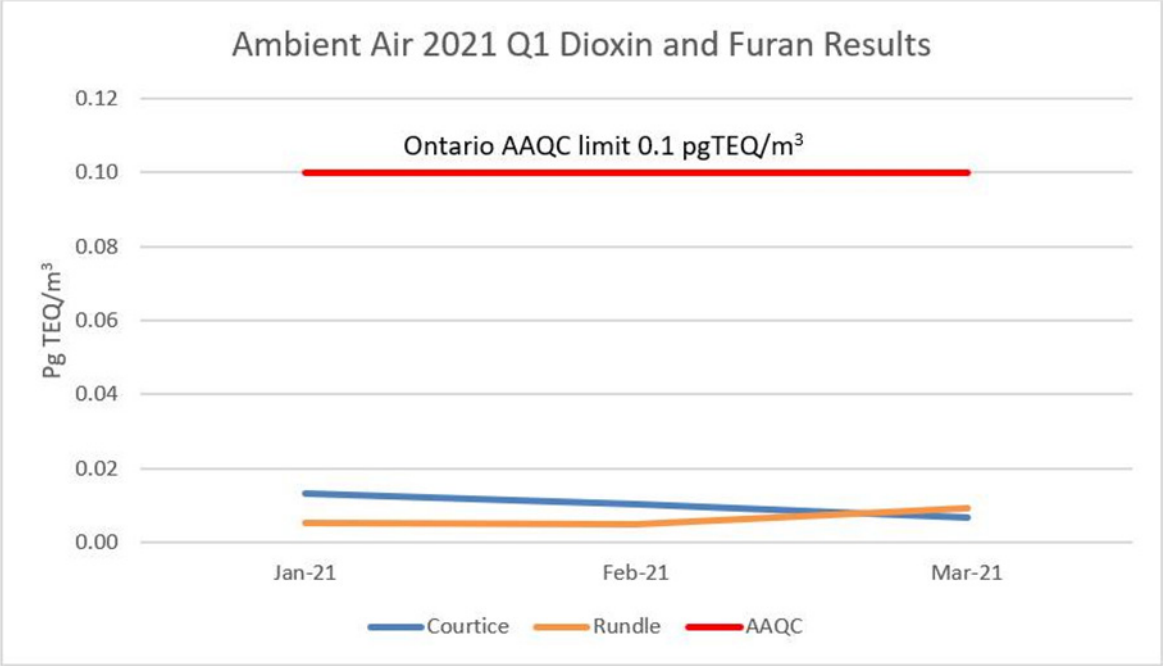
8. AMESA relative to most current Source Testing Dioxin and Furan Results



9. Ambient Air Dioxin and Furan Results – First Quarter (Q1)

The Ambient Air Monitoring Program samples for dioxins and furans. The units of measurement and the reporting limits are prescribed differently and cannot be compared directly. Ambient Air does not measure point source emissions. The equipment samples air capturing ambient air emissions from a variety of emissions sources in the area. The results of this monitoring advise on local air quality and may suggest contributing factors based on meteorological conditions such as wind speed and direction. As can be seen in the graph below, the dioxin and furan results measured from both ambient air stations in the program are well below the Ontario Ambient Air Quality Criteria of 0.1 picogram Toxic Equivalency per cubic metre (pgTEQ/m^3) during the 2021 Q1.

Note: Ontario Ambient Air Quality Criteria is 10 times lower than the Ontario Regulation 419 Upper Risk Threshold of 1 pgTEQ/m^3 for dioxins and furans.



10. References

Region of Durham Works Report (2021-WR-10) on the Long-Term Sampling System for Dioxins and Furans

Validation Checklist Rev.0 February 3, 2021

AMESA Report to MECP, February 21, 2021

AMESA Report Submission Letter to MECP, February 21, 2021

11. Durham York Energy Centre Inquiries

Were there air quality studies prior to the DYEC being in operation? Were Dioxin and Furan (D/F) monitored as part of that study? Were there any D/F exceedences recorded during the baseline monitoring?

Yes, background ambient air monitoring was conducted in 2013 and 2014. The DYEC commenced operations in 2015.

No D/F exceedences were recorded as part of the 2013/14 monitoring, prior to the DYEC operations in 2015. Since ambient air monitoring started in the Clarington area, the lowest D/F concentrations were recorded when the DYEC was in operation.

Table 21: 2013-2020 Comparison of Maximum Measured D&F Concentrations at the Courtice and Rundle Road Stations

Year	Sampling Period Throughout Year	Courtice Station		Rundle Road Station	
		Maximum Concentration (pg TEQ/m³)	No. of Exceedances	Maximum Concentration (pg TEQ/m³)	No. of Exceedances
2013 [1]	May - December	0.036	0	0.029	0
2014 [1]	January - June	0.038	0	0.065	0
2015 [1]	October - December	0.017	0	0.021	0
2016 [1]	February - December	0.044	0	0.026	0
2017 [1]	January – December	0.052	0	0.065	0
2018 [1]	January - December	0.109	1	0.091	0
2019	January - December	0.012	0	0.025	0
2020	January - December	0.025	0	0.030	0

Notes: [1] 2013-2018 Q2 data taken from Stantec's 2017 Annual Report (Stantec, 2018) and Stantec's 2018 Q1 (Stantec, 2018a) and Q2 Reports (Stantec, 2018b)

Sources which contribute to background air quality include industrial facilities, transportation, commercial and residential as well as long-range transboundary air pollution. A review of the National Pollution Release Index provides an indication of the various contributors to the air shed quality. The background concentration for D/F as demonstrated by the monitoring program is 0.02 picograms per cubic metre (pg/m^3). The air quality limit for D/F is set at 0.1 pg/m^3.

The recent Emissions Summary and Dispersion Model study calculates that with the DYEC emitting D/F at its permit limit of 60 pg/m^3, the impact to the ambient air at the maximum point of impingement would be 0.003 pg/m^3. This represents a minimal impact in relation to the ambient air results recorded in the above table.

A question concerning the destruction of DYEC records was raised at Durham Regional Council.

Covanta is required by the Project Agreement with the Owners to retain all information and data relating to the operation and maintenance of the facility, including the AMESA data. Covanta is not permitted to destroy any records without the Owners' consent. Staff have confirmed with Covanta that the AMESA records are being retained pursuant to the Project Agreement.

Is there a section on the website that pertains to the AMESA data?

The previous reports on AMESA were part of the Source Test report and the Annual report, which are both posted to the website. Moving forward, AMESA quarterly reports will be posted within its own tab on the website.

How many kilowatt hours (kWh) of electricity were sent to the grid for 2020? What was the revenue received for the electricity?

Electricity Revenues (2020): $8,850,000.

Generation (2020): 107,186,200 kWh

End of Report