

DELIVERED VIA EMAIL ONLY

March 22, 2022

Re: 2020 Methane Report

Calgary Head Office
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www.aer.ca

This is an educational letter that you are receiving as part of the AER's methane data quality assurance process for the 2020 reporting year. Your company did **not** have substantial reporting errors, and are thus receiving this letter as information to ensure you remain compliant in 2021, and onward. Within this letter you will find what data quality issues were assessed for 2020, along with new requirements which are coming into effect for the 2022 and 2023 reporting years.

Below is a summary of the reporting errors that were investigated, which are described in detail in this letter:

- **Petrinex vs OneStop vent gas reporting:** A reporting facility reported vent gas volumes to Petrinex but not to OneStop, or vice-versa.
- **Pneumatic Devices vent gas reporting:** Emissions from pneumatic devices may be under-reported or over-reported.
- **Compressor vent gas reporting:** Volumes in the compressor template were higher than in the volume-mass template in OneStop at a given reporting facility.
- **Methane concentration:** Calculated methane content is greater than 100% for a specific source at a given reporting facility.
- **Fugitive Reporting:** Leaks were reported but fugitive volumes were reported as zero in OneStop at a given reporting facility.
- **Pending 2020 Submissions:** OneStop reports were not received for all active facilities in 2020.

Thank you for your attention to this matter.

Yours truly,

Thomas Gilman, E.I.T.
Emissions Management
Compliance & Liability Management
cc: Gerald Palanca, Manager Emissions Management, AER

SECTION 1 - DIRECTIVE 060 ANNUAL METHANE EMISSIONS DATA QUALITY REPORT – 2020

The Alberta Energy Regulator (AER) has reviewed the annual methane emissions reports submitted to OneStop, as well as the volumetric reporting to Petrinex for the 2020 reporting year. The following items were identified as potential reporting errors or data quality flags.

1. Petrinex vs OneStop vent gas reporting

Description of Data Quality Flag

The operator of record of a facility must electronically submit an annual methane emissions report to OneStop under Section 8.2 of *Directive 060*. The AER has done a comparison of the volume of vent gas reported to Petrinex, to the volume of vent gas reported to OneStop. The Petrinex VENT volume includes non-routine events, while the volumes reported to OneStop do not. If the Petrinex VENT volume is due to routine venting, including pneumatic devices, compressor seals, or glycol dehydrators then the annual volume of vent gas and mass of methane should be reported into the correct category(ies) within OneStop.

Result of Data Review

No data quality flags identified

2. Pneumatic Devices vent gas reporting

Description of Data Quality Flag

The operator of record of a facility must electronically submit an annual methane emissions report under Section 8.2 of *Directive 060*. The AER has compared 2020 OneStop data reported for pneumatic instruments and pumps to a modelled estimate.

Results of Data Review

No data quality flags identified

3. Compressor vent gas reporting

Description of Data Quality Flag

As per *Directive 060* section 8.6.2.4 (1a), “the operator of record must include in the annual methane emission report the volume of vent gas emitted (m³) from **all** compressor seals (including seals in compressors rated less than 75 kW and compressors pressurized for less than 450 hr/yr) by facility ID”. In addition to this, the annual vent gas volume should be reported for **each** reciprocating or centrifugal compressor rated at least 75 kW and pressurized for more than 450 hr/yr in the “compressors template” file provided in Onestop.

Results of Data Review

No data quality flags identified

4. Methane concentration

Description of Data Quality Flag

Based on equation 1 in *Manual 015: Estimating Methane Emissions*, the methane content (vol %) equals the mass of methane (kg) divided by the vent gas volume (m³) and divided by the density of methane (0.67850 kg/m³).

Result of Data Review

No data quality flags identified

5. Fugitive Reporting

Description of Data Quality Flag

Directive 060, 8.10.5 (1) requires the operator of record to submit the volume and mass of methane for all fugitives in the annual methane emissions report.

Result of Data Review

No data quality flags identified

6. Pending 2020 Submissions

Description of Data Quality Flag

Directive 060, 8.2 (1) requires the operator of record to submit an annual methane emissions report for a facility that was active in the reporting period.

Result of Data Review

No pending submissions identified

SECTION 2 – UPCOMING REGULATIONS

See below for upcoming regulations found in Directive 060 which are coming into effect within the following reporting years. This is provided for educational purposes only.

Effective January 1, 2022

Defined Vent Gas

Directive 060 8.4 - The duty holder must design and operate any site with first receipt or production on or after January, 1 2022, to limit the DVG emitted to less than 3.0 10³ m³ of vent gas per month per site or less than 1.8 10³ kg of methane per month per site.

Crude Bitumen Batteries

Directive 060 8.5 – Effective January, 1, 2022, the duty holder must limit vent gas to one of the following:

- a) From each site, to the DVG limit listed above
- b) From the crude bitumen fleet, to less than an average vent gas rate in each month of $1.5 \times 10^3 \text{ m}^3$ of vent gas per month per facility ID.

The crude bitumen fleet in each month consists of facilities with non-zero production or vent volumes reported to facility IDs

- with subtype codes 331, 341, and 342; or
- with subtype codes 311, 321, and 322 that have at least one production string that - is reporting oil production from a pool with an assigned density greater than or equal to 920 kg/m^3 at 15°C , or has a well fluid status of bitumen.

Manual 011: How to Submit Volumetric Data to the AER defines the subtype codes.

The average vent gas rate in each month is calculated as follows:

$$\frac{\text{Sum of the vent volumes from the crude bitumen fleet}}{\text{Total number of facility IDs within the crude bitumen fleet}}$$

Pneumatic Devices

Directive 060 8.6.1.1 - The duty holder must prevent or control vent gas from pneumatic instruments installed on or after January 1, 2022

Directive 060 8.6.1.2 - The duty holder must ensure that pneumatic pumps installed on or after January 1, 2022, that operate more than 750 hours per calendar year do not emit vent gas

Compressor Seals

Directive 060 8.6.2.2.1 - The duty holder must control vent gas from any seal on a reciprocating compressor installed on or after January 1, 2022, with four or more throws.

Directive 060 8.6.2.2.2 - Effective January 1, 2022, the duty holder must limit vent gas from the RCS fleet to less than $0.35 \text{ m}^3/\text{hr}/\text{throw}$

The RCS fleet consists of the duty holder's reciprocating compressors that are rated 75 kW or more, pressurized for more than 450 hours per calendar year, and either

- a) were installed before January 1, 2022, or
- b) were installed on or after January 1, 2022, and have fewer than four throws.

The vent gas from the RCS fleet is calculated as follows:

$$\frac{\sum_{i=1}^n v_i}{\sum_{i=1}^n (t_i \times c_i)}$$

where

- n = total number of reciprocating compressors in the fleet
- v = vent gas volume for the calendar year for the reciprocating compressor (m^3)
- t = the number of hours per calendar year that the reciprocating compressor is pressurized
- c = number of pressurized throws for the reciprocating compressor

Directive 060 8.6.2.2.3 - Effective January 1, 2022, the duty holder must bring any RCS with a measured vent gas rate greater than 5.00 $m^3/hr/throw$ to below 5.00 $m^3/hr/throw$ within 30 days of the measurement date.

Directive 060 8.6.2.3 -

- 1) For centrifugal compressors installed on or after January 1, 2022, the duty holder must limit the vent gas rate to less than 3.40 $m^3/hr/compressor$. If the measured rate is not below this limit, the duty holder must take action to bring the rate below 3.40 $m^3/hr/compressor$ within 90 days of the measurement date.
- 2) Effective January 1, 2022, for centrifugal compressors installed before January 1, 2022, the duty holder must limit the vent gas rate to less than 10.20 $m^3/hr/compressor$. If the measured rate is not below this limit, the duty holder must take action to bring the rate below 10.20 $m^3/hr/compressor$ within 90 days of the measurement date

Glycol Dehydrators

Directive 060 8.6.3 –

- 1) The duty holder must limit methane emissions from each glycol dehydrator installed or relocated on or after January 1, 2022, to less than 68 kg of methane/day
- 2) Effective January 1, 2022, the duty holder must limit methane emissions from each glycol dehydrator installed or relocated before January 1, 2022, to less than 109 kg of methane/day.

Effective January 1, 2023

OVG

Directive 060 8.3.1 – Effective January 1, 2023, Pneumatic Devices, Compressor Seals, and Glycol Dehydrators will no longer be excluded from OVG limit.

Pneumatic Devices

Directive 060 8.6.1.3 -

Effective January 1, 2023, for level controllers that emit vent gas and are installed before January 1, 2022, the duty holder must

- a) prevent or control vent gas, or
- b) evaluate the actuation frequency during normal operating conditions and for level controllers that actuate between 0 and 15 minutes, use a relay that has been designed to reduce or minimize transient or dynamic venting or adjust the actuation frequency to ensure that the time between actuations is greater than 15 minutes

Directive 060 8.6.1.4 -

Effective January 1, 2023, for pneumatic instruments other than level controllers that emit vent gas and are installed before January 1, 2022, the duty holder must

- a) prevent or control vent gas, or
- b) ensure that the instruments have a manufacturer-specified steady-state vent gas rate of less than $0.17 \text{ m}^3/\text{hr}$