2019 Equivalency Report

Agreement on the Equivalency of Federal and British Columbia Regulations Respecting the Release of Methane from the Upstream Oil and Gas Sector in British Columbia

Jan. 24, 2022

BC Oil & Gas COMMISSION

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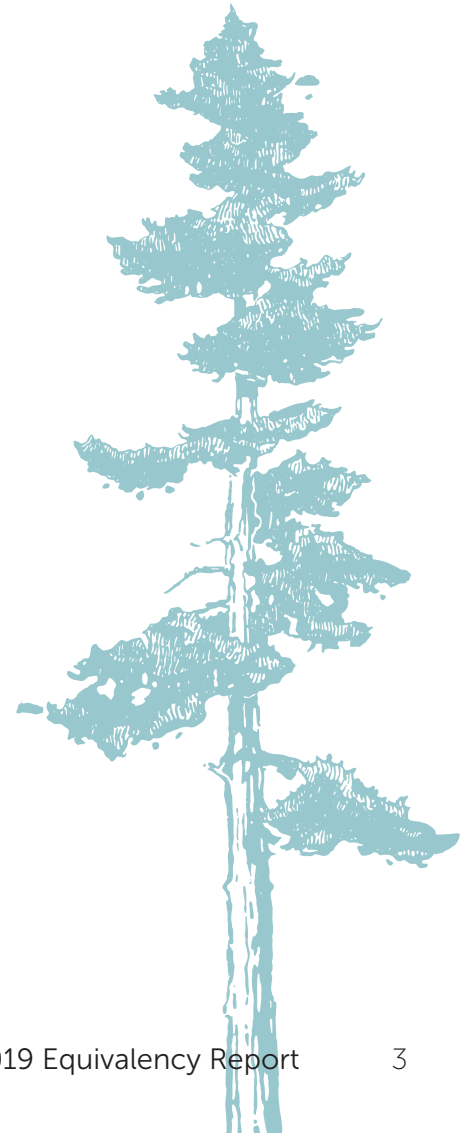
1. Introduction

The Agreement on the Equivalency of Federal and British Columbia Regulations Respecting the Release of Methane from the Upstream Oil and Gas Sector in British Columbia, 2020 (Equivalency Agreement) came into force on March 25, 2020 with the publication of a final order under section 10(3) of the Canadian Environmental Protection Act (CEPA). As a result, the following federal regulations no longer apply in British Columbia (B.C.):

- Regulations Respecting Reduction in the Release of Methane and Certain Volatile Organic Compounds (Upstream Oil and Gas Sector).

In their place, amendments were made to the B.C. Drilling and Production Regulation (DPR), under the Oil and Gas Activities Act (OGAA). These amendments specify Leak Detection and Repair (LDAR) obligations, and other requirements, which came into force on Jan. 1, 2020. A summary of these new requirements is provided in the following section as background information, however, this report reflects reporting obligations under the Equivalency Agreement for the 2019 calendar year. Therefore, the information presented does not reflect the 2020 regulatory amendments for LDAR detailed in DPR section 41.1. Future annual reports will be reflective of the regulatory changes.



2. Background: British Columbia DPR 2020 Amendments Summary

The amendments to the Drilling and Production Regulation (DPR), which came into force on Jan. 1, 2020, are in line with federal and provincial goals to reduce methane emissions by up to 45 per cent by 2025 and address the primary sources of methane emissions from B.C.'s upstream natural gas and oil industry. The amendments summarized in the Equivalency Agreement include:

- Restrictions and limits on natural gas venting;
- Prohibition of venting of natural gas from pneumatic devices for new facilities;
- Leak detection, requirements by facility type as well as timely inspections and repairs;
- Use of low-bleed pneumatic equipment or prohibition of venting of natural gas at existing installations;
- Restrictions on the use of pneumatic pumps using natural gas;
- Inspection and maintenance requirements for compressor seal and packing systems; and
- Additional provisions for glycol dehydrators.

The regulatory approach was developed by the BC Oil and Gas Commission (Commission), along with the Ministry of Energy, Mines and Low Carbon Innovation and the Ministry of Environment and Climate Change Strategy, with input from environmental groups and industry. A review of the regulatory approach is planned for 2022.

3. Summary of Reporting Obligations under the Equivalency Agreement

Part 3 of the Equivalency Agreement on information sharing requires that British Columbia provide Environment and Climate Change Canada (ECCC) with information representing the 2019 year no later than Dec. 31, 2020. Specific reporting requirements include:

A) The number of existing facilities and wells subject to the DPR and, as of Jan. 1, 2019, the number of new facility and well permits issued in 2018 and the number of closures of facilities and wells, with all information disaggregated by well type and facility classification.

B) Information assessing the implementation and effectiveness of the DPR in reducing methane emissions, including the methodology, analysis undertaken and results of calculations of emission reductions.

C) A summary of compliance verification activities and enforcement or sanction measures applied to facilities and wells in 2019, segregated by well type and facility classification, including the number of inspections, verifications other than inspections, equipment repairs completed to comply with the DPR requirements, the number and type of non-compliance events and the orders, penalties and convictions.

As noted previously, the amendments to the DPR that specifically target the reduction of methane emissions did not come into force until 2020 and therefore, this report for 2019 represents a period in time before these new regulations were in force. As such, this report provides data respecting sections A and C, above. A summary of the future reporting approach is provided respecting section B.

Pertinent to section C, the amended DPR requires regular leak detection surveys using "comprehensive" (optical gas imaging (OGI), United States Environmental Protection Agency Method 21) or "screening" (soap solution, audial-visual-olfactory) methods. Data on comprehensive and screening inspections and concomitant leak repairs carried out by permit holders prior to implementation of DPR section 41.1 pertaining to LDAR are not available. Although these types of inspections and repairs occurred, permit holders were not required to report them to the Commission in 2019. This data will be available for the 2020 reporting year, as permit holders will be submitting their first set of annual reports to the Commission by May 31, 2021.

4. Part A: Facilities and Well Counts

Table 1 shows the change in the overall number of natural gas and oil facilities in B.C. from 2018 to 2019. The number of active facilities decreased by 365 and the number of inactive facilities increased by 393. Note the data is on January 31 of each reporting year due to the way data is stored in the Commission's Knowledge, Enterprise, Resource, Management, Information and Technology (KERMIT) data system. It is an internal database for oil and gas infrastructure associated inspections.

Table 1: Summary of Facility Status

Facility Status	Number of Facilities		
	2018	2019	Change
Active	8,147	7,782	-365
Cancelled	11,823	12,056	233
Construction Complete	82	61	-21
Inactive	253	646	393
Permit Approved	581	376	-205
Removed	1,231	1,296	65
Suspended	1,053	1,112	59
Under Construction	88	90	2
Total	23,258	23,419	161

Table 2 shows the change in the overall number of wells in British Columbia from 2018 to 2019. The number of active wells increased by 68 and the number of inactive wells decreased by 363. Note the data is on January 1 of each reporting year due to the way data is stored in the Commission's KERMIT database.

Table 2: Summary of Well Status

Facility Status	Number of Wells		
	2018	2019	Change
Abandoned	7,546	7,793	247
Active	10,265	10,333	68
Cancelled	5,549	5,712	163
Inactive	2,030	1,667	-363
Suspended	5,081	5,647	566
Under Development	316	230	-86
Well Authorized	2,135	2,394	259
Total	32,922	33,776	854

5. Part B: Implementation and Effectiveness

The effectiveness of the DPR will be assessed in future years through the use of greenhouse gas information reported by operators under the Greenhouse Gas Industrial Reporting and Control Act, along with supplementary information provided under the DPR. The assessment will consider facilities that were in operation since 2012 and 2014 and the change in their reported emissions over time, and aims to disaggregate new facilities by reporting year to ensure the differing requirements for various facility types, considered in the DPR, are taken into account. When possible, information will be assessed by source type (e.g. pneumatic devices, venting, etc.) including both emissions and equipment counts. It's expected the methods, analysis, and format of information to be shared will be discussed with ECCC next year, prior to the submission of the report in 2021, to ensure an appropriate level of detail is provided in the report, and there is a common understanding of the approach and analysis as well as the results for provincial and federal purposes.

Amendments were enacted to the Greenhouse Gas Emission Reporting Regulation in the spring of 2020 to allow for an extension to GHG reporting requirements for the 2019 and 2018 reporting periods. The extension provided additional time for operations that may have been impacted by travel restrictions or operational challenges due to the enactment of COVID-19 orders and directives issued by the Provincial Health Officer. These amendments also allowed for the use of virtual site visits under certain conditions, in line with international guidance and standards for the use of communication technology for auditing and assessment purposes.

6. Part C: Compliance and Enforcement

Table 3 details the field-based facility inspections carried out by Commission staff in 2019. Overall, 2,941 inspections were conducted with 16 of them involving the use of OGI technology. Inspections that did not involve the use of OGI technology are denoted as regular inspections. Most inspections were of well facilities, at 2,432.

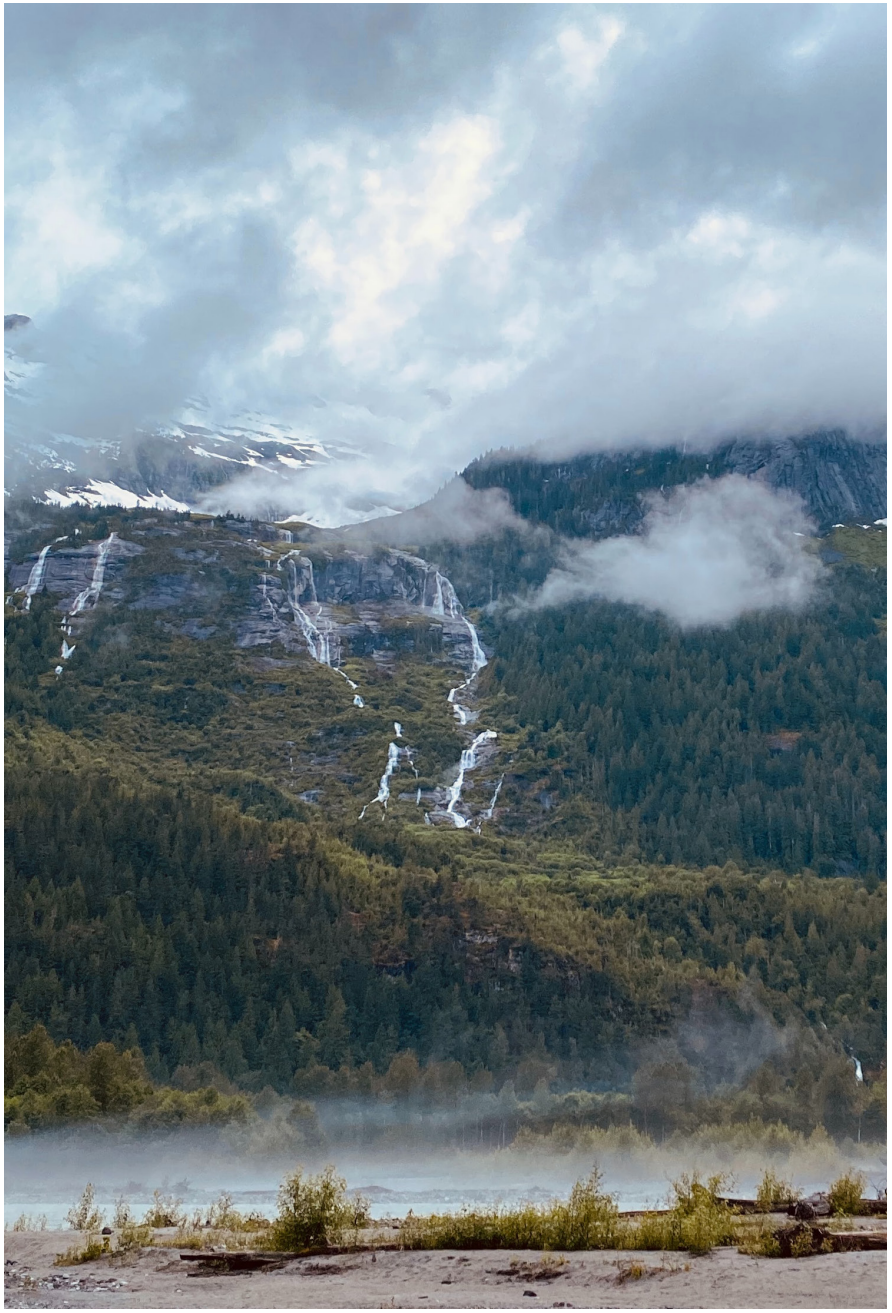


Table 3: Summary of Field-Based Facility Inspections Conducted by Commission Staff in 2019

Facility Type	Number of Inspections in 2019		
	Total Inspections	OGI Inspections	Inspections Not Involving OGI
Battery Site	113	0	113
Compressor Dehydrator	69	4	65
Compressor Station	46	0	46
Disposal Station	24	2	22
Gas Dehydrator	12	1	11
Gas Processing Plant	57	1	56
Gas Sales Meter	40	0	40
Injection Station	7	0	7
Natural Gas Liquids Fractionation Facility	2	0	2
Oil Sales Meter	10	0	10
Pipeline Gathering	6	0	6
Processing Battery	38	6	32
Satellite Battery	65	0	65
Tank Terminal	2	0	2
Test Facility	13	0	13
Water Hub	5	0	5
Well Facility	2,432	2	2,430
Total	2,941	16	2,925

Table 4 shows the field-based inspections carried out by Commission staff in 2019 at gas and oil wells. Overall, 6,142 inspections were conducted, six of which involved the use of OGI technology. Most inspections were of gas wells (a total of 4,227).

Table 4: Summary of Field-Based Well Inspections Conducted by Commission Staff in 2019

Well Type	Number of Inspections		
	Total Inspections	OGI Inspections	Inspections Not Involving OGI
Acid Gas	3	0	3
Gas	4,227	4	4,223
Multiple Gas	544	1	543
Multiple Oil and Gas	26	0	26
Multiple Oil	87	0	87
Oil	623	1	622
Solvent Injection	1	0	1
Undefined	378	0	378
Water	253	0	253
Total	6,142	6	6,136

Explanatory Note: "Multiple" refers to multiple completion events within the same well and solvent injection refers to solvent injection for enhanced oil recovery.

Table 6 details the methane-related deficiencies identified during the field-based inspections listed in Table 3 and the associated corrections. The inspection and deficiency data used to meet the reporting requirements of Part C of the equivalency agreement is Commission data retrieved electronically from KERMIT and is compiled in an internal report entitled BIL-245.

Inspection counts by facility and well type from Jan. 1, 2019 through to Dec. 31, 2019 are downloaded from BIL-245 and compiled into tables for this report. An inspection may be counted more than once if it involves multiple activities. For example, an inspection of a site that includes a compressor station and a well could be counted as two separate inspections if both the compressor station and well were inspected. Deficiencies and corrections were also downloaded by facility and well type and by methane-related deficiency type. Additionally, inspections are separated in BIL-245 between those that involved the use of an OGI camera by the Commission and those that did not. Those that involved the use of an OGI camera were assigned a pass or a fail. A pass indicated no leaks were found during the inspection and a fail indicated at least one leak was found during the inspection. Details of what sections of OGAA and the DPR qualify as methane-related deficiencies are provided in Table 5.

Table 5: Methane Related Deficiencies

Act/Regulation Section	Act/Regulation Name	Methane Qualifier
18 (8)(a)	DPR	Yes
18 (8)(a)(b)	DPR	Yes
18 (8)(b)	DPR	Yes
41 (1)	DPR	Yes
41 (1)(b)	DPR	Yes
41 (1)(c)	DPR	Yes
41 (5)	DPR	Yes
26 (b)(iv)	DPR	Possible
41 (3)	DPR	Possible
44 (b)	DPR	Possible
45 (3)	DPR	Possible
45 (3)(c)	DPR	Possible
50 (1)	DPR	Possible
37 (1)	OGAA	Possible
37 (1)(a)	OGAA	Possible
37 (2)	OGAA	Possible
37 (2)(a)	OGAA	Possible
37 (2)(b)	OGAA	Possible
37 (3)	OGAA	Possible

Of the 393 deficiencies identified, all but one has been corrected. Outstanding deficiencies are being addressed through the Commission's graduated approach to managing non-compliance, whereby compliance notices, communication with the permit holder and escalation to enforcement are employed as appropriate. Enforcement data is maintained by the Commission in spreadsheet format. There were no methane-related enforcement actions in 2019.

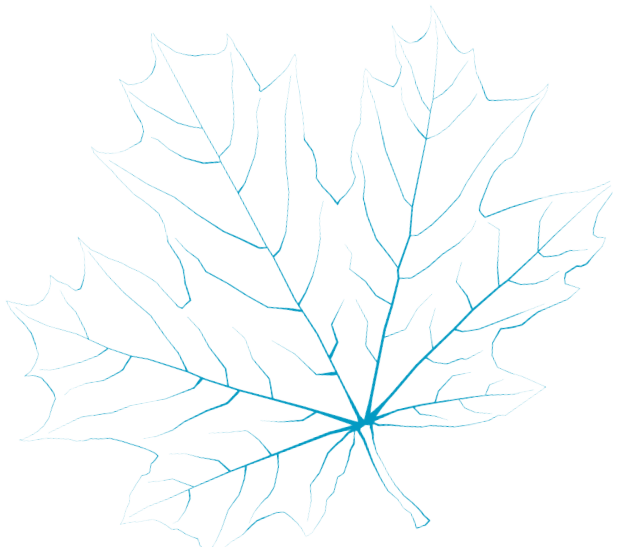
Table 6: Methane-Related Deficiencies and Corrections at Facilities Inspected by Commission Staff in 2019

Facility Type	Number of Methane-Related Deficiencies in 2019	
	Deficiencies	Deficiency Corrections
Battery Site	20	20
Compressor Dehydrator	8	8
Compressor Station	7	7
Disposal Station	3	3
Gas Dehydrator	1	1
Gas Processing Plant	5	5
Gas Sales Meter	4	4
Injection Station	1	1
Natural Gas Liquids Fractionation Facility	0	0
Oil Sales Meter	1	1
Processing Battery	12	11
Satellite Battery	2	2
Tank Terminal	1	1
Test Facility	1	1
Water Hub	0	0
Well Facility	327	327
Total	393	392

Table 7 details the methane-related deficiencies identified during the field-based inspections listed in Table 4 and the associated corrections. Of the 663 deficiencies identified, all but three have been corrected.

Table 7: Summary Methane-Related Deficiencies and Corrections at Wells Inspected by Commission Staff in 2019

Well Type	Number of Methane-Related Deficiencies in 2019	
	Deficiencies	Deficiency Corrections
Gas	534	531
Multiple Gas	69	69
Mutiple Oil and Gas	0	0
Multiple Oil	0	0
Oil	36	36
Undefined	17	17
Water	7	7
Total	663	660
Explanatory Note: "Multiple" refers to multiple completion events within the same well.		



7. Exemption Requests

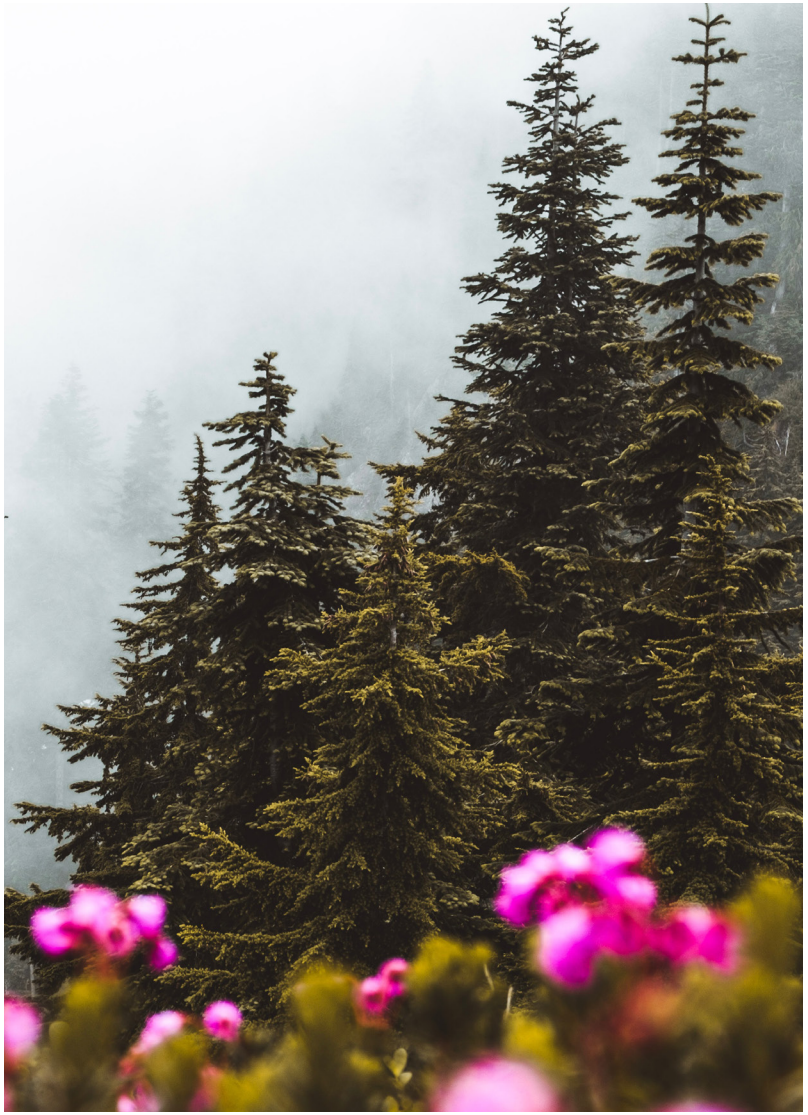
Permit holders have the opportunity to apply for exemptions to specific requirements of DPR section 41.1 under DPR section 4. A summary of the exemption requests received to date and their disposition is provided in Table 8. Two requests pertaining to compressor seals were received in 2019. Nine requests were received in 2020, four of which pertained to COVID-19. One request was based on economic hardship and three requests were for time extensions to repair leaks due to the need to order parts. One request for an alternative program is under review.

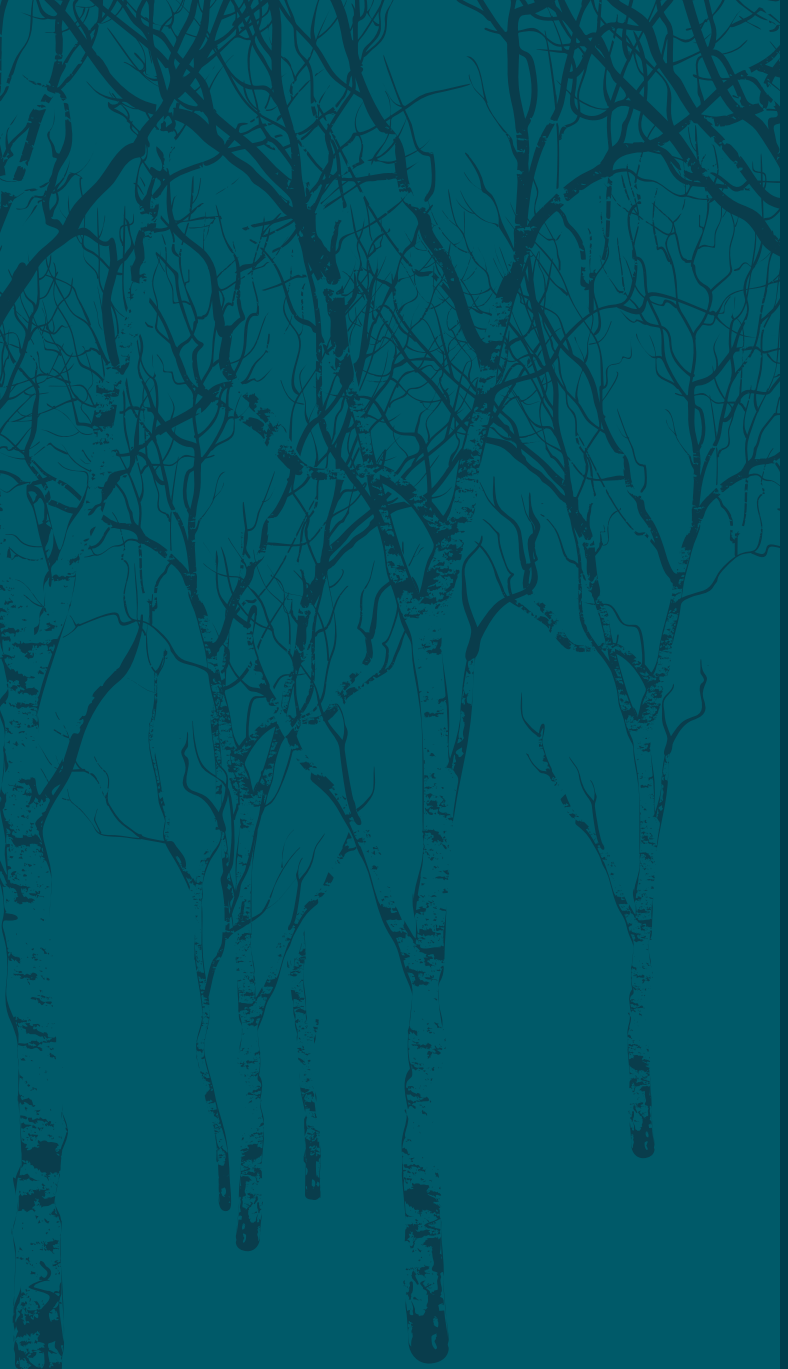
Table 8: Exemptions Summary

Operator	Year	Exemption Request Summary	Rationale for Exemption	Outcome	Number of Facilities or Leaks Exempted (Applied For)
A	2019	Centrifugal compressor seal vent limit	Technical feasibility	Not Granted	0 (2)
A		Centrifugal compressor seal vent limit	Technical feasibility	Not Granted	0 (2)
B	2020	Comprehensive survey frequency	COVID-19	Not Granted	0 (44)
C		Comprehensive survey frequency	COVID-19	Partially Granted	6 (10)
D		Comprehensive survey frequency	COVID-19	Granted	3 (3)
E		Comprehensive survey frequency spacing	COVID-19 and asset acquisition	Partially Granted	16 (19)
F		Comprehensive survey frequency	Economic hardship	Not Granted	0 (1)
G		Leak Repair Timing	Ordering of Parts Required	Granted	1 (1)
B		Leak Repair Timing	Ordering of Parts Required	Partially Granted	1 (4)
H		Leak Repair Timing	Ordering of Parts Required	Granted	1 (1)
I		Alternative Fugitive Emissions Management Program	Cost	In Progress	To Be Determined (38)

8. Looking Forward

Implementation of the DPR LDAR requirements, which came into force in January 2020, is well underway and will be discussed in the next annual equivalency report in accordance with reporting requirements. The 2020 reporting year submission will include details of how many screening and comprehensive leak detection surveys were completed by permit holders, how many leaks were identified during those surveys and how many leaks were subsequently repaired subject to the new regulatory requirements.





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