

2020 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

Dec. 31, 2021



Table of Contents

1. Introduction	3		
2. Summary of Reporting Obligations under the Equivalency Agreement	5		
3. Part A: Facility and Well Counts	6		
4. Part B: Implementation and Effectiveness	8		
5. Part C: Compliance and Enforcement	9		
5.1: Overview of Commission LDAR Compliance Framework	9	5.2: 2020 Commission Inspections Data	10
5.1.1: Compliance Awareness and Promotion	9	Compliance Framework	
5.1.2: Inspections Framework for LDAR	9	5.3: Industry Compliance Data Based on Analysis of LDAR Submission Data	14
5.1.3: LDAR Submission Compliance Review	9	5.3.1: Survey Methods Used by Industry	14
5.1.4 DPR Non-Compliances	10	5.3.2: Leak Repair Data	16
		5.3.3: Survey Number and Timing Requests	19
		5.4: Commission Training and Competency Audits	24
		6. Continuous Improvement	25
		6.1: eSubmission system modifications	25
		6.2 Regulatory Review	25
		6.3 Compliance Awareness and Promotion	25
		7. Exemption Requests	26

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 \(Upstream Oil and Gas Sector\)](#).

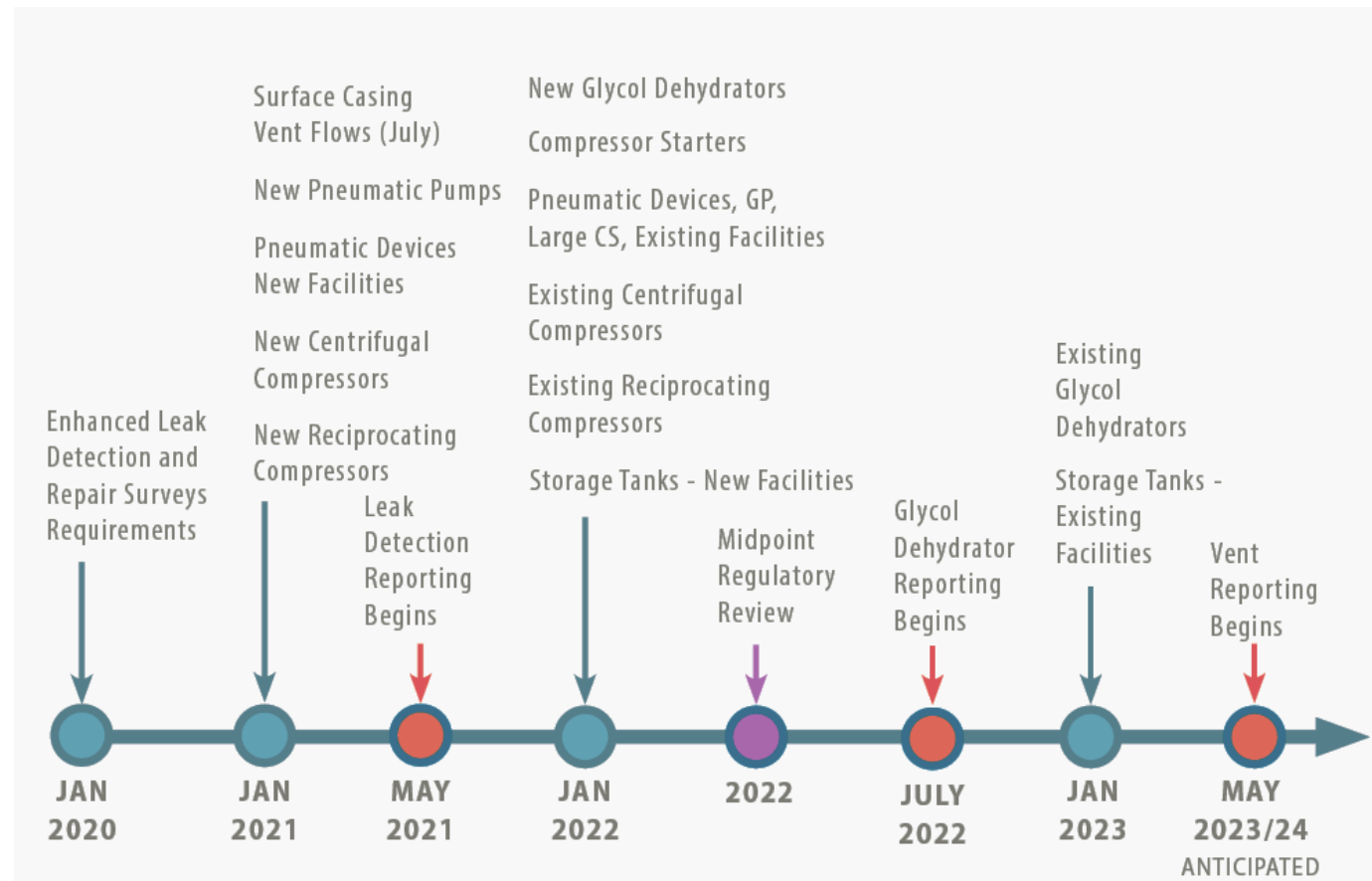
Under the Equivalency Agreement, the provincial methane regulations, which were introduced in December 2018 through amendments to the [Drilling and Production Regulation](#) (DPR) under the [Oil and Gas Activities Act](#) (OGAA), apply in B.C. instead. These methane regulations came into force on Jan. 1, 2020 and are the primary policy instrument for achieving the Province's 2025 methane emissions reduction target of 45 per

cent below 2014 levels. The provincial methane regulations set emission limits on fugitive emissions and venting sources from B.C.'s upstream oil and gas industry, which include leak detection and repair (LDAR), pneumatic devices, compressors, glycol dehydrators, storage tanks and surface casing vents. The LDAR provisions, aimed at reducing emissions from fugitive sources, became effective the same day the regulations came into force. The remainder of the provisions, targeting venting sources, have differential effective dates ranging from January 2021 to January 2023, depending on the age of the facility (see Figure 1).

This report reflects reporting obligations under the Equivalency Agreement for the 2020 calendar year only. As such, it focuses on the LDAR provisions (section 41.1 of the DPR) as they became effective in 2020. As such, only one year of data is available for LDAR sources in 2020.



Figure 1: DPR Implementation Timeline for Methane Provisions

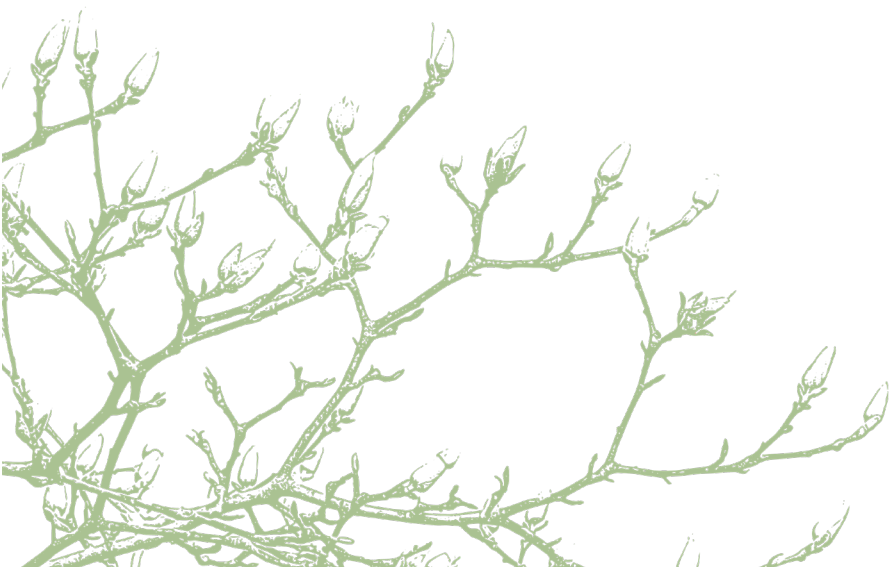


The provincial methane regulations were developed by the BC Oil and Gas Commission (Commission), in collaboration with the Ministry of Energy, Mines and Low Carbon Innovation and the Ministry of Environment and Climate Change Strategy, with input from industry and environmental groups. A review of the regulations is scheduled for 2022.

2. Summary of Reporting Obligations under the Equivalency Agreement

Section 3 of the Equivalency Agreement requires B.C. to provide Canada with information representing the previous year (2019) no later than Dec. 31, 2020, and subsequently, on an annual basis and no later than December 31, the following information for the previous calendar year:

- a. the number of existing facilities and wells that are subject to the DPR and, as of January 1 of the year data is being submitted for, the number of new facility and well permits issued in the preceding year and the number of closures of facilities and wells, with all information disaggregated by well type and facility classification (as specified in the DPR), and other types of facilities;
- b. information assessing the implementation and effectiveness of the DPR in reducing methane emissions (in CO₂e), including the methodology, analysis undertaken and results of calculations of emission reductions; and
- c. a summary of compliance verification activities and enforcement or sanctions measures applied to facilities and wells, 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.



3. Part A: Facility and Well Counts

Table 1 shows the overall number of natural gas and oil facilities in B.C. in 2019 and 2020, disaggregated by facility status. Further to the explanatory notes provided, there were 518 new facilities and 15,327 facility closures in 2020.

Please note that the data summarized in Table 1, and subsequent tables in this report, cover the period between January 31-January 30 for each reporting year due to the way data is stored in the Commission's Knowledge, Enterprise, Resource, Management, Information and Technology (KERMIT) data system. KERMIT is an internal database for oil and gas infrastructure associated inspections.

Table 1: Summary of Facility Status

Facility Status	Number of Facilities	
	2020	2019
Active	7,661	7,782
Cancelled	12,070	12,056
Construction Complete	57	61
Inactive	711	646
Permit Approved	377	376
Removed	1,441	1,296
Suspended	1,105	1,112
Under Construction	84	90
Total	23,506	23,419

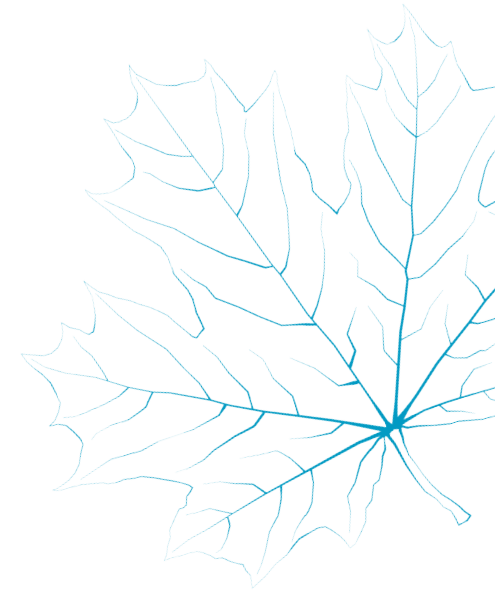
Explanatory Notes:

1. Facility closures include "Cancelled", "Inactive", "Suspended", and "Removed" statuses. A facility with one of these statuses is not required to conduct LDAR surveys because they are no longer operating, never existed or no longer exist.
2. New facilities include "Construction Complete", "Permit Approved", and "Under Construction". As they are not operating yet, a facility with one of these statuses is not required to conduct LDAR surveys.
3. Existing facilities include "Active" facilities, and these are required to conduct LDAR surveys so long as they are operating.
4. Facilities receive a "Removed" status after the permit holder submits notice of intent to the Commission, indicating all equipment and associated piping have been removed from the site.

Table 2: Summary of Well Status

Facility Status	Number of Facilities	
	2020	2019
Abandoned (Decomissioned)	8,165	7,793
Active	9,916	10,333
Cancelled	5,743	5,712
Inactive	1,945	1,667
Suspended	5,832	5,647
Under Development	186	230
Well Authorized	2,702	2,394
Total	34,489	33,776
<p><i>Explanatory Notes:</i></p> <ol style="list-style-type: none"> 1. Well closures include "Abandoned", "Inactive", "Suspended", and "Cancelled" statuses. A well with one of these statuses does not need to undergo LDAR surveys because they are no longer operating, never existed or no longer exist. 2. New wells include "Under Development", and "Well Authorized". As they are not operating yet, wells with one of these statuses do not need to undergo LDAR surveys. 3. Existing wells include "Active" wells, and these must undergo LDAR surveys when they are operating. 		

Table 2 shows the overall number of wells in B.C. in 2019 and 2020, disaggregated by well status. Further to the explanatory notes, there were 2,888 new wells and 21,685 well closures in in 2020.



4. Part B: Implementation and Effectiveness



As noted in the Introduction, only the LDAR requirements of the DPR came into effect in the 2020 calendar year. As such, the ability to assess the effectiveness of the DPR in terms of methane emissions reductions is limited. In future years, as additional provisions of the regulation come into effect, the analysis will expand to include those emissions sources.

Preliminary analysis of the raw LDAR data points to differences between the bottom-up modelling approach used when developing the DPR and extrapolated results of leaks detected and measured in the field. Based on these initial insights, and the planned methodological improvements to fugitive methane emissions from upstream oil and gas for the 2022 publication of Canada's GHG National Inventory Report, additional analysis of the B.C. LDAR data is required to confidently assess the effectiveness of the LDAR provisions.

Through the BC Oil and Gas Research and Innovation Society, there is ongoing research to measure the effectiveness of the completed 2020 LDAR surveys in B.C. (B.C. Fugitive Emission Management Program Effectiveness Assessment). The results of this study will be incorporated into future equivalency reports. B.C. will also look to collaborate with Environment and Climate Change Canada to best utilize the data collected through the LDAR reporting requirements, B.C.-based methane detection research and other appropriate sources to develop a more accurate and consistent approach to methane emission modelling and analysis.

5. Part C: Compliance and Enforcement

5.1: Overview of Commission LDAR Compliance Framework

5.1.1: Compliance Awareness and Promotion

To date, the Commission has encouraged compliance awareness and promotion in the following manner:

1. Stakeholder consultation activities related to the development of the regulations with members of the Canadian Association of Petroleum Producers, the Explorers and Producers Association of Canada, and the Canadian Energy Pipeline Association;
2. Commission methane webpage materials;
3. Commission technical guidance materials;
4. Commission participation in information sessions and conferences;
5. Commission information bulletins;

6. Commission staff availability to answer permit holder and service provider questions by phone, email, and video conference;
7. Mid-2020 survey of permit holders regarding the progress of leak detection surveys and repairs; and
8. Late-2020 survey of permit holders regarding data collection.

5.1.2: Inspections Framework for LDAR

An important part of the Commission's Compliance Management System is proactive inspections of permit holder activities and documentation of alleged non-compliances. Inspection results, including any non-compliances identified, are tracked and shared with permit holders for action. Non-compliances identified through Commission inspections are referred to as "deficiencies" according to its Compliance Management System. If a deficiency is not addressed, the Commission may respond with escalated

enforcement action, including the issuance of a regulatory order. The Commission conducted 11,016 facility and well inspections in 2020, some of which included the use of optical gas imaging (OGI) technology.

5.1.3: LDAR Submission Compliance Review

In addition to inspections, the Commission conducted an administrative review with respect to industry compliance respecting LDAR reporting requirements. Following the review, the Commission followed up directly with permit holders that had missing submissions. Compliance actions regarding submissions are currently being considered and managed by the Commission. Compliance and enforcement data for 2020 will be reported in the next Equivalency Report.

5.1.4: DPR Non-Compliances

Compliance investigations or actions have not been initiated regarding potential non-compliances in meeting the DPR requirements, as data compilation was completed in December 2021 to prepare this report. Compliance actions in relation to LDAR survey requirements will be included in the next Equivalency Report.

5.2: 2020 Commission Inspections Data

Table 3 details the field-based facility inspections carried out by Commission staff in 2020. Overall, 3,661 inspections were conducted across facility types. The Commission has documented procedures for detecting and reporting leaks and spills, including methane leaks. Leaks, spills, and unauthorized emissions are a primary focus area of inspections. In aggregate, the Commission issues more deficiencies related to leaks, spills, and unauthorized emissions than for other items.

The majority of inspections detect methane leaks through personal gas monitors and/or audio, visual, olfactory (AVO) indicators, and are denoted as “regular inspections” in this report. Fourteen inspections involved the use of OGI technology.



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

Facility Type	Number of Inspections		
	Total Inspections	Regular Inspections	Inspections Involving OGI
Battery Site	155	153	2
Compressor Dehydrator	91	88	3
Compressor Station	84	84	0
Disposal Station	23	23	0
Gas Dehydrator	19	19	0
Gas Processing Plant	57	57	0
Gas Sales Meter	92	92	0
Injection Station	9	9	0
Natural Gas Liquids Fractionation Facility	1	1	0
Oil Sales Meter	13	13	0
Pipeline Equipment	1	1	0
Pipeline Gathering	1	1	0
Processing Battery	39	37	2
Pump Station	7	7	0
Satellite Battery	115	115	0
Tank Terminal	4	4	0
Test Facility	9	9	0
Water Hub	12	12	0
Well Facility	2,929	2,922	7
Total	3,661	3,647	14

Table 4 shows the field-based well inspections carried out by Commission staff, across well types, in 2020. Overall, 7,355 inspections were conducted, eight of which involved the use of OGI technology. About 70 per cent (4,959) of the inspections conducted were of gas wells.

Table 4: Summary of Field-Based Well Inspections Conducted by Commission Staff in 2020

Well Type	Number of Inspections		
	Total Inspections	Regular Inspections	Inspections Involving OGI
Acid Gas	10	10	0
Gas	4,959	4,953	6
Multiple Gas–	511	511	0
Multiple Oil and Gas	21	21	0
Multiple Oil	158	158	0
Oil	733	731	2
Solvent Injection	0	0	0
Undefined	614	614	0
Water	349	349	0
Total	7,355	7,347	8
<p><i>Explanatory Notes:</i></p> <p>1. "Multiple" refers to multiple completion events within the same well and solvent injection refers to solvent injection for enhanced oil recovery.</p> <p>2. An undefined well type is one where the primary product has not yet been determined or reported.</p>			

Table 5 details the methane-related deficiencies identified during the field-based inspections by Commission staff listed in Table 3 and the associated corrections. Of the 398 deficiencies identified, all have been corrected. Nearly all (96 per cent) of the facility deficiencies were spill or leak related.

Table 5: Summary of Methane-Related Deficiencies and Corrections at Facilities Inspected by Commission Staff

Facility Type	Number of Methane-Related Deficiencies	
	Deficiencies	Deficiency Corrections
Battery Site	17	17
Compressor Dehydrator	11	11
Compressor Station	7	7
Disposal Station	1	1
Gas Dehydrator	1	1
Gas Processing Plant	5	5
Gas Sales Meter	6	6
Injection Station	0	0
Natural Gas Liquids Fractionation Facility	0	0
Oil Sales Meter	0	0
Processing Battery	3	3
Pump Station	1	1
Satellite Battery	2	2
Tank Terminal	1	1
Test Facility	1	1
Water Hub	1	1
Well Facility	341	341
Total	398	398
<p><i>Explanatory Notes:</i></p> <p>1. Deficiency means alleged non-compliance under the Commission's inspection framework.</p> <p>2. Methane-related deficiencies include deficiencies that are or might be related to methane.</p>		

Table 6 details the methane-related deficiencies identified during the field-based inspections by Commission staff listed in Table 4 and the associated corrections. Of the 668 deficiencies identified, all (100 per cent) have been corrected. Nearly all (98 per cent) of the facility deficiencies were spill or leak related.

Table 6: Summary Methane-Related Deficiencies and Corrections at Wells Inspected by Commission Staff in 2020

Well Type	Number of Methane-Related Deficiencies	
	Deficiencies	Deficiency Corrections
Gas	562	562
Multiple Gas	52	52
Mutiple Oil and Gas	0	0
Multiple Oil	0	0
Oil	26	26
Undefined	19	19
Water	9	9
Total	668	668
<p><i>Explanatory Notes:</i></p> <ol style="list-style-type: none"> 1. "Multiple" refers to multiple completion events within the same well. 2. An undefined well type is one where the primary product has not yet been determined or reported. 3. Deficiency means alleged non-compliance under the Commission's inspection framework. 4. Methane-related deficiencies include deficiencies that are or might be related to methane. 		

5.3: Industry Compliance Data Based on Analysis of LDAR Submission Data

5.3.1: Survey Methods Used by Industry

Table 7 details the LDAR surveys conducted by industry at facilities in 2020. Overall, 1,159 surveys were conducted with 1,125 (97 per cent) of them involving the use of OGI technology. Surveys that involve the use of OGI technology are termed "comprehensive surveys" and those that do not involve the use of OGI technology are termed "screening surveys" (use one or both of the following methods: a soap solution bubble test; the senses of hearing, sight, and smell).

Table 7: Summary of LDAR Surveys at Facilities

Facility Type	Number of Methane-Related Deficiencies		
	Total Surveys	Comprehensive Surveys	Screening Surveys
Battery Site	160	160	0
Compressor Dehydrator	294	288	6
Compressor Station	110	110	0
Disposal Station	30	30	0
Gas Dehydrator	11	11	0
Gas Processing Plant	189	189	0
Gas Sales Meter	80	74	6
Injection Station	9	9	0
Natural Gas Liquids Fractionation Facility	3	3	0
Oil Sales Meter	44	22	22
Pipeline Equipment	Not Applicable	Not Applicable	Not Applicable
Pipeline Gathering	Not Applicable	Not Applicable	Not Applicable
Processing Battery	81	81	0
Pump Station	Not Applicable	Not Applicable	Not Applicable
Satellite Battery	127	127	0
Tank Terminal	13	13	0
Test Facility	Not Applicable	Not Applicable	Not Applicable
Water Hub	8	8	0
Well Facility	Not Applicable	Not Applicable	Not Applicable
Total	1,159	1,125	34

Table 8 details the LDAR surveys conducted by industry at wells in 2020 based on well fluid type. Overall, 6,036 surveys were conducted with 4,165 (69 per cent) of them involving the use of OGI technology. Surveys that use OGI technology are comprehensive surveys and those that do not use OGI technology are screening surveys.

Table 8: Summary of LDAR Surveys at Wells

Well Type	Number of LDAR Surveys		
	Total Surveys	Comprehensive Surveys	Screening Surveys
Acid Gas	0	0	0
Gas	4,937	3,620	1,317
Multiple Gas	476	197	279
Multiple Oil and Gas	2	0	2
Multiple Oil	158	145	13
Oil	370	181	189
Solvent Injection	0	0	6
Undefined	0	0	0
Water	93	22	71
Total	6,036	4,165	1,871
<i>Explanatory Notes:</i> 1. "Multiple" refers to multiple completion events within the same well and solvent injection refers to solvent injection for enhanced oil recovery. 2. An undefined well type is one where the primary product has not yet been determined or reported.			

5.3.2: Leak Repair Data

Table 9 summarizes leaks detected and their repair status at facilities, as of Nov. 19, 2021. In total, 4,320 leaks were identified, and 3,700 (86 per cent) of the detected leaks were repaired.

Table 9: Summary of Leak Detection and Repairs at Facility

Facility Type	2020		
	Number of Leaks Identified	Number of Leak Repairs Completed	Number of Leak Repairs Not Completed
Battery Site	140	127	13
Compressor Dehydrator	1,076	943	133
Compressor Station	296	275	21
Disposal Station	41	41	0
Gas Dehydrator	7	6	1
Gas Processing Plant	2,465	2,067	398
Gas Sales Meter	32	32	0
Injection Station	0	0	0
Natural Gas Liquids Fractionation Facility	18	0	18
Oil Sales Meter	2	2	0
Pipeline Equipment	Not Applicable	Not Applicable	Not Applicable
Pipeline Gathering	Not Applicable	Not Applicable	Not Applicable
Processing Battery	196	166	30
Pump Station	Not Applicable	Not Applicable	Not Applicable
Satellite Battery	23	23	0
Tank Terminal	24	18	6
Test Facility	Not Applicable	Not Applicable	Not Applicable
Water Hub	0	0	0
Well Facility	Not Applicable	Not Applicable	Not Applicable
Total	4,320	3,700	620
<i>Explanatory Note:</i> All leaks reported are included in the counts, regardless of their methane content.			

Table 10 details leaks detected and their repair status at well sites, as of Nov. 19, 2021, at wells. In total, 970 leaks were identified, and 916 (94 per cent) leak repairs were completed.

Table 10: Summary of Leaks Detected at Wells and Repairs Made

Well Type	2020		
	Total Surveys	Comprehensive Surveys	Screening Surveys
Acid Gas	0	0	0
Gas	876	833	43
Multiple Gas	68	63	5
Multiple Oil and Gas	0	0	2
Multiple Oil	1	1	0
Oil	23	18	5
Solvent Injection	0	0	0
Undefined	0	0	0
Water	2	2	71
Total	970	917	53
<p><i>Explanatory Notes:</i></p> <p>1. "Multiple" refers to multiple completion events within the same well and solvent injection refers to solvent injection for enhanced oil recovery.</p> <p>2. An undefined well type is one where the primary product has not yet been determined or reported.</p> <p>All leaks reported are included in the counts, regardless of their methane content.</p>			



5.3.3: Survey Number and Timing Requirements

The LDAR data submissions were reviewed with respect to regulatory requirements for the number of LDAR surveys required as well as timing requirements for both survey spacing and repair. Data compilation to support this review, however, was limited due to the Commission's existing data systems (KERMIT), which does not provide real-time data on facility operational status. For example, a facility could have an active status in KERMIT but not operate for all or part of the year and, therefore, the full requirements for survey number and timing may not apply. As such, the data compilation presented in the tables below should be considered conservative estimates of the maximum possible number of potential non-compliances. As discussed in Section 6, (Continuous Improvement), the Commission plans to address this compliance management issue through system improvements and communications with permit holders.

Tables 11 and 12 summarize non-compliance with the minimum required number of LDAR surveys, survey spacing (timing) requirements and repair timelines at facilities. The number of facilities that did not meet the minimum spacing requirements between LDAR surveys was 23 (seven per cent) out of 310 facilities that completed multiple surveys. Out of a total of 4,320 leaks detected, 1,710 (40 per cent) were not repaired within the time limits specified in regulation. In 2020, 3,006 LDAR surveys were required to be conducted by permit holders. Approximately 65 per cent (1,927) of the required LDAR surveys were not conducted.

Table 11: Summary of Non-compliance with LDAR Spacing and Leak Repair Requirements at Facilities

Facility Type	Leak Detection Spacing and Repair Deficiencies	
	Number of Facilities not Meeting Minimum Survey Spacing Requirements (310 facilities submitted multiple surveys)	Number Leaks Not Repaired on Time (of 4,320 total required)
Battery Site	2	55
Compressor Dehydrator	7	352
Compressor Station	4	128
Disposal Station	Not Applicable	1
Gas Dehydrator	Not Applicable	3
Gas Processing Plant	7	1,081
Gas Sales Meter	Not Applicable	5
Injection Station	Not Applicable	0
Natural Gas Liquids Fractionation Facility	0	0
Oil Sales Meter	Not Applicable	2
Pipeline Equipment	Not Applicable	Not Applicable
Pipeline Gathering	Not Applicable	Not Applicable
Processing Battery	3	67
Pump Station	Not Applicable	Not Applicable
Satellite Battery	0	5
Tank Terminal	Not Applicable	11
Test Facility	Not Applicable	Not Applicable
Water Hub	Not Applicable	0
Well Facility	Not Applicable	Not Applicable
Total	23	1,710
<p><i>Explanatory Note:</i></p> <p>1. The number of leaks not repaired on time excludes those that indicated in their submissions that they are waiting until the next turnaround to complete.</p> <p>2. Exemptions to regulatory LDAR survey spacing and leak repair timing requirements were accounted for in the totals.</p> <p>3. Summary of leak repair times (days) - Average: 120, Median: 79, Maximum: 564, Minimum: 31, Not Repaired: 75.</p>		

Table 12: Summary of Non-compliance with Number of LDAR Survey Requirements at Facilities

Facility Type	Leak Detection and Repair Survey Deficiencies		
	Number of Active Facilities	Number of Surveys Required	Number of Surveys Conveyed
Battery Site	263	779	159
Compressor Dehydrator	186	549	289
Compressor Station	121	359	106
Disposal Station	59	57	25
Gas Dehydrator	31	37	9
Gas Processing Plant	76	223	182
Gas Sales Meter	181	181	42
Injection Station	15	15	5
Natural Gas Liquids Fractionation Facility	1	1	1
Oil Sales Meter	67	67	42
Pipeline Equipment	Not Applicable	Not Applicable	Not Applicable
Pipeline Gathering	Not Applicable	Not Applicable	Not Applicable
Processing Battery	59	171	78
Pump Station	Not Applicable	Not Applicable	Not Applicable
Satellite Battery	174	519	126
Tank Terminal	11	11	8
Test Facility	Not Applicable	Not Applicable	Not Applicable
Water Hub	32	37	7
Well Facility	Not Applicable	Not Applicable	Not Applicable
Total	1,276	3,006	1,079

Explanatory Note:

1. Active facilities will not match earlier tables because permit-holder information is used to remove facilities that are not operating but are still listed as active in the Commission database.
2. In the case of facilities that did not report any LDAR surveys, the number of required LDAR surveys is assumed based on facility type and not on pressurized days.
3. Active batteries that did not report are all assumed to require three LDAR surveys per year.
4. Some active facilities may not be operating, resulting in an overstating of non-compliance.
5. The overall number of LDAR surveys completed that contribute to compliance is lower than the number of LDAR surveys completed because some permit holders completed more than the minimum required or used screening methods in place of comprehensive methods.
6. Some permit holders used comprehensive LDAR survey methods in place of screening LDAR survey methods, and this was accepted for compliance purposes. The values have been adjusted accordingly in this table.
7. Exemptions to minimum number of LDAR survey requirements were accounted for in the totals.

Tables 13 and 14 summarize non-compliance with the minimum required number of LDAR surveys, LDAR survey spacing (timing) requirements and repair timelines at wells. In 2020, survey spacing requirements did not apply to wells because it was the first year of reporting and wells require one survey per year. Out of a total of 970 leaks detected, 388 (40 per cent) were not repaired within the time limits specified in the regulation. A total of 8,379 LDAR surveys were required to be conducted in 2020. About 38 per cent (3,185) of the required LDAR surveys were not conducted.

Table 13: Summary of Non-compliance with LDAR Spacing and Leak Repair Requirements at Wells

Well Type	Leak Detection Spacing and Repair Deficiencies	
	Minimum Survey Spacing Requirements Not Met	Leak Not Repaired on Time (out of the 970 required)
Acid Gas	Not Applicable	0
Gas	Not Applicable	340
Multiple Gas	Not Applicable	31
Multiple Oil and Gas	Not Applicable	0
Multiple Oil	Not Applicable	0
Oil	Not Applicable	17
Solvent Injection	Not Applicable	0
Undefined	Not Applicable	0
Water	Not Applicable	0
Total	Not Applicable	388
<p><i>Explanatory Notes:</i></p> <ol style="list-style-type: none"> 1. "Multiple" refers to multiple completion events within the same well and solvent injection refers to solvent injection for enhanced oil recovery. 2. An undefined well type is one where the primary product has not yet been determined or reported. 3. Spacing requirements between LDAR surveys at wells did not apply in 2020 because one LDAR survey is required per year and it was the first year of reporting. They will apply in 2021 forward. 4. Acid gas well data added manually – not in BIL-264. 5. Exemptions to regulatory LDAR survey spacing and leak repair timing requirements at wells did not apply in 2020. 6. Summary of leak repair times (days) - Average: 107, Median: 69, Maximum: 428, Minimum: 31, Not Repaired: 53. 		

Table 14: Summary of Non-compliance with Number of LDAR Survey Requirements at Wells

Well Type	Leak Detection and Repair Survey Deficiencies		
	Number of Active Wells	Number of Surveys Required	Number of Surveys Completed
Acid Gas	9	9	0
Gas	6,987	6,987	4,305
Multiple Gas	613	613	396
Multiple Oil and Gas	4	4	2
Multiple Oil	172	172	157
Oil	594	594	334
Solvent Injection	0	0	0
Undefined	0	0	0
Water	Not Applicable	Not Applicable	Not Applicable
Total	8,379	8,379	5,194

Explanatory Notes:

1. Active well, in this case, is any well with more than 90 days of production in 2020.
2. The overall number of LDAR surveys completed that contribute to compliance is lower than the number of LDAR surveys completed because some permit holders completed more than the minimum required or used screening methods in place of comprehensive methods.
3. Some permit holders used comprehensive LDAR survey methods in place of screening LDAR survey methods, and this was accepted for compliance purposes.
4. The values have been adjusted accordingly in this table.
5. Acid Gas wells added manually - not in BIL-264.
6. Exemptions to minimum number of LDAR survey requirements at wells did not apply in 2020.

5.4: Commission Training and Competency Reports

The Commission selected four permit holders and audited their leak detection technician training and competency programs. Section 41.1(1)(b)(ii) of the DPR states that the optical gas imaging cameras used in leak detection surveys must be operated by individuals who are competent in the operation of the camera. The permit holders were provided with the opportunity to detail how they have met the requirements.

The audit involved an assessment of the training of individuals conducting comprehensive surveys and included a review of:

1. Methods for detecting emissions with the equipment or method;
2. Methods for the operation and calibration of equipment;
3. How sources of fugitive emissions are identified; and
4. Identification of factors that affect detection of fugitive emissions (e.g., weather, temperature) and how to account for them.

The selection of permit holders for the audit program considered representation of:

(a) service providers and their activity level in B.C. and (b) permit holders who conduct surveys using in-house expertise.

Responses provided by all permit holders support a finding of compliance with section 41.1(1)(b)(ii) of the DPR.



6. Continuous Improvement

6.1: eSubmission system modifications

Many necessary improvements to the data intake system (eSubmission) and analysis system (BIL-264) have been identified based on learnings from this first year of LDAR data submission, and the Commission is developing a program to implement improvements using a phased approach. Key system improvements needed to facilitate data submission, data compilation and industry compliance with regulations are planned.

6.2: Regulatory Review

The Commission will be undertaking a review of the methane regulations in 2022. The 2020 LDAR data collected by the Commission and the learnings gained in administering the regulation will be considered as part of the review and may result in changes to continually improve regulations, technical guidance, and business processes.

6.3 Compliance Awareness and Promotion

Additional awareness and compliance promotion activities that are planned in 2022 include:

1. Issuing amended technical guidance as needed, to address or clarify requirements;
2. Presenting summary findings to stakeholders as part of the Commission's scheduled review of the methane regulations, beginning in January 2022;
3. Commission staff continuing to make themselves available to respond to specific questions by permit holders; and
4. Website updates, as required.



7. Exemption Requests

Permit holders can 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 approval status is provided in Table 15. Two requests for exemptions to leak repair timing windows were received in 2021 and both were granted.

Table 15: 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	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	Withdrawn	0 (38)
A	2021	Leak Repair Timing	Ordering of Parts Required	Granted	1 (1)
J		Leak Repair Timing	Ordering of Parts Required	Granted	5 (5)



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