

A PROTOCOL FOR INDEPENDENT VERIFICATION OF METHANE EMISSIONS OF CRUDE OIL AND NATURAL GAS PRODUCTION PLACED ON THE EUROPEAN UNION MARKET – INTERIM FINAL



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PREFACE

The EU Methane Regulation (EUMR) requires independent third-party verification of emissions data for domestic fossil fuel supply chains and fossil fuel supplies placed on the EU market. Even for energy producers aligned with OGMP 2.0, the EUMR requires the verifier to assess with reasonable assurance – as in Article 8.4 – that the emissions report complies with the requirements of the EUMR. However, the text of the EUMR provides no definition of “reasonable assurance” or guidance on how it could be achieved, leaving it open to a broad group of stakeholders to determine compliance pathways.

This verification protocol has been developed to facilitate compliance with the EUMR and to establish shared procedures that independent third-party verifiers can confidently apply when issuing verification statements until the draft harmonized standards – as in Article 32 – are put in place. It is intended to provide a practical framework as a potential pathway to compliance, which the European Commission could adopt as guidance, or signal as consistent with its interpretation of how compliance could be achieved, under Article 28 of the Regulation for crude oil and natural gas supplies placed on the EU market. It has been developed for crude oil and natural gas supplies placed on the EU market, reflecting the expertise of the authors, and is expected to be largely adaptable to domestic supply chains and coal supplies where compliant reporting protocols are available.

This verification protocol reflects input from a global stakeholder process – including workshops, webinars, bilateral technical sessions and other outreach activities – which engaged representatives from more than 200 organizations and more than 40 countries. Participants in this process included stakeholders from major energy exporting and importing regions, including Europe, Asia, the Middle East, Africa, and North America. In addition to geographical scope, the stakeholder process engaged representatives from across the global energy sector, including onshore and offshore energy producers, export terminal operators, national oil companies, integrated oil companies, assurance providers, and technology providers.

Alongside the stakeholder process, the Commission has been consulted through multiple rounds during the development of this protocol to support compliance with the EUMR requirements on independent verification, and all feedback received to date has been addressed. The current version is provided as an interim final protocol, subject only to final consultation with the Commission and the competent authorities. A final version is expected by the end of May 2026.

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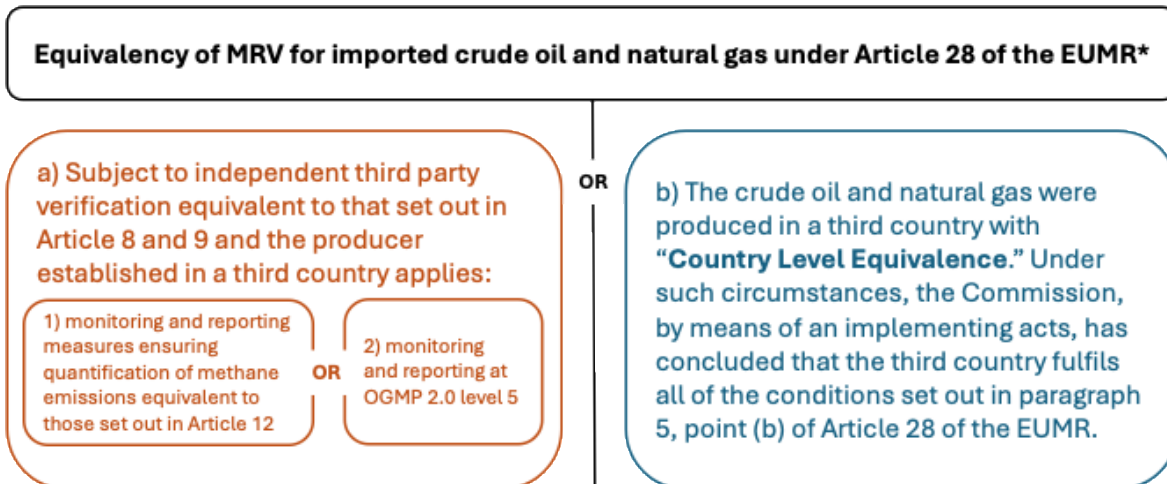
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Penalties apply to importers of crude oil and natural gas and coal who fail to provide information required in accordance with Article 28, including information on monitoring, reporting, and verification (MRV) measures equivalent to those set out in the Regulation. While Article 28 provides the primary legal trigger for the application of this protocol in the import context, the verification outcomes it produces are also relevant to other provisions of the Regulation. In particular, verified producer-level methane emissions data underpin importer disclosure obligations under Article 27 support methane intensity calculations and reporting under Article 29, and provide the producer-level information required in Annex IX. References to Article 28 in this Preface therefore reflect the regulatory entry point for imports, but do not limit the applicability of verified outputs to only Article 28.

EUMR sets two main pathways for demonstrating this equivalence: Producer-level regulatory equivalence and country-level regulatory equivalence. Within the producer-level pathway, there are two options available for crude oil and natural gas:

- **Producer-Level Equivalence with Article 12 with the addition of independent third-party verification** – where a producer applies monitoring and reporting measures ensuring quantification of methane emissions equivalent to those set out in Article 12, subject to independent third-party verification (as set out in Articles 8 and 9).
- **OGMP 2.0 Level 5 Reporting with the addition of independent third-party verification** – where a producer applies monitoring and reporting equivalent with the OGMP 2.0 Level 5 standard with the addition of independent third-party verification (as set out in Articles 8 and 9), which is not satisfied by the OGMP 2.0 gold standard assessments.

This protocol specifically addresses the first option of the first pathway: demonstration of equivalence with Article 12 through a standardized approach to emissions monitoring, reporting, and independent verification. It is designed for use by producers and exporters of crude oil and natural gas outside the EU, regardless of participation in OGMP 2.0, as an option to demonstrate compliance with the EUMR.



*From 1 January 2027, importers shall demonstrate, and report in accordance with Article 27(1), to the competent authorities of the Member State in which they are established that the contracts concluded or renewed on or after 4 August 2024 for the supply of crude oil, natural gas or coal produced outside the Union cover only crude oil, natural gas or coal that is subject to monitoring, reporting and verification measures applied at the level of the producer that are equivalent to those set out in this Regulation.

Figure 1. Equivalence of MRV for imported crude oil and natural gas under Article 28 of the EU Methane Regulation (EUMR). Producers outside the Union may demonstrate compliance either (a) through independent third-party verification of monitoring and reporting measures equivalent to Article 12, or through independent third-party verification of monitoring and reporting at OGMP 2.0 Level 5, or (b) under “country-level equivalence,” where the European Commission determines that a third country’s MRV framework meets all requirements of Article 28(5)(b).

A central theme of stakeholder feedback has been that even the strongest verification protocol cannot ensure consistent reasonable assurance unless the underlying emissions reports are prepared according to clearly defined, verifiable reporting requirements. Without such clarity, two equally qualified verifiers may arrive at different conclusions due to differing interpretations. This document therefore addresses both the verification process and the minimum reporting specifications needed to generate verifiable emissions statements. Resultantly, this document consists of two complementary parts:

- **A standardized verification protocol**, aligned with ISO and established EU assurance, accreditation, and verification practices, including Regulation (EC) No 765/2008 and EU MRV verification practice under the Maritime MRV and EU ETS frameworks, that can be applied consistently by producers and exporters established in third countries and supplying crude oil, natural gas or coal to the European Union market; and
- **A provisional reporting protocol (Annex A)**, which provides methodologies for preparing verifiable emissions reports that can serve as the basis for independent verification under Articles 8 and 9.

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TABLE OF CONTENTS

<i>Preface</i>	2
<i>Table of Contents</i>	5
<i>1.0 Introduction</i>	8
1.1 Purpose	10
1.2 Audience and Users	10
<i>2.0 Scope</i>	11
2.1 Applicability	11
2.2 Type of Engagement and Methane Emissions Statement	12
2.3 Verification Criteria	12
2.4 Subject and Boundary of Verification	14
2.5 Emissions Reporting Period	14
2.6 Level of Assurance	15
2.7 Materiality	15
<i>3.0 Performance of Verification Assessments</i>	15
3.1 Verifier Accreditation, Impartiality, and Technical Competence	16
3.1.1 Accreditation.....	16
3.1.2 Independence and Impartiality of Verifiers.....	17
3.1.3 Quality Management System for Verification Bodies.....	18
3.1.4 Verifier Qualifications.....	18

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3.2 Engagement Definition	23
3.2.1 Boundary	23
3.2.2 Level of Assurance	27
3.2.3 Materiality	27
3.2.4 Inherent Uncertainty	29
3.2.5 Physical and Remote Site Visit Requirements (Site Checks)	31
3.3 Verification Process	32
3.3.1 Kick-off	34
3.3.2 Strategic Analysis	35
3.3.3 Risk Assessment	36
3.3.4 Evidence-Gathering	37
3.3.5 Verification Activities	37
3.3.6 Facility Visits	38
3.4 Verification Outcomes Reporting, Statement and Opinion	39
3.4.1 Verification Outcomes Report Template	39
3.4.2 Verification Statement Template	40
3.4.3 Process of Submitting the Verification Statement	41
4.0 Reporting Outputs	42
4.1 Producer-Level Emissions Reports.....	42
5.0 Protocol Maintenance and Updates.....	43
<i>Annex A – Provisional Reporting Protocol for Producer Level Source- and Site-Level Measurement, Quantification, and Reporting</i>	44
1.0 Scope and Boundary Definitions	44

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1.1 Purpose..... 44

1.2 Boundary Definitions..... 45

2.0 Emissions Reporting51

Scope of Quantification Requirements..... 51

 2.1 Overview..... 51

 2.2 Source Categories..... 52

 2.3 Source-Level Quantification Methods..... 53

 2.4 Site-Level Measurements..... 56

 2.5 Reconciliation and Discrepancy Management..... 61

3.0 Reporting Requirements.....66

 3.1 Reporting Scope..... 66

4.0 Data Management and Quality Assurance.....68

 4.1 Record-Keeping Requirements..... 68

 4.2 Quality Assurance and Quality Control 69

Annex B Q&A..... 70

1.0 Introduction

This protocol is designed to support the implementation of the EU Methane Regulation (EUMR) requirements for independent third-party verification (equivalent to provisions in Articles 8 and 9) of monitoring and reporting measures that ensure the quantification of methane emissions (equivalent to provisions in Article 12), for a crude oil and natural gas producer established in a third (i.e., non-EU) country. While the protocol has been developed with the use case of imported production in mind, its technical requirements and verification approach are equally applicable to domestic production subject to Article 12 of the Regulation. It is designed to be adaptable to additional segments of the domestic supply chain, as well as to domestic and imported coal, where appropriate reporting protocols are available.

This protocol is intended to guide independent verifiers and producers, including third-country producers and exporters, in the preparation of credible, consistent, and verifiable methane emissions reports at the producer level, and to support the consistent assurance of those reports, including the development and issuance of verification statements. In doing so, it helps position importers for success in demonstrating compliance with Articles 8, 27, 28, and 29, as well as Annex IX of the Regulation. Ultimately, this enables exporters, importers, buyers, market participants, policymakers, and other stakeholders across the crude oil and natural gas supply chain to access credible, comparable, and decision-useful methane emissions information.

The protocol is designed to be consistent with, and adaptable to, future harmonised methane MRV standards developed under CEN and ISO, and may be updated as such standards are adopted or referenced through delegated or implementing acts under the EUMR.

Methane emissions verification under the EUMR should not be implemented in isolation from broader greenhouse gas (GHG) inventory preparation and assurance activities. This protocol is therefore intended to align with established GHG assurance concepts and practices, particularly those defined in ISO 14064-3, including risk-based planning, materiality assessment, evidence evaluation, and reasonable assurance. Where operators already undertake GHG inventory assurance, the methane-specific verification activities described here should be integrated with those processes to the extent practicable, provided that the specific requirements of the EUMR are met.

In accordance with Article 8(3), verification activities are required to be aligned with European or other international standards and methodologies for verifiers, in order to limit administrative burden and support consistent application across operators, verifiers, and competent authorities. Specifically, this verification protocol draws from:

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- **ISO/IEC 17029 Conformity assessment** — General principles and requirements for validation and verification bodies
- **ISO 14065:2020** – General principles and requirements for bodies validating and verifying environmental information
- **ISO 14064-3:2019** – Greenhouse gases – Part 3: Specification with guidance for the verification and validation of greenhouse gas statements
- **Commission Delegated Regulation (EU) 2023/2917¹** – Commission Delegated Regulation on the verification activities, accreditation of verifiers and approval of monitoring plans by administering authorities pursuant to Regulation (EU) 2015/757 of the European Parliament and of the Council on the monitoring, reporting and verification of greenhouse gas emissions from maritime transport
- **Regulation (EC) No 765/2008** - Setting out the requirements for accreditation and market surveillance relating to the marketing of products ^{2,3}

Together, these frameworks provide the procedural, technical, and quality foundations necessary for impartial, evidence-based verification activities. The ISO standards (14064-3 and 14065) establish globally accepted methodologies for defining verification scope, selecting assurance levels, applying materiality thresholds, evaluating uncertainty, and ensuring verifier impartiality. They also set expectations for verification planning, execution, and verification outcomes reporting that are essential for high-integrity assurance processes.

In parallel, Commission Delegated Regulation (EU) 2023/2917 under the EU Maritime MRV framework serves as a concrete example of how the European Commission has operationalized GHG verification requirements. It offers valuable precedent for structuring verification activities, specifying verifier competence, and formalizing the interface between verifiers, operators, and competent authorities, elements that are directly applicable to verification under the EUMR.

Finally, Regulation (EC) No 765/2008 provides the overarching legal basis for accreditation of verification bodies within the EU. It establishes the rules for how national accreditation bodies operate and ensures that conformity assessment activities, including those related to GHG assurance, are performed by technically competent and impartial organizations. This regulation underpins the credibility and consistency of all assurance work conducted under the EUMR framework by ensuring that verifiers operate under harmonized accreditation conditions.

Taken together, these international and EU instruments form a coherent and complementary foundation for the design, implementation, and execution of the verification protocol presented

¹ https://eur-lex.europa.eu/eli/reg_del/2023/2917/oj/eng

² <https://eur-lex.europa.eu/eli/reg/2008/765/oj/eng>

³ <https://parola.co.uk/AccreditationBodiesEurope.htm>

here. They reflect best practices in assurance and are essential for ensuring that methane emissions data reported under the EUMR can be consistently verified to a high standard of rigor and credibility.

Unless otherwise specified, terms including producer, licensed area, operated assets, and producer-level reporting have the meaning assigned in the EUMR and are applied consistently throughout this protocol.

1.1 Purpose

The purpose of this verification protocol is to establish a clear and consistent framework for independently assessing whether methane emissions reports prepared or commissioned by crude oil and natural gas producers conform to the monitoring and reporting requirements of the EU Methane Regulation (EUMR), equivalent to Article 12.

The protocol sets out how verifiers evaluate the reliability, credibility, and accuracy of reported methane emissions, including the appropriateness of data sources, quantification methods, measurements, calculations, and quality-control systems applied by operators. It enables verifiers to form a reasonable-assurance conclusion in line with Articles 8 and 9 of the EUMR and applicable international verification standards.

1.2 Audience and Users

This protocol is intended for independent third-party verifiers engaged to assess methane emissions reports and issue verification conclusions in relation to the requirements of the EU Methane Regulation (EUMR). It sets out the principles, processes, and evidence expectations applicable to verification activities performed under Articles 8 and 9 of the EUMR.

This protocol may also be referenced by:

- Third-country producers and exporters of crude oil and natural gas whose products are placed on the EU market, to understand the expectations applicable to independent verification of methane emissions data; and
- Importers of crude oil and natural gas, including LNG, placing products on the EU market, to understand how verification is performed on emissions data provided by their third-country suppliers.

This protocol does not address importer obligations directly and is not intended to serve as compliance guidance for fulfilling importer reporting duties to Member State Competent Authorities under the EUMR.

Responsible party

The responsible party for the methane emissions report, referred to as a greenhouse gas statement under ISO 14064-3, is the producer as defined in the EUMR: an undertaking that, in the course of a commercial activity, produces crude oil or natural gas by extracting it from the ground in a licensed area and processing or conveying it through connected infrastructure within that licensed area.

Exporters and importers may rely on the verified methane emissions statement for their commercial and regulatory purposes, but they are not the responsible party for the methane emissions report itself.

Intended users

The primary intended users of the verification conclusion are:

- EU importers placing crude oil or natural gas (including LNG) on the Union market under Article 28;
- Competent authorities of Member States and the European Commission overseeing compliance with the EUMR; and
- The producer, for internal governance, disclosure and performance-management purposes.

2.0 Scope

2.1 Applicability

This protocol formally applies to the independent verification of methane emissions reports from crude oil and natural gas production facilities located outside the European Union, where the crude oil or natural gas is intended for placement on the Union market. The independent verification activities described herein relate specifically to the import requirements of the EU Methane Regulation (EUMR) and support the monitoring and reporting requirements under Article 12, as well as the verification obligations set out in Articles 8 and 9.

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This protocol was not developed to apply to emissions from coal production or to monitoring, reporting, or verification obligations within the EU domestic supply chain. Nor was it developed to apply to downstream activities, LNG terminals, refineries, or midstream infrastructure located outside the production licensed area. These limitations reflect that the protocol has been developed for crude oil and natural gas supplies placed on the EU market, consistent with the expertise of the authors, while leaving open the possibility that the protocol could be evaluated for appropriateness in domestic supply chain applications and for coal supplies, either as currently drafted or with adaptation, where suitable reporting protocols are available.

From a verification and assurance perspective, the principles, processes, and methodological approaches set out in this protocol are not inherently specific to imported (as opposed to domestic) production and are broadly applicable to the independent verification of methane emissions from crude oil and natural gas production activities. The protocol has been designed around internationally recognized verification practices and emission-source characteristics that are common across production contexts, irrespective of geographic location.

2.2 Type of Engagement and Methane Emissions Statement

Type of engagement

The engagement is a verification of a methane emissions reports, as in Article 12 of the EUMR.

Methane emissions report

The methane emissions report, referred to as an emissions statement in the context of ISO 14064 standards, is the producer-level methane emissions report prepared by, or on behalf of, a producer. It covers methane emissions from crude oil and natural gas production within the relevant licensed area or areas, together with any additional producer-level information required to support importer obligations under the EUMR, including the information specified in Annex IX and, where applicable, methane intensity reporting.

2.3 Verification Criteria

The verification criteria comprise:

- a) The relevant provisions of the EU Methane Regulation, in particular Articles 8, 9, 12, and 28;
- b) Where applicable, the reporting and quantification framework, such as that set out in Annex A to this protocol, which provides one structured option for producers to present

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the standards, technical prescriptions, and methodologies used for the purpose of verification activities in accordance with Article 8(2), pending the adoption of harmonised standards or technical prescriptions under Article 32. Annex A of this document operationalizes EUMR requirements at the level of the producer, including definitions of producer, licensed area, production location, and operated assets, without precluding the use of alternative methodologies that satisfy the Regulation; and

c) Any additional standards, technical prescriptions, or methodologies referenced by the producer for the purpose of verification activities under Article 8(2), provided that such standards or methodologies are appropriately justified, documented, and do not conflict with the requirements of the EUMR.

Application of this Protocol in Relation to OGMP 2.0 Level 5 and Other Approaches Intended to Demonstrate Equivalence with Article 12

Article 28(5) of the EU Methane Regulation allows producers to demonstrate producer-level equivalence of monitoring and reporting measures through multiple options, including monitoring and reporting in accordance with OGMP 2.0 Level 5, in all cases subject to independent third-party verification under Articles 8 and 9. Because neither OGMP 2.0 Level 5 nor Article 12 itself prescribes a detailed reporting protocol suitable for reasonable-assurance verification, producers relying on either the OGMP 2.0 Level 5 option or approaches other than Annex A, intended to demonstrate equivalence must ensure that sufficiently detailed reporting documentation is available. Documentation generated through such equivalence options, including methane emissions reports, or other documents such as implementation plans, and internal assurance outputs, may therefore be relevant inputs for verification activities.

Independent verification under Article 8 requires verifiers to assess whether emissions reports are prepared in accordance with the requirements of the Regulation and to review the data sources and methodologies used in order to evaluate the reliability, credibility, and appropriateness of the reported information. Accordingly, the standards, technical prescriptions, and methodologies applied for methane emissions measurement and quantification must be sufficiently documented, transparent, and traceable to allow the emissions report to be assessed against them. This protocol relies on the availability of such documentation in order to support verification to a reasonable level of assurance, consistent with Articles 8(2) and 8(3).

For the avoidance of doubt, internal assurance processes, implementation plan approvals, or grading outcomes under OGMP 2.0 or other voluntary initiatives do not replace, limit, or predetermine the requirement to obtain independent third-party verification to a reasonable level of assurance under Articles 8 and 9 of the EUMR. The verifier retains full responsibility for assessing whether the reported methane emissions are credible, appropriately derived, and

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supported by sufficient and appropriate evidence, taking into account the equivalence provisions of Article 28 and the documentation requirements set out in Article 8.

2.4 Subject and Boundary of Verification

Subject of verification

The subject of verification is the quantified annual methane emissions and related producer-level information reported in the methane emissions reports.

Organizational and geographic boundary

The verification boundary includes all upstream crude oil and natural gas production facilities within the licensed areas operated by the producer that contribute to crude oil or natural gas placed on the EU market. Each licensed area includes all associated production locations, operated assets, extraction activities, and connected infrastructure located within that area.

Asset-level aggregation

For verification purposes, methane emissions are assessed at the level of an *asset*. An asset, as defined in the EUMR in Article 2.4, means a business or operating unit, which can be composed of several facilities or sites, including operated assets and non-operated assets. This means that the definition of asset applies similarly to assets in both operated and non-operated cases; however, an individual asset must be either operated or non-operated. Where an asset includes multiple facilities or sites, the verification scope shall reflect the complete asset; aggregation shall be applied consistently and shall not be used to selectively include or exclude facilities in a manner that would distort the reported emissions profile.

System boundary

The system boundary includes the quantification of source-level methane emissions, complemented by site-level methane emission measurements for production assets where applicable. The boundary excludes downstream and midstream assets outside the licensed area, including transmission pipelines, LNG plants, refineries, storage terminals, underground gas storages, and distribution networks.

2.5 Emissions Reporting Period

The methane emissions statement shall cover the last available calendar year.

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2.6 Level of Assurance

Verification under this protocol shall be performed at a reasonable level of assurance.

2.7 Materiality

In the context of verification under this protocol, materiality is applied exclusively as an assurance concept, consistent with ISO 14064-3 and related assurance standards, and refers to whether errors, omissions, or misapplications of methods or data, whether considered individually or in aggregate, could reasonably influence the decisions of the intended users of the verification statement, rather than to the relative size or quantity of emissions sources for the purpose of determining reporting applicability or scope.

Materiality shall be assessed using both quantitative and qualitative criteria. Quantitative materiality thresholds and qualitative considerations are defined in Section 3.2.3.

3.0 Performance of Verification Assessments

Verification activities under this protocol are designed to meet the requirements of Articles 8 and 9 of the EU Methane Regulation and to be aligned with Article 8(3) through the application of recognized verification standards and risk-based assurance principles. In this context, a risk-based approach refers to the systematic identification and evaluation of risks of material misstatement in reported methane emissions, and the design of verification activities, including planning, sampling, site visits, and evidence-gathering, in proportion to those risks, consistent with ISO 14064-3 and ISO 14065.

Where operators are subject to other local, national, or international monitoring, reporting, or verification requirements, verifiers shall take those requirements into account and avoid unnecessary duplication of verification activities where accredited evidence is demonstrably equivalent to the EUMR criteria. Verification conclusions issued under this protocol are final for the purposes of EUMR compliance and do not require additional validation or approval by another EU body beyond the processes established under the Regulation.

The purpose of the verification process is to determine whether the methane emissions report is consistent with the EUMR requirements including alignment with Articles 8(2) and 8(3). The extent and depth of verification activities shall be proportionate to the assessed risk of misstatement and the nature of the emissions profile, while still supporting a reasonable level of assurance. Existing reports prepared under other frameworks, including OGMP 2.0, may be used as verification inputs where the underlying standards, technical prescriptions, and

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methodologies are sufficiently documented and demonstrably equivalent to EUMR requirements. This includes evaluating the appropriateness of quantification methods, the completeness of source coverage, the sufficiency of documentation, and the effectiveness of data quality controls.

Verifiers shall use the standards and technical prescriptions the Commission will adopt under Article 32. Until those apply, operators and importers must provide verifiers the relevant European or other international standards or methodologies that they have used.

3.0.1 Relationship to GHG Assurance Activities

Where operators conduct broader GHG inventory assurance (e.g., corporate or asset-level GHG verification under ISO 14064-3), methane emissions verification under this protocol should be planned and executed in a coordinated manner. This includes alignment of organisational boundaries, data governance systems, internal controls, risk assessments, and materiality considerations, provided that methane-specific requirements under the EUMR are fully satisfied.

Coordination is intended to improve consistency, reduce duplication of assurance activities, and support coherent assurance conclusions across greenhouse gases. However, integration with broader GHG assurance does not reduce or replace the methane-specific evidence-gathering or verification requirements established under Articles 8 and 9 of the EUMR.

3.1 Verifier Accreditation, Impartiality, and Technical Competence

3.1.1 Accreditation

Under the EU Methane Regulation (EUMR), verification must be performed by accredited or authorised third parties (“Verifiers”). This includes:

- **Verification Bodies** – organisations accredited by a National Accreditation Body (NAB) in accordance with Regulation (EC) No 765/2008 or comparable; and
- **Individual Verifiers** – natural persons formally authorised by a national authority under equivalent oversight.

In accordance with Article 9 of the EU Methane Regulation, verification bodies performing verification activities under this protocol shall be accredited by a National Accreditation Body (NAB) designated by an EU Member State pursuant to Regulation (EC) No 765/2008 for the relevant verification scope or by an accreditation body that applies accreditation requirements equivalent in substance and oversight to those set out in Regulation (EC) No 765/2008.

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Accreditation to ISO/IEC 17029 and ISO 14065 granted by an EU national accreditation body in accordance with Regulation 765/2008 is sufficient for performing independent verification of activities within the EUMR's scope, including engagements carried out outside the Union for EU import purposes. Under the EU system of mutual recognition, additional EU accreditations are generally unnecessary, provided the existing accreditation clearly covers methane MRV under this protocol.

Outside the EU, many oil and gas producing countries have national accreditation bodies that operate in a functionally similar way, often as members of the International Accreditation Forum (IAF) and the International Laboratory Accreditation Cooperation (ILAC). These bodies apply the same ISO/IEC standards (e.g., 17029, 17020, 17021, 14065) and peer evaluation mechanisms.

An accreditation body can be considered equivalent in substance and oversight to a National Accreditation Body designated by an EU Member State pursuant to Regulation 765/2008 where it is established by law as the national authority for accreditation; operates in the public interest on a non-profit basis with institutional safeguards for independence and impartiality; accredits conformity-assessment bodies against the relevant ISO/IEC standards for validation and verification (including ISO/IEC 17029 and ISO 14065, and as applicable ISO/IEC 17021-1, 17020, or 17025); applies ISO/IEC 17011 to its own accreditation processes; demonstrates robust sector competence for oil and gas methane MRV; undergoes regular peer evaluation and participates in multilateral recognition arrangements (e.g., ILAC MRA and IAF MLA); enforces conflict-of-interest rules and separation from conformity-assessment activities; maintains transparent procedures for application, assessment, decision-making, surveillance, and suspension or withdrawal; provides accessible complaints and appeals processes; and publishes clear, granular accreditation scopes with ongoing surveillance and re-evaluation. These criteria identify when a third-country NAB's accreditation system is technically comparable.

3.1.2 Independence and Impartiality of Verifiers

Verifiers must maintain independence from the reporting entity and the assets under verification, consistent with the impartiality requirements of the EUMR and ISO 14065.

Specifically, according to Article 9(1), verifiers shall be independent from the operators, undertakings, mine operators and importers and shall carry out verification activities under this Regulation in the public interest. For that purpose, neither the verifier nor any part of the same legal entity shall be an operator, undertaking, mine operator or importer, or own an operator, undertaking, mine operator or importer, or be owned by an operator, undertaking, mine operator or importer. Furthermore, verifiers shall not have relations with operators, undertakings, mine operators or importers that could affect their independence and impartiality.

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Where a verifier has provided consulting or system design directly related to methane emissions monitoring, quantification, or reporting for a specific asset within the preceding two years, that verifier shall not perform verification for that asset.

Other consulting activities not related to emissions monitoring or reporting may be permitted where independence, impartiality, and objectivity can be demonstrably maintained, including through organisational separation, documented safeguards, and independent review.

To support objectivity in long-term engagements, verification bodies should consider appropriate measures such as periodic rotation of lead verifiers, independent technical review, or other safeguards consistent with accreditation requirements and professional judgment.

3.1.3 Quality Management System for Verification Bodies

An internal quality management system must be in place, aligned with ISO 14065. This system must include:

- Defined responsibilities and oversight
- Documented procedures for audits, corrective actions, and records management
- Processes for handling appeals and complaints

Individual Verifiers (natural persons formally authorised by a national authority under equivalent oversight) must implement equivalent procedures, proportionate to their scale of operation, ensuring the same level of control and documentation.

3.1.4 Verifier Qualifications

All verifiers, whether Verification Bodies with multi-person teams or Individual Verifiers (natural persons formally authorised by a national authority under equivalent oversight), must demonstrate the competence, independence, and oversight required under the EUMR and Regulation (EC) No 765/2008. Training pathways may vary by region or accreditation body, but competence must be demonstrable under ISO 14065/14066 requirements and maintained through ongoing professional development.

Competence requirements under this protocol may be met at the level of the verification team as a whole, where applicable. A modular approach is encouraged, whereby general GHG assurance competence (e.g., ISO 14064-3, ISO 14065) is complemented by methane-specific expertise in measurement, uncertainty evaluation, and reconciliation. This allows verification bodies to demonstrate appropriate competence through team composition, training modules, or

documented access to subject matter experts, rather than requiring all individual verifiers to carry the full range of technical qualifications.

The assignment of verification functions must follow applicable international standards and address the unique technical and regulatory requirements of methane emissions from oil and gas operations. An Individual Verifier (natural persons formally authorised by a national authority under equivalent oversight) must demonstrate competence across all required functions and ensure impartiality, internal review, and quality control equivalent to team-based arrangements.

Role Alignment with Standards

- **Verification functions**—including Lead Verifier (or Lead Auditor), Verifier, Technical Expert, and Independent Reviewer—must be defined and applied in accordance with the verifier’s ISO 14065:2020 and ISO/IEC 17029:2019-accredited management system or equivalent authorised system for individual verifiers.
- **Competence requirements** must be consistent with ISO 14066 (latest edition), which supports the demonstration of role-specific qualifications under ISO 14065.
- **Verification activities** must be conducted in line with ISO 14064-3:2019 methodologies, including the application of risk-based verification planning, materiality assessment, evidence evaluation, and the formulation of reasonable assurance conclusions, as further described in this protocol.

In addition to these baseline expectations, effective verification under the EUMR requires function-specific methane and oil and gas expertise, such as experience with methane measurement technologies, assessment of episodic, event-based emissions, reconciliation, and the evaluation of uncertainty and data quality. Recognized best practices, including those reflected in voluntary initiatives such as OGMP 2.0, provide useful reference points for these competencies, without constituting mandatory requirements.

Verification Bodies are expected to ensure that the team collectively covers all required competencies; Individual Verifiers must demonstrate them personally or through documented external support. All role assignments must be documented, and competence maintained and periodically reassessed.

3.1.4.1 Lead Verifier

Role: The lead verifier (or lead auditor) is responsible for the overall planning, execution, and oversight of the verification engagement. In a team setting, this includes developing the verification plan, directing team members, evaluating risks and materiality, reviewing all verification activities, and issuing the assurance opinion. In the case of an individual verifier, these

responsibilities are carried out personally, with the same expectation of objectivity and quality control.

Lead verifiers shall demonstrate relevant experience in oil and gas production operations, including familiarity with emission sources, operational practices, and methane emissions measurement or estimation approaches applicable to upstream oil and gas activities.

Technical and Regulatory Knowledge – Must demonstrate understanding of:

- Methane emissions sources, controls, and measurement approaches across oil and gas production facilities.
- Relevant regulatory frameworks, including:
 - EUMR (especially Articles 8, 9, 12 and 28)
 - ISO 14064-3:2019 – GHG verification procedures
 - ISO 14065:2020 – Verifier competence and impartiality
- Materiality assessment, uncertainty evaluation, and evidence sampling principles.
- Risk-based verification planning and execution strategies.

Professional Experience – Minimum of five years relevant work experience in environmental auditing, including:

- At least three years in GHG emissions verification or related assurance work.
- Direct experience planning and leading engagements involving emissions, preferably in oil and gas operations.

Core Skills:

- Design and manage complex emissions verification engagements.
- Apply methodologies to both measurement- and estimation-based reporting.
- Conduct document reviews, interviews, site visits (as applicable), and data checks.
- Ensure conclusions are based on objective, sufficient, and appropriate evidence.
- Supervise teams or, for Individual Verifiers, arrange required independent review.

Ongoing Competence:

- Participate in training on methane measurement technologies, verification procedures, and regulatory updates.
- Undergo periodic performance review and competence re-evaluation per accreditation or authorization requirements.

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- Lead verifiers must be subject to internal audit or equivalent peer review at least once during each accreditation cycle to maintain quality and consistency of assurance.

3.1.4.2 Technical Experts

Role: Provide in-depth expertise on technical or methodological issues. For Verification Bodies, assigned as needed; for Individual Verifiers, expertise must be held personally or accessed via documented consultation.

Qualifications:

- Advanced technical knowledge in emissions measurement and estimation.
- Sector knowledge in oil and gas production operations.
- Familiarity with source- and site-level estimating approaches.

Advanced technical knowledge in emissions measurement and estimation may include expertise in methane measurement technologies applicable to oil and gas production, such as source-level quantification and site-level measurement approaches; experience applying and evaluating emission factors, engineering calculations, and measurement-based methodologies; and technical understanding of uncertainty assessment, data quality evaluation, and the reconciliation of source-level inventories with site-level measurement results. Relevant experience may also include familiarity with the technical methodologies and requirements applied under recognized methane monitoring frameworks, including those used for compliance with Article 12 of the EU Methane Regulation, OGMP 2.0, or comparable national methane regulations, as well as relevant international standards and guidance.

Application:

- Assess validity of emissions and activity factors (e.g. throughput, operating hours and their representativity, production volumes), as defined in applicable GHG quantification standards, source attribution, measurement results, and uncertainty estimations.
- Evaluate quantification and measurement methods against EUMR with particular attention to Article 12, including alignment with standards and recognised technical prescriptions adopted under Article 32 and, where those are not yet applicable, consistency with state-of-the-art industry practices and best available technologies.
- Use international guidance (e.g., OGMP 2.0, API Compendium, Regulatory Reporting Methods) for best practice benchmarking.

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3.1.4.3 Independent Reviewer

Role: Conducts a quality and completeness check of the verification file and final assurance statement prior to issuance. Independent review does not require a second verifier to repeat the verification engagement, but provides a quality and completeness check appropriate to the scope and risk of the verification.

- **For verification bodies:** must be independent of the verification team, though may be part of the same organisation.
- **For individual verifiers:** must arrange for an independent review by a qualified and impartial person not involved in the engagement.

Qualifications:

- Independence from both the verification process and the client.
- Technical and regulatory knowledge to assess scope, risk, and evidence sufficiency.
- Experience in reviewing greenhouse gas verification engagements under comparable regulatory or assurance frameworks.

An independent reviewer may be an employee of, or contracted by, the verification body, provided that the reviewer has not participated in the verification activities under review and that independence from the verification process is demonstrably maintained. Where the independent reviewer is an employee of the verification body, the verifier shall document and apply safeguards to ensure impartiality and independence, including separation from the verification team, conflict-of-interest declarations, and management system controls consistent with ISO 14065 and ISO/IEC 17029.

Reviewer competence may be demonstrated through internal or external qualification processes consistent with ISO 14065. As with lead verifiers, safeguards shall be applied where prolonged involvement with the same verification body or with specific engagements could reasonably be perceived to affect objectivity, including rotation, additional independent review, or other management system controls.

Relevant experience in reviewing greenhouse gas verification engagements under comparable regulatory or assurance frameworks may include, for example, independent review of verification engagements conducted under the EU Emissions Trading System or EU MRV regimes, review of ISO 14064-3 greenhouse gas verification engagements within ISO 14065 accredited verification bodies, review of assurance engagements conducted under ISAE 3000 (Revised) or the AA1000 Assurance Standard where applied to greenhouse gas or environmental information, or review of methane or oil and gas sector verification engagements conducted under recognized

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regulatory or voluntary frameworks, including OGMP 2.0 or comparable national methane regulations.

3.2 Engagement Definition

3.2.1 Boundary

A producer or exporter seeking a verification statement under the EUMR shall clearly define and document the organisational, geographic, and temporal boundaries relevant to the reporting of methane emissions and within the scope of verification.

Producer-level scope is defined on the basis of an operated emissions inventory covering the full asset under the operator's control, commonly referred to as an '8/8ths' inventory. This means that all methane emissions and associated production from the asset are included in the inventory, irrespective of ownership shares. For example, where an asset is jointly owned by multiple companies (e.g., 75% Company A [operator], 25% Company B) but operated by a single producer, the verification applies to 100 percent of the asset's emissions and production. The resulting verified emissions data may be used by each ownership partner for their respective in Annex IX submissions where they independently market. This approach reflects established practice in regulatory reporting and carbon markets and is provided here as protocol guidance. While the EUMR does not explicitly prescribe this treatment, it is considered consistent with the Regulation's intent and is applied to ensure consistency, avoid duplication of verification activities, and clarify that verification is based on operational control rather than ownership interest.

3.2.1.1 Organisational Boundary

The organisational boundary shall be aligned with the applicable EUMR monitoring, reporting, and verification requirements, including Articles 8, 9, 12, and 28 and any applicable acts adopted under Article 32. The boundary should cover an operated asset, encompassing all facilities and operations across the licensed area(s) reported at the level of the producer. It must include the full scope of methane emission sources, including but not limited to:

- Venting (routine and non-routine)
- Flaring (incomplete combustion of methane)
- Leaks
- Incomplete combustion of methane from combustion sources other than flares
- Emissions during maintenance events (planned)
- Emissions from unplanned events (e.g., equipment failure, accidents)

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3.2.1.2 Geographic Boundary – Licensed Area Definition

At a minimum, the licensed area boundary shall include all facilities and equipment directly engaged in upstream crude oil and natural gas production and initial processing activities that are under the operational control of the operator. This includes wells and well pads, associated production facilities, gathering systems dedicated to the licensed area, storage tanks and tank batteries, and centralized or satellite processing and separation facilities such as separators, dehydrators, stabilizers, and compression equipment, where such facilities are located within the licensed area. The licensed area boundary shall exclude downstream facilities and infrastructure, including LNG plants, refineries, transmission systems, and gas processing plants located outside the licensed area, as well as ancillary infrastructure such as worker accommodation, offices, or other non-production facilities that do not directly participate in hydrocarbon production or initial processing, even where such facilities are co-located or provide supporting services.

While “producer level” and “licensed area” are not explicitly defined in the Regulation, reasonable interpretations can be drawn from the definitions of producer⁴ and production location,⁵ consistent with the Regulation’s policy objective of determining the methane intensity of fossil fuel products placed on the EU market. For the purposes of verification under this protocol, the licensed area is understood to encompass facilities and infrastructure involved in crude oil or natural gas production and initial processing where such activities take place within the boundaries of the relevant licence. Facilities that perform downstream functions, such as LNG liquefaction plants or pipelines, are not included within the licensed area unless the activities performed at those facilities constitute production within the licence area, consistent with Commission guidance clarifying that plants which only liquefy natural gas are not engaged in production. Where applicable reporting standards referenced under the EUMR, delegated acts, implementing acts, or Commission guidance provide further clarification relevant to the interpretation of licensed area boundaries, those clarifications shall be taken into account. An illustrative application of this interpretation is provided in Annex A, Section 1.2.

Where applicable, geographic disaggregation shall be sufficient to allow identification of the region of production consistent with Annex IX requirements. For production outside the Union, analogous and consistently defined geographic units shall be used to achieve equivalent regional specificity. The EUMR references the EU’s NUTS Level 1 classification for onshore areas within

⁴ ‘producer’ means an undertaking which, in the course of a commercial activity, produces crude oil, natural gas or coal, by extracting it from the ground in a licensed area, processing it or conveying it through connected infrastructure within that licensed area (EUMR Art. 2)

⁵ ‘production location’ means a location where oil or natural gas is extracted from the ground and where no processing takes place (EUMR Art. 2)

the Union and nearby territories.^{6,7} This establishes the principle that producer-level data must be reported at a level of geographic disaggregation sufficient for the importer to identify the specific region of production. For production outside the Union, where NUTS classifications do not apply, analogous and consistently defined geographic units must be used to achieve equivalent regional specificity. This ensures both the integrity of producer-level boundaries and the comparability of methane intensity metrics across producing regions.

For clarity, the definition of “licensed area” applies to both **onshore and offshore contexts**, where the EUMR itself does not distinguish between onshore and offshore with respect to requirements:

- In an **onshore context**, a licensed area may include well pads, gathering systems dedicated to the area, storage tanks and tank batteries, and centralized processing/separation facilities (e.g., dehydrators, separators, stabilizers, or satellite facilities) under the control of a single operator. Compression and other equipment are included where they are operated assets located within the licensed area boundary; assets located outside the licensed area (for example at downstream gas processing plants or transmission systems) are excluded even if they provide services to production.
- In an **offshore context**, a licensed area may consist of production platforms, associated production locations, connected infrastructure within the licensed area, and associated

⁶ Questions and answers on importer requirements of EU Methane Regulation (EU) 2024/1787.

https://energy.ec.europa.eu/document/download/b545c5a6-03c9-4cfa-805a-0411de927ce6_en?filename=Methane%20regulation%20import%20requirements%20Q%26A.pdf

Last accessed January 10, 2026.

⁷ Q27. What is considered the equivalent of NUTS level 1 territorial units in third countries, as mentioned in Annex IX (2)? A27. NUTS is a classification that subdivides the economic territory into units, notably administrative units. To this end, ‘administrative unit’ is, according to the NUTS Regulation 1059/2003, a geographical area with an administrative authority that has the power to take administrative or policy decisions for that area within the legal and institutional framework of the Member State. There are average size values (in population) of administrative units to classify them as NUTS 1 (3 to 7 million) NUTS 2 (800k to 3 million) and NUTS 3(150k to 800k)]. NUTS classification is indeed defined only for EU Member States, EFTA and EU accession candidate countries (NUTS 2024 classification is valid from 1 January 2024 and lists 92 regions at NUTS 1. NUTS 1 covers the socio-economic regions in each Member State. Eurostat, in agreement with the countries concerned, also defines a coding of statistical regions for countries that do not belong to the EU but are either: • candidate countries awaiting accession to the EU or • potential candidates or • countries belonging to the European Free Trade Association (EFTA). ESTAT explains that such structures are not always applied in the same way across jurisdictions and that it can contain a mixture of administrative levels. This is why, as a matter of principle, the Regulation targets what is equivalent to NUTS 1 in the EU’s partner countries. The intention in the Methane Regulation is to cover the first sub-division level below the country level. The idea is to be able to draft Methane Performance Profiles for subcountry level, to cover for example basins and geological formations that are only relevant to part of the national territory.

floating production storage and offloading units (FPSOs) under the control of a single operator.

3.2.1.3 Temporal Boundary

Emissions reports shall cover the most recent complete calendar year. The boundary definition, including organisational and geographic scope, shall be reviewed and confirmed annually to ensure it remains accurate and complete. In cases where part or all of an asset is acquired or divested during the reporting year, the operator may limit reporting for those portions of the asset to the periods under its operational control. Such cases must be clearly documented in the emissions report, including a description of the boundaries applied and the circumstances of the change in control. Such limitations shall not be used to exclude facilities or periods in a manner that would materially distort the asset-level emissions profile.



Figure 2. Example of temporal boundary of emissions data relative to reporting of such data.

3.2.1.4 Scope Limitations

Verification under this protocol covers the producer’s annual methane emissions and the producer-level information required to support Annex IX reporting. Methane intensity is calculated from Annex IX inputs using the verified methane emissions. Verification of the methane intensity value itself is optional unless expressly requested by the reporting entity or required by a Competent Authority.

Verification assesses whether the emissions report has been prepared in accordance with the reporting approach claimed by the producer to demonstrate equivalence with Article 12, and whether the report is supported by sufficient and appropriate evidence (Articles 8 and 28).

This protocol applies to producer-level methane emissions reports. Where an imported cargo comprises volumes from multiple producers or licensed areas marketed as a blend, verification under this protocol applies to the underlying producer-level reports that support Annex IX submissions. This protocol does not establish a separate verification framework for cargo-level aggregation across multiple producers, except where a single producer issues a consolidated report covering all contributing licensed areas under its operational responsibility.

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3.2.2 Level of Assurance

In accordance with Article 8 of the EUMR, verification shall be performed at a *reasonable level of assurance*—the highest level of assurance in a verification engagement. As defined in ISO 14064-3,⁸ this involves a systematic and detailed evaluation of the methane emissions statement, supported by sufficient and appropriate evidence, to allow the verifier to conclude, with a high (but not absolute) level of confidence, that the reported information is free from material misstatement and is prepared in accordance with the applicable criteria.

3.2.3 Materiality

In the context of verification under this protocol, materiality is applied as an assurance concept consistent with ISO 14064-3 and related assurance standards and refers to whether misstatements in reported methane emissions, whether considered individually or in aggregate, could reasonably be expected to affect regulatory reliance on the emissions report and verification statement under the EU Methane Regulation. Although verification statements are not necessarily published, they form part of the documentation relied upon by Competent Authorities and the Commission for compliance assessment, and materiality is therefore assessed by reference to the significance of misstatements in the reported emissions information rather than discretionary decision making.

For purposes of this protocol, misstatement refers to an error, omission, or misapplication of methods or data (whether intentional or unintentional) that affects the reported emissions; bias is one potential contributor to misstatement.

Materiality is not a measure of the inherent uncertainty in the data itself. Inherent uncertainty is addressed separately in this verification process and does not determine the materiality threshold. Instead, materiality is a planning and evaluation concept used to decide:

- The nature, timing, and extent of verification testing;
- Whether identified errors, omissions, or misstatements, individually or collectively, are significant enough to require correction before a verification statement can be issued.

Quantitative Materiality

Unless otherwise justified, the default quantitative threshold for misstatements under this protocol is 5% of total reported methane emissions. This threshold is provided as protocol

⁸ ISO 14064-3 Reference (Clause 3.13)

guidance to promote consistency; the EUMR itself does not prescribe a numerical materiality threshold. In applying the materiality threshold, verifiers shall take into account the maturity of monitoring approaches, model uncertainty, and the use of emerging measurement technologies, consistent with professional judgment.

If the verifier concludes that the default threshold is not appropriate and thus applies a threshold other than the default 5% (higher or lower), the rationale shall be documented in the verification plan, approved under the verifier's quality management system, and justified in terms of its relevance to intended users' decision-making. Any such departure shall be documented as part of the verifier's professional judgment, consistent with ISO 14064-3 principles.

Quantitative materiality addresses measurable errors such as:

- Omission of emission sources
- Misclassification of emissions
- Calculation errors or incorrect application of emission factors or activity factors (e.g., throughput, operating hours, equipment counts, or other operational parameters).

Qualitative Materiality

Qualitative materiality considers non-numeric issues that could reasonably influence intended users' decisions or affect the credibility of the report, even if their quantitative effect is small. Examples include:

- Weaknesses in internal controls or data management processes;
- Poorly maintained or incomplete supporting documentation;
- Delays or difficulties in providing required evidence;
- Noncompliance with regulations pertaining to GHG emissions, removals or storage that could indirectly affect data completeness or accuracy.

Distinction from OGMP 2.0

In OGMP 2.0, the term *materiality* refers to reporting thresholds within its framework—for example, portfolio materiality (inclusion of non-operated joint ventures), asset materiality (which assets must advance to higher-level reporting), and source materiality (which sources within an asset require specific methods). These uses are unique to OGMP 2.0 and are not included in the EUMR. Materiality in a verification context follows assurance standards (e.g., ISO 14064-3, ISAE 3000 (Revised)) and refers to whether misstatements, individually or in aggregate, could influence the decisions of intended users.

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3.2.4 Inherent Uncertainty

All methane emissions data inherently contain some level of uncertainty. In a verification context, uncertainty refers to the degree to which the reported values may differ from the actual values, due to limitations in measurement, estimation, or extrapolation methods. Article 8 does not require quantitative uncertainty disclosure for reasonable assurance; verifiers assess whether the uncertainty characterization (qualitative and/or quantitative) is sufficient to support the verification conclusion.

Uncertainty assessment supports transparency and comparability but should be proportionate to the assurance objective and not detract from the primary goal of methane reporting. Higher uncertainty does not necessarily mean lower data quality if the uncertainty is well-characterized and disclosed.

Reporter's Responsibilities

Emissions reports submitted for EUMR verification shall include an uncertainty characterization. This may be qualitative and/or quantitative and shall identify key sources of uncertainty, describe the methods, assumptions, and data used, and provide quantitative ranges or qualitative descriptions where appropriate.

Common Sources of Inherent Uncertainty

- **Measurement uncertainty** – Inaccuracy or bias associated with a primary measurement technique or observation, such as precision limits, calibration error, or other performance characteristics of methane concentration sensors or flow measurement devices.
- **Emission rate uncertainty** – Variability introduced when converting a primary measurement, such as gas concentration or flow rate, into an emission rate for a specific source or process, including uncertainty associated with assumptions, atmospheric modeling, conversion factors, or operating conditions.
- **Extrapolation uncertainty** – Variability introduced when applying measurements or estimates to equipment populations, operating conditions, or time periods beyond those directly observed, including the effects of intermittency, transient and steady-state operating conditions, temporal variability, and assumptions regarding representativeness.

Each category of uncertainty may include both systematic components (bias) and random components (variability), and verifiers should consider both when evaluating the potential effect on reported results.

Options for Addressing Uncertainty

Time, equipment behavior, and measurement tools all introduce uncertainty. It is often not practical, or even possible, to calculate a precise numerical uncertainty bound for the entire inventory, especially when scaling short-duration measurements to annual totals or integrating site-level observations. To strengthen confidence in reported values, reporters may apply complementary approaches that characterize uncertainty qualitatively or quantitatively, without requiring a single numerical error margin. These may include:

- Sensitivity analysis – Testing how different key assumptions (e.g., spatial/temporal scaling factors, conversion methods) affect emission estimates.
- Significance thresholds – Setting clear benchmarks (e.g., sources above defined kg/hr are individually investigated) that would trigger further review or explanation.
- Data quality frameworks – Applying structured assessments (e.g., IPCC-style quality evaluation) to evaluate the robustness of methods in lieu of detailed uncertainty propagation.

Verifier Responsibilities

The verifier is responsible for assessing whether:

- The operator’s uncertainty assessment is complete, reasonable, and consistent with the reporting standard;
- The methods used to estimate uncertainty are appropriate for the data and reporting scope; and
- Any unaddressed sources of uncertainty could be material to the verification conclusion.

Where the reporting standard permits flexibility, the verifier may accept:

- Quantitative uncertainty estimates (e.g., % error, confidence intervals);
- Qualitative assessments (e.g., data quality scoring, expert judgement); or
- A hybrid approach combining both.

Relationship to materiality

Materiality and uncertainty are related but distinct concepts:

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- **Materiality** (per ISO 14064-3 and other assurance standards) refers to whether individual or aggregated errors, omissions, or misstatements, individually or in aggregate, could reasonably influence the decisions of intended users of the verification statement.
- **Uncertainty** refers to the inherent variability or lack of precision in the reported data, even when no misstatement has occurred. All measurements and estimates carry uncertainty.

In a verification context, uncertainty assessment is not itself a materiality test. Instead, it informs the verifier’s professional judgment about the reliability of the reported data and whether uncertainty is large enough to create the risk of a material misstatement.

Example – Materiality vs. Uncertainty

A methane sensing system reports an emission rate of 100 kg/hr with an accuracy of ± 30 percent, corresponding to a possible range of 70 to 130 kg/hr. This level of **uncertainty** exists at the source level but may not be **material** if to the resulting variation would not reasonably affect the credibility of the reported total or regulatory reliance on the overall inventory.

Continuing this example, assume the annual emissions from the asset are reported as 400 metric tonnes of methane. And assume the emissions identified through the sensing system correspond to 2.5 metric tonnes of methane and are appropriately included in the inventory. A $\pm 30\%$ uncertainty associated with these measurements would corresponded to less than 0.75 metric tonnes of methane, representing approximately 0.2 percent of the total annual emissions.

By contrast, the complete omission of a material source, such as flaring, would constitute a **material misstatement**, even where measurement methods for other sources were precise uncertainties are low, and potentially even if omitted flare emissions did exceed a fixed percentage threshold of total asset-level emissions.

3.2.5 Physical and Remote Site Visit Requirements (Site Checks)

Verification engagements must include sufficient interaction with the operational context and emissions data to credibly assess reported methane emissions. This may involve physical site visits, remote verification techniques (for example document review supported by remote sensing, third-party datasets, video-enabled site walkthroughs, operational logs, and other evidence that does not require the verifier’s physical presence), or a combination—selected via a documented, risk-based site selection strategy.

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In accordance with Article 8.2 of the EUMR, verification may include site visits, which can be announced or unannounced if justified by material risks. Operators are obliged to provide assistance to verifiers, consistent with Article 8.5. Unannounced site checks shall be conducted only where feasible and shall not compromise safety, security, or regulatory access constraints. Where unannounced access is impractical, verifiers shall apply alternative evidence-gathering procedures to address the same risks, and document the rationale in the verification plan.

As long as their use complies with the requirements of the EUMR, acceptable alternatives may include:

- Appropriate remote monitoring or continuous sensor data;
- LDAR logs, operational data, or other structured records;
- Authorized virtual site checks or hybrid (partial physical, partial remote) reviews.

Verifiers must document the rationale for whether a site visit was conducted, its format (announced, unannounced, remote, or hybrid), and demonstrate that the chosen approach provided adequate evidence. This ensures verification remains both rigorous and proportionate while protecting health, safety, and security at all facilities.

3.3 Verification Process

These procedures are designed to reflect internationally recognized assurance principles and established EU verification practices that are consistent with the objectives and requirements of the EUMR. In particular, they draw on the procedural verification principles established in EU Implementing Regulation 2018/2067 (EU ETS verification) to the extent relevant, including, by way of example, pre-contractual engagement, operator information requirements, risk-based planning, assessment of internal controls, data checking, and reporting obligations, where those principles are directly applicable to methane emissions verification. This list is illustrative rather than exhaustive.

This protocol adapts those procedural principles, together with relevant international assurance standards, to the methane-specific requirements of the EUMR. References to EU ETS verification are intended solely to provide procedural precedent for assurance planning and execution and do not introduce EU ETS-specific compliance obligations, prescriptive materiality thresholds, monitoring tiers, or allowance-related requirements into the application of this protocol.

The purpose of the verification process is to determine whether the methane emissions report is prepared in accordance with the applicable criteria, is free from material misstatement, and reflects a credible application of methodologies consistent with the EUMR and referenced international standards. This includes evaluating the appropriateness of quantification methods,

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the completeness of source coverage, the sufficiency of documentation, and the effectiveness of data quality controls.

Article 8.1 specifically requires that the verification activities shall include the review of all data sources and methodologies used in order to assess the reliability, credibility and accuracy of the emissions reports, in particular the following:

- (a) the choice and employment of emission factors;
- (b) the methodologies, measurements, calculations, activity factors, samplings or statistical distributions leading to the determination of methane emissions;
- (c) any risk of inappropriate measuring or reporting;
- (d) any quality control or quality assurance systems applied by the operators.

Verification activities must be tailored to the characteristics of each engagement, including the reporting scope, organizational and operational boundaries, quantification methods, and level of reporting. Where the verifier cannot obtain certain evidence (e.g., due to service availability, local restrictions, or other legitimate limitations), alternative procedures shall be applied. The verifier must determine whether the available evidence is sufficient and appropriate to support a reasonable assurance conclusion; if not, this limitation shall be disclosed in the verification statement, with its potential effect on the conclusion clearly explained.

Where feasible, verifiers should review operator processes for identifying and, where appropriate, integrating relevant emissions information from publicly available datasets from the verification period (for example satellite portals such as UNEP IMEO MARS) as an optional element of the assurance process. Independent datasets are not expected to replace operator-supplied information, but may serve as a cross-check on completeness and plausibility of emission estimates. Such datasets may have limitations, including variable detection limits and spatial or temporal resolution, and should be interpreted accordingly. Where independent evidence indicates a discrepancy that could be significant, the discrepancy shall be investigated and addressed prior to issuing a reasonable assurance opinion. Where deficiencies or potential misstatements are identified during verification, the operator shall be given an opportunity to provide additional evidence or corrective clarification before the verification opinion is issued. For example, if a verifier questions whether the frequency of gas composition sampling provides reasonable assurance, the producer may demonstrate, using historical data or statistical analysis, that the sampling approach is sufficient. Such responses must be documented and considered in the verification conclusion.

The typical stages of verification, from pre-engagement through reporting and issuance of the verification statement, are illustrated in Figure 3 below.



Figure 3 Typical stages of a verification engagement.

3.3.1 Kick-off

At the start of the engagement, the verifier and reporting entity shall confirm the verification scope, objectives, criteria, roles, responsibilities, deliverables, and timeline. This confirmation may be completed through a meeting or through documented correspondence, as appropriate.

The kick-off should confirm:

- The verification scope, objectives, and applicable criteria;
- Roles and responsibilities of the verifier and the reporting entity;
- The verification plan timeline and key milestones;

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- Communication protocols, including handling of findings and requests for additional information.

3.3.2 Strategic Analysis

The strategic analysis provides the contextual understanding needed to plan and execute the verification activities. It involves reviewing the reporting organisation’s structure, operations, and methane emissions sources, as well as the methodologies and boundaries applied in the emissions report.

The verifier shall:

- Confirm organisational and operational boundaries
 - Verify that the boundaries applied are consistent with the EUMR and any applicable delegated acts or allowable reporting standards (e.g., definition of “licensed area” at the level of the producer).
 - Ensure boundaries capture all relevant facilities within the relevant boundaries.
- Understand the emissions source profile
 - Identify and categorise methane-emitting sources (e.g., venting, flaring, incomplete combustion, leaks).
 - Assess whether the source list aligns with EUMR requirements and any applicable delegated acts or allowable reporting standards.
- Review quantification methodologies and data sources
 - Determine which measurement, modeling, and factor-based methods are applied and whether they comply with EUMR requirements and any applicable delegated acts or allowable reporting standards.
 - Note the use of:
 - **Direct measurements** (e.g., stack flow meters, chamber measurements, remote sensing, or direct inputs into calculation methods) and assess whether they capture representative operating conditions and a sufficient share of emissions; representative sampling is relative to the producer’s asset base and emissions profile and shall be defined through a documented, risk-based sampling rationale that considers asset types, operating conditions, historical emissions variability, and known high-risk sources.
 - **Specific emission factors⁹ and models** (e.g., specific emission factors or engineering models/simulation tools based on established physical or

⁹ ‘Specific emission factor’ means an emission factor for a type of emission source which is derived from direct measurements (Art. 1(18)).

- chemical principles) and assess whether they are properly representative, validated, and appropriate for the asset.
- **Generic emission factors**¹⁰ (applied to equipment- or activity-specific data) and assess whether their use is justified and whether there is credible evidence they adequately represent the source.
 - Consider regulatory and reporting context
 - Consider any relevant EU obligations and, where applicable, national or other jurisdictional requirements that influence methane data systems.
 - Voluntary frameworks explicitly referenced in the EUMR (e.g., OGMP 2.0 Level 5) may also be considered, but participation is not assumed
 - Assess organisational readiness and data governance
 - Evaluate the maturity of methane data management systems, quality control procedures, and documentation practices.
 - Identify potential constraints or barriers (e.g., data availability, measurement feasibility, local content/service restrictions) that may affect the verification scope or approach.

The strategic analysis should be documented and used to inform the risk assessment, evidence-gathering plan, and site visit strategy, ensuring the verification approach is risk-based, proportionate, and consistent with EUMR requirements.

3.3.3 Risk Assessment

The verifier shall identify and prioritize areas with a higher likelihood of material misstatement. The assessment shall consider:

- **Completeness risks** (e.g., omission of sources or sites, or exclusion of super-emitter events). To assess completeness, verifiers should review the operator's source identification and reconciliation processes, evaluate whether site-level measurements indicate missing categories, and may, where feasible, consult independent evidence (e.g., public satellite data, third-party alerts, or sectoral benchmarks). Any credible indications of potentially omitted emissions must be investigated and documented in the risk assessment;
- **Quantification risks** (e.g., inappropriate use of generic emission factors when direct measurement or higher-quality data are available; or, where such methods are not available, risks that chosen estimation methods may not adequately represent actual emissions);

¹⁰ 'Generic emission factor' means a standardised emission factor for each type of emission source which is derived from inventories or databases, but in any case not verified by means of direct measurements (Art. 1(17)).

- **Measurement and instrumentation risks** (e.g., calibration gaps, reliance on unverified sensors);
- **Extrapolation risks** (e.g., scaling short-term measurements to annual totals without sensitivity testing); and
- **Controls risks** (e.g., inconsistent, undocumented, or weakly implemented processes, controls, and governance over data collection, calculation, and change management).

The verifier shall also review the adequacy of internal controls, QA/QC procedures, and documentation systems. Risk assessment results inform sampling design, the selection of sources for detailed testing, and the need for site visits.

Verifiers are encouraged to maintain and update internal risk libraries and to make use of existing public resources that summarize methane emissions risks, measurement limitations, and emission factor representativeness, where available. Any shared learnings should be framed as learnings rather than requirements and should avoid disclosure of operator- or vendor-sensitive information.

3.3.4 Evidence-Gathering

The evidence-gathering plan shall ensure documents and data are traceable within the verification record from original records through to the reported values, including clear version control, source attribution, and linkage to the reported figures. It should:

- Identify the data sources, records, and systems to be reviewed;
- Specify the types of supporting documentation required (e.g., LDAR logs, OGI imagery, sensor output files, maintenance logs);
- Reference the applicable reporting standard's requirements for traceability and documentation;
- Define procedures for cross-checking data consistency across systems and reporting levels;
- Identify key assumptions requiring review (e.g., emission factor selection, scaling methods).

3.3.5 Verification Activities

Verification techniques may include:

- **Sampling** – Select a representative subset of reported data and recalculating values to confirm accuracy (this refers to review of calculation procedures, not physical re-measurement by the verifier);

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- **Recalculation** –Where discrepancies, data issues, or methodological errors are identified that could affect reported emissions totals, the verifier shall evaluate whether recalculation or re-performance of selected calculations is necessary to obtain sufficient and appropriate evidence. Recalculation activities may include checking activity data, emission factor application, aggregation logic, unit conversions, and any adjustments made through reconciliation;
- **Analytical procedures** – Compare emissions intensities, trends, and ratios across sites or periods;
- **Sensitivity analysis** – Test the impact of key assumptions on reported results;
- **Interviews and system walkthroughs** – Confirm procedures are implemented as described;
- **Document review** – Check the completeness and reliability of source records; Review methane emissions management policies, procedures, and standards, and documentation demonstrating implementation (for example training records, maintenance logs, LDAR programs where applicable, and corrective action tracking);
- **Relevant public data review** – Review relevant independent data (when it is available) such as public satellite observations or regional-level estimates of emissions intensities.

Sampling design should be risk-based, with sample size and selection criteria documented in the verification plan.

3.3.6 Facility Visits

Where relevant to address identified risks, the verification plan shall include site checks of a representative sample of locations within the verification boundary to obtain sufficient, appropriate evidence. Site checks may be performed through physical visits, remote techniques, or a combination, and shall not compromise safety, security, or access constraints.

Triggers for site visits may include:

- Unexplained discrepancies between source-level and site-level observations;
- Missing or contradictory measurement records;
- Use of novel or complex methodologies requiring on-site review;
- Significant operational changes since the last verification;
- Weaknesses in quality control systems;
- Requests from Competent Authorities or substantiated third-party concerns that were not already addressed in the operator’s data plan.

If no site visit is conducted, the verifier must document the rationale and demonstrate that alternative procedures provided sufficient evidence. Site visit decisions and findings shall be documented in the verification plan and working papers.

3.4 Verification Outcomes Reporting, Statement and Opinion

The verification outcomes reporting and opinion stage of the verification process ensures that conclusions are documented in a clear, consistent, and transparent manner that meets the requirements of Article 8.4 of the EUMR and relevant assurance standards. The verification statement must communicate the level of assurance, scope, criteria, and the verifier's conclusion, supported by sufficient and appropriate evidence.

3.4.1 Verification Outcomes Report Template

The verification outcomes report is a detailed internal document submitted to the client (operator or undertaking) and retained by the verifier. It provides the evidence base for the verification statement and includes:

1. Engagement details
 - Identification of the reporting entity and reporting period.
 - Scope of verification.
 - Applicable criteria (EUMR, referenced reporting standard, ISO/IEC 17029, ISO 14064-3, ISO 14065).
2. Methodology
 - Summary of verification approach, including risk assessment, sampling strategy, and evidence-gathering techniques.
 - Site visit details (if conducted) or rationale for alternative methods.
3. Findings
 - Description of misstatements, omissions, or methodological issues identified.
 - Assessment of inherent uncertainty and data quality.
 - Corrective actions requested and responses received.
4. Basis for conclusion
 - Materiality threshold applied and rationale.
 - Summary of evidence supporting the conclusion.
5. Verifier's independence and competence declaration
 - Statement of compliance with Article 9 of the EUMR and relevant accreditation or authorisation requirements.

The verification outcomes report should be sufficiently detailed to allow a competent third party to understand how the conclusion was reached.

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3.4.2 Verification Statement Template

The verification statement is the formal, public-facing document provided to importers and the competent authority. It must be aligned with the EUMR and shall be prepared in a manner consistent with recognized greenhouse gas verification standards (such as ISO 14064-3), as applicable to the verifier’s accreditation. At minimum, it should contain:

1. **Identification** of the verifier and accreditation/authorisation reference.
2. **Identification** of the reporting entity, asset boundary, reporting period, and verified emissions report.
3. **Scope** of the verification and applicable criteria.
4. **Level of assurance** (reasonable, per EUMR Article 8).
5. **Verification opinion** (positive, qualified, or negative).
6. **Summary of verification activities** undertaken.
7. **Date** of issuance and authorised signatory.

Types of opinions:

Positive Statement (Unqualified Opinion)

“Based on the verification procedures conducted in accordance with the Protocol for Independent Verification of Methane Emissions of Crude Oil and Natural Gas Production Placed on the European Union Market and the requirements of the EU Methane Regulation, we provide **reasonable assurance** that, in all material respects, the reported methane emissions data for [Reporting Year] have been prepared in accordance with [Applicable Criteria]. No material misstatements were identified.”

Issued when: Report is free from material misstatement and conforms to all applicable requirements.

Qualified Statement

“Based on the verification procedures conducted in accordance with the Protocol for Independent Verification of Methane Emissions of Crude Oil and Natural Gas Production Placed on the European Union Market and the requirements of the EU Methane Regulation, we provide **reasonable assurance** that, **except for** the matters described in the Basis for Qualified Opinion section, the reported methane emissions data for [Reporting Year] have been prepared, in all material respects, in accordance with [Applicable Criteria]. The identified matters are material but not pervasive to the overall emissions report.”

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Issued when: Misstatements or scope limitations exist that are material but not pervasive.

Negative Statement (Adverse Opinion)

“Based on the verification procedures conducted in accordance with the Protocol for Independent Verification of Methane Emissions of Crude Oil and Natural Gas Production Placed on the European Union Market and the requirements of the EU Methane Regulation, we conclude that the reported methane emissions data for [Reporting Year] have not, in all material respects, been prepared in accordance with [Applicable Criteria]. The matters described in the Basis for Adverse Opinion section are material and pervasive to the emissions report. As a result, we were **unable to provide reasonable assurance** on the conformity of the report.”

Issued when: Misstatements are both material and pervasive, preventing a reliable conclusion.

3.4.3 Process of Submitting the Verification Statement

Issuance of the Verification Statement: The verifier shall conduct an independent internal review and issue a formal verification opinion based on the sufficiency and appropriateness of the evidence, with attention to potential misstatements or noncompliance. Where relevant, the verifier may also identify significant methodological limitations, data gaps, or sources of uncertainty observed during verification, without prescribing corrective actions, for consideration in subsequent reporting or verification cycles.

The signed verification statement shall be provided to the reporting entity together with any required supporting documentation. The verification statement shall be signed by the Lead Verifier. Independent review shall be documented as part of the verification record but does not require a separate signature unless required by the verifier’s accreditation body.

Recordkeeping: The verifier must retain all verification records, including working papers and the verification report, for the retention period specified in the applicable accreditation or authorisation requirements.

4.0 Reporting Outputs

This section describes the form, content, and regulatory use of outputs resulting from verification activities conducted under this protocol. It clarifies how emissions reporting outcomes and verification conclusions are reflected in producer-level emissions information used to support Annex IX submissions and related import obligations under the EU Methane Regulation (EUMR).

This section does not establish additional monitoring, reporting, or aggregation requirements beyond those set out elsewhere in the protocol or in the EUMR. It summarizes how the results of source-level and site-level evaluation, reconciliation, and discrepancy assessment are reflected in the producer-level emissions reports that are subject to independent verification.

Unless otherwise specified, terms including producer, licensed area, operated assets, and producer-level reporting have the meaning assigned in the EUMR and are applied consistently throughout this protocol. Reconciliation outputs represent the producer's best estimate of annual methane emissions, developed through integration of relevant evidence reviewed during verification, and are suitable for use in importer disclosures and regulatory review.

4.1 Producer-Level Emissions Reports

Verification activities conducted under this protocol result in the issuance of a verification statement expressing a reasonable assurance opinion on the producer's methane emissions report.

The methane emissions report is prepared by, or on behalf of, the producer and includes the producer's reconciled producer-level estimate of annual methane emissions for the licensed area. The reconciled estimate reflects the producer's integration of source-level and site-level information, including the identification and treatment of discrepancies and documented limitations, in accordance with Article 12 of the EUMR and any applicable equivalence pathway under Article 28. Verification activities assess whether the report has been prepared in accordance with the applicable criteria and whether sufficient and appropriate evidence supports the reported information to a reasonable assurance standard.

The methane emissions report and the associated verification statement together constitute the verified producer-level emissions information used to support Annex IX submissions and related import disclosure obligations under the EUMR. The verification opinion applies to the methane emissions report as a whole and does not extend to individual measurements, data inputs, or intermediate calculations considered in isolation.

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5.0 Protocol Maintenance and Updates

This protocol is intended to provide a stable and consistent framework for verification under the EU Methane Regulation. While it is not expected to change frequently, there may be circumstances where updates are necessary. For example, updates could be needed to reflect advances in measurement technologies, new delegated acts or technical guidance under the EUMR, or feedback from verifiers, producers, importers, the Commission, or Competent Authorities during implementation.

In such cases, updates should be developed by the protocol writer or another independent technical body with relevant expertise, in consultation with stakeholders. Proposed updates would then be submitted to the European Commission or another designated authority for review and endorsement to ensure compliance with the Regulation. This approach balances technical independence with regulatory oversight, ensuring that the protocol remains scientifically robust, practicable for operators and verifiers, and aligned with the requirements of the EUMR.

This protocol assumes annual verification during initial implementation and early compliance periods under the EU Methane Regulation. Over time, and subject to regulatory acceptance, verification frequency may be revisited where repeated verification outcomes demonstrate consistently high data quality, effective internal controls, and stable emissions profiles. Any adjustment to verification frequency would need to remain consistent with the requirements of Article 8 of the EUMR and applicable delegated or implementing acts, and would not preclude additional verification where material changes, discrepancies, or risks are identified.

ANNEX A – PROVISIONAL REPORTING PROTOCOL FOR PRODUCER LEVEL SOURCE- AND SITE-LEVEL MEASUREMENT, QUANTIFICATION, AND REPORTING

1.0 Scope and Boundary Definitions

1.1 Purpose

This protocol establishes standardized methodologies and system boundaries for the quantification and reporting of methane emissions at the producer level from oil and natural gas operations, in support of compliance with the EU Methane Regulation (EUMR) for crude oil and natural gas imports placed on the Union market.

Under Article 28.5 of the EUMR, producers may demonstrate compliance for imports through one of two distinct pathways:

- **OGMP 2.0 Level 5 reporting**, subject to independent third-party verification under Articles 8 and 9; or
- **Monitoring and reporting measures equivalent to Article 12**, also subject to independent third-party verification under Articles 8 and 9.

This provisional reporting protocol addresses the **Article 12 equivalence pathway**. It provides a structured set of requirements for preparing emissions reports that can be independently verified and ensures that all Annex IX producer-level data elements are included, enabling importers to meet their compliance obligations. The protocol does not replace or duplicate OGMP 2.0. Rather, it offers an alternative route for producers outside the Union, particularly those who are not OGMP participants, to demonstrate compliance with the EUMR. Because OGMP 2.0 Level 5 reflects recognized best practices, certain concepts that are common across leading methane reporting frameworks (such as integrating source- and site-level data) are reflected here for consistency, without creating additional requirements for OGMP participants. However, this protocol is designed to be fully sufficient for verification under the Article 12 equivalence pathway without requiring OGMP participation. In addition, Annex A has been designed so that it can also function as a stand-alone reporting protocol for producer-level methane emissions, even outside the EU verification context. Producers, regulators, or voluntary initiatives may use it independently as a consistent framework for quantification and reporting, whether or not third-party assurance is sought.

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Where producers elect to demonstrate equivalence through reporting in accordance with OGMP 2.0 Level 5, this Annex is not applicable. The provisions of this Annex apply only to producers demonstrating equivalence with Article 12 of the EUMR and are not intended to impose additional requirements or expectations on producers pursuing compliance through OGMP 2.0 Level 5.

1.2 Boundary Definitions

Purpose

These boundary definitions specify the minimum scope of facilities, sources, and activities that must be included in a methane emissions report intended for third-party verification under Articles 8 and 9 of the EUMR. They ensure that reported data accurately reflect methane emissions at the level of the producer, is consistent with the Regulation's policy objective of determining methane intensity for crude oil and natural gas placed on the EU market, and is comparable across producing regions.

1.2.1 Producer Boundary (Primary Boundary)

The primary boundary for reporting under this Annex is at the level of the the producer, which is defined in Article 2.58 as an undertaking, which in the course of a commercial activity, produces crude oil, natural gas or coal, by extracting it from the ground in a licensed area, processing it or conveying it through connected infrastructure within that licensed area.

For the purposes of Article 12 reporting under the EU Methane Regulation, methane emissions are reported at the level of an asset, as defined in Article 2.4. An asset means a business or operating unit, which can be composed of several facilities or sites, including operated assets and non-operated assets. This means that the definition of asset applies similarly to assets in both operated and non-operated cases; however, an individual asset must be either operated or non-operated. Where an asset includes multiple facilities or sites, the reporting scope shall reflect the complete asset; aggregation shall be applied consistently and shall not be used to selectively include or exclude facilities in a manner that would distort the reported emissions profile.

Where an asset includes multiple facilities or sites within a production region, reporting shall encompass the complete asset, rather than selected individual facilities. This approach ensures that reported emissions reflect the full operational scope of the asset, avoids selective inclusion or exclusion of facilities, and supports the use of population-based measurement and estimation approaches where appropriate.

Emissions reports shall include all facilities or sites within the complete asset, consistent with Article 2.4. All emissions sources within that asset shall be comprehensively identified and addressed in the emissions report; aggregation shall not be used to obscure or exclude material sources of methane emissions within the operational scope of the asset.

For the purposes of reporting under this Annex, a licensed area may comprise multiple individually authorised wells, sites, facilities, or activities operating under one or more legal instruments; where those activities together constitute a coherent production area under the operational control of a producer, the licensed area defines the asset boundary for producer-level methane emissions reporting. In such cases, the term 'licensed area' is used to describe the functional production area rather than a single licence document, and is applied consistently as the asset boundary for reporting and verification purposes.

1.2.2 Licensed Area Boundary

A **licensed area** is a geographically defined zone granted to a single operator or undertaking through a lease, concession, production license, or equivalent legal instrument that authorizes the extraction of hydrocarbons and the operation of one or more associated facilities. Where a particular regulatory authority authorizes each well, site, equipment group, facility, or activity individually, the licensed area may be a combination of those facilities individually authorized within the same geographic region, subject to the geographic aggregation concepts described below.

Inclusions — Onshore Context

All facilities and equipment functionally integrated with upstream oil and gas production activities within the licensed area and under the operational control of a single operator or undertaking, including but not limited to:

- **Well sites**¹¹ (individual wells, well pads, and associated production equipment)
- **Centralized production facilities** (e.g., tank batteries, central separation and dehydration facilities, stabilization systems)
- **Field compression and processing sites** that are dedicated to the licensed area (including gas lift and field-level boosting facilities)
- **Temporary drilling, completion, or maintenance sites** operating within the licensed area

¹¹ All wells within the licensed area, whether active or inactive shall be included.

- **Gathering and separation stations** that handle produced fluids prior to transfer to third-party midstream systems
- **Custody transfer points** (e.g., Lease Automatic Custody Transfer units) located within the licensed area

Inclusions — Offshore Context

All facilities and equipment functionally integrated with offshore oil and gas production activities within the licensed area and under the operational control of a single operator or undertaking, including but not limited to:

- **Fixed and floating production platforms** (e.g., jackets, semisubmersibles, tension-leg platforms)
- **Floating Production Storage and Offloading (FPSO) units** or other floating facilities dedicated to the licensed area
- **Gas lift and injection systems**
- **Compressors, turbines, and engines** (including those for platform power generation)
- **Separation, dehydration, and stabilization systems** installed on platforms or FPSOs
- **Produced water treatment** units
- **Storage tanks, flare systems, and vapor recovery** units located on offshore facilities
- **Marine loading systems** (e.g., shuttle tanker transfer systems) that are part of the offshore production operation
- **Temporary drilling, completion, or maintenance equipment** operating within the licensed area

Temporary drilling, completion, or maintenance activities are included within the licensed area boundary for completeness, but verification does not require direct measurement or separate sampling of each temporary activity where such data cannot reasonably be obtained.

Exclusions — General

The following are outside the licensed area boundary scope for the purposes of producer-level reporting under Article 28:

- Third-party operated gas gathering and boosting systems not dedicated to the licensed area
- Gas processing plants operated by a third party
- Midstream LNG liquefaction facilities and transmission pipelines or compression stations
- Downstream facilities (e.g., distribution pipeline systems, end users such as independent power producers)

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- Ancillary infrastructure (e.g., office buildings, worker housing, landfills, wastewater treatment plants)

Boundary Clarification

Where facilities, sources, or equipment are functionally integrated with upstream production activities but are not under the operational control of the reporting producer (e.g., third-party operated power generation units, standalone midstream assets), they are excluded from the licensed area boundary. Such exclusions must be explicitly disclosed in the emissions report, with documentation describing the nature of the facility and a clear rationale for its exclusion, to enable verifiers, Competent Authorities, and the European Commission to confirm boundary consistency.

For field compression, processing, and gathering systems, inclusion within the licensed area boundary is determined by operational control and functional integration with upstream production activities, irrespective of whether similar functions are outsourced by other operators in the same region.

In addition, ancillary infrastructure (e.g., office buildings, worker housing, landfills, wastewater treatment plants) is excluded from the licensed area scope even when co-located and under the operator's control, as such infrastructure is not functionally integrated with upstream production activities.

1.2.3 Geographic Aggregation of Facilities or Sites Across a Licensed Area

For producer-level reporting under the EUMR, methane emissions are reported for an asset, which may comprise multiple facilities or sites under common operational control within a licensed area, as defined above. Geographic aggregation is a reporting construct used to organize producer-level emissions reporting for Annex IX purposes and does not create an alternative asset or licensed-area boundary.

Geographic aggregation may be applied only where it reflects a coherent and externally recognizable production area that is already used by the producer for regulatory, geological, or operational reporting purposes. Such aggregation shall be clearly defined, complete, and consistently applied, and shall not be used to recharacterize or selectively redefine asset or licensed-area boundaries. Recognized geographic units used for aggregation may include, where applicable:

- Geological basins or sub-basins
- Contiguous fields or blocks designated for resource development
- Offshore production regions

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- Political or maritime jurisdictions where these align with official production reporting

Where geographic aggregation is applied, all upstream production facilities under common operational control that contribute to production from the defined geographic unit shall be included.

Geographic units shall be treated as distinct where they are recognized separately in geological or regulatory contexts and do not share fully integrated upstream operations. Temporary or incidental operational linkages, such as short-term gas balancing or intermittent shared infrastructure, do not constitute grounds for combining producing areas.

Aggregation shall not be used to selectively include or exclude facilities in a manner that would distort the reported emissions profile. The selected geographic aggregation approach shall be applied consistently over time and across assets within the same jurisdictional or regulatory context. Changes to geographic aggregation may occur only where justified by a documented change in regulatory classification, asset configuration, or operational control and shall be clearly disclosed in the emissions report.

Consistency in Boundary Choice

Where more than one boundary definition could reasonably apply under the principles above (e.g., a geological basin that could also be subdivided into distinct sub-basins), the producer may select the option most appropriate for their operations. However, the chosen definition must be applied consistently in subsequent EUMR reports and across all assets within the same jurisdictional context, unless a justified and documented change occurs (e.g., regulatory reclassification or material change in operational control).

Illustrative Examples of Boundary Application for Facilities Under Common Operational Control

These examples illustrate acceptable aggregation choices for reporting consistency and do not create additional obligations beyond Articles 12 and 28 of the EUMR.

North America (Permian Basin, U.S.)

A producer with operated assets in both the Delaware and Midland sub-basins may either:

- Report them separately as distinct producing areas, since both are recognized sub-basins; or
- Report them as a single producing area (“Permian Basin”) consistent with regulatory reporting of emissions recognized by the relevant domestic regulation.

In either case, the choice must be applied consistently across reporting years.

Europe (North Sea)

A producer with operated assets in the UK Continental Shelf and Norwegian Continental Shelf must report separately, as these are distinct producing areas under different regulatory jurisdictions, even though they are part of the same geological basin.

Within one jurisdiction, an operator could choose to aggregate multiple fields into a single producing area, provided this is consistent with official reporting practices.

Middle East (Abu Dhabi, U.A.E.)

A producer operating multiple offshore concession blocks could either report each concession separately (if consistent with official reporting statistics) or aggregate them into a larger producing area (e.g., “Abu Dhabi Offshore”) if the concessions are operated under unified operational control and reported as such for national statistics.

South America (Neuquén Basin, Argentina)

A producer operating across both conventional oil fields and unconventional shale gas pads within the Neuquén Basin should report them together as one producing area, unless the unconventional sub-basin (e.g., Vaca Muerta) is recognized in official statistics as distinct.

Africa (Niger Delta, Nigeria)

An operator with multiple oil mining leases (OMLs) under common operational control may aggregate them into a single producing area (“Niger Delta Onshore”) if consistent with regulatory reporting, but offshore deepwater OMLs would need to be reported separately as distinct producing areas.

1.2.4 Temporal Boundary

Emissions reports shall cover the most recent complete calendar year. Boundaries, including organizational scope and geographic coverage, must be reviewed annually to confirm accuracy and completeness.

In cases where part or all of an asset is acquired or divested during the reporting year, the operator preparing the report may limit reporting for those portions of the asset to the periods under its operational control. Such circumstances must be clearly documented in the emissions report, including a description of the boundaries applied and the timing and circumstances of the change in control.

2.0 Emissions Reporting

Scope of Quantification Requirements

The quantification requirements set out in this section apply to methane emissions from operated assets within the boundaries defined in Section 1 of this Annex. Reporting and verification under this protocol are based on operational control and are not performed on an ownership-share basis. Non-operated assets are therefore outside the scope of this reporting protocol.

The source categories, quantification approaches, and data requirements described below are intended to support preparation of a producer-level methane emissions report suitable for Annex IX submissions under the EU Methane Regulation, including the producer-level identifiers and activity data necessary to support import-related reporting.

2.1 Overview

Operators must quantify methane emissions at the source level and supplement this information with site-level observations. Site-level measurements provide an independent perspective on whether the source-level inventory is complete, help identify potential unreported or underestimated sources, and offer additional operational context.

The reconciliation process is not a simple numerical comparison of “source totals” versus “site totals,” since site-level measurements do not directly totalize annualized emissions from a facility. Instead, reconciliation is an integration exercise: site-level observations, supported by models and operational data, are used to test, validate, and, where appropriate, adjust source-level estimates.

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Reconciliation involves investigating and explaining differences between methods, identifying whether these differences reflect omissions, methodological biases, or transient events, and then integrating the available multi-scale information. The result is a reconciled source-level inventory, which is a best estimate of annual methane emissions that reflects both detailed source-level quantification and credible site-level evidence, applied in a consistent, verifiable manner at the producer level.

Sections 2.1 through 2.5 describe how information from site-level measurement methods and source-level emissions estimates is reviewed, prioritized, and integrated as part of the development of the final methane emissions inventory. These sections are intended to systematize the evaluation of detections and discrepancies, with particular attention to those observations that have the greatest potential to influence total reported emissions, and to support the preparation of a reconciled inventory that reflects the best available information.

2.2 Source Categories

Producers shall compile a complete inventory of methane emission sources within the licensed area(s) under operational control. At a minimum, the following source categories shall be included, if present within the boundaries:

- **Combustion sources** (incomplete combustion of methane from engines, heaters, turbines)
- **Flaring** (incomplete combustion of methane and unlit flares)
- **Leaks** from components and equipment
- **Venting sources**, including but not limited to:
 - Natural gas-driven pneumatic devices
 - Reciprocating compressor rod packing
 - Centrifugal compressor (wet and dry) seals
 - Glycol dehydrators
 - Tanks (hydrocarbon and produced water)
 - Well liquids unloading
 - Casinghead venting
 - Hydraulic fracture completions and workovers
 - Non-hydraulic fracture completions and workovers
 - Unstabilized crude oil loading and offloading
 - Equipment blowdowns
- **Other significant methane sources** that are known to the operator and are not covered under the source categories listed above. Source identification shall be **systematic and documented** to ensure no significant category is omitted.

The source categories listed above are intended to ensure comprehensive coverage of Article 12 sources. Subcategories provided under each heading are illustrative and are not required to be reported separately unless material or useful for verification and mitigation purposes.

Emissions arising from incidents and malfunctions shall be attributed to the most relevant source category wherever practicable. Where attribution is not practicable, such emissions may be reported as another material methane source, provided that incident or malfunction types are described with sufficient specificity to support verification and mitigation planning.

2.3 Source-Level Quantification Methods

2.3.1 Acceptable Approaches

Methane emissions must be quantified at source-level using one or more of the following approaches, applied transparently, with justification, and in line with the hierarchy established by the Regulation. Quantification is defined in Article 2.20 as the “activities to determine the quantity of methane emissions by means of direct measurements or, where direct measurements are not feasible, based on other methods such as simulation tools, and other detailed engineering calculations or a combination of such methods.”

Tier 1: Direct Measurement-Based Methods

As required under EUMR Article 12.2, direct measurement at source shall be applied where possible. Measurement-based methods include:

- **Direct flow measurement** (e.g., stack flow meters, chamber measurements, inline sensors).
- **Measurement-integrated approaches**, where physical parameters (e.g., gas concentration, flow rate, pressure, temperature) are measured and then combined through a calculation or model to yield an emission rate (e.g., high-flow sampler, bagging, mass-balance, remote sensing techniques, including optical, laser-based, aerial, or satellite-based techniques).

These methods may be applied at the process, source, or site level under normal or event-specific operating conditions.

Tier 2: Engineering Models and Measurement-Derived Factors

Where direct measurement is not feasible, Article 12.2 allows for the use of specific emission factors based on source-level quantification or sampling, in addition to simulation tools, and other detailed engineering calculations or a combination of such methods.

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Article 2 offers the following relevant definitions:

- Emission factor means a coefficient that quantifies the emissions of a gas per unit of activity, which is based either on a sample of measurement data or other quantification methods, averaged to develop a representative rate of emission for a given activity level under a given set of operating conditions (Art. 2.16).
- Specific emission actor means an emission factor for a type of emission source which is derived from direct measurements (Art. 2.18).

Therefore, this tier of quantification includes:

- **Event-based models** for transient or episodic emissions (e.g., blowdowns, well liquids unloading) using operational data such as pressure, temperature, and volume.
- **Process simulation tools** based on physical or chemical principles (e.g., thermodynamic flash models, process simulators, or mass-balance approaches).
- **Specific emission factors** derived from representative measurement data under conditions that match the source type, equipment configuration, and environment.

These approaches often provide more reliable annualized estimates than short-duration measurement campaigns for episodic or process-driven sources.

Tier 3: Other Specific Emission Factors

Specific emission factors that are derived from measurement data under less representative conditions may only be used if direct measurement is not feasible and where there is no credible evidence from site-level measurements, reconciliation findings, or third-party data suggesting the factor is inadequate. They must be:

- **Equipment- or activity-specific**, applied to actual observed counts and operational data (e.g., component leak factor applied to the number of leaking valves observed); and
- Not population-based or asset-generic (i.e., factors that assume both equipment counts and emission rates for a “typical asset” are not acceptable).

2.3.2 Principles for Method Selection

- **Priority of direct measurement:** Consistent with Article 12.2 of the EUMR, direct measurement at source is the preferred method for source categories likely to materially influence the total emissions estimate or its uncertainty. For the purposes of this protocol, *direct measurement* is interpreted broadly to include both flow-based instrumentation (e.g., stack flow meters) and measurement-integrated methods where one or more

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physical parameters (e.g., gas concentration, flow rate, pressure, temperature) are directly measured and used to derive an emission rate (e.g., bagging, high-flow sampler, mass-balance, remote sensing).

- **Use of models and factors where appropriate:** Where direct measurement is not feasible, consistent with Article 12.2, quantification may be based on simulation tools, other detailed engineering calculations or a combination of such methods, or based on specific emission factors. *Not feasible* may include cases where measurement is technically possible but would introduce greater uncertainty or bias compared to engineering models (e.g., episodic events such as blowdowns or liquids unloading, process-driven sources such as flash emissions or glycol dehydrators).
- **Mixed-method approaches:** Operators may combine measurement, modeling, and factor-based approaches for a single source or category, where such integration improves accuracy, transparency, or completeness of the estimate.
- **Activity data requirements:** In all cases, activity factors (e.g., equipment counts, operating hours, throughput volumes, cycles) must be based on actual operational data to the extent possible rather than generic assumptions, and demonstrably consistent with observed site conditions.
- **Integration with site-level reconciliation:** Site-level observations used in reconciliation must confirm that selected factors, models, and activity data are not omitting significant sources of emissions.
- **Evolving technologies:** Emerging technologies not explicitly listed may be used where their performance has been demonstrated in peer-reviewed literature, regulator-accepted studies, or equivalent validation, and where their application is appropriate to the source and operating conditions.

2.3.3 Criteria for Reasonable and Appropriate Factors/Methods

A factor or method is reasonable and appropriate where it:

- Is applicable to the equipment, operating, and environmental conditions of the asset;
- Uses actual activity data (not generic assumptions);
- Has transparent provenance, with documented data sources and assumptions;
- Incorporates both emission-rate and activity-factor information;
- Is representative of the facility type and operating mode;
- Minimizes systematic over- or under-estimation.

Methods are strengthened when they:

- Stratify by operating mode (e.g., active vs. idle, normal vs. malfunctioning);
- Stratify by event type and frequency for episodic emissions;

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- Use asset-specific or regional measurement data;
- Differentiate between properly emitting and improperly emitting modes (e.g., non-leaking vs. leaking components);
- Employ field-verified counts, inspections, or operational records.

2.4 Site-Level Measurements

For the purposes of this protocol, the term “site” is used consistent with Article 2.7 of the EUMR, as a subdivision of an asset. In the context of verification, a site typically corresponds to an operated upstream facility or group of facilities within a licensed area that functions as a coherent operational unit (e.g., a well pad, central processing facility, offshore platform), and site-level measurements must be applied across the licensed areas to support producer-level reporting under Article 28.

2.4.1 Role and Relationship to Source-Level Assessment

Site-level measurement provides an independent check on the completeness and accuracy of source-level inventories and shall be designed to supply information at a different scale than the source-level assessment. Site level measurement method should have a detection resolution appropriate for the site total emissions as estimated by the source-level method.

- Site-level results may be used to inform updates to source-level estimates where appropriate.
- When site-level measurement technologies provide sufficient spatial resolution and detection sensitivity to characterize emissions attributable to individual sources, source-level direct measurements may be selectively applied to support robust source-level quantification and to resolve key uncertainties. The combined use of site-level and source-level measurements should produce both defensible source-level emission quantification and a reconciled dataset that incorporates multiple, independent perspectives on emissions, enabling assessment of internal consistency across methods. Measurement efforts should therefore be structured to minimize unnecessary duplication while preserving the completeness, credibility, and reconciliation objectives of the quantification. Where redundant measurements are necessary to reduce uncertainty or support reconciliation, such redundancy shall be retained.
- The site-level measurement program shall be capable of validating total emissions from the collection of sources at a site. Where available, additional information on the distribution or behavior of emission sources or source categories may be used to support reconciliation and verification planning, but source-level resolution is not a prerequisite for site-level measurement.

2.4.2 Site-Level Measurement Techniques

Site-level measurement means a measurement that captures an integrated view of total site emissions. It may be performed using:

- Mobile platforms (vehicle, drone, aircraft, boat, autonomous / remotely operated underwater vehicle);
- Satellite-based detection;
- Fixed, continuous, or near-continuous monitors.

Measurement approaches can involve:

- Short-duration campaigns (seconds, minutes, or hours), typically with short duration higher quantification accuracy;
- Long-duration or continuous monitoring with lower per-event quantification accuracy but greater ability to characterize frequency and duration of large events.

Technology selection shall be guided by a structured risk assessment that identifies the parameters most critical to inventory accuracy, including:

- For continuous or frequent sources — higher-accuracy quantification (even if short-duration) may be more valuable;
- For highly variable sources or sources with a risk of large, unintended events, continuous or high-frequency observation, including from process parameter monitoring and other operational data streams, may provide greater value for characterizing emissions behavior and event duration, even where individual measurements have lower per-measurement accuracy.

Asset-specific risks may be identified through:

- Structured process safety or environmental risk assessments;
- Peer benchmarking and public disclosures of comparable operations;
- Third-party alerts (e.g., IMEO MARS) or other credible public sources documenting historical or recurrent emissions.

2.4.3 Detection Limits

Specific detection limits for site-level measurements are not mandated in advance. If a site has emissions large enough to be consistently observed by a technology with higher detection thresholds (e.g., satellites), the critical finding is that the emissions are high and that is independently validated. Conversely, for sites consistently (or mostly) observed with emissions

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below a minimum threshold, reducing the detection limit further is of limited value for inventory improvement.

Minimum Threshold Guideline: As a general benchmark, a system capable of detecting sustained emissions around **10 kg CH₄/hr**, at an individual site, is sufficient to validate a low-emission site.

The minimum threshold guideline of approximately 10 kg CH₄/hr is provided as interpretive verification guidance and does not establish a regulatory detection limit under the EU Methane Regulation. It is intended to support verifier judgment under Article 8, pending the adoption of any delegated or implementing acts that may establish minimum detection limits or performance requirements. Where such acts are adopted, this protocol shall be applied in a manner consistent with those requirements.

The guideline is consistent with the observed empirical distribution of methane emissions and with measurement frameworks that prioritize detection of emissions contributing most to site-level totals. Studies show that methane emissions are highly skewed, such that when un-inventoried emission events occur their rates are generally above this level. Even in measurement campaigns deploying technologies with detection limits below 10 kg CH₄/hr, more than 80 percent of observed emissions occur at rates exceeding 10 kg CH₄/hr.¹² This pattern is consistent with the literature summarized by and the conclusions in Zavala-Araiza et al., which finds that high-emitting sources contribute a disproportionate share to overall emissions (about 33% of the total emissions, varying by region).¹³ Alvarez *et al.* also identified large emission sources at a relatively small subset of sites as driving the large divergence between source-level inventories and site-level measurements (with site-level estimates about 2 times the source-level estimates in the production segment), concluding that source-level emission factors undersample abnormal conditions.¹⁴

In one documented multi-site campaign, short-duration site-level measurements were collected at 33 dry-gas production sites using a mobile downwind approach, while independent source-

¹² Donahue, C. P., Oberoi, K., Dillon, J. W., Hengst, V., Kennedy, B., Kearney, W., Lennox, J., Rehbein, E., Sykes, R., Dudiak, C. D., Altamura, D. T., Doherty, G., Roos, P. A., Bresseur, J. K., & Thorpe, M. J. (2025). *Aerial LiDAR based, source resolved methane emissions inventory: Permian Basin case study for benchmarking U.S. emissions* (Preprint). EarthArXiv. <https://doi.org/10.31223/X5S45T>

¹³ Zavala-Araiza D, Alvarez RA, Lyon DR, Allen DT, Marchese AJ, Zimmerle DJ, Hamburg SP. Super-emitters in natural gas infrastructure are caused by abnormal process conditions. *Nat Commun.* 2017 Jan 16 :8:14012. doi: 10.1038/ncomms14012.

¹⁴ Ramón A. Alvarez *et al.* Assessment of methane emissions from the U.S. oil and gas supply chain. *Science* **361**, 186-188(2018). DOI:[10.1126/science.aar7204](https://doi.org/10.1126/science.aar7204)

level measurements and modeling provided longer-duration emission estimates.¹⁵ Reconciliation analysis showed that the site-level observations were consistent with the expected distribution of hourly average emissions derived from the source-level data, with only two transient exceedances identified as abnormal events. Importantly, no persistent high-emitting outliers were observed. This case demonstrates that a system capable of reliably detecting sustained emissions on the order of 10 kg CH₄/hr would have been sufficient to establish that large emission sources were not present and that higher detection sensitivity would not have materially altered the verification outcome.

Measurement approaches that prioritize reliable detection of higher-emitting conditions therefore capture the dominant contributors to inventories with significant unaccounted emissions, while avoiding duplicative effort on low-level sources that contribute little on an individual basis and are generally well represented in quality source-level inventories. This principle is reflected in MiQ's adoption of a facility-scale minimum detection limit of 25 kg CH₄/hr,¹⁶ which is explicitly designed to encompass potential super-emitters based on observed emission distributions. The 10 kg CH₄/hr benchmark adopted here represents a more conservative threshold that extends sensitivity below typical super-emitter definitions, while remaining aligned with the same underlying objective: confirming whether a facility exhibits elevated emission behavior rather than resolving every minor source.

For the purposes of verification under Article 8 of the EU Methane Regulation, this guideline supports the assessment of whether site-level measurement provides sufficient and appropriate evidence to evaluate the completeness and plausibility of the reported inventory. Where site-level technologies demonstrate a sustained detection capability at or below approximately 10 kg CH₄/hr, and repeated observations indicate emissions below this level, verifiers may reasonably conclude that uninventoried emissions are small relative to total site emissions and that further reductions in detection limits would provide limited additional assurance. In such cases, site-level measurement can be relied upon to support reconciliation and the use of source-level quantification estimates, provided that technology performance is documented and the measurement program is representative of operating conditions. Detection capabilities should be adequate to either:

- Detect emissions at the majority of facilities in the assessed population;

¹⁵ Tullos, E. E.; Stokes, S. N.; Cardoso-Saldaña, F. J.; Herndon, S. C.; Smith, B. J.; Allen, D. T. Use of Short Duration Measurements to Estimate Methane Emissions at Oil and Gas Production Sites. *Environ. Sci. Technol. Lett.* 2021, 8 (6), 463–467. <https://doi.org/10.1021/acs.estlett.1c00239>

¹⁶ MiQ. 2022. *MIQ STANDARD for Methane Emissions Performance for Petroleum Operations MAIN DOCUMENT – Onshore Production v1.0*. MiQ. Available at: <https://miq.org/document/oil-gas-onshore/>

- Detect the majority of expected total emissions produced by the assessed population, taking into account the skewed distribution of methane emissions and the contribution of rare, high-impact events; or
- Provide confidence that undetected emissions are minimal following the minimum threshold guidance.

In order to rely on minimum threshold guidance to support the use of site-level technologies to support the appropriateness of emission-factor based source estimation techniques, verifiers should ensure that technologies:

- Have documented evidence, such as third-party testing or contractual language guaranteeing performance, to demonstrate that the minimum threshold guideline is met
- Provide equipment-level information to support inventory updates

2.4.4 Sampling Frequency and Population Coverage

- Site-level measurement must be conducted at least once per calendar year for a representative sample of facilities and operating conditions. More frequent measurement may be required where material emission sources are intermittent or episodic, in order to ensure measurement representativeness.
- The monitoring plan should consider more frequent or near-continuous monitoring approaches for subsets of assets with higher emission potential, greater uncertainty, or known variability.

Where large discrepancies exist between source- and site-level results, the operator shall investigate and may elect to increase monitoring frequency and/or asset coverage, particularly where discrepancies cannot be resolved through operational or parametric data. Robust operational or parametric monitoring may support event detection and duration estimates and inform reductions in measurement frequency, provided that site-level measurements are still conducted at least once per calendar year. Sampling plans should consider:

- Distribution skew from rare but high-impact events;
- Stratification by facility type and operating conditions;
- Risk of bias from extrapolation (e.g., seasonal or diurnal variability, under- or over-representation of super-emitters, and intermittency of emissions).

Operators shall provide the verifier with information about sampling assumptions, methods, and assumptions and explain why potential biases (e.g., diurnal or seasonal variability, spatial or temporal extrapolation bias) are unlikely to materially affect reported emissions.

2.5 Reconciliation and Discrepancy Management

2.5.1 Purpose

Reconciliation ensures that methane emissions reported at the producer level reflect the best available integration of source-level quantification (Section 2.3) and site-level measurements (Section 2.4). The process is intended to:

- Detect potential under- or over-estimation in the source-level inventory;
- Incorporate credible multi-scale measurement evidence into the final emissions estimate;
- Document the basis for any adjustments, in a manner verifiable under Articles 8, 9, and 12 of the EUMR.

This reconciliation process implements the “comparison and reconciliation” requirement described in Article 12.6 of the EUMR. For the purposes of this protocol, reconciliation is defined as the integration of source-level and site-level evidence into a single best estimate, rather than the creation of parallel inventories to be numerically compared. For the purposes of this Annex, reconciliation does not require formal statistical overlap between source-level and site-level uncertainty ranges. Site-level measurements are used to inform completeness, plausibility, and prioritization of source-level estimates, rather than to establish an independent emissions inventory in isolation. An asset or group of facilities is considered reconciled when available source-level estimates and site-level observations have been reviewed, prioritized, and integrated into a single internally consistent inventory that reflects the best available information and is suitable for producer-level reporting under Article 12.

This definition of reconciliation reflects an Article 12–specific implementation and does not replicate reconciliation concepts used in voluntary frameworks such as OGMP 2.0.

Illustrative example: If site-level measurements indicate emissions materially higher than those estimated at source level for a given facility, reconciliation may involve identifying unaccounted-for emission sources, revising emission factors, updating activity data, or documenting operational conditions that explain the observed difference. Reconciliation is achieved when the source-level inventory has been appropriately updated or justified in light of the site-level evidence, and the producer-level emissions report transparently reflects the outcome of that evaluation, irrespective of whether the site-level measurement result numerically exceeds or falls below the original inventory estimate.

2.5.2 General Principles

- Site-level and source-level assessments shall be independent in execution but may be mutually informative in method refinement and adjustment of estimates. Because site-level technologies do not directly produce annualized totals, their role in reconciliation is to identify possible omissions, quantify abnormal events, and provide scaling information to test and adjust source-level inventories.
- Site-level results with sufficient spatial and emissions resolution may justify targeted reductions in direct source-level measurements if criteria in Section 2.4 are met, subject to verifier judgment on adequacy.
- Other sources of operational information, like maintenance records or parametric monitoring, may be additional sources of information that are used to inform overall estimates and contextualize site-level information.
- Reconciliation must be performed for each reporting year and applied consistently across the relevant producing area. This requirement does not imply that site-level measurements must be conducted annually at every facility, but that all available site-level evidence for the reporting year must be evaluated and integrated.
- Discrepancy assessment must consider both quantitative (numerical difference) and qualitative (nature, persistence, operational cause) factors.

2.5.3 Discrepancy Assessment

For the purposes of this section, a discrepancy refers to the difference between reported emissions derived from the source-level inventory and observed emissions inferred from site-level measurements. Operators shall evaluate whether differences between site-level and source-level results are:

- **Explained** — e.g., already covered in the source inventory, attributable to known operational events, or within expected uncertainty or operational range of documented sources; or
- **Unexplained** — indicating possible missing sources, errors in emission factors, misapplied methods, or unusual events not reflected in the source inventory.

Potential causes to consider include:

- Incomplete or inaccurate source identification;
- Inappropriate factor/method selection (per Section 2.3 criteria);
- Episodic high-volume events (e.g., liquid unloadings, blowdowns);
- Errors or limitations in measurement technology;
- Incompatibility in temporal or spatial scope between the two approaches.

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For the purposes of this protocol, a material discrepancy is one that, individually or in aggregate, could reasonably be expected to influence the conclusions of intended users of the methane emissions report, including importer decisions under Annex IX. Materiality is assessed at the producer level in accordance with Article 8 and applicable assurance standards, taking into account both the magnitude of the discrepancy and its qualitative characteristics (e.g., persistence, recurrence, operational cause).

2.5.4 Tiered Discrepancy Thresholds

To ensure consistent and proportionate treatment of discrepancies, detected emissions differences shall be addressed according to the following indicative thresholds. These thresholds are illustrative order-of-magnitude benchmarks intended to promote consistency across operators and verifiers spanning large and spatially distributed oil and gas production regions. They do not replace the requirement to address any discrepancy that exceeds the applicable quantitative materiality threshold. They do not define regulatory thresholds under the EUMR, nor do they determine compliance outcomes independently of the verifier's materiality assessment under Article 8. This approach applies both to technology platforms that identify individual plumes (e.g., aircraft-based detection) and to differences between source-level inventories and site-level technologies that do not resolve individual sources.

The thresholds are grounded in the well-documented spatial variability and highly skewed distribution of site-level methane emissions, in which a relatively small number of sources or events account for a disproportionate share of total emissions.¹³ As a result, discrepancies associated with larger detected emissions warrant substantially greater scrutiny and documentation than the more numerous low-rate observations. Satellite-based and multi-scale measurement programs described in the scientific literature and implemented through initiatives such as the International Methane Emissions Observatory (IMEO) routinely prioritize emissions on the order of 100-1,000+ kg CH₄/hr as critical for investigation, as these rates are commonly associated with abnormal or non-routine conditions and can dominate asset-level emissions profiles. Regulatory and reporting frameworks such as the U.S. EPA Greenhouse Gas Reporting Program similarly recognize emissions at this scale as requiring explicit evaluation.¹⁷

A second tier of discrepancies extends down to approximately 10 kg CH₄/hr, consistent with the minimum detection threshold described in Section 2.4.3. Emissions in this range are readily detectable by site-level technologies and may indicate deviations from assumed source-level

¹⁷ U.S. Environmental Protection Agency (EPA). 2024. *Greenhouse Gas Reporting Rule: Revisions and Confidentiality Determinations for Petroleum and Natural Gas Systems*. Federal Register, Vol. 89, No. 94 (May 14, 2024). Available at: <https://www.federalregister.gov/documents/2024/05/14/2024-08988/greenhouse-gas-reporting-rule-revisions-and-confidentiality-determinations-for-petroleum-and-natural>

values, particularly when persistent or repeated across similar sources. Observations below approximately 10 kg CH₄/hr are expected, in most cases, to be associated with sources already represented in source-level inventories and generally fall within normal operational variability. Such discrepancies should still be evaluated, but typically do not warrant the same level of investigative effort unless evidence indicates that they are persistent, systematic, or sufficiently prevalent to influence reconciliation outcomes.

Based on these considerations, discrepancies identified during reconciliation are addressed in accordance with the following indicative response tiers, which describe the expected level of investigation, documentation, and potential inventory adjustment associated with different orders of magnitude of detected emissions.

- **Must Address (> 100 kg CH₄/hr)**
 - Requires investigation, documentation, and adjustment of source-level estimates as warranted, including evaluation for the likelihood of similar sources that have gone undetected
 - Information provided to verifiers must detail the cause, quantification method, corrective measures, and any changes to ongoing monitoring.
 - Due to the known impact of sources at this level on methane inventories, this documentation must be gathered regardless of the impact on the quantitative materiality threshold.
- **Address if Material to Inventory (10–100 kg CH₄/hr)**
 - Documented investigation is required where adjustment of an individual detection or discrepancy would exceed the quantitative materiality threshold for the annual producer-level estimate.
 - Adjustments should be made where site-level observations indicate that a source is meaningfully different from the assumed value and the change could have a discernible effect, or producing a smaller change in a category that is numerous enough to shift total regional emissions in a meaningful way.
- **May Address (< 10 kg CH₄/hr)**
 - Differences are generally within expected operational variability and measurement uncertainty for most assets and technologies.
 - No further action is required unless credible evidence emerges that such emissions are more frequent, persistent, or impactful than assumed.
 - Adjustment is required if the observation, despite being individually small, would exceed the quantitative materiality threshold.

Discrepancy tiers apply irrespective of whether source-level and site-level estimates overlap within uncertainty ranges, as reconciliation under this protocol is evidence-based rather than purely statistical. Adjustments to the source-level inventory are required where unexplained

discrepancies, individually or in aggregate, exceed the applicable quantitative materiality threshold for verification or otherwise indicate systematic bias, omission of sources, or misapplication of methods.

2.5.5 Documentation Requirements

For each discrepancy investigated, operators must record:

- Detection details (technology, date/time, magnitude);
- Determination of whether the source was already included in the inventory;
- Adjustments made to emission factors, activity data, or source inclusion;
- Justification for no action where applicable (e.g., below threshold, within uncertainty bounds).

2.5.6 Integration into Final Emissions Estimate

The final reconciled estimate must:

- Reflect adjustments based on credible site-level observations and documented reasoning;
- Attribute numerical changes to specific sources or categories;
- Include updated uncertainty characterization, incorporating both measurement and estimation sources of error.

Where models are used to extrapolate or integrate observations into inventory estimates, they must be transparently documented (function, inputs, limitations, data quality indicators). Ideally, such models are open-source, publicly available, and peer-reviewed. If proprietary tools are applied, operators shall provide sufficient information for the verifier to determine whether the model is based on sound standards for converting measurement data into integrated, measurement-informed emissions estimates, and that outputs are applied and interpreted consistently with the tool's intended use. Use of such models is consistent with Article 12.3, which permits scientifically sound calculation methods when direct measurement alone is insufficient.

2.5.7 Implications for Verification Conclusions

Where material discrepancies remain unresolved, inadequately explained, or unsupported by sufficient and appropriate evidence, verifiers shall consider the implications for the verification opinion in accordance with Article 8 of the EUMR and applicable assurance standards (e.g., ISO 14064-3).

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3.0 Reporting Requirements

Transparency and Traceability

Reported emissions must be transparent and traceable to underlying data sources sufficient to allow independent verification. For each source category included in the inventory, the emissions report shall provide:

- The quantification method applied (direct measurement, engineering model, or emission factor);
- The key parameters used (e.g., emission rate or factor, equipment count, operating hours, throughput, or duration, as relevant); and
- Documentation of data sources and assumptions.

Verifiers must be able to recalculate or trace emissions estimates for a representative sample of sources to confirm consistency and accuracy. A full recalculation of every reported source is not required, but sufficient detail must be available to enable sampling-based recalculation, in a manner consistent with internationally recognized assurance standards, such as ISO 14064-3 and EUMR Article 8 requirements.

The emissions report¹⁸ shall include:

- All emissions associated with the production asset within the licensed area(s) and under the operational control of a single operator at the level of the producer, and applicable emission source details, per EUMR Art. 12.4.
- Annex IX data that must be sourced at the level of the producer according to the EUMR.

3.1 Reporting Scope

Annual methane emissions reports prepared under this protocol must:

- Cover the most recent complete calendar year, in accordance with the temporal boundary requirements in Section 1.2.4.
- Include all methane emissions from the the producer and relevant organisational and geographic boundaries defined in this Annex, as defined in Sections 1.2 and 2.0.

¹⁸ It is envisioned that the verification statement would accompany the emissions report when supplied to an exporter.

3.1.1 Final Reconciled Inventory

Annual methane emissions reports prepared under this protocol must:

- Present the final reconciled methane emissions inventory at the producer level, where site-level measurement results have been used to validate and, where necessary, revise one or more source-level categories through the reconciliation process in Section 2.5.
- The final reported values must represent the best estimate of annual methane emissions after reconciliation, not separate unreconciled totals from source-level and site-level assessments.

3.1.2 Required Data Elements

The emissions report must include, at minimum, the following information:

Emissions Data

- A breakdown by source category, including a description of the emission sources.
- Methane emissions in tonnes CH₄ and tonnes CO₂-equivalent, using global warming potentials as required by the EUMR Article 12(4)(b) or as updated in future delegated acts. CH₄ reported in CO₂-eq using IPCC AR6 GWP₁₀₀ = 29.8 (Art. 12.4(b) specifies fossil methane from the IPCC Sixth Assessment Report).
- Quantification methodologies applied for each category, including measurement types, emission factors, engineering models, or other methods, with references to applicable EU or international standards.

Producer-Level Information

- Name, address, and contact information of the producer.
- Description of the producing area and licensed area(s) covered in the report, including maps or geospatial boundaries where available.

3.1.3 Supporting Data and Documentation

Where non-detections (i.e., instances where monitoring technologies or measurement campaigns do not identify emissions above the method's detection limit or resolution) or inferred emissions (e.g., values estimated from surrogate data, operational parameters, or back-calculations rather than direct observation) are included in the inventory, the report must describe the treatment of these cases. This shall include:

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- The detection thresholds applied and how they were determined;
- The statistical handling of non-detections (e.g., substitution rules, treatment as zero, or modeled estimates); and
- The rationale and data sources for inferred emissions.

In addition, the report must include sufficient supporting documentation to substantiate reported values, such as:

- Data processing steps applied to measurement and activity data;
- Calibration logs for measurement instruments, including sensors for both emissions and operational parameters (e.g., flow, temperature, pressure, operating hours); and
- QA/QC measures applied to ensure data completeness, accuracy, and traceability.

4.0 Data Management and Quality Assurance

4.1 Record-Keeping Requirements

Producers should retain, for a minimum of five years following submission of a report (or longer, if required by accreditation rules or national law), complete records necessary to allow verification of the reported emissions. These records must cover all information disclosed under Section 3.1.3 (Supporting Data and Documentation) and include, at minimum:

- **Emissions data:**
 - All raw and processed emissions measurement datasets used in the development of the emissions report.
 - Detailed source-level inventories and associated activity data.
 - Detailed site-level measurement datasets, including original records, processed outputs, and documentation of detection limits or non-detection treatment.
- **Methodological information:**
 - Methodology descriptions for each quantification approach, including calculation steps, input data, and references.
 - Calibration and maintenance logs for measurement instruments, including those measuring operational parameters (e.g., flow, pressure, temperature).
- **Reconciliation documentation:**
 - Original source-level and site-level results.
 - Discrepancies identified through reconciliation.
 - Rationale for adjustments, including supporting evidence.
 - Final reconciled inventory submitted for verification.

Records must be stored in a manner that preserves data integrity and allows retrieval for independent third-party verification under Articles 8 and 9 of the EUMR.

4.2 Quality Assurance and Quality Control

Producers shall implement a QA/QC program that includes:

- **Standard Operating Procedures (SOPs)**
 - Written procedures for all emissions measurement and quantification methods used.
 - Version control to ensure consistency across reporting years.
- **Internal Review Processes**
 - Internal audits to verify data accuracy, completeness, and methodological compliance before submission.
 - Cross-checking of activity data with operational and production records.
- **Verification Readiness**
 - All records and calculations maintained in a format accessible for independent third-party verification.
 - Clear traceability from reported totals to underlying measurements or factors.
- **Corrective Actions**
 - Documented process for addressing errors or significant discrepancies identified during internal QA or by third-party verification.
 - Procedures for revising emissions reports if material errors are discovered post-submission.

ANNEX B Q&A

1. Q: In the case of imports from a country with third country level equivalence, is level 5 still needed?

A: EUMR Article 28(5) provides two distinct pathways to demonstrate equivalence for imports:

- i. At the producer level, through monitoring and reporting measures equivalent to Article 12 or reporting at OGMP 2.0 Level 5, both subject to independent verification; or
- ii. At the country level, where the third country has adopted and enforces an MRV regulatory framework that is at least equivalent to that applied in the Union, including source- and site-level quantification, independent third-party verification (Articles 8 and 9), and effective supervision and enforcement.

Where country-level equivalence is recognized under Article 28(5)(b), individual producers are not required to demonstrate compliance via Article 12 equivalence or OGMP 2.0 Level 5. However, this does not exempt imports from the disclosure obligations in Article 27 and Annex IX, nor from the methane intensity calculations and reporting under Article 29. These provisions continue to apply, meaning that importer-level Annex IX reporting and the Commission's aggregation of methane intensity remain required.

2. Q: Is training for technical aspects in development?

A: Yes, curriculum and training materials are in development for operators, service providers and assurance providers.

3. Protocol interoperability

a. Q: Would this protocol work for any MRV standard/protocol (would be great) or is this specifically written to work for producers using OGMP?

A: The verification protocol can be applied to other MRV standards/protocols. It is neither for exclusive use with OGMP 2.0 nor the provisional reporting protocol. Some of the protocol may require adaptation in cases of substance conflict.

The provisional reporting protocol is intended for use and potential endorsement or adoption by any reporting program.

b. Q: Would this protocol work for any OGMP Level or only L4 and L5?

A: This protocol aims to sufficiently define EUMR Article 12 reporting equivalence to enable reasonable assurance opinions of such statements as opposed to one or more specific reporting levels within OGMP 2.0 or any other reporting program.

c. Q: Footnote 9 says that the protocol applies to MRV under Art. 28 MER: Why is this limitation and would the protocol not also be usable to verify e.g. methane intensity figures under Art. 29 MER? Ideally it should cover that.

A: Verification activities under Article 8 of the EUMR apply specifically to emissions reports, with no additional verification requirements introduced in Article 29. While the methane intensity methodology is deferred for future development, exploring potential approaches can help identify relevant production and activity data that should be included in emissions reports to support future intensity calculations. Annex A therefore presents one possible method for calculating producer-level methane intensity.

4. Q: How do you see the overlap with ISO/CEN standards for MRV and how can these be addressed?

A: Ideally highly collaborative, but at least mutually informative. It is anticipated that this protocol will be ready and publicly available before CEN/ISO standards are likely to be adopted.

5. Q: Can verifiers accredited outside the EU (e.g., ANSI NAB in the United States) perform EUMR verification?

A: Verifiers assessing third country emissions reports for imports must be accredited by an EU national accreditation body or by an accreditation body that is equivalent.

6. Q: Does the EUMR require verifiers to conduct unannounced site visits?

A: No. Article 8(2) of the EU Methane Regulation states that verification activities *may include* announced or unannounced site visits, but it does not mandate them. The intent is to ensure verifiers have the flexibility to obtain sufficient and appropriate evidence in cases where on-site presence is necessary to address material risks or uncertainties.

However, unannounced visits must never compromise safety, security, or regulatory protocols, whether at onshore or offshore facilities. In practice, verifiers and operators should agree on evidence-gathering approaches that maintain both rigor and safety. Where unannounced visits are not feasible, alternative procedures (e.g., remote checks, continuous monitoring data, LDAR records, operational logs, or hybrid approaches) can provide equivalent assurance.

This protocol clarifies that the principle is proportionality: site visit strategies must be risk-based, justified, and documented, but should not introduce undue safety or logistical risks.