

European Emissions Trading Scheme

Manual No. 2

Guide on Verification

Version 1.0 (October 2005)

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Preface

This manual has been prepared in the framework of the project:

**Capacity Building for the Implementation of the EU Emissions Trading Directive in new EU Member States
(EU Ref. no ENV.C.2/SER/2004/0071)**

The project's objectives have been defined as to "improve the capacity of relevant competent authorities to fulfil the requirements of the Emission Trading Directive and its supporting legislation" and "to improve the knowledge and awareness of the requirements of the Emissions Trading Directive among operators of installations and other stakeholders".

This Manual No.2 - Guide to Verification – is mainly addressed to verifiers and is supplemented by two other manuals:

- Manual No. 1: Guide on Monitoring & Reporting
(mainly addressed to operators)
- Manual No. 3: Guide on Accreditation
(mainly addressed to competent authorities)

All three manuals are used as background material for workshops to be held in the new EU Member States from October to December 2005. The findings and results of these workshops and the further development of the implementation of the EU legal framework to national law as well as the implementation of the EU and national legal requirement to practise will be considered in a final version of all three manuals prepared in December 2005 and issued in January 2006.

It should be expressively noted that this manual is meant as an instrument to systematically set up verifications of an annual emission reports. However, there might be specific circumstances which are not covered by this manual. In any case EU and national laws have be to considered and are always prevalent.

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Part I: Introduction

Within this manual verification procedures will be described. Similar to the Manual No.1 (“Guide on Monitoring and Reporting”) the following symbols are used to make these descriptions more transparent, to make appropriate references to the legal framework and to flag controversial interpretations of the legal requirements:



This symbol indicates an explanatory example.



This symbol indicates a reference to a legal text *(only EU- and not any national legal framework)*



This symbol indicates necessary clarifications, potential misinterpretations and/or inconsistencies in legal framework *(to be discussed with the competent authority)*

The objective of this manual is to support verifier in their work to give an expert opinion on annual emission reports and to establish and issue a verification report and a verification statement. Verification reports and verification statements are mandatory required by Annex V of the ETS Directive. The manual is a tool

- to check the necessary documents,
- to perform a compliance audit,
- to document and to report the findings and results

according to the requirements of the EU regulations^{1), 2)}.

1) DIRECTIVE 2003/87/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 13 October 2003 establishing a scheme of greenhouse gas emission allowances trading within the Community and amending Council Directive 96/61/EC, OJL 25.10.2003, L275/32-46

2) COMMISSION DECISION of 29 January 2004 establishing guidelines for the monitoring and reporting of greenhouse gas emissions (notified under document number C(2004) 130), 2004/156/EC, OJL 26.2.2004, L 59/1-74

According to the ETS Directive EU Member States shall ensure that

- each operator of an installation reports the emissions from that installation during each calendar year to the competent authority after the end of that year in accordance with the MRG [§ 14(3) of the ETS Directive] and
- these annual emission reports submitted by operators are beforehand verified in accordance with the criteria set out in Annex V of the ETS Directive, and that the competent authority is informed thereof [§15 ETS Directive].



REMARK: The terms validation and verification are used in the ETS Directive as synonyms. They don't have a different meaning as e.g. in case of CDM-projects with their validation (singular inspection, check of the project design document) and verification (periodically inspection, determination of real greenhouse gas emission abatements).

In this manual the terms validation and verification are used as synonyms, too.

Annex V of the ETS Directive lists - beside the requirements to a verification report and the minimum requirements for the verifier - the criteria for verification classified in two regimes:

- general principles (criteria 1 to 5) and
- the methodology (criteria 6 to 10).



ETS Directive, Annex V

General Principles

1. Emissions from each activity listed in Annex I of the ETS Directive shall be subject to verification.
2. The verification process shall include consideration of the report pursuant to Article 14(3) of the ETS Directive and of monitoring during the preceding year. It shall address the reliability, credibility and accuracy of monitoring systems and the reported data and information relating to emissions, in particular:



ETS Directive, Annex V

General Principles (continuation)

- (b) the reported activity data and related measurements and calculations;
 - (c) the choice and the employment of emission factors;
 - (d) the calculations leading to the determination of the overall emissions; and
 - (e) if measurement is used, the appropriateness of the choice and the employment of measuring methods.
3. Reported emissions may only be validated if reliable and credible data and information allow the emissions to be determined with a high degree of certainty. A high degree of certainty requires the operator to show that:
 - (a) the reported data is free of inconsistencies;
 - (b) the collection of the data has been carried out in accordance with the applicable scientific standards; and
 - (c) the relevant records of the installation are complete and consistent.
 4. The verifier shall be given access to all sites and information in relation to the subject of the verification.
 5. The verifier shall take into account whether the installation is registered under the Community eco-management and audit scheme (EMAS).

The five methodology-criteria are aligned to criteria of

- a strategic analysis,
- a process analysis and
- a risk analysis.



ETS Directive, Annex V

Methodology

Strategic analysis

6. The verification shall be based on a strategic analysis of all the activities carried out in the installation. This requires the verifier to have an overview of all the activities and their significance for emissions.

Process analysis

7. The verification of the information submitted shall, where appropriate, be carried out on the site of the installation. The verifier shall use spot-checks to determine the reliability of the reported data and information.

Risk analysis

8. The verifier shall submit all the sources of emissions in the installation to an evaluation with regard to the reliability of the data of each source contributing to the overall emissions of the installation.
9. On the basis of this analysis the verifier shall explicitly identify those sources with a high risk of error and other aspects of the monitoring and reporting procedure which are likely to contribute to errors in the determination of the overall emissions. This especially involves the choice of the emission factors and the calculations necessary to determine the level of the emissions from individual sources. Particular attention shall be given to those sources with a high risk of error and the abovementioned aspects of the monitoring procedure.
10. The verifier shall take into consideration any effective risk control methods applied by the operator with a view to minimising the degree of uncertainty.

Additional requirements according verification of annual emission reports can be found in the MRG. However, these requirements are textually not clearly linked to the requirements of the ETS Directive.

The assessment of the monitoring methodology plays a key role in the MRG and is a general verification-requirement.

§ **MRG, Annex I, Chapter 7.4**

The verifier shall assess whether the monitoring methodology applied by the operator complies with

- the installation's monitoring methodology as approved by the competent authority,
- the principles for monitoring and reporting* and
- the guidelines laid down in the MRG.

** completeness, consistency, transparency, accuracy, cost effectiveness, materiality, faithfulness, improvement of performance in monitoring and reporting emissions
see MRG, Annex I, Chapter 3*

Throughout the verification process, the verifier shall determine misstatements by assessing whether:

- the quality assurance and control processes have been implemented,
- there is clear and objective evidence obtained through the gathering of data to support the determination of misstatements.

The assessment of the monitoring methodology which should be part of the greenhouse gas permit and the assessment of the quality assurance (QA) and quality control (QC) processes which might be additionally part of an already established management system play a key role in verifying annual emission reports. Both topics, however, are complex in structure and need further explanation and guidance (see e.g. Manual No. 1 - Guide on Monitoring and Reporting).

On the basis of this assessment the verifier shall conclude as to whether the data within the emissions report contains omissions, misrepresentations or errors that lead to material misstatement of the reported information.

In Annex I, Chapter 7.4 of the MRG (“Verification and materiality”) concrete verification requirements are listed:



MRG, Annex I, Chapter 7.4

As part of the verification process, the verifier shall in particular:

1. understand each activity undertaken by the installation, the sources of emissions within the installation, the metering equipment used to monitor or measure activity data, the origin and application of emission factors and oxidation/conversion factors, and the environment in which the installation operates,
2. understand the operator's data management system and overall organisation with respect to monitoring and reporting, and obtain, analyse and check the data contained within the data management system,
3. establish an acceptable materiality level in the context of the nature and complexity of the installation's activities and sources,
4. analyse the data risks which could lead to a material misstatement within the emissions report, based on the verifier's professional knowledge and the information submitted by the operator,
5. draw up a verification plan which is commensurate with this risk analysis and the scope and complexity of the operator's activities and sources, and which defines the sampling methods to be used with respect to that operator's installations,
6. carry out the verification plan by gathering data in accordance with the defined sampling methods, plus all relevant additional evidence, upon which the verifier's verification conclusion will be based,
7. check that the application of the monitoring methodology specified in the permit has delivered an accuracy level consistent with the defined tiers,
8. request the operator to provide any missing data or complete missing sections of audit trails, explain variations in the emissions data, or revise calculations, before reaching a final verification conclusion.

These eight verification requirements will be interpreted in Part II B of this manual in more detail. Reference to already available guidelines will be given additionally.

As a part of the introduction key terms essential for the verification process are defined in the following table.

| Term | Definition | Example |
|-------------------------------|--|---|
| Installations | Stationary technical units where one or more activities listed in Annex I of the ETS Directive are carried out and any other directly associated activities which have a technical connection with the activities carried out on that site and which could have an effect on emissions and pollution (Source: List of definitions in the ETS Directive) | <ul style="list-style-type: none"> • Integrated steel works • Cement factory • Power station • etc. |
| Categories of Activities | Indirect definition given in in Annex I of ETS Directive (Remark: only 4 categories) | <ol style="list-style-type: none"> 1. Energy activities 2. Production and processing of ferrous metals 3. Mineral Industry 4. Other activities |
| Activities | Means the activities listed in Annex I to the ETS Directive; (Source: List of definitions in the MRG) (Remark: only 10 activities) | <ol style="list-style-type: none"> 1. Combustion installation 2. Coke ovens 3. Refineries 4. Metal ore roasting or sintering installations 5. Installations for the production of pig iron or steel 6. Installations for the production of cement clinker or lime 7. Installation for the manufacture of glass 8. Installations for the manufacture of ceramic products 9. Industrial plants for the production of pulp 10. Industrial plants for the production of paper |
| Sources | Separately identifiable points or processes in an installation from which greenhouse gases are emitted (Source: List of definitions in the MRG) | <ul style="list-style-type: none"> • Combustion process or combustion chamber • Flue gas cleaning or flue gas scrubber • etc. |
| Streams of fuels or materials | Indirect definition given in the MRG (e.g. see chapter 4.2.2.1.4 page 12) | <ul style="list-style-type: none"> • Coal • Limestone • etc. |

| Term | Definition | Example |
|-------------------------------------|---|---|
| Level of assurance | Means the degree to which the verifier is confident in the verification conclusions that it has been proved whether or not the information reported for an installation taken as a whole is free from material misstatement; (Source: List of definitions in the MRG) | The level of assurance is used to determine the depth of detail that a verifier designs in his verification plan to determine if there are any material errors, omissions or misstatements. There might be three levels of assurance: high, moderate, low, which result in a positive, neutral and negative verification statement. |
| Materiality | Means the professional judgment of the verifier as to whether an individual or aggregation of omissions, misrepresentations or errors that affects the information reported for an installation will reasonably influence the intended users' decisions. As a broad guide, a verifier will tend to class a misstatement in the total emissions figure as being material if it leads to aggregate omissions, misrepresentations or errors in the total emissions figure being greater than five percent; (Source: List of definitions in the MRG) | The 5% threshold is given as an example. The verifier has to establish a material level for each installation whose annual emission report will be verified. Thus values deviating from the 5% threshold may occur, e.g. 1%. |
| Monitoring and reporting principles | Principles to ensure the accurate and verifiable monitoring and reporting of greenhouse gases under the ETS Directive; (Source: MRG, Annex I, Chapter 3) (Remark: 8 principles) | <ol style="list-style-type: none"> 1. Completeness 2. Consistency 3. Transparency 4. Accuracy 5. Cost effectiveness 6. Materiality 7. Faithfulness 8. Improvement of performance in monitoring and reporting |
| Verifier | Means a competent, independent, accredited verification body with responsibility for performing and reporting on the verification process, in accordance with the detailed requirements established by the Member State pursuant to Annex V to the ETS Directive. (Source: List of definitions in the MRG) | A verification body can be either a legal person or a natural person. |

(more terms are defined in the Glossary – Annex 5)

Part II: Verification process

The ETS Directive focuses in its Annex V on three main steps determining the verification process (here and further on indicated with D1 to D3):

- D1 Strategic analysis,
- D2 Process analysis and
- D3 Risk analysis.

The MRG link as already mentioned in the introduction to this manual the verification in general to the monitoring methodology and QA-/QC-processes and define in Annex I, Chapter 7.4 eight concrete parts of the verification process (here and further on indicated with G1 to G8):

- G1 Understanding of activities
- G2 Understanding of data management system
- G3 Establishing an acceptable material level
- G4 Analysing the data risks
- G5 Drawing up a verification plan
- G6 Carrying out a verification plan
- G7 Checking the accuracy level
- G8 Requesting the operator to provide missing data or revise calculations

The requirements for verification processes given in the ETS Directive and the MRG are not textually clearly linked and thus give a wide field for interpretations of parties involved in verification (operator, verifier, competent authority).

The following matrix is an approach to allocate the three core verification requirement of the ETS Directive (criteria D1 to D3) to the eight core verification requirements of the MRG (criteria G1 to G8).

| Matrix of requirement for the verification of annual emission reports according to the ETS Directive and the MRG | D1 Strategic analysis | D2 Process analysis | D3 Risk analysis |
|---|--------------------------------------|------------------------------------|---------------------------------|
| G1 Understanding of activities | X | X | X |
| G2 Understanding of data management system | (X) | X | X |
| G3 Establishing an acceptable material level | X | (X) | (X) |
| G4 Analysing the data risks | (X) | (X) | X |
| G5 Drawing up a verification plan | X | - | - |
| G6 Carrying out a verification plan | (X) | X | (x) |
| G7 Checking the accuracy level | (X) | X | X |
| G8 Requesting the operator to provide missing data or revise calculations | X | X | X |

A major relationship is indicated in the table with “X”, a minor one with “(X)”. Beside the criteria G8, which is only part of the strategic analysis, all other G-criteria are aligned to all kind of analysis (strategic, process and risk analysis).

A verifier shall consider both verification requirements – the requirements of the ETS Directive and the requirements of the MRG. It is his core objective and a proof of his expert knowledge to adjust verification procedures (scope and scale) to the installation whose emission report has to be verified. It is not possible, at least not meaningful to establish a general verification plan for all kind of activities and for all kind of plant sizes. However, the consultation of already available guidelines/manuals will give substantial support to verifier to establish an installation specific and appropriate verification plan. Therefore it is recommended to have a detailed look to – among others - the following two guideline which are currently available in internet (more sources for useful information are given in the list of references in Annex 4 of this manual):

- IETA-Verification Protocol v.2.0 (September 6th 2005)
(Verification of Annual Emission reports of installations engaged in EU emissions trading
(see International Emission Trading Association – IETA www.ieta.org)
- EU Emissions Trading Scheme – Guidance on Annual Verification, Version 1 (August 5th 2005)
(see Department for Environment Food and Rural Affairs – defra www.defra.gov.uk)

The IETA-Verification protocol is mainly aligned to the verification requirements of the ETS-Directive and thus addresses a strategic analysis, a process analysis and a risk analysis. Essentials of this approach are presented with some comments and amendments on the following pages of this manual (Part II-A).

The defra-Guidance is mainly aligned to the verification requirements of the MRG and thus addresses the eight core requirements of the MRG: Understanding of activities, understanding of data management system, establishing an acceptable material level, analysing the data risks, drawing up a verification plan, carrying out a verification plan, checking the accuracy level, requesting the operator to provide missing data or revise calculations.

These eight topics are also addressed in this manual (Part II-B) - again with some additional comments and amendments.

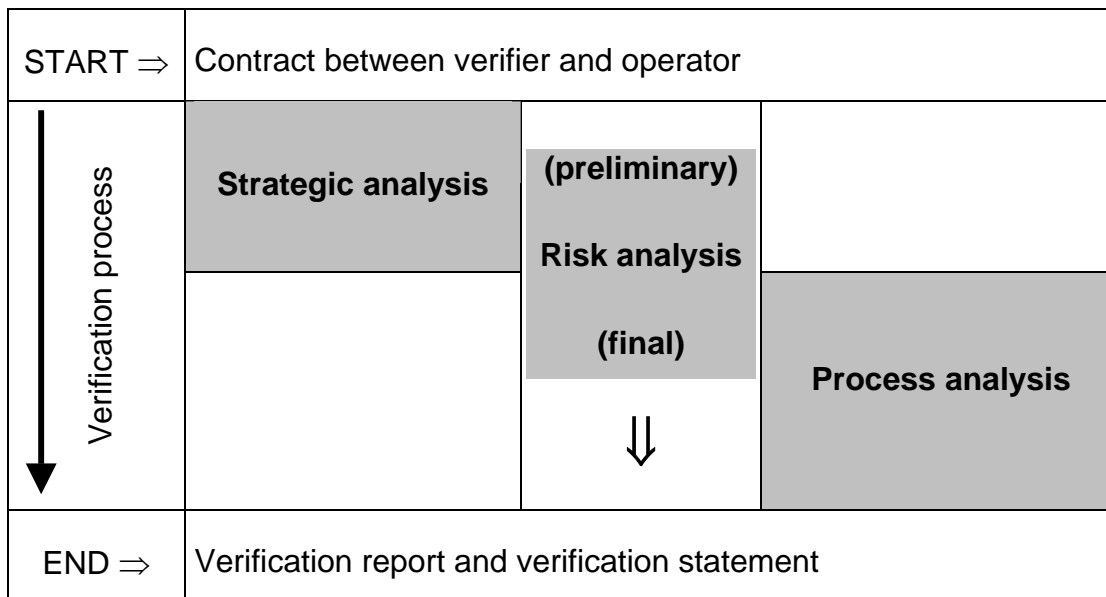
Part II-A. Verification requirements based on ETS Directive

(for more information see: IETA-Verification Protocol v.2.0 September 6th 2005)

In Annex V of the ETS Directive the required analysis are given in the following sequence:

- Strategic analysis
- Process Analysis
- Risk Analysis

However, the workflow of a verification process should differ from this sequence as follows:



In a first step the strategic analysis has to be performed with a preliminary risk analysis. A verification plan is the core objective of the strategic analysis considering the already visible risks for the envisaged verification activities.

The verification plan is a fundamental tool for the execution of the process analysis which is combined with further activities according to risk assessment (⇒ final risk analysis).

Strategic analysis (D1)

The strategic analysis is strictly focused on monitoring and reporting of CO₂-emissions and thus “only” related to the system to meet the legal requirements according to CO₂ emissions. The strategic analysis shall assess the following documents and procedures:

- greenhouse gas emissions permit
(including approved monitoring methodology and frequency),
- implementation of the approved monitoring methodology
(including associated operational records, e.g. forms, procedural and work descriptions),
- internal QA-/QS-measures
(including audit plan, audit findings, quality records)
- annual emission report

A core method for assessment of the operator’s monitoring and reporting procedures will be document review combined with selected interviews to such topics which are relevant for CO₂ emissions and thus relevant for the verification of the annual emission report, which, however, cannot be found easily/directly in the available documents. In general a site visit is not be a mandatory part of the strategic analysis. Only in justified exception (e.g. very complex installation, “weak” documentation, several questions) a site visit may be already performed at this early stage of verification.

The level of information necessary for performing a strategic analysis is an “aggregated management level” and this is much lower than the information level necessary to perform the process and risk analysis (see next sub-chapters of Part II-A of this manual).

Based on this “aggregated management information level” the complete system of monitoring and reporting shall be assessed by the verifier, e.g. with regard to the following topics:

- Complexity of the installation
 - What kind and how many categories of activities?
 - What kind and how many activities?
 - What kind and how many sources?
 - What kind and how many fuel and material streams?
 - What kind of monitoring approach? (calculation or measurement)
 - What kind and how many biomass streams?
 - Is CO₂ transferred to other installations?
- Operational structure, especially data management system
 - What kind of data collection, e.g. online measurement or periodic measurement?
 - What kind and how many samplings?
 - What kind of external input, e.g. accredited laboratory?
 - What kind of data processing and archiving?
 - Stand alone system or integrated system, e.g. combined with environmental and/or quality management systems?
 - Is the operational structure documented (see also QA/QC-measures)?
- Organizational structure, especially responsibilities
 - Who is the operator (i.e. legal person) according to the permit?
 - Are there responsibilities/duties delegated? What kind of responsibilities/duties and to whom?
 - Is the organisational structure documented (see also QA-/QC-measures)?

- QA-/QC-measures
 - How are QA-/QC-measures documented? (handbook, intranet, etc.)
 - Listing of procedural descriptions available?
 - Listing of work descriptions available?

As the strategic analysis is based on aggregated managerial information the assessment will be mainly qualitatively respectively semi-quantitatively. Conventional strategic analysis tools might be applied, as e.g.

- Strength weakness assessments,
- Portfolio analysis,
- Balanced score card.

The findings and results of the strategic analysis will be a main input to the process and risk analysis. Especially an installation specific verification plan considering the findings and results of the strategic analysis shall be presented at the very end of the strategic analysis by the verifier.

The verification plan consists of a verification programme and a data sampling plan and summarizes all activities that are to be carried out in order to culminate in conclusions on the emission report with a predetermined level of assurance.

The verification programme describes the nature of the audit activities [e.g. document review, interviews expert's survey, audit, walk-through tests], their timing and scope in order to contribute effectively to the verification plan. The verification programme serves as a means of monitoring and recording progress in the audit activities.

The data sampling plan sets out the detail of the data to be tested in order to reach a conclusion on the materiality of the reported figures.

Process Analysis (D2)

The process analysis is the execution of the verification plan and is in general combined with an on site inspection of the complete monitoring and reporting system. However, site visits are not mandatory according to the ETS Directive:



ETS Directive, Annex V

The verification of the information submitted shall, where appropriate, be carried out on the site of the installation.

The verifier shall use spot-checks to determine the reliability of the reported data and information.

But in virtually all cases verifiers shall visit the installation as part of the process analysis. Site visits are assumed to mean data sampling and provision of information at:

- the site of an installation to audit compliance with the rules and principles for monitoring and reporting;
- an installation's head or regional office if this is where the emissions data is held or processed; and
- any other location (e.g. suppliers' facilities) where data verification work may be necessary.

There may be only a few situations (e.g. telemetered data, site in a remote an inaccessible location) when the operator and verifier may agree and justify, why a site visit cannot be carried out. In deciding on whether or not a site visit is required, the verifier shall take into account the potential risks to the verification of not visiting the site. Potential risks - for both the verifier and operator – include e.g. that the verifier might not be able:

- to confirm that the physical meters meet the description in the monitoring methodology and maintenance system,
- to check whether changes have occurred which have not been approved by or notified to the competent authority
- to check that the quality assurance and control processes have been fully implemented and adhered to,
- to check that the monitoring and reporting on site complies with the conditions of the permit and the MRG.

The process analysis can be structured according to the workflow of monitoring and reporting, e.g. by the investigation of the following core documents and procedures:

- greenhouse gas emissions permit including monitoring methodology
- data management including QA-/QC-procedures
- annual emission report including determination of total CO₂-emissions



ETS Directive, Article 6(2)

A greenhouse gas emissions permit shall contain the following:

- (a) the name and address of the operator;
- (b) a description of the activities and emissions from the installation;
- (c) monitoring requirements, specifying monitoring methodology and frequency;
- (d) reporting requirements; and
- (e) an obligation to surrender allowances equal to the total emissions of the installation in each calendar year, as verified in accordance with Article 15, within four months.

The verifier has already checked as part of the strategic analysis whether the greenhouse gas emissions permit is existent and available. Thus the monitoring and reporting requirements addressed in the permit have been already considered in the verification plan and thus in the planning of the process analysis.

If no installation specific monitoring and reporting requirement are part of the permit, the verifier shall check the operator's application for a greenhouse gas emissions permit whether this application

- is existent and available and
- contains measures planned to monitor and report emissions in accordance with the MRG.

If the operator has not applied for any measure planned to monitor and report emissions in accordance with the MRG and/or if the permit does not contain monitoring and reporting requirements although the operator has applied for the verifier shall flag this in his verification report. In this case the annual emission report has to comply with the relevant legal framework (MRG and the implementation of the ETS Directive to national law).

The implementation of the monitoring methodology shall be proven by auditing the workflow from data collection via data calculation to data archiving and data reporting. Reported CO₂-data shall always be correlated with their primary sources (e.g. activity data, emission factor, oxidation factor of the fuel stream). The verifier has to perform this document and flow trace by a representative number of spot checks. The materiality of the emission report shall be tested by means of these spot checks (data tests and sampling) to confirm that the emission report is fairly stated.

The following aspects should be checked additionally during the compliance audit whether they are in line with the greenhouse gas emissions permit respectively with the monitoring methodology:

- Responsibilities for monitoring and reporting
- QA-/QC-measures including Internal audits
- Completeness and any changes in sources and streams
- Inspection of selected measuring devices
- Workflow of data management
- Handling of any abnormal operation of the installation (repairs, malfunctions, extensions or incidents that affected the reported data)

If in the opinion of the verifier the monitoring methodology and associated internal control mechanisms (e.g. documentation, internal audits) are in conformity with legal requirements and are implemented effectively and sustainably, this positive conclusion will be flagged in the verification report and verification statement.

The audit findings and results are compared to the legal requirements (compliance audit). In cases of non conformities e.g. between the implemented monitoring methodology and the approved one documented in the greenhouse gas emissions permit, all issues relevant to non conformities shall be documented in a non conformity statement in the verification report and/or in the verification statement. In cases where the non conformity is material

- further investigations shall be undertaken to resolve the matter or
- a material error statement in the verification report respectively in the verification statement shall be produced.

In case of any doubts about the existence, design, legal compliance and implementation of the monitoring methodology and associated internal control procedures that could result in material errors, omissions and misstatements in the annual emission report the verifier has to modify his verification programme and its associated data sampling plan in order to perform more control tests so that sufficient assurance that the monitoring methodology meets the requirements set out in the permit can still be achieved (risk analysis).

In cases of any doubts about the conformity of the monitoring methodology with requirements given in the greenhouse gas emissions permit, associated monitoring methodology and other relevant requirements additional document review site review, sampling and tests shall be carried out. This will result in the verification programme requiring more time so that sufficient assurance can still be achieved.

If it is impossible to gather sufficient audit evidence, that the monitoring methodology is existent, well designed, in line with the legal framework and effectively implemented, no positive verification statement can be provided. The findings and results have to be clearly documented in the verification report.

Risk analysis (D3)

Risks have something to do with complexity of the installation, the number of people involved and the number of individual steps implemented to arrive at an aggregated emission figure in the emissions report. Risks relate generally to the possibility of

- material errors, omissions and/or misstatements in the emission report and
- non conformities with requirements in the greenhouse gas emissions permit (including monitoring methodology) and other relevant legal requirements.

The likelihood of a material error, omission and/or misstatement respectively of a non conformity can be deduced from the strategic analysis (see first described analysis) and the assessments of inherent risks and internal control risks.

An inherent risk is the susceptibility of a parameter in the emission report to misstatements that could be material, individually or when aggregated with misstatements in other parameters, assuming that there were no related internal controls implemented.

An internal control risk is the probability that the implemented internal control system (data management, QA-/QC-procedures) does not prevent or detect or correct in a timely manner non conformities with the greenhouse gas emissions permit, its associated approved monitoring methodology and other relevant requirements.

Inherent risks are generally low at installations/installations with the following features:

- simple technology, i.e. not too complex
- simple and transparent workflow from primary data via emission data to reported data
- only few or no differences compared to previous years have come about.

Internal control risks are generally low at installations where the likelihood of material errors, omissions and misstatements is controlled/minimized by the following measures:





- documented and implemented data management systems,
- segregation of duties,
- integration the monitoring system as far as possible in existing reporting systems,
- only few or no changes have come about in comparison to previous years.

The verifier has to establish during the process analysis updated “lists of inherent risks and internal control risks”, which have to be considered in the (adjusted) verification plan, by investigating the established procedures, by checking the available documents and by interviewing key persons responsible for emission monitoring and reporting. Installation specific characteristics like

- occurrence of biomass streams,
- transferred CO₂
- malfunctions and shut downs during the monitoring and reporting period
- substantial changes in the load and/or capacity of the installation
- outsourcing of procedures with relevance to monitoring and reporting
- changes in the operational and organizational structure (e.g. responsibilities, data management, QA/QC)

have to be carefully considered in the risk analysis.

The verification intensity has to be adjusted to the listed internal risks and internal control risks, e.g. according to the portfolio diagram on the next page. Adjustment of verification intensity means the reallocation e.g. of document review, interviews, site visits, auditing, data sampling, analytical procedures and data review procedures.

| | | | | |
|-----------------------|-------------------------------|--|---|-------------|
| INHERENT RISKS | high |  medium verification intensity minor adjustments to verification plan established during the strategic analysis |  very high verification intensity major adjustments to verification plan established during the strategic analysis | |
| | low | low verification intensity no adjustments to verification plan established during the strategic analysis  | medium verification intensity minor adjustments to verification plan established during the strategic analysis  | |
| | INTERNAL CONTROL RISKS | | | high |

Part II B. Verification requirements based on the MRG

(for more information see: defra Guidance on Annual Verification, Vers.1, August 5th 2005)

Understanding of activities (G1)



MRG, Annex I, Chapter 7.4

The verifier shall understand each activity undertaken by the installation, the sources of emissions within the installation, the metering equipment used to monitor or measure activity data, the origin and application of emission factors and oxidation/conversion factors, and the environment in which the installation operates.

Operators were responsible as part of their application for a greenhouse gas emissions permit for correctly determining the scope of their installation (category of activity, activity) and identifying the sources and streams of fuel and material that should be included within in the greenhouse gas emissions permit. Where it is unclear, operators shall clarify with the competent authority what sources / streams should and should not be included in the permit.

The verifier should review the greenhouse gas emissions permit including non-technical description and flow chart of the installation. In any case the verifier shall check

- whether he is generally appointed to perform verifications for the activities of the installation and
- whether he has the necessary scope competence for the technology applied in the installation.

In case of any doubts the verifier has to clarify open questions with the operator (and in selected cases also the competent authority). The verifier shall select an expert as a member of the verification team if he is not sufficiently familiar with the installation-specific technology.

Understanding of data management system (G2)



MRG, Annex I, Chapter 7.3

The operator shall perform data management quality assurance and control processes on its data to prevent omissions, misrepresentations and errors. Such processes shall be designed by the operator based on the complexity of the data set. The data management quality assurance and control processes shall be recorded and made available to the verifier.

Verifiers shall check that the operator's data management system enables transparent reporting and ensures ease of verification. Effective data management with accessible data and records will streamline the process, reduce verification time and minimise costs. Good data management means that verifiers can be more confident in the quality of the data being checked, and this may influence the data sampling plan and the verification programme as well as the level of assurance.

Verifiers shall check that operators are maintaining adequate quality assurance systems or procedures to comply with Chapter 6 (Retention of Information) and Chapter 7.3 (Data management) of the MRG.

Verifier shall check whether the operator has a procedure established, documented, implemented and maintained that data, calculations and related specified information are retained for at least ten years after the submission of each annual emission report. Similar requirements apply to documents and laboratory tests used to calculate emissions data. For example, results of tests for net calorific values and emission factors for fuels, activity specific oxidation factors, process emission factors and composition data, calibration procedures (reporting dates, certificates and data), and the biomass fraction.

Remark: Verifier should also retain parallel documentation records for ten years (including working papers).

Establishing an acceptable material level (G3)



MRG, Annex I, Chapter 7.4

The verifier shall assess the materiality both of any individual misstatement and of the aggregate of uncorrected misstatements, taking into account any omission, misrepresentation or error that could lead to misstatement, for example a data management system that produces non-transparent, biased or inconsistent figures. The level of assurance shall be commensurate with the materiality threshold determined for that installation.

The verifier has to establish an installation specific materiality threshold considering the scope and complexity of the installation. He can relate to the following recommendations:

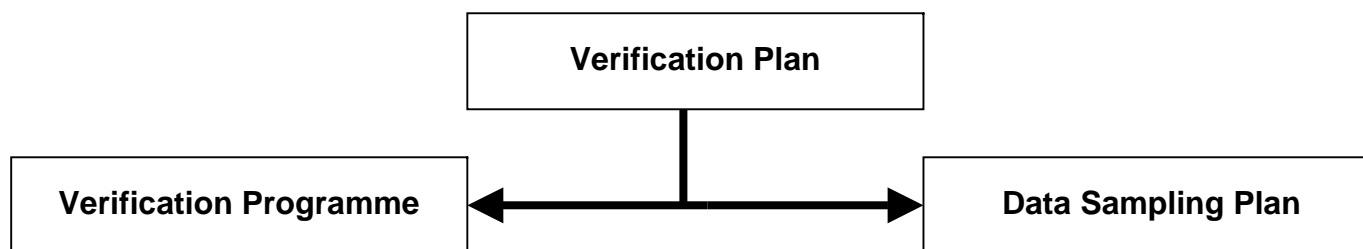
- The MRG states
*'materiality means the professional judgement of the verifier as to whether an individual or aggregation of omissions, misrepresentations or errors that affects the information reported for an installation will reasonably influence the intended users' decision. As a broad guide, a verifier will tend to class a misstatement in the total emissions figure as being material if it leads to aggregate omissions, misrepresentations or errors in the total emissions figure being **greater than 5 percent**'.*
- The Commission's FAQs on Monitoring and Reporting for the EU ETS goes on to say that
*'the level of materiality has to be established by the verifier on a case-by-case basis. Depending on the circumstances, a level of misstatement **above 1%** of annual emissions of an installation could qualify as material'.*

Analysing the data risks (G4)

All inherent risks and internal control risks that might contribute to a material error, omission and/or misstatement shall be assessed by the verifier. The procedure is already described in Part II A of this manual in the sub-chapter “Risk Analysis”. Please refer to this chapter for more information.

Drawing up a verification plan (G5)

A verification programme and a data sampling plan should be described and summarized in the verification plan (see also “Strategic Analysis” in Part II A of this manual):



The verifier shall take into account the scale, number and complexity of the emissions from the installation when drawing up a verification plan (all checks in form, content and time that need to be performed for the verification). In smaller installations with fewer emissions, the verifier may need to check fewer records, and the process should be faster than for larger, more complex installations. Thus an appropriate degree of rigour is required for both small and large installations, taking into account their scope and complexity.

The scope, depth and breadth of verification work undertaken should be planned to reduce risk and uncertainty arising in the emissions data. It must be recognised that a “reasonable” level of assurance requires significant effort (efficient, effective processes) in order to demonstrate that the emissions have been determined with a high degree of certainty as required in Annex V of the ETS Directive.

Each installation's annual emissions report must be verified on its own merits and the verifier shall propose appropriate verification procedures and take appropriate data and information samples. The verification programme shall describe the verification procedures (G1 to G8) in their extent, intensity and sequence, e.g. the verifier shall:

- check that the scope of the permit complies with Annex 1 of the ETS Directive and any determinations by the regulator or competent authority,
- check that all emission sources and all fuel and material streams listed in the GHG permit are included in the monitoring methodology,
- plan and announce a site visit (date and scope, availability of contact person),
- control meter checks and calibrations,
- assess any equipment failure and the measures the operator has undertaken.

A data sampling plan may be used by the verifier to reduce the resources required for verification at an installation provided the selected sample is representative and conforms to all legislative requirements. Any data sampling plan to verify the accuracy of the data requires prior assessment of relevant evidence to ensure that the data sampling will meet the principles of the MRG for “completeness”, “consistency” and “transparency”. This will also allow an assessment of “faithfulness”. Where a data sampling plan has been adopted (in the course of verifying accuracy and materiality) and problems are revealed with the other monitoring and reporting principles within the sample selected, then the whole data set must be re-examined by the verifier to ensure that the sample is properly representative of the requirements (subject to a repeated risk analysis).

Carrying out a verification plan (G6)

Procedures for the verification of an annual emission report are described in detail in the verification plan. Among others the verifier shall check

- calibration, adjustment and check at regular intervals of measuring equipment,
- failure of measuring equipment and thus change of tiers.



MRG, Annex I, Chapter 7.2

The operator shall ensure that relevant measuring equipment is calibrated, adjusted and checked at regular intervals including prior to use, and checked against measurement standards traceable to international measurement standards. In addition, the operator shall assess and record the validity of the previous measuring results when the equipment is found not to conform to requirements. When the equipment is found not to conform to requirements, the operator shall promptly take necessary remedial action. Records of the results of calibration and authentication shall be retained.

The verifier shall check that the appropriate calibrations, checks and adjustments and their frequencies have been carried out, as defined in the monitoring methodology. Any non conformities shall be noted in the verification report and the verifier will need to consider whether a “not verified” statement should be issued if the lack of checking is likely to lead to material misstatement.

Where the calibrations, checks and adjustments and their frequencies are not specified in the approved monitoring methodology, or where no approved monitoring methodology exists, the verifier should review documentation and records and consider whether the operator has demonstrated that the relevant metering equipment has been calibrated, adjusted and checked at regular intervals including prior to use, and checked against appropriate calibration standards traceable to international measurement standards (if available), and that the operator has promptly taken necessary remedial action when the equipment is found not to conform to requirements.

If the verifier considers that the procedures are inadequate, improvements should be clearly described and noted in the verification report. The verifier will also need to consider whether a “not verified” statement should be issued if the lack of checking could lead to material misstatement in the emissions figure.

In addition to calibration and maintenance of meters, verifiers should check the following :

- meter installation, e.g. adequate straight pipework upstream of a meter (depending on the meter type);
- meters should be in the appropriate plane (vertical/ horizontal pipework);
- flow volume being measured, e.g. volumes and type still within the original design capacity of the meter; steady state flow etc.;
- the possible limitations of weighbridge calibration.

Where the approved monitoring methodology specifies a checking and calibration regime, any changes to that regime should be approved by the competent authority, preferably through a permit variation. Where the competent authority has not approved a particular change, an “not verified statement” should be issued with comments, unless the verifier considers that the lack of calibration is unlikely to lead to material misstatement.

Verifiers must also check that the correct factors have been used by operators to perform appropriate calibrations, checks and adjustments. For example, they must check that consistent standard temperature and pressure factors have been used and are consistent within any calculations for adjustments.



MRG, Annex I, Chapter 4.2.2.1.4

If the highest tier methodology, or the variable-specific agreed tier is temporarily not feasible for technical reasons, an operator may apply the highest achievable tier until such time as the conditions for application of the former tier have been restored. The operator shall without undue delay provide proof of the necessity for a change of tiers to the competent authority and details of the interim monitoring methodology. The operator shall take all necessary action to allow the prompt restoration of the original tier for monitoring and reporting purposes.

The verifier must check that there is an adequate alternative emissions monitoring method in place in the event of equipment failure and that the emissions have been calculated correctly using the method described in the monitoring methodology or as agreed in writing with the regulator or competent authority. The verifier shall check whether any estimates made by the operator have considered the most representative set of data and were consistent with the underlying monitoring and reporting principles such as faithfulness, accuracy and transparency, and that prompt measures were taken to correct any failures.



Adequate alternative emissions monitoring methods

CO₂ emissions during meter failure might be estimated using techniques such as the appropriate activity data and/or the worst case monthly average efficiency factor during the previous twelve months of operation. For example, the activity data might be 'run-time' or 'product output', and the efficiency factor might be the highest monthly 'gas usage per day' or the highest monthly 'gas usage per tonne of product' determined in the twelve months preceding the date that the meter became unavailable. These alternatives avoid under-reporting.

The verifier shall also check that the operators notified the regulators/competent authority of any equipment failures or drops to lower tiers during the reporting period, and that efforts were made to correct the failure as promptly as possible.

Checking the accuracy level (G7)



MRG, Annex I, Chapter 4.3.1

The operator shall have an understanding of the impact of uncertainty on the overall accuracy of his reported emission data.

Under the calculation-based methodology, the competent authority will have approved the combination of tiers for each source in an installation plus approved all other details of the monitoring methodology for that installation as contained within the installation's permit. In doing so, the competent authority has authorised the uncertainty directly resulting from correct application of the approved monitoring methodology, and the evidence of that approval is the content of the permit.

The operator shall state the approved combination of tiers for each source in an installation in his annual emissions report to the competent authority for each activity and relevant stream of fuel or material. Stating the combination of tiers in the emissions report shall constitute reporting uncertainty for the purposes of the Directive. Hence there is no further requirement to report on uncertainty if the calculation-based methodology is applied.

The permissible uncertainty determined for metering equipment within the tier system shall comprise the specified uncertainty of metering equipment, uncertainty associated to the calibration and any additional uncertainty connected to how the metering equipment is used in practice. The stated threshold values within the tier system refer to the uncertainty associated to the value for one reporting period.

The operator, via the quality assurance and control process, shall manage and reduce the remaining uncertainties of the emissions data in his emissions report. During the verification process, the verifier shall check the correct application of the approved monitoring methodology, and shall assess the management and reduction of remaining uncertainties via the operator's quality assurance and control procedures.

A certain level of uncertainties and inaccuracies has been accepted in the greenhouse gas emissions permit, respectively in the approved monitoring methodology. So the verifier has mainly to check whether monitoring and reporting is in line with the monitoring methodology. The methodology must be used for verification purposes whether or not it is the same as that for a similar installation.

If the verifier considers that monitoring and reporting has not been applied correctly in accordance with the greenhouse gas permit and the monitoring methodology they should raise any inconsistencies with the operator as soon as possible. The operator must then either change the monitoring to come into line with the monitoring methodology, or apply to the regulator/competent authority to vary the permit and relevant parts of the monitoring methodology.

If the inconsistency cannot be corrected through a variation in time for the verification report to be issued, and the discrepancy does **not** cause material errors or it is **not** because the operator has used a lower tier factor than the one specified in the monitoring methodology, then a 'verified' opinion can be issued. In these cases, the verifier must state the reasons for any non-material inconsistencies and describe the improvements required to comply with the monitoring methodology.

However, if the inconsistency is not corrected and it is likely to lead to material errors, or the inconsistency involves the use of a lower tier factor than that specified in the monitoring methodology, the verifier must issue a "not verified" verification statement with a description of the material errors and reasons.

The monitoring methodology should specify monitoring required for all relevant CO₂ sources listed in the greenhouse gas emissions permit. Verifiers must check that the scope of the permit complies with Annex I of the ETS Directive. They must also check that all sources and streams listed in the greenhouse gas emissions permit are included in the monitoring methodology. Any discrepancies should be raised with the operator as soon as possible, and resolved. Verifiers may ask operators to show evidence of why a permit scope does not meet with their expectations for compliance. Evidence could include details of correspondence with the regulator/competent authority about which sources should and should not be in the permit, and any permit variation documents.

Requesting the operator to provide missing data or revise calculations (G8)

The following section explains the types of errors, omissions or misstatements that may lead to material misstatement in the final emissions figure, and how they should be assessed and corrected. Operators should be aware that they may be required to amend the annual emission report if errors are found by the verifier and need to be corrected.

Verifiers should follow the following stages when checking for and dealing with errors:

- Verify data sets and raw data as determined by the verification sampling plan.
- If errors, omissions or misstatements are found, the installation operator should correct them.
- When errors, omissions and misstatements are found and have been corrected, take another set of data samples to see if errors, omissions and misstatements re-occur or may be deemed based on data sampling not to re-occur in the rest of the data set.
- If errors, misstatements or omissions re-occur, the operator of the installation should check the whole data set and provide evidence of checking and any corrections made to the verifier. When the operator's checking is complete and confirmed by the verifier, the verifier should take another set of data samples to check and see if the errors, omissions and misstatements reoccur or may be deemed (based on sampling) not to re-occur in the rest of the data set.
- Verifiers must then make a decision about what they believe is the potential for unidentified material misstatement throughout the data stream being tested.
- Previous steps should then be repeated for all data streams.

If errors are identified by the verifier, they should be corrected by the operator and recorded by the verifier. If the verifier detects an error in the reported data, but cannot determine whether it results in an over- or under-declaration of emissions, the verifier should consider whether it constitutes or contributes to a material error for that source and for the whole installation. This should be commented on in the verification report.

Part III: Verification report and verification statement

The verifier shall write according to the ETS Directive and the MRG a verification report and a verification statement.



ETS Directive, Annex V

The verifier shall prepare a report on the validation process stating whether the report pursuant to Article 14(3)* is satisfactory. This report shall specify all issues relevant to the work carried out. A statement that the report pursuant to Article 14(3)* is satisfactory may be made if, in the opinion of the verifier, the total emissions are not materially misstated.

** Explanation of author: This is the annual emission report of the operator.*



MRG, Annex I, Chapter 7.4

At the end of the verification process, the verifier shall make a judgment with respect to whether the emissions report contains any material misstatement. If the verifier concludes that the emissions report does not contain any material misstatement, the operator can submit the emissions report to the competent authority in accordance with Article 14 (3) of the ETS Directive. If the verifier concludes that the emissions report contains a material misstatement, the operator's report has not been verified as satisfactory.

The operator needs a positive verification statement for further participating in the EU ETS and for surrendering EU allowances according to the amount of CO₂ emissions documented in the annual emission report. The verification statement it has to be formulated as a clear yes or no statement, so that the competent authority can take clearly all further actions.

However, it is not clear to the time when writing this manual, whether the verification report and the verification statement

- will be one single document or will be two separate documents (e.g. addressed to different parties, report to operator, statement to competent authority) ,
- will be a separate document or an integrated part of the operator's annual emission report .

As there are no additional detailed mandatory requirements given by the EU legal framework according to the structure and content of the verification report and statement, national requirements issued by the competent authority have to be considered by the verifier.

Independent of these missing requirements the verifier should prepare in any case beside the mandatory verification report and the verification statement an internal verification process report which is used for independent technical review. This recommendation is also given in the EA Guidance EA-6/03 for the recognition of Verification Bodies under the EU ETS Directive. This internal verification process report should contain sufficient information to enable the verifier to evaluate the verification process and supporting documentary evidence to confirm the conclusion and the recommendations of the mandatory verification report and statement according to Annex V of the ETS Directive. The internal verification process report shall thus describe

- the transparent and logical flow of information including the rationale for increase/decrease of data sampling,
- the results of the verification plan, especially the results of the strategic analysis, risk analysis and process analysis,
- activities undertaken,
- changes that have occurred during the verification process and
- decisions on the data quality and materiality of the installation's CO₂ emission data and annual emission report.

A more detailed list of requirements can be found in the ISO/DIS 14064-3, which can be adapted to the requirements of the EU ETS as follows:

Verifiers should prepare documentation that is sufficiently complete and detailed to provide an overall understanding of the process. As appropriate, the verifiers should consider producing and recording the following kinds of documents and verification evidence:

BACKGROUND DOCUMENTATION

- Information concerning the industry and legislative environment within which the installation operates,
- Information about organisational boundaries of the installation,
- Information about the identification of CO₂-sources and fuel and material streams,
- Procedures for quantifying CO₂ emissions
- An annotated process flow diagram, characterising mass and energy flows for CO₂ sources
- Extracts or copies of important agreements, contracts, etc. with relevance to CO₂ emissions

PROCESS DOCUMENTATION

- Evidence of the verification plan,
- Any changes made to the verification plan and associated activities as a result of evidence obtained,
- Details of the anticipated and actual activities to be undertaken within the verification programme, including explanations and justifications for the approach taken during the verification and methodologies used,,
- Details of the anticipated and actual data sampling plan, including explanations and justifications for the approach taken during the verification and the methodologies used,
- Records relating to verification team personnel, including verifier competence and performance evaluation,

- A record of who completed the activities, when they were performed and how these activities contributed to the verification findings and conclusions,
- Results of the risk assessment and materiality analysis, including evidence of inherent and control risk assessments,
- Evidence that the verifier has a clear understanding of the operator's data management and internal control system,
- A record of the nature, timing and extent of activities performed and the results of such activities including significant verification trails followed and the reasoning behind them,
- Analysis of the CO₂ information inputs, quantification and aggregation and disaggregation methodologies,
- Details of the reported CO₂ information that were verified, including any relevant supporting information that may be required to verify consistency in future verifications,
- Verifier's reasoning and rationale on all significant matters that require the exercise of professional judgement,
- The results and findings of the verification, including how exceptions and unusual matters – if any – were resolved or treated and conclusion of the verifier concerning significant aspects of the verification.

Based in the internal verification process report (and/or the mandatory verification report according to Annex V of the ETS Directive), the verifier has to establish a verification statement (or verification opinion). The verifier shall issue a clear verification statement with the following three options:

| | | |
|---|------------------------------|---|
| 1 | verified without comments | The verifier is satisfied that there are no material errors, omissions and misstatements in the annual emission report and that monitoring and reporting has been carried out in accordance with the green house gas emissions permit. Any inconsistencies – if applicable – have been resolved and are no longer an issue. |
| 2 | verified with comments | The verifier has detected some inconsistencies/non conformities with the green house gas emissions permit that could not be resolved and that should be addressed by the operator as soon as possible. However, these inconsistencies/non-conformities have not caused material errors, omissions and misstatements and therefore the annual emission report can be verified. |
| 3 | not verified | The verifier has detected some inconsistencies/non conformities with the green house gas emissions permit that could not be resolved and that should be addressed by the operator as soon as possible. These inconsistencies/non-conformities have caused material errors, omissions and misstatements and therefore the annual emission report cannot be verified. |

The verifier shall assess – according to the ETS Directive and the MRG - that the reported emissions are not materially misstated. This statement is similar to what is known in financial statement audits as “reasonable assurance”. Therefore significant effort are necessary to ensure that the data are not materially misstated and the verifier shall have performed enough checks to reach a positive conclusion.

Annex 1: Verification checklist – check on completeness of monitoring methodology

| 1: Identification of the installation | | Agreement | | | Remarks |
|---------------------------------------|--|-----------|----|-----|---------|
| No. | Description | yes | no | n/a | |
| 1.A | Installation (capacity) | | | | |
| | Category of activity | | | | |
| | Activity | | | | |
| | NAP-Code | | | | |
| | IPPC permit | | | | |
| | GHG permit | | | | |
| 1.B | Non-technical summary | | | | |
| 1.C | Flowchart (sources, metering, sampling) | | | | |
| | Definition of the system borders | | | | |
| 1.D | Total CO ₂ -emissions of the installation | | | | |
| 2 | Name of operator | | | | |
| | Address of operator and site | | | | |
| | Contact person operator for monitoring and reporting | | | | |
| | Contact person regulator, competent authority | | | | |
| 3 | List of fuels and material streams for each source | | | | |
| | | | | | |

| 1: Identification of the installation | | Agreement | | | Remarks |
|---------------------------------------|--|-----------|----|-----|---------|
| No. | Description | yes | no | n/a | |
| 4 | List of sources for each activity | | | | |
| | List of activities for each category of activity | | | | |
| | List of categories of activities for the installation | | | | |
| 5 | Classification of streams (A, B, C) | | | | |
| | Classification of streams (de minimis, minor, major) | | | | |
| | Classification of sources (A, B, C) | | | | |
| | Classification of sources (de minimis, minor, major) | | | | |
| | List of tiers for major streams/sources | | | | |
| | List of tiers/approaches for minor streams/sources | | | | |
| | List of tiers/approaches for de-minimis streams/sources | | | | |
| 6 | List of metering devices (description, type, location, etc.) | | | | |
| 7. | List of sampling of fuels and materials | | | | |
| 8 | List of data-sources or analytical approaches | | | | |
| 9 | Description of a continuous monitoring system (CEM) | | | | |
| 10 | Description of QA-/QC-procedures | | | | |
| | List of procedural and work descriptions, handbook | | | | |
| 11 | Information about EMAS, ISO 14001 and/or ISO 9001 | | | | |

Annex 2: Verification checklist – check on availability of additional information of monitoring methodology

| 1: Identification of the installation | | Agreement | | | Priority | | Remarks |
|---------------------------------------|--|-----------|----|-----|----------|---|---------|
| No. | Description | yes | no | n/a | A | B | |
| 1 | Deviation from tiers prescribed in the MRG | | | | | | |
| 2 | Reporting of incidents | | | | | | |
| 3 | Amendments since earlier versions of the MM | | | | | | |
| 4 | Internal audits (plan, scope, results) | | | | | | |
| 5 | Operational records | | | | | | |
| 6 | Quality records | | | | | | |
| 7 | Storage of data and information | | | | | | |
| 8 | Organisation chart | | | | | | |
| 9 | Duties, responsibilities and authorities (e.g. matrix) | | | | | | |
| 10 | N.N. | | | | | | |
| 11 | N.N. | | | | | | |
| 12 | N.N. | | | | | | |
| 13 | N.N. | | | | | | |
| 14 | N.N. | | | | | | |
| 15 | N.N. | | | | | | |

Annex 3: Verification checklist – check on content of monitoring methodology

| 1: Identification of the installation | | Agreement | | | Remarks |
|---------------------------------------|--|-----------|----|-----|---------------------------------------|
| No. | Description | yes | no | n/a | |
| 1 | Definition of the installation | | | | Assessed in the check of complettness |
| | Are fuel and material streams indicated in the flow chart? | | | | See chapter 1 in Guide No.1 |
| | Is the definition of the system boundary clear and exact? | | | | |
| | Are streams and sources clearly distinguished? | | | | |
| 2 | Responsibilities | | | | See chapter 2 in Guide No.1 |
| | Is an organisation chart available? | | | | |
| | Are job descriptions available? | | | | |
| 3 | Fuel and material streams | | | | See chapter 3 in Guide No.1 |
| | Are streams clearly indicated? (Code) | | | | |
| | Are streams clearly linked to sources? | | | | |
| | Are there streams with 100%? | | | | |
| | Are there streams with < 100% biomass | | | | |
| | Are there streams linked to process emissions? | | | | |
| | Are there streams not linked to sources? (e.g. ash, dust) | | | | |

| 1: Identification of the installation | | Agreement | | | Remarks |
|---------------------------------------|--|-----------|----|-----|--|
| No. | Description | yes | no | n/a | |
| 4 | Sources | | | | See chapter 4 in Guide No.1 |
| | Are sources clearly indicated? (Code) | | | | |
| | Are sources clearly linked to activities? | | | | |
| | Is there more than 1 activity? | | | | |
| 5 | Tiers | | | | See chapter 5 in Guide No.1 |
| | Classification of streams to de minimis, minor, major correct? | | | | |
| | Classification of sources to de minimis, minor, major correct? | | | | |
| | Classification of installation to A, B, C correct? | | | | |
| | List of major streams with tiers in line with MRG? | | | | |
| | List of major streams with tiers not in line with MRG? | | | | Compare permit, proof for deviation |
| | List of minor streams with tiers in line with MRG? | | | | |
| | List of minor streams with tiers not in line with MRG? | | | | Compare permit, proof for deviation |
| | Are approaches for de minimis streams/sources acceptable? | | | | |
| 6 | Are metering devices in operation? | | | | See chapter 6 in Guide No.1 |
| | Are metering devices completely characterised? | | | | |
| | Is metering externally performed? | | | | Proof of qualification, e.g. ISO 17025 |

| 1: Identification of the installation | | Agreement | | | Remarks |
|---------------------------------------|---|-----------|----|-----|--|
| No. | Description | yes | no | n/a | |
| 7 | Is a sampling performed? | | | | See chapter 7 of Guide No.1 |
| | Are sampling procedures completely characterised? | | | | |
| | Are sampling procedures externally performed? | | | | Proof of qualification, e.g. ISO 17025 |
| 8 | Are data sources and analytical approaches used? | | | | |
| | Are data sources and analytical approaches characterised? | | | | See chapter 8 of Guide No.1 |
| | Are chemical analysis externally performed? | | | | Proof of qualification, e.g. ISO 17025 |
| 9 | Are CEM is operation? | | | | |
| | Are CEMs completely characterised? | | | | See chapter 9 in Guide No.1 |
| 10 | Are QA_/QC-measures documented? | | | | |
| | Are QA_/QC-measures implemented? | | | | |
| 11 | Are management systems implemented? | | | | See chapter 11 of Guide No.1 |
| | Are management systems certified? | | | | |

Annex 4: References

(A) ISO Standards

| | |
|---|--|
| ISO/IEC Guide 65 First edition 1996 | General requirements for bodies operating product certification systems |
| ISO 589 Third edition 2003-11-15 | Hard coal — Determination of total moisture |
| ISO 5069-1: 1983 | Brown coals and lignites – Principles of sampling – Part 1: Sampling for determination of moisture and for general analysis |
| ISO 5069-2: 1983 | Brown coals and lignites – Principles of sampling – Part 2: Sampling preparation for determination of moisture and for general analysis |
| ISO 9000: 2000 | Quality management systems — Fundamentals and vocabulary |
| ISO 9001: 2000 | Quality management systems — Requirements |
| ISO 9004: 2000 | Quality management systems — Guidelines for performance improvements |
| ISO 10012-1: 1992 | Quality assurance requirements for measuring equipment; Part 1: Metrological confirmation system for measuring equipment |
| ISO 13909-1 | Hard coal and coke – Mechanical Sampling – Part 1: General introduction |
| ISO 13909-8 | Hard coal and coke – Mechanical Sampling – Part 8: Methods for testing of bias |
| ISO 14001 Second edition 2004-11-15 | Environmental management systems — Requirements with guidance for use |
| ISO/IEC 17025 Second edition 2005-05-15 | General requirements for the competence of testing and calibration laboratories |
| ISO/DIS 14064-1: 2005 | Greenhouse gases – Part 1: Specification with guidance at the organisational level for quantification and reporting of greenhouse gas emissions and removals |
| ISO/DIS 14064-2: 2005 | Greenhouse gases – Part 2: Specification with guidance at the project level for quantification, monitoring and reporting of greenhouse gas emission reductions or removal enhancements |
| ISO/DIS 14064-3: 2005 | Greenhouse gases – Part 3: Specification with guidance for the validation and verification of greenhouse gas assertions |
| ISO 19011: 2001 | Guidelines for quality and/or environmental management auditing |

(B) EU Standards

| | |
|---|--|
| Official Journal of the European Union 25.10.2003 L 275/32-46 | DIRECTIVE 2003/87/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC |
| Official Journal of the European Union 26.2.2004 L 59/1-74 | COMMISSION DECISION of 29 January 2004 establishing guidelines for the monitoring and reporting of greenhouse gas emissions pursuant to Directive 2003/87/EC of the European Parliament and of the Council <i>(notified under document number C(2004) 130)</i> |
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Annex 5: Glossary

| Term | Definition | Source |
|--------------------------|--|--|
| Accuracy | means the degree of precision and/or margin of error in reported information that is required by users in order to be able to make decisions with a high level of assurance. Note: the characteristics that determine accuracy vary depending on the type of information. | ISO/WD 14064-3.1, 3.1 |
| Activities | means the activities listed in Annex I to the ETS Directive | MRG |
| Activity data | means historic data and information about fuel use rates, production rates, material use rates and fuel types that have been used to calculate CO ₂ emissions from combustion and processes | defra guidance on verification |
| Activity factor | means the numeric value representing any action or operation that causes or influences the release of greenhouse gas emissions (e.g., amount of fuel consumed or counts of emission sources); absolute greenhouse gas emissions result when related to the rate of emissions from the action | defra guidance on verification |
| Activity specific | means specific to an activity as carried out at one specific installation | MRG |
| Allowance | means an allowance to emit one tonne of carbon dioxide equivalent during a specified period, which shall be valid only for the purposes of meeting the requirements of this Directive and shall be transferable in accordance with the provisions of this Directive | ETS Directive |
| Assurance, high level of | refers to the [verifier] having obtained sufficient appropriate evidence to conclude that the emission report] conforms in all material respects with identified suitable criteria. In rare circumstances, the [verifier] may be able to provide absolute assurance, for example, where the evidence available is conclusive and reliable because the [emission report] is determinate, the criteria definitive and the process applied comprehensive. However, because of the limitations of the engagement process, a high level of assurance is ordinarily less than absolute. The [verifier] designs the engagement to reduce to a low level the risk of an inappropriate conclusion that the [emission report] conforms in all material respects with identified suitable criteria. | Guidelines for financial audits, NIVRA |
| Audit | The objective of an audit (of the information being verified) is to enable the verifier to express an opinion on whether the information is in accordance with an identified framework for drawing up emission reports. | defra guidance on verification |

| Term | Definition | Source |
|----------------|---|---|
| Audit | The objective of an audit [of the information being verified] is to enable the [verifier] to express an opinion on whether [the information] is prepared, in all material respects, in accordance with an identified reporting framework The phrases used to express the [verifier's] opinion are “give a true and fair view” [...] or “present fairly, in all material respects,” which are equivalent terms. A similar objective applies to the audit of financial or other information prepared in accordance with appropriate criteria. | Handbook of International Auditing, Assurance, and Ethics, IFAC |
| Audit evidence | is the information obtained by the [verifier] in arriving at the conclusions on which the audit opinion is based. Audit evidence will comprise source documents and accounting records underlying [the emission report] and corroborating information from other sources. | Handbook of International Auditing, Assurance, and Ethics, IFAC |
| Audit plan | The [verifier] must draw up an audit plan in which the likely scope and approach of the audit are laid down. These should be conveyed in sufficient detail to provide a sound basis for the design of the audit program. | Guidelines for financial audits, NIVRA |
| Audit program | sets out the nature, timing and extent of planned audit procedures required to implement the overall audit plan. The audit program serves as a set of instructions to assistants involved in the audit and as a means to control the proper execution of the work. | Handbook of International Auditing, Assurance, and Ethics, IFAC |
| Audit risk | is the risk that the [verifier] gives an inappropriate audit opinion when the [emission report] is materially misstated. Audit risk has three components: inherent risk, control risk, detection risk | Handbook of International Auditing, Assurance, and Ethics, IFAC |
| Batch | means an amount of fuel or material transferred as one shipment or continuously over a specific period of time. It shall be representatively sampled and characterised in respect of its average energy and carbon content and other relevant aspects of its chemical composition | MRG |

| Term | Definition | Source |
|-------------------------|---|---|
| Biomass | means non-fossilised and biodegradable organic material originating from plants, animals and micro-organisms. This shall also include products, by-products, residues and waste from agriculture, forestry and related industries as well as the non-fossilised and biodegradable organic fractions of industrial and municipal wastes. Biomass also includes gases and liquids recovered from the decomposition of non-fossilised and biodegradable organic material. When burned for energy purposes biomass is referred to as biomass fuel | MRG |
| Combustion emissions | means greenhouse gas emissions occurring during the exothermic reaction of a fuel with oxygen | MRG |
| Combustion installation | means a stationary technical unit which burns fuel for the production of an energy product. The energy product could be electricity, heat or mechanical power. Where energy is produced as heat it may be transferred using different media such as steam, hot oil, hot water, and hot air. If the energy is produced and used within the same technical unit such that the main product of the unit is not the energy product (electricity or heat) then the technical unit is not considered to fall within the definition of “combustion installation” | defra guidance on verification |
| Competent authority | means the appropriate competent authority or authorities for the implementation of the provisions set out in this Decision, designated in accordance with Article 18 of the ETS Directive | MRG |
| Competent authority | means a body or institution which has the authority to enforce Commission legislation | defra guidance on verification |
| Conversion factor | means a factor expressing the fraction of carbon contained in input materials that is converted to CO ₂ during a process | defra guidance on verification |
| Detection risk | is the risk that the [verifier’s] substantive procedures will not detect a misstatement that exist in [emission report] that could be material, individually or when aggregated with misstatements in other balances or classes. | Handbook of International Auditing, Assurance, and Ethics, IFAC |
| EA | means European Co-operation on Accreditation, who cover European conformity assessment activities | defra guidance on verification |

| Term | Definition | Source |
|-----------------------------------|---|---|
| Emission factor | means the emission rate for a particular emission source per unit of the source, when related to the activity data (e.g., amount of fuel consumed or counts of emission sources) results in absolute greenhouse gas emissions | defra guidance on verification |
| Emissions | means the release of greenhouse gases into the atmosphere from sources in an installation, as defined in the ETS Directive | MRG |
| Emissions | means the release of greenhouse gases into the atmosphere from sources in an installation | ETS Directive |
| Emissions | means emissions from a permitted installation, measured in tonnes of carbon dioxide. Calculations should only be rounded at the end when reporting the CO ₂ in total number of tonnes with no decimal points. | defra guidance on verification |
| Error | refers to an unintentional misstatement in the [emission report] | Handbook of International Auditing, Assurance, and Ethics, IFAC |
| GHG | means greenhouse gas: A gas that absorbs and re-emits infrared radiation, warming the earth's surface and contributing to climate change. Each greenhouse gas has a different capacity to cause global warming. Greenhouse gases include water vapor, carbon dioxide (CO ₂), methane (CH ₄), nitrous oxide (N ₂ O), hydrochlorofluorocarbons (HCFCs), ozone (O ₃), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF ₆). | defra guidance on verification |
| Greenhouse gas assertion | means declaration or factual and objective statement of performance made by the responsible party of actual or expected performance | ISO/DIS 14064-3 |
| Greenhouse gas emissions permit | means a permit as referred to in Article 4 of the ETS Directive and issued in accordance with Articles 5 and 6 of the ETS Directive | MRG |
| Greenhouse gas emissions permit | means the permit issued in accordance with Articles 5 and 6 of the ETS Directive | ETS Directive |
| Greenhouse gas information system | means policies, processes and procedures to establish, manage and maintain greenhouse gas information | ISO/DIS 14064-3 |
| Greenhouse gases | means the gases listed in Annex II to the ETS Directive | MRG |

| Term | Definition | Source |
|-------------------------|---|---|
| Greenhouse gases | means the gases listed in Annex I of the ETS Directive | ETS Directive |
| Inherent risk | is the susceptibility of a [parameter in the emission report] to misstatements that could be material, individually or when aggregated with misstatements in [other parameters], assuming that there were no related internal controls. | Handbook of International Auditing, Assurance, and Ethics, IFAC |
| Installation | means a stationary technical unit where one or more activities listed in Annex I to the ETS Directive are carried out and any other directly associated activities which have a technical connection with the activities carried out on that site and which could have an effect on emissions and pollution, as defined in the ETS Directive | MRG |
| Installation | means a stationary technical unit where one or more activities listed in Annex I are carried out and any other directly associated activities which have a technical connection with the activities carried out on that site and which could have an effect on emissions and pollution | ETS Directive |
| Internal control risk | means the risk that a misstatement that could occur in a [parameter in the emission report] and that could be material, individually or when aggregated with misstatements in [other parameters, will not be prevented or detected and corrected on a timely basis by the accounting and internal control system. | Handbook of International Auditing, Assurance, and Ethics, IFAC |
| Internal control system | consists of all the policies and procedures (internal controls) adopted by the management of an entity to assist in achieving management's objective of ensuring, as far as practicable, the orderly and efficient conduct of its business, including adherence to management policies, the safeguarding of assets, the prevention and detection of fraud and error, the accuracy and completeness of the accounting records, and the timely preparation of reliable [...] information. The internal control system extends beyond these matters which relate directly to the functions of the accounting system. | Handbook of International Auditing, Assurance, and Ethics, IFAC |
| ISO | means International Organisation for Standardisation. | defra guidance on verification |
| Level of assurance | means the degree to which the verifier is confident in the verification conclusions that it has been proved whether or not the information reported for an installation taken as a whole is free from material misstatement | MRG |

| Term | Definition | Source |
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| Level of assurance | means degree of assurance the intended user requires in a validation or verification statement | ISO/DIS 14064-3 |
| M&R plan | means Monitoring and Reporting Plan: M&R Plans outline the monitoring and reporting that will be carried out by an installation in the EU ETS. It is prepared by operators and must be approved by regulators. Many of the M&R Plans may now form part of the installation's GHG Permit conditions. | defra guidance on verification |
| Materiality | means the professional judgment of the verifier as to whether an individual or aggregation of omissions, misrepresentations or errors that affects the information reported for an installation will reasonably influence the intended users' decisions. As a broad guide, a verifier will tend to class a misstatement in the total emissions figure as being material if it leads to aggregate omissions, misrepresentations or errors in the total emissions figure being greater than five percent | MRG |
| Materiality | means an expression of the relative significance of any individual matter (error, misstatement, missing record etc) in the context of an installation's annual emissions data. | defra guidance on verification |
| Materiality | Information is material if its omission or misstatement could influence the economic decisions of users taken on the basis of the information. Materiality depends on the size of the item or error judged in the particular circumstances of its omission or misstatement. Thus, materiality provides a threshold or cut-off point rather than being a primary qualitative characteristic which information must have if it is to be useful. | Handbook of International Auditing, Assurance, and Ethics, IFAC |
| Materiality | means concept that individual or the aggregation of errors, omissions and misrepresentations may affect the GHG assertion and could influence the intended user's decision. | ISO/DIS 14064-3 |
| Monitoring | means continuous or periodic assessment of GHG emissions and removals or other GHG-related data | ISO/DIS 14064-3 |
| Monitoring methodology | means the methodology used for the determination of emissions, including the choice between calculation or measurement and the choice of tiers | MRG |

| Term | Definition | Source |
|-------------------|--|---|
| New entrant | means any installation carrying out one or more of the activities indicated in Annex I of the ETS Directive, which has obtained a greenhouse gas emissions permit or an update of its greenhouse gas emissions permit because of a change in the nature or functioning or an extension of the installation, subsequent to the notification to the Commission of the national allocation plan | ETS Directive |
| Operator | means any person who operates or controls an installation or, where this is provided for in national legislation, to whom decisive economic power over the technical functioning of the installation has been delegated, as defined in the ETS Directive | MRG |
| Operator | means any person who operates or controls an installation or, where this is provided for in national legislation, to whom decisive economic power over the technical functioning of the installation has been delegated | ETS Directive |
| Operator | means a person who operates or manages an installation, if provided for under national legislation, who has been given the authority to make economic decisions concerning technical operations. | defra guidance on verification |
| Opinion | The auditor's report contains a clear written expression of opinion on the [emission report] as a whole. An unqualified opinion is expressed when the auditor concludes that the financial statements give a true and fair view (or are presented fairly, in all material respects,) in accordance with the [Monitoring Methodology]. | Handbook of International Auditing, Assurance, and Ethics, IFAC |
| Oxidation factor | means a factor representing the proportion of carbon that is not oxidised during combustion. | defra guidance on verification |
| Person | means any natural or legal person | ETS Directive |
| Process emissions | means greenhouse gas emissions other than 'combustion emissions' occurring as a result of intentional and unintentional reactions between substances or their transformation, including the chemical or electrolytic reduction of metal ores, the thermal decomposition of substances, and the formation of substances for use as product or feedstock | MRG |

| Term | Definition | Source |
|----------------------|--|---|
| Reasonable assurance | In an audit engagement, the auditor provides a high, but not absolute, level of assurance, expressed positively in the auditor's report as reasonable assurance, that the information subject to audit is free of material misstatement. | Handbook of International Auditing, Assurance, and Ethics, IFAC |
| Reasonable Assurance | In an audit engagement, the [verifier] provides a high, but not absolute, level of assurance, expressed positively in the audit report as reasonable assurance, that the information subject to audit is free of material misstatement. | Handbook of International Auditing, Assurance, and Ethics, IFAC |
| Registry | allows account holders to hold, transfer, or acquire EU allowances and Kyoto units. They also enable regulators and nominated competent authorities to manage regulated industries (those with legal emissions reduction targets), and monitor national compliance and performance against international emissions reductions obligations. Computerised registries are key components of the EU Emissions Trading Scheme. | defra guidance on verification |
| Reliability | <p>implies a guarantee of truthfulness, measurement and/or completeness. More precisely it can be defined in terms of the following aspects of faithfulness:</p> <ul style="list-style-type: none"> • Existence: an asset or liability exists at a given date. • Completeness: there are no unrecorded assets, liabilities, transactions or events, or undisclosed items. • Rights and obligations: an asset or liability pertains to the entity at a given date. • Occurrence: a transaction or event took place which pertains to the entity during the period. • Measurement: a transaction or event is recorded at an appropriate carrying value. | Guidelines for financial audits, NIVRA |
| Reporting period | means the time period for which emissions have to be monitored and reported as set out in Article 14(3) of the Directive, being a calendar year | MRG |
| Risk assessment | means an assessment carried out by a verifier to identify potential risks in the data that could lead to material errors or misstatements. This is used to direct and plan the verification process. | defra guidance on verification |

| Term | Definition | Source |
|-------------------------------------|---|--------------------------------|
| Source | means a separately identifiable point or process in an installation from which greenhouse gases are emitted | MRG |
| The public | means one or more persons and, in accordance with national legislation or practice, associations, organisations or groups of persons | ETS Directive |
| Tier | means a specific methodology for determining activity data, emission factors and oxidation or conversion factors. Several tiers form a hierarchy of methodologies from which a selection shall be made in accordance with these guidelines | MRG |
| Tier | means a specific methodology for determining activity data, emission factors and oxidation or conversion factors. Several tiers from a hierarchy of methodologies from which a selection shall be made in accordance with the Commission's M&R Decision. | defra guidance on verification |
| Tonne of carbon dioxide equivalent | means one metric tonne of carbon dioxide (CO ₂) or an amount of any other greenhouse gas listed in Annex II with an equivalent global-warming potential | ETS Directive |
| Uncertainty | means parameter associated with the result of quantification which characterises the dispersion of the values that could be reasonable attributed to the quantified amount | ISO/DIS 14064-3 |
| Validation / verification | means systematic independent and documented process for the evaluation of a proposed GHG assertion against agreed validation / verification criteria. | ISO/DIS 14064-3 |
| Validation / verification statement | means formal written declaration to the intended user that provide assurance on the statements in the responsible party's GHG assertion. | ISO/DIS 14064-3 |
| Verification | means systematic, independent and documented assessment and/or identification performed at regular intervals by a verification body of the greenhouse gas emissions, emission reductions and/or storage of greenhouse gas emissions by an installation in the EU ETS. | defra guidance on verification |
| Verification plan | means description of the activities and arrangements for the verification process. | defra guidance on verification |
| Verifier | means a competent, independent, accredited verification body with responsibility for performing and reporting on the verification process, in accordance with the detailed requirements established by the Member State pursuant to Annex V to the ETS Directive | MRG |
| Verifier | means the accredited team leader or member of the verification team responsible for carrying out the verification process and drawing up a report. | defra guidance on verification |

| Term | Definition | Source |
|-------------------|--|---|
| Verifier | means competent and independent person or persons with responsibility for performing and reporting on the verification process. This term can be used to refer to a verification body. | ISO/DIS 14064-3 |
| VOS | means Verification Opinion Statement | defra guidance on verification |
| Walk-through test | involves tracing certain [reported emission data] through the [emission registration system]. | Handbook of International Auditing, Assurance, and Ethics, IFAC |