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Version: 29 Apr 2015

# Regulation (EU) 2015/757 of the European Parliament and of the Council

**of 29 April 2015**

**on the monitoring, reporting and verification of carbon dioxide emissions from maritime transport, and amending Directive 2009/16/EC**

**(Text with EEA relevance)**

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**on the monitoring, reporting and verification of carbon dioxide emissions from maritime transport, and amending Directive 2009/16/EC**

**(Text with EEA relevance)**

THE EUROPEAN PARLIAMENT AND THE COUNCIL OF THE EUROPEAN UNION,

Having regard to the Treaty on the Functioning of the European Union, and in particular Article 192(1) thereof,

Having regard to the proposal from the European Commission,

After transmission of the draft legislative act to the national parliaments,

Having regard to the opinion of the European Economic and Social Committee,

After consulting the Committee of the Regions,

Acting in accordance with the ordinary legislative procedure,

Whereas:

(1) Directive 2009/29/EC of the European Parliament and of the Council and Decision No 406/2009/EC of the European Parliament and of the Council which call for contributions from all sectors of the economy to achieve emission reductions, including the international maritime shipping sector, provide that in the event that no international agreement which includes international maritime emissions in its reduction targets through the International Maritime Organisation (IMO) has been approved by Member States or no such agreement through the United Nations Framework Convention on Climate Change has been approved by the Community by 31 December 2011, the Commission should make a proposal to include international maritime emissions in the Community reduction commitment, with the aim of the proposed act entering into force by 2013. Such a proposal should minimise any negative impact on the Community's competitiveness while taking into account the potential environmental benefits.

(2) Maritime transport has an impact on the global climate and on air quality, as a result of the carbon dioxide ($CO_2$) emissions and other emissions that it generates, such as nitrogen oxides ($NO_x$), sulphur oxides ($SO_x$), methane ($CH_4$), particulate matter (PM) and black carbon (BC).

(3) International maritime shipping remains the only means of transportation not included in the Union's commitment to reduce greenhouse gas emissions. According to the impact assessment accompanying the proposal for this Regulation, Union-related $CO_2$ emissions from international shipping increased by 48 % between 1990 and 2007.

(4) In the light of the rapidly developing scientific understanding of the impact of non-$CO_2$ related emissions from maritime transport on the global climate, an updated assessment of that impact should be carried out regularly in the context of this Regulation. Based on its assessments, the Commission should analyse the implications for policies and measures, in order to reduce those emissions.

(5) The European Parliament's Resolution of 5 February 2014 on a 2030 framework for climate and energy policies called on the Commission and the Member States to set a binding EU 2030 target of reducing domestic greenhouse gas emissions by at least 40 % compared to 1990 levels. The European Parliament also pointed out that all sectors of the economy would need to contribute to reducing greenhouse gas emissions if the Union is to deliver its fair share of global efforts.

(6) In its Conclusions of 23 and 24 October 2014, the European Council endorsed a binding EU target of an at least 40 % domestic reduction in greenhouse gas emissions by 2030 compared to 1990. The European Council also stated the importance of reducing greenhouse gas emissions and risks related to fossil fuel dependency in the transport sector and invited the Commission to further examine instruments and measures for a comprehensive and technology-neutral approach, inter alia, for the promotion of emissions reduction and energy efficiency in transport.

(7) The 7th Environment Action Programme (EAP) underlines that all sectors of the economy will need to contribute to reducing greenhouse gas emissions if the Union is to deliver its fair share of global efforts. In this context the 7th EAP highlights that the White paper on transport of 2011 needs to be underpinned by a strong policy framework.

(8) In July 2011, the IMO adopted technical and operational measures, in particular the Energy Efficiency Design Index (EEDI) for new ships and the Ship Energy Efficiency Management Plan (SEEMP), which will bring improvement in terms of reducing the expected increase in greenhouse gas emissions, but alone cannot lead to the necessary absolute reductions of greenhouse gas emissions from international shipping to keep efforts in line with the global objective of limiting increases in global temperatures to 2 °C.

(9) According to data provided by the IMO, the specific energy consumption and $CO_2$ emissions of ships could be reduced by up to 75 % by applying operational measures and implementing existing technologies; a significant part of those measures can be regarded as cost-effective and being such that they could offer net benefits to the sector, as the reduced fuel costs ensure the pay-back of any operational or investment costs.

(10) In order to reduce $CO_2$ emissions from shipping at Union level, the best possible option remains setting up a system for monitoring, reporting and verification (MRV system) of $CO_2$ emissions based on the

fuel consumption of ships as a first step of a staged approach for the inclusion of maritime transport emissions in the Union's greenhouse gas reduction commitment, alongside emissions from other sectors that are already contributing to that commitment. Public access to the emissions data will contribute to removing market barriers that prevent the uptake of many cost-negative measures which would reduce greenhouse gas emissions from maritime transport.

(11) The adoption of measures to reduce greenhouse gas emissions and fuel consumption is hampered by the existence of market barriers such as a lack of reliable information on the fuel efficiency of ships or of technologies available for retrofitting ships, a lack of access to finance for investments in ship efficiency, and split incentives, as shipowners would not benefit from their investments in ship efficiency when fuel bills are paid by operators.

(12) The results of the stakeholder consultation and discussions with international partners indicate that a staged approach for the inclusion of maritime transport emissions in the Union's greenhouse gas reduction commitment should be applied with the implementation of a robust MRV system for $CO_2$ emissions from maritime transport as a first step and the pricing of those emissions at a later stage. This approach facilitates the making of significant progress at international level on the agreement of greenhouse gas emission reduction targets and further measures to achieve those reductions at minimum cost.

(13) The introduction of a Union MRV system is expected to lead to emission reductions of up to 2 % compared to business-as-usual, and aggregated net costs reductions of up to EUR 1,2 billion by 2030 as it could contribute to the removal of market barriers, in particular those related to the lack of information about ship efficiency, by providing comparable and reliable information on fuel consumption and energy efficiency to the relevant markets. This reduction of transport costs should facilitate international trade. Furthermore, a robust MRV system is a prerequisite for any market-based measure, efficiency standard or other measure, whether applied at Union level or globally. It also provides reliable data to set precise emission reduction targets and to assess the progress of maritime transport's contribution towards achieving a low carbon economy. Given the international nature of shipping, the preferred and most effective method of reducing greenhouse gas emissions in international maritime transport would be by global agreement.

(14) All intra-Union voyages, all incoming voyages from the last non-Union port to the first Union port of call and all outgoing voyages from a Union port to the next non-Union port of call, including ballast voyages, should be considered relevant for the purposes of monitoring. $CO_2$ emissions in Union ports, including emissions arising from ships at berth or moving within a port, should also be covered, particularly as specific measures for their reduction or avoidance are available. These rules should be applied in a non-discriminatory manner to all ships regardless of their flag. However, since this Regulation focuses on maritime transport, it should not establish monitoring, reporting and verification requirements for ship movements and activities not serving the purpose of transporting cargo or passengers for commercial purposes, such as dredging, ice-breaking, pipe laying or offshore installation activities.

(15) To ensure a level-playing field for ships operating in less favourable climate conditions, it should be possible to include specific information relating to a ship's ice class, and to its navigation through ice, in the data monitored on the basis of this Regulation.

(16) The proposed MRV system should take the form of a Regulation on account of the complex and highly technical nature of provisions to be introduced, the need for uniform rules applicable throughout the Union to reflect the international nature of maritime transport with numerous ships being expected to call at ports in different Member States, and to facilitate implementation throughout the Union.

(17) A robust ship-specific Union MRV system should be based on the calculation of emissions from fuel consumed on voyages to and from Union ports, as fuel sales data could not provide appropriately accurate estimates for the fuel consumption within this specific scope, due to the large tank capacities of ships.

(18) The Union MRV system should also cover other relevant information allowing for the determination of ships' efficiency or for the further analysis of the drivers for the development of emissions, while preserving the confidentiality of commercial or industrial information. This scope also aligns the Union MRV system with international initiatives to introduce efficiency standards for existing ships, also covering operational measures, and contributes to the removal of market barriers related to the lack of information.

(19) In order to minimise the administrative burden for shipowners and operators, in particular for small and medium-sized enterprises, and to optimise the cost-benefit ratio of the MRV system without jeopardising the objective of covering a widely predominant share of greenhouse gas emissions from

maritime transport, the rules for MRV should only apply to large emitters. A threshold of 5 000 gross tonnage (GT) has been selected after detailed objective analysis of sizes and emissions of ships going to and coming from Union ports. Ships above 5 000 GT account for around 55 % of the number of ships calling into Union ports and represent around 90 % of the related emissions. This non-discriminatory threshold would ensure that that the most relevant emitters are covered. A lower threshold would result in a higher administrative burden while a higher threshold would limit the coverage of emissions and thus the environmental effectiveness of the MRV system.

(20) To further reduce the administrative burden for shipowners and operators, the monitoring rules should focus on $CO_2$ as the most relevant greenhouse gas emitted by maritime transport.

(21) The rules should take into account existing requirements and data already available on board ships; therefore, companies should be given the opportunity to select one of the following four monitoring methods: the use of Bunker Fuel Delivery Notes, bunker fuel tank monitoring on-board, flow meters for applicable combustion processes or direct emission measurements. A monitoring plan specific to each ship should document the choice made and provide further details on the application of the selected method.

(22) Any company with responsibility for an entire reporting period over a ship performing shipping activities should be considered responsible for all monitoring and reporting obligations arising in relation to that reporting period, including the submission of a satisfactorily verified emissions report. In the event of a change of company, the new company should only be responsible for the monitoring and reporting obligations related to the reporting period during which the change of company has taken place. To facilitate the fulfilment of these obligations, the new company should receive a copy of the latest monitoring plan and document of compliance, if applicable.

(23) Other greenhouse gases, climate forcers or air pollutants should not be covered by the Union MRV system at this stage to avoid requirements to install not sufficiently reliable or commercially available measuring equipment, which could impede the implementation of the Union MRV system.

(24) The IMO International Convention for the Prevention of Pollution from Ships (MARPOL) provides for the mandatory application of the EEDI to new ships and the use of SEEMPs throughout the entire world fleet.

(25) To minimise the administrative burden for shipowners and operators, reporting and publication of reported information should be organised on an annual basis. By restricting the publication of emissions, fuel consumption and efficiency-related information to annual averages and aggregated figures, confidentiality issues should be addressed. In order to ensure that the protection of legitimate economic interests overriding the public interest in disclosure is not undermined, a different level of aggregation of data should be applied in exceptional cases at the request of the company. The data reported to the Commission should be integrated with statistics to the extent that those data are relevant for the development, production and dissemination of European statistics in accordance with Commission Decision 2012/504/EU.

(26) Verification by accredited verifiers should ensure that monitoring plans and emissions reports are correct and in compliance with the requirements set out in this Regulation. As an important element to simplify verification, verifiers should check data credibility by comparing reported data with estimated data based on ship tracking data and characteristics. Such estimates could be provided by the Commission. In order to ensure impartiality, verifiers should be independent and competent legal entities and should be accredited by national accreditation bodies established pursuant to Regulation (EC) No 765/2008 of the European Parliament and of the Council.

(27) A document of compliance issued by a verifier should be kept on board ships to demonstrate compliance with the obligations for monitoring, reporting and verification. Verifiers should inform the Commission of the issuance of such documents.

(28) Based on experience from similar tasks related to maritime safety, the European Maritime Safety Agency (EMSA) should, within the framework of its mandate, support the Commission by carrying out certain tasks.

(29) Enforcement of the obligations relating to the MRV system should be based on existing instruments, namely those established under Directive 2009/16/EC of the European Parliament and of the Council and Directive 2009/21/EC of the European Parliament and of the Council, and on information on the issuance of documents of compliance. The document confirming compliance of the ship with the monitoring and reporting obligations should be added to the list of certificates and documents referred to in Annex IV to Directive 2009/16/EC.

(30) Member States should endeavour to inspect ships which enter ports under their jurisdiction and for which certain required information concerning the document of compliance is not available.

(31) Non-compliance with the provisions of this Regulation should result in the application of penalties. Member States should lay down rules on those penalties. Those penalties should be effective, proportionate and dissuasive.

(32) In the case of ships having failed to comply with monitoring and reporting requirements for two or more consecutive reporting periods and where other enforcement measures have failed to ensure compliance, it is appropriate to provide for the possibility of expulsion. Such a measure should be applied in such a way as to allow the situation of non-compliance to be rectified within a reasonable period of time.

(33) Member States that have no maritime ports in their territory and which have no ships flying their flag and falling under the scope of this Regulation, or which have closed their national ship registers, should be able to derogate from the provisions of this Regulation relating to penalties, as long as no such ships are flying their flag.

(34) The Union MRV system should serve as a model for the implementation of a global MRV system. A global MRV system is preferable as it could be regarded as more effective due to its broader scope. In this context, and with a view to facilitating the development of international rules within the IMO for the monitoring, reporting and verification of greenhouse gas emissions from maritime transport, the Commission should share relevant information on the implementation of this Regulation with the IMO and other relevant international bodies on a regular basis and relevant submissions should be made to the IMO. Where an agreement on a global MRV system is reached, the Commission should review the Union MRV system with a view to aligning it to the global MRV system.

(35) In order to take account of relevant international rules and international and European standards as well as technological and scientific developments, the power to adopt acts in accordance with Article 290 of the Treaty on the Functioning of the European Union should be delegated to the Commission in respect of reviewing certain technical aspects of monitoring and reporting of $CO_2$ emissions from ships and of further specifying the rules for the verification activities and the methods of accreditation of verifiers. It is of particular importance that the Commission carry out appropriate consultations during its preparatory work, including at expert level. The Commission, when preparing and drawing-up delegated acts, should ensure a simultaneous, timely and appropriate transmission of relevant documents to the European Parliament and to the Council.

(36) In order to ensure uniform conditions for the use of standard templates for the monitoring of $CO_2$ emissions and other relevant information, for the use of automated systems and standard electronic templates for the coherent reporting of $CO_2$ emissions and other relevant information to the Commission and the authorities of the flag States concerned, for the specification of technical rules specifying the parameters applicable to categories of ships other than passenger, ro-ro and container ships and for the revision of those parameters, implementing powers should be conferred on the Commission. Those powers should be exercised in accordance with Regulation (EU) No 182/2011 of the European Parliament and of the Council.

(37) Since the objective of this Regulation, namely to monitor, report and verify $CO_2$ emissions from ships as the first step of a staged approach to reduce greenhouse gas emissions, cannot be sufficiently achieved by the Member States, due to the international nature of maritime transport, but can rather, by reason of its scale and effects, be better achieved at Union level, the Union may adopt measures, in accordance with the principle of subsidiarity as set out in Article 5 of the Treaty on European Union. In accordance with the principle of proportionality as set out in that Article, this Regulation does not go beyond what is necessary in order to achieve that objective.

(38) The rules establishing the MRV system should comply with Directive 95/46/EC of the European Parliament and of the Council and Regulation (EC) No 45/2001 of the European Parliament and of the Council.

(39) This Regulation should enter into force on 1 July 2015 to ensure that the Member States and relevant stakeholders have sufficient time to take the necessary measures for the effective application of this Regulation before the first reporting period starting on 1 January 2018,

HAVE ADOPTED THIS REGULATION:

## CHAPTER I

GENERAL PROVISIONS

*Article 1*

**Subject matter**

This Regulation lays down rules for the accurate monitoring, reporting and verification of carbon dioxide ($CO_2$) emissions and of other relevant information from ships arriving at, within or departing from ports under the jurisdiction of a Member State, in order to promote the reduction of $CO_2$ emissions from maritime transport in a cost effective manner.

*Article 2*

**Scope**

1. This Regulation applies to ships above 5 000 gross tonnage in respect of $CO_2$ emissions released during their voyages from their last port of call to a port of call under the jurisdiction of a Member State and from a port of call under the jurisdiction of a Member State to their next port of call, as well as within ports of call under the jurisdiction of a Member State.

2. This Regulation does not apply to warships, naval auxiliaries, fish-catching or fish-processing ships, wooden ships of a primitive build, ships not propelled by mechanical means, or government ships used for non-commercial purposes.

*Article 3*

**Definitions**

For the purposes of this Regulation, the following definitions apply:

(a) '$CO_2$ emissions' means the release of $CO_2$ into the atmosphere by ships;

(b) 'port of call' means the port where a ship stops to load or unload cargo or to embark or disembark passengers; consequently, stops for the sole purposes of refuelling, obtaining supplies, relieving the crew, going into dry-dock or making repairs to the ship and/or its equipment, stops in port because the ship is in need of assistance or in distress, ship-to-ship transfers carried out outside ports, and stops for the sole purpose of taking shelter from adverse weather or rendered necessary by search and rescue activities are excluded;

(c) 'voyage' means any movement of a ship that originates from or terminates in a port of call and that serves the purpose of transporting passengers or cargo for commercial purposes;

(d) 'company' means the shipowner or any other organisation or person, such as the manager or the bareboat charterer, which has assumed the responsibility for the operation of the ship from the shipowner;

(e) 'gross tonnage' (GT) means the gross tonnage calculated in accordance with the tonnage measurement regulations contained in Annex I to the International Convention on Tonnage Measurement of Ships, adopted by the International Maritime Organization (IMO) in London on 23 June 1969, or any successor convention;

(f) 'verifier' means a legal entity carrying out verification activities which is accredited by a national accreditation body pursuant to Regulation (EC) No 765/2008 and this Regulation;

(g) 'verification' means the activities carried out by a verifier to assess the conformity of the documents transmitted by the company with the requirements of this Regulation;

(h) ‘document of compliance’ means a document specific to a ship, issued to a company by a verifier, which confirms that that ship has complied with the requirements of this Regulation for a specific reporting period;

(i) ‘other relevant information’ means information related to $CO_2$ emissions from the consumption of fuels, to transport work and to the energy efficiency of ships, which enables the analysis of emission trends and the assessment of ships' performances;

(j) ‘emission factor’ means the average emission rate of a greenhouse gas relative to the activity data of a source stream, assuming complete oxidation for combustion and complete conversion for all other chemical reactions;

(k) ‘uncertainty’ means a parameter, associated with the result of the determination of a quantity, that characterises the dispersion of the values that could reasonably be attributed to the particular quantity, including the effects of systematic as well as of random factors, expressed as a percentage, and describes a confidence interval around the mean value comprising 95 % of inferred values taking into account any asymmetry of the distribution of values;

(l) ‘conservative’ means that a set of assumptions is defined in order to ensure that no under-estimation of annual emissions or over-estimation of distances or amounts of cargo carried occurs;

(m) ‘reporting period’ means one calendar year during which $CO_2$ emissions have to be monitored and reported. For voyages starting and ending in two different calendar years, the monitoring and reporting data shall be accounted under the first calendar year concerned;

(n) ‘ship at berth’ means a ship which is securely moored or anchored in a port falling under the jurisdiction of a Member State while it is loading, unloading or hotelling, including the time spent when not engaged in cargo operations;

(o) ‘ice class’ means the notation assigned to the ship by the competent national authorities of the flag State or an organisation recognised by that State, showing that the ship has been designed for navigation in sea-ice conditions.

## CHAPTER II

MONITORING AND REPORTING

## SECTION 1

Principles and methods for monitoring and reporting

*Article 4*

### Common principles for monitoring and reporting

1. In accordance with Articles 8 to 12, companies shall, for each of their ships, monitor and report on the relevant parameters during a reporting period. They shall carry out that monitoring and reporting within all ports under the jurisdiction of a Member State and for any voyages to or from a port under the jurisdiction of a Member State.

2. Monitoring and reporting shall be complete and cover $CO_2$ emissions from the combustion of fuels, while the ships are at sea as well as at berth. Companies shall apply appropriate measures to prevent any data gaps within the reporting period.

3. Monitoring and reporting shall be consistent and comparable over time. To that end, companies shall use the same monitoring methodologies and data sets subject to modifications assessed by the verifier.

4. Companies shall obtain, record, compile, analyse and document monitoring data, including assumptions, references, emission factors and activity data, in a transparent manner that enables the reproduction of the determination of $CO_2$ emissions by the verifier.

5. Companies shall ensure that the determination of $CO_2$ emissions is neither systematically nor knowingly inaccurate. They shall identify and reduce any source of inaccuracies.

6. Companies shall enable reasonable assurance of the integrity of the $CO_2$ emission data to be monitored and reported.

7. Companies shall endeavour to take account of the recommendations included in the verification reports issued pursuant to Article 13(3) or (4) in their subsequent monitoring and reporting.

*Article 5*

**Methods for monitoring CO2 emissions and other relevant information**

1. For the purposes of Article 4(1), (2) and (3), companies shall, for each of their ships, determine the $CO_2$ emissions in accordance with any of the methods set out in Annex I, and monitor other relevant information in accordance with the rules set out in Annex II or adopted pursuant to it.

2. The Commission shall be empowered to adopt delegated acts in accordance with Article 23 to amend the methods set out in Annex I and the rules set out in Annex II, in order to take into account relevant international rules as well as international and European standards. The Commission shall be also empowered to adopt delegated acts in accordance with Article 23 to amend Annexes I and II in order to refine the elements of the monitoring methods set out therein, in the light of technological and scientific developments.

**SECTION 2**

Monitoring plan

*Article 6*

**Content and submission of the monitoring plan**

1. By 31 August 2017, companies shall submit to the verifiers a monitoring plan for each of their ships indicating the method chosen to monitor and report $CO_2$ emissions and other relevant information.

2. Notwithstanding paragraph 1, for ships falling under the scope of this Regulation for the first time after 31 August 2017, the company shall submit a monitoring plan to the verifier without undue delay and no later than two months after each ship's first call in a port under the jurisdiction of a Member State.

3. The monitoring plan shall consist of a complete and transparent documentation of the monitoring method for the ship concerned and shall contain at least the following elements:

(a) the identification and type of the ship, including its name, its IMO identification number, its port of registry or home port, and the name of the shipowner;

(b) the name of the company and the address, telephone and e-mail details of a contact person;

(c) a description of the following $CO_2$ emission sources on board the ship: main engines, auxiliary engines, gas turbines, boilers and inert gas generators, and the fuel types used;

(d) a description of the procedures, systems and responsibilities used to update the list of $CO_2$ emission sources over the reporting period;

(e) a description of the procedures used to monitor the completeness of the list of voyages;

(f) a description of the procedures for monitoring the fuel consumption of the ship, including:

(i) the method chosen from among those set out in Annex I for calculating the fuel consumption of each $CO_2$ emission source, including, where applicable, a description of the measuring equipment used,

(ii) the procedures for the measurement of fuel uplifts and fuel in tanks, a description of the measuring equipment used and the procedures for recording, retrieving, transmitting and storing information regarding measurements, as applicable,

(iii) the method chosen for the determination of density, where applicable,

(iv) a procedure to ensure that the total uncertainty of fuel measurements is consistent with the requirements of this Regulation, where possible referring to national laws, clauses in customer contracts or fuel supplier accuracy standards;

(g) single emission factors used for each fuel type, or in the case of alternative fuels, the methodologies for determining the emission factors, including the methodology for sampling, methods of analysis and a description of the laboratories used, with the ISO 17025 accreditation of those laboratories, if any;

(h) a description of the procedures used for determining activity data per voyage, including:

(i) the procedures, responsibilities and data sources for determining and recording the distance,

(ii) the procedures, responsibilities, formulae and data sources for determining and recording the cargo carried and the number of passengers, as applicable,

(iii) the procedures, responsibilities, formulae and data sources for determining and recording the time spent at sea between the port of departure and the port of arrival;

(i) a description of the method to be used to determine surrogate data for closing data gaps;

(j) a revision record sheet to record all the details of the revision history.

4. The monitoring plan may also contain information on the ice class of the ship and/or the procedures, responsibilities, formulae and data sources for determining and recording the distance travelled and the time spent at sea when navigating through ice.

5. Companies shall use standardised monitoring plans based on templates. Those templates, including the technical rules for their uniform application, shall be determined by the Commission by means of implementing acts. Those implementing acts shall be adopted in accordance with the examination procedure referred to in Article 24(2).

*Article 7*

**Modifications of the monitoring plan**

1. Companies shall check regularly, and at least annually, whether a ship's monitoring plan reflects the nature and functioning of the ship and whether the monitoring methodology can be improved.

2. Companies shall modify the monitoring plan in any of the following situations:

(a) where a change of company occurs;

(b) where new $CO_2$ emissions occur due to new emission sources or due to the use of new fuels not yet contained in the monitoring plan;

(c) where a change in availability of data, due to the use of new types of measuring equipment, new sampling methods or analysis methods, or for other reasons, may affect the accuracy of the determination of $CO_2$ emissions;

(d) where data resulting from the monitoring method applied has been found to be incorrect;

(e) where any part of the monitoring plan is identified as not being in conformity with the requirements of this Regulation and the company is required to revise it pursuant to Article 13(1).

3. Companies shall notify to the verifiers without undue delay any proposals for modification of the monitoring plan.

4. Modifications of the monitoring plan under points (b), (c) and (d) of paragraph 2 of this Article shall be subject to assessment by the verifier in accordance with Article 13(1). Following the assessment, the verifier shall notify the company whether those modifications are in conformity.

## SECTION 3

Monitoring of CO2 emissions and other relevant information

*Article 8*

### Monitoring of activities within a reporting period

From 1 January 2018, companies shall, based on the monitoring plan assessed in accordance with Article 13(1), monitor $CO_2$ emissions for each ship on a per-voyage and an annual basis by applying the appropriate method for determining $CO_2$ emissions among those set out in Part B of Annex I and by calculating $CO_2$ emissions in accordance with Part A of Annex I.

*Article 9*

### Monitoring on a per-voyage basis

1. Based on the monitoring plan assessed in accordance with Article 13(1), for each ship arriving in or departing from, and for each voyage to or from, a port under a Member State's jurisdiction, companies shall monitor in accordance with Part A of Annex I and Part A of Annex II the following parameters:

(a) port of departure and port of arrival including the date and hour of departure and arrival;

(b) amount and emission factor for each type of fuel consumed in total;

(c) $CO_2$ emitted;

(d) distance travelled;

(e) time spent at sea;

(f) cargo carried;

(g) transport work.

Companies may also monitor information relating to the ship's ice class and to navigation through ice, where applicable.

2. By way of derogation from paragraph 1 of this Article and without prejudice to Article 10, a company shall be exempt from the obligation to monitor the information referred to in paragraph 1 of this Article on a per-voyage basis in respect of a specified ship, if:

(a) all of the ship's voyages during the reporting period either start from or end at a port under the jurisdiction of a Member State; and

(b) the ship, according to its schedule, performs more than 300 voyages during the reporting period.

*Article 10*

### Monitoring on an annual basis

Based on the monitoring plan assessed in accordance with Article 13(1), for each ship and for each calendar year, companies shall monitor in accordance with Part A of Annex I and with Part B of Annex II the following parameters:

(a) amount and emission factor for each type of fuel consumed in total;
(b) total aggregated $CO_2$ emitted within the scope of this Regulation;
(c) aggregated $CO_2$ emissions from all voyages between ports under a Member State's jurisdiction;
(d) aggregated $CO_2$ emissions from all voyages which departed from ports under a Member State's jurisdiction;
(e) aggregated $CO_2$ emissions from all voyages to ports under a Member State's jurisdiction;
(f) $CO_2$ emissions which occurred within ports under a Member State's jurisdiction at berth;
(g) total distance travelled;
(h) total time spent at sea;
(i) total transport work;
(j) average energy efficiency.

Companies may monitor information relating to the ship's ice class and to navigation through ice, where applicable.

Companies may also monitor fuel consumed and $CO_2$ emitted, differentiating on the basis of other criteria defined in the monitoring plan.

## SECTION 4

Reporting

*Article 11*

### Content of the emissions report

1. From 2019, by 30 April of each year, companies shall submit to the Commission and to the authorities of the flag States concerned, an emissions report concerning the $CO_2$ emissions and other relevant information for the entire reporting period for each ship under their responsibility, which has been verified as satisfactory by a verifier in accordance with Article 13.

2. Where there is a change of company, the new company shall ensure that each ship under its responsibility complies with the requirements of this Regulation in relation to the entire reporting period during which it takes responsibility for the ship concerned.

3. Companies shall include in the emissions report the following information:

(a) data identifying the ship and the company, including:
    (i) name of the ship,
    (ii) IMO identification number,
    (iii) port of registry or home port,
    (iv) ice class of the ship, if included in the monitoring plan,

(v) technical efficiency of the ship (the Energy Efficiency Design Index (EEDI) or the Estimated Index Value (EIV) in accordance with IMO Resolution MEPC.215 (63), where applicable),

(vi) name of the shipowner,

(vii) address of the shipowner and its principal place of business,

(viii) name of the company (if not the shipowner),

(ix) address of the company (if not the shipowner) and its principal place of business,

(x) address, telephone and e-mail details of a contact person;

(b) the identity of the verifier that assessed the emissions report;

(c) information on the monitoring method used and the related level of uncertainty;

(d) the results from annual monitoring of the parameters in accordance with Article 10.

*Article 12*

**Format of the emissions report**

1. The emissions report shall be submitted using automated systems and data exchange formats, including electronic templates.

2. The Commission shall determine, by means of implementing acts, technical rules establishing the data exchange formats, including the electronic templates. Those implementing acts shall be adopted in accordance with the examination procedure referred to in Article 24(2).

## CHAPTER III

VERIFICATION AND ACCREDITATION

*Article 13*

**Scope of verification activities and verification report**

1. The verifier shall assess the conformity of the monitoring plan with the requirements laid down in Articles 6 and 7. Where the verifier's assessment identifies non-conformities with those requirements, the company concerned shall revise its monitoring plan accordingly and submit the revised plan for a final assessment by the verifier before the reporting period starts. The company shall agree with the verifier on the timeframe necessary to introduce those revisions. That timeframe shall in any event not extend beyond the beginning of the reporting period.

2. The verifier shall assess the conformity of the emissions report with the requirements laid down in Articles 8 to 12 and Annexes I and II.

In particular the verifier shall assess whether the $CO_2$ emissions and other relevant information included in the emissions report have been determined in accordance with Articles 8, 9 and 10 and the monitoring plan.

3. Where the verification assessment concludes, with reasonable assurance from the verifier, that the emissions report is free from material misstatements, the verifier shall issue a verification report stating that the emissions report has been verified as satisfactory. The verification report shall specify all issues relevant to the work carried out by the verifier.

4. Where the verification assessment concludes that the emissions report includes misstatements or non-conformities with the requirements of this Regulation, the verifier shall inform the company thereof in a timely manner. The company shall then correct the misstatements or non-conformities so as to enable the

verification process to be completed in time and shall submit to the verifier the revised emissions report and any other information that was necessary to correct the non-conformities identified. In its verification report, the verifier shall state whether the misstatements or non-conformities identified during the verification assessment have been corrected by the company. Where the communicated misstatements or non-conformities have not been corrected and, individually or combined, lead to material misstatements, the verifier shall issue a verification report stating that the emissions report does not comply with this Regulation.

*Article 14*

**General obligations and principles for the verifiers**

1. The verifier shall be independent from the company or from the operator of a ship and shall carry out the activities required under this Regulation in the public interest. For that purpose, neither the verifier nor any part of the same legal entity shall be a company or ship operator, the owner of a company, or be owned by them, nor shall the verifier have relations with the company that could affect its independence and impartiality.

2. When considering the verification of the emissions report and of the monitoring procedures applied by the company, the verifier shall assess the reliability, credibility and accuracy of the monitoring systems and of the reported data and information relating to $CO_2$ emissions, in particular:

(a) the attribution of fuel consumption to voyages;

(b) the reported fuel consumption 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 $CO_2$ emissions;

(e) the calculations leading to the determination of the energy efficiency.

3. The verifier shall only consider emissions reports submitted in accordance with Article 12 if reliable and credible data and information enable the $CO_2$ emissions to be determined with a reasonable degree of certainty and provided that the following are ensured:

(a) the reported data are coherent in relation to estimated data that are based on ship tracking data and characteristics such as the installed engine power;

(b) the reported data are free of inconsistencies, in particular when comparing the total volume of fuel purchased annually by each ship and the aggregate fuel consumption during voyages;

(c) the collection of the data has been carried out in accordance with the applicable rules; and

(d) the relevant records of the ship are complete and consistent.

*Article 15*

**Verification procedures**

1. The verifier shall identify potential risks related to the monitoring and reporting process by comparing reported $CO_2$ emissions with estimated data based on ship tracking data and characteristics such as the installed engine power. Where significant deviations are found, the verifier shall carry out further analyses.

2. The verifier shall identify potential risks related to the different calculation steps by reviewing all data sources and methodologies used.

3. The verifier shall take into consideration any effective risk control methods applied by the company to reduce levels of uncertainty associated with the accuracy specific to the monitoring methods used.

4. The company shall provide the verifier with any additional information that enables it to carry out the verification procedures. The verifier may conduct spot-checks during the verification process to determine the reliability of reported data and information.

5. The Commission shall be empowered to adopt delegated acts in accordance with Article 23, in order to further specify the rules for the verification activities referred to in this Regulation. When adopting these acts, the Commission shall take into account the elements set out in Part A of Annex III. The rules specified in those delegated acts shall be based on the principles for verification provided for in Article 14 and on relevant internationally accepted standards.

*Article 16*

**Accreditation of verifiers**

1. Verifiers that assess the monitoring plans and the emissions reports, and issue verification reports and documents of compliance referred to in this Regulation shall be accredited for activities under the scope of this Regulation by a national accreditation body pursuant to Regulation (EC) No 765/2008.

2. Where no specific provisions concerning the accreditation of verifiers are laid down in this Regulation, the relevant provisions of Regulation (EC) No 765/2008 shall apply.

3. The Commission shall be empowered to adopt delegated acts in accordance with Article 23, in order to further specify the methods of accreditation of verifiers. When adopting these acts, the Commission shall take into account the elements set out in Part B of Annex III. The methods specified in those delegated acts shall be based on the principles for verification provided for in Article 14 and on relevant internationally accepted standards.

## CHAPTER IV

COMPLIANCE AND PUBLICATION OF INFORMATION

*Article 17*

**Document of compliance**

1. Where the emissions report fulfils the requirements set out in Articles 11 to 15 and those in Annexes I and II, the verifier shall issue, on the basis of the verification report, a document of compliance for the ship concerned.

2. The document of compliance shall include the following information:

(a) identity of the ship (name, IMO identification number and port of registry or home port);

(b) name, address and principal place of business of the shipowner;

(c) identity of the verifier;

(d) date of issue of the document of compliance, its period of validity and the reporting period it refers to.

3. Documents of compliance shall be valid for the period of 18 months after the end of the reporting period.

4. The verifier shall inform the Commission and the authority of the flag State, without delay, of the issuance of any document of compliance. The verifier shall transmit the information referred to in paragraph 2 using automated systems and data exchange formats, including electronic templates.

5. The Commission shall determine, by means of implementing acts, technical rules for the data exchange formats, including the electronic templates. Those implementing acts shall be adopted in accordance with the

examination procedure referred to in Article 24(2).

*Article 18*

**Obligation to carry a valid document of compliance on board**

By 30 June of the year following the end of a reporting period, ships arriving at, within or departing from a port under the jurisdiction of a Member State, and which have carried out voyages during that reporting period, shall carry on board a valid document of compliance.

*Article 19*

**Compliance with monitoring and reporting requirements and inspections**

1. Based on the information published in accordance with Article 21(1), each Member State shall take all the measures necessary to ensure compliance with the monitoring and reporting requirements set out in Articles 8 to 12 by ships flying its flag. Member States shall regard the fact that a document of compliance has been issued for the ship concerned, in accordance with Article 17(4), as evidence of such compliance.

2. Each Member State shall ensure that any inspection of a ship in a port under its jurisdiction carried out in accordance with Directive 2009/16/EC includes checking that a valid document of compliance is carried on board.

3. For each ship in respect of which the information referred to in points (i) and (j) of Article 21(2), is not available at the time when it enters a port under the jurisdiction of a Member State, the Member State concerned may check that a valid document of compliance is carried on board.

*Article 20*

**Penalties, information exchange and expulsion order**

1. Member States shall set up a system of penalties for failure to comply with the monitoring and reporting obligations set out in Articles 8 to 12 and shall take all the measures necessary to ensure that those penalties are imposed. The penalties provided for shall be effective, proportionate and dissuasive. Member States shall notify those provisions to the Commission by 1 July 2017, and shall notify to the Commission without delay any subsequent amendments.

2. Member States shall establish an effective exchange of information and effective cooperation between their national authorities responsible for ensuring compliance with monitoring and reporting obligations or, where applicable, their authorities entrusted with penalty procedures. National penalty procedures against a specified ship by any Member State shall be notified to the Commission, the European Maritime Safety Agency (EMSA), to the other Member States and to the flag State concerned.

3. In the case of ships that have failed to comply with the monitoring and reporting requirements for two or more consecutive reporting periods and where other enforcement measures have failed to ensure compliance, the competent authority of the Member State of the port of entry may issue an expulsion order which shall be notified to the Commission, EMSA, the other Member States and the flag State concerned. As a result of the issuing of such an expulsion order, every Member State shall refuse entry of the ship concerned into any of its ports until the company fulfils its monitoring and reporting obligations in accordance with Articles 11 and 18. The fulfilment of those obligations shall be confirmed by the notification of a valid document of compliance to the competent national authority which issued the expulsion order. This paragraph shall be without prejudice to international maritime rules applicable in the case of ships in distress.

4. The shipowner or operator of a ship or its representative in the Member States shall have the right to an effective remedy before a court or tribunal against an expulsion order and shall be properly informed thereof by the competent authority of the Member State of the port of entry. Member States shall establish and maintain appropriate procedures for this purpose.

5. Any Member State without maritime ports in its territory and which has closed its national ship register or has no ships flying its flag that fall within the scope of this Regulation, and as long as no such ships are flying its flag, may derogate from the provisions of this Article. Any Member State that intends to avail itself of that derogation shall notify the Commission at the latest on 1 July 2015. Any subsequent change shall also be communicated to the Commission.

*Article 21*

**Publication of information and Commission report**

1. By 30 June each year, the Commission shall make publicly available the information on $CO_2$ emissions reported in accordance with Article 11 as well as the information set out in paragraph 2 of this Article.

2. The Commission shall include the following in the information to be made publicly available:

(a) the identity of the ship (name, IMO identification number and port of registry or home port);

(b) the technical efficiency of the ship (EEDI or EIV, where applicable);

(c) the annual $CO_2$ emissions;

(d) the annual total fuel consumption for voyages;

(e) the annual average fuel consumption and $CO_2$ emissions per distance travelled of voyages;

(f) the annual average fuel consumption and $CO_2$ emissions per distance travelled and cargo carried on voyages;

(g) the annual total time spent at sea in voyages;

(h) the method applied for monitoring;

(i) the date of issue and the expiry date of the document of compliance;

(j) the identity of the verifier that assessed the emissions report;

(k) any other information monitored and reported on a voluntary basis in accordance with Article 10.

3. Where, due to specific circumstances, disclosure of a category of aggregated data under paragraph 2, which does not relate to $CO_2$ emissions, would exceptionally undermine the protection of commercial interests deserving protection as a legitimate economic interest overriding the public interest in disclosure pursuant to Regulation (EC) No 1367/2006 of the European Parliament and of the Council, a different level of aggregation of that specific data shall be applied, at the request of the company, so as to protect such interests. Where application of a different level of aggregation is not possible, the Commission shall not make those data publicly available.

4. The Commission shall publish an annual report on $CO_2$ emissions and other relevant information from maritime transport, including aggregated and explained results, with the aim of informing the public and allowing for an assessment of the $CO_2$ emissions and the energy efficiency of maritime transport per size, type of ships, activity, or any other category deemed relevant.

5. The Commission shall assess every two years the maritime transport sector's overall impact on the global climate including through non-$CO_2$-related emissions or effects.

6. Within the framework of its mandate, EMSA shall assist the Commission in its work to comply with this Article and Articles 12 and 17 of this Regulation, in accordance with Regulation (EC) No 1406/2002 of the European Parliament and of the Council.

## CHAPTER V

INTERNATIONAL COOPERATION

*Article 22*

### International cooperation

1. The Commission shall inform the IMO and other relevant international bodies on a regular basis of the implementation of this Regulation, without prejudice to the distribution of competences or to decision-making procedures as provided for in the Treaties.

2. The Commission and, where relevant, the Member States shall maintain technical exchange with third countries, in particular the further development of monitoring methods, the organisation of reporting and the verification of emissions reports.

3. In the event that an international agreement on a global monitoring, reporting and verification system for greenhouse gas emissions or on global measures to reduce greenhouse gas emissions from maritime transport is reached, the Commission shall review this Regulation and shall, if appropriate, propose amendments to this Regulation in order to ensure alignment with that international agreement.

## CHAPTER VI

DELEGATED AND IMPLEMENTING POWERS AND FINAL PROVISIONS

*Article 23*

### Exercise of delegation

1. The power to adopt delegated acts is conferred on the Commission subject to the conditions laid down in this Article. It is of particular importance that the Commission follow its usual practice and carry out consultations with experts, including Member States' experts, before adopting those delegated acts.

2. The power to adopt delegated acts referred to in Articles 5(2), 15(5) and 16(3) shall be conferred on the Commission for a period of five years from 1 July 2015. The Commission shall draw up a report in respect of the delegation of power not later than nine months before the end of the five-year period. The delegation of power shall be tacitly extended for periods of an identical duration, unless the European Parliament or the Council opposes such extension not later than three months before the end of each period.

3. The delegation of power referred to in Articles 5(2), 15(5) and 16(3) may be revoked at any time by the European Parliament or by the Council. A decision to revoke shall put an end to the delegation of the power specified in that decision. It shall take effect the day following the publication of the decision in the *Official Journal of the European Union* or at a later date specified therein. It shall not affect the validity of any delegated acts already in force.

4. As soon as it adopts a delegated act, the Commission shall notify it simultaneously to the European Parliament and to the Council.

5. A delegated act adopted pursuant to Articles 5(2), 15(5) and 16(3) shall enter into force only if no objection has been expressed either by the European Parliament or the Council within a period of two months of notification of that act to the European Parliament and the Council or if, before the expiry of that period, the European Parliament and the Council have both informed the Commission that they will not object. That period shall be extended by two months at the initiative of the European Parliament or of the Council.

*Article 24*

**Committee procedure**

1. The Commission shall be assisted by the Committee established by Article 26 of Regulation (EU) No 525/2013 of the European Parliament and of the Council. That Committee shall be a committee within the meaning of Regulation (EU) No 182/2011.

2. Where reference is made to this paragraph, Article 5 of Regulation (EU) No 182/2011 shall apply. Where the committee delivers no opinion, the Commission shall not adopt the draft implementing act and the third subparagraph of Article 5(4) of Regulation (EU) No 182/2011 shall apply.

*Article 25*

**Amendments to Directive 2009/16/EC**

The following point shall be added to the list set out in Annex IV to Directive 2009/16/EC:

> ‘50.Document of Compliance issued under Regulation (EU) 2015/757 of the European Parliament and of the Council of 29 April 2015 on the monitoring, reporting and verification of carbon dioxide emissions from maritime transport, and amending Directive 2009/16/EC.’

*Article 26*

**Entry into force**

This Regulation shall enter into force on 1 July 2015.

This Regulation shall be binding in its entirety and directly applicable in all Member States.

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**ANNEX I**

**Methods for monitoring CO2 emissions**

A. CALCULATION OF CO 2 EMISSIONS (ARTICLE 9)

For the purposes of calculating CO 2 emissions companies shall apply the following formula:

Fuel consumption × emission factor

Fuel consumption shall include fuel consumed by main engines, auxiliary engines, gas turbines, boilers and inert gas generators.

Fuel consumption within ports at berth shall be calculated separately.

The following default values for emission factors for fuels used on board shall be applied:

| Type of fuel | Reference | Emission factor (t-$CO_2$/t-fuel) |
|---|---|---|
| 1. Diesel/Gas oil | ISO 8217 Grades DMX through DMB | 3,206 |
| 2. Light fuel oil (LFO) | ISO 8217 Grades RMA through RMD | 3,151 |
| 3. Heavy fuel oil (HFO) | ISO 8217 Grades RME through RMK | 3,114 |
| 4. Liquefied petroleum gas (LPG) | Propane | 3,000 |
| | Butane | 3,030 |
| 5. Liquefied natural gas (LNG) | | 2,750 |
| 6. Methanol | | 1,375 |
| 7. Ethanol | | 1,913 |

Appropriate emission factors shall be applied for biofuels, alternative non-fossil fuels and other fuels for which no default values are specified.

## B. METHODS FOR DETERMINING $CO_2$ EMISSIONS

The company shall define in the monitoring plan which monitoring method is to be used to calculate fuel consumption for each ship under its responsibility and ensure that once the method has been chosen, it is consistently applied.

Actual fuel consumption for each voyage shall be used and be calculated using one of the following methods:

(a) Bunker Fuel Delivery Note (BDN) and periodic stocktakes of fuel tanks;
(b) Bunker fuel tank monitoring on board;
(c) Flow meters for applicable combustion processes;
(d) Direct $CO_2$ emissions measurements.

Any combination of these methods, once assessed by the verifier, may be used if it enhances the overall accuracy of the measurement.

1. Method A: BDN and periodic stocktakes of fuel tanks

This method is based on the quantity and type of fuel as defined on the BDN combined with periodic stocktakes of fuel tanks based on tank readings. The fuel at the beginning of the period, plus deliveries, minus fuel available at the end of the period and de-bunkered fuel between the beginning of the period and the end of the period together constitute the fuel consumed over the period.

The period means the time between two port calls or time within a port. For the fuel used during a period, the fuel type and the sulphur content need to be specified.

This method shall not be used when BDN are not available on board ships, especially when cargo is used as a fuel, for example, liquefied natural gas (LNG) boil-off.

Under existing MARPOL Annex VI regulations, the BDN is mandatory, is to be retained on board for three years after the delivery of the bunker fuel and is to be readily available. The periodic stocktake of fuel tanks on-board is based on fuel tank readings. It uses tank tables relevant to each fuel tank to determine the volume at the time of the fuel tank reading. The uncertainty associated with the BDN shall be specified in the monitoring plan. Fuel tank readings shall be carried out by appropriate methods such as automated systems, soundings and dip tapes. The method for tank sounding and uncertainty associated shall be specified in the monitoring plan.

Where the amount of fuel uplift or the amount of fuel remaining in the tanks is determined in units of volume, expressed in litres, the company shall convert that amount from volume to mass by using actual density values. The company shall determine the actual density by using one of the following:

(a) on-board measurement systems;

(b) the density measured by the fuel supplier at fuel uplift and recorded on the fuel invoice or BDN;

(c) the density measured in a test analysis conducted in an accredited fuel test laboratory, where available.

The actual density shall be expressed in kg/l and determined for the applicable temperature for a specific measurement. In cases for which actual density values are not available, a standard density factor for the relevant fuel type shall be applied once assessed by the verifier.

2. Method B: Bunker fuel tank monitoring on-board

This method is based on fuel tank readings for all fuel tanks on-board. The tank readings shall occur daily when the ship is at sea and each time the ship is bunkering or de-bunkering.

The cumulative variations of the fuel tank level between two readings constitute the fuel consumed over the period.

The period means the time between two port calls or time within a port. For the fuel used during a period, the fuel type and the sulphur content need to be specified.

Fuel tank readings shall be carried out by appropriate methods such as automated systems, soundings and dip tapes. The method for tank sounding and uncertainty associated shall be specified in the monitoring plan.

Where the amount of fuel uplift or the amount of fuel remaining in the tanks is determined in units of volume, expressed in litres, the company shall convert that amount from volume to mass by using actual density values. The company shall determine the actual density by using one of the following:

(a) on-board measurement systems;

(b) the density measured by the fuel supplier at fuel uplift and recorded on the fuel invoice or BDN;

(c) the density measured in a test analysis conducted in an accredited fuel test laboratory, where available.

The actual density shall be expressed in kg/l and determined for the applicable temperature for a specific measurement. In cases for which actual density values are not available, a standard density factor for the relevant fuel type shall be applied once assessed by the verifier.

3. Method C: Flow meters for applicable combustion processes

This method is based on measured fuel flows on-board. The data from all flow meters linked to relevant $CO_2$ emission sources shall be combined to determine all fuel consumption for a specific period.

The period means the time between two port calls or time within a port. For the fuel used during a period, the fuel type and the sulphur content need to be monitored.

The calibration methods applied and the uncertainty associated with flow meters used shall be specified in the monitoring plan.

Where the amount of fuel consumed is determined in units of volume, expressed in litres, the company shall convert that amount from volume to mass by using actual density values. The company shall determine the actual density by using one of the following:

(a) on-board measurement systems;

(b) the density measured by the fuel supplier at fuel uplift and recorded on the fuel invoice or BDN;

(c) the density measured in a test analysis conducted in an accredited fuel test laboratory, where available.

The actual density shall be expressed in kg/l and determined for the applicable temperature for a specific measurement. In cases for which actual density values are not available, a standard density factor for the relevant fuel type shall be applied once assessed by the verifier.

4. Method D: Direct $CO_2$ emissions measurement

The direct $CO_2$ emissions measurements may be used for voyages and for $CO_2$ emissions occurring in ports located in a Member State's jurisdiction. $CO_2$ emitted shall include $CO_2$ emitted by main engines, auxiliary engines, gas turbines, boilers and inert gas generators. For ships for which reporting is based on this method, the fuel consumption shall be calculated using the measured $CO_2$ emissions and the applicable emission factor of the relevant fuels.

This method is based on the determination of $CO_2$ emission flows in exhaust gas stacks (funnels) by multiplying the $CO_2$ concentration of the exhaust gas with the exhaust gas flow.

The calibration methods applied and the uncertainty associated with the devices used shall be specified in the monitoring plan.

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## ANNEX II

## Monitoring of other relevant information

A. MONITORING ON A PER VOYAGE BASIS (ARTICLE 9)

1. For the purposes of monitoring other relevant information on a per-voyage basis (Article 9(1)), companies shall respect the following rules:

(a) the date and hour of departure from berth and arrival at berth shall be considered using Greenwich Mean Time (GMT/UTC). The time spent at sea shall be calculated based on port departure and arrival information and shall exclude anchoring;

(b) the distance travelled may be either the distance of the most direct route between the port of departure and the port of arrival or the real distance travelled. In the event of the use of the distance of the most direct route between the port of departure and the port of arrival, a conservative correction factor should be taken into account to ensure that the distance travelled is not significantly underestimated. The monitoring plan shall specify which distance calculation is used and, if necessary, the correction factor used. The distance travelled shall be determined from berth of the port of departure to berth of the port of arrival and shall be expressed in nautical miles;

(c) transport work shall be determined by multiplying the distance travelled with the amount of cargo carried;

(d) for passenger ships, the number of passengers shall be used to express cargo carried. For all other categories of ships, the amount of cargo carried shall be expressed either as metric tonnes or as standard cubic metres of cargo, as appropriate;

(e) for ro-ro ships, cargo carried shall be defined as the mass of cargo on board, determined as the actual mass or as the number of cargo units (trucks, cars, etc.) or occupied lane-metres multiplied by default values for their weight.

For the purposes of this Regulation, ‘ro-ro ship’ means a ship designed for the carriage of roll-on-roll-off cargo transportation units or with roll-on-roll-off cargo spaces;

(f) for container ships, cargo carried shall be defined as the total weight in metric tonnes of the cargo or, failing that, the amount of 20-foot equivalent units (TEU) multiplied by default values for their weight. Where cargo carried by a container ship is defined in accordance with applicable IMO Guidelines or instruments pursuant to the Convention for the Safety of Life at Sea (SOLAS Convention), that definition shall be deemed to comply with this Regulation.

For the purposes of this Regulation, ‘container ship’ means a ship designed exclusively for the carriage of containers in holds and on deck;

(g) the determination of cargo carried for categories of ships other than passenger ships, ro-ro ships and container ships shall enable the taking into account, where applicable, of the weight and volume of cargo carried and the number of passengers carried. Those categories shall include, inter alia, tankers, bulk carriers, general cargo ships, refrigerated cargo ships, vehicle carriers and combination carriers.

2. In order to ensure uniform conditions for the application of point (g) of paragraph 1, the Commission shall adopt, by means of implementing acts, technical rules specifying the parameters applicable to each of the other categories of ships referred to under that point.

Those implementing acts shall be adopted not later than 31 December 2016 in accordance with the examination procedure referred to in Article 24(2).

The Commission, by means of implementing acts, may revise, where appropriate, the applicable parameters referred to in point (g) of paragraph 1. Where relevant, the Commission shall also revise those parameters to take account of amendments to this Annex pursuant to Article 5(2). Those implementing acts shall be adopted in accordance with the examination procedure referred to in Article 24(2).

3. In complying with the rules referred to in paragraphs 1 and 2, companies may also choose to include specific information relating to the ship's ice class and to navigation through ice.

B. MONITORING ON AN ANNUAL BASIS (ARTICLE 10)

For the purposes of monitoring other relevant information on an annual basis, companies shall respect the following rules:

The values to be monitored under Article 10 shall be determined by aggregation of the respective per voyage data.

Average energy efficiency shall be monitored by using at least four indicators: fuel consumption per distance, fuel consumption per transport work, $CO_2$ emissions per distance and $CO_2$ emissions per transport work, which shall be calculated as follows:

- Fuel consumption per distance = total annual fuel consumption/total distance travelled
- Fuel consumption per transport work = total annual fuel consumption/total transport work
- $CO_2$ emissions per distance = total annual $CO_2$ emissions/total distance travelled
- $CO_2$ emissions per transport work = total annual $CO_2$ emissions/total transport work.

In complying with these rules, companies may also choose to include specific information relating to the ship's ice class and to navigation through ice, as well as other information related to the fuel consumed and $CO_2$ emitted, differentiating on the basis of other criteria defined in the monitoring plan.

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## ANNEX III

### Elements to be taken into account for the delegated acts provided for in Articles 15 and 16

A. VERIFICATION PROCEDURES

- Competencies of verifiers,
- documents to be provided by companies to verifiers,
- risk assessment to be carried out by verifiers,
- assessment of the conformity of the monitoring plan,
- verification of the emissions report,
- materiality level,
- reasonable assurance of verifiers,
- misstatements and non-conformities,
- content of the verification report,
- recommendations for improvements,
- communication between companies, verifiers and the Commission.

B.ACCREDITATION OF VERIFIERS

- How accreditation for shipping activities can be requested,
- how verifiers will be assessed by the national accreditation bodies in order to issue an accreditation certificate,
- how the national accreditation bodies will perform the surveillance needed to confirm the continuation of the accreditation,
- requirements for national accreditation bodies in order to be competent to provide accreditation to verifiers for shipping activities, including reference to harmonised standards.