



SPECIAL CIRCULAR

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To the Members

Dear Sirs,

EU – Implementation Requirements for the Monitoring, Reporting and Verification (MRV) of CO₂ Emissions from Vessels

Members' attention is drawn to new EU Regulation 2015/757, which came into force on 1 July 2015¹. The Regulation includes maritime CO₂ emissions in the European Union's commitment to reducing emissions generally. The Regulation follows the European Parliament's Resolution of 5th February 2014, which called upon the Commission and Member States to set a binding target of reducing domestic greenhouse gas emissions by at least 40% compared with levels observed in 1990.

Maritime transport has an impact on the global climate and on air quality, as a result of carbon dioxide and other emissions. CO₂ emissions from international shipping, related to the European Union alone, increased by 48% between 1990 and 2007. However, as yet international maritime shipping remains the only means of transportation which has not been included in Community proposals to reduce greenhouse gas emissions.

In light of the developing scientific understanding of the impact of maritime transport on the global climate, it has been decided that this should be assessed regularly and that the European Commission should consider implementing policies and measures to reduce both CO₂ emissions and other kinds of emissions from vessels in future. According to data provided by the IMO, the energy consumption and emissions of ships could be reduced by up to 75% by applying operational measures and implementing technologies which already exist. It is believed that the best option for reducing CO₂ emissions from shipping is to set up a system for monitoring, reporting and verification (MRV) of CO₂ emissions based on the fuel consumption of ships. The MRV system is set out in the form of a Regulation due to the complex and highly technical nature of the provisions introduced, the need for uniform rules applicable throughout the European Union, and to facilitate implementation of these proposals throughout the European Union.

The new Regulation came into force on 1st July 2015. The main provisions of the legislation are as follows:

1. GENERAL PROVISIONS

1.1. Under Article 2(1) of the Regulation, the rules only apply to vessels with a gross tonnage of 5000GT or above, in respect of CO₂ emissions released during their voyages from their last port of call to a port under the jurisdiction of a Member State, and from a port under the jurisdiction of a Member State to the next port of call. The rules will also apply to voyages within or between ports which are under the jurisdiction of Member States.

1.2. It is important to note that a 'port of call' is defined under Article 3(b) as being a port where the vessel stops to load or unload cargo or to embark or disembark passengers. Therefore, stops of other kinds (for example to refuel, go into dry-dock or take shelter from adverse weather) would not be included.

¹ <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32015R0757>.

- 1.3. It is also important to note that the party responsible for monitoring and reporting is referred to throughout the proposed Regulation as the ‘company’. This is defined in Article 3 as *“the owner of a ship”* or *“any other organisation or person, such as the manager or the bareboat charterer, who has assumed the responsibility for the operation of the ship from the ship-owner.”* The obvious consequence of this is that parties will need to reach agreement as to which of them (owners, ship managers or charterers) will be responsible for reporting and monitoring emissions. As will be seen below, failure to comply with these responsibilities carries penalties to which no party will wish to be exposed.
- 1.4. The Regulation also provides that a ‘verifier’ will carry out certain activities in order to assess whether companies have complied with the requirements of the Regulation. A ‘verifier’ is a *“legal entity carrying out verification activities that is accredited by a national accreditation body pursuant to Regulation (EC) No 765/2008 of the European Parliament and the Council and this Regulation”* (Article 3 (f)).
- 1.5. Warships, naval auxiliaries, fish catching or processing ships, wooden ships of a primitive build, ships not propelled by mechanical means and government ships which are used for non-commercial purposes are exempt from these rules (Article 2(2)).

2. MONITORING, REPORTING AND VERIFICATION (MRV)

- 2.1. Article 4 of the Regulation sets out ‘common principles’ for monitoring and reporting. For each ship with a gross tonnage above 5000GT, ship owners must provide a complete report covering CO₂ emissions from the combustion of fuels whilst ships are at sea as well as at berth. It is important to apply appropriate measures to prevent any gaps in the data – the whole period must be covered (Article 4(2)). The data produced must also be accurate – the burden is on the ship owner to identify the source of any inaccuracies and prevent them (Article 4(5)).
- 2.2. Monitoring and reporting must also be consistent. The same monitoring methods and data sets should be used so that the data acquired can be compared over time and any increase or decrease in emissions can be accurately monitored (Article 4(3)). The monitoring data itself must be collected and documented in a transparent manner. This will enable any independent verifier to reproduce the methods used to determine the vessel’s CO₂ emissions (Article 4(4)).
- 2.3. Article 5 of the Regulation sets out specific methods for monitoring and reporting vessel emissions, as well as other relevant information, by reference to Annexes I and II. By Article 5(1) any of the methods set out in the Annexes may be used to determine CO₂ emissions and other relevant information.

Methods for determining CO₂ Emissions

- 2.4. It is recommended that Members look into the detailed provisions of Annexes I and II themselves. However, we include a brief summary of the key points below. Four methods for determining CO₂ emissions are given in the Regulation, as set out in the following formulae: (from Annex I):

Fuel consumption x emission factor

For the emission factor, default values shall be used unless the company decides to use the fuel quality data set out in the bunker delivery note for that fuel.

For the actual consumption of fuel, Annex I provides the following approved methods:

Method A: Bunker Delivery Notes and Periodic Stock-Takes of Fuel Tanks

This method is based on the quantity and type of fuel as defined in the bunker delivery notes, compared with information gained from periodic stock-takes. The fuel at the beginning of the monitoring period, plus deliveries, minus fuel available at the end of the period and de-bunkered fuel will indicate how much fuel has been consumed.

Fuel tank readings must be carried out by methods such as automated systems, soundings and dip tapes. Whichever method is used, it must be specified in the monitoring plan. (See below.)

Method B: Bunker Fuel Tank Monitoring On-Board

This method is based on fuel tank readings for all the fuel tanks on board. The readings must take place 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 will constitute the fuel consumed over the period, which might be the time between two port calls or time spent within a port.

As above, the method of taking fuel tank readings must be an ‘appropriate method’ and be specified in the monitoring plan.

Method C: Flow Meters for Applicable Combustion Processes

This method is based on measured fuel flows on board. The data from all the flow meters linked to relevant emission sources will be combined to determine all fuel consumption for a specific period. Again, the period might be the time between two port calls or time spent within a port.

Method D: Direct Emissions Measurement

This method may be used for voyages within the scope of the Regulation and emissions occurring in ports located in a Member State’s jurisdiction. For ships on which reporting is based on this method, fuel consumption will be calculated using measured CO₂ emissions and the applicable emission factor of the relevant fuels.

This method is based on the determination of CO₂ emission flows in exhaust gas stacks (funnels) by multiplying the CO₂ concentration of exhaust gas by the exhaust gas flow.

Monitoring Plan

- 2.5. Under Article 6(1), by 31st August 2017 a monitoring plan must be submitted to the verifiers which indicates the method chosen to monitor and report emissions and other relevant information. Each ‘company’ must submit a separate plan for each ship to which the Regulation applies. Should ships fall within this Regulation only after the 31st August 2017, the plan must be submitted without undue delay (Article 6(2)).
- 2.6. The monitoring plan is meant to be a complete, transparent documentation of the monitoring methodology for the specific ship. It must contain:
 - a) the identification and type of ship (including its name, IMO number, port of registry and owners’ name);
 - b) contact details for the ‘company’ responsible for monitoring and reporting;
 - c) a description of the emission sources on board (the main engines, auxiliary engines, gas turbines, boilers, inert gas generators) and the fuel types used;
 - d) a description of procedures, systems and responsibilities used to update the list of emission sources;
 - e) a description of procedures used to monitor the completeness of the list of voyages;
 - f) a description of the procedures for monitoring fuel consumption, emission factors for each fuel type used (including how these were calculated in the case of alternative fuels);
 - g) a description of the procedures used to determine activity data per voyage, a description of the method to be used to determine surrogate data (in the case of data gaps); and
 - h) a revision record sheet to show any revisions which have been made.
- 2.7. As can be seen from the above this is a comprehensive document and therefore templates will be provided in order to streamline and standardise this process. The form these will take is as yet

undecided, but it is indicated by Article 6(4) that these will be determined by means of implementing acts in the near future.

2.8. Under Article 7, the company is required to modify the monitoring plan in certain situations:

- a) if there is a change of company (i.e. another party takes on that role in relation to the vessel);
- b) if there are new emission sources or fuels are used which are not yet referred to in the monitoring plan;
- c) where there is a change in the availability of data (e.g. because new methods are being used to collect it);
- d) where data resulting from previously used methods has been found to be incorrect; or
- e) if the monitoring plan does not conform to the above requirements. (If the monitoring plan does not conform, the verifier will request that the company modifies the plan. In other circumstances, the company must notify any planned modifications to the verifiers without undue delay.)

2.9. Having chosen a method and prepared a monitoring plan, companies must then monitor emissions for each ship both on a per-voyage and annual basis (Article 8).

2.10. Where emissions are monitored on a per-voyage basis, Article 9 stipulates that the following information must be monitored:

- a) the ports of departure and arrival (including date and time of departure/arrival);
- b) the total amount and emission factor for each type of fuel consumed;
- c) CO₂ emitted;
- d) distance travelled;
- e) time spent at sea;
- f) cargo carried; and
- g) transport work.

However, ships are exempted from the need to monitor emissions on a per-voyage basis if all the ship's voyages either start or end at a port under the jurisdiction of a Member State or the ship performs more than 300 voyages in a year.

2.11. Where emissions are monitored on an annual basis, for each ship the company must monitor:

- a) the amount and emission factor for each type of fuel consumed in total;
- b) the total aggregated CO₂ emitted;
- c) the aggregated CO₂ emissions from all voyages:
 - (1) between ports under a Member State's jurisdiction,
 - (2) which departed from ports under a Member State's jurisdiction,
 - (3) to ports under a Member State's jurisdiction, and
- d) any CO₂ emissions which occurred at berth within ports under a Member State's jurisdiction.
- e) In addition, the total distance travelled, total time spent at sea, total transport work and average energy efficiency of the vessel must be monitored.

Although the monitoring plan must be submitted to verifiers by 31 August 2017, Recital 39 makes clear that the "first reporting period" begins on 1 January 2018. The purpose of the delay is to allow Member States, ship owners and others time to prepare for the MRV obligations provided by the Regulation.

3. DOCUMENTS OF COMPLIANCE (DOC)

Emission Report

3.1. From 2019 onwards, by 30th April each year companies will be required to submit an 'emission report' to the European Commission and the authorities of the flag State of the vessel (Article 11.) Such a report will be concerned with the emissions and other relevant information during the

entire relevant reporting period. One report must be produced for each individual ship and must be rated 'satisfactory' by a verifier.

- 3.2. Emission reports must identify the ship and the company which has responsibility for it, by including the ship's name, IMO number and port of registry, as well as the ship owner's name and address (and that of the company if they are different entities) and the identity of the verifier who has assessed the report. The report must also contain information on the monitoring method which was used and the results of that monitoring.
- 3.3. By Article 12 of the Regulation, the emission report must adhere to a particular format. As with the monitoring plan, it is suggested that the reports will be able to be submitted using electronic templates and automated systems for exchanging the monitoring data. These will be established by implementing acts.

Verification Report

- 3.4. Once the emission report has been submitted, the verifier will be required to produce a 'verification report'. Under Article 13 (2) the verifier will assess whether the emission report complies with the requirements of the Regulation as set out above and whether the monitoring plan has been adhered to. If the verifier concludes "*with reasonable assurance...that the emission report is free from material misstatements the verifier shall issue a verification report stating that the emissions report is verified as satisfactory*" (Article 13(4)).
- 3.5. However, under Article 13(5) if the emission report does include misstatements or does not comply with the Regulation, the verifier must inform the company in a timely manner so that the company can correct such errors (or provide further information to explain them) so as to allow the verification process to be finalised on time. The final verification report will state whether any identified errors have been resolved. If they have not, and individually or together lead to material misstatements, the verifier will issue a report stating that the emission report does not comply with the Regulation.

Documents of Compliance

- 3.6. If the emission report does comply with the Regulation, and a verification report has been issued which supports this, a 'document of compliance' for the ship concerned will be issued by the verifier (Article 17(1)). This document will identify the ship, the ship owner and the verifier and indicate how long the document of compliance remains valid for. Under Article 17(3) documents of compliance will remain valid for a period of 18 months after the end of the reporting period. Once the document has been issued the verifier must inform the European Commission and the authority of the Flag State concerned.
- 3.7. Under Article 18, by 30th June of the year following the end of a reporting period, all ships which have carried out voyages under the scope of the Regulation during that reporting period and which arrive at or depart from ports within the jurisdiction of Member States must carry on board a valid document of compliance.

4. PENALTIES FOR NON-COMPLIANCE

- 4.1. Under Article 19, each Member State is required to take all measures necessary to ensure compliance with monitoring and reporting requirements. Member States shall regard the information that a document of compliance has been issued for the ship concerned as evidence of compliance. Any inspection of a ship in a port under the Member State's jurisdiction (carried out in accordance with Directive 2009/16/EC²) must include checking that a valid document of compliance is carried on board.

² [Directive 2009/16/EC of the European Parliament and of the Council of 23 April 2009 on port State control](#) (OJ L 131, 28 5 2009, p. 57).

- 4.2. Member States are required to set up a system of penalties, which should be effective, proportionate and dissuasive, and notify these to the European Commission by 1st July 2017. Any subsequent amendments to these penalties should be notified to the European Commission without delay (Article 20(1)). Without knowing what these penalties will be we cannot comment further at present. However, Members are advised to check whether any such system is in place in a Member State whose territorial waters their vessel will be entering, and exactly what its provisions are.
- 4.3. The Regulation stipulates that the most severe penalty available (the ‘expulsion order’) may only be used where ships have failed to comply with the monitoring and reporting requirements for two or more consecutive reporting periods and where other enforcement measures have been unsuccessful. The ‘expulsion order’ can be issued by the competent authority of the Member State of the vessel’s port of entry. If such an order is made it must be notified to the Commission, EMSA, the other Member States and the flag State of the vessel. The effect of the order is that no Member State shall allow the vessel to enter any of its ports until the company responsible fulfils its monitoring and reporting obligations. This will be evidenced by a valid document of compliance being issued to the vessel.
- 4.4. This penalty may appear to be draconian, but the Regulation does indicate that it does not prejudice or override the international maritime rules which would normally be applicable in the case of ships in distress. Further, under Article 20 (3a) Member States must ensure that “*The owner or operator of a ship*” will have a right to an effective remedy before a court or tribunal against the expulsion order, of which the owner or operator must be properly informed by the authority which makes the order.

5. CO₂ EMISSION REGULATIONS OUTSIDE THE EUROPEAN UNION

United States of America

- 5.1. In the United States of America, the Environmental Protection Agency (EPA) has been implementing a co-ordinated strategy to reduce air pollution. This has involved domestic action under the US Clean Air Act as well as Government action through the International Maritime Organisation (IMO), including the designation of Emission Control Areas (ECAs) in US Coastal Waters and the adoption of new international standards for shipping outside the US.
- 5.2. Annex VI to the International Convention for the Prevention of Pollution from Ships (MARPOL Annex VI), which applies to all ships of 400 gross tonnage or above, has now been implemented in the United States. This treaty provided new international standards designed to lower emissions from vessels. It was amended in 2008 to include additional, more stringent emission requirements for ships operating in designated coastal areas where air quality problems are acute. These are known as Emission Control Areas. From January 1st 2015 ships docked in these areas have been required to switch to fuels with a less than 0.1% sulphur content.
- 5.3. Further amendments to MARPOL Annex VI came into force on 1st January 2013, which introduced, among other considerations, new requirements for vessel inspections, surveys and certification. The MARPOL Annex VI Surveys (as they are known) are a set of inspections to ensure that vessels and their engines comply with the requirements of Annex VI. These include initial surveys (after which the vessel will be issued with an International Air Pollution Prevention Certificate if it is compliant) and periodic surveys at which certificates of compliance will be reissued.
- 5.4. By contrast to the new Regulation introduced within the European Union, MARPOL Annex VI provides for inspections to be carried out by the US Coast Guard and for certificates of compliance to remain valid for five years. The system for reporting is not as onerous on the ship-owner and there is less need, or so it would seem, for continuous and frequent monitoring of the vessel’s emissions.

Hong Kong

- 5.5. As foreseen by Japan P&I News No. 738 of 25 June 2015³, the Legislative Council of Hong Kong has now approved a law⁴ to prevent ships calling there from burning fuel with more than a 0.5% sulphur content. The law becomes effective on 1 July 2015. Hong Kong thus becomes the first Asian jurisdiction to control its ports' emissions in this way. While the proposal has caused concern among ship owners (as low-sulphur fuels are more expensive) statements from the Environmental Protection Department of Hong Kong indicate that the use of technologies such as 'scrubbers' which reduce sulphur emissions to the levels of low-sulphur fuels would exempt vessel operators from needing to switch to low-sulphur fuels whilst in Hong Kong.
- 5.6. Vessels will also be required, under the proposed new legislation, to record the date and time of switching to low sulphur fuel and to maintain the relevant records for three years.
- 5.7. The proposed penalties for non-compliance are severe: a fine of HK\$200,000 (US\$25,000) and up to six months' imprisonment. Ship owners failing to keep up the required records in relation to fuel switching will be liable to a fine of HK\$50,000 (US\$6,400) and three months' imprisonment.

Yours faithfully,

The Japan Ship Owners' Mutual Protection & Indemnity Association

³ https://www.piclub.or.jp/index.php?action=pages_view_main&active_action=journal_view_main_detail&post_id=2488&comment_flag=1&block_id=372#_372

⁴ <http://www.maritime-executive.com/article/hong-kong-wants-ship-emission-standards-now>