

# **Guidance/Best practices document on the preparation of monitoring plans pursuant to Regulation (EU) 2015/757 on monitoring, reporting and verification emissions from maritime transport**

This document is part of a series of documents prepared by experts gathered under two subgroups established under the umbrella of the "European Sustainable Shipping Forum (ESSF)": the MRV subgroup on monitoring and reporting and the MRV subgroup on verification and accreditation. These two MRV subgroups gathered for the period June 2015 to May 2017 in order to provide technical expertise for the implementation of Regulation (EU) 2015/757 (the MRV Shipping Regulation).

As indicated in their terms of reference, the two MRV shipping subgroups were mandated to identify best practices in areas relevant for the implementation of the MRV Shipping Regulation. The substance of this best practices document was unanimously endorsed by the representatives of the ESSF Plenary by written procedure ending on 30<sup>th</sup> of June 2017.

Apart from the present document Guidance/Best practices documents have been established in the following areas:

- Monitoring and reporting of fuel consumption, CO2 emissions and other relevant parameters;
- Assessment of monitoring plans by verifiers;
- Backward assessment of monitoring plans;
- Use of external ship tracking data by verifiers;
- Materiality and sampling;
- Verification of emissions reports by verifiers;
- Recommendations for improvements issued by verifiers;
- Assessment of verifiers by National Accreditation Bodies in order to issue an accreditation certificate;
- Dealing with situations where the accreditation is suspended or withdrawn close to the planned issuing date of the Document of Compliance (DOC) by the verifier.

*All guidance/ best practices documents and other relevant documents can be downloaded from the Commission's website at the following address:*

[https://ec.europa.eu/clima/policies/transport/shipping\\_en#tab-0-1](https://ec.europa.eu/clima/policies/transport/shipping_en#tab-0-1)

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## 1 INTRODUCTION

From 1<sup>st</sup> January 2018 companies are required to collect and later report verified annual data on CO<sub>2</sub> emissions and other relevant information for ships over 5 000 gross tons on voyages from and to EU ports. Furthermore, by 31 August 2017, for the ships concerned, companies have to submit to an accredited MRV shipping verifier a monitoring plan, consisting of complete and transparent documentation of the monitoring method and procedures to be applied for each of the ships under its responsibilities.

The legal framework is set by Regulation (EU) 2015/757 on monitoring, reporting and verification of carbon dioxide emissions from maritime transport and amending Directive 2009/16/EC ("the MRV Shipping Regulation")<sup>1</sup>.

Further technical legislation has been adopted by the European Commission to implement the requirements as regards templates for monitoring plan. This concerns in particular:

- Commission Implementing Regulation (EU) 2016/1927 of 4 November 2016 setting templates for monitoring plans, emissions reports and documents of compliance pursuant to Regulation (EU) 2015/757<sup>2</sup>

The present document has been prepared by dedicated Work Package under the ESSF subgroup on MRV monitoring, co-ordinated by Helena Athoussaki, PwC.

It provides best practices on how MRV companies should prepare monitoring plan and use the template. It has been written to support the implementation of the MRV Shipping Regulation by explaining its requirements in a non-legislative language and providing some examples. However, it should always be remembered that the MRV Shipping Regulation and the related Delegated and Implementing Regulations set the primary legal requirements.

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<sup>1</sup> [http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L\\_.2015.123.01.0055.01.ENG](http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2015.123.01.0055.01.ENG)

<sup>2</sup> [http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L\\_.2016.299.01.0001.01.ENG](http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2016.299.01.0001.01.ENG)

## **2 PREPARATION OF THE MONITORING PLAN**

### **2.1. Monitoring Plan**

The Monitoring Plan is a document in which the company describes the design of the management system the ship has in place in order to monitor and report several data parameters related to the CO<sub>2</sub> and Energy Efficiency of the vessel.

The Monitoring Plan should consist of a complete and transparent documentation of the monitoring method for the ship concerned along with the description of the relevant procedures, systems and responsibilities used to monitor the completeness and accuracy of the data provided in the Emissions Report in conformity with the MRV Shipping Regulation.

The submission date along with the content of the Monitoring Plan is laid down in Article 6 of the MRV Shipping Regulation.

### **2.2. When has a company to modify the Monitoring Plan?**

Companies have to modify the Monitoring Plan as laid down in Article 7 of the MRV Shipping Regulation.

### **2.3. Using the appropriate template**

Companies may use any template as long as the content is according to Annex 1 to Commission Implementing Regulation (EU) 2016/1927.

Companies may split the Monitoring Plan into a Company specific and Vessel specific according to article 2 of Commission Implementing Regulation (EU) 2016/1927.

#### ***Example***

Companies may indicate at the beginning of the template which tables are company specific.

### **2.4. Using the Appropriate Language**

Companies should communicate to the verifiers the content of the monitoring plan in an easy and clear way.

### *Example*

<b>Title</b>	<b>Guidance</b>	<b>Example</b>
Reference to existing procedure	Enter the name of the manual, the chapter and paragraph.	Office Operations Manual, Chapter 7.2.1
Version of existing procedures	Use version or date of the doc	Version 2
Description of EU MRV procedures if not already existing outside the MP	Describe the procedures or leave empty if a reference is made above	See section 5.1 of best practices document on monitoring and reporting
Name of person or position responsible for this procedure	Based on the official organogram	Operational manager, HSQE manager, Master, etc
Location where records are kept	Ref to the company address and department or onboard ( master's office)	Company's Office/Technical Department Files
Name of IT system used	Use name, version and module of the system used within procedure, as per IT system provider manual. For internal system specify characteristics for identification.	Software X, Module: vessel management
Data source	Enter the source from where the data is collected	Noon Report, Oil Record Book, BDN, GPS etc.

If the mandatory fields are not applicable then the company should indicate “N/A” in the relevant fields of MP.

### **2.5. Describing a procedure**

When describing a procedure in the Monitoring Plan, companies must consider the level of detail required to obtain a sufficient level of understanding from the verifiers.

Example can be found in section 5 on the determination of fuel consumption of the best practices document on monitoring and reporting.

#### ***Reference to existing procedures***

When providing information on elements and procedures as part of the Monitoring Plan, companies should be able to also refer to procedures or systems effectively implemented as part of their existing management systems, such as;

- the International Safety Management Code (ISM Code);
- the Ship Energy Efficiency Management Plan (the SEEMP);

- Systems and controls covered by harmonised quality, environmental or energy management standards, such as EN ISO 9001:2015, EN ISO 14001:2015 or EN ISO 50001:2011;
- Any other internal procedures.

## 2.6. Creating data flow activities

For monitoring and reporting carbon emissions it is important for Companies to ensure that data is retrieved, collected, transported and stored in a controlled way.

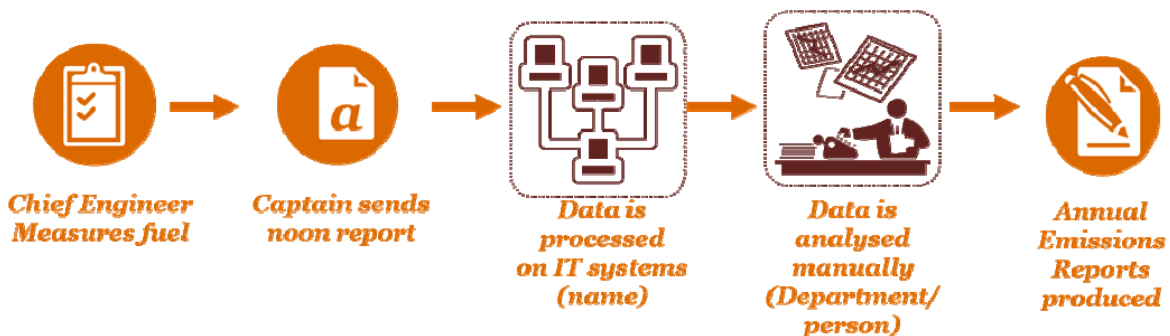
To obtain a clear picture of how data about fuel consumption, transport work and other relevant information is collected from various sources and aggregated for the emission report in accordance with the requirement of the MRV Shipping Regulation a clear description of the data flow is necessary.

Preparing simple process flow charts provide an efficient mean to obtain a good overview of data exchange between departments/locations.

### *Example of data flow activities concerning activity data*

An example with the information about the procedure along with a diagram.

The Captain receives information from the Chief Engineer after taking the soundings of the fuel tanks using sounding tape, then he inserted into the daily noon report.



## 2.7. Process flow diagram

To better explain vessel's monitoring system, company may wish to utilize process flow diagrams which could include information such as the fuels used, monitoring methods, measuring equipment, emission sources or other data sources etc.

For example, a diagram of a fuel oil system can be used to better explain the fuel monitoring process. Such a diagram can be found in section 5.1 of the best practices document on monitoring and reporting.

## 2.8. Responsibilities and records

### *Name of Person or position responsible for this procedure*

The company should mention in the Monitoring Plan the name or the position of the person responsible for the procedure.



This enables company to record responsibilities and identify whom to contact in case queries are raised about the procedure.

***Location where records are kept***

The location of where records are kept should be specified in the Monitoring Plan in order to ensure availability of information also in cases where the contact person for the purpose of the Monitoring Plan changes. Also, this will be included in the verifier's risk assessment and the decision on the necessity – and destination – of a site visit.

### 3 THE MONITORING PLAN TEMPLATE

#### **Part A Revision record sheet**

Reference to Chapters where revisions or modifications have been made, including a brief explanation of changes.

#### ***Example***

Table B.2. Change of address, Table C.2.1. Change of method to determine fuel consumption, Table B.5. person responsible for this position.

#### **Part B Basic Data**

##### **Table B.1. Identification of the ship**

###### **IMO Number**

Refers to unique seven digit IMO number as assigned by IHS Maritime and shown on the ship's hull, in accordance with SOLAS regulation XI/3.

###### **IMO unique company and registered owner identification number**

Refers to the IMO number of the MRV company (responsible for MRV compliance) and the ship owner company as assigned by IHS Maritime in accordance with SOLAS regulation XI-1/3-1

###### **Name of the ship owner**

The legal entity that owns the vessel

###### **Voluntary open description field**

This may concern certain information related to the characteristics of the business activities of the ship based on its type (cruise line etc.).

This information may help to gain a better understanding of the potential fluctuation of CO2 efficiency between certain voyages or reporting periods (e.g. dry docking, Breakdown etc.).

Also companies may insert additional technical characteristics that may affect the energy efficiency of the vessel (e.g. Mewis Duct, Propeller boss cap fin, Anti-fouling, Hull surface coating).

##### **Table B.2. Company information**

Name and address of the company as described in article 3 of regulation (EU) 2015/757.

Name, position and contact details of responsible natural person(s) within the company. In case where companies prefer to appoint several contact persons, responsibilities need to be clearly allocated, with one person carrying the overall correspondence between the company and the verifier.

**Table B.3. Emissions sources and fuel types used****Example**

Emission source reference no.	Emission source (name, type)	Technical description of emission source (performance/power, specific fuel oil consumption (SFOC), year of installation, identification number in case of multiple identical emission sources, etc.)	(Potential) Fuel types used
1	Main Engine Hitachi Zosen Type MAN B & W 6S60MC Mk6	Serial No: 3896 Year of Installation: 2001 Rated Power (MCR): 10750 kW @ 99 RPM SFOC (MCR): 172 g/ kWh	HFO LFO MGO
2	Auxiliary Engine HYUNDAI-HIMSEN 6H21/32	Serial No: BA5832-1 Year of Installation: 2016 Rated Power (MCR): 1200kW @ 900RPM SFOC: 195g/kWh	HFO LFO MDO MGO
3	Inert Gas Generator WARTSILA MOSS AS	Serial No: n/a Year of Installation: 2016 Performance: 4500 Nm <sup>3</sup> /hr SFOC: 333 kg/hr	MDO MGO

**Table B.4. Emission factors**

In case of use of fuel without an emission factor within publicly known source (IMO, EU or other), then company should provide the emission factor along with the methodology for sampling, methods of analysis and a description of the laboratories used, if any.

Section 5.1.6 of the best practices document on monitoring and reporting provides information on how to deal with so-called “hybrid fuels” which not match with ISO 8117 Marine Fuels specifications.

**Table B.5. Procedures, systems and responsibilities used to update the completeness of emission sources**

Companies should provide details about the systems, procedures and responsibilities used to track the completeness of the list of emission sources over the reporting period.

**Example**

**Procedure:** In case any change in the emission sources occur for the vessels under the Company’s management, the Technical Manager is responsible to fully inform the assigned Superintendent Engineer for the changes and provide them with all the necessary information.

The responsible assigned Superintendent Engineer must review and update the list of the emission sources in the related Monitoring Plan(s) and in any other report and document that the Company maintains with the latest information of the emission sources on board, when applicable, in order to ensure completeness and accuracy....

**Name of person or position:** Assigned Superintendent Engineer/ Technical Department

**Location where records are kept:** The list is saved at the vessel's Monitoring Plan which is located at the Company's Office/ Technical Department Files.

**Part C Activity Data**

**Table C.1. Conditions of exemption related to Article 9(2)**

If all of a ship's voyages during the reporting period either start from or end at a port under the jurisdiction of a Member State and if the ship, according to its schedule, is planned to perform more than 300 voyages during the reporting period, the company may be exempted from the obligation to monitor the amount of fuel consumed on a per-voyage basis (Art. 9 (2) of the MRV Shipping Regulation). It is up to the decision of the company to make use of the exemption while providing evidence of the above exemption assumptions.

Companies will be asked to lay down in their monitoring plans whether they opt for the exemption, respectively.

Further information on how to prepare the MP for companies making use of the exemption is provided section 4.2 of the best practices document on monitoring and reporting..

**Table C.2. Monitoring of fuel consumption**

**Table C.2.1. Methods used to determine fuel consumption of each emission source**

Companies can insert as an emission source one of the following categories: ‘All sources’, ‘Main engines’, ‘Auxiliary engines’, ‘Gas turbines’, ‘Boilers’ or ‘Inert gas generators’. Companies can select one (or more if it enhances the overall accuracy of the measurement) of the following categories: ‘Method A: BDN and periodic stock takes of fuel tanks’, ‘Method B: Bunker fuel tank monitoring on-board’, ‘Method C: Flow meters for applicable combustion processes’ or ‘Method D: Direct CO<sub>2</sub> emissions measurement’.

*Example*

Emission source	Chosen methods for fuel consumption
All sources	Method B

**Table C.2.2. Procedures for determining fuel bunkered and fuel in tanks**

The procedure must describe (or make a reference to an existing one) how bunkering is performed to ensure that tanks are fueled with the agreed quantity. Another procedure must describe (or make a reference to existing one) how fuel consumption is monitored in a consistent and accurate manner. In addition a procedure can be in place in case where an external, independent BQS Surveyor comes on board so as to provide extra support in the procedure of fuel bunkering. Companies can create a list of forms involved during the bunkering procedure (Bunker Plan Record, Bunkering Checklist, Oil Transfer Procedures Table etc.). Companies may also develop dataflow activities as described in section 2.6.

*Example*

**Procedure:** detailed procedure can be found in section 5.1 of the best practices document on monitoring and reporting

**Responsible Person:** Chief Engineer, Operations Manager

**Location where records are kept:** Log book (On board), Noon report (On board/ Operations Department)

**Name of IT system used:** the system where documents are stored (e.g. ERP system)

### **Table C2.3. Regular cross-checks between bunkering quantity as provided by BDN and bunkering quantity indicated by on-board measurement**

The procedure must describe (or make a reference to existing one) how the company cross-checks the bunkering quantity between on board measurements vs. the quantity provided by the supplier as displayed on the BDNs.

#### **Example**

Procedure: The Chief Engineer performs cross-checks between the sounding readings and the Bunker Delivery Note(s), every time upon completion of the bunkering operations. The quantity and receipt number of the Bunker Delivery Note(s) are recorded into the Sounding Form located on board.

### **Table C2.4. Description of the measurement instruments involved**

Companies must insert the name of the measurement instrument (i.e. tank sounding, flowmeter) involved (relevant to method A, B, C, D), the sources used (tanks, boilers, etc.) along with the technical characteristics (year of installation or purchased, maintenance period, accuracy etc.) in order to signify that the measurement equipment is under good condition.

#### **Example**

Measurement Equipment	Elements applied to (Emission sources, tanks)	Technical Description (age, specification, maintenance intervals)
Name of manufacture, Type (sounding tape, flowmeter, CO <sub>2</sub> sensor), Model	Main engine	Date of Installation, Reference to manufacture specifications, Calibration and interval standards used.

### **Table C.2.5. Procedures for recording, retrieving, transmitting and storing information regarding measurements**

Companies should describe (or make a reference) the whole process of how data information related to fuel is recorded, retrieved, transmitted and stored before is reported into the annual emission report. Data flow diagrams and task lists can be proved helpful tools to understand the procedure.

#### **Example**

Procedure: Recording and retrieving: The Chief Engineer responsible for recording fuel measurements performing manually daily tank soundings. Chief Engineer then informs the Master who is responsible for retrieving these values and entering them into the X system in order to be transmitted to shore.

Transmitting and Storing: The exchange of information or “transmitting” regarding fuel measurements for all CO<sub>2</sub> emissions sources installed on board, is governed by internal procedure (reference) sets clearly the steps which need to be followed: four types of reports (arrival, departure, noon and port) are sent from the Master through the system X to the Technical and Operations departments on shore each with specific values on the fuel consumed per CO<sub>2</sub> emission source at specific time intervals.

#### **Table C.2.6. Method for determination of density**

In the case where the amount of fuel bunkered or the amount of fuel remaining in the tanks is determined in units of volume or is measured through a volume flow meter, the company should convert that amount from volume to mass by using actual density values by using one of the following options:

- (a) on-board measurement systems;
- (b) the density measured by the fuel supplier at fuel bunkering 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.

#### ***Example***

Detailed procedure along with the usage of standard default values temperature correction can be provided in section 5.1 of the best practices document on monitoring and reporting.

#### **Table C.2.7. Level of uncertainty associated with fuel monitoring**

Fuel quantity determination is inherently subject to uncertainty. Article 6.3. (f). (iv) specifies that companies should develop a procedure to ensure the total uncertainty of fuel measurements is consistent with the requirements of the MRV Shipping Regulation. To make monitoring easier, it is appropriate to allow the use of default values for the level of uncertainty associated with fuel monitoring. Companies may use these values to include in their procedure in the monitoring plan.

The use of default values is not mandatory. Ships may also use calculated uncertainty (ship specific estimate) related to fuel monitoring and/ or CO<sub>2</sub> emissions, provided that these calculations are appropriate and available for assessment by the verifier..

Default uncertainty values are provided in section 5.1 of the best practices document on monitoring and reporting.

#### **Table C.2.8. Procedures for ensuring quality assurance of measuring equipment**

Companies should describe in the Monitoring Plan the procedures with regards the effective functioning of relevant measuring equipment (calibration; malfunctions, repairs; accuracy, determining reference figures and comparative measurements). Measuring equipment manuals, technical datasheets, certificates can be used as a reference. Often companies include this procedure within the Planned Maintenance System. Forms include but not limited to: Calibration status report or instrument calibration record.

Moreover, training and familiarization of personnel with the measuring equipment can also be used as a procedure.

**Example** (in case of manual sounding)

Before performing a sounding, the Chief Engineer or the crew member assigned by the Chief Engineer to perform the sounding, should make sure that: The sounding tape to be used is of sufficient length for the height of the tank to be gauged. The sounding tape is graduated in feet, inches, and fractions of an inch; feet and hundredths of a foot; or meters, centimeters, and millimeters. Markings are visible. The sounding tape is not kinked or spliced. In case any of the above does not hold, then the sounding tape should be discarded and a sounding tape fulfilling the criteria above should be used.

**Example** (in case of flow meters)

The quality of measuring equipment is supported by the fact that company performs maintenance and calibration of flow meters according to the manufacturer's specifications and if not feasible by the operating experience. This is outlined in the company's Planned Maintenance System (PMS) which describes clearly the procedure and the roles of doing so. Additionally the technical department checks periodically the output of the flowmeter to ensure that works properly.

If a flow meter malfunctions, then the chief engineer informs the technical department and all the necessary steps are followed to immediate replace it.

**Table C.3. List of voyages**

Companies should provide details about the systems, procedures and responsibilities used to ensure the completeness of the list of voyages over the reporting period. The description of the procedure in place to keep an updated detailed list of voyages during the reporting period which are carried out under EU MRV scope. The procedures in place should ensure completeness and non-duplication of data.

Data flow procedures of recording, monitoring and reporting voyages along with the IT system diagram (if any) may be used.

**Example**

**Procedure:** The recording of all voyages is done through the noon, arrival, departure and port reports which are reviewed by the Operations Department. This information is processed through system X, which maintains information for all in scope voyages. The filtering of EU MRV voyages is done through the X system as per EU voyage definition.

**Table C.4. Distance travelled**

As explained in section 6 of the best practices document on monitoring and reporting, distance travelled is determined as distance over ground. Should the vessel be adrift (i.e. while waiting for a berth) the distance should be included as the vessel is underway.

**Example**

The distance travelled may be calculated by the two (2) Electronic Chart Display and Information System (ECDIS) which are installed on board per vessel and connected with the two (2) GPS apparatus. The Master reports distance travelled through the daily messages (departure/ noon/arrival) and records distance travel on the Log Book.

### **Table C.5. Amount of cargo carried & Number of passengers**

Companies will be requested to provide information on how the amount of cargo carried will be compiled and calculated. Cargo carried can be recorded and retrieved in different ways and should all be described in the monitoring plan. Companies will be asked to provide details about the procedures, responsibilities and data sources for determining and recording the cargo carried.

The monitoring plan should also use the units for determining ‘cargo carried’ as specified in Commission Implementing Regulation (EU) 2016/1928.

#### ***Example (Tanker)***

**Procedure:** Before loading, the Chief Officer performs ullage measurements using portable instruments (which are certified and annually inspected). A second ullage measurement is performed again upon completion of loading.

Ullage measurements on all cargo tanks are converted from volume to mass of cargo through utilisation of density. Cargo calculation reports are then cross checked by the Captain with the Bill of Lading (B/L).

Loading takes place always at the presence of a Cargo Surveyor (who can be from the supplier’s side when loading or buyer’s side when unloading).

As a control, a second measurement can be obtained from electronic cargo tank soundings which are conducted by the Chief Officer before and after loading. Further cross-check is performed between cargo tank electronic readings and ullage measurements...

### **Table C.6. Time spent at sea**

Determining and recording the time spent at sea from the arrival at the first berth and the departure of the last berth in a port, as explained in section 6 of the best practices document on monitoring and reporting.

Anchorage is excluded from time spent at sea.

#### ***Example***

The Master reports the time as per the GPS indications (or the Master Clock(s) / local time zone or GMT) in the Deck Log Book and in the Daily Noon Reports, Arrival and Departure. Time spent at sea is calculated at the end of each voyage and recorded in the voyage documents.

### **Part D Data gaps**

The risk of the occurrence of data gaps should be minimized by developing an appropriate monitoring plan. However, it is not possible to completely exclude events that require the closure of a data gap.

There are several reasons for data gaps or estimations in order to deliver data to be used in the emissions report. It can be distinguished between events that require the closure of a data gap and those that require the correction of existing data. Corrective measures can be made by using secondary data. In contrast to this, estimations have to be used for real data gaps, i.e. when no information by the applied monitoring approach is available.



Companies will be asked to provide a brief description of the method to treat data gaps regarding the parameters other than fuel consumption (i.e. list of voyages, distance, total time spent at sea, cargo carried, number of passengers) as well as control activities to prevent missing data.

This may be the case if information is missing, lost or found corrupt. It should include a back-up solution for each parameter and a formula/description of the calculation.

For example, assume that a flow meter did not output values for 1 day. The Chief Engineer is responsible for noticing this data gap and applying the back-up monitoring method e.g. tank sounding. The Chief Engineer should report the failure promptly to the managing office. If for any other reason, the Chief Engineer cannot close or detect this data gap, then the shore side is responsible for closing it, by applying formulae, historic data etc.

#### **Table D.1. Methods to be used to estimate fuel consumption**

Companies can select one of the four methods (A, B, C, D) or can describe a method to estimate fuel consumption.

##### ***Example using Method A***

In the event of a data gap due to unexpected conditions, the performance manager (shore) communicates its existence to the Chief Engineer who fills the gap once arrival established using the average of the ROB difference between arrival and departure ROBs. He then records the value as an error to the engine log book and communicates this to the Performance Manager (shore).

##### ***Example using Method B***

When the related data is missing, the Chief Engineer requests to perform as soon as possible tank sounding in order to close the gap. In the case where the missing data is not immediately identified then the responsible Superintendent closes the gap manually by using the average fuel consumption of the previous and the next day.

#### **Table D.2. Methods to be used to treat data gaps regarding distance travelled**

##### ***Example***

In the event of a data gap related to distance traveled, while using an automated/electronic chart navigation system, the master can fill the gap by means of back-up methods such as terrestrial or celestial navigation being documented in the Deck Log Book.

#### **Table D.3. Methods to be used to treat data gaps regarding cargo carried**

##### ***Example (bulk carrier)***

In the event of a cargo related document been lost and therefore the occurrence of a data gap, then the Master can report values from other cargo related documents such as Bill of Lading, Mate Receipt or Statement of Facts.

If the total transported cargo cannot be ascertained otherwise, the draft readings may be used to estimate it. From the drafts, the total displacement of the ship is calculated (basis the hydrostatic properties included in the stability booklet or loading computer). By subtracting

the Light Weight of the ship, the content in all tanks, as well as consumables, provisions, spares and Crew, the Cargo can be derived.

#### **Table D.4. Methods to be used to treat data gaps regarding time spend at sea**

##### ***Example***

In the event of a data gap related to time spent at sea, the responsible Operator must immediately communicate with the Master and raise the existence of it and close it using the data from the Statement of Facts documents.

The data gap can be filled by using the average of the time difference in hours between Arrival and Departure.

### **Part E Management**

#### **Table E.1. Regular check of the adequacy of the Monitoring Plan**

Companies check regularly, and at least annually, whether MP is adequate and can be improved further (Article 7 of the MRV Shipping Regulation).

##### ***Example***

The HSQE manager includes the Monitoring Plan in the official company procedures being subject to review and/or updates through the Management of Change procedure. This should be done at list annually and on a when needed basis for example when new flow meters are installed, new procedures are in place or roles and responsibilities are amended, and in general changes which can affect the Monitoring Plan of a vessel...

#### **Table E.2. Control activities: Quality assurance and reliability of information technology**

In case of an internal IT system used, the company must describe the back-up procedure in place (i.e. how often are backups taken? Are they tested? Where are they stored? Who has access to those backups? etc.), the user access management procedure (i.e. who is responsible for granting privileges, are the super privileges reviewed? Password policy etc.), the change management procedure (i.e. how requests / issues are reviewed, tracked, are there any user acceptance tests performed?) as well as the logging & monitoring procedure admin action.

##### ***Example***

Backup Servers will occur every day after regular business hours. Full Back up includes all the source files. Only one full backup will be done once a week. Incremental Backups includes only files that have changed since the last full backup. The next time an incremental backup is done, this file is skipped (unless it is modified again).

#### **Table E.3. Control activities: Internal reviews and validation of EU MRV relevant data**

Companies should have a procedure which ensures quality of information before submitting the respective reports to verifiers. The written procedure should lay down checks to be performed. Minimum review check may include: data completeness check; trend analysis (relative comparison of data over several years) etc.

### ***Example***

For Example, this procedure will formalise all actions conducted by the Operations Department with regards to the checks and the reviews applied to measurements related to fuel, time, distance and cargo.

**Cargo:** The reported cargo values are observed so as to make sure that the number is not bigger than the DWT nominal value. If discrepancies are found, communication with the vessel is established.

**Distance:** Distances are validated by the Operations Department with the geographical shape and previous similar voyages. Noon reports and reported distances are checked on a monthly basis and verified. In rare cases a big deviation is found, communication is established with the vessel directly.

**Time:** The Operations Department performs cross-checks between the sum of steaming hours + non steaming hours + off hire hours versus the difference (in hours) between dates from berth to berth. If a difference higher than 10 hours is identified, communication is established with the vessel directly and it is included as an error in the Logbook.

### **Table E.4. Control activities: Corrections and corrective actions**

To establish a systematic and controlled way of reporting and reviewing any non-conformity identified within the Company or on board the vessels, and of deciding and following-up on corrections and corrective actions.

Non-conformity is an observed situation where the objective evidence indicates the non fulfilment of a specific requirement. Such requirements are MRV related procedures, control and MRV management system performance.

The procedure to be described should include: (1) how an MRV non-conformity is reported, (2) Review of a non-conformity, (3) how to implement the corrective action and (4) how corrective actions are followed-up.

Companies can make a reference to existing procedures on ISM with an extended scope to include MRV.

### **Table E.5. Control activities: Outsourced activities (if applicable)**

A procedure for deciding how to outsource to a third party a service related to the Company's MRV management system, and for ensuring quality of outputs.

The procedure should describe how the decision to outsource an activity related to MRV is taken, and (2) how quality in delivering is ensured. The Company might develop a Supplier Performance Rating system and a series of criteria (e.g. level of confidence, response and time availability etc.) based upon which the quality of the services received by the third party is assessed at periodic intervals depending on the length of the outsourced service.

### **Table E.6. Control activities: Documentation**

All companies which are ISM certified do have in place such a procedure. Companies may consider extending the scope in order to include MRV relevant documents as well as the new legal documents imposed by the MRV Shipping Regulation (Monitoring Plan, Emissions Report and Document of Compliance) including the retention period (e.g. DOC 18 months).

### ***Example***

All records should be kept in specific files both on board and in the office and be legible, readily identifiable and retrievable. Records should be stored and retained in such a manner as to avoid deterioration or damage.

The Company's filing system is divided in the filing system of each department (i.e. Operations Department, Technical Department and HSQE Department). Each Department is responsible to maintain all hard copies in the floor it is located for at least 3 years after the date of issue. Document of compliance should be kept for at list 18 months.

The filing system on board each ship is divided in the systems of the Master, Chief Engineer, Chief Officer and bridge. All records are retained for at least 3 years after the date of issue.

## **Part F Further Information**

### **Table F.1. List of definitions and abbreviations**

Companies should list any (individual) abbreviations, acronyms or definitions that they have used in completing this monitoring plan (e.g. PMS: Plant Management System, SMS: ship Management system etc.).

### **Table F.2. Additional information**

In this chapter companies may enter any additional information on the MRV matter that they consider relevant for their ship and relevant management procedures (e.g. Data flow diagrams, tasks lists, organizational diagram etc.)

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