



MARITIME MRV

HOW TO PREPARE FOR CARBON EMISSIONS REPORTING

NOVEMBER 2016

WHEN YOU NEED TO BE SURE



- Policy background
- Scope and timeline
- The monitoring plan
- Templates and reporting
- The verification process
- Q&A



POLICY BACKGROUND

WHEN YOU NEED TO BE SURE





- Pressure to address greenhouse gas (GHG) emissions from shipping:
 - According to IMO study, maritime transport emits around 1000 million tonnes of CO₂ annually and is responsible for about **2.5% of global GHG emissions**
 - Without action, shipping emissions are predicted to **increase between 50% and 250%** by 2050
- EU would prefer global agreement due to international nature of shipping, but yet to be developed
- EU strategy published in 2013 to integrate maritime emissions into EU's GHG reduction policies
- First step in strategy is to implement a regulation covering Monitoring, Reporting and Verification (MRV) for the sector

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

- Available at: http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2015.123.01.0055.01.ENG
- Many aspects of the Regulation developed in line with requirements of existing EU ETS
- Key difference is no targets, or issuance and trading of emissions allowances – so emissions reporting only
- Draft delegated acts have been published in August 2016 and the feedback period is now closed. The final version of the delegated act is expected by end of 2016. The delegated acts clarify rules on monitoring, and on verification and accreditation.



SCOPE AND TIMELINE

WHEN YOU NEED TO BE SURE





- Applies to ships above 5,000 gross tonnage (GT) regardless of flag
 - EU estimate around 55% of ships are above this threshold and account for around 90% of emissions
- CO₂ emissions only - other GHGs are not included
- Emissions included:
 - Intra-Union voyages
 - All incoming voyages from last non-Union port of call to first Union port of call
 - All outgoing voyages from Union port of call to next non-Union port of call
 - In Union ports at berth or moving within a port

- Responsibility for monitoring and reporting lies with the “company”: the ship-owner 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 ship-owner



- Certain non-transport voyages excluded:
 - Dredging, ice-breaking, pipe laying, offshore installation activities
- Certain ship types excluded:
 - 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



- Delegated acts and templates published by end of **2016**
- Companies shall submit a monitoring plan to a verifier for each of their ships by **31 August 2017** deadline
- Conformity assessment process to be finalised by the verifier by **31 December 2017**
- First reporting period starts **1 January 2018**
- Submission of first annual verified reports by **30 April 2019**
- Verified annual reports to be submitted by **30 April each year** to the competent authority



MONITORING PLAN REQUIREMENTS

EMISSIONS AND OTHER DATA

WHEN YOU NEED TO BE SURE



MONITORING PLANS (MP): MANDATORY CONTENT



- MPs contain at least:
 - Ship details
 - Company details
 - Description of procedures for updating the list of sources
 - Description of procedures for monitoring completeness of the list of voyages
 - Description of procedures for monitoring fuel consumption
 - Method, measuring equipment for fuel uplift/fuel in tanks, data management, density, uncertainty
 - The emission factors used for each fuel type
 - Description of procedures for determining activity data per voyage including
 - Distance, recording cargo/passenger numbers, time spent at sea
 - Data Gap method
 - Revision record sheet



Companies may add in the MPs:

- Information on ice class, and procedures for determining distance and time spent navigating through ice
- Any voluntary information on transport work to help understand the efficiency metrics for the ship in question
- Notice that all extra information needs to be verified by the verifier



- Regular review of MP by the ship-owner/operator (at least annually)
- Must modify MP in various situations e.g. new emission sources, new measuring equipment
- Approval of MPs by verifiers will take place during 2017
- Deadline for submission of MP to verifier is 31 August 2017
- Any non-conformities need to be resolved and a final MP approved before the start of monitoring in 2018
- Any modifications in prescribed situations in future also need to be approved

MONITORING OF EMISSIONS: WHAT IS INCLUDED?

- Calculation of CO₂ emissions based on:
Fuel consumption x emission factor (EF)
- Includes fuel consumed in main engines, auxiliary engines, gas turbines, boilers and inert gas generators
- Actual fuel consumption calculated for each voyage
- Fuel consumption within ports at berth calculated separately
- Default EF values used unless company decides to use data on fuel quality set out in Bunker Fuel Delivery Notes (BDN)
- Default EFs from IMO
- 'Appropriate' EFs shall be applied for bio-fuels and alternative non-fossil fuels
- Emissions might also be measured in stack (method D)



- Choice of methods for emissions monitoring presented in Annex I of Regulation
- Monitoring plan should define which method is used for each fuel type
- Methods:
 - Bunker Fuel Delivery Note (BDN) and periodic stocktake of fuel tanks
 - Bunker fuel tank monitoring on board
 - Flow meters for applicable combustion processes
 - Direct CO₂ emissions measurements
- Combination of methods possible if it improves accuracy and is approved by the verifier

METHOD A: BDN AND PERIODIC STOCKTAKE OF FUEL TANKS

■ Calculation approach:

$$\text{Total Fuel Consumption} = \text{Fuel Stock at start of period} + \text{Deliveries} - \text{Fuel Stock at end of period} - \text{De-bunkered fuel during period}$$

- Note: period means time between two port calls or time within a port
- Fuel type and sulphur content need to be specified
- Method cannot be used when BDN not available, especially when cargo used as a fuel, e.g. LNG boil-off
- Where fuel uplift/stock measured in volume, must use actual density from on-board systems or fuel supplier to convert to tonnes (can use standard density factor where actual factor not available)

METHOD B: BUNKER FUEL TANK MONITORING ON-BOARD

- Based on differences in tank readings during period
- Density values to be used where measured in volume
 - On-board systems
 - Fuel supplier invoice or BDN
 - Analysis by laboratory
- May use standard density where actual density not available

METHOD C: FLOW METERS

- Data from flow meters for all relevant emission sources combined
- Calibration methods applied and uncertainty of meters specified in the monitoring plan
- Density requirements as for Method A and B



METHOD D: DIRECT CO₂ EMISSIONS MEASUREMENT

- Approach:

$$\text{CO}_2 \text{ emissions} = \frac{\text{CO}_2 \text{ concentration of exhaust gas}}{\text{exhaust gas flow}}$$

- Again monitoring per period (per voyages or in port at berth)
- Fuel consumption calculated for reporting using measured CO₂ emissions and the EF for the relevant fuel
- Calibration methods applied and uncertainty of devices used shall be specified in the monitoring plan

MONITORING REQUIREMENTS PER VOYAGE



- Monitor emissions and other activity data for each ship on a per-voyage and an annual basis
- Per-voyage monitoring:
 - Ports of departure and arrival
 - Fuel amount and EF
 - CO₂ emitted
 - Distance travelled
 - Time spent at sea
 - Cargo or passengers carried (specified requirements per type of cargo)
 - Transport work (distance x cargo)
- Derogations from per-voyage requirements is all intra-EU voyages and the ship performs more than 300 voyages during the reporting period

MONITORING ON ANNUAL BASIS



- Shall report:
 - Fuel amount and EF
 - CO₂ emissions
 - Total emissions
 - Intra voyages
 - Voyages from EU
 - Voyages to EU
 - At berth
 - Total distance
 - Total time spent at seas
 - Total transport work
 - Average energy efficiency
 - Fuel per distance
 - Fuel per transport work
 - CO₂ per distance
 - CO₂ per transport work
- May report additional information, differentiating emissions and fuel consumption by other criteria specified in the MP
 - Ice class and time or distance navigating through ice
 - Extra information on cargo
- Would need verification together with mandatory information



TEMPLATES AND REPORTING

WHEN YOU NEED TO BE SURE



TEMPLATE: MONITORING PLAN

- Draft regulation has been published with regard to templates for monitoring plans, emissions reports and docs of compliance
- Companies may split the monitoring plan into a company-specific part and a ship-specific part, provided that all elements set out in Annex I are covered.
- Template is available at https://ec.europa.eu/info/law/better-regulation/initiatives/ares-2016-3985800_en

- For emissions reports, companies shall use the electronic version of the template available in the THETIS MRV automated Union information system operated by the European Maritime Safety Agency (EMSA)
- The European Commission can access the system for information on reporting and notification obligations of the companies and verifiers respectively
- Member States (and flag states) can also access emissions reports and DOCs



COMPLIANCE ASSESSMENT AND VERIFICATION

THE PROCESS

WHEN YOU NEED TO BE SURE





- Must be undertaken by **accredited** verifiers
- Accreditation from a member of European Accreditation (EA)
 - SGS seeking accreditation for scope of Maritime MRV through UK Accreditation Service (UKAS) in the UK, under our existing ISO 14065 accreditation
 - SGS involved in UKAS pilot scheme
 - SGS offices will provide Maritime MRV services worldwide under the single UKAS accreditation
 - UKAS stated accreditation should be granted **by March 2017**



- Verification of monitoring plans and emissions reports is required
- '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
- Assessing conformity of:
 - Monitoring plan with the regulations
 - Actual monitoring and reporting activities with the monitoring plan
- Assessing 'the reliability, credibility and accuracy of the monitoring systems and of the reported data and information relating to CO₂ emissions'
- Shipping companies must keep a 'document of compliance', issued by the verifier, on board ships to demonstrate compliance with the MRV regulations



- SGS - Single provider for MP approval and ER verification
- **Stage 1: Compliance Assessment of Monitoring Plan**
 - Deadline for submission of monitoring plans, to the verifier is 31 August 2017
 - Non-conformities must be addressed and submitted in revised plan before the start of the reporting period (31 December 2017)

■ **Stage 2: Verification of Emissions report**

- First verification covers reporting year 2018 and reporting deadline is 30 April 2019
- Review that actual practices comply with regulations and the MP
- Risk based approach – focus verification efforts on areas identified in an initial assessment as posing greatest risk of misstatement
- Verifying to ‘reasonable assurance’
- Verifying that ER is free from material misstatements
- Issue a verification report at conclusion of process
- Issue Document of Compliance

SITE VISITS REQUIREMENTS: WHAT DO WE KNOW?

- The verifier **shall** carry out site visits in order to gain sufficient understanding of the procedures described in the monitoring plan and validate that the information therein is accurate
- The verifier **shall** determine the location or locations of the site visit after taking into consideration the place where the critical mass of relevant data is stored, including electronic or hard copies of documents of which the originals are kept on the ship, and the place where data-flow activities are carried out
- The verifier may waive a site visit under certain conditions but will need to provide a justification
- Uncertainties still exist on whether or not the site visit shall be carried out on the vessel and these will be clarified by the end of current year

- Where the verifier identifies non-conformities in the course of the assessment, it shall inform the company thereof without undue delay and request relevant corrections within a proposed timeframe
- The company shall correct all non-conformities communicated by the verifier and submit a revised monitoring plan/emissions report to the verifier according to the agreed timeframe that allows the verifier to reassess it
- Independent review is required for MP assessment and emissions reports

RECOMMENDATIONS FOR IMPROVEMENT

- The verifier shall communicate to the company recommendations for improvement in relation to uncorrected misstatements and non-conformities not leading to material misstatements
- The verifier may communicate other recommendations for improvement that it finds relevant, in the light of the outcome of the verification activities

VERIFICATION REPORT

- On the basis of the information collected, the verifier shall issue a verification report to the company on each emissions report subject to verification
- The verification report shall include a statement verifying the emissions report as satisfactory or unsatisfactory, in case it contains material misstatements that were not corrected before the report was issued
- The emissions report shall be considered to have been verified as satisfactory only if it is free of material misstatements
- Independent review is required



- Aim to prepare and submit MPs early to allow more time to resolve any issues – do not need wait until August 2017
- If more than one ship, worth considering verifier review of one ship's MP initially early in 2017, before the rest are submitted
- Consider the data and information that a verifier will potentially need to review for all ships – ensure it is available in a central location for the purposes of site visit verification
- Verification of emissions can start during the reporting year. Again, this allows more time to deal with compliance issues. Final data verification can take place in the Jan-Apr period following the reporting period

WHY SGS?

- SGS is the world's leading inspection, verification, testing and certification company. SGS is recognised as the global benchmark for quality and integrity. With more than 85,000 employees, SGS operates a network of over 1,800 offices and laboratories around the world
- Global **maritime** services with a presence in every major port around the world
- Ballast water sampling and analysis
- Gas emissions monitoring in port or at sea
- Ship vetting
- Demurrage facilitation
- Bunker fuel services



ANY QUESTIONS?

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