



European Sustainable Shipping Forum
2nd meeting of the Sub-group on Shipping MRV Monitoring
Brussels, 27th October 2015
Location: Albert Borschette Conference Centre, room 1/B
(Rue Froissart 36, 1040 Brussels)

Welcome and Opening

1. After having adopted the Agenda, the sub-group approved the minutes of the 1st meeting.
2. A presentation on the outcome of the Inter-sessional meeting of IMO WG on further technical and operational measures for enhancing the energy efficiency of international shipping was delivered by the rapporteur **Ludovic Laffineur** (Royal Belgian Shipowners Association - RBSA). This meeting, under the chairmanship of Japan, had the main objective to discuss the core elements of the Global MRV or Data Collection System (DCS). Having in mind the mandate given by MEPC 68, the WG was asked to further consider transport work (and/or proxies) for inclusion in the DCS, the issue of confidentiality, development of guidelines identified in document MEPC 68/WP.10 and report back to MEPC 69 (April 2016).
3. Sub-group members feedback as follows:
 - One member further clarified that a MS interface for database queries would be possible as long as individual ships' anonymisation is guaranteed.
 - Some members, while recognising similarities between the EU MRV Regulation and the IMO DC system, call for a technical alignment, particularly with regards to transport work proxies and resulting energy efficiency metrics.
4. Having in mind the comments, the Chairman recalled the clear mandates given by the EU MRV Regulation for the implementing legislation and informed that the sub-group should focus on recommendations on the necessary technical elements, avoiding a political debate.

Task 1: Determination of cargo carried for other ship types than passenger, ro-ro and container ships (1st working paper on determination of cargo carried)

Options for determination of cargo carried

5. A presentation of the 1st working paper on determination of cargo carried was made by PwC & partners (**Jasper Faber, CE Delft**). It included an overview of the ship types for determination of cargo carried and definitions, as well as the cargo parameter options. To this end, and similarly to the first meeting, the presentation covered the contractor's method following the use of the EU MRV Regulation ship type list as a minimum (identified in Annex II) and MARPOL Annex VI and related energy efficiency guidelines definitions to the extent possible, distinguishing ship types with specific operational profiles, while ensuring completeness by mapping to 'Statcode 5 v1081'. Having in mind the comments received on the concept paper, three additional types were added (Chemical Tankers, LNG Carriers, Gas Carriers other than LNG and Ro-Pax) and definitions modified accordingly.
6. Questions were put forward with the sub-group members' feedback as follows:
 - Definitions to be checked and amended according to the relevant IMO Instruments e.g. Oil Tanker as per MARPOL Annex I; other like Passenger Ship should be revised to avoid confusion.
 - One member reminded the previous agreement to differentiate Ro-Ro Ships into four categories: Ro-Ro Cargo, Ro-Pax, Vehicle Carriers and Passenger Car Ferries.
7. The presentation continued focusing on the criteria for selection of cargo parameters in respect to accuracy, verifiability, administrative efficiency as well as robustness in view of fair comparisons between ships. This overview included Chemical Tankers, Bulk Carriers, General Cargo Ships and Refrigerated Cargo Ships, Ro-Pax, LNG Carriers, Gas Carriers, Vehicle Carriers, Containers and Ro-Ro cargo Ships.
8. Questions for discussion were put forward which led to a thorough technical debate for each ship category and with the sub-group members feedback summarised as follows:
 - Chemical Tankers
 - The majority of the members agreed on the use of weight/mass of cargo carried; however, there should be a voluntary field where e.g. cargo densities (or a suitable correction factor) could be reported. By reporting additional information, a better understanding of results would be possible, namely towards a fair interpretation and evaluation in terms of energy efficiency.

Particular situations/profiles where ships 1) require additional fuel consumption for cargo heating purposes 2) are loaded but not full vs full but not loaded, were given as examples i.e. have reached their maximum volumetric capacity but have not maximised their DWT or vice-versa.

- One member suggested differentiating technical efficiency and operational efficiency to allow a more fair comparison. Another member claimed that there will be no technical or operational efficiency parameter, even if a correction factor is used, that would serve the purpose of a robust and fair comparison between ships.
 - Several members again underlined difficulties/complexity in finding a representative parameter i.e. a meaningful criterion for evaluating the appropriate cargo related parameter. Therefore, and echoing the IMO debate, instead of using actual cargo carried, a proxy expressing the cargo carrying capacity i.e. Deadweight Tonnage (DWT) should be accepted as an alternative.
 - One member mentioned that contractual obligations would be inherently reflected on fuel consumption over distance.
- Bulk Carriers
 - Several members voiced similar concerns, very much in line with previous ones (Chemical Tankers).
 - Most members agreed that both laden and ballast voyages should be taken into account but should also be differentiated. In this respect, others claimed that, if needed for safety reasons i.e. stability and strength, ballast weight should be added to the mass of cargo carried and consequently to transport work.
 - One member suggested, within the mandate of this sub-group, to see how the information could be published; possibly in such a comparable and reliable way that it would be functional without being unfair. In this respect, other members recommended to include a note or statement explaining the content of the published information (*Art. 21*) e.g. values published are just an indication of Energy Efficiency according to the EU MRV Regulation parameters.
 - The Vice-Chair (France) recalled the draught measurements and relevant on-board stability information (for most ship types) to estimate the displacement and then the amount of cargo, thus avoiding the use of the cargo density parameter. The technical secretariat (EMSA) intervened adding that it may not be so straightforward and accurate for all ship types e.g. large Tankers or Bulkers; moreover, it will always depend on several other factors such as the density of the water the ship will be floating on i.e. a mixture between fresh and salt water.
 - Reference was made to the EEDI Regulatory Framework and the complex correction factors therein, particularly to account

- for the cargo density variation and applied to specific technical characteristics of certain ship types like ice-classed, etc.
 - One member asked if the information to be monitored and reported on a voluntary basis would have to be verified.
 - Some members, while mentioning that volume would still be relevant whenever lighter cargoes are transported, prefer to keep volume or mass as optional to monitor/report cargo.
- General Cargo Ships and Refrigerated Cargo Ships (combined with an expert presentation by **Thijs Hasselaar (MARIN)** on the use of DWT carried as an indicator for transport work for general cargo vessels and reefers. An interesting technical debate followed:
 - Some members expressed concerns over different designs and service/operational profiles commonly provided by general cargo and reefers; charter related parameters (mass vs volume), operational contract speeds (general cargo vs perishable goods), installed power requirements and thus fuel consumption were amongst those discussed.
 - MARIN highlighted the fact that by considering DWT carried i.e. including the ballast water (as a direct correction factor), it will smooth the deviations found in result of cargo density variations, allowing a better correlation if used as an indicator for transport work. Several participants found this concept interesting having the potential to address different cargoes and densities and consequently on energy efficiency results.
 - Questions were raised in relation to monitoring and reporting ballast water (as part of transport work) on a voyage and annual basis. The EC clarified that reporting is done on an annual basis; therefore, 'zero cargo' voyages will be taken into account by aggregating into the annual parameters/indicators.
 - One member argued that correction factors would turn out less important if comparisons are made between similar ship types in similar market/trading conditions.
 - One member mentioned that both total transport work and average energy efficiency definitions in the EU MRV Regulation are still to be adjusted in the coming delegated acts discussion.
- Ro-Pax
 - Several members, while not agreeing with the recommendation to monitor cargo in the same way as for Ro-Ro Cargo Ships, spoke in favor of a more in-depth analysis to be carried by a correspondence group.
- LNG Carriers
 - There was a general understanding that 1) volume should be used as the cargo carrying parameter (due to cargo density

variation and availability sometimes related to Boil-off gas (BOG) consumption rate variation during the voyage/s, 2) custody transfer measurement (CTM) system would provide an accurate, readily-available and verifiable method on board these ships and 3) the volume to be reported should be the one measured at the discharge/unloading.

- Gas Carriers (other than LNG).
 - Several members agreed with a flexible approach; suggested keeping both volume and weight/mass parameters as optional.
 - One member argued that the density of these cargoes will not vary significantly to make it a challenge as such.
 - One member proposed to use a cargo utilisation factor e.g. % of DWT in a way to alleviate the concerns over volume vs weight/mass. It could be also applied to other ship types.
 - Vehicle Carriers
 - One member, while providing a brief *pros and cons* overview of each parameter with regards to the relevant evaluation criteria, recommended splitting these ships into transoceanic and short-sea carriers.
9. Having in mind the comments and the debate, the Chair concluded that for LNG carriers, volume should be used as parameter for cargo carried and noted that there is large support in the subgroup to use weight/mass for gas carriers (other than LNG).
10. **Consolidated wrap-up for all other ship types considered above** - Having listened to the debate, the Chair, while recognising the complexity of addressing some of these ship types, particularly where a flexible approach was recommended, agreed that certain aspects merit further discussion inviting for additional input/contributions from the sub-group. To this end, it would be appropriate to set up the following task-forces:
- **Work package 2: Assessment of the concept of deadweight carried DWT_{carried} as cargo parameter** - Nick Lurkin (KVNR), supported by the **Commission/EMSA** and any interested members of the sub-group, volunteered to take up this task. This ad-hoc group of experts should focus on the practicalities of the concept such as variety of cargoes (densities) and ship types, additional variables needed and their monitoring, reporting and verification requirements. To this end, it is suggested a deeper look with an aim to further develop this concept, having in mind its benefits as well as additional data requirements in terms of the evaluation criteria i.e. accuracy/uncertainty, verifiability, administrative efficiency and robustness for comparison purposes. Recommendations shall be reported back at the next meeting.

- **Work package 3: Recommendation for cargo parameter for Ro-Ro passenger ships** - Poul Woodall (DFDS), supported by the Commission/EMSA and any interested members of the sub-group, volunteered to take up this task. This ad-hoc group of experts should focus on the suitability of cargo parameter/s having in mind the evaluation criteria. Recommendations shall be reported back at the next meeting.
- **Work package 4: Recommendation for cargo parameter for Vehicle Carriers** - Bjørn Reppe (Norway), supported by the Commission/EMSA and any interested members of the sub-group, volunteered to take up this task. This ad-hoc group of experts should focus on the suitability of cargo parameter/s having in mind the evaluation criteria. Recommendations shall be reported back at the next meeting.

11. In addition, the Chair reiterated the legal remit of the EU MRV Regulation and provided the following clarifications and recommendations:

- Although acknowledging the International/IMO discussions on the use of a proxy for cargo i.e. DWT, it is not considered to be an adequate parameter to express cargo carried. Any other possible parameters rather than weight/mass or volume of cargo carried could be considered; nevertheless, there will always be a need to link these to the actual amount of cargo carried, by using for example a proper correction factor.
- Reference was once more made to *any other information monitored and reported on a voluntary basis* included in Art. 21 of the Regulation, as well as the templates foreseen in the communication exchange between the EU MRV 'actors' where this additional/complementary information could be added in a pre-defined field. In this respect, it is not only believed but also recommended to make the best use of this 'tool' to facilitate a better understanding and interpretation of the monitored and reported values/results. Furthermore, it would provide an opportunity to explore a way to explain, with the appropriate technical and operational background as relevant supplementary information, why these figures come from and effectively mean.

12. A presentation on **Work package 1: other ship types** followed, delivered by Anna Ziou (ECSA/UK Chamber of Shipping) providing a summary and outcome of the discussions held in this *ad-hoc* group of experts (reference is made to the document produced and circulated to the sub-group ahead of this meeting). Sub-group members' feedback as follows:

- Some members, while highlighting the ships' certification and general maritime transport concepts including those related to offshore activities, asked for further clarification on the potential exclusions.

- Considering the short time available and the CO₂ contribution from these ship types to the global fleet values, one member recommended to keep these ship types in abeyance and to address their specificities (technical and operational ones) at a later stage.
- One member also made reference to shuttle tankers involved in offshore activities, particularly the ones using dynamic-positioning (DP) systems with clear impact on fuel consumption. The coordinator of the WP1 rapidly clarified that these ships were not considered in the analysis.

13. Although understanding the rationale behind the proposals by taking note of the report and the comments by other members just made, the EC recalled the clarifications given in the first meeting on the categories of ships excluded and concluded that any further guidance or interpretation on the scope of the EU MRV Regulation namely regarding ships types and/or activities excluded, if necessary will be done by the Commission according to the wording of the EU MRV Regulation and subject to confirmation by the CJEU. Individual ships will fall in, or out the EU MRV Regulation depending on their specific trading operational profile which can also evolve with the time.

Task 2 & 3: Identification and assessment of possible amendments to Annex I and II (1st Working Paper on Monitoring)

14. The EC recalled the legal frame and mandate for discussing the essential elements of the monitoring methods on CO₂ emissions and of the rules on monitoring other relevant information currently contained in Annex I and II of the MRV Regulation, including transport work, distance sailed, and average energy efficiency. Possible amendments/refinements to Annex I and II (through delegated act) are foreseen and shall be clearly linked to relevant International and European standards and rules, or in light of technological and scientific developments.

Monitoring of fuel consumption and CO₂ emissions

15. A presentation of the 1st working paper on the monitoring of fuel consumption and CO₂ emissions was delivered by PwC & partners (**Brigitte Behrends, Marena Ltd.**), based on the comments received by the members to the concept version. An additional chapter was introduced - pressure measurement - to account for gas measurements, followed by a discussion on emission factors, direct emission measurement (method D) and related mass flow calculation. The presentation covered existing relevant International and European rules and standards as well as technological and scientific developments that could have an impact on the current EU MRV Regulation and trigger amendments to its Annexes. Again, the contractor identified existing regulations and standards like MARPOL Annex VI and related energy efficiency, fuel oil quality and exhaust gas cleaning systems framework,

ISO and API standards, IPCC Guidelines and EU Directives like the 2004/22/EC Measuring Instruments Directive (MID) as basis.

16. Questions for discussion were put forward which led to a debate for each key element and with the sub-group members feedback summarised as follows:

- One member commented that the use of LNG BDN as currently included in the draft agreed International Code of Safety for Ships using Gases or other Low flashpoint Fuels (IMO IGF Code) is to be applied to either gas-fueled or dual-fueled ships, therefore not applicable to LNG carriers. With regards to dual-fuel engines, if pilot fuel is to be included, it could be monitored through existing methods A/B/C.
- Reference was made to the outcome of the IMO debate on dual-fuel engines and combustion mixture as a possible way forward.
- One member reflected some concerns surrounding the obligation to measure and calculating the fuel consumption as per *Art. 6* for different and several emission sources (like main engine and diesel generators), particularly when these share the same service tanks.
- Some members highlighted the inaccuracy of what is considered the most common monitoring method used i.e. BDN; issues linked with the difference of the amount of fuel supplied and the fuel actually being burnt in terms of overall consumption. Specific reference was once more made to water/sludge content of the fuel being supplied to ships and something generally assumed to be around 2%, and that would provide a false indication of the true amount of fuel and subsequent CO₂ emissions produced; special consideration should be taken on the possibility to deduct these 'off-specs' from the total. The Chair replied that the range of possible methods foreseen by the EU MRV Regulation as well as the timeline for its implementation would help alleviating the concerns being stated.
- Specific uncertainty discussions around the methods such as tanks calibration, flow-meters, temperature and density measurements were put forward to the verification and accreditation sub-group. Some members recommended using the cargo density determined at loading for calculating the BOG consumption in mass. One of these also suggested dividing it in two parts; 'during voyage' and 'consumed in port' the last being measured by using either mass or volume flow meters.

17. Having in mind the comments and the debate, the Chair concluded that no international rules and standards and scientific and technological developments have been identified which would trigger amendments to Annex I. Furthermore, the Chair agreed that some of the issues raised are very relevant, deserve further consideration and that would fall under another task of this sub-group which is the development of best practices/guidance compendium; common understanding on 'how to do

it in practice' will be extremely relevant and useful for those who will have to implement and comply with the Regulation. However, having in mind the short time remaining to prepare the legal acts, it was suggested to leave this work for the time being and come back to it at a later stage.

18. The presentation continued on the **emission factors** with the sub-group members feedback summarised as follows:

- Some members pointed once again the need to consider optional (but appropriate) standards, not included in the IMO emission factors list, for the non-conventional fuels such as alternative non-fossil fuels like biofuels, hybrid/mixtures of fuels, etc., now becoming available to cater for the Sulphur Regulations.
- The sub-group agreed to use the IMO values to the extent possible. Moreover, it would make the verification related process simpler. Reference was also made to the latest/amended version of IMO Resolution MEPC.245 (66) - Guidelines calculation of the EEDI.

19. The presentation continued on the **direct emission measurements (method D)** and related **mass flow calculation** with the sub-group members feedback as follows:

- Several members voiced apprehension on using this method; uncertainty of the measurements of flue gases inside ducts and the fluid-flow dynamics associated, as well as calibration issues make it a complex, not practical and unreliable measurement method.
- One member recommended that, if there is willingness to use such methods, a combination of methods could serve as back-up.

20. Having in mind the comments and the debate, the Chair concluded the subgroup does not see an urgent need to refine this monitoring method given its limited practical relevance as that stage.

Monitoring of other relevant information

21. A presentation of the 2nd working paper on the key elements with regard to monitoring other relevant information, including the information of distance sailed, time spent at sea and cargo carried for Passenger, Ro-Ro and Container Ships was made by PwC & partners (**Jasper Faber, CE Delft**), based on the comments received by the members to the concept version. Similar to the first meeting, the presentation covered existing relevant International and European rules and standards as well as technological and scientific developments that could have an impact on the current EU MRV Regulation and may trigger amendments to its Annexes. The contractor identified existing regulations and standards such as IMO Instruments: COLREG, SOLAS *Chapter 5* and related MSC circulars, MARPOL Annex VI and related energy efficiency framework definitions i.e. EEDI/EEOI plus inputs from the latest discussions held at the IMO during the intersessional meeting *on further technical and*

operational measures for enhancing the energy efficiency of international shipping and finally the EU VTMS Directive as basis for discussions.

22. Questions for discussion were put forward on distance sailed and time spent at sea. Sub-group members feedback summarised as follows:

- Although the majority supported the 'berth to berth' concept, some members still have concerns over clarity of definitions; examples like voyages (e.g. tank cleaning, drifting when on spot market) and at the berth/anchorage/pilot station and its related time allocation/duration at sea, canal transiting, long pilotage were amongst those discussed.
- One member suggested that for LNG Carriers, the information related to loading & unloading in the CTMS should be used for consistency between time at berth and cargo operations.

23. Having in mind the comments, debate and clarifications given, the Chair noted that the sub-group agreed in principle with the 'berth to berth' concept. However it was recognised that there are a number of specific cases that require further reflection, common understanding and particular guidance on defining distance sailed and time spent at sea.

24. Questions for discussion were put forward on cargo carried for Passenger, Ro-Ro and Container Ships. Sub-group members feedback summarised as follows:

- Some members believed that SOLAS definition may cause confusion in the EU MRV Regulation context and questioned the passenger ship definition in case of more than 12 passengers or if cargo is transported. The contractor, assisted by the Chair, clarified that the rationale behind the proposal was to avoid misinterpretations from what should be really considered as benefit to society; either transporting passengers or cargo.
- One member suggested differentiating between high-speed and conventional Ro-Pax Ships if ship comparisons on energy efficiency are to be made. The Chair clarified that this could be mentioned when reporting the ship type and additional information; being an high-speed vessel one would expect to have different fuel consumption values compared to conventional one.
- One member requested that the passenger ship definition should clearly mention that it would include Cruise Liners.
- One member recommended that, for consistency and correctness purposes, the Administration of that ship should be consulted.
- One member proposed to define these Ro-Ro Ships as Ro-Ro Cargo. The Chair, while noting the benefit of such proposal, informed that it would have to be subject to a legal consideration.
- Some members requested that the reference MSC.1/Circ.1475 should be confirmed as it only applies to Container Ships not Ro-Ro. It will be checked by the contractor as soon as possible.

- Some members questioned about how to deal with Ro-Ro Ships that could carry containers on deck i.e. ConRO; examples such as weight differences between a normal container on deck vs trailer container rolled into a Ro-Ro cargo space. The Chair considered it a valid point and invited the sub-group for written comments concerning these specialised ships (also applies to GenRO, etc.).
- One member, making reference to the on-going discussions, questioned the relevance of the CEN standard EN 16258 (2012) for Ro-Ro Cargo Ships and, therefore, it should be deleted.

25. Having in mind the comments, debate and lack of time available to address some of the issues raised plus Container Ships, the Chair suggested a more in-depth analysis, while inviting for written comments.

Task 4: Feedback on draft templates for monitoring plans and emission reports (concept papers templates)

26. The Chair briefly introduced this task as the one dealing with the more practical aspects of the implementation of the EU MRV Regulation. To this end, it would entail particular discussions on the templates but then broaden to various communication activities and information exchange.

Concept papers on templates

27. A presentation on the communication activities and data/information exchange between actors, encompassing the use of automated systems and formats i.e. electronic templates as per the EU MRV Regulation was delivered by **EMSA**. It covered an overview of the role of each 'actor' (Companies, Verifiers, EC, Member/Flag States, National Accreditation Bodies and General Public) and presented two possible approaches for interaction according to the provisions of the same Regulation 1) 'Decentralized based on templates e.g.: Excel' and 2) 'Integrated web-based IT tool'. It also included a summarized *pros and cons* analysis.

28. Several questions were put forward with the sub-group members' feedback summarised as follows:

- Several members, while noting the attractiveness of option 2 (Integrated web-based IT tool) believe that further information is required to decide to which extent the tool is really needed. To this end, specific questions were raised on: data access, management, control and disclosure, security aspects particularly in view of sensitive information to be sent to a centralised system (e.g. voyage basis information), clarity on what is mandatory and voluntary, costs, complexity and additional administrative burden to be expected.
- Others welcomed and recognised the apparent simplicity and potential advantages of such an administration/facilitation tool through the use of a centralised system, namely for actors that would have to manage hundred/thousands of ships and exchange

information 'in bulk' with several parties. Data logging and recording seemed also interesting.

- Possible usefulness towards a harmonised implementation and enforcement of the EU MRV Regulation was also mentioned, particularly from a Member State perspective.
- One member proposed to set up a task-force for discussing this particular item i.e. centralisation of EU MRV information.

29. Having in mind the comments, debate and lack of time available to address the issue in hand, the Chair suggested that further consideration should be given to both approaches and invited for written comments. In addition, a possible work-package creation on this respect was left to the decision of the Shipping MRV Verification & Accreditation sub-group.

30. A presentation of the concept paper on the Monitoring Plan (MP) was made by PwC & partners (**Anne-Luise Brehm, PwC**). It included the background on the scope and purpose of the MP concerning its content and the level of detail, proposals to address data gaps and finally an overview of the related management activities.

31. Having in mind the lack of time available to address the issue at this stage, the Chair suggested that further consideration is given to this paper and invited members for written comments. The Chair also expressed his appreciation to all those who have contributed to this concept paper with inputs from their voluntary monitoring and reporting schemes/activities.

Concluding Remarks

32. The Chair concluded the meeting with a list of actions and responsibilities as follows:

- The minutes of the meeting will be provided by the technical secretariat **EMSA as soon as possible**.
- **Members** are invited to provide written comments on all the concept papers, working papers and presentations given, having in mind not only the questions that were put forward in these documents in each discussion points but also inputs from this meeting. **Deadline 13 November**.
- An e-mail will be circulated after the meeting, with the presentations delivered that have not been sent before, as well as with the details of the establishing the *Ad-doc* expert groups (WP 2, 3 and 4). *Ad-hoc* expert groups should report back by **mid-December**, being supported by sub-group members as well as the technical secretariat **EMSA** and the **Commission** with technical and legal interpretation contributions, respectively.
- The next meeting of the sub-group will be on **19 & 20 January 2016 (one and a half day)**. More details will be forward to the members closer to the event.

[Signed] Carlos Pereira - EMSA (Technical Secretariat)