İstanbul :
Sayı:
Our Reference : 4819 25.12.2018
Konu:
Subject : **Gemilerden Kaynaklanan Sera Gazlarına Karşı ICS Tarafından Önerilen Tedbirler Hk.**

Sirküler No: 760 / 2018

Sayın Üyemiz,

İlgi: ICS (Uluslararası Deniz Ticaret Odası)'nın 11.12.2018 tarihli ve MC(18)108 sayılı yazısı

Üyelerden, 6-10 Mayıs 2019 tarihlerinde gerçekleşecek olan, gemilerden kaynaklanan sera gazı emisyonlarının azaltılmasıyla ilgili, oturumlararası çalışma grubunun beşinci toplantısına, ICS tarafından teklif edilen taslak önerileri incelemeleri ve değerlendirmede bulunmaları talep edilmektedir.

Bilgilerinize arz ve rica ederiz.

Saygılarımızla,

Murat TUNCER
Genel Sekreter

EKLER:
Ek-1: İlgi yazı Türkçe Çevirisi (2 syf.)
Ek-2: İlgi yazı ve Eki (25 syf.)

DAĞITIM:
Gereği:
-Tüm Üyelerimiz (Web)
-Türk Armatörler Birliği
-S/S Gemi Armatörleri Motorlu Taş. Koop.
-Vapur Donatanları ve Acenteleri Derneği
-İMEAK DTO Meslek Komitesi Başkanları
-İMEAK DTO Şube ve Temsilcilikleri
-GİSBİR
-Yalova Altınova Tersane Girişimcileri San.ve Tic.A.Ş
-TÜRKLİM
-GESAD
-S.S. Deniz Tankerleri Akaryakıt Taş. Koop .
-Gemi Yakıt İkmalcileri Derneği
-Yetkilendirilmiş Klas Kuruluşları
-Gemi Sahibi Firmalar

Bilgi:
-Meclis Başkanlık Divanı
-Yönetim Kurulu Başkanı ve Üyeleri
-İMEAK DTO Çevre Komisyonu
-Meclis Üyeleri
-İMEAK DTO Şube Y/K Başkanları
-Gemi Makineleri İşletme Mühendisleri Odası
-Gemi Mühendisleri Odası
-WISTA Türkiye Derneği

Ayrıntılı bilgi: Erkin TUĞRAN, Çevre Birimi Telefon:252 0130-246 E-mail: erkin.tugran@denizticaretodasi.org.tr

İstanbul :
Sayı:
Our Reference : 4819 25.12.2018
Konu:
Subject : **Gemilerden Kaynaklanan Sera Gazlarına Karşı ICS Tarafından Önerilen Tedbirler Hk.**

Sirküler No: 760 / 2018

EK-1

11 Aralık 2018 *(Serbest Çeviridir)*

GEMİLERDEN KAYNAKLANAN SERA GAZI EMİSYONLARININ AZALTILMASI İLE İLGİLİ ÇALIŞMA GRUBU'NUN OTURUMLARARASI TOPLANTISINA ICS TARAFINDAN GÖNDERİLEN TASLAK TEKLİFLER

Yapılması Gereken: Üyeler, 6-10 Mayıs 2019 tarihlerinde gerçekleşecek olan, gemilerden kaynaklanan sera gazı emisyonlarının azaltılmasıyla ilgili, oturumlararası çalışma grubunun beşinci toplantısına, ICS tarafından teklif edilen taslak önerileri incelemeleri ve değerlendirmede bulunmaları talep edilmektedir. Bahse konu taslak teklifler; ilk IMO stratejisinde yer alan sera gazı emisyonunu azaltma konusunda önerilen tedbirlerini ya da gemilerden kaynaklanan sera gazı emisyonlarının azaltılması ile ilgili çalışma grubunun dördüncü oturumunda önerilen kısa vadeli sera gazı azaltma tedbirlerini içermektedir.

Üyelere, gemilerden kaynaklanan sera gazı emisyonlarının azaltılması konusundaki çalışma grubunun bir sonraki oturumuna Sekretarya tarafından üç taslak teklif hazırlandığı bildirilmektedir (ISWG GHG).

Bu taslak tekliflerin ilki, SEEMP'in güçlendirilmesini önermektedir ve ICS'nin ISWG-GHG 4/2/10 dökümanında gemilerden kaynaklanan sera gazı emisyonlarının azaltılması konusundaki çalışma grubunun dördüncü oturumuna sunulan ve Ek A'ya eklenmiş olan tekliflerin üzerine kurulmuştur.
Bu, bahse konu teklife amaç koyulması ve bu amaçlara ulaşılmasının sağlanması kavramını ortaya koymaktadır. Üyelerden bu hususu özel olarak dikkate almaları ve gerekirse uygun göstergelere örnekler vermeleri talep edilmektedir.

Aşağıdakilerin yapılması gerektiğini öneren ikinci bir taslak teklif hazırlanmıştır:

• Gemilerden metan gazı kaçışını azaltmak için tedbirlerin geliştirilmesi,

• Limanlarda kıyı elektrik enerjisi tedarikinin (cold ironing) sağlanmasını kolaylaştıracak ve liman verimliliğini artıracak önlemlerin geliştirilmesi,

• Her çeşit yakıt için sera gazı/karbon yoğunluğu yaşam döngüsü kılavuz ilkelerinin geliştirilmesi,

• Sera gazı / karbon yoğunluğunu azaltmak için teknolojilerin etkinliğini değerlendirilmesinde kılavuzların geliştirilmesi konularını içermektedir.

Ayrıntılı bilgi: Erkin TUĞRAN, Çevre Birimi Telefon:252 0130-246 E-mail: erkin.tugran@denizticaretodasi.org.tr

İstanbul :
Sayı:
Our Reference : 4819 25.12.2018
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Sirküler No: 760 / 2018

Bahse konu taslak teklif, **Ek B**'de verilmiştir.

Ek C'de önerilen son teklif ise bazı kısa vadeli önlemleri değerlendirmektedir.

Sekreterya, hız optimizasyonu ve azaltma önlemlerinin birbirinden ayrı olarak uygulanmasının zor olacağını ve sektöre önemli bir idari yük getirecek olan zorunlu hız sınırlamalarına neden olabileceğinden endişe duymaktadır. Sekreterya ayrıca IMO operasyonel enerji verimliliği performans göstergesinin, gemilerde zorunlu operasyonel verimlilik endeksinin bir öncüsü olabileceğinden endişe duymaya devam etmektedir.

EEDI konusunda, Üyeler, EEDI 2. aşamanın devamında ileriye dönük teklifler ile ilgili değerlendirmelerde bulunan MC(18)103 dökümanını hatırlayacaklardır.

Sekreterya, zorunlu hız azaltma veya operasyonel verimlilik endeksi olarak kullanılabilecek olan operasyonel göstergeler gibi bazı olası tedbirlerin, piyasada çarpıklık yaratabileceğinden endişe duymaya devam etmektedir.

John Bradshaw
Teknik Direktör

Ekler:

Ek A - Gemi Enerji Verimliliği Yönetim Planını (SEEMP) Güçlendirme Teklifleri

Ek B - Uluslararası Denizcilikten Kaynaklanan Sera Gazı Emisyonlarını Azaltmaya Yönelik Kısa Vadeli Tedbirler

Ek C –Olası Kısa Vadeli Tedbirlerin Gözden Geçirilmesi

İngilizceden çeviren: Erkin TUĞRAN
İMEAK DTO Çevre Sorumlusu / Çevre Mühendisi

Ayrıntılı bilgi: Erkin TUĞRAN, Çevre Birimi Telefon:252 0130-246 E-mail: erkin.tugran@denizticaretodasi.org.tr

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11 December 2018 **MC(18)108**

To: MARINE COMMITTEE

Copy: BOARD
CONSTRUCTION & EQUIPMENT SUB-COMMITTEE
ENVIRONMENT SUB-COMMITTEE
ALL FULL AND ASSOCIATE MEMBERS (for information)

ICS DRAFT SUMISSIONS TO THE FIFTH SESSION OF THE INTERSESSIONAL WORKING GROUP ON REDUCTION OF GHG EMISSIONS FROM SHIPS

Action required: ***Members are invited to review and provide comment on three proposed draft ICS submissions to the fifth session of the intersessional working group on reduction of GHG emissions from ships which will take place May 6 – 10, 2019. The proposed draft submissions review some of the candidate GHG emission reduction measures in the initial IMO strategy or which were proposed at the fourth session of the intersessional working group on reduction of GHG emissions from ships and provide proposals for short term GHG reduction measures.***

Members are advised that the Secretariat has prepared three draft submissions to the next session of the intersessional working group on reduction of GHG emissions from ships (ISWG GHG).

The first of these draft submissions proposes strengthening the SEEMP,and builds on the proposals which ICS submitted to fourth session of the intersessional working group on reduction of GHG emissions from ships in document ISWG-GHG 4/2/10 and is attached at **Annex A**.

This introduces the concept of setting objectives into the proposal and establishing that these objectives are achieved. Members are requested to give this matter particular consideration, and if necessary provide examples of appropriate indicators.

A second draft submission has been prepared which proposes that the following should be undertaken:

- Development of measures to reduce methane slip;
- Development of measures to facilitate provision of shoreside electrical power (cold ironing facilities) in ports and to improve port efficiency;
- Development of guidelines for lifecycle GHG/carbon intensity guidelines for all types of fuels; and

- Development of guidelines for assessing the efficacy of technologies for lowering GHG/carbon intensity.

The draft submission is attached at **Annex B**.

The final submission provides comment to certain short term measures which have been proposed and is attached at **Annex C**.

The Secretariat remains concerned that separate speed optimisation and reduction measures could result in mandatory speed limits which would be difficult to implement and enforce, and which would impose a significant administrative burden on the industry. The Secretariat also remains concerned that an IMO operational energy efficiency performance indicator could be a precursor to mandatory operational efficiency indexing of ships.

On the matter of EEDI, Members will recall circular MC(18)103 which invited comments on the proposed way forward with respect to EEDI reduction beyond phase 2.

The secretariat remains concerned that some candidate measures, such as mandatory speed reduction or operational indicators which could be used as an operational efficiency index, could be market distorting.

Members are invited indicate their support, or otherwise, for the attached draft submissions and to provide comment.

Members are kindly requested to provide any comments to the undersigned (john.bradshaw@ics-shipping.org) by **Friday, 21 December 2018**.

John Bradshaw
Technical Director

Attachments:

Annex A–Proposal to strengthen the ship energy efficiency management plan (SEEMP)
Annex B–Short Term Measures to Reduce GHG emissions from international shipping
Annex C–Review of Candidate Short Term Measures

INTERNATIONAL MARITIME ORGANIZATION

E

INTERSESSIONAL WORKING GROUP ON REDUCTION OF GHG EMISSIONS FROM SHIPS
5th session
Agenda item 3

ISWG-GHG 5/X/X
May 2019
Original: ENGLISH

CONSIDERATION OF CONCRETE PROPOSALS ON CANDIDATE SHORT-TERM MEASURES, NOTING THE DISCUSSION AT ISWG-GHG 4 ABOUT SHORT-TERM MEASURES AND THEIR CATEGORIZATION

PROPOSAL TO STRENGTHEN THE SHIP ENERGY EFFICIENCY MANAGEMENT PLAN (SEEMP)

Submitted by ICS.....

SUMMARY

Executive summary:	The [co-sponsors] provide concrete proposals to strengthen the Ship Energy Efficiency Management Plan (SEEMP) as a short term measure to reduce GHG emissions from international shipping. The proposals provided would require minimal amendments to existing instruments and could be agreed and implemented relatively quickly, delivering actual GHG reductions without undue delay and moving the industry towards meeting its 2030 target of improving efficiency as an average across the sector by at least 40%.
Strategic direction:	
High-level action:	
Output:	
Action to be taken:	Paragraph 15
Related documents:	MEPC.304(72), MEPC.282(70), MEPC 73/WP.1, MEPC 73/WP.8, MEPC 73/WP.5, MEPC.72/Inf.5, ISWG-GHG 4/2/10, MEPC.1/Circ.684, MEPC.67/5/4, MEPC.65/4/30, MEPC.65/4/19, MEPC.65/4/30, MEPC.72/Inf.5, ISWG-GHG 2/2/7

Introduction

1. The Committee, at MEPC 72, adopted the Initial IMO strategy on reduction of GHG emissions from ships (MEPC.304(72)) (the initial strategy). The co-sponsors supported the

adoption of this initial strategy and consider it to be a major step forward for the international shipping sector, setting out a pathway for the phase-out of GHG emissions.

2. ISWG-GHG 4 developed a draft programme of follow-up actions of the initial IMO strategy on reduction of GHG emissions from ships up to 2023 which, inter alia proposed three categorise for candidate short term measures and called for consideration of concrete proposals at MEPC 74 (MEPC 73/WP.5, Annex).

4. MEPC 73 agreed the terms of reference for ISWG-GHG 5, including consideration of concrete proposals on candidate short-term measures (MEPC 73/WP.8, Annex 2).

5. Further to the decision of MEPC 73 to call for concrete proposals to be submitted for consideration at ISWG-GHG 5 the co-sponsors provide proposals for strengthening the SEEMP.

6. The co-sponsors consider it to be essential that short-term measures should be effective and that they should be agreed and implemented quickly. Enhancing the SEEMP would satisfy these requirements and is a measure which the Committee could agree to and introduce quickly without prejudice to other potential candidate short term measures.

7. Strengthening the SEEMP would be a group A candidate short-term measure, one that can be considered and addressed under existing IMO instruments.

Discussion

8. Short term measures should:

- be effective;
- be implementable;
- minimise negative impacts on Member States and global trade; and
- not divert time and resources from the development of longer term solutions such as zero carbon fuels.

Short term measures which are relatively simple to implement, verify and enforce will deliver quicker reductions to GHG emissions than more complex measures which will require prolonged work to develop and agree. Minimizing negative impacts on Member States is consistent with paragraphs 4.9 – 4.12 of the initial strategy on reduction of GHG emissions from ships.

9. Work to develop short term measures should not abstract time and resources from development of long term solutions.

10. To minimize impacts on global trade and Member States, improvements to operational efficiency should focus on the efficiency of ships, and not the efficiency of trade. This is a critical distinction, many measures which have been proposed to enhance operational efficiency would be determined by the nature of trade and discourage ships from operating in certain trades. This would result in market distortion, see also paragraph 25.

11. The *2016 Guidelines for the development of a ship energy efficiency management plan (SEEMP)* (MEPC.282(70))(SEEMP guidelines) provide detailed and comprehensive guidance for developing a SEEMP, including for speed optimisation and use of operational indicators. The SEEMP guidelines are based on four steps; planning, implementation, monitoring, and self-evaluation and improvement. Thus they already include an assessment and improvement

stage. Although the SEEMP is a mandatory requirement, there is no mandated requirement for it to be reviewed through life and for the results of such reviews to feed back into improving the SEEMP.

12. Introducing of a mandatory independent third party review process which would address this and strengthen the existing SEEMP guidelines provisions for monitoring, review and self-improvement and provide the same benefits which have been claimed for some other candidate short term measures, such as mandatory speed reduction or an IMO operational efficiency indicator.

Self-evaluation and improvement

13. Self-evaluation and improvement is essential for monitoring the effectiveness of any plan or activity, and for identifying improvement opportunities. This is recognized in paragraphs 4.4.1 – 4.4.3 of the SEEMP guidelines.

14. The co-sponsors concur with the SEEMP guidelines that the effectiveness of a ships SEEMP should be analysed so as to better understand ship performance and which measures have been effective (or otherwise). This facilitates future efficiency improvements.

Monitoring

15. Paragraphs 4.3.1 – 4.3.3 of the SEEMP guidelines provide useful guidance on monitoring the efficiency of a ship.

16. If used appropriately operational energy efficiency indicators or key performance indicators (KPIs) are a useful internal tool, demonstrating the effectiveness of the SEEMP and efficiency improvement.

17. Any suitable operational efficiency indicator or key performance indicator (KPI) should be acceptable where it can be demonstrated to be an effective performance monitoring tool. No single operational energy efficiency indicator or KPI is suitable for all ships and results for different ships will generally not be comparable therefore it is essential that any indicators or KPIs used should be appropriate.

Speed Optimization

18. The co-sponsors concur with 5.2.6 and 5.2.7 of the SEEMP guidelines which provide a concise summary of the principal arguments in favour of speed optimization, and why simply talking about speed reduction or advocating mandatory speed reduction measures is inappropriate. In particular we would draw attention to the following guidance provided in 5.2.6, "*optimum speed means the speed at which the fuel used per tonne mile is at a minimum level for that voyage. It does not mean minimum speed; in fact, sailing at less than optimum speed will consume more fuel rather than less. Reference should be made to the engine manufacturer's power/consumption curve and the ship's propeller curve.*" We would also draw particular attention to the following guidance provided in 5. 2.7, "*As part of the speed optimization process, due account may need to be taken of the need to coordinate arrival times with the availability of loading/discharge berths, etc.*"

19. MEPC 73 agreed that improving port efficiency will play an essential role in achieving the objectives of the initial strategy (paragraphs 7.19 – 7.21, MEPC 73/WP.1). This is also addressed, albeit briefly, in 5.2.4 & 5.2.5 of the SEEMP guidelines. Ships may have to increase speed for parts of their voyage to avoid missing a berth slot, optimizing voyage speed, rather than simply slowing down, is an essential part of support efforts to improve port optimization.

20. Strengthening the SEEMP would promote speed optimization and reduce GHG emissions.

Application of measures

21. The existing SEEMP guidelines recognise that there is a wide range of options for improving the efficiency of ships and that the benefits of applying multiple solutions may not be cumulative and that the support of multiple stakeholders may be necessary to make such measures work effectively. The SEEMP guidelines explicitly state that energy efficiency measures considered in the guidance will be dependent on the trade and sailing area of the ship and highlight that ships may change operating routes and that not all technologies are suitable for all ships. The co-sponsors concur with the SEEMP guidelines.

Setting Objectives

22. In order to demonstrate that the SEEMP review and improvement process is working the co-sponsors consider a means of setting objectives and quantifying performance improvement to be necessary. The SEEMP review and improvement process should demonstrate its effectiveness in improving the operational efficiency of a ship, however this is more complicated than it may appear.

23. Ships are subject to environment and weather conditions, as well as asymmetric trade patterns which are beyond the control of the shipowner and crew.

24. Operational efficiency is influenced by route deployment and the nature of trade on those routes. Liner ships operate along known routes, however they may be redeployed, and following which operational efficiency may alter significantly. Tramp ships do not know where they sail until they receive orders for a given voyage. Therefore a ships indicated operational efficiency may vary through the year in ways which cannot be predicted by the shipowner. Document MEPC.72/Inf.5 (Intertanko) provided the results of applying operational efficiency indicators to identical sister ships operated by the same company varied greatly, demonstrating the limitations of such indicators.

25. Setting objectives must not distort markets and penalise those countries, many of which are small islands developing states (SIDS) or least developed countries (LDCs), which are remote from the principal trade routes and/or for which trade is heavily weighted in one direction (import of essential goods and materials, or export of a bulk commodity for example). Should industry wide mandatory objectives be adopted, based on inappropriate metrics and which failed to take into account the particular circumstances of particular member states then this could disincentivise ships from serving such countries in order to avoid ships being rated as inefficient and facing potential penalties and reduced ship value.

26. The diversity of shipping means that no single operational efficiency indicator or KPI will be appropriate for all ships, not even all ships of a given ship type. Therefore, indicators and KPIs used for a particular ship will be specific to that ship and will not provide data which is comparable with data for other ships.

27. Measures to promote improved operational energy efficiency must not punish efficient ships. If all ships were required to quantitatively demonstrate an improvement of "X"% then this could have the unfortunate result of punishing ships which are already operating as efficiently as is practicable. Imposing an unachievable efficiency improvement target on a ship which is already operating at the limit of what is achievable, followed by potential penalties or commercial and reputational damage for failing to achieve the necessary target, cannot be considered sensible. It has been suggested that reference lines for operational efficiency could

be developed followed by requiring reductions below such reference lines. No reference line could reflect a genuine datum point for operational efficiency of a given ship type, attempting to develop such lines would be very time consuming and contentious.

28. There are certain measures to improve operational efficiency which are not affected by route deployment and weather conditions, for example use of energy efficient lighting, variable speed pump drives for power and propulsion systems and trim optimization. Such measures can make a valuable contribution to efficiency which can be relatively easily quantified and used to demonstrate an improvement in efficiency. However the most important aspects of operational energy efficiency, the largest energy consumers onboard (i.e. propulsion engines) will largely be determined by route deployment and weather conditions. Similarly, transport work indicators will largely be determined by route deployment and the nature of trade since many trades are inherently asymmetrical making it impossible for shipowners to avoid ballast voyages or voyages in which a large part of the load is empty containers being repositioned. Therefore any objective setting must consider:

- The differences between efficiency parameters which are within the control of the shipowner and crew, and those which aren't;
- Existing operational energy efficiency, i.e. an unrealistic objective based on an across the fleet objective should not be imposed on a ship which is already at the limits of what can practicably be achieved;
- The risks of market distortion resulting from setting objectives which will inhibit ships from serving certain markets in order to avoid failure to satisfy objectives;
- That a ship can be managed to a high standard and to miss meeting operational efficiency objectives as a result of being redeployed to other routes or because of weather and environmental conditions;
- Operational efficiency indicators may be influenced by the nature of the loads carried, for example the number of refrigerated cargo containers or liquid cargo requiring thermal conditioning; and
- The diversity not just of shipping as a whole but even between operational conditions for ships of the same type.

29. The co-sponsors therefore propose that at this stage objective setting should be high level and non-proscriptive. A shipowner should demonstrate what can practicably be achieved during SEEMP audits and agree improvement goals based on their own unique operational circumstances. This would then be reviewed at the following audit along with proposals to further enhance operational energy efficiency by proposing further goals. These objectives would be based on operational energy indicators or KPIs selected by the shipowner based on them being appropriate for a particular ships expected operational circumstances.

Summary

30. The SEEMP guidelines already address speed optimization, use of operational efficiency indicators (monitoring) and evaluating effectiveness of the SEEMP so as to improve future performance. Enhancing the SEEMP by introducing a mandatory third party review and audit process to strengthen the self-evaluation and improvement provisions, including setting of objectives, would address the single weakness of the SEEMP. This would drive a continuous improvement process and deliver the benefits claimed for other separate measures, and could be agreed much more quickly than efforts to develop, agree and implement separate measures. This would not prejudice development of other candidate short terms measures, and if agreed quickly there may be an opportunity to use lessons learned from applying the enhanced SEEMP to inform future potential short term measures based on operational experience and evidence.

Proposals

31. The co-sponsors propose that Part I of the SEEMP should form part of the ship's Safety Management System (SMS) for those ships subject to SOLAS Chapter IX. There have been some concerns that such a measure would conflate safety and environmental protection, however Regulation 22 of MARPOL Annex VI already states that the ship's SEEMP may form part of the ship's SMS. Therefore the MARPOL Convention already makes provision for the SEEMP to be part of the SMS. This is reflected in industry guidance (such as, for example, *Guidelines on the Application of the IMO International Safety Management(ISM) Code* published by ICS and ISF).

32. This would make the SEEMP subject to mandatory external audits by the Administration or a duly authorised Recognised Organization on a regular basis. This would include interim (where applicable), initial, intermediate and renewal audits; the renewal audit being carried out after five years.

33. The co-sponsors provide draft regulatory amendments for the consideration of the Committee in the Annex to this document. In addition, the co-sponsors consider it would be necessary to review the *Revised guidelines on the implementation of the International Safety Management (ISM) Code by Administrations* (A.1118(30)) in order to ensure that these recognise differences between safety and environmental aspects of the SMS. This is particularly pertinent to the nature of certain non-comformities. For example, failure to meet an environmental improvement objective may be the result of circumstances beyond the control of the shipowner such as prolonged periods of bad weather or a change in ship deployment.

Action requested by the Committee.

34. The Committee is invited to consider the comments and proposals contained in this submission and to take action as appropriate.

ANNEX 1

PROPOSED AMENDMENTS TO MARPOL CHAPTER IV REGULATION 22 - SHIP ENERGY EFFICIENCY MANAGEMENT PLAN (SEEMP)

Modifications to MARPOL Chapter IV Regulation 22 are proposed as follows, with additions and deletions shown through underlining and ~~strikethrough~~.

1 Each ship shall keep on board a ship specific Ship Energy Efficiency Management Plan (SEEMP). This shall ~~may~~ form part of the ship's Safety Management System (SMS) for ships subject to SOLAS Chapter IX.

2 On or before 31 December 2018, in the case of a ship of 5,000 gross tonnage and above, the SEEMP shall include a description of the methodology that will be used to collect the data required by regulation 22A.1 of this Annex and the processes that will be used to report the data to the ship's Administration.

3 The SEEMP shall be developed taking into account guidelines adopted by the Organization.

4 At intermediate and renewal audits of the SMS the Company is to:

- demonstrate, using appropriate performance monitoring tools and indicators what measures have been taken to optimise operational performance and to improve the efficiency of the ship;
- Using these performance monitoring tools and indicators, define objectives for improving operational performance and ship efficiency; and
- Review whether objectives agreed at the previous audit have been achieved.

Environmental objectives are to be agreed by the ship's Administration. In cases where a ship has been unable to achieve objectives agreed during the previous audit then the reasons for this are to be recorded and are to be considered when defining objectives for the next period.

ANNEX 2

PROPOSED AMENDMENTS TO RESOLUTION MEPC.282(70) - 2016 GUIDELINES FOR THE DEVELOPMENT OF A SHIP ENERGY EFFICIENCY MANAGEMENT PLAN (SEEMP)

Modifications to SEEMP guidelines are proposed as follows, with additions and deletions shown through underlining and ~~strikethrough~~.

Part only shown.

3.4 In addition, ships which are subject to the requirements of SOLAS Chapter IX ~~many companies~~ already develop, implement and maintain a Safety Management System. In such case, part I of the SEEMP ~~may~~ forms part of the ship's Safety Management System.

4.4.4 For ships which are subject to SOLAS Chapter IX, the SEEMP forms part of the Safety Management System and as such is subject to the audit, verification and certification processes of the International Safety Management Code (ISM Code).

INTERNATIONAL MARITIME ORGANIZATION

E

INTERSESSIONAL WORKING GROUP ON REDUCTION OF GHG EMISSIONS FROM SHIPS
5th session
Agenda item 3

ISWG-GHG 5/X/X
May 2019
Original: ENGLISH

CONSIDERATION OF CONCRETE PROPOSALS ON CANDIDATE SHORT-TERM MEASURES, NOTING THE DISCUSSION AT ISWG-GHG 4 ABOUT SHORT-TERM MEASURES AND THEIR CATEGORIZATION

Short Term Measures to Reduce GHG emissions from international shipping

Submitted by ICS……

SUMMARY

Executive summary:	The co-sponsors recommend that measures to reduce methane slip, promote improved port efficiency and encourage provision of shore power (cold ironing) should be developed and implemented. Additionally, robust guidelines assess the lifecycle GHG/carbon intensity of marine fuels and also the efficacy of technologies for lowering GHG emissions from ships should be developed.
Strategic direction:	
High-level action:	
Output:	
Action to be taken:	Paragraph 38
Related documents:	MEPC.304(72), MEPC 73/WP.5, MEPC.281(70),

Introduction

1. The Committee, at MEPC 72, adopted the Initial IMO strategy on reduction of GHG emissions from ships (MEPC.304(72)) (the initial strategy). The co-sponsors supported the adoption of this initial strategy and consider it to be a major step forward for the international shipping sector, setting out a pathway for the phase-out of GHG emissions.

2. ISWG-GHG 4 developed a draft programme of follow-up actions of the initial IMO strategy on reduction of GHG emissions from ships up to 2023 which, inter alia proposed three categorise for candidate short term measures and called for consideration of concrete proposals at MEPC 74 (MEPC 73/WP.5, Annex).

4. Further to the decision of MEPC 73 to call for concrete proposals to be submitted for consideration at ISWG-GHG 5 the co-sponsors provide proposals for reducing GHG emissions from ships and to facilitate informed decision making by the Organization.

5. These proposals are:

1. Development of measures to reduce methane slip;

2. Development of measures to facilitate provision of shoreside electrical power (cold ironing facilities) in ports and to improve port efficiency;

3. Development of guidelines for lifecycle GHG/carbon intensity guidelines for all types of fuels; and

4. Development of guidelines for assessing the efficacy of technologies for lowering GHG/carbon intensity.

Discussion

Reducing methane slip

6. The Initial IMO strategy on reduction of GHG emissions from ships includes consideration and analysis of measures to address emissions of methane and further enhance measures to address emissions of Volatile Organic Compounds as a short term candidate measure.

7. Natural gas fuelled ships emit much lower levels of local pollutants than those combusting marine fuel oil, with clear benefits for public health in coastal and port areas. Natural gas fuelled ships may also lower GHG emissions from shipping in the short term.

8. The carbon factor (Cf) of liquefied natural gas (LNG) for the EEDI calculation is 2.75, compared with 3.206 for marine diesel/gas oil (MDO/MGO) and 3.114 for heavy fuel oil (HFO) (MEPC.281(70)). Therefore strengthening the EEDI, such as implementing EEDI phase 3 in 2022, will encourage the adoption of LNG fuel.

9. When combusting natural gas in internal combustion engines some methane may be emitted to atmosphere as part of the engine exhaust. This is referred to as methane slip. Depending on the thermodynamic cycle of gas fuelled internal combustion engines, methane slip may be significant. Methane slip is particularly associated with Otto engines, it is not generally associated with gas fuelled diesel engines because of more efficient and complete combustion of gas in a gas Diesel engine. Methane is a more potent GHG than CO_2, therefore any fugitive emissions such as methane slip are undesirable and reduce the GHG benefit of using natural gas fuel[1].

10. Otto engines offer some significant advantages relative to gas fuelled diesel engines since they do not need the high pressure gas supply requirement of gas Diesel engines, emit less NO_x and can operate without a pilot fuel such as oil. The simplified gas supply arrangements, lower NOx emissions and lower risk profile resulting from eliminating high pressure gas systems mean that Otto engines are a popular option for gas fuelled internal combustion engines on ships.

[1] Intergovernmental Panel on Climate Change (IPCC), Climate Change 2013: Physical Science Basis, Anthropogenic and Natural Radiative Forcing, p. 714.

11. To reduce the risk that methane slip levels could negate the GHG benefits of using natural gas fuel it is proposed that the Organization agree measures to control methane slip.

12. There may be several ways to achieve this. For example it could be done by means of an engine certification scheme, similar to that which regulates emissions of NO_x, with an engine being pre-certificated in accordance with measures to be developed by the Organization. This could be included within the Engine International Air Pollution Prevention Certificate (EIAPPC). However, the co-sponsors consider that regulations to control methane slip should be goal based and non-proscriptive, similar to those which govern emissions of NO_x.

13. It will be necessary to consider both emission limit values for methane slip and methane slip at different engine load points.

14. Development of suitable measures would require significant effort to complete. However, as a purely technical matter it could be undertaken by the PPR sub-committee, and should not divert resources from development of other GHG reduction measures.

15. This is considered to be a Group B candidate short-term measures, one that is not a work in progress and which would be subject to data analysis in order to establish emission limit values.

Measures to facilitate provision of shoreside electrical power (cold ironing facilities) in ports as well as consideration of how ports could be made more efficient

16. MEPC 73 agreed that improving port efficiency/optimisation could ports contribute to reducing GHG emissions from ships and encouraged the exchange of best practices as well as the development of non-mandatory guidelines to assist member states to reduce emissions from ports (MEPC 73/WP.1 paragraph 7.21). A further contribution which ports could make to reduce GHG emissions from ships would be to increase the provision of shoreside electrical power. The initial strategy already includes development and implementation of measures to facilitate provision of shoreside electrical power (cold ironing facilities) in ports as well as consideration of how ports could be made more efficient.

17. The efficiency of shipping is linked to the efficiency of a wider logistic chain, improving the efficiency of shipping is contingent on similar efficiency enhancements being applied in other parts of that chain, especially ports. For example, for speed optimisation to be effective ports must ensure the availability of berths, cranes, pilots, tugs, land transport etc. on time for the planned arrival time of the ship. This would facilitate smoother voyage speed profiles and avoid the current all too common situation where ships manage their voyage speed to arrive at a given time only to be required to anchor, or be allocated a berth but then have to await cranes.

18. Although some aspects of port optimisation may have to be addressed via national action plans there may be a role for IMO in developing improved communication and planning tools.

19. Increased provision of shoreside electrical power supplies could encourage the adoption of cold ironing by ships, eliminating at berth emissions of GHGs and local emissions. Efforts to promote cold ironing have been hampered by two factors:

1. In many cases it is more cost effective for ships to use their electrical generators at berth; and
2. Incompatibility between the ship and shoreside power systems.

20. The Organization is already developing technical guidelines for shoreside electrical power systems, including the interface between ship and shore and safe management of operations. The report of a correspondence group which has been progressing this work will be considered at SSE 6. The co-sponsors support this work and look forward to the final guidelines. Although the co-sponsors support developing the use of shoreside electrical power it should also be acknowledged that there are alternatives such as provision of zero emission auxiliary power units onboard and that shoreside power may not be appropriate for all ships calling at a particular port. It should also be understood that use of shoreside electrical power will only reduce GHG emissions where that power is supplied from low carbon energy sources.

21. Cold ironing generally requires incentives to be a viable option for shipowners. This may have to be addressed via national action plans.

22. These measures are considered to be a combination of Group A and Group C.

Development of guidelines for lifecycle GHG/carbon intensity guidelines for all types of fuels

23. The co-sponsors consider that the 2050 levels of ambition in the initial strategy can only be achieved by adopting new low/zero carbon fuels and technologies.

24. In order to facilitate informed decision making it will be essential to understand the carbon intensity of marine fuels. This requires the development of lifecycle GHG intensity guidelines for marine fuels. Development of such guidelines is already included within the initial strategy as a candidate measure.

25. Without such guidelines there is a risk that marine fuels which initially appear to offer GHG emission benefits but which are subsequently re-evaluated and found to deliver very limited or no net GHG emissions benefit over their lifecycle could be adopted. This could involve high costs firstly to adopt such fuels, followed by possibly still greater costs to phase out their use in favour of low carbon alternatives.

26. To facilitate the necessary investment to commercialise new fuels industry needs some surety that the fuels concerned will be accepted as low/zero carbon products.

27. The lifecycle GHG intensity of fuels is sensitive to how system boundaries are defined and the methodology used, meaning that it is possible to develop different analysis for the same fuel.

28. IMO guidelines for lifecycle GHG analysis would promote consistency and transparency, facilitate informed decision making and provide greater assurance to industry when considering investing in new or alternative fuels and technologies.

Development of guidelines for assessing the efficacy of technologies for lowering GHG/carbon emissions

29. As stated in paragraph 23, the co-sponsors consider that the 2050 levels of ambition in the initial strategy can only be achieved by adopting new low/zero carbon fuels and technologies.

30. The Organization is already considering strengthening the EEDI regulation, as the industry moves beyond EEDI phase 2 it will be increasingly necessary to adopt new and innovative technologies, and for the Organization to understand what is technologically achievable when considering further EEDI strengthening.

31. In addition to the EEDI regulation it is anticipated that the Organization will take far reaching decisions as it implements the initial strategy. Some of these decisions may be predicated on assessments of the readiness of technologies to reduce GHG emissions.

32. If decisions are made based on unrealistic assessments of what is technologically achievable, or based on inappropriate analysis of proposed technical solutions then the consequences could be setting unrealistic objectives and wrongful decision making.

33. Documents ISWG-GHG 4/3/4 and MEPC 73/5/9 (both RINA) highlighted some of the issues associated with evaluating the efficacy of technologies for improving the efficiency of ships.

34. Operational experience indicates that there can be significant differences between claimed improvements for new technologies and what is actually achieved in service. How such claims verified and quantified? For example, are measured improvements in an aspect of performance compared with alternatives on a like for like basis, or based on conditions which could be favourable to certain outcomes? For example if a ship is fitted with a new propeller design during a dry dock, it is probable that the hull will also be cleaned to some degree at the same time and the opportunity taken to perform engine maintenance, sea water system cleaning and other routine works which will improve performance and efficiency. This presents the question of how much of any measured improvement is because of the new propeller design and how much is attributable to maintenance and cleaning. Or it may be that changes in operational management are introduced along with a technology trial which make it difficult to assess whether these changes in operational management or the new technology are responsible for any measured differences in performance and efficiency.

35. The efficacy of technologies should be demonstrated under a range of representative conditions. This is to minimise the risk that data obtained under highly optimized conditions which are not representative of actual operations is used to support claims made for a technology.

36. IMO guidelines for assessing the efficacy of technologies for lowering GHG/carbon emissions would promote consistency and transparency, facilitate informed decision making and promote improved regulation making.

Proposals

37. The co-sponsors propose that:

1. Measures to reduce methane slip should be developed as a short term candidate measure. This includes developing appropriate emission limit values, followed by development of goal based regulations to control such emissions. This should consider the practicability of an engine pre-certification scheme and the most effective means to verify continued compliance through life;

2. Work to develop technical standards for provision of shoreside electrical power (cold ironing facilities) should be finalized, this should be complimented by developing measures to encourage the provision and use of cold ironing. This may be most appropriately addressed by suitable guidance for member states for how the matter should be addressed in national action plans.

3. The Organization should develop requirements to improve communications between ships and ports so as to improve voyage planning and improve port efficiency. In

addition, the Organization should develop guidance for member states for promoting improving port efficiency for inclusion in national action plans;

4. Guidelines for lifecycle GHG/carbon intensity guidelines for all types of fuels should be developed; and

5. Guidelines for assessing the efficacy of technologies for lowering GHG/carbon intensity should be developed.

Action requested by the Committee.

38. The Committee is invited to consider the comments and proposals contained in this submission and to take action as appropriate.

INTERNATIONAL MARITIME ORGANIZATION

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INTERSESSIONAL WORKING GROUP ON REDUCTION OF GHG EMISSIONS FROM SHIPS
5th session
Agenda item 3

ISWG-GHG 5/X/X
May 2019
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CONSIDERATION OF CONCRETE PROPOSALS ON CANDIDATE SHORT-TERM MEASURES, NOTING THE DISCUSSION AT ISWG-GHG 4 ABOUT SHORT-TERM MEASURES AND THEIR CATEGORIZATION

Review of Candidate Short Term Measures

Submitted by ICS.....

SUMMARY

Executive summary:	The [co-sponsors] comment on candidate short term GHG emissions reduction measures contained within the Initial IMO strategy on reduction of GHG emissions from ships and which were proposed at ISWG-GHG4 and/or MEPC 73.
Strategic direction:	
High-level action:	
Output:	
Action to be taken:	Paragraph 15
Related documents:	MEPC.304(72), MEPC 73/WP.1, ISWG-GHG 3/2/10, ISWG-GHG 4/2/8, ISWG-GHG 4/3, ISWG-GHG 4/3/1, ISWG-GHG 4/3/4, ISWG-GHG 4/2/14, ISWG-GHG 4/2 MEPC 73/5/9, ISWG-GHG 2/2/7, MEPC.1/Circ.850/Rev.2

Introduction

1. The Committee, at MEPC 72, adopted the Initial IMO strategy on reduction of GHG emissions from ships (MEPC.304(72)) (the initial strategy). The co-sponsors supported the adoption of this initial strategy and consider it to be a major step forward for the international shipping sector, setting out a pathway for the phase-out of GHG emissions. The co-sponsors fully support rapid progress in introducing short term measures to reduce emissions of GHG gases from ships, such measures should:

- be effective;

- be implementable;
- minimise negative impacts on Member States and global trade; and
- not divert time and resources from the development of longer term solutions such as zero carbon fuels.

The 2050 level of ambition of the initial strategy can only be achieved by adopting new fuels and technologies. Development, commercialisation and provision of the requisite infrastructure for these new fuels and technologies will require a huge effort, efforts to agree and implement short term measures must not delay or detract from development of medium and long term measures. This would be counterproductive and delay adoption of the long term measures which are needed to decarbonise the industry.

2. At ISWG-GHG 4 a draft programme of follow-up actions of the initial IMO strategy was developed which was then agreed at MEPC 73.

4. At MEPC 73 terms of reference were agreed for ISWG-GHG 5, including consideration of concrete proposals on candidate short-term measures (MEPC 73/WP.8, Annex 2).

5. This document reviews some candidate short measures within the initial strategy or which have been proposed and provides comments for the consideration of the Committee.

Speed Optimization and Speed Reduction

12. The initial strategy includes *Speed optimization and speed reduction, taking into account safety issues, distance travelled, distortion of the market or trade and that such measure does not impact on shipping's capability to serve remote geographic areas* as a candidate short term GHG reduction measure.

13. Sections 5.2.6 and 5.2.7 of the SEEMP guidelines state:

> *5. 2.6 Speed optimization can produce significant savings. However, optimum speed means the speed at which the fuel used per tonne mile is at a minimum level for that voyage. It does not mean minimum speed; in fact, sailing at less than optimum speed will consume more fuel rather than less. Reference should be made to the engine manufacturer's power/consumption curve and the ship's propeller curve. Possible adverse consequences of slow speed operation may include increased vibration and problems with soot deposits in combustion chambers and exhaust systems. These possible consequences should be taken into account.*
>
> *5. 2.7 As part of the speed optimization process, due account may need to be taken of the need to coordinate arrival times with the availability of loading/discharge berths, etc. The number of ships engaged in a particular trade route may need to be taken into account when considering speed optimization.*

The co-sponsors concur with the SEEMP guidelines, which provide a concise summary of the principal arguments as to why the initial strategy should promote speed optimization, and not speed reduction.

14. Reducing the speed of a ship reduces the required power and hence fuel consumption, however it should be recognized that speed will reach a point where there is no further reduction in fuel use because of the effect of sea margin and provision of additional ships to maintain transport supply.

15. Speed reduction could adversely affect areas which are remote from the principal shipping routes and population centres, hence the inclusion of optimization in the candidate measure (see ISWG-GHG 3/2/10 for analysis of this matter).

16. Document ISWG-GHG 4/2/8 (CSC) provided proposals for a mandatory speed reduction measure. The co-sponsors thank the submitters of the document for recognizing that any speed measures must be nuanced and cognizant of the different operational characteristics of different ship types, however they cannot recommend support for this proposal.

17. The CSC proposal would establish speed baselines for ship types, further sub-divided by size, and then defining limits for average speed over the course of a year. The baseline speeds would be established based on historic data and then verified using data submitted to the IMO Data Collection System (DCS). It is stated that use of an average speed limit value would enable ships to operate at higher speeds at certain times of the year when required to carry perishable cargo, and compensate by operating at lower speeds at other times of the year. This, it is claimed, would avoid market distortion. An initial reduction of 10% below the baselines is indicated, with further reductions to help IMO meet its 2030 GHG emissions reduction target.

18. Establishing baselines from historic speed data will not account for regional conditions and the demands of different trades and cargo. The proposal assumes that ships will only carry perishable cargo at certain times of year, allowing them to offset seasonal high speed operation by slowing down out of season. A reefer ship or reefer container ship can expected to carry time sensitive cargo at all times of the year. Further, the nature of liner ship operations requires regular fixed schedules of operation in order to maximise efficiency of the logistic chain.

19. At MEPC 73 many delegates recognised the importance of port optimisation in reducing GHG emissions from ships. Improving port efficiency will play an essential role in achieving the objectives of the initial strategy (paragraphs 7.19 – 7.21, MEPC 73/WP.1). For port optimisation measures to work ships must have flexibility to adjust voyage speeds in order to ensure on time arrival.

20. Efficiency measures must not risk the safety of seafarers and ships. Ships routinely use weather routing to avoid adverse weather, this may necessitate increasing speed to compensate for the longer routing. An annualised average speed limit could result in unintended consequences in the later part of the reporting period, if ships are unable to operate at a higher speed to offset the lost time involved in avoiding adverse weather conditions.

21. Ships must be provided with sufficient power to operate safely when adverse conditions cannot be avoided or when operating in areas with strong currents or exposed to high windage. Low load engine operation reduces efficiency both in terms of engine specific fuel consumption (g/KWhr) and also in terms of overall power system efficiency as energy recovery systems cannot operate as efficiently. Most ships have already reduced speed to a point which provides a good balance between lower fuel use and minimising problems associated with low load operation.

22. Despite tools such as AIS tracking, monitoring and enforcement of speed limits would not be a simple task. For example, it would need to consider circumstances where ships need to increase speed to avoid hazards to safety. This could create an unreasonable administrative burden for both shipowners and Administrations.

23. Port congestion is already a major challenge for the industry, slowing the global fleet down without expanding port capacity would only make this worse and would in fact be counterproductive.

24. The propeller law (i.e. $P \alpha V^3$) is a simplification and breaks down at low speeds as interaction with waves becomes more important. Ships reach a point where reducing speed will not result in further reduction of power (and hence fuel consumption) since the power required is a function of interaction with waves. Also, as speed reduces so does the proportionate reduction in power.

25. Speed reductions could lead to modal shift and higher aggregate GHG emissions in the case of time sensitive cargo, particularly in the short sea segment.

26. Mandatory speed reduction measures could inhibit technological innovation. There has been some comment on the possibility of a rebound effect (see for example document ISWG-GHG 4/3). If a ship can emit less GHG emissions and also operate at a higher service speed then this should not be prevented, to do so would effectively remove a major incentive for shipowners to invest in new and innovative technologies.

27. Low load engine operation increases emissions of NOx, PM and Black Carbon, the co-sponsors would urge the Committee not to introduce measures which could worsen emissions of local pollutants.

28. The existing SEEMP guidelines which already address speed optimization. Strengthening the SEEMP would avoid the time necessary to agree separate speed measures, reduce administrative burden and avoid the negative consequences of mandatory speed restrictions.

29. The co-sponsors recommend that the Committee should support speed optimization, not mandatory speed reduction, this could be achieved by strengthening the SEEMP.

Operational Efficiency Indicators

30. Operational efficiency indicators have been advocated, for example, documents ISWG-GHG 4/3/1 and ISWG-GHG 4/2/14. The co-sponsors agree that an appropriate operational energy efficiency indicator or key performance indicator (KPI) may provide a useful tool for a ship to demonstrate its energy efficiency performance. However, inappropriate metrics would be counterproductive.

31. The Operational energy efficiency indicators which have been submitted for the consideration of the Committee measure the efficiency of trade, not the operational energy efficiency of ships and rely on assumptions. They do not account for asymmetric trading patterns or influence of sea conditions, weather and current, as such they would not provide meaningful, comparable values. If published they would almost certainly be used unfairly to promote some ships as being better than others, leading to erroneous conclusions and distortion of trade.

32. Research undertaken on behalf of Intertanko (document MEPC.72/Inf.5) demonstrated that the results of applying efficiency indicators to identical sister ships operated by the same company varied greatly. This supported the conclusions of document ISWG-GHG 2/2/7 (Argentina, China, India and the Philippines).

33. No single operational energy efficiency indicator is suitable for all ships. Ships have to obey charterers' instructions regarding service speed, itinerary and amount of cargo to be shipped when under time charter. Even liner ships are routinely redeployed between different routes with very different operating conditions, meaning that historic data for operational performance cannot be assumed to be meaningful in terms of assessing future (or current) performance.

34. The co-sponsors supportive the use of appropriate operational efficiency indicators or KPIs selected by the shipowner as part of the SEEMP self-evaluation and improvement process.

Mandatory technology retrofit

35. Document ISWG-GHG 4/2/14 (Belgium et al) included mandatory technology retro-fitting as a possible short term GHG reduction measure.

36. The co-sponsors fully support improving the efficiency of existing ships, however mandatory technology retrofitting would be very problematic. In ISWG-GHG 4/2/14 it is stated that "many efficiency improving technologies that have been shown to be cost-effective are not applied to ships", how is cost effective defined? How would the economic viability of a measure be assessed? The costs of retrofitting any technology will be ship specific and vary hugely, based on (but not limited to) factors such as:

- The extent of work needed to access the installation area, followed by re-instating any access openings;
- Scale of modifications required to existing system;
- Modifications to existing systems and equipment, which may not necessarily form part of the retrofit but which require extensive adjustment to create space;
- Structural modifications to the fabric of the ship to carry additional weight and consequential modifications to maintain stability and fire/flood sub-division;
- The location chosen for the work and availability of resource; and
- Time off hire for completion of works.

These are all in addition to the cost of purchasing the equipment and associated class costs. Whether or not a retrofit is sensible will also be influenced by the age of the ship. The cost of a retrofit cannot be estimated, but only worked out on a ship specific basis requiring significant time and effort. Generic high level estimates proposed by consultants and others should not be seen as credible cost estimates. Shipowners do not generally need to be coerced into installing genuinely cost-effective technologies.

37. There is a lack of independent and impartial information to assess the performance of new technologies and it is unclear how much, if any environmental benefit, some technologies deliver. Documents MEPC 73/5/9 and ISWG-GHG 4/3/4 (RINA) highlighted uncertainties and inaccuracies associated with claims which have been made for percentage savings for energy saving techniques and how this makes it difficult to compare the effectiveness of such techniques. RINA also observed that the effectiveness of some techniques may have been overestimated and called for a robust framework which could be used to verify claims made for energy saving techniques. The co-sponsors concur with the arguments presented by RINA, which are consistent with the operational experiences of shipowners.

38. Mandatory retrofitting of technology is not within scope of existing IMO instruments and would be within Group B of the programme of follow-up actions of the initial IMO strategy, a candidate measure which is not work in progress and is subject to data analysis.

39. The co-sponsors consider that strengthening the SEEMP would promote improvement of existing ships with a lower administrative burden and would avoid the problems associated with mandatory retrofit proposals which have been identified in paragraphs 36 & 37 of this document, without requiring data assessment.

EEDI for existing ships built before EEDI Phase 0

40. Document ISWG-GHG 4/2 (Norway) proposed developing an EEDI for existing ships built before phase 0. The co-sponsors fully support strengthening the existing IMO energy efficiency framework, including the EEDI, however we have serious reservations with respect to extending the EEDI to existing ships built before EEDI phase 0.

41. The EEDI is a design measure, which assigns a value to a ship when tested under controlled conditions according to a defined method of calculation, it is important not to conflate operational efficiency measures with the EEDI. Improving a ships EEDI can only be done by applying technical and design measures, it cannot be improved by operational measures. Changing the EEDI of an existing ship would require either technology retrofit, re-profiling of the hull, engine de-rating (this is not the same as slow steaming) or similar measures. The co-sponsors would reiterate that where retrofitting technology or re-profiling hull contours is advantageous and cost effective it is already done.

42. EEDI phase 0 entered into force on 1 January 2013. An EEDI for existing ships built before the EEDI took affect would require significant work to develop and agree, in particular development of survey and certification requirements which would have to be cognisant of the differences between new and existing ships. Given the procedures for amending the MARPOL Convention and the time which would be necessary to apply such a measure to the existing fleet (clearly calculating EEDI values and carry out the necessary surveys and certification of the existing fleet would require a reasonable interval following entry into force) it is unlikely that an EEDI for existing ships built prior to phase 0 could enter into force before 2025. A significant period of time would then be necessary for the existing fleet to be certificated. Considering the available resource of recognised organisations and the time which would be required to survey and certificate each ship, the co-sponsors estimate that such ships could expect to receive their EEDI values in the period 2025 – 2030. By this point they would be 10 – 15 years old. This would merely measure and certificate a ships EEDI value, it would not result in any reduction of GHG emissions.

43. If the intention is to require existing ships built before EEDI phase 0 to reduce their initial EEDI value then clearly this would require further time. Paragraphs 36 – 37 have already evaluated the challenges facing technology retrofitting, we estimate that ships making such improvements would be at least 15 – 20 years old.

44. The age profile of three key ship types which form the bulk of the world fleet is shown in table 1, using data from Equasis:

Ship type	0 - 4 yrs	5 – 14 yrs	15 – 24 yrs	25+ yrs
Small bulk carrier	11	11	80	207
Medium bulk carrier	736	1793	610	653
Large bulk carrier	1804	3042	874	110
Very large bulk carrier	442	1051	170	20
Small container ship	1	16		1
Medium container ship	230	1039	815	169
Large container ship	202	961	299	45
Very large container ship	429	733	167	
Small oil & chemical tanker	156	244	428	1074
Medium oil & chemical tanker	752	2851	1265	2044
Large oil & chemical tanker	504	1655	416	54
Very large oil & chemical tanker	417	1056	300	6
Total (all)	5684 (19%)	14452 (48.25%)	5424 (18.1%)	4383 (14.65%)

Total (large & very large)	3798 (25.74%)	8498 (57.58%)	2226 (15%)	235 (1.59%)

Table 1 – Age distribution of bulk carrier, container ship and oil & chemical tanker fleet, 2016[1]

There is general agreement that the majority of CO2 emissions originate from large ships, the data in table 1 demonstrates that for the categories of large and very large ships, over 83% are 0 – 14 years old and just over 16% older than 15 years, with those older than 25 years at less than 2%. Even if including small (with small being <500GT) and medium sized ships, then it is clear that the majority of ships are in the range 0 – 14 years and with a small minority at 25 years or older.

45. Paragraphs 41 - 44 demonstrate that

- The EEDI is a design measures and can only be improved by technical and design measures, not by operational efficiency measures;
- Should an EEDI for ships built before phase 0 be developed then ships would be at least 10 – 15 years old when certificated with a new EEDI;
- Certificating an existing ship with an attained EEDI does not alter that ships efficiency;
- If such ships are required to then reduce their EEDI then they will probably be 15 – 20 years old by the time such modifications are made; and
- Most larger ships, which are responsible for most GHG emissions from shipping, are less than 15 years old.

From this it can be derived that introducing an EEDI for ships built before phase 0 would entail significant effort to develop, followed by imposing a significant cost on industry to survey and certificate existing ships and that there would be very limited benefit from such a measure. The expected benefits cannot be considered as being in any way commensurate with the costs and administrative burden of such a measure.

46. Applying operational efficiency measures will be more appropriate for older ships than attempting to develop a new EEDI for them, promoting improved operational efficiency could be achieved by strengthening the SEEMP.

Strengthening EEDI requirements for existing ships which already have an attained EEDI value

47. Document ISWG-GHG 4/2 (Norway) also proposes strengthening the EEDI for existing ships which already have an attained EEDI value. The co-sponsors would re-iterate that the EEDI is a design measure therefore improving the EEDI value of an existing ship would necessitate technical measures such as technology retrofitting, re-profiling the hull, de-rating the engine or similar.

48. Paragraphs 35 – 39 highlight the challenges associated with technology retrofitting. Robust guidelines to evaluate the effectiveness of such technologies are a pre-requisite for any consideration of proposals to mandate technology retrofitting.

49. The age of EEDI phase 0 and phase 1 ships is less than that of those built prior to phase 0, some of them would nevertheless still be reaching an advanced stage of their service lives

[1] Source - http://www.equasis.org, small <500GT, medium 500 – 25000GT, large 25000 – 60000GT, very large >60000GT

by the time any proposals to strengthen their existing EEDI took effect and still older by the time any improvements were applied to lower their attained EEDI values.

50. The co-sponsors reiterate that where refitting technology is attractive it is already done for commercial reasons, shipowners want more efficient ships. Fuel is one of the most significant costs for any shipowner and all try to minimise fuel use so far as is practicable. This applies regardless of the oft quoted split incentive between owners and charterers since it also affects the charter rate for a ship.

51. For ships certificated to EEDI phase 1 phase 2 there will be less scope to apply energy improving technologies since many of these technologies will have already been applied. De-rating the engine will be less feasible since such ships will in most cases already have down sized engines in order to optimise their attained EEDI value and will have much less scope to reduce engine power whilst maintaining compliance with the *2013 Interim Guidelines for Determining Minimum Propulsion Power to Maintain the Manoeuvrability of Ships in Adverse Conditions* (MEPC.1/Circ.850/Rev.2).

52. Improving the operational efficiency of ships is more appropriate for older tonnage, which could be achieved by strengthening the SEEMP. Proposals to require existing ships built following the introduction of EEDI phase 0 to reduce their attained EEDI values should not be supported.

Require ships to measure speed-fuel curves in a standardized way

53. Document ISWG-GHG 4/2/14 (Belgium et al) proposes requiring that ships measure speed-fuel curves in a standardized way. The co-sponsors support this proposal, however we would offer some observations.

54. Belgium et al suggest that information about the ship's energy efficiency is often only available in a simple form, such as a maximum consumption per day, rather than consumption as a function of speed and loading condition. This may be true in some cases, however many ships already have speed – fuel curves for their ships when at different draughts.

55. Belgium et al also reference the relationship between shipowners and charterers. This is an important relationship since it is the charterer, not the shipowners that takes the key operational decisions which determine ship deployment and efficiency. However,paragraph 14 of ISWG-GHG 4/2/14, "*One of the well-evidenced market failures is the split incentive between the shipowner and the charterer. In several segments of the shipping market, charter rates do not reflect a ship's efficiency, therefore the shipowner has little incentive to invest in the energy efficiency of the ship*" is not supported. A ships fuel consumption is a key metric for securing charters and the charter rate which a ship can command, therefore it is not correct to state that a shipowner has little incentive to invest in the efficiency of a ship.

56. The co-sponsors do, however, support a common methodology for measuring speed-fuel curves for new ships which could then form part of the ships SEEMP.

Proposals

57. The co-sponsors in paragraph 1 supported short term GHG reduction measures which are:

- are effective;
- are implementable;
- minimise negative impacts on Member States and global trade; and
- do not divert time and resources from the development of longer term solutions.