標題

MEPC 67 の審議結果の紹介

ClassNK
テクニカル
インフォメーション

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各位

2014 年 10 月 13 日から 17 日にかけて開催された IMO の第 67 回海洋環境保護委員会（MEPC67）での情報及び審議結果について、次の通りお知らせいたします。

1. バラスト水管理条約関連

船舶のバラスト水の移送による海洋生態系への悪影響を防止するため、バラスト水管理条約が 2004 年に採択されました。同条約では、船舶に対して沖合におけるバラスト水交換を実施するか、バラスト水排出基準を満足するバラスト水処理装置を使用したバラスト水交換が要求されています。

同条約は、30 ヶ国以上の批准かつ批准国の合計商船船腹量が世界の商船船腹量の 35%以上となった 12 ヵ月後に発効することとなっています。

(1) 日本及びトルコの批准

10 月 10 日付けで日本が、14 日付けでトルコがバラスト水管理条約を批准しました。同条約の批准国数は 43 ヶ国、合計商船船腹量に対する比率は 32.54%になりましたが、依然未発効となっています。

(2) 活性物質を用いたバラスト水処理装置の承認

同条約で規定されるバラスト水処理装置は、IMO のガイドラインに従って主管庁による承認（型式承認）が必要とされています。なお、同装置に有害水生生物や病原菌を殺傷・滅菌するための「活性物質」が使用される場合は、主管庁による型式承認に先立ち、IMO による活性物質単体の承認（基本承認）、及び処理装置としての総合的な承認（最終承認）が必要となります。

今回の会合では、活性物質を用いたバラスト水処理装置について、1 件の基本承認、及び 3 件の最終承認が与えられました。この結果、IMO によって最終承認が与えられた装置は、合計 36 件となりました。

主管庁による型式承認を取得し、実際に船舶に搭載可能な装置の数は、活性物質を用いない装置も含め、51 件です。承認された装置のリストは、IMO のウェブサイト (http://www.imo.org/OurWork/Environment/BallastWaterManagement/Pages/BWMTechnologies.aspx)で公開されています。

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(3) バラスト水処理装置の型式承認のための G8 ガイラインの改正 (添付 1.RESOLUTION MEPC.253(67)参照)
現行の G8 ガイドラインに従って型式承認されたバラスト水処理装置が、使用環境によっては基準値以上の値が検出される可能性があることから、試験条件強化のために G8 ガイドラインの見直しを行うことについて、前回 MEPC 66 より審議が行われています。
審議の結果、通信部会(コレスポンデンスグループ)を設置して、G8 ガイドラインの見直し作業を行うことが合意されました。また、現行 G8 ガイドラインに従って型式承認されたバラスト水処理装置を搭載した船舶に対し、将来、G8 ガイドラインが改正された場合に不利益を被ることがない措置を講じることを明記した MEPC 決議が採択されました。

(4) PSC ガイドライン (添付 2.RESOLUTION MEPC.252(67)参照)
バラスト水管理条約に関する PSC の実施手順を規定する PSC ガイドラインが採択されました。同ガイドラインでは、PSC 検査を以下の四段階に分けて行うことが規定されています。
- 第 1 段階:初期検査
  国際バラスト水管理証書等の書類確認
- 第 2 段階:詳細検査
  バラスト水処理装置の稼働状況の確認
- 第 3 段階:バラスト水の簡易分析
- 第 4 段階:バラスト水の詳細分析

2. 温室効果ガス(GHG)関連
温室効果ガス(GHG)の削減を国際的に定めた国連気候変動枠組条約(UNFCCC)の京都議定書では、外航船舶をその対象外としており、IMO が国際海運からの GHG 排出の抑制対策を検討することとされています。
2011 年 7 月に開催された MEPC 62 において、エネルギー効率設計指標(EEDI)及び船舶エネルギー効率管理計画(SEEMP)の船舶への備え付け等を義務化する MARPOL 条約 附属書 VI の改正が採択され、2013 年 1 月 1 日に発効しました。
また、前回の会合では、EEDI 規制の適用を Ro-Ro 船、LNG 運搬船、クルーズ客船に拡大する MARPOL 条約 附属書 VI の改正が採択され、2015 年 9 月 1 日に発効する予定です。

(1) EEDI 検査・証書ガイドラインの改正 (添付 3. RESOLUTION MEPC.254(67)参照)
今回の会合において、主に以下の審議が行われ、EEDI 検査・証書ガイドラインの改正が採択されました。
(i) 二元燃料機関を搭載する場合における Primary fuel(主燃料)の判断基準
(ii) 海上速力試験における水温・密度の影響に対する補正の追加

また、海上試運転解析法の ISO 規格(ISO15016:2002)の改正作業の進捗が認められ、ISO15016 の改正版が発行された際には、EEDI 認証において、改正 ISO 規格に従って海上速力試験及び外乱影響補正を行なうことが合意されました。

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(2) 最低推進出力ガイドラインの改正 (添付 4. RESOLUTION MEPC.255(67)参照)
MEPC 65 において、対象をバルクキャリアとタンカーに限定した、フェーズ 0 の期間（2013 年 1 月 - 2014 年 12 月）のみ有効な最低推進出力暫定ガイドラインが策定されました。
今回の会合では、当該暫定ガイドラインに関して、適用対象船舶（20,000DWT 以上のバルクキャリアとタンカー）及び評価手法（レベル 1 及びレベル 2）を維持したまま、フェーズ 1（2015 年 1 月 - 2019 年 12 月）の期間まで適用期間を延長することが合意され、その適用期間を延長した暫定ガイドランの改正が採択されました。
ただし、現行暫定ガイドラインの評価手法では十分な安全性が確保されていないとして要件強化を強く主張する一部意見があったため、本件については次回 MEPC 68 で引き続き審議することになりました。
なお、現在、最低推進出力に関する調査研究が欧州や日本で実施されていることが報告され、それらの成果が報告される 2016 年後半以降に、暫定ガイドラインの抜本的な見直しを行なうことが合意されました。

(3) EEDI 規制に関する技術開発状況レビュー
MARPOL 条約 附属書 VI 第 21.6 規則において、フェーズ 1 の開始時点及びフェーズ 2 の中間点で、EEDI の改善に寄与する技術の開発動向をレビューし、必要に応じ、フェーズの開始時期、関連船種のリファレンスライン算定パラメータ及びリファレンスラインからの削減率を改正することが規定されています。
今回の会合では、当該技術開発動向のレビューを実施するための通信部会（コレスポンデンスグループ）を設置し、レビューを開始することが合意されました。次回 MEPC 68 に進捗状況が報告される予定です。

(4) 船舶のエネルギー効率改善についての技術移転・技術協力
MARPOL 条約 附属書 VI 第 23 規則において、船舶のエネルギー効率改善について、途上国に対する技術移転及び技術協力を促進することが規定されています。
前回の会合において、特別作業部会が設置され、技術移転・協力のための具体的な活動及びスケジュールを定めた作業計画を作成し、MEPC 69 においてその成果を報告することが合意されました。
今回の会合では、承認された作業計画に基づき実施されている同作業部会の進捗状況が報告されました。

（次頁に続く）

(5) 燃費報告制度

MEPC 65 において、国際海運からの更なる GHG 排出削減のための技術的及び運航的手法として、現存船を含めた船舶に対し、燃費データのモニタリング、報告及び認証を課す燃費報告制度を検討することが合意されました。

前回の会合で設置された通信部会（コレスポンデンスグループ）において、燃費報告制度に必要な要素である対象船舶、報告すべきデータ項目、旗国の果たすべき役割等の検討が行われ、検討結果が報告されました。

審議の結果、再度通信部会を設置して、燃費報告制度に必要な要素について更に検討を進めることが合意されました。また、データ収集の目的・必要性、運航効率基準の設定の是非、報告の強制・非強制等の基本的な問題について、先進国、途上国、業界団体のそれぞれの立場の意見が出され、これらの問題については次回 MEPC 68 で引き続き審議することになりました。

(6) IMO GHG スタディ

MEPC 64 において、2009 年時点の国際海運からの二酸化炭素排出量予測である「第 2 次 IMO GHG スタディ」の更新を行うことが合意され、その作業が 2013 年から進められてきました。

今回の会合にその報告書が提出され、「第 3 次 IMO GHG スタディ」として承認されました。同スタディによると、2012 年時点の国際海運からの二酸化炭素排出量は 8 億トンで、世界全体の排出量に対して国際海運の占める割合は 2.2%となっています。また、2050 年の二酸化炭素排出量の予測として、更なる二酸化炭素の排出削減対策を講じない場合は、12 億トンから 28 億トンの間で推移することが報告されています。

3. 大気汚染関連

(1) 燃料油の硫黄分規制

MARPOL 条約 附属書 VI において、燃料油中の硫黄分濃度を 0.5%に強化する前に、低硫黄燃料油の供給が可能であるかをレビューすることが規定されています。同レビューは 2018 年までに完了し、同レビューにより、0.5%規制の 2020 年の開始、若しくは 2025 年までの延期が決定されます。

前回の会合でレビューの開始時期及び手法について検討を行うための通信部会（コレスポンデンスグループ）が設置され、今回はその中間報告が行われました。今後も通信部会での審議を継続し、次回会合に提出される最終報告を検討した上で、レビューの開始時期及び手法を審議することになりました。

(2) 燃料油の品質管理

MARPOL 条約 附属書 VI 第 18 規則では、有害な添加物の含有禁止等、船舶に供給される燃料油の品質が規定されており、前回の会合において、同規則に適合した燃料油の供給を確実にするための方策を検討することが合意されました。

今回の会合では、燃料油の規制適合を確実にするための方策を定めたガイダンス作成、及び現行の MARPOL 条約に基づく規定の妥当性検討のため、通信部会を設置して、検討を進めていくことが合意されました。

（次頁に続く）

4. シップリサイクル条約関連
船舶の安全かつ環境上適正な解撤を目的として、シップリサイクル条約が 2009 年に採択されました。同条約では、船舶に対して有害物質一覧表（インベントリ）を作成・保持すること、及び条約に適合している解撤ヤードにおける船舶の解撤等が要求されています。
同条約は、15 カ国以上の批准、批准国の船腹量合計が世界船腹量の 40%以上、かつ批准国の直近 10 年における最大の年間解体船腹量の合計が批准国の合計船腹量の 3%以上となった後、24ヶ月後に発効することとなっています。2014 年 11 月末時点の、同条約への批准国はノルウェー、コンゴ及びフランスの 3 ヶ国です。

(1) インベントリに記載すべき有害物質の閾値の検討
今回の会合では、時間上の制約から十分な審議が行えなかったため、本件を来年1月に予定されている第2回汚染防止・対応小委員会（PPR 2）で審議することが合意されました。同小委員会に対し、「有害物質インベントリ作成ガイドライン」（決議 MEPC.197(62)）改正案の検討及び最終化、並びに次回 MEPC 68 への報告を要請することになりました。

5. 極海コード（Polar Code）
近年の北極航路の開設に向けた国際的な関心の高まりや旅客船等の航行海域が南北に拡大していることに鑑み、北極海及び南極海（「極海」）を航行する船舶の安全確保及び極海の環境保護等を目的とした極海コードについて、2009 年以降検討を行ってきました。
同コードの Part 1 に極海特有の危険性を考慮した復原性、耐航性、防火・救命設備、無線通信などの安全要件、Part 2 に油や汚水などによる海洋汚染防止のための環境保護要件が規定されています。
今回の会合では、Part 2 の環境保護要件及び同コードを強制化するための MARPOL 条約の改正案が承認されました。次回 MEPC 68 で採択される見込みです。

6. 採択された強制要件 (添付 5. RESOLUTION MEPC.258(67)参照)
今回の会合で採択された強制要件は以下の通りです。

(1) ガス燃料エンジンに対する NOx 規制（MARPOL 条約附属書 VI 第 2 規則）
（概要） ガス燃料エンジンに対して NOx 規制を適用するために、「fuel oil」及び「marine diesel engine」の定義を改正するもの
（適用） 2016 年 3 月 1 日以降

(2) Approved Method の適用対象エンジンの明確化（MARPOL 条約附属書 VI 第 13 規則）
（概要） 2000 年以前に建造された現存船に対して NOx 規制を適用するための第 13 規則 7.3 の規定において、搭載エンジンが Approved Method 適用対象である場合に証書の記載要件を改正するもの
（適用） 2016 年 3 月 1 日以降

(3) IAPP 証書フォームの改正（MARPOL 条約附属書 VI, Appendix I）
（概要） NOx 規制への適合状況の明確な記載及び船上焼却炉の性能基準の改正採択 (MEPC244(66))への対応を目的とした証書様式の改正
（適用） 2016 年 3 月 1 日以降

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本MEPC 67の審議概要につきましてはIMO ホームページにも掲載されていますのでご参照下さい。
(http://www.imo.org/MediaCentre/MeetingSummaries/MEPC/Pages/Default.aspx)

なお、本件に関してご不明な点は、以下の部署にお問い合わせください。

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添付:

1. バラスト水処理装置の型式承認のための G8 ガイラインの改正(RESOLUTION MEPC.253(67))
2. PSC ガイドライン(RESOLUTION MEPC.252(67))
3. EEDI 検査・証書ガイドラインの改正(RESOLUTION MEPC.254(67))
4. 最低推進出力ガイドラインの改正(RESOLUTION MEPC.255(67))
5. 採択された強制要件(RESOLUTION MEPC.258(67))

ANNEX 3

RESOLUTION MEPC.253(67)

Adopted on 17 October 2014

MEASURES TO BE TAKEN TO FACILITATE ENTRY INTO FORCE OF THE INTERNATIONAL CONVENTION FOR THE CONTROL AND MANAGEMENT OF SHIPS' BALLAST WATER AND SEDIMENTS, 2004

THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

RECALLING Article 38(a) of the Convention on the International Maritime Organization concerning the functions of the Marine Environment Protection Committee conferred upon it by the international conventions for the prevention and control of marine pollution from ships,

RECALLING ALSO that the International Conference on Ballast Water Management for Ships held in February 2004 adopted the International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004 (the Convention) together with four conference resolutions,

NOTING that regulation D-3 of the Annex to the Convention provides that ballast water management systems used to comply with the Convention must be approved by the Administration, taking into account guidelines developed by the Organization, and that regulation D-2 of the same Annex defines the performance standard for ships' ballast water management,

NOTING ALSO resolution MEPC.174(58) by which the Committee adopted the *Guidelines for approval of ballast water management systems (G8)* (Guidelines (G8)),

NOTING IN PARTICULAR that, by resolution MEPC.174(58), the Committee agreed to keep the Guidelines (G8) under review in the light of experience gained with their application,

NOTING FURTHER resolution MEPC.252(67), by which the Committee adopted the *Guidelines for port State control under the BWM Convention*,

RECOGNIZING the concerns of the shipping industry regarding the potential penalization of those owners and operators that have installed and operate ballast water management systems that have been type approved in accordance with Guidelines (G8),

BEING CONSCIOUS of the need to provide certainty and confidence in the application of the Convention, thereby assisting shipping companies, shipowners, managers, ships' crews and operators, as well as the shipbuilding and equipment manufacturing industries, in the timely planning of their operations; and the need to encourage the early installation of ballast water management systems,

HAVING CONSIDERED, at its sixty-seventh session, the recommendation made by the Ballast Water Review Group,

1 AGREES to immediately begin a comprehensive review of Guidelines (G8), which should, at a minimum, address the issues contained in the annex to this resolution;

2 AGREES that the existing Guidelines (G8) should continue to be applied until the application of revised Guidelines (G8) following completion of the review, and that Parties to the Convention should ensure the Guidelines are fully adhered to in any approval application;

3 AGREES that shipowners that have installed type-approved ballast water management systems prior to the application of the revised Guidelines (G8), should not be penalized;

4 AGREES that port States should refrain from applying criminal sanctions or detaining a ship, based on sampling during the trial period described in the report of BLG 17 (BLG 17/18, annex 6) associated with the *Guidance for sampling and analysis for trial use in accordance with the BWM Convention and Guidelines (G2)* (BWM.2/Circ.42). This does not prevent the port State from taking preventive measures to protect its environment, human health, property or resources.

ANNEX

ELEMENTS TO BE INCLUDED IN THE REVIEW OF GUIDELINES (G8)

The following elements will be included, as a minimum, as a part of the review of Guidelines (G8), taking into account the associated guidance (resolution MEPC.228(65), BWM.2/Circ.43, BWM.2/Circ.33 and BWM.2/Circ.28):

.1 testing being performed using fresh, brackish and marine waters;

.2 testing considering the effect of temperature in cold and tropical waters on operational effectiveness and environmental acceptability;

.3 specification of standard test organisms for use in testing;

.4 challenge levels set with respect to suspended solids in test water;

.5 type approval testing discounting test runs in the full-scale testing that do not meet the D-2 standard and the results of test runs being "averaged";

.6 type approval testing realistically representing the flow rates the system is approved for;

.7 any differences between type approval protocols of Member States; and

.8 any items raised by, and any data arising from, the Study on the Implementation of the ballast water performance standard described in regulation D-2 of the Convention and any other relevant information provided within the timeline for the review of Guidelines (G8).

***

ANNEX 1

RESOLUTION MEPC.252(67)

Adopted on 17 October 2014

GUIDELINES FOR PORT STATE CONTROL UNDER THE BWM CONVENTION

THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

RECALLING Article 38(a) of the Convention on the International Maritime Organization concerning the functions of the Marine Environment Protection Committee conferred upon it by international conventions for the prevention and control of marine pollution from ships,

RECALLING ALSO that the International Conference on Ballast Water Management for Ships held in February 2004 adopted the International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004 (the Ballast Water Management Convention) together with four conference resolutions,

RECALLING FURTHER that article 9 of the Ballast Water Management Convention prescribes that ships to which the Convention applies may, in any port or offshore terminal of another Party, be subject to inspection by officers duly authorized by that Party for the purpose of determining whether the ship is in compliance with the Convention,

NOTING that article 3.3 of the Ballast Water Management Convention prescribes that Parties to the Convention shall apply its requirements as may be necessary to ensure that no more favourable treatment is given to ships of non-Parties to the Convention,

HAVING CONSIDERED, at its sixty-seventh session, *Guidelines for port State control under the BWM Convention*, developed by the Sub-Committee on Implementation of IMO Instruments, at its first session,

1 ADOPTS the *Guidelines for port State control under the BWM Convention*, as set out in the annex to this resolution;

2 INVITES Governments to apply the guidelines when exercising port State control inspections;

3 AGREES to keep the guidelines under review, following the trial period associated with the *Guidance on ballast water sampling and analysis for trial use in accordance with the BWM Convention and Guidelines (G2)* (BWM.2/Circ.42) and in the light of experience gained with their application.

ANNEX

GUIDELINES FOR PORT STATE CONTROL UNDER THE BWM CONVENTION

CHAPTER 1
GENERAL

1.1 Purpose

1.1.1 These guidelines are intended to provide basic guidance for the conduct of a port State control (PSC) inspection to verify compliance with the requirements of the International Convention for the Control and Management of Ship's Ballast Water and Sediments, 2004 (BWM Convention). They are not intended to limit the rights the port State has in verifying compliance with the BWM Convention.

1.1.2 The Marine Environment Protection Committee, at its sixty-fifth session (May 2013), approved the *Guidance on ballast water sampling and analysis for trial use in accordance with the BWM Convention and Guidelines (G2)* (BWM.2/Circ.42) and agreed in principle with the recommendations related to the trial period for reviewing, improving and standardizing the guidance, as set out in annex 6 to document BLG 17/18.

1.2 Definitions and abbreviations

1.2.1 For the purpose of these guidelines, the definitions in the BWM Convention and in BWM.2/Circ.42 apply.

1.2.2 For the purpose of these guidelines, the following abbreviations apply:

IBWMC: International Ballast Water Management Certificate;

BWMP: Ballast Water Management Plan;

BWRB: Ballast Water Record Book;

BWMS: Ballast Water Management System;

FSUs: Floating Storage Units; and

FPSOs: Floating Production, Storage and Offloading unit.

1.3 Application

1.3.1 These guidelines apply to ships as stipulated in article 3 of the BWM Convention.

1.3.2 The regulations of the BWM Convention contain the following compliance provisions:

.1 the discharge of ballast water shall only be conducted in accordance with the regulations of the BWM Convention (regulation A-2);

.2 an IBWMC is required for all ships of 400 GT or above, excluding floating platforms, FSUs and FPSOs, as identified in regulation E-2;

.3 a ship is required to have on board and implement a BWMP approved by the Administration;

.4 a ship is required to have on board and maintain a BWRB which shall at least contain the information specified in appendix II of the BWM Convention, for a minimum period of two years after the last entry has been made (regulation B-2);

.5 a ship is required to meet either the ballast water exchange standard (regulation D-1) or ballast water performance standard (regulation D-2) in accordance with regulation B-3. The PSCO, however, should only enforce this in accordance with the schedule in resolution A.1088(28);

.6 ballast water exchange is conducted at least 200 nm from the nearest land and in water at least 200 m in depth, or in cases where the ship is unable, at least 50 nm from the nearest land and in water at least 200 m in depth, or in a designated ballast water exchange area and is required to be conducted in accordance with regulation B-4;

.7 sediment is removed and disposed from spaces designated to carry ballast water in accordance with the provisions of the ship's BWMP;

.8 officers and crew shall be familiar with their duties in the implementation of ballast water management particular to the ship and ship's BWMP (regulation B-6);

.9 any exemptions from the BWM Convention shall be recorded in the BWRB (regulation A-4.4) as well as records of any accidental and exceptional discharges (regulation B-2.3) and instances where ballast water was not exchanged in accordance with the BWM Convention (regulation B-4.5);

.10 a ship is required to report accidents or defects that affect its ability to manage ballast water to the flag State and the port State (regulation E-1.7);

.11 the condition of a ship, and its equipment, systems and processes shall be maintained to conform with the BWM Convention (regulation E-1.9); and

.12 after any survey of a ship under regulation E-1.1 has been completed, no change shall be made in the structure, equipment, fittings, arrangements or material associated with the BWMP and covered by the survey without the sanction of the Administration, except the direct replacement of such equipment or fittings (regulation E-1.10).

1.3.3 The regulations of the BWM Convention contain the following exceptions to the specific compliance provisions detailed below:

.1 exception to ballast water management requirements in the case of uptake or discharge of ballast water and sediments necessary for the purpose of ensuring the safety of a ship in emergency situations or saving life at sea (regulation A-3.1);

.2 exception to ballast water management requirements under certain conditions in the case of the accidental discharge or ingress of ballast water and sediments resulting from damage to a ship or its equipment (regulation A-3.2);

.3 exception to ballast water management requirements in the case of the uptake and discharge of ballast water and sediments when being used for the purpose of avoiding or minimizing pollution incidents from the ship (regulation A-3.3);

.4 exception to the ballast water management requirements in the case of the uptake and subsequent discharge on the high seas of the same ballast water and sediments (regulation A-3.4);

.5 exception to the ballast water management requirements in the case of the discharge of ballast water and sediments from a ship at the same location where the whole of the ballast and those sediments originated and provided that no mixing with unmanaged ballast water and sediments from other areas has occurred (regulation A-3.5);

.6 exception to the ballast water management requirements in the case of the discharge of ballast water to a reception facility designed taking into account the *Guidelines for ballast water reception facilities (G5)* (regulation B-3.6); and

.7 exception to the ballast water exchange requirements in the case where the master reasonably decides that such exchange would threaten the safety or stability of the ship, its crew, or its passengers because of adverse weather, ship design or stress, equipment failure, or any other extraordinary condition (regulation B-4.4).

1.3.4 With respect to ships of non-parties to the BWM Convention, port State control officers (PSCO) of Parties should apply the same requirements to ensure that no more favourable treatment is given to such ships.

1.3.5 The BWM Convention provides for a transition between two standards of ballast water management: from the ballast water exchange standard (regulation D-1) to the ballast water performance standard (regulation D-2). Resolution A.1088(28) on *Application of the International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004* should be used by the PSCO instead of the schedules of regulation B-3 for the purpose of enforcing compliance with the ballast water performance standard.

CHAPTER 2
INSPECTIONS OF SHIPS REQUIRED TO CARRY THE BALLAST WATER MANAGEMENT (BWM) CERTIFICATE

2.1 Four-stage inspection

The PSC procedure can be described as a four-stage inspection:

.1 the first stage, the "initial inspection", should focus on documentation and ensuring that an officer has been nominated for ballast water management on board the ship and to be responsible for the BWMS, and that the officer has been trained and knows how to operate it;

.2 the second stage – the "more detailed inspection" where the operation of the BWMS is checked and the PSCO clarifies whether the BWMS has been operated adequately according to the BWMP and the self-monitored operational indicators verified during type approval procedures. Undertaking a detailed inspection is dependent on the conditions of article 9.2 of the BWM Convention;

.3 the third stage – sampling is envisaged to occur during this stage of PSC which relies on indicative analysis, to identify whether the ship is meeting the ballast water management performance standard described in regulation D-2, or whether detailed analysis is necessary to ascertain compliance; and

.4 the fourth stage, if necessary, incorporates detailed analysis to verify compliance with the D-2 standard.

2.2 Initial inspection

2.2.1 An initial inspection will, as a minimum and to the extent applicable, examine the following:

.1 check that a valid IBWMC is on board, based on article 9.1(a);

.2 check the BWMP is on board and approved by the flag State, based on regulation B-1;

.3 check the BWRB is on board and meets the requirements of the BMW Convention, based on regulation B-2;

.4 check that the details of any ballast water operations carried out are recorded in the BWRB together with any exemptions granted, based on regulation B-2 and appendix II of the BWM Convention, as well as notations of any accidental and exceptional discharges (regulation B-2.3) and instances where ballast water was not exchanged in accordance with the BWM Convention (regulation B-4.5). The BWRB should be in an approved format (which may be an electronic record system, which may be integrated into another record book or system) and should be kept on board the ship for a minimum of two years after the last entry. The officer in charge of the operation should sign each entry in the BWRB and the master should sign each completed page;

.5 in conducting the initial inspection, PSCO should conduct a visual check of the overall condition of the ship and the equipment and arrangements detailed in the IBWMC and the BWMP, including the BWMS if the use of one is required;

.6 in the case of a ship subject to the ballast water exchange standard, check that the BWRB indicates that the required exchange was undertaken, or alternatively, the ship has taken steps to meet the ballast water performance standard described in regulation D-2;

.7 check that the ship has taken steps to meet the ballast water performance standard described in regulation D-2 once required to do so by resolution A.1088(28);

.8 check that an officer has been designated to be responsible for the BWMP;

.9 check that designated officers and crew are familiar with essential BWM procedures, including the operation of BWMS; and

.10 in the case of a ship claiming an exception under regulation A-3.1 (safety of the ship or saving life), regulation A-3.2 (accidental discharge or ingress resulting from damage), regulation A-3.3 (avoiding or minimizing pollution) or regulation B-4.4 (unsafe conditions for exchange), the master should provide proof of the need for the relevant exception.

2.2.2 The performance of a ballast water management system (BWMS) is key to protecting the environment, human health, property and resources of the port State. While this performance may be verified directly by sampling the ship's ballast water (as per article 9.1(c) and *Guidelines for ballast water sampling (G2)*), both the port State and the ship may benefit from a document check to more readily establish the validity of the BWMS during the initial inspection. To this end, the PSCO may ask to check the Type Approval Certificate for the BWMS, to determine whether the BWMS is used in accordance with any limiting conditions on the Type Approval Certificate. While carriage and presentation of the Type Approval Certificate is not mandatory, the PSCO may also consult the BWMP to obtain ship-specific information on the BWMS and its use, and may refer to type-approval information shared with the Organization pursuant to the *Information reporting on type approved ballast water management systems* (resolution MEPC.228(65)).

2.2.3 If the IBWMC is valid, the approved BWMP is on board, entries in the BWRB are appropriate and the PSCO's general impressions and visual observations on board confirm a good standard of maintenance with regard to the BWM Convention, the PSCO should generally confine the initial inspection to reported deficiencies.

2.2.4 Clear grounds

2.2.4.1 When a PSCO inspects a foreign ship which is required to hold an IBWMC, and which is in a port or an offshore terminal under the jurisdiction of the port State, any such inspection should be limited to verifying that there is on board a valid certificate and other relevant documentation and the PSCO forming an impression of the overall condition of the ship, its equipment and its crew, unless there are "clear grounds" for believing that the condition of the ship or its equipment does not correspond substantially with the particulars of the certificate.

2.2.4.2 "Clear grounds" to conduct a more detailed inspection include:

.1 IBWMC is missing, not valid, or has expired;

.2 absence of a BWMP approved by the flag State;

.3 absence of a BWRB or a BWRB that does not meet the requirements of the BWM Convention;

.4 entries in the BWRB do not reflect the actual ballast water situation on board;

.5 condition of the ship or its equipment does not correspond substantially with the particulars of the IBWMC and the BWMP or has not been maintained;

.6 no officer has been designated in accordance with regulation B-1.5;

.7 information or evidence that the master or designated crew is not familiar with their duties and essential shipboard operations relating to the implementation of the ballast water management or that such operations have not been carried out;

.8 information from third parties such as a report or complaint concerning violation of the BWM Convention;

.9 if the BWMP requires the use of a BWMS evidence, or observation that the BWMS has not been used in accordance with its operational instructions;

.10 evidence or observation of unreported accidents or defects that affect the ability of the ship to manage ballast water (regulation E-1.7);

.11 evidence or observation that ballast water has been discharged other than in accordance with the regulations of the BWM Convention (regulation A-2); and

.12 the master has not provided the proof referenced in paragraph 2.2.1.10.

2.2.4.3 If the ship does not carry valid certificates, or if the PSCO, from general impressions or observations on board, has clear grounds for believing that the condition of the ship or its equipment does not correspond substantially with the particulars of the certificates or the BWM Convention, or that the master or designated crew is not familiar with, or have not implemented essential shipboard procedures, a more detailed inspection should be carried out. Where a more detailed inspection is to be carried out, the port State will take such steps to ensure the ship will not discharge ballast water until it can do so in accordance with article 9.3 of the BWM Convention (see notification requirements in paragraph 3.3 below).

2.3 More detailed inspection

2.3.1 When carrying out a more detailed inspection, the PSCO may utilize, but not be limited to, the following questions to ascertain the extent of compliance with the BWM Convention:

.1 Is the ballast water management on board the ship in accordance with the operations outlined in the ship's BWMP? In particular:

.1 Is the crew following specific operational or safety restrictions associated with safe tank entry, if needed?

.2 Is the crew managing ballast water sediments in accordance with the BWMP?

.3 Are designated officers following their duties as set out in the BWMP?

.4 Are the record-keeping requirements in accordance with the BWMP?

.2 Since the time of the survey of the ship under regulation E-1.1, has an unsanctioned change been made to the structure, equipment, fittings, arrangements or material associated with the BWMP, except the direct replacement of such equipment or fittings (regulation E-1.10)?

.3 If the BWMP requires the use of a BWMS:

.1 Is the BWMS and associated equipment in good working order, (this could include filters, pumps, and back flushing equipment)?

.2 Is the crew following safety procedures associated with operation of the BWMS?

.3 Is the treatment process fully operational (this could include, reference to the self-monitoring system of a BWMS)?

.4 Does the BWRB align with the onboard control equipment, including the self-monitoring device of the BWMS?

.5 Is the BWMS being operated according to the operational instructions?

.6 Can the designated officer demonstrate the necessary knowledge of the BWMS and how it operates?

.7 Has the BWMS been bypassed?

.8 Where required, are any needed Active Substances present in adequate supply on board the ships, and where present, are they being introduced into the BWMS?

2.3.2 The PSCO may examine any element of the ballast water system in order to check that it is working properly.

2.3.3 More detailed inspection may result in sampling.

2.4 Sampling

2.4.1 PSCO should carry out an indicative analysis first. However, the time required to conduct the indicative analysis should not unduly delay the operations, movement or departure of the ship. If the result of indicative analysis for the D-2 standard exceeds the D-2 standard by a threshold specific to the validated indicative analysis method being used as set out in the *Guidance on ballast water sampling and analysis for trial use in accordance with the BWM Convention and Guidelines (G2)* (BWM.2/Circ.42)[1], a detailed analysis can be carried out.

2.4.2 The quantity of the sampling water to be taken and location in the ship chosen should be in accordance with the *Guidelines for ballast water sampling (G2)* and associated guidance developed by the Organization. Every effort should be made to avoid any undue delays to the ship.

2.4.3 The PSCO should not delay the operation, movement or departure of the ship while waiting for the results of detailed analysis.

[1] The validation on a specific method is to be carried out through the process of review and revision of the *Guidance on sampling and analysis for trial use in accordance with the BWM Convention and Guidelines (G2)* (BWM.2/Circ.42).

2.5 Violations and control of ships

Stopping the discharge due to sampling as a control action

2.5.1 If the sampling described above leads to a result, or supports information received from another port or offshore terminal, indicating that the ship poses a threat to the environment, human health, property or resources, the Party in whose waters the ship is operating should prohibit such ship from discharging ballast water until the threat is removed (see notification requirements in paragraph 3.3 below).

Detainable deficiencies

2.5.2 If a ship has violated the BWM Convention, the PSCO may take steps to warn, detain or exclude the ship or grant such a ship permission to leave to discharge ballast water elsewhere or seek repairs. The PSCO should use professional judgment to determine whether to detain the ship until any noted deficiencies are corrected, or to permit a ship to sail with deficiencies that do not pose an unreasonable threat of harm to the marine environment, human health, property or resources (see notification requirements in paragraphs 3.3 to 3.6 below).

2.5.3 In order to assist the PSCO in the use of these guidelines, there follows a non-exhaustive list of deficiencies which are considered to be of such a serious nature that they may warrant the detention of a ship:

.1 absence of an IBWMC;

.2 absence of a BWMP;

.3 absence of a BWRB;

.4 indication that the ship or its equipment does not correspond substantially with the particulars of the IBWMC and BWMP;

.5 absence, serious deterioration or failure of proper operation of equipment required under the BWMP;

.6 the designated officers or crew are not familiar with essential ballast water management procedures including the operation of BWMS and all associated BWMS equipment;

.7 no ballast water management procedures have been implemented on board;

.8 no designated officer has been nominated;

.9 the ship has not complied with the BWMP for management and treatment of ballast water;

.10 result of non-compliance by sampling; or

.11 ballast water has been discharged other than in accordance with the regulations of the BWM Convention (regulation A-2).

Control actions

2.5.4 If a ship is detected to have violated the BWM Convention, the port State may take steps to warn, detain or exclude the ship. The port State, however, may grant such a ship permission to leave the port or offshore terminal for the purpose of discharging ballast water or proceeding to the nearest appropriate repair yard or reception facility available, provided doing so does not present a threat of harm to the environment, human health, property or resources (see notification requirements in paragraphs 3.3 to 3.6 below).

2.5.5 Port States should refrain from applying criminal sanctions or detaining the ship, based on sampling during the trial period. This does not prevent the port State from taking preventive measures to protect its environment, human health, property or resources.

2.5.6 The ship should have evidence that the ballast water management system is type approved and has been maintained and operated in accordance with the ships' Ballast Water Management Plan.

2.5.7 As an alternative to warning, detention or exclusion of the ship, the PSCO may wish to consider the following alternative measures, providing doing so does not present a threat to the environment, human health, property or resources:

.1 retention of all ballast water on board;

.2 require the ship to undertake any repairs required to the BWMS;

.3 permit the ship to proceed to exchange ballast water in a location acceptable to the port State, providing ballast water exchange is still an acceptable practice for the specific ship and such areas are established in accordance with the *Guidelines on designation of areas for ballast water exchange (G14)*;

.4 allow the ship to discharge ballast to another ship or to an appropriate shipboard or land-based reception facility; or

.5 allow the ship to manage the ballast water or a portion of it in accordance with a method acceptable to the port State.

CHAPTER 3
REPORTING REQUIREMENTS

3.1 Port State authorities should ensure that, at the completion of an inspection, the master of the ship is provided with a document showing the results of the inspection, details of any action taken by the PSCO and a list of any corrective action to be initiated by the master and/or company. Such reports should be made in accordance with the format in appendix 13 of the *Procedures for port State Control* (resolution A.1052(27), paragraph 4.1.1).

3.2 If a ship has been inspected as a result of a request for investigation from another State, the inspection report should be sent to the requesting State and the flag State (article 10.4).

3.3 In the event that an action is taken in accordance with paragraphs 2.2.4.3, 2.5.1 or 2.5.5:

.1 the port State should inform, in writing, the flag State of the ship concerned, or if this is not possible, the consul or diplomatic representative of the ship concerned, of all the circumstances in which the action was deemed necessary. In addition, the recognized organization responsible for the issue of certificates should be notified (article 11.2); and

.2 in the event that the PSCO is unable to take the intended action, or if the ship has been allowed to proceed to the next port of call, the authorities of the port State should communicate all the facts to the authorities of the country of the next appropriate port of call, to the flag State, and to the recognized organization, where appropriate (article 11.3; resolution A.1052(27), paragraph 4.1.4).

3.4 In the event of a violation of the BWM Convention, the notifications in paragraph 3.3 should be made. In addition, the ship should be notified of the violation and the report forwarded to the flag State should include any associated evidence (article 11.1).

3.5 Where, in the exercise of port State control, a Party denies a foreign ship entry to the ports or offshore terminals under its jurisdiction, whether or not as a result of information about a substandard ship, it should forthwith provide the master and flag State with reasons for the denial of entry (resolution A.1052(27), paragraph 4.1.2).

3.6 In the case of a detention, at least an initial notification should be made to the flag State as soon as practicable. If such notification is made verbally, it should be subsequently confirmed in writing. As a minimum, the notification should include details of the ship's name, the IMO number, copies of Forms A and B as set out in appendix 13 of the Procedures for port State Control, time of detention and copies of any detention order. Likewise, the recognized organizations which have issued the relevant certificates on behalf of the flag State should be notified, where appropriate. The parties above should also be notified in writing of the release of detention. As a minimum, this information should include the ship's name, the IMO number, the date and time of release and a copy of Form B as set out in appendix 13 of the *Procedures for Port State Control* (resolution A.1052(27), paragraph 4.1.3).

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ANNEX 5

RESOLUTION MEPC.254(67)

Adopted on 17 October 2014

2014 GUIDELINES ON SURVEY AND CERTIFICATION OF THE ENERGY EFFICIENCY DESIGN INDEX (EEDI)

THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

RECALLING Article 38(a) of the Convention on the International Maritime Organization concerning the functions of the Marine Environment Protection Committee conferred upon it by international conventions for the prevention and control of marine pollution from ships,

RECALLING ALSO that, at its sixty-second session, the Committee adopted, by resolution MEPC.203(62), *Amendments to the Annex of the Protocol of 1997 to amend the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto* (inclusion of regulations on energy efficiency for ships in MARPOL Annex VI),

NOTING that the amendments to MARPOL Annex VI adopted at its sixty-second session, including a new chapter 4 for regulations on energy efficiency for ships, entered into force on 1 January 2013,

NOTING ALSO that regulation 5 (Surveys) of MARPOL Annex VI, as amended, requires ships to which chapter 4 applies shall also be subject to survey and certification taking into account guidelines developed by the Organization,

NOTING FURTHER that, at its sixty-third session, the Committee adopted, by resolution MEPC.214(63), *2012 Guidelines on survey and certification of the Energy Efficiency Design Index (EEDI)*, which were further amended at its sixty-fifth session, by resolution MEPC.234(65),

RECOGNIZING that the amendments to MARPOL Annex VI requires the adoption of relevant guidelines for smooth and uniform implementation of the regulations and to provide sufficient lead time for industry to prepare,

HAVING CONSIDERED, at its sixty-seventh session, proposed *2014 Guidelines on survey and certification of the Energy Efficiency Design Index (EEDI)*,

1 ADOPTS the *2014 Guidelines on survey and certification of the Energy Efficiency Design Index (EEDI)*, as set out in the annex to the present resolution;

2 INVITES Administrations to take the annexed guidelines into account when developing and enacting national laws which give force to and implement provisions set forth in regulation 5 of MARPOL Annex VI, as amended;

3 REQUESTS the Parties to MARPOL Annex VI and other Member Governments to bring the annexed guidelines to the attention of shipowners, ship operators shipbuilders, ship designers and any other interested groups;

4 AGREES to keep these guidelines under review in light of the experience gained with their application; and

5 REVOKES the *2012 Guidelines on survey and certification of the Energy Efficiency Design Index (EEDI),* adopted by resolution MEPC.214(63), as amended by resolution MEPC.234(65).

ANNEX

2014 GUIDELINES ON SURVEY AND CERTIFICATION OF THE ENERGY EFFICIENCY DESIGN INDEX (EEDI)

Table of contents

1 GENERAL

The purpose of these guidelines is to assist verifiers of the Energy Efficiency Design Index (EEDI) of ships in conducting the survey and certification of the EEDI, in accordance with regulations 5, 6, 7, 8 and 9 of MARPOL Annex VI, and assist shipowners, shipbuilders, manufacturers and other interested parties in understanding the procedures for the survey and certification of the EEDI.

2 DEFINITIONS[1]

2.1 *Verifier* means an Administration or organization duly authorized by it, which conducts the survey and certification of the EEDI in accordance with regulations 5, 6, 7, 8 and 9 of MARPOL Annex VI and these guidelines.

2.2 *Ship of the same type* means a ship the hull form (expressed in the lines such as sheer plan and body plan), excluding additional hull features such as fins, and principal particulars of which are identical to that of the base ship.

2.3 *Tank test* means model towing tests, model self-propulsion tests and model propeller open water tests. Numerical calculations may be accepted as equivalent to model propeller open water tests or used to complement the tank tests conducted (e.g. to evaluate the effect of additional hull features such as fins, etc. on ship's performance), with the approval of the verifier.

3 APPLICATION

These guidelines should be applied to new ships for which an application for an initial survey or an additional survey specified in regulation 5 of MARPOL Annex VI has been submitted to a verifier.

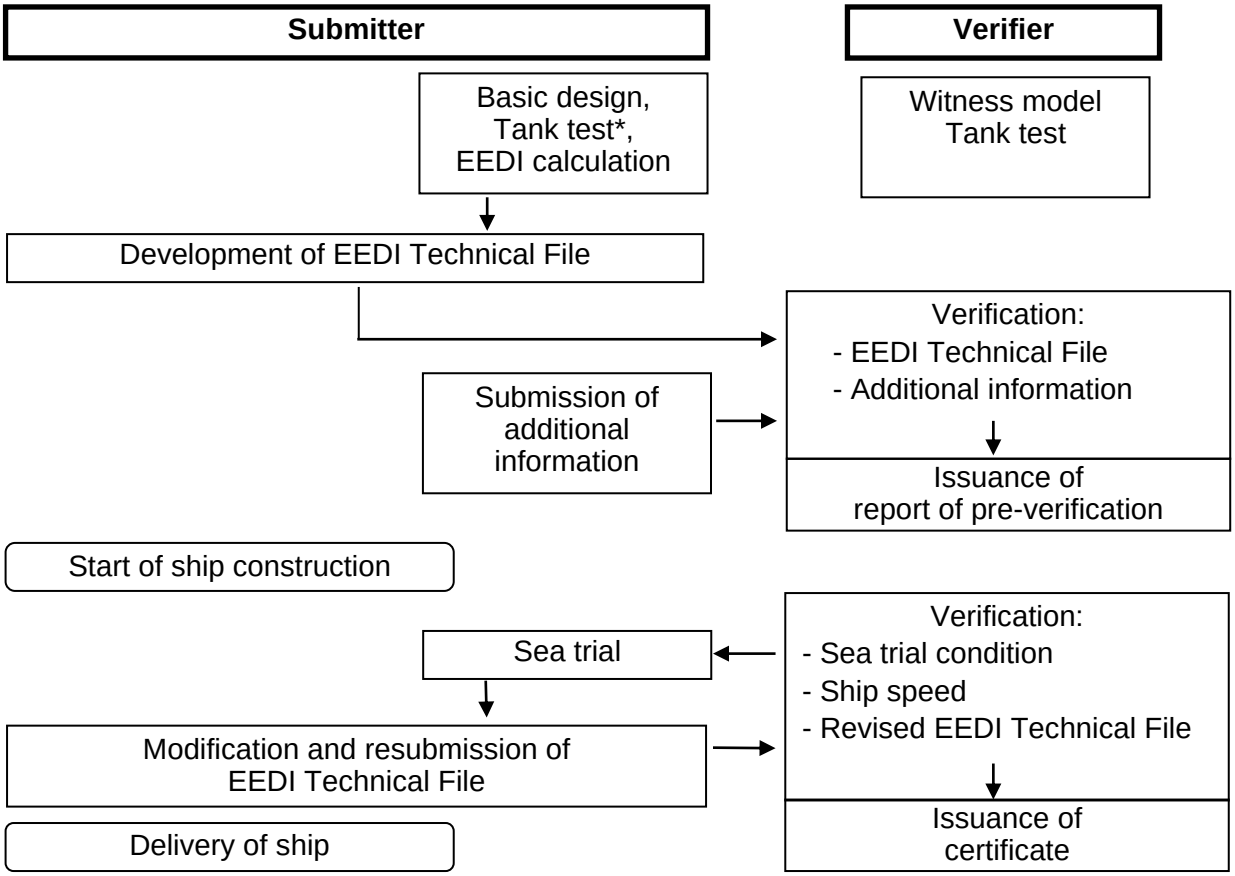
4 PROCEDURES FOR SURVEY AND CERTIFICATION

4.1 General

4.1.1 The Attained EEDI should be calculated in accordance with regulation 20 of MARPOL Annex VI and the *Guidelines on the method of calculation of the attained (EEDI) for new ships* adopted by resolution MEPC.245(66) (EEDI Calculation guidelines). Survey and certification of the EEDI should be conducted in two stages: preliminary verification at the design stage and final verification at the sea trial. The basic flow of the survey and certification process is presented in figure 1.

4.1.2 The information used in the verification process may contain confidential information of submitters which requires Intellectual Property Rights (IPR) protection. In the case where the submitter wants a non-disclosure agreement with the verifier, the additional information should be provided to the verifier upon mutually agreed terms and conditions.

[1] Other terms used in these guidelines have the same meaning as those defined in the *Guidelines on the method of calculation of the attained EEDI for new ships*.



* To be conducted by a test organization or a submitter.

Figure 1: Basic flow of survey and certification process

4.2 Preliminary verification of the attained EEDI at the design stage

4.2.1 For the preliminary verification at the design stage, an application for an initial survey and an EEDI Technical File containing the necessary information for the verification and other relevant background documents should be submitted to a verifier.

4.2.2 The EEDI Technical File should be written at least in English. The EEDI Technical File should include as a minimum, but not limited to:

.1 deadweight (DWT) or gross tonnage (GT) for passenger and ro-ro passenger ships, the maximum continuous rating (MCR) of the main and auxiliary engines, the ship speed (V_{ref}), as specified in paragraph 2.2 of the EEDI Calculation guidelines, type of fuel, the specific fuel consumption (*SFC*) of the main engine at the 75% of MCR power, the *SFC* of the auxiliary engines at the 50% MCR power, and the electric power table[2] for certain ship types, as necessary, as defined in the EEDI Calculation guidelines;

[2] Electric power table should be validated separately, taking into account guidelines set out in appendix 2 to these Guidelines.

.2 power curve(s) (kW – knot) estimated at design stage under the condition as specified in paragraph 2.2 of the EEDI Calculation guidelines, and, in the event that the sea trial is carried out in a condition other than the above condition, then also a power curve estimated under the sea trial condition;

.3 principal particulars, ship type and the relevant information to classify the ship as such a ship type, classification notations and an overview of the propulsion system and electricity supply system on board;

.4 estimation process and methodology of the power curves at design stage;

.5 description of energy saving equipment;

.6 calculated value of the attained EEDI, including the calculation summary, which should contain, at a minimum, each value of the calculation parameters and the calculation process used to determine the attained EEDI;

.7 calculated values of the attained $EEDI_{weather}$ and f_w value (not equal to 1.0), if those values are calculated, based on the EEDI Calculation guidelines; and

.8 for LNG carriers:

.1 type and outline of propulsion systems (such as direct drive diesel, diesel electric, steam turbine);

.2 LNG cargo tank capacity in m^3 and BOR as define in paragraph 2.5.6.3 of the EEDI Calculation guidelines;

.3 shaft power of the propeller shaft after transmission gear at 100% of the rated output of motor (MPP_{Motor}) and $\eta_{(i)}$ for diesel electric;

.4 maximum continuous rated power ($MCR_{SteamTurbine}$) for steam turbine; and

.5 $SFC_{SteamTurbine}$ for steam turbine, as specified in paragraph 2.5.7 of the EEDI Calculation guidelines.

A sample of an EEDI Technical File is provided in appendix 1 to these guidelines.

4.2.3 For ships equipped with dual-fuel engine(s) using LNG and fuel oil, the C_F-factor for gas (LNG) and the Specific Fuel Consumption (SFC) of gas fuel should be used by applying the following criteria as a basis for the guidance of the Administration:

.1 final decision on the primary fuel rests with the Administration;

.2 the ratio of calorific value of gas fuel (LNG) to total marine fuels (HFO/MGO), including gas fuel (LNG) at design conditions should be equal or larger than 50% in accordance with the formula below. However the Administration can accept a lower value of the percentage taking into account the intended voyages

$$\frac{V_{gas} \times \rho_{gas} \times LCV_{gas} \times K_{gas}}{\left(\sum_{i=1}^{nLiquid} V_{liquid(i)} \times \rho_{liquid(i)} \times LCV_{liquid(i)} \times K_{liquid(i)} \right) + V_{gas} \times \rho_{gas} \times LCV_{gas} \times K_{gas}} \geq 50\%$$

Whereby,

V_{gas} is the total net tank volume of gas fuel on board in m^3;
V_{liquid} is the total net tank volume of every liquid fuel on board in m^3;

ρ_{gas} is the density of gas fuel in kg/m^3;

ρ_{liquid} is the density of every liquid fuel in kg/m^3;

LCV_{gas} is the low calorific value of gas fuel in kJ/kg;

LCV_{liquid} is the low calorific value of liquid fuel in kJ/kg;

K_{gas} is the filling rate for gas fuel tanks;

K_{liquid} is the filling rate for liquid fuel tanks.

Normal density, Low Calorific Value and filling rate for tanks of different kinds of fuel are listed below.

Type of fuel	Density (kg/m^3)	Low Calorific Value (kJ/kg)	Filling rate for tanks
Diesel/Gas Oil	900	42700	0.98
Heavy Fuel Oil	991	40200	0.98
Liquefied Natural Gas (LNG)	450	48000	0.95*

* subject to verification of tank filling limit

.3 in case the ship is not fully equipped with dual-fuel engines, the CF-factor for gas (LNG) should apply only for those installed engines that are of dual-fuel type and sufficient gas fuel supply should be available for such engines; and

.4 LNG fuelling solutions with exchangeable (specialized) LNG tank-containers should also fall under the terms of LNG as primary fuel.

4.2.4 The *SFC* of the main and auxiliary engines should be quoted from the approved NO_x Technical File and should be corrected to the value corresponding to the ISO standard reference conditions using the standard lower calorific value of the fuel oil (42,700 kJ/kg), referring to ISO 15550:2002 and ISO 3046-1:2002. For the confirmation of the *SFC*, a copy of the approved NO_x Technical File and documented summary of the correction calculations should be submitted to the verifier. In cases where the NO_x Technical File has not been approved at the time of the application for initial survey, the test reports provided by manufacturers should be used. In this case, at the time of the sea trial verification, a copy of

the approved NO_x Technical File and documented summary of the correction calculations should be submitted to the verifier. In the case that gas fuel is determined as primary fuel in accordance with paragraph 4.2.3 and that installed engine(s) have no approved NO_x Technical File tested in gas mode, the *SFC* of gas mode should be submitted by the manufacturer and confirmed by the verifier.

> **Note:** *SFC* in the NO_x Technical File are the values of a parent engine, and the use of such value of *SFC* for the EEDI calculation for member engines may have the following technical issues for further consideration:
>
> .1 the definition of "member engines" given in the NO_x Technical File is broad and specification of engines belonging to the same group/family may vary; and
>
> .2 the rate of NO_x emission of the parent engine is the highest in the group/family – i.e. CO_2 emission, which is in the trade-off relationship with NO_x emission, can be lower than the other engines in the group/family.

4.2.5 For ships to which regulation 21 of MARPOL Annex VI applies, the power curves used for the preliminary verification at the design stage should be based on reliable results of tank tests. A tank test for an individual ship may be omitted based on technical justifications such as availability of the results of tank tests for ships of the same type. In addition, the omission of tank tests is acceptable for a ship for which sea trials will be carried under the condition as specified in paragraph 2.2 of the EEDI Calculation guidelines, upon agreement of the shipowner and shipbuilder and with the approval of the verifier. For ensuring the quality of tank tests, the ITTC quality system should be taken into account. Model tank tests should be witnessed by the verifier.

> **Note:** It would be desirable in the future that an organization conducting a tank test be authorized.

4.2.6 The verifier may request further information from the submitter, in addition to that contained in the EEDI Technical File, as necessary, to examine the calculation process of the attained EEDI. For the estimation of the ship speed at the design stage much depends on each shipbuilder's experience, and it may not be practicable for any person/organization other than the shipbuilder to fully examine the technical aspects of experience-based parameters, such as the roughness coefficient and wake scaling coefficient. Therefore, the preliminary verification should focus on the calculation process of the attained EEDI to ensure that it is technically sound and reasonable and follows regulation 20 of MARPOL Annex VI and the EEDI Calculation guidelines.

> **Note 1:** A possible way forward for more robust verification is to establish a standard methodology of deriving the ship speed from the outcome of tank tests, by setting standard values for experience-based correction factors such as roughness coefficient and wake scaling coefficient. In this way, ship-by-ship performance comparisons could be made more objectively by excluding the possibility of arbitrary setting of experience-based parameters. If such standardization is sought, this would have an implication on how the ship speed adjustment based on sea trial results should be conducted, in accordance with paragraph 4.3.8 of these guidelines.
>
> **Note 2:** A joint industry standard to support the method and role of the verifier is expected to be developed.

4.2.7 Additional information that the verifier may request the submitter to provide includes, but is not limited to:

.1 descriptions of a tank test facility; this should include the name of the facility, the particulars of tanks and towing equipment, and the records of calibration of each monitoring equipment;

.2 lines of a model ship and an actual ship for the verification of the appropriateness of the tank test; the lines (sheer plan, body plan and half-breadth plan) should be detailed enough to demonstrate the similarity between the model ship and the actual ship;

.3 lightweight of the ship and displacement table for the verification of the deadweight;

.4 detailed report on the method and results of the tank test; this should include at least the tank test results at sea trial condition and under the condition as specified in paragraph 2.2 of the EEDI Calculation guidelines;

.5 detailed calculation process of the ship speed, which should include the basis for the estimation of experience-based parameters such as roughness coefficient, and wake scaling coefficient;

.6 reasons for exempting a tank test, if applicable; this should include lines and tank test results of ships of the same type, and the comparison of the principal particulars of such ships and the ship in question. Appropriate technical justification should be provided, explaining why the tank test is unnecessary; and

.7 for LNG carriers, detailed calculation process of P_{AE} and $SFC_{SteamTurbine}$.

4.2.8 The verifier should issue the report on the Preliminary Verification of the EEDI after it has verified the attained EEDI at the design stage, in accordance with paragraphs 4.1 and 4.2 of these guidelines.

4.3 Final verification of the attained EEDI at sea trial

4.3.1 Sea trial conditions should be set as the conditions specified in paragraph 2.2 of the EEDI Calculation guidelines, if possible.

4.3.2 Prior to the sea trial, the following documents should be submitted to the verifier: a description of the test procedure to be used for the speed trial, the final displacement table and the measured lightweight, or a copy of the survey report of deadweight, as well as a copy of the NO_x Technical File, as necessary. The test procedure should include, as a minimum, descriptions of all necessary items to be measured and corresponding measurement methods to be used for developing power curves under the sea trial condition.

4.3.3 The verifier should attend the sea trial and confirm:

.1 propulsion and power supply system, particulars of the engines or steam turbines, and other relevant items described in the EEDI Technical File;

.2 draught and trim;

.3 sea conditions;

.4 ship speed; and

.5 shaft power and RPM.

4.3.4 Draught and trim should be confirmed by the draught measurements taken prior to the sea trial. The draught and trim should be as close as practical to those at the assumed conditions used for estimating the power curves.

4.3.5 Sea conditions should be measured in accordance with ITTC Recommended Procedure 7.5-04-01-01.1 Speed and Power Trials Part 1; 2012 revision 1 or ISO 15016:2002[2], as amended.

4.3.6 Ship speed should be measured in accordance with ITTC Recommended Procedure 7.5-04-01-01 Speed and Power Trials Part 1; 2012 revision 1 or ISO 15016:2002[2], as amended, and at more than two points the range of which includes the power of the main engine as specified in paragraph 2.5 of the EEDI Calculation guidelines.

4.3.7 The main engine output, shaft power of propeller shaft (for LNG carriers having diesel electric propulsion system) or steam turbine output (for LNG carrier having steam turbine propulsion system) should be measured by shaft power meter or a method which the engine manufacturer recommends and the verifier approves. Other methods may be acceptable upon agreement of the shipowner and shipbuilder and with the approval of the verifier.

4.3.8 The submitter should develop power curves based on the measured ship speed and the measured output of the main engine at sea trial. For the development of the power curves, the submitter should calibrate the measured ship speed, if necessary, by taking into account the effects of wind, tide, waves, shallow water, displacement, water temperature and water density in accordance with ISO 15016:2002[3], as amended. Upon agreement with the shipowner, the submitter should submit a report on the speed trials, including details of the power curve development, to the verifier for verification.

4.3.9 The submitter should compare the power curves obtained as a result of the sea trial and the estimated power curves at the design stage. In case differences are observed, the attained EEDI should be recalculated, as necessary, in accordance with the following:

.1 for ships for which a sea trial is conducted under the condition as specified in paragraph 2.2 of the EEDI Calculation guidelines: the attained EEDI should be recalculated using the measured ship speed at sea trial at the power of the main engine as specified in paragraph 2.5 of the EEDI Calculation guidelines; and

.2 for ships for which a sea trial cannot be conducted under the conditions as specified in paragraph 2.2 of the EEDI Calculation guidelines: if the measured ship speed at the power of the main engine as specified in paragraph 2.5 of the EEDI Calculation guidelines at the sea trial conditions is different from the expected ship speed on the power curve at the corresponding condition, the shipbuilder should recalculate the attained EEDI by adjusting the ship speed under the conditions as specified in paragraph 2.2 of the EEDI Calculation guidelines by an appropriate correction method that is agreed by the verifier.

[3] ITTC Recommended Procedure 7.5-04-01-01 is considered as preferable standard available from URL at ITTC.SNAME.ORG. Revised version of ISO 15016 should be available by early 2014.

An example of a possible method for speed adjustment is given in figure 2.

> **Note:** Further consideration would be necessary for the speed adjustment methodology in paragraph 4.3.9.2 of these guidelines. One of the concerns relates to a possible situation where the power curve for sea trial condition is estimated in an excessively conservative manner (i.e. power curve is shifted in a leftward direction) with the intention to get an upward adjustment of the ship speed by making the measured ship speed at sea trial easily exceed the lower-estimated speed for sea trial condition at design stage.

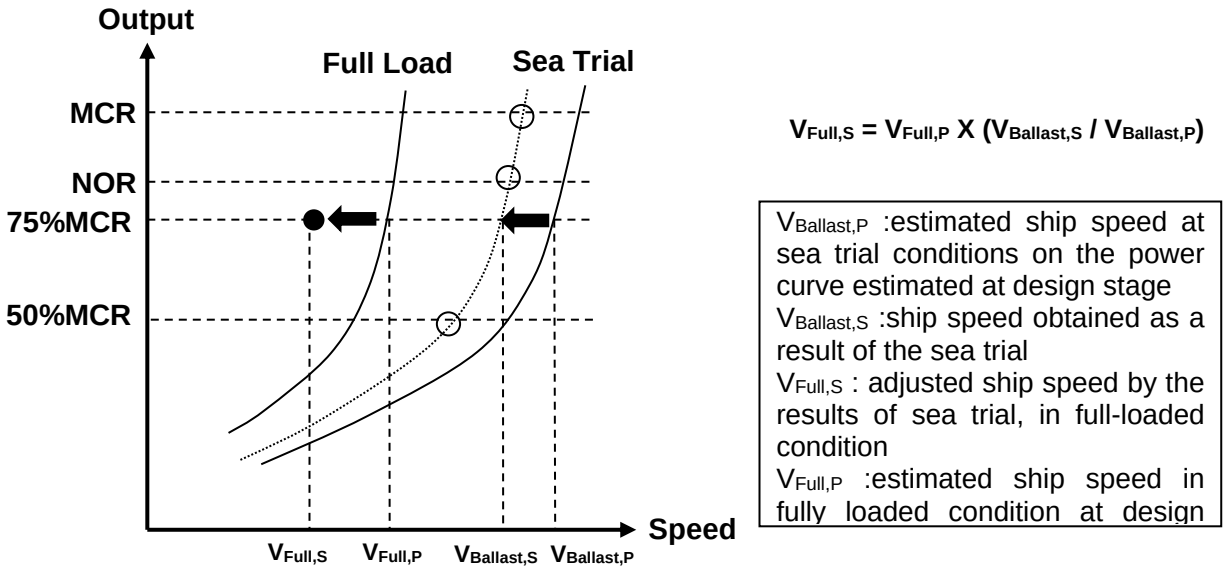


Figure 2: An example of possible ship speed adjustment

4.3.10 In cases where the finally determined deadweight/gross tonnage differs from the designed deadweight/gross tonnage used in the EEDI calculation during the preliminary verification, the submitter should recalculate the attained EEDI using the finally determined deadweight/gross tonnage. The finally determined gross tonnage should be confirmed in the Tonnage Certificate of the ship.

4.3.11 The electrical efficiency $\eta_{(i)}$ should be taken as 91.3% for the purpose of calculating the attained EEDI. Alternatively, if a value of more than 91.3% is to be applied, $\eta_{(i)}$ should be obtained by measurement and verified by a method approved by the verifier.

4.3.12 In case where the attained EEDI is calculated at the preliminary verification by using *SFC* based on the manufacturer's test report, due to the non-availability at that time of the approved NO_x Technical File, the EEDI should be recalculated by using *SFC* in the approved NO_x Technical File. Also, for steam turbines, the EEDI should be recalculated by using *SFC* confirmed by the Administration or an organization recognized by the Administration at the sea trial.

4.3.13 The EEDI Technical File should be revised, as necessary, by taking into account the results of sea trials. Such revision should include, as applicable, the adjusted power curve based on the results of sea trials (namely, modified ship speed under the condition as specified in paragraph 2.2 of the EEDI Calculation guidelines), the finally determined deadweight/gross tonnage, η for LNG carriers having diesel electric propulsion system and

SFC described in the approved NO_x Technical File, and the recalculated attained EEDI based on these modifications.

4.3.14 The EEDI Technical File, if revised, should be submitted to the verifier for confirmation that the (revised) attained EEDI is calculated in accordance with regulation 20 of MARPOL Annex VI and the EEDI Calculation guidelines.

4.4 Verification of the attained EEDI in case of major conversion

4.4.1 In cases of a major conversion of a ship, the shipowner should submit to a verifier an application for an Additional Survey with the EEDI Technical File duly revised, based on the conversion made and other relevant background documents.

4.4.2 The background documents should include as a minimum, but are not limited to:

.1 details of the conversion;

.2 EEDI parameters changed after the conversion and the technical justifications for each respective parameter;

.3 reasons for other changes made in the EEDI Technical File, if any; and

.4 calculated value of the attained EEDI with the calculation summary, which should contain, as a minimum, each value of the calculation parameters and the calculation process used to determine the attained EEDI after the conversion.

4.4.3 The verifier should review the revised EEDI Technical File and other documents submitted and verify the calculation process of the attained EEDI to ensure that it is technically sound and reasonable and follows regulation 20 of MARPOL Annex VI and the EEDI Calculation guidelines.

4.4.4 For verification of the attained EEDI after a conversion, speed trials of the ship are required, as necessary.

APPENDIX 1

SAMPLE OF EEDI TECHNICAL FILE

1 Data

1.1 General information

Shipbuilder	JAPAN Shipbuilding Company
Hull no.	12345
IMO no.	94111XX
Ship type	Bulk carrier

1.2 Principal particulars

Length overall	250.0 m
Length between perpendiculars	240.0 m
Breadth, moulded	40.0 m
Depth, moulded	20.0 m
Summer load line draught, moulded	14.0 m
Deadweight at summer load line draught	150,000 tons

1.3 Main engine

Manufacturer	JAPAN Heavy Industries Ltd.
Type	6J70A
Maximum continuous rating (MCR)	15,000 kW x 80 rpm
SFC at 75% MCR	165.0 g/kWh
Number of set	1
Fuel type	Diesel Oil

1.4 Auxiliary engine

Manufacturer	JAPAN Diesel Ltd.
Type	5J-200
Maximum continuous rating (MCR)	600 kW x 900 rpm
SFC at 50% MCR	220.0 g/kWh
Number of set	3
Fuel type	Diesel Oil

1.5 Ship speed

Ship speed in deep water at summer load line draught at 75% of MCR	14.25 knots

2 Power curves

The power curves estimated at the design stage and modified after the speed trials are shown in figure 2.1.

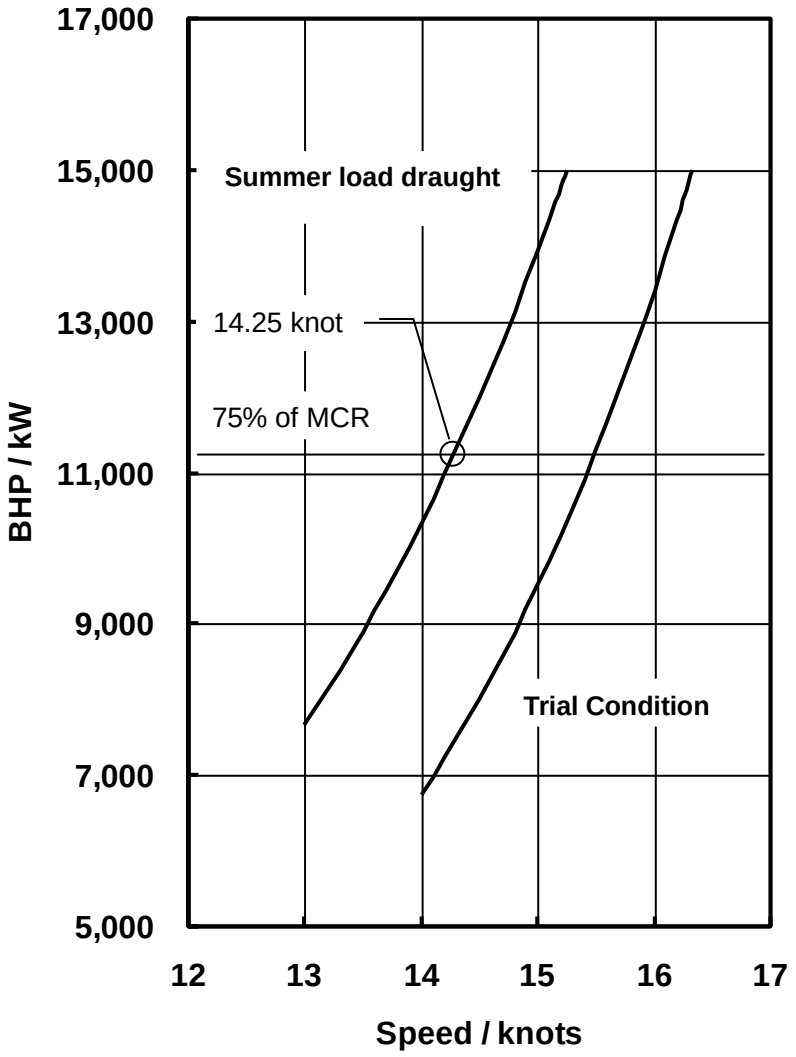


Figure 2.1: Power curves

3 Overview of propulsion system and electric power supply system

3.1 Propulsion system

3.1.1 Main engine
Refer to paragraph 1.3 of this appendix.

3.1.2 Propeller

Type	Fixed pitch propeller
Diameter	7.0 m
Number of blades	4
Number of set	1

3.2 Electric power supply system

3.2.1 Auxiliary engines
Refer to paragraph 1.4 of this appendix.

3.2.2 Main generators

Manufacturer	JAPAN Electric
Rated output	560 kW (700 kVA) x 900 rpm
Voltage	AC 450 V
Number of set	3

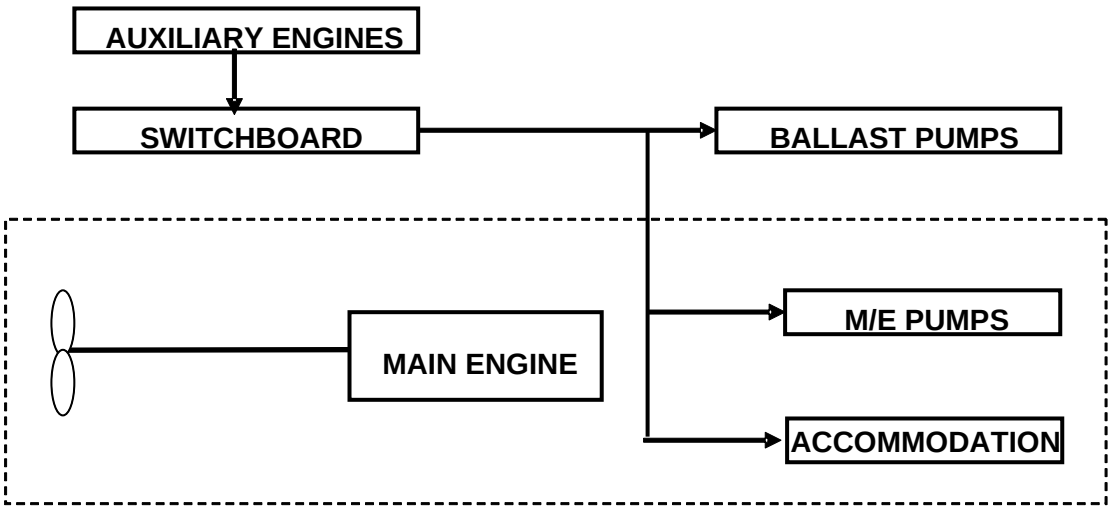


Figure 3.1: Schematic figure of propulsion and electric power supply system

4 Estimation process of power curves at design stage

Power curves are estimated based on model test results. The flow of the estimation process is shown below.

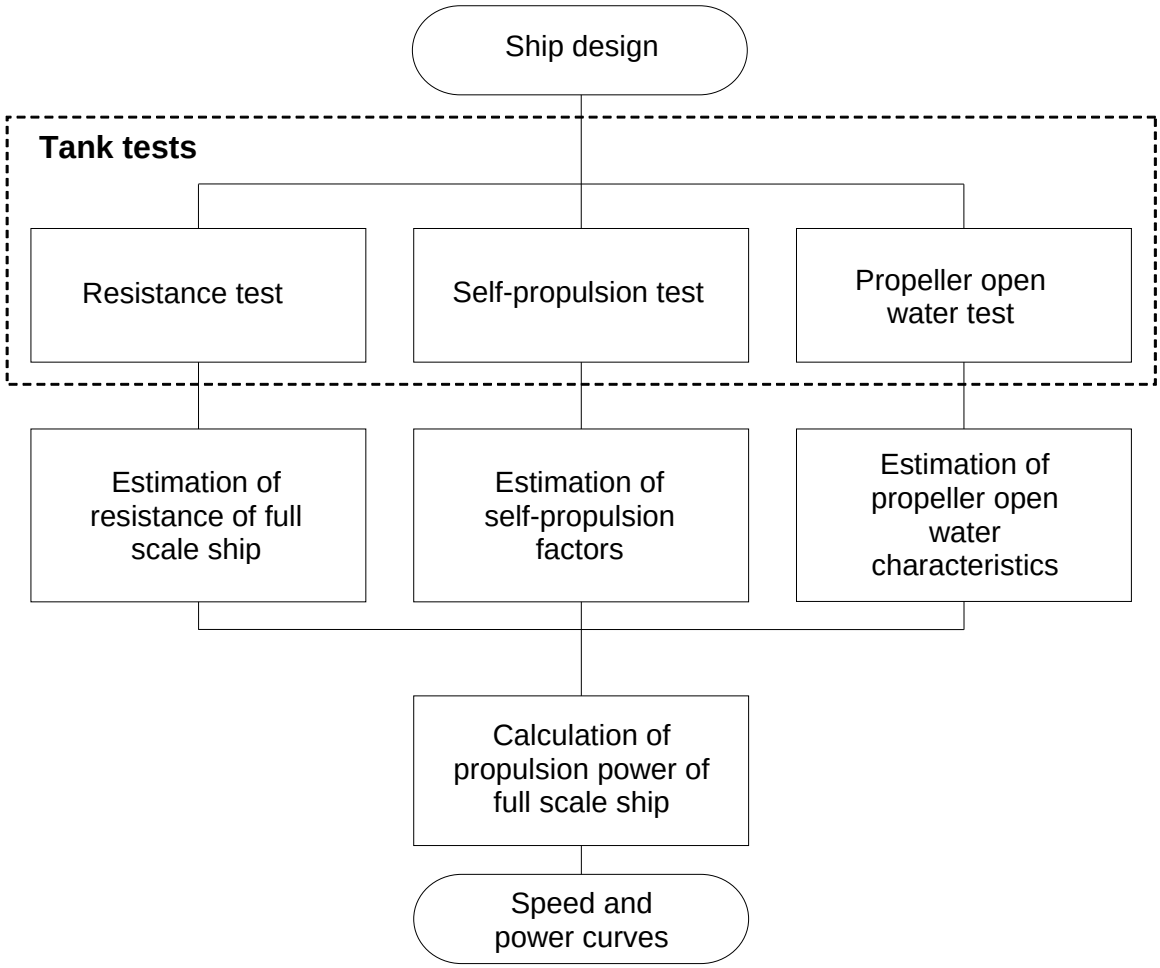


Figure 4.1: Flow-chart of process for estimating power curves

5 Description of energy saving equipment

5.1 Energy saving equipment the effects of which are expressed as $P_{AEeff(i)}$ and/or $P_{eff(i)}$ in the EEDI calculation formula

N/A

5.2 Other energy saving equipment

(Example)

5.2.1 Rudder fins

5.2.2 Propeller boss cap fins

……
(Specifications, schematic figures and/or photos, etc., for each piece of equipment or device should be indicated. Alternatively, attachment of a commercial catalogue may be acceptable.)

6 Calculated value of attained EEDI

6.1 Basic data

Type of ship	Capacity DWT	Speed V_{ref} (knots)
Bulk Carrier	150,000	14.25

6.2 Main engine

MCR_{ME} (kW)	Shaft gen.	P_{ME} (kW)	Type of fuel	C_{FME}	SFC_{ME} (g/kWh)
15,000	N/A	11,250	Diesel Oil	3.206	165.0

6.3 Auxiliary engines

P_{AE} (kW)	Type of fuel	C_{FAE}	SFC_{AE} (g/kWh)
625	Diesel Oil	3.206	220.0

6.4 Ice class

N/A

6.5 Innovative electrical energy efficient technology

N/A

6.6 Innovative mechanical energy efficient technology

N/A

6.7 Cubic capacity correction factor

N/A

6.8 Calculated value of attained EEDI

$$EEDI = \frac{\left(\prod_{j=1}^{M} f_j\right)\left(\sum_{i=1}^{nME} P_{ME(i)} \cdot C_{FME(i)} \cdot SFC_{ME(i)}\right) + \left(P_{AE} \cdot C_{FAE} \cdot SFC_{AE}\right)}{f_i \cdot f_c \cdot Capacity \cdot f_w \cdot V_{ref}}$$

$$+ \frac{\left\{\left(\prod_{j=1}^{M} f_j \cdot \sum_{i=1}^{nPTI} P_{PTI(i)} - \sum_{i=1}^{neff} f_{eff(i)} \cdot P_{AEeff(i)}\right) C_{FAE} \cdot SFC_{AE}\right\} - \left(\sum_{i=1}^{neff} f_{eff(i)} \cdot P_{eff(i)} \cdot C_{FME} \cdot SFC_{ME}\right)}{f_i \cdot f_c \cdot Capacity \cdot f_w \cdot V_{ref}}$$

$$= \frac{1 \times (11250 \times 3.206 \times 165.0) + (625 \times 3.206 \times 220.0) + 0 - 0}{1 \cdot 1 \cdot 150000 \cdot 1 \cdot 14.25}$$

$$= 2.99 \quad (\mathrm{g - CO_2/ton \cdot mile})$$

attained EEDI: 2.99 g-CO_2/ton mile

7 Calculated value of attained $EEDI_{weather}$

7.1 Representative sea conditions

	Mean wind speed	Mean wind direction	Significant wave height	Mean wave period	Mean wave direction
BF6	12.6 (m/s)	0 (deg.)*	3.0 (m)	6.7 (s)	0 (deg.)*

* Heading direction of wind/wave in relation to the ship's heading, i.e. 0 (deg.) means the ship is heading directly into the wind.

7.2 Calculated weather factor, f_w

f_w	0.900

7.3 Calculated value of attained $EEDI_{weather}$

attained $EEDI_{weather}$: 3.32 g-CO_2/ton mile

APPENDIX 2

GUIDELINES FOR VALIDATION OF ELECTRIC POWER TABLES FOR EEDI (EPT-EEDI)

1 INTRODUCTION

The purpose of these guidelines is to assist recognized organizations in the validation of Electric Power Tables (EPT) for the calculation of the Energy Efficiency Design Index (EEDI) for ships. As such, these guidelines support the implementation of the EEDI Calculation guidelines and the *Guidelines on survey and certification of the Energy Efficiency Design Index (EEDI)*. These guidelines will also assist shipowners, shipbuilders, ship designers and manufacturers in relation to aspects of the development of more energy efficient ships and also in understanding the procedures for the EPT-EEDI validation.

2 OBJECTIVES

These guidelines provide a framework for the uniform application of the EPT-EEDI validation process for ships for which required auxiliary engine power is calculated under paragraph 2.5.6.4 of the EEDI Calculation guidelines.

3 DEFINITIONS

3.1 *Applicant* means an organization, primarily a shipbuilder or a ship designer, which requests the EPT-EEDI validation in accordance with these guidelines.

3.2 *Validator* means a recognized organization which conducts the EPT-EEDI validation in accordance with these guidelines.

3.3 *Validation* for the purpose of these guidelines means review of submitted documents and survey during construction and sea trials.

3.4 *Standard EPT-EEDI-Form* refers to the layout given in appendix 3, containing the EPT-EEDI results that will be the subject of validation. Other supporting documents submitted for this purpose will be used as reference only and will not be subject to validation.

3.5 P_{AE} herein is defined as per the definition in paragraph 2.5.6 of the EEDI Calculation guidelines.

3.6 *Ship service and engine-room loads* refer to all the load groups which are needed for the hull, deck, navigation and safety services, propulsion and auxiliary engine services, engine-room ventilation and auxiliaries and ship's general services.

3.7 *Diversity factor* is the ratio of the "total installed load power" and the "actual load power" for continuous loads and intermittent loads. This factor is equivalent to the product of service factors for load, duty and time.

4 APPLICATION

4.1 These guidelines are applicable to ships as stipulated in paragraph 2.5.6.4 of the EEDI Calculation guidelines.

4.2 These guidelines should be applied for new ships for which an application for an EPT-EEDI validation has been submitted to a validator.

4.3 The steps of the validation process include:

.1 review of documents during the design stage

.1 check if all relevant loads are listed in the EPT;

.2 check if reasonable service factors are used; and

.3 check the correctness of the P_{AE} calculation based on the data given in the EPT.

.2 survey of installed systems and components during construction stage

.1 check if a randomly selected set of installed systems and components are correctly listed with their characteristics in the EPT.

.3 survey of sea trials

.1 check if selected units/loads specified in EPT are observed.

5 SUPPORTING DOCUMENTS

5.1 The applicant should provide as a minimum the ship electric balance load analysis.

5.2 Such information may contain shipbuilders' confidential information. Therefore, after the validation, the validator should return all or part of such information to the applicant at the applicant's request.

5.3 A special EEDI condition during sea trials may be needed and defined for each ship and included in the sea trial schedule. For this condition, a special column should be inserted into the EPT.

6 PROCEDURES FOR VALIDATION

6.1 General

P_{AE} should be calculated in accordance with the EPT-EEDI Calculation guidelines. EPT-EEDI validation should be conducted in two stages: preliminary validation at the design stage and final validation during sea trials. The validation process is presented in figure 1.

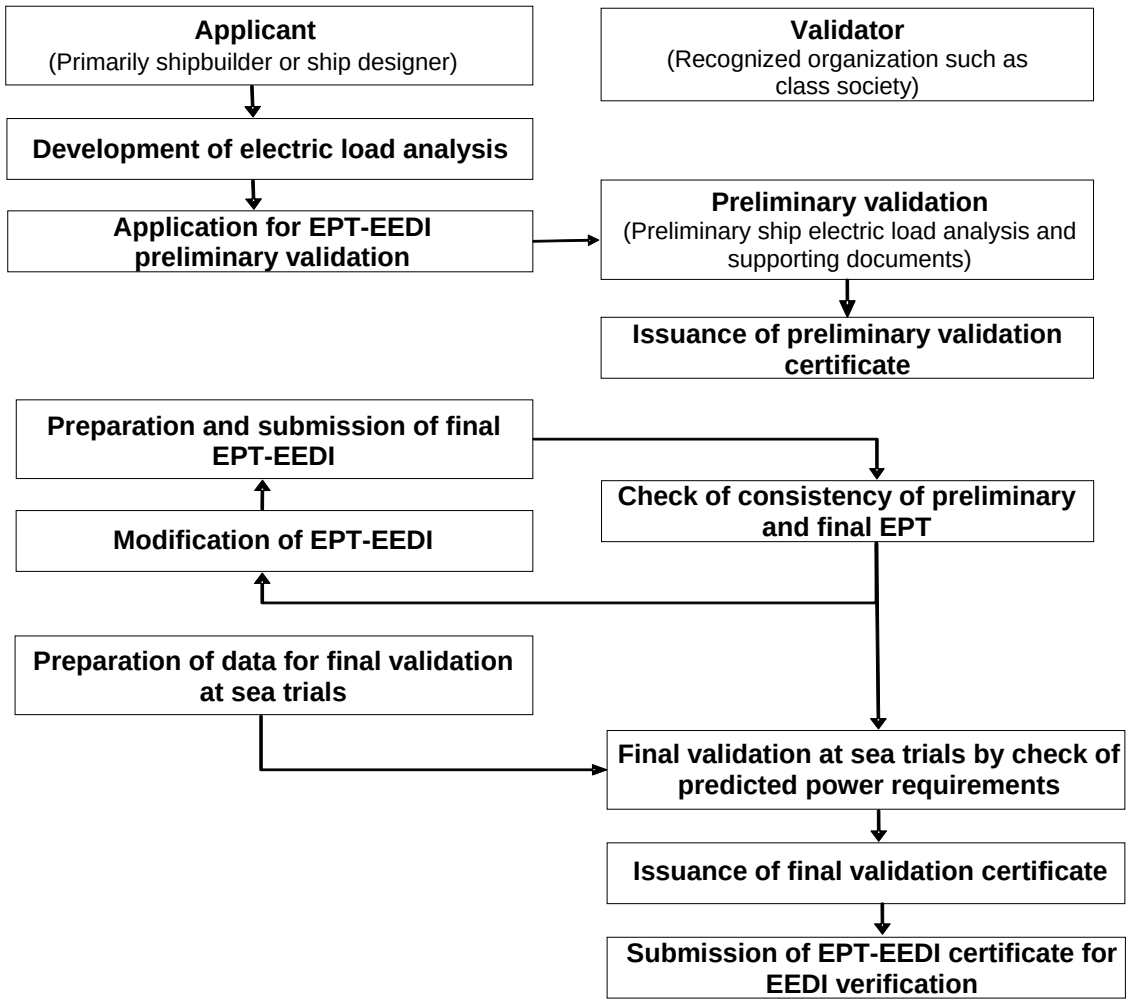


Figure 1: Basic flow of EPT-EEDI validation process

6.2 Preliminary validation at the design stage

6.2.1 For the preliminary validation at the design stage, the applicant should submit to a validator an application for the validation of EPT-EEDI, inclusive of the EPT-EEDI Form, and all the relevant and necessary information for the validation as supporting documents.

6.2.2 The applicant should supply as a minimum the supporting data and information, as specified in appendix A (to be developed).

6.2.3 The validator may request from the applicant additional information to that contained in these guidelines, as necessary, to enable the validator to examine the calculation process of the EPT-EEDI. The estimation of the ship EPT-EEDI at the design stage depends on each applicant's experience, and it may not be practicable to fully examine the technical aspects and details of each machinery component. Therefore, the preliminary validation should focus on the calculation process of the EPT-EEDI that should follow best marine practices.

> **Note:** A possible way forward for more robust validation is to establish a standard methodology of deriving the ship EPT by setting standard formats as agreed and used by industry.

6.3 Final validation

6.3.1 The final validation process should as a minimum should include a check of the ship electric load analysis to ensure that all electric consumers are listed; their specific data and the calculations in the power table itself are correct and are supported by sea trial results. If necessary, additional information has to be requested.

6.3.2 For the final validation, the applicant should revise the EPT-EEDI Form and supporting documents as necessary, by taking into account the characteristics of the machinery and other electrical loads actually installed on board the ship. The EEDI condition at sea trials should be defined and the expected power requirements in these conditions documented in the EPT. Any changes within the EPT from design stage to construction stage should be highlighted by the shipyard.

6.3.3 The preparation for the final validation includes a desk top check comprising:

.1 consistency of preliminary and final EPT;

.2 changes of service factors (compared to the preliminary validation);

.3 all electric consumers are listed;

.4 their specific data and the calculations in the power table itself are correct; and

.5 in case of doubt, component specification data is checked in addition.

6.3.4 A survey prior to sea trials is performed to ensure that machinery characteristics and data as well as other electric loads comply with those recorded in the supporting documents. This survey does not cover the complete installation but selects randomly a number of samples.

6.3.5 For the purpose of sea trial validation, the surveyor will check the data of selected systems and/or components given in the special column added to the EPT for this purpose or the predicted overall value of electric load by means of practicable measurements with the installed measurement devices.

7 ISSUANCE OF THE EPT-EEDI STATEMENT OF VALIDATION

7.1 The validator should stamp the EPT-EEDI Form as "Noted" having validated the EPT-EEDI in the preliminary validation stage, in accordance with these guidelines.

7.2 The validator should stamp the EPT-EEDI Form as "Endorsed" having validated the final EPT-EEDI in the final validation stage in accordance with these guidelines.

APPENDIX 3

ELECTRIC POWER TABLE FORM FOR ENERGY EFFICIENCY DESIGN INDEX (EPT-EEDI FORM) AND STATEMENT OF VALIDATION

Ship ID:
IMO no.: _____
Ship's name: _____
Shipyard: _____
Hull no.: _____

Applicant:

Name: _____
Address: _____
_____

Validation stage:

☐ Preliminary validation

☐ Final validation

Summary results of EPT-EEDI

Load group	Seagoing condition EEDI Calculation guidelines		Remarks
	Continuous load (kW)	Intermittent load (kW)	
Ship service and engine-room loads			
Accommodation and cargo loads			
Total installed load			
Diversity factor			
Normal seagoing load			
Weighted average efficiency of generators			
P_{AE}			

Supporting documents

Title	ID or remarks

Validator details:
Organization: _____
Address: _____
_____

This is to certify that the above-mentioned electrical loads and supporting documents have been reviewed in accordance with EPT-EEDI Validation guidelines and the review shows a reasonable confidence for use of the above P_{AE} in EEDI calculations.

Date of review: _____ Statement of validation no. _____

This statement is valid on condition that the electric power characteristics of the ship do not change.

Signature of Validator

_____
Printed name:

***

ANNEX 6

RESOLUTION MEPC.255(67)

Adopted on 17 October 2014

AMENDMENTS TO THE 2013 INTERIM GUIDELINES FOR DETERMINING MINIMUM PROPULSION POWER TO MAINTAIN THE MANOEUVRABILITY OF SHIPS IN ADVERSE CONDITIONS (RESOLUTION MEPC.232(65))

THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

RECALLING Article 38(a) of the Convention on the International Maritime Organization concerning the functions of the Marine Environment Protection Committee conferred upon it by international conventions for the prevention and control of marine pollution from ships,

RECALLING ALSO that, at its sixty-second session, the Committee adopted, by resolution MEPC.203(62), Amendments to the annex of the Protocol of 1997 to amend the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto (inclusion of regulations on energy efficiency for ships in MARPOL Annex VI),

NOTING that the amendments to MARPOL Annex VI adopted at its sixty-second session by resolution MEPC.203(62), including a new chapter 4 for regulations on energy efficiency for ships, entered into force on 1 January 2013,

NOTING ALSO that regulation 21.5 of MARPOL Annex VI, as amended, requires that the installed propulsion power shall not be less than the propulsion power needed to maintain the manoeuvrability of the ship under adverse conditions as defined in the guidelines to be developed by the Organization,

NOTING FURTHER that, at its sixty-fifth session, the Committee adopted, by resolution MEPC.232(65), the *2013 Interim guidelines for determining minimum propulsion power to maintain the manoeuvrability of ships in adverse conditions* (the interim guidelines),

RECOGNIZING that the amendments to MARPOL Annex VI require the adoption of relevant guidelines for the smooth and uniform implementation of the regulations and to provide sufficient lead time for industry to prepare,

HAVING CONSIDERED, at its sixty-seventh session, proposed amendments to the interim guidelines,

1 ADOPTS amendments to the *2013 Interim guidelines for determining minimum propulsion power to maintain the manoeuvrability of ships in adverse conditions*, as set out in the annex to the present resolution;

2 INVITES Administrations to take the aforementioned amendments into account when developing and enacting national laws which give force to and implement provisions set forth in regulation 21.5 of MARPOL Annex VI, as amended;

3 REQUESTS the Parties to MARPOL Annex VI and other Member Governments to bring the amendments to the attention of shipowners, ship operators, shipbuilders, ship designers and any other interested groups;

4 AGREES to keep the interim guidelines, as amended, under review, in light of experience gained with their application.

ANNEX

AMENDMENTS TO THE 2013 INTERIM GUIDELINES FOR DETERMINING MINIMUM PROPULSION POWER TO MAINTAIN THE MANOEUVRABILITY OF SHIPS IN ADVERSE CONDITIONS (RESOLUTION MEPC.232(65))

1 The footnote related to paragraph 2 "Applicability" is replaced with the following:

"* These interim guidelines are applied to ships required to comply with regulations on Energy Efficiency for Ships according to regulation 21 of MARPOL Annex VI during Phase 0 and Phase 1 (i.e. for those ship types as in table 1 of appendix with the size of equal or more than 20,000 DWT)."

2 The title of the appendix is replaced with the following:

"ASSESSMENT PROCEDURES TO MAINTAIN THE MANOEUVRABILITY UNDER ADVERSE CONDITIONS, APPLICABLE DURING PHASE 0 AND PHASE 1 OF THE EEDI IMPLEMENTATION"

3 Paragraph 1.1 of the appendix is replaced with the following:

"1.1 The procedures as described below are applicable during Phase 0 and Phase 1 of the EEDI implementation as defined in regulation 21 of MARPOL Annex VI (see also paragraph 0 – Purpose of these interim guidelines)."

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ANNEX 9

RESOLUTION MEPC.258(67)

Adopted on 17 October 2014

AMENDMENTS TO THE ANNEX OF THE PROTOCOL OF 1997 TO AMEND THE INTERNATIONAL CONVENTION FOR THE PREVENTION OF POLLUTION FROM SHIPS, 1973, AS MODIFIED BY THE PROTOCOL OF 1978 RELATING THERETO

Amendments to MARPOL Annex VI

(Amendments to regulations 2 and 13 and the Supplement to the IAPP Certificate)

THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

RECALLING Article 38(a) of the Convention on the International Maritime Organization concerning the functions of the Marine Environment Protection Committee conferred upon it by international conventions for the prevention and control of marine pollution from ships,

NOTING article 16 of the International Convention for the Prevention of Pollution from Ships, 1973 ("1973 Convention"), article VI of the Protocol of 1978 relating to the International Convention for the Prevention of Pollution from Ships, 1973 ("1978 Protocol") and article 4 of the Protocol of 1997 to amend the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto ("1997 Protocol"), which together specify the amendment procedure of the 1997 Protocol and confer upon the appropriate body of the Organization the function of considering and adopting amendments to the 1973 Convention, as modified by the 1978 and 1997 Protocols,

NOTING ALSO that, by the 1997 Protocol, Annex VI entitled Regulations for the prevention of air pollution from ships was added to the 1973 Convention,

NOTING FURTHER that the revised Annex VI, which was adopted by resolution MEPC.176(58), entered into force on 1 July 2010,

HAVING CONSIDERED draft amendments to the revised Annex VI concerning engines solely fuelled by gaseous fuels,

1 ADOPTS, in accordance with article 16(2)(d) of the 1973 Convention, amendments to Annex VI, the text of which is set out in the annex to the present resolution;

2 DETERMINES, in accordance with article 16(2)(f)(iii) of the 1973 Convention, that the amendments shall be deemed to have been accepted on 1 September 2015, unless prior to that date, not less than one third of the Parties or Parties, the combined merchant fleets of which constitute not less than 50% of the gross tonnage of the world's merchant fleet, have communicated to the Organization their objection to the amendments;

3 INVITES the Parties to note that, in accordance with article 16(2)(g)(ii) of the 1973 Convention, said amendments shall enter into force on 1 March 2016 upon their acceptance in accordance with paragraph 2 above;

4 REQUESTS the Secretary-General, in conformity with article 16(2)(e) of the 1973 Convention, to transmit to all Parties to the 1973 Convention, as modified by the 1978 and 1997 Protocols, certified copies of the present resolution and the text of the amendments contained in the annex;

5 REQUESTS FURTHER the Secretary-General to transmit to the Members of the Organization which are not Parties to the 1973 Convention, as modified by the 1978 and 1997 Protocols, copies of the present resolution and its annex.

ANNEX

AMENDMENTS TO MARPOL ANNEX VI

(Amendments to regulations 2 and 13 and appendix I)

MARPOL Annex VI
Regulations for the prevention of air pollution from ships

Chapter 1
General

Regulation 2
Definitions

1 The definition of "fuel oil" in paragraph 9 is replaced by the following definition:

"*Fuel oil* means any fuel delivered to and intended for combustion purposes for propulsion or operation on board a ship, including gas, distillate and residual fuels."

2 The definition of "marine diesel engine" in paragraph 14 is replaced by the following definition:

"*Marine diesel engine* means any reciprocating internal combustion engine operating on liquid or dual fuel, to which regulation 13 of this Annex applies, including booster/compound systems if applied. In addition, a gas fuelled engine installed on a ship constructed on or after 1 March 2016 or a gas fuelled additional or non-identical replacement engine installed on or after that date is also considered as a marine diesel engine."

Chapter 3
Requirements for control of emissions from ships

Regulation 13
Nitrogen oxides (NO_X)

3 Paragraph 7.3 is replaced by the following paragraph:

"7.3 With regard to a marine diesel engine with a power output of more than 5,000 kW and a per cylinder displacement at or above 90 litres installed on a ship constructed on or after 1 January 1990, but prior to 1 January 2000, the International Air Pollution Prevention Certificate shall, for a marine diesel engine to which paragraph 7.1 of this regulation applies, indicate one of the following:

.1 an approved method has been applied pursuant to paragraph 7.1.1 of this regulation;

.2 the engine has been certified pursuant to paragraph 7.1.2 of this regulation;

.3 an approved method is not yet commercially available as described in paragraph 7.2 of this regulation; or

.4 an approved method is not applicable."

Appendix I
Form of International Air Pollution Prevention (IAPP) Certificate (Regulation 8)

Supplement to the International Air Pollution Prevention Certificate (IAPP Certificate)

4 The footnote relating to paragraph 1.4 is replaced by the following footnote:

"* Completed only in respect of ships constructed on or after 1 January 2016 that are specially designed, and used solely for recreational purposes and to which, in accordance with regulation 13.5.2.1 or regulation 13.5.2.3, the NO_x emission limit as given by regulation 13.5.1.1 will not apply."

5 Paragraph 2.2.1 is replaced by the following paragraph:

"2.2.1 The following marine diesel engines installed on this ship are in accordance with the requirements of regulation 13, as indicated:

Applicable regulation of MARPOL Annex VI (NTC = NO_X Technical Code 2008) (AM = Approved Method)			Engine #1	Engine #2	Engine #3	Engine #4	Engine #5	Engine #6
1	Manufacturer and model							
2	Serial number							
3	Use (applicable application cycle(s) – NTC 3.2)							
4	Rated power (kW) (NTC 1.3.11)							
5	Rated speed (RPM) (NTC 1.3.12)							
6	Identical engine installed ≥ 1/1/2000 exempted by 13.1.1.2		☐	☐	☐	☐	☐	☐
7	Identical engine installation date (dd/mm/yyyy) as per 13.1.1.2							
8a	Major Conversion (dd/mm/yyyy)	13.2.1.1 & 13.2.2						
8b		13.2.1.2 & 13.2.3						
8c		13.2.1.3 & 13.2.3						
9a	Tier I	13.3	☐	☐	☐	☐	☐	☐
9b		13.2.2	☐	☐	☐	☐	☐	☐
9c		13.2.3.1	☐	☐	☐	☐	☐	☐
9d		13.2.3.2	☐	☐	☐	☐	☐	☐
9e		13.7.1.2	☐	☐	☐	☐	☐	☐
10a	Tier II	13.4	☐	☐	☐	☐	☐	☐
10b		13.2.2	☐	☐	☐	☐	☐	☐
10c		13.2.2 (Tier III not possible)	☐	☐	☐	☐	☐	☐
10d		13.2.3.2	☐	☐	☐	☐	☐	☐
10e		13.5.2 (Exemptions)	☐	☐	☐	☐	☐	☐
10f		13.7.1.2	☐	☐	☐	☐	☐	☐
11a	Tier III ($ECA\text{-}NO_x$ only)	13.5.1.1	☐	☐	☐	☐	☐	☐
11b		13.2.2	☐	☐	☐	☐	☐	☐
11c		13.2.3.2	☐	☐	☐	☐	☐	☐
11d		13.7.1.2	☐	☐	☐	☐	☐	☐
12	AM*	installed	☐	☐	☐	☐	☐	☐
13		not commercially available at this survey	☐	☐	☐	☐	☐	☐
14		not applicable	☐	☐	☐	☐	☐	☐

* Refer to the *2014 Guidelines on the approved method process* (resolution MEPC.243(66)).''

6 Paragraph 2.5 is replaced by the following paragraph:

"2.5 Shipboard incineration (regulation 16)

The ship has an incinerator:

.1 installed on or after 1 January 2000 that complies with:

.1 resolution MEPC.76(40), as amended * ☐

.2 resolution MEPC.244(66) ☐

.2 installed before 1 January 2000 that complies with:

.1 resolution MEPC.59(33), as amended ** ☐

.2 resolution MEPC.76(40), as amended * ☐"

* As amended by resolution MEPC.93(45).
** As amended by resolution MEPC.92(45)."

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