



MARPOL Seminar

23 mei 2013





Programma

- 13.30 – 13.40 Opening Chris Dijkmans
- 13.40 – 14.05 MARPOL Annex IV en V Marja Tiemens
- 14.05 – 14.30 MARPOL Annex VI, SOx en Nox Jaap Kolpa
- 14.30 – 14.55 EEDI, SEEMP, EEOI Sibrand Hassing
- 14.55 – 15.15 Pauze
- 15.15 – 15.40 Handhaving Inspectie IL&T
- 15.40 – 16.05 Inspecties door havens Cees-Willem Koorneef
- 16.05 – 16.30 EEDI verificatie Michiel Verhulst
- 16.30 – 17.00 Forumdiscussie Dagvoorzitter
- 17.00 Netwerkgelegenheid

MARPOL ANNEX IV & V

23 - 05 - 2013



Marja C. Tiemens-Idzinga
Ministerie van Infrastructuur en Milieu
Directoraat - Generaal Bereikbaarheid (DGB)
Maritieme Zaken – afdeling Zeevaart en Security

MARPOL ANNEX IV



CHAPTER 1 – GENERAL

CHAPTER 2 – SURVEY & CERTIFICATION

CHAPTER 3 – EQUIPMENT AND CONTROL OF DISCHARGE

CHAPTER 4 – RECEPTION FACILITIES

CHAPTER 5 – PORT STATE CONTROL

Regulation 1 - Definitions

Sewage

means drainage from:

- Toilets
- Medical units
- Live animal spaces
- Mixed waste waters (if involving the above)

Regulation 9 - Sewage Systems

Every ship to which this Annex applies shall be equipped with **one** of the following:

- Sewage treatment plant type approved by the Administration, see MEPC.159(55) **more to come**
- Sewage comminuting and disinfecting system approved by the Administration plus temporary storage when the ship is less than 3 nautical miles from nearest land
- A holding tank with capacity for retention of all sewage to the satisfaction of the Administration

Sea Area	Discharge criteria – Regulation 11
Within 3 nm from land	No discharge except from an approved/certified sewage treatment plant
Between 3 and 12 nm from land	No discharge except (1) from approved/certified sewage treatment plant or (2) approved comminuting and disinfecting system
More than 12 nm	Discharge from either (1) or (2) Or sewage from a holding tank when proceeding at not less than 4 knots at a rate approved by the Administration.

MARPOL – ANNEX IV amendments per 01-01-2013





**RESOLUTION MEPC.200(62)
Adopted on 15 July 2011**

**Special Area provisions
and
the designation of the Baltic Sea as a
Special Area under
MARPOL Annex IV**

the said amendments entered into force on 1 January 2013



**12bis
Reception facilities for passenger ships in Special Areas**

Discharge of sewage from passenger ships within a special area

The discharge of sewage from a passenger ship within a special area
shall be prohibited:

- a) for **new** passenger ships **on or after 1 January 2016**
and
- b) for **existing** passenger ships **on or after 1 January 2018**
both subject to regulation 12*bis*, subparagraph 2 (notification to IMO)

except when the following conditions are satisfied:

the ship has in operation **an approved sewage treatment plant** which has been certified by the Administration to meet the operational requirements referred to in regulation **9.2.1** of this Annex, and the effluent shall not produce visible floating solids nor cause discoloration of the surrounding water.

9.2.1 refers to a sewage treatment plant taking into account 227(64)

Sewage treatment plant type approved by the Administration, see MEPC.159(55)

RESOLUTION MEPC.227(64)
Adopted on 5 October 2012

**2012 GUIDELINES ON IMPLEMENTATION OF EFFLUENT
STANDARDS
AND PERFORMANCE TESTS FOR SEWAGE TREATMENT PLANTS**

SUPERSEDES MEPC.159(55)

Sewage treatment plants installed prior to 1 January 2016 and on or after 1 January 2010, on ships other than passenger ships operating in MARPOL Annex IV special areas and intending to discharge treated sewage effluent into the sea, should comply with resolution MEPC.159(55).

Sewage treatment plants installed prior to 1 January 2010 on ships other than passenger ships operating in MARPOL Annex IV special areas and intending to discharge treated sewage effluent into the sea, should comply with resolution MEPC.2(VI).

INVITES Governments to:

implement the 2012 Guidelines and apply them on or after 1 January 2016;

and

provide the Organization with information on experience gained with the application of the 2012 Guidelines

MARPOL ANNEX V

31 December 1988



MEPC 61 – September 2010

* Approval of the revised MARPOL Annex V



General prohibition

Adjusted definitions

Discharge *en route*

Discharge requirements inside & outside SA

Criteria for harmful solid bulks to be developed

* Continuation of the CG to develop guidelines

MEPC 62 – July 2011

revised Annex V adopted

MEPC.201(62)



**entry into force on
1 January 2013**

- Continuation of the CG to develop guidelines
- Development of criteria for solid bulk cargoes

MEPC 63 – March 2012

**2012 guidelines for the implementation of
MARPOL Annex V**



MEPC.219(63)

**2012 guidelines for the development of
garbage management plans**



MEPC.220(63)

Type of garbage	Ships outside SA's	Ships within SA's
Food waste comminuted or ground	Discharge permitted ≥ 3 nm from the nearest land, en route	Discharge permitted ≥ 12 nm from the nearest land, en route
Food waste not comminuted or ground	Discharge permitted ≥12 nm from the nearest land, en route	Discharge prohibited
Cargo residues ¹ not contained in wash water	Discharge permitted ≥12 nm from the nearest land, en route	Discharge prohibited
Cargo residues ¹ contained in wash water		Discharge not permitted² ≥12 nm from the nearest land, en route
Cleaning agents and additives ¹ contained in cargo hold wash water	Discharge permitted	Discharge not permitted² ≥12 nm from the nearest land, en route
Cleaning agents and additives ¹ in deck and external surfaces wash water		Discharge permitted
Animal carcasses carried on board as cargo and which died during the voyage	Discharge permitted as far as possible from nearest land, en route	Discharge prohibited
All other garbage - plastics, domestic wastes, cooking oil, incinerator ashes, operational wastes, fishing gear	Discharge prohibited	Discharge prohibited
Mixed garbage	When garbage is mixed with or contaminated by other substances prohibited from discharge or having different discharge requirements - the more stringent requirements shall apply	

1 These substances must **not** be harmful to the marine environment;

2 According to regulation 6.1.2 of MARPOL Annex V the discharge shall only be allowed if: (a) both the port of departure and the next port of destination are within the special area and the ship will not transit outside the special area between these ports; and (b) if no adequate reception facilities are available at those ports

The revised ANNEX V mandatory documents on board



- * Placards (every ship ≥ 12 metres)
- * Garbage management plan (every ship ≥ 100 GT and every ship certified to carry ≥ 15 persons)
- * GRB (every ship ≥ 400 GT and every ship certified to carry ≥ 15 persons)



discussion



SOLID BULK CARGOES



MEPC 59 – JULY 2009

Submission by BIMCO and Intercargo

Problem with SRF for solid dry bulk in
Mediterranean Sea and Gulfs area



1 May 2009



1 Aug 2008

Effective SA



Ref. T5/1.01

MEPC.1/Circ.675
22 July 2009

Short term

DISCHARGE OF CARGO HOLD WASHING WATER IN THE GULFS AREA AND MEDITERRANEAN SEA AREA UNDER MARPOL ANNEX V

1 The Marine Environment Protection Committee, at its fifty-ninth session (13 to 20 July 2009), having considered the problems associated with disposal of cargo hold washing water from bulk carriers in accordance with the current requirements of MARPOL Annex V and, recognizing that the issue is linked to the ongoing review of MARPOL Annex V and that until appropriate amendments have been adopted and entered into force, an appropriate solution should be developed, agreed that (MEPC 59/24, paragraph 6.39):

- .1 cargo hold washing water, containing the remnants of any dry cargo material, generated in connection with the ship cleaning its cargo holds should not be treated as garbage under MARPOL Annex V within the *Gulfs Area* and *Mediterranean Sea Area*; and
- .2 such cargo hold washing water may be discharged at a greater distance than 12 nautical miles from shore within these areas. Cargo residues in the washing water must not originate from a cargo material that is classified as a marine pollutant in the IMDG Code.

2 MEPC 59 recalled, however, that paragraph 17.10 of the Guidelines for the implementation of MARPOL Annex V state that such cargo residues are expected to be in small quantities.

3 Member Governments are invited to bring the content of this circular to the attention of those interested, including port State control authorities and coastguard and maritime surveillance services, as appropriate.

MEPC 60 – March 2010

* Resolution MEPC.191(60) – 1 May 2011

* MEPC.1/Circ.675/Rev.1



Dry bulk in the MED & GULF & WCR
SHORT TERM SOLUTION



Type of garbage	Ships outside SA's	Ships within SA's
Food waste comminuted or ground	Discharge permitted ≥ 3 nm from the nearest land, en route	Discharge permitted ≥ 12 nm from the nearest land, en route
Food waste not comminuted or ground	Discharge permitted ≥12 nm from the nearest land, en route	Discharge prohibited
Cargo residues ¹ not contained in wash water	Discharge permitted ≥12 nm from the nearest land, en route	Discharge prohibited
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2012 guidelines for the implementation of MARPOL Annex V



MEPC.219(63)

chapter 3 - criteria for solid bulk cargoes

HME CRITERIA

Cargo residues are considered harmful to the marine environment if they are residues of solid bulk substances which are classified according to the criteria of the UN GHS system, meeting one of the seven parameters in **paragraph 3.2** in the 2012 Guidelines for implementation of Annex V

Acute Aquatic Toxicity

Chronic Aquatic Toxicity

Carcinogenicity combined with degradable and having high bioaccumulation

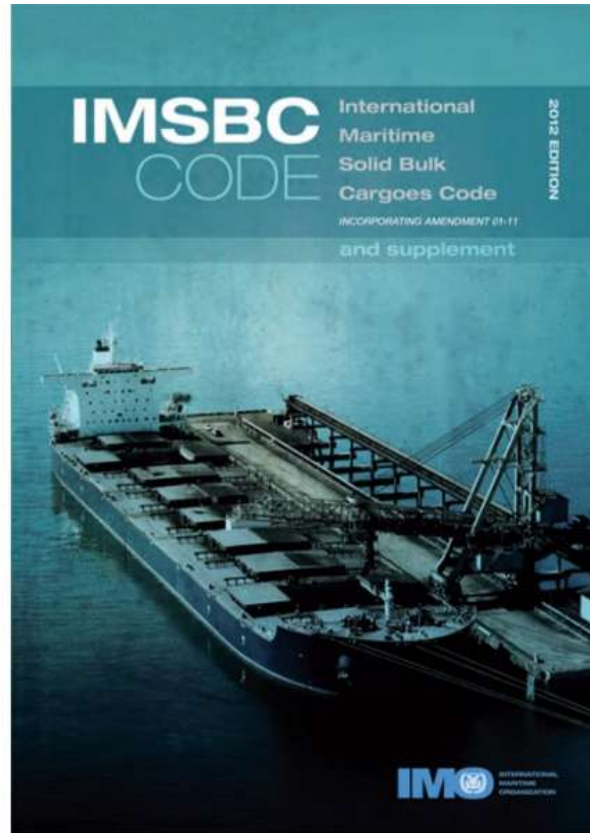
Mutagenicity combined with not being rapidly degradable and having high bioaccumulation

Reproductive Toxicity combined with not being rapidly degradable and having high bioaccumulation

Specific Target Organ Toxicity Repeated Exposure combined with not being rapidly degradable and having high bioaccumulation

Solid bulk cargoes containing or consisting of **synthetic polymers, rubber, plastics, or plastic feedstock pellets** (this includes materials that are shredded, milled, chopped or macerated or similar materials)

HME



**OR
NOT
HME**

INTERIM MEASURES

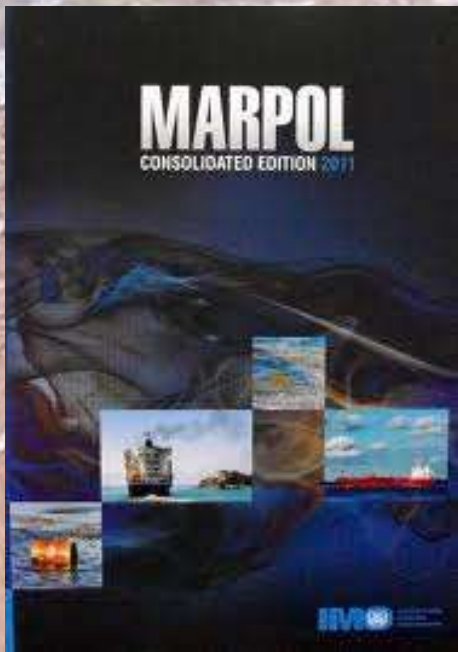
MEPC.1/Circ.791

18 October 2012

**Provisional classification of solid bulk cargoes under the
revised MARPOL Annex V
between 1 January 2013 and 31 December 2014**

**shippers of solid bulk cargoes should
classify those cargoes using
the seven criteria**

to be continued





Ministerie van Infrastructuur en Milieu



Laatste ontwikkelingen MARPOL Annex VI en Europese regelgeving

Jaap Kolpa,
Ministerie van IenM

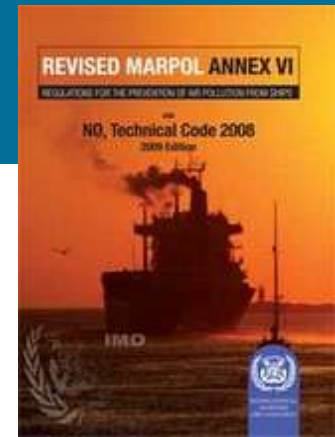
Harderwijk, 23 mei 2013





1. Regelgeving op gebied van zwavelemissies





Aanscherping Marpol Annex VI: Maximale zwavelgehalte in scheepsbrandstof:

	Mondiale zwavel limiet	SECA zwavel limiet
Tot 30 juni 2010	4,50 %	1,50 %
1 juli 2010		1,00 %
januari 2012	3,50 %	
1 januari 2015		0,10 %
1 januari 2020 *)	0,50 %	

*) Evaluation in 2018; in case of negative results, the introduction date will shift from 2020 to 2025



Europese 'kop' op mondiale IMO-regelgeving:

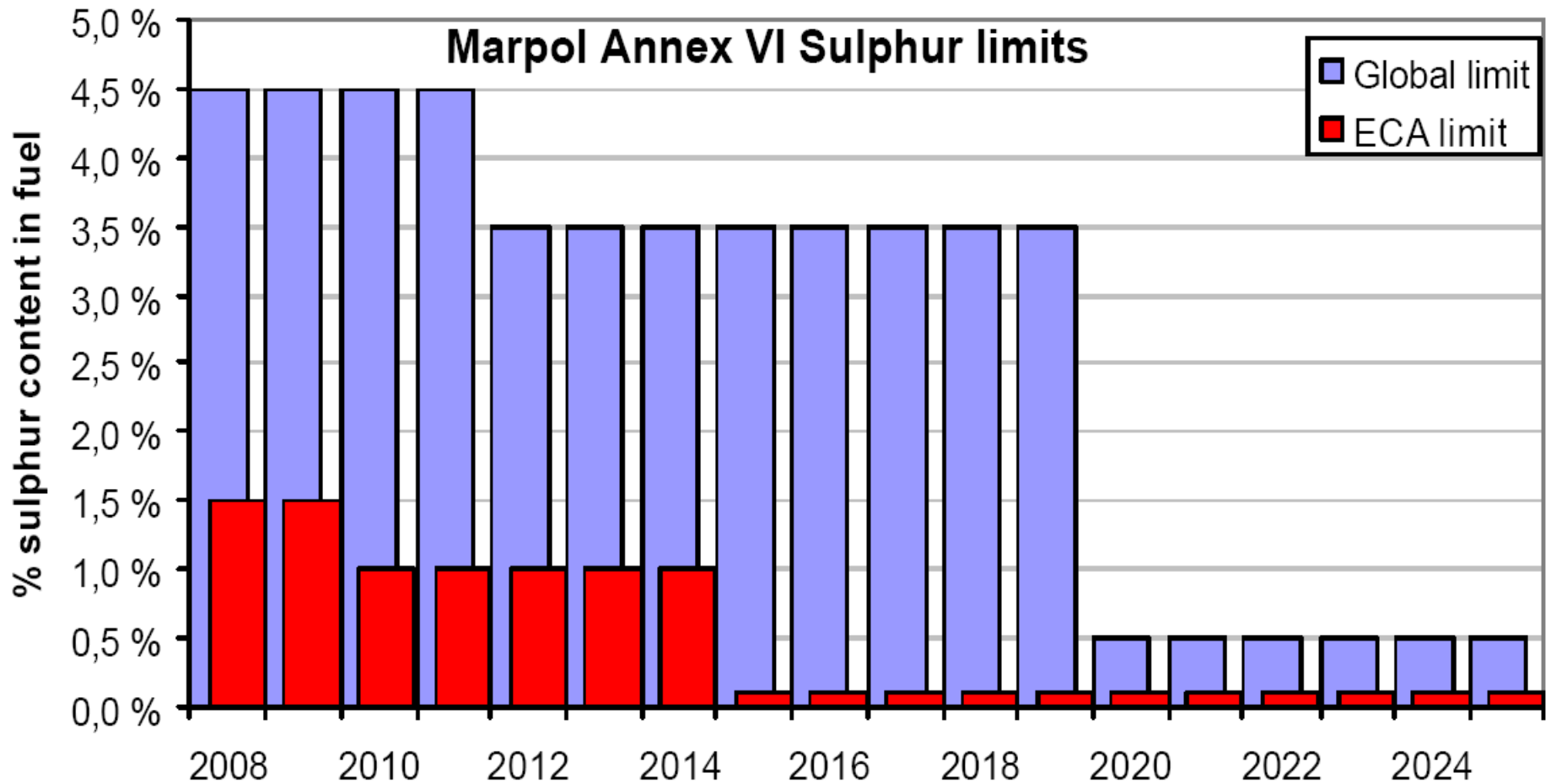
Mondiale zwavelnorm in 2020 omlaag van 3,5 % naar 0,5 %.

Mocht uit de IMO evaluatie in 2018 blijken dat in 2020 onvoldoende laagzwavelige brandstof beschikbaar is, dan verschuift de ingangsdatum naar 2025.

De EU houdt, voor EU-wateren, vast aan 2020 als ingangsdatum voor die 0,5 % norm, ongeacht wat IMO besluit (EU-Zwavelrichtlijn 1999/32/EC)



MARPOL limits on sulphur content in marine fuels

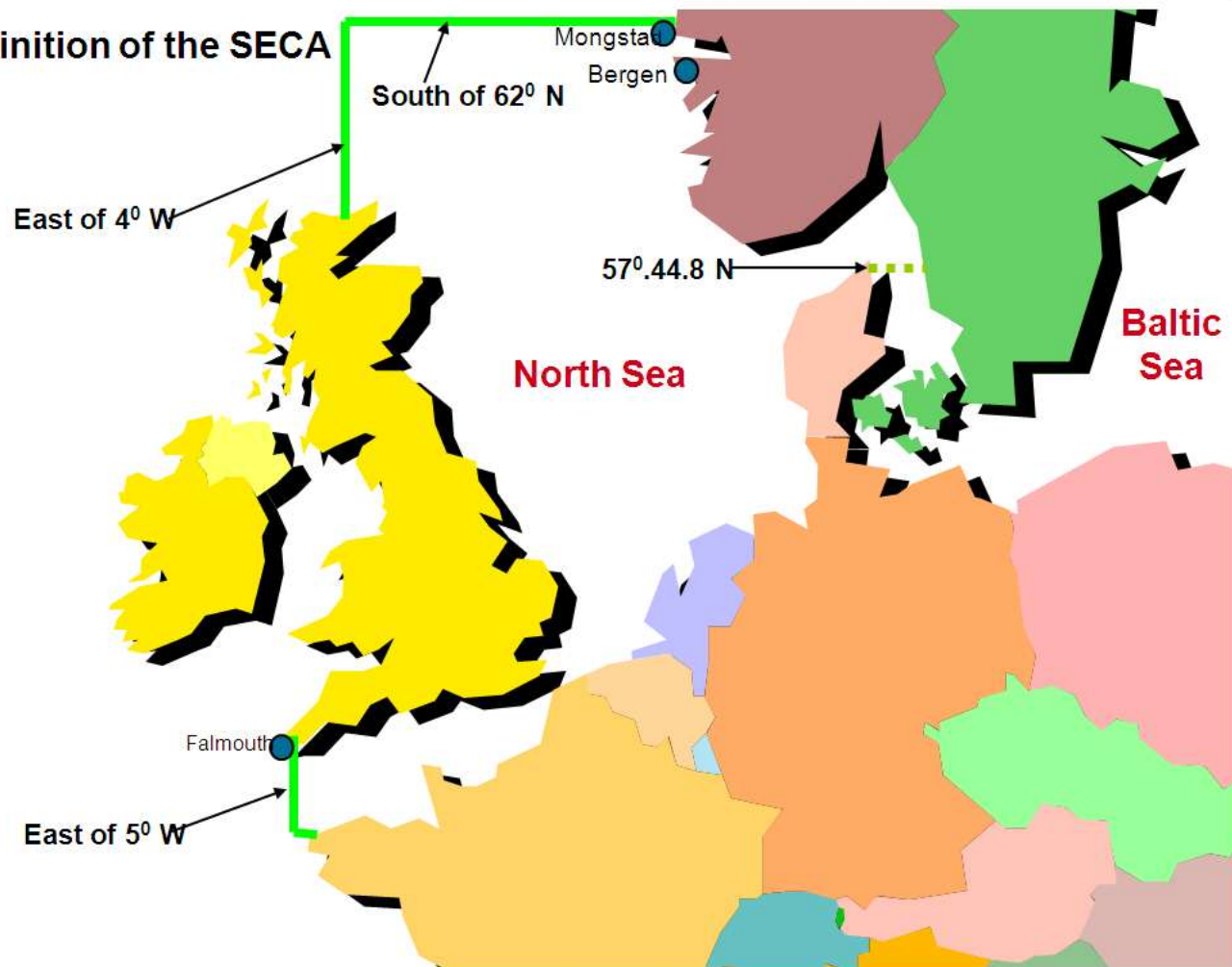




SECA = SOx Emission Control Area

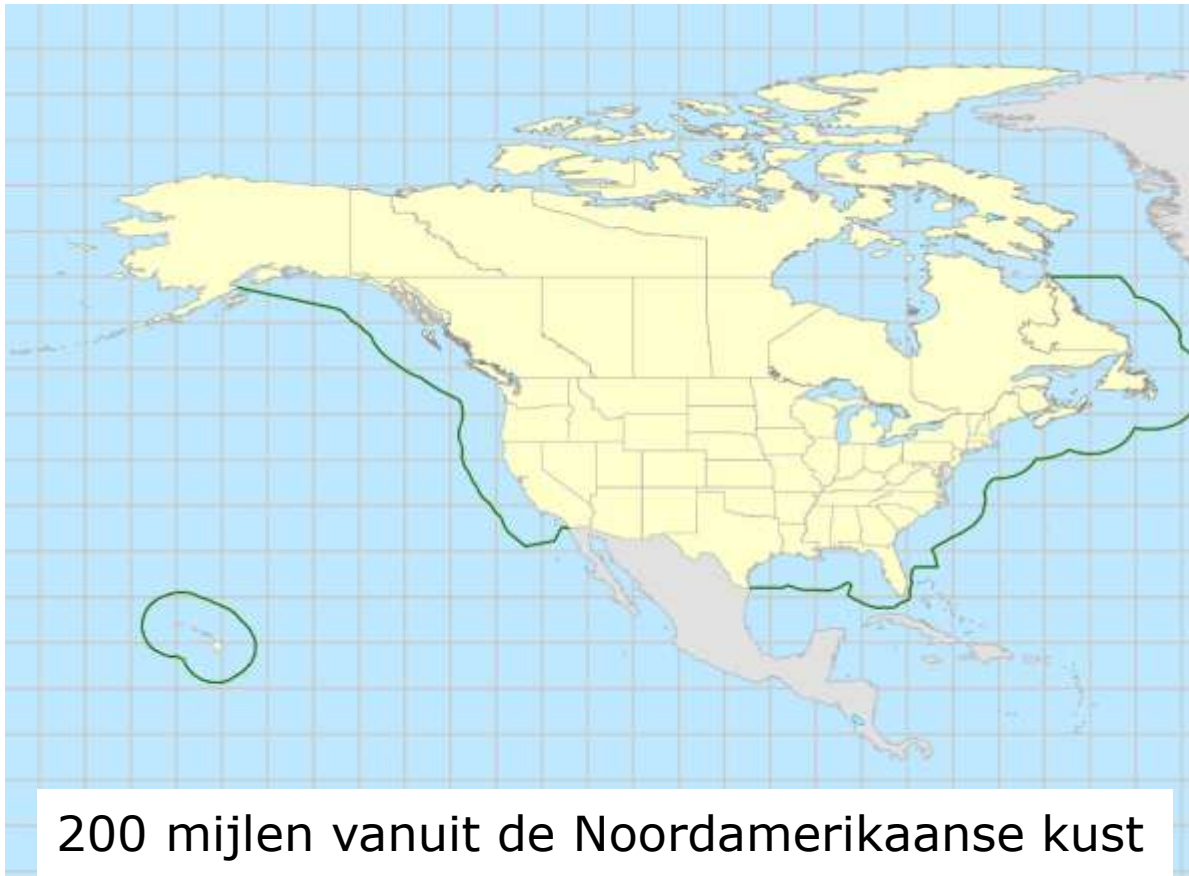
Annex VI of MARPOL 73/78

Definition of the SECA





SECA Noord-Amerika vanaf 1 augustus 2011





Zwavelnormen zeevaart vergeleken met normen voor wegvervoer en binnenvaart:



Zwavelnormen zeevaart vergeleken met normen voor wegvervoer en binnenvaart:

Zeevaart norm voor SECA's (2015):
0,1 % (**1000 ppm**)





Zwavelnormen zeevaart vergeleken met normen voor wegvervoer en binnenvaart:

Zeevaart norm voor SECA's (2015):
0,1 % (**1000 ppm**)



Binnenvaart (ingegaan 2011):
0,001% (**10 ppm**)





Zwavelnormen zeevaart vergeleken met normen voor wegvervoer en binnenvaart:

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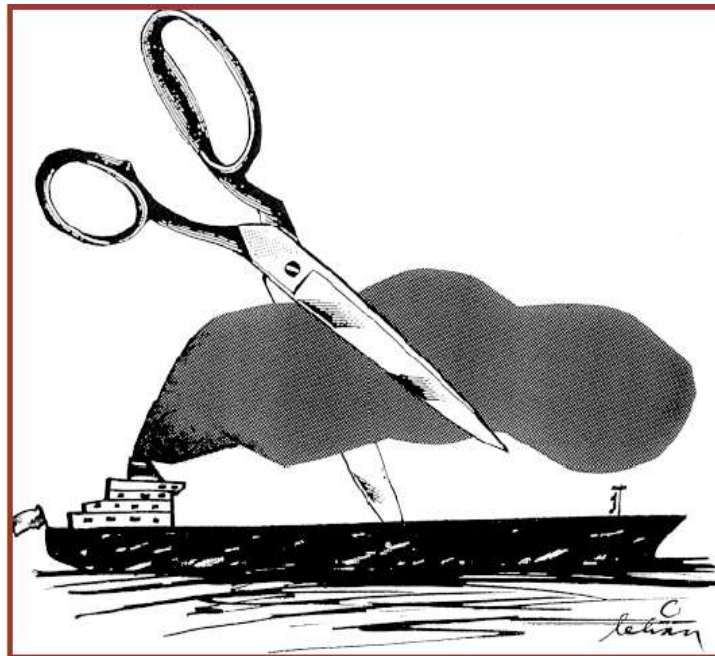


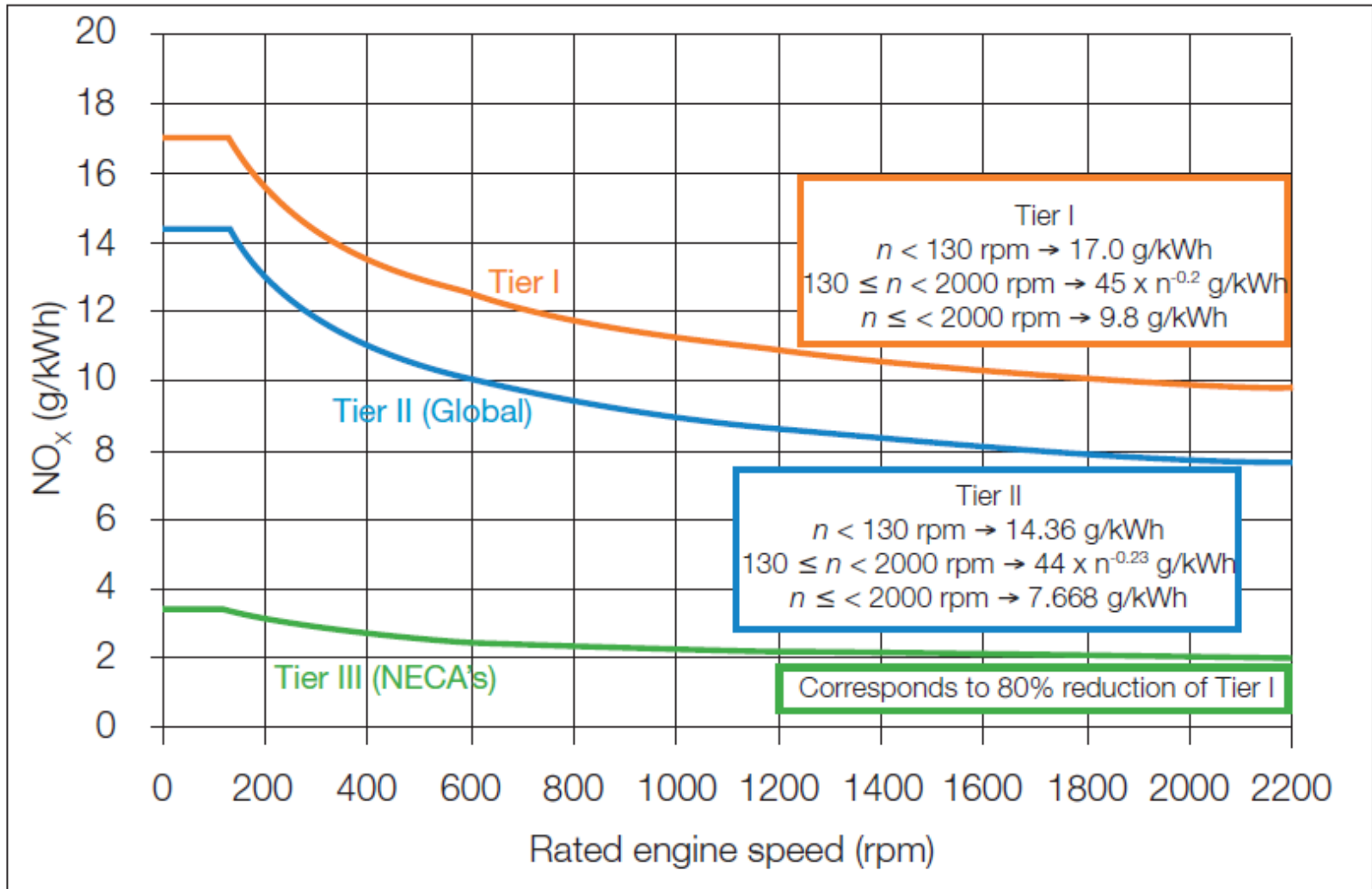
Wegvervoer (ingegaan 2009):
0,001% (**10 ppm**)





2. Regelgeving op gebied van stikstofoxide-emissies







Voor schepen gebouwd tussen 1990 en 2000 met grote motoren geldt ook Tier I, wanneer:

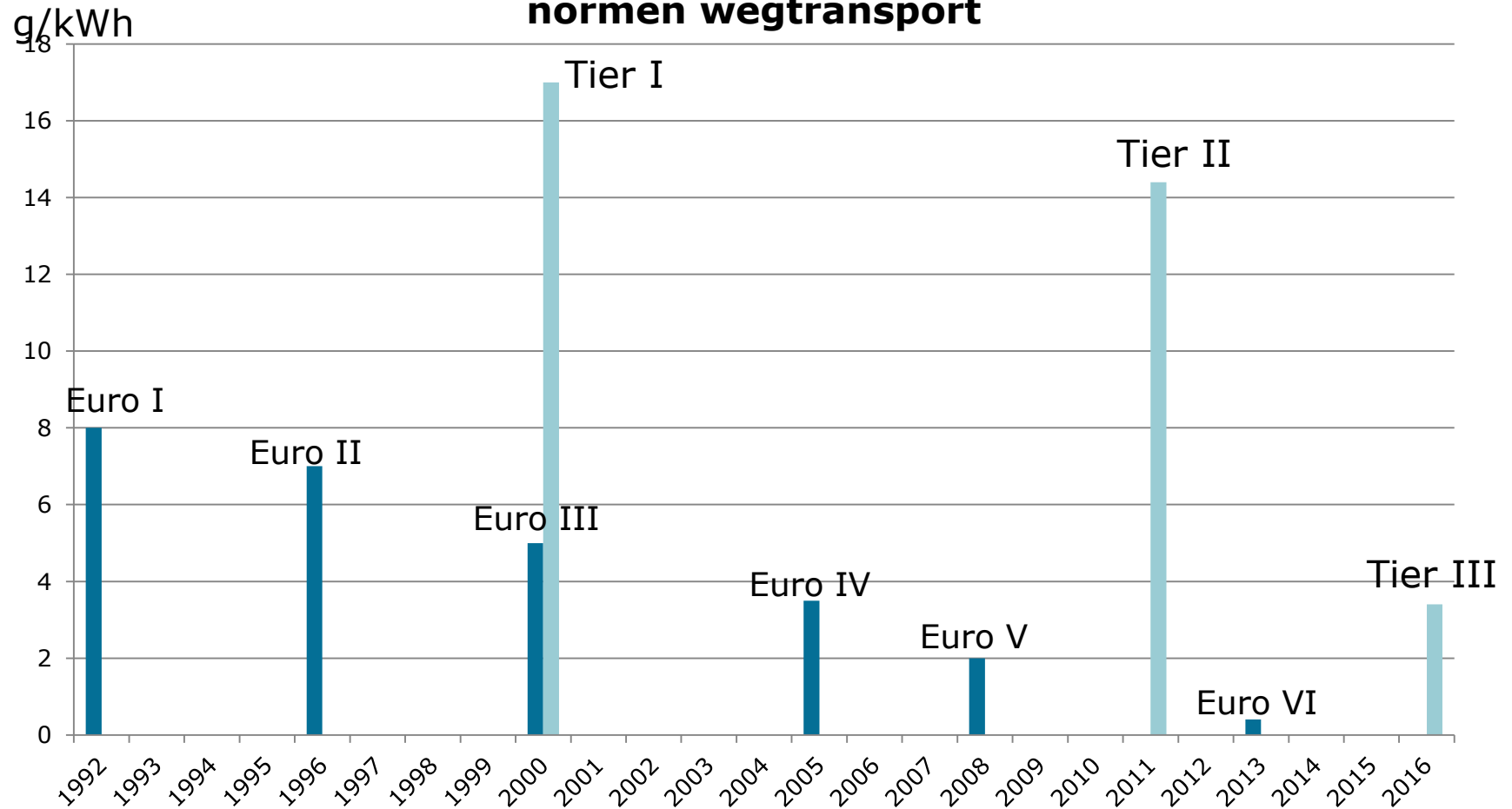
- vermogen > 5000 kW
- cilinderinhoud > 90 liter

(Tier I: 17.0 g/kWh
bij 130 omwentelingen
per minuut)





NOx-normen Marpol Annex VI vergeleken met EU-normen wegtransport

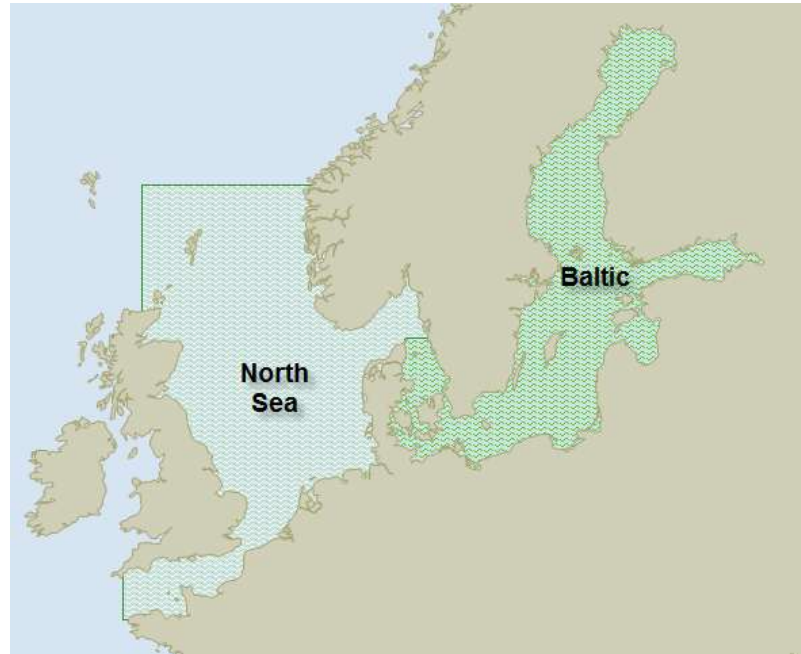




NECA Noord-Amerika vanaf óf 1 januari 2016 óf 1 januari 2021



200 mijlen vanuit de Noordamerikaanse kust



Worden Noordzee, Het Kanaal en de Baltische Zee aangewezen als NECA?



Baltische Zee een NECA?

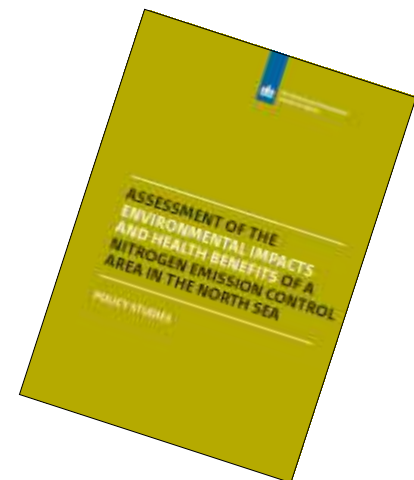
Beslissing over aanvraag bij
IMO ligt ter tafel bij de
Baltic Marine Environment
Protection Commission
(ook bekend als de Helsinki
Commissie, HELCOM)





Noordzee en Het Kanaal een NECA?

Dit dossier bevindt zich in de
studiefase. Twee rapporten zijn
hierover uitgekomen:





BEDANKT VOOR UW AANDACHT !



Ministry of Infrastructure and the
Environment

MARPOL ANNEX VI

Energy Efficiency Measures
EEDI – SEEMP - EEOI

By: Sibrand Hassing
Directorate-General for Mobility
and Transport – Shipping &
Security

23 May 2013



MARPOL ANNEX VI - EE

Content

- Introduction
- Why an EEDI & SEEMP?
- Main components of Ch. 4 MARPOL Annex VI
 - (I) – EEDI
 - (II) - SEEMP
- Likely impacts of EEDI & SEEMP
- Latest developments



MARPOL ANNEX VI - EE

Introduction (1)

- MEPC 62 agreed 15 July 2011 a new Chapter 4 in MARPOL Annex VI on "*Regulations on Energy Efficiency of Ships*"* - for ships > 400GT;
- Makes mandatory the ***Energy Efficiency Design Index (EEDI)***, for new ships;
- Makes mandatory the ***Ship Energy Efficiency Management Plan (SEEMP)***, for all ships;
- Entered into force on **1 January 2013**.

* Resolution MEPC.203(62)



MARPOL ANNEX VI - EE

Introduction (2)

- EEDI & SEEMP are part of IMO's package approach;
- 'Package' = Technical- (EEDI), Operational- (SEEMP) and Marketbased measures;
- MBMs' are on agenda IMO/MEPC;
- Outcome not predictable – a very political discussion



MARPOL ANNEX VI - EE

Why an EEDI & SEEMP?

- CO₂ emissions from ships are expected to increase (approx. 3% in 2007 → 12-18% in 2050*);
- Shipping needs also to take its responsibility;
- All emission reducing measures, incl. technical & operational measures - such as EEDI & SEEMP, will also decrease shippings' CO₂ footprint;
- Technical- and operational EE measures are identified as measures with a significant potential*;
- CO₂ emissions are proportional to fuel consumption.

* Second IMO Greenhouse Gas Study 2009



MARPOL ANNEX VI - EE

Main components of Ch. 4 MARPOL Annex VI (I) → EEDI;

- An **attained EEDI** shall be calculated for ships which falls into one of the categories defined in reg. 2.25 to 2.35 – reg. 20;
= EEDI value achieved by an individual ship
- **Required EEDI** for ships which falls into one of the categories defined in reg. 2.25 to 2.31 – reg. 21;
= maximum value of attained EEDI allowed by reg. 21



MARPOL ANNEX VI - EE

The EEDI formula:

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



MARPOL ANNEX VI - EE

Attained EEDI

- Bulk carrier
- Gas carrier
- Tanker
- Container ship
- General cargo ship
- Reefer
- Combination carrier
- Passenger ship
- Ro-ro cargo ship (vehicle carrier)
- Ro-ro cargo ship
- Ro-ro passenger

Required EEDI

- Bulk carrier
- Gas carrier
- Tanker
- Container ship
- General cargo ship
- Reefer
- Combination carrier



MARPOL ANNEX VI - EE

Attained EEDI ↔ Required EEDI

$$\underline{\text{Attained EEDI}} \leq \underline{\text{Required EEDI}} = (1 - X^*/100) \times \text{Reference line value}$$

* Where X is the Reduction Factor

Reduction Factor implementation phases:

- | | | |
|------------|-------------------------|---------------------------------|
| 1. Phase 0 | 01.01.2013 – 31.12.2014 | (0 or n/a ^{**}) |
| 2. Phase 1 | 01.01.2015 – 31.12.2019 | (10 or 0 – 10 ^{**}) |
| 3. Phase 2 | 01.01.2020 – 31.12.2024 | (20 – or 0 – 20 ^{**}) |
| 4. Phase 4 | 01.01.2025 - | (30 or 0 – 30 ^{**}) |

** pending ship size



MARPOL ANNEX VI - EE

- Reference line refer to statistically average EEDI curves; derived from data of existing ships
- Reference line value = $a \times b^{-c}$ Parameters can be found in Table 2 to regulation 21.3
- If the design of the ship allows to fall into more than one ship type definitions, the required EEDI for the ship shall be the most stringent (the lowest) required EEDI.
- Between Phase 1 and midpoint of Phase 2 – review of the status of technological developments → if felt necessary time periods and EEDI reference line parameters can be amended.
- In compliance with the EEDI regulations ⇒ ***International Energy Efficiency Certificate (EEDI in grams-CO₂/tonne-mile)***



MARPOL ANNEX VI - EE

(II) → SEEMP (1);

Regulation 22 – each ship shall keep on board a specific SEEMP

- May form part of the ship's ISM SMS;
- In developing take into account guidelines developed by IMO ⇒ **MEPC.1/Circ.683: GUIDANCE FOR THE DEVELOPMENT OF A SHIP ENERGY EFFICIENCY MANAGEMENT PLAN (SEEMP)***

Note: does not need a formal approval by flag State and/or RO

* Still under further development



Amendments to MARPOL ANNEX VI - EE

(II)→ SEEMP (2);

- A list of all the possible stakeholders in the efficiency of a single voyage is long; such as charterers, ports and vessel traffic management services, etc., for the specific voyage. All involved parties should consider and coordinate the inclusion of efficiency measures in their operations both individually and collectively.
- Fuel efficient operations, e.g. by: improved voyage planning – weather routing – just in time – speed optimization – optimized shaft power – optimum trim – optimum ballast - optimum propeller and propeller inflow considerations - optimum use of rudder and heading control systems (autopilots) - hull maintenance - propulsion system maintenance - waste heat recovery - improved fleet management – improved cargo handling – energy management



MARPOL ANNEX VI - EE

INTERNATIONAL ENERGY EFFICIENCY CERTIFICATE

- ⇒ IEE Certificate to be on board **all** ships!
- New ships to certify that:
 1. Comply with the applicable EEDI requirements; and
 2. Comply with the SEEMP requirements
 - Existing ships to certify that:
 1. Comply with the SEEMP requirements

Note: *For existing ships, the verification of the requirement to have a SEEMP on board according to regulation 22 shall take place at the first intermediate or renewal survey identified in paragraph 1 of this regulation, whichever is the first, on or after 1 January 2013.*



MARPOL ANNEX VI - EE

Energy Efficiency Operational Indicator (EEOI)

- Compulsary? - a monitoring system should be in place
- *Resolution MEPC.213(63): The energy efficiency of a ship should be monitored quantitatively. This should be done by an established method, preferably by an international standard. The EEOI developed by the Organization is one of the internationally established tools to obtain a quantitative indicator of energy efficiency of a ship and/or fleet in operation, and can be used for this purpose. Therefore, EEOI could be considered as the primary monitoring tool, although other quantitative measures also may be appropriate.*

- EEOI → see MEPC.1/Circ.684
- $$EEOI = \frac{\sum_i \sum_j (FC_{ij} \times C_{Fj})}{\sum_i (m_{cargo,i} \times D_i)}$$



MARPOL ANNEX VI - EE

Likely impacts of EEDI & SEEMP

- More energy efficient ships;
- Use of alternative fuels (e.g. LNG);
- Slower speed ships (= most effective measure);
- Pressure on sector to improve its CO₂ footprint (especially existing ships);
- Increase of newbuilding costs;
- Risk of modal shift (especially for short sea).



MARPOL ANNEX VI - EE

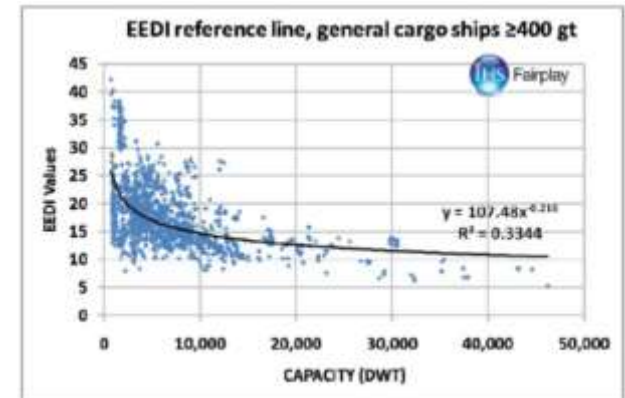
Latest developments

At MEPC 65 (13 – 17 May 2013), the NL proposal for the introduction of 3 correction factors for small general cargo ships (< 20.000 dwt) was adopted.

Why? Large scatter and low correlation

Cause (disproportional effect of):

1. Operational aspects (dimensions/area of operation)
2. Loading gear (cranes, sideloaders, RoRo ramps)
3. Class notations (eg loading/unloading aground)





MARPOL ANNEX VI - EE

Factors are:

f_j factor for general cargo ships

$f_{i_{VSE}}$ factor for small general cargo ships to correct for additional class notations

f_l factor for ships equipped with cranes and other cargo-related gear

Note: already included in formula shown in sheet #7





MARPOL ANNEX VI - EE

Proposal was based upon a study by:

1. CONOSHIP



2. MARIN



3. CMTI



Note: The study indicated that the application of these three factors will provide an incentive to reduce CO2 emissions by this segment.



Thank you for your attention.

Contactdetails:

E: sibrand.hassing@minienm.nl



Inspectie Leefomgeving en Transport
Ministerie van Infrastructuur en Milieu

Handhaving MARPOL

Annex IV, V en VI

M.C. Vink





HH via FSC en PSC

- MARPOL conventie Artikel 5
 - Controle op certificaat en uitgebreid inspectie op basis van “clear grounds”.
 - Artikel 4 geeft sancties aan zoals b.v. boetes, voldoende om overtredingen te ontmoedigen (PSC meestal aanhouding)
- Procedures for PSC Res A.1052(27)
- Artikel per Annex
 - Annex IV art 13 → Familiariteit van de bemanning
 - Annex V art 8 → Familiariteit van de bemanning
 - Annex VI art 10 → Controle op het certificaat (i.o.m. Art 5 v/d Conventie)



Uitgewerkt per Annex





Annex IV gewijzigd vlg Res MEPC.200(62)

- Baltic Sea special area
- Nieuwe discharge voorschriften voor passagiers schepen
- Gevolg is:
 - Sanitair afval afgeven
 - Sanitair afval behandelen door Res. MEPC.159(55) goedgekeurde apparatuur
- Pass schip is schip > 12 passagiers dus → Bruine vloot ook!
- Van kracht vanaf :
 - Nieuwe schepen 1-1-16
 - Bestaande schepen 1-1-18
- Afhankelijk van aanwezigheid sanitair afval ontvangst faciliteiten
- **HH** via bewijzen van afgifte of gebruik van goedgekeurde apparatuur
→ Wel een certificaat maar geen logboek voorgeschreven



Annex V gewijzigd vlg Res MEPC 201(62)

- 9 categorieën vuilnis te vermelden in vuilnis boek.
- Elk schip **>100 GT** en elk schip > 15 personen en drijvende en vaste platforms hebben een vuilnis management plan.
- Elk schip > 400 GT en elk schip > 15 personen en drijvende en vaste platforms hebben een vuilnis boek.
- Elk schip > 12 m over alles en drijvende en vaste platforms hebben posters die de bemanning en passagiers informeren over de vuilnis behandeling volgens Annex V



Annex V en droge lading restanten

- Ruim bilge water dat ladingdelen bevat mag overboord als het niet schadelijk is voor het milieu > 12 mijl van land, anders afgeven
- Binnen special area alleen overboord als er geen haven ontvangst installaties beschikbaar zijn in beide havens.
- Voor elke (be)lading moet duidelijk zijn of de lading schadelijk is voor mens en milieu volgens de 7 criteria genoemd in par 3.2 in de richtlijn. Gebaseerd op een tussentijdse maatregel geldig tot december 2014. (IMSBC of MEPC.1/Circ.791)
- Onder droge lading restanten wordt niet verstaan het stof dat overblijft na het vegen of schoonmaken.



Annex V en schoonmaakprodukten

- De producent van het produkt moet zelf verklaren of het produkt onschadelijk is.
- Ladingrestanten vermengt met water en schoonmaakmiddel mogen overboord alleen als zij niet schadelijk zijn voor het milieu
- De tijdelijke permissie voor lozen van ladingrestanten in special area van de Golf, Middellandse zee en Caribische gebied volgens MEPC.1/Circ.675/Rev.1 is vervallen per 1-1-13
- Als in de vertrek en de aankomst haven geen afval ontvangstmogelijkheden zijn dan mag het >12 mijl overboord worden gezet als het geen gevaar kan voor het milieu.
- Afgifte en lozing vermelding in het vuilnis boek



Annex V en HH

- Geen certificaat maar wel een logboek vereist
- Vuilnis management plan behoeft geen goedkeuring
- Vuilnis boek moet voldoen aan het IMO model.
- Posters moeten zijn opgehangen
- Afval melding in het kader van de EU richtlijn
- Op basis van hoeveelheid afval aan boord en de EU afgifte plicht (Geld niet voor ladingrestanten)

- HH op Ladingrestanten is verbeterd omdat:
 - Verplichte melding in vuilnis boek
 - Verplichte classificatie (MEPC.1/Circ.791)



Annex VI Hoofdstuk 4 Energie efficiëntie

- Geld voor schepen > 400GT
- EEDI voor elk nieuw schip na 1-1-13
- SEEMP op elk schip tijdens 1e tussentijdse of groot survey na 1-1-13
- SEEMP geen goedkeuring vereist
- En IEE certificaat op elk schip tijdens 1e tussentijdse of groot survey na 1-1-13

- HH op aanwezigheid IEE en SEEMP



MARPOL inspecties

Gewoon doen !

Cees-Willem Koorneef

Hoofd Inspectie Divisie Havenmeester Havenbedrijf Rotterdam N.V.

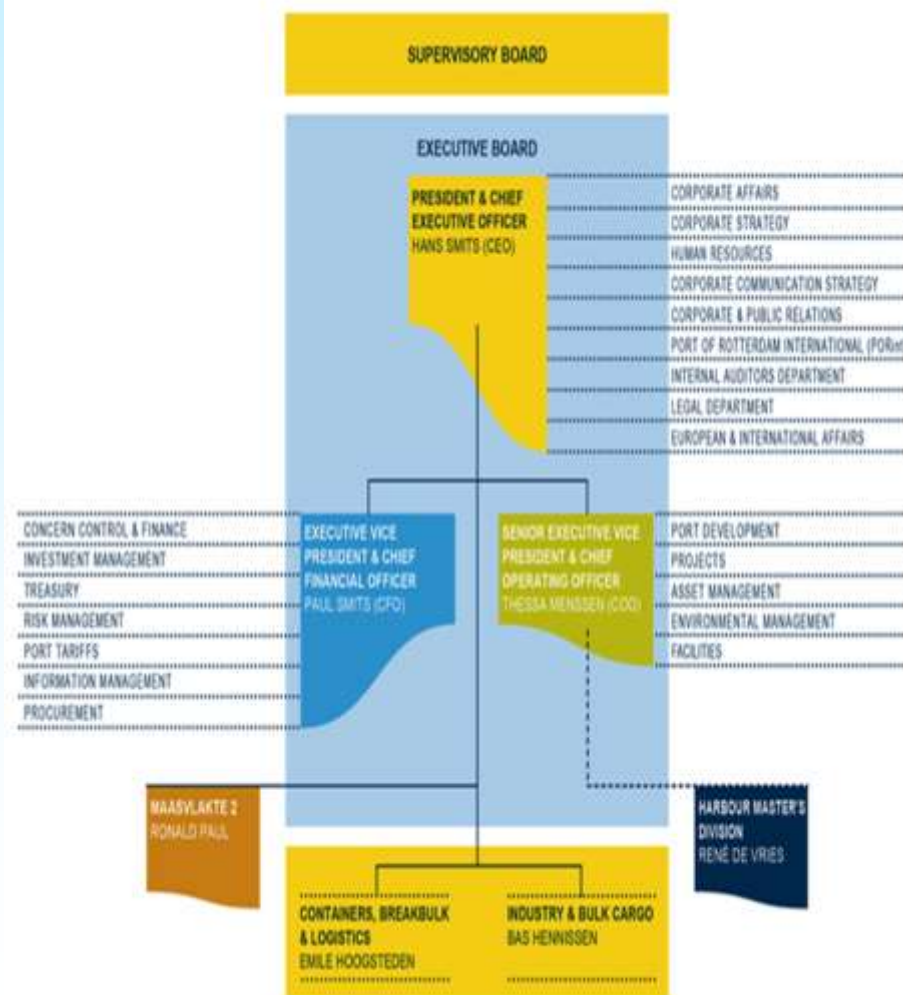
Bio

- bouwjaar 1966
- Douane Rotterdam 1985
- Port of Rotterdam 1990
- MARPOL superintendent
- Hoofd Centrale Meldkamer
Havenmeester 2006
- Hoofd Inspectie 2009



Eerst even dit

- Havenmeester (DHMR) is onderdeel Havenbedrijf Rotterdam
- Convenant
- Verantwoording afleggen



Sinds 1987

- Start MARPOL taken
- Scheepvaart inspectie en Havendienst



- samenwerkingsovereenkomst
Wet voorkoming
verontreiniging door Schepen
(Wvvs)
- Medetoezichthouder
- Vernieuwing Toezicht



Inspectieloket *Digitale toegang tot rijksinspecties*

[Home](#) [Actueel](#) [Onderwerpen](#) [Organisatie](#) [Vernieuwing Toezicht](#)

Zo werkt DHMR Inspectie

- Safety and Environmental Index (SEI)
- 9.0
- Risicogestuurd
- HaMIS



Calculating targets

1.5 Schepensoorten	2018	2020
Tankers	8.300	8.900
Droge bulk	1.100	1.100
General cargo	10.500	9.900
Volcontainer	7.600	8.200
Rest	6.900	6.900
Populatie	36.400	35.900



$$n \geq \frac{N \times z^2 \times p(1-p)}{z^2 \times p(1-p) + (N-1) \times F^2}$$

Gateway	SEI 88	TOD IV	Operatie
ZINAMP 88000			
Beleidsdoel: Havenactiviteit	2.000	150	100
Beleidsdoel: Veiligheidsdoel 1	2.000	150	100
Veiligheidsdoel: Schepen	2000	150	100
Veiligheidsdoel: Schepen (C1, C2)	1000	100	100
Veiligheidsdoel: Schepen (C3, C4)	1000	100	100
Veiligheidsdoel: Schepen (C5, C6)	1000	100	100
Veiligheidsdoel: Schepen (C7, C8)	1000	100	100
Veiligheidsdoel: Schepen (C9, C10)	1000	100	100
Veiligheidsdoel: Schepen (C11, C12)	1000	100	100
Veiligheidsdoel: Schepen (C13, C14)	1000	100	100
Veiligheidsdoel: Schepen (C15, C16)	1000	100	100
Veiligheidsdoel: Schepen (C17, C18)	1000	100	100
Veiligheidsdoel: Schepen (C19, C20)	1000	100	100
Veiligheidsdoel: Schepen (C21, C22)	1000	100	100
Veiligheidsdoel: Schepen (C23, C24)	1000	100	100
Veiligheidsdoel: Schepen (C25, C26)	1000	100	100
Veiligheidsdoel: Schepen (C27, C28)	1000	100	100
Veiligheidsdoel: Schepen (C29, C30)	1000	100	100
Subtotaal Schepen	2000	150	100
Subtotaal Schepen (C1-C10)	1000	100	100
Subtotaal Schepen (C11-C20)	1000	100	100
Subtotaal Schepen (C21-C30)	1000	100	100
ZINAMP 88000			
Beleidsdoel: Havenactiviteit	2.000	150	100
Beleidsdoel: Veiligheidsdoel 1	2.000	150	100
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Veiligheidsdoel: Schepen (C3, C4)	1000	100	100
Veiligheidsdoel: Schepen (C5, C6)	1000	100	100
Veiligheidsdoel: Schepen (C7, C8)	1000	100	100
Veiligheidsdoel: Schepen (C9, C10)	1000	100	100
Veiligheidsdoel: Schepen (C11, C12)	1000	100	100
Veiligheidsdoel: Schepen (C13, C14)	1000	100	100
Veiligheidsdoel: Schepen (C15, C16)	1000	100	100
Veiligheidsdoel: Schepen (C17, C18)	1000	100	100
Veiligheidsdoel: Schepen (C19, C20)	1000	100	100
Veiligheidsdoel: Schepen (C21, C22)	1000	100	100
Veiligheidsdoel: Schepen (C23, C24)	1000	100	100
Veiligheidsdoel: Schepen (C25, C26)	1000	100	100
Veiligheidsdoel: Schepen (C27, C28)	1000	100	100
Veiligheidsdoel: Schepen (C29, C30)	1000	100	100
Subtotaal Schepen	2000	150	100
Subtotaal Schepen (C1-C10)	1000	100	100
Subtotaal Schepen (C11-C20)	1000	100	100
Subtotaal Schepen (C21-C30)	1000	100	100

Safety- & Environmental Index

- De SEI is een gemiddelde waarde van het nalevingsgedrag aan boord van zeeschepen op basis van fysieke inspecties in een bepaalde periode.
- Voor de SEI geldt:
 - Op basis van fysieke inspecties
 - Afbreukwaarden bij tekortkoming
 - Afbreuk afhankelijk van ernst van de tekortkoming
 - Cijfer o.b.v. scheepstotaal



Mee kijken in Rotterdam



- HaMIS “live”

Dank voor uw aandacht!

cgw.koorneef@portofrotterdam.com





Challenging wind and waves

Linking hydrodynamic research to the maritime industry

EEDI VERIFICATIE

Michiel Verhulst

- Verificatie proces
- Def. verificatie tijdens proeftocht
- Model testen tijdens ontwerp
- Onzekerheden in EEDI bepaling

EEDI TO REDUCE CO2 EMISSIONS

Proces

Proeftocht

Model testen

Onzekerheden

- Attained EEDI

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

- Required EEDI

Attained EEDI \leq Required EEDI = (1-X/100) \times Reference line value

3 The Reference line values shall be calculated as follows:

Reference line value = a \times b^{-c}

where a, b and c are the parameters given in Table 2.

Table 2. Parameters for determination of reference values for the different ship types

Ship type defined in regulation 2	a	b	c
2.25 Bulk carrier	961.79	DWT of the ship	0.477
2.26 Gas carrier	1120.00	DWT of the ship	0.456
2.27 Tanker	1218.80	DWT of the ship	0.488
2.28 Container ship	174.22	DWT of the ship	0.201
2.29 General cargo ship	107.48	DWT of the ship	0.216
2.30 Refrigerated cargo carrier	227.01	DWT of the ship	0.244
2.31 Combination carrier	1219.00	DWT of the ship	0.488

VERLAGING REQUIRED EEDI

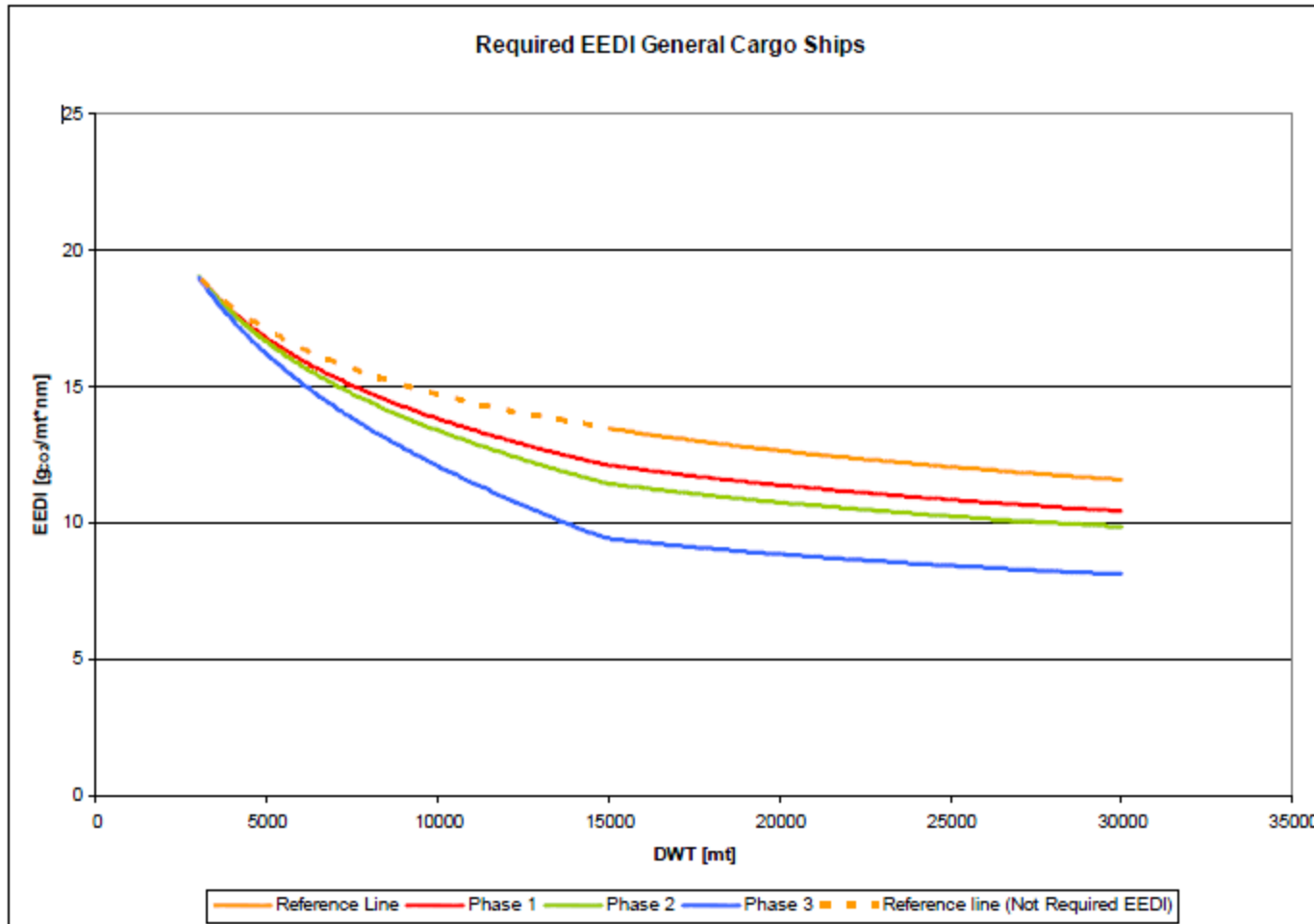
Proces

Proeftocht

Model testen

Onzekerheden

Required EEDI waarden General Cargo Ships, per phase



phase1: 2015

phase2: 2020

phase3: 2025

VERIFICATION PROCESS & INDUSTRY WG

Proces

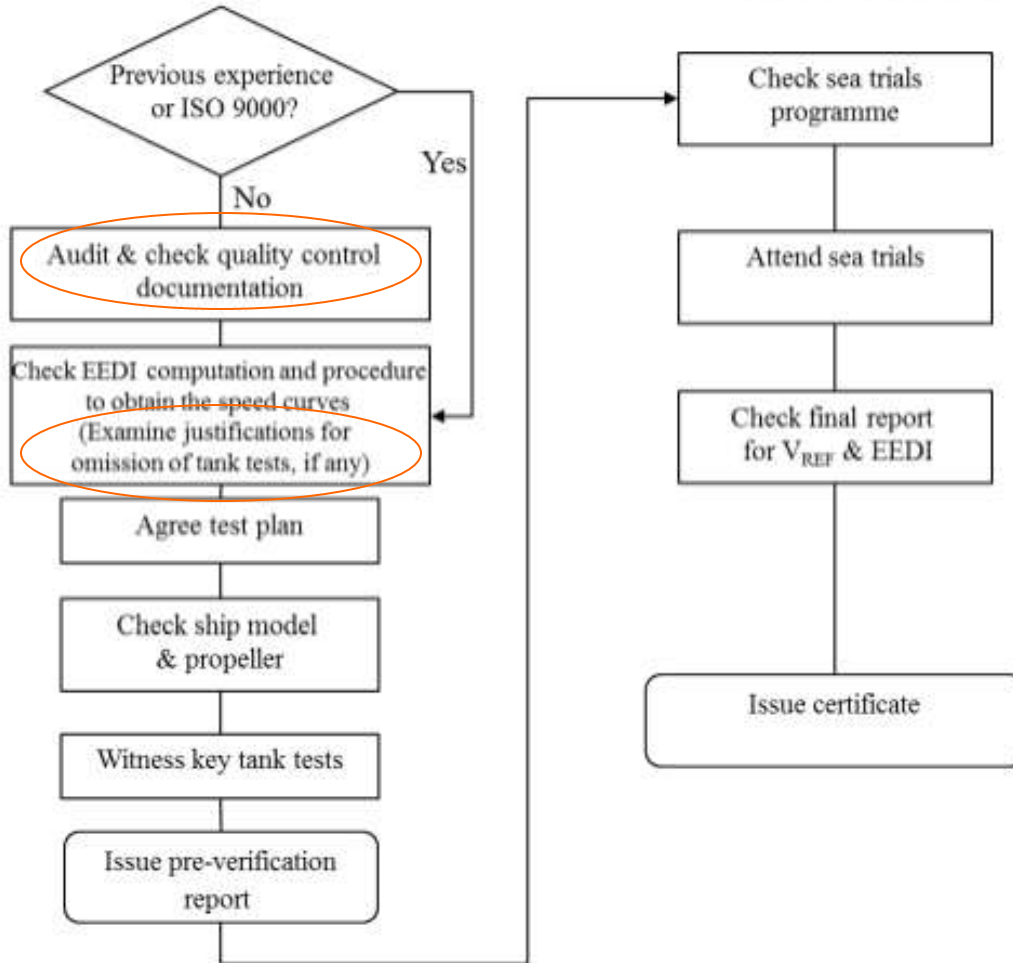
Proeftocht

Model testen

Onzekerheden

PRELIMINARY VERIFICATION

FINAL VERIFICATION



Verifier zal meestal klasse zijn

Pre-verification ontwerp

Final verification proeftocht

Figure 2: Flow of survey and certification process by verifier

WANNEER IS CFD TOEGESTAAN?

Proces

Proeftocht

Model testen

Onzekerheden

First version of the industry guidelines:

- ‘The speed power curves for these two loading conditions are to be based on tank test measurements’
- ‘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’

Verification Guidelines:

- ‘Ship of the same type means a ship of which hull form excluding additional hull features such as fins and of which principal particulars are identical to that of the base ship’

FINAL VERIFICATION

Proces

Proeftocht

Model testen

Onzekerheden

Proeftocht om gegeven het vermogen (75% MCR)
de referentie snelheid V_{ref} te bepalen

Dit geeft de def. attained EEDI

Op EEDI diepgang (summer draught
voor bulkers, gen. cargo)

EEDI conditie: diep water, geen
wind en golven



PROCEDURE PROEFTOCHT

Proces

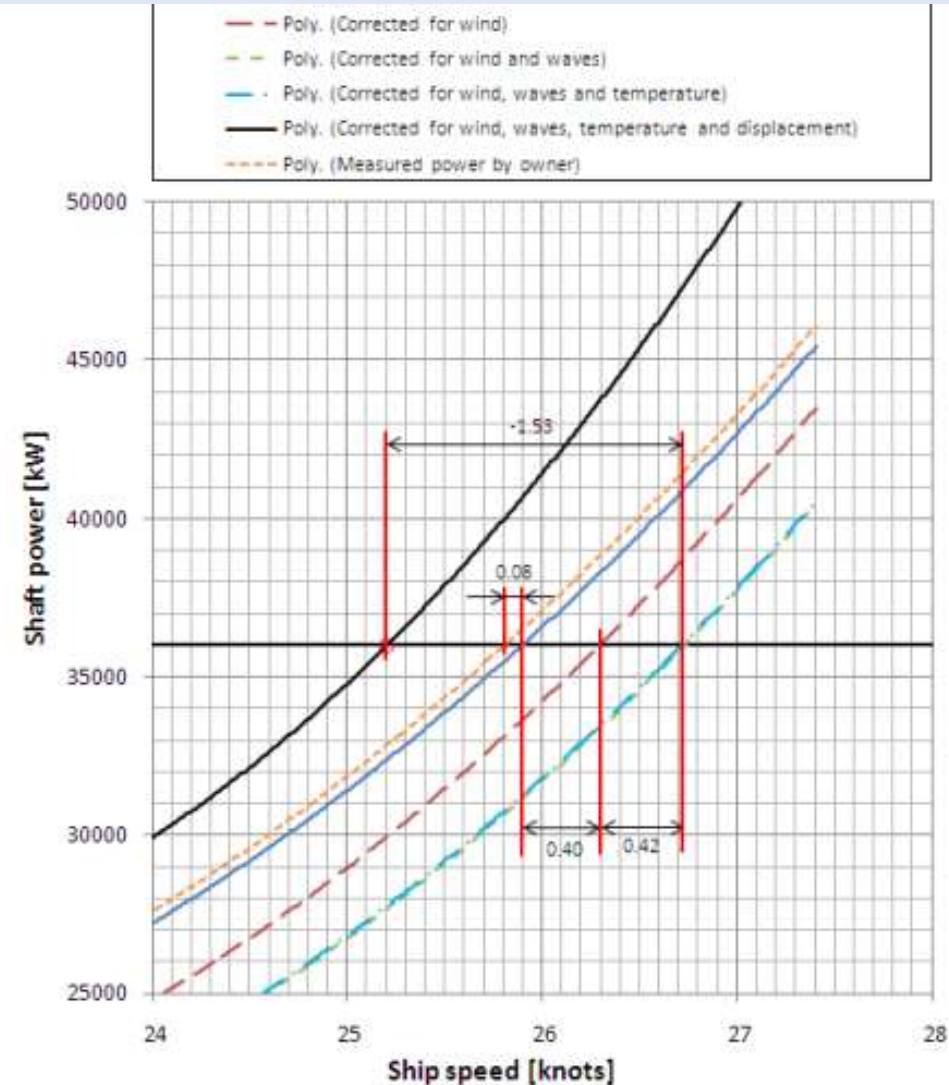
Proeftocht

Model testen

Onzekerheden

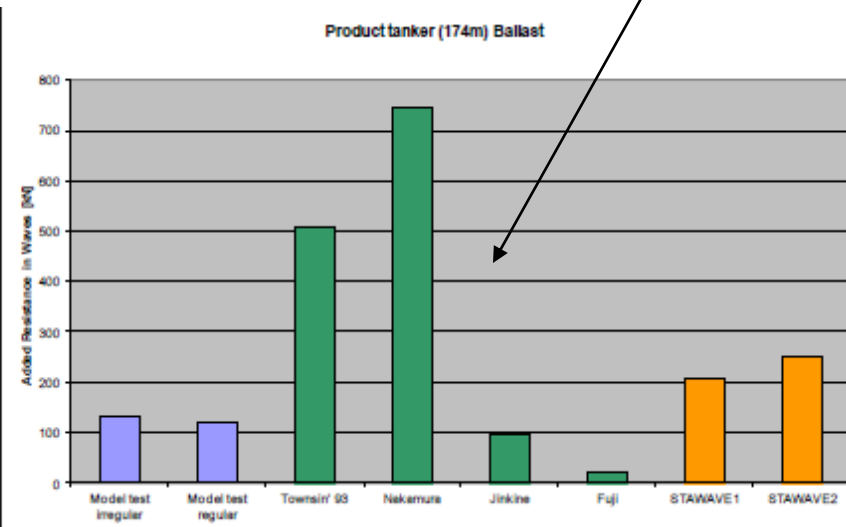
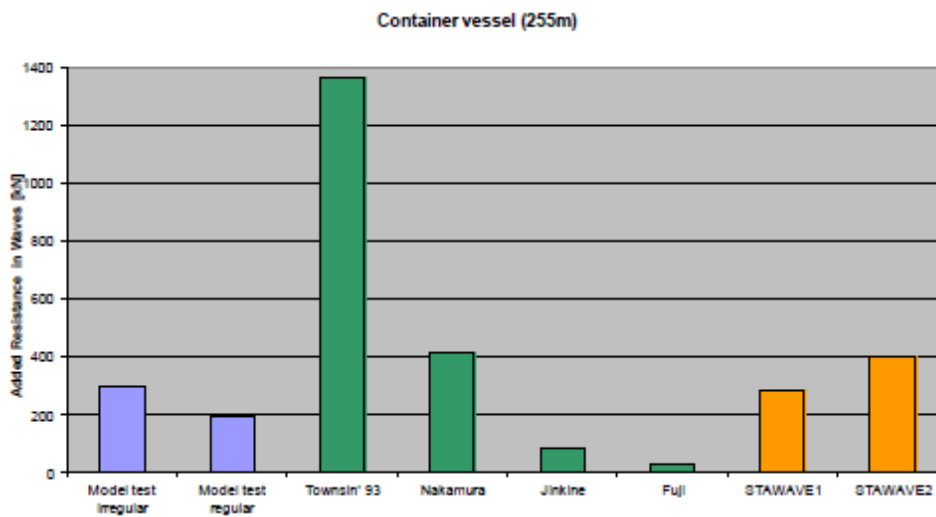
Uitvoering

- Meet snelheid over de grond en asvermogen
- Double runs om effect stroming te elimineren
- Een keer in kopgolven, terug-run achterinkomende
- Corrigeer vermogen voor wind en golven
- Conversie naar beladen conditie via modelproeven



Analyse methoden oa:

- ISO 15016 in 2002 uitgekomen. Keuze uit verschillende verschillende golf correctie methoden Grote verschillen!
- STA (Sea trial Analysis JIP) 2006. Introductie van STAWAVE 1 en 2



Model test results, ISO methods and STAWAVE, head waves

STA OF ISO?

Proces

Proeftocht

Model testen

Onzekerheden

- STA procedure opgenomen in nieuwe ITTC guideline voor speed/power trials
- Beide methoden (ITTC en ISO 15016) mogen gebruikt worden voor EEDI verificatie, te veel vrijheid in keuze golfcorrecties
- ISO is bezig om samen met ITTC beiden in lijn te brengen

Modelproeven voor pre-verificatie en omrekening ballast (proeftocht) naar beladen (EEDI) conditie

ballast

$$V_{\text{ballast}} \rightarrow P_{\text{meas}}/P_{\text{pred}}$$

Full load

$$P_{\text{meas}}/P_{\text{pred}} * P_{\text{pred}} \rightarrow V_{\text{ref}}$$

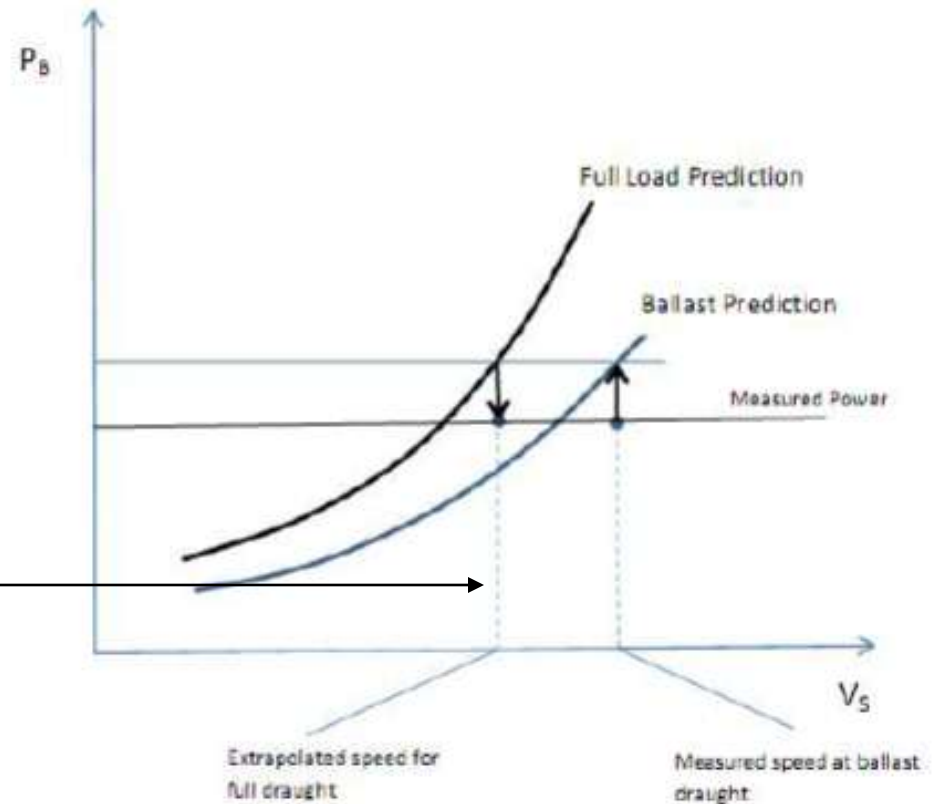


Figure 4: Extrapolation from Measured Values at sea trial draught to EEDI Draught

EXTRAPOLATIE MODEL PROEF

Proces

Proeftocht

Model testen

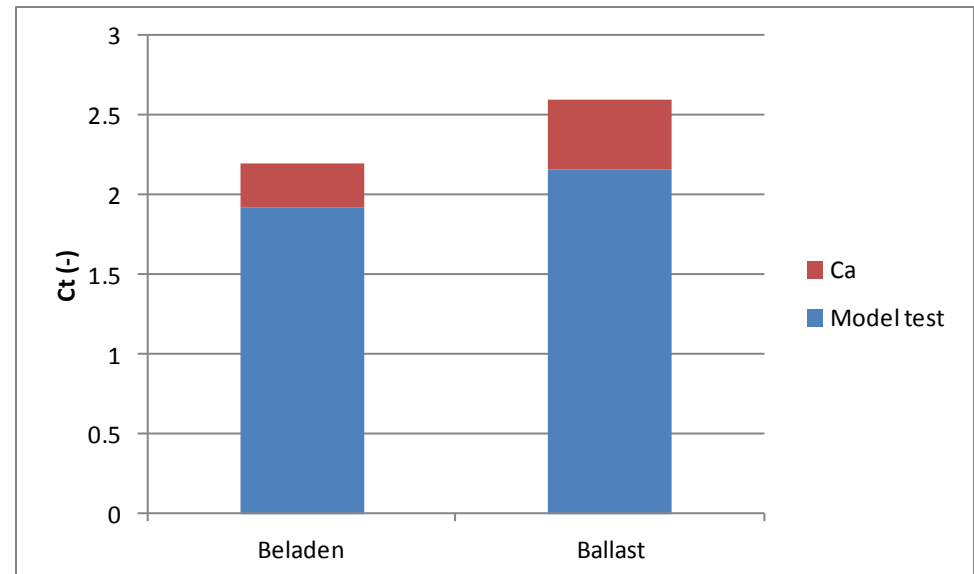
Onzekerheden

Correlation Allowance (Ca) is ervaringsgetal om te compenseren voor bekende en onbekende tekortkomingen, oa:

- luchtweerstand schip (geen bovenbouw)
- Ruwheid (model is te glad)
- ...

Dus dichten van het gat tussen modelproef en ware-grootte

$$\Delta Ca = Ca_{ballast} - Ca_{beladen}$$



BALLAST/LADEN CORRELATION ALLOWANCE

Proces

Proeftocht

Model testen

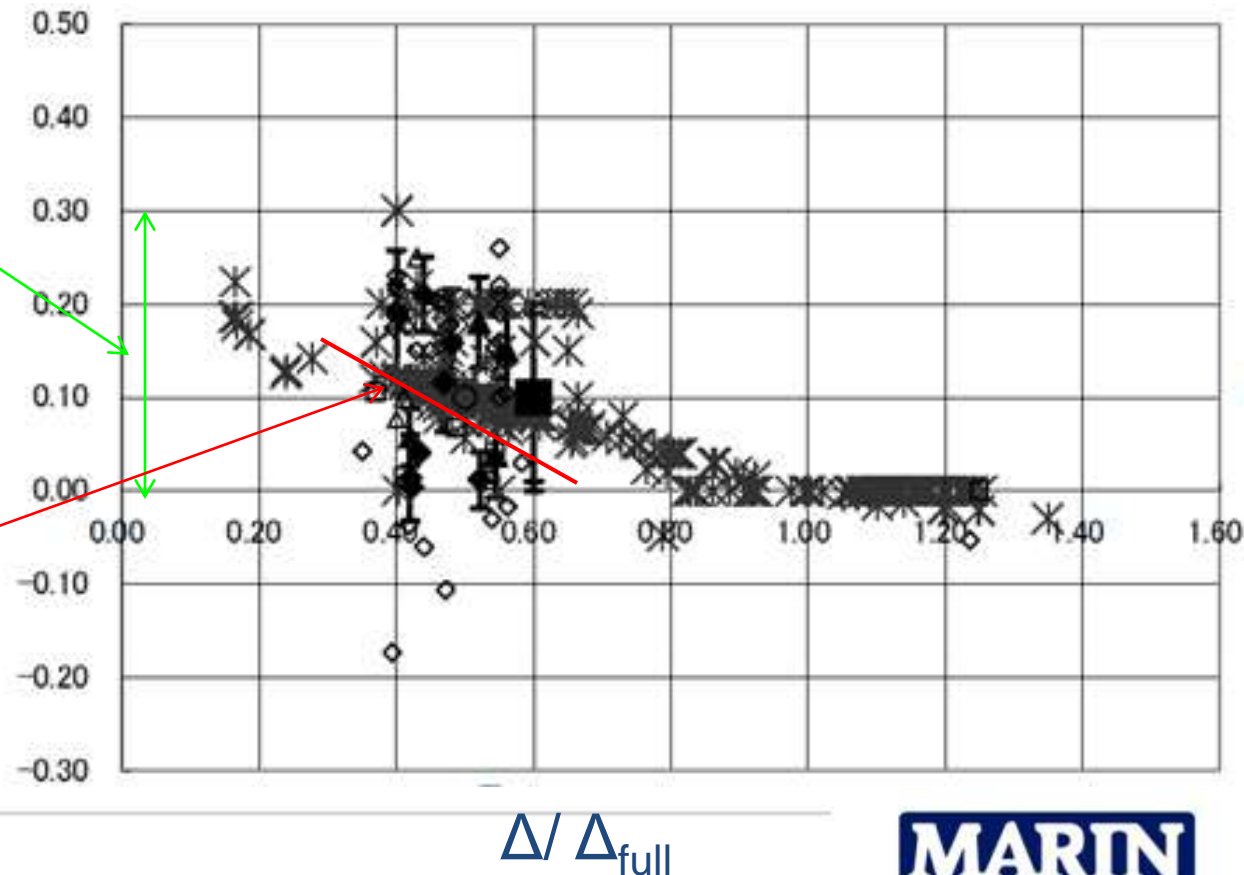
Onzekerheden

Waargenomen variaties in ΔCa als functie van displacement verhouding

~12% vermogen!

ΔCa

MARIN standaard



GUIDELINES VOOR CA VERSCHIL

Proces

Proeftocht

Model testen

Onzekerheden

Industry guidelines:

- ‘In particular, the verifier will compare the differences between experience based coefficients C_a between EEDI condition and sea trial condition’
- ‘If the difference is significantly higher than the values reported in the figure, a proper justification...’

Wat is significantly higher? Betere grens nodig, grote invloed V_{ref}

ONZEKERHEID EEDI BEPALING

Proces

Proeftocht

Model testen

Onzekerheden

Meetonzekerheid heeft te maken met nauwkeurigheid en precisie:



Onnauwkeurig, niet precies

Onnauwkeurig, precies

Nauwkeurig, niet precies

Nauwkeurig, precies

We spreken over betrouwbaarheids interval, bv $U95=2\sigma$

Onzekerheid in V_{ref} en EEDI is +/- factor 3 kleiner dan in vermogen

ONZEKERHEID WARE GROOTTE

Proces

Proeftocht

Model testen

Onzekerheden

Meetonzekerheid:

- Standaard deviatie vermogen (vd Boom, 2012) =1%

Reproduceerbaarheid:

- Correctie voor niet ideale omgevingcondities
- Zusterschepen van dezelfde werf:
 - Serie bulkcarriers (11): std P = 2.9%
 - Serie containers (8): std P = 4.0%

Komt overeen met ITTC Performance Committee (4.5%)

In EEDI is dit dus $2 * 4.5 / 3 = +/- 3%$ (inclusief zusterschepen)

BOVEN/ONDER REQUIRED EEDI

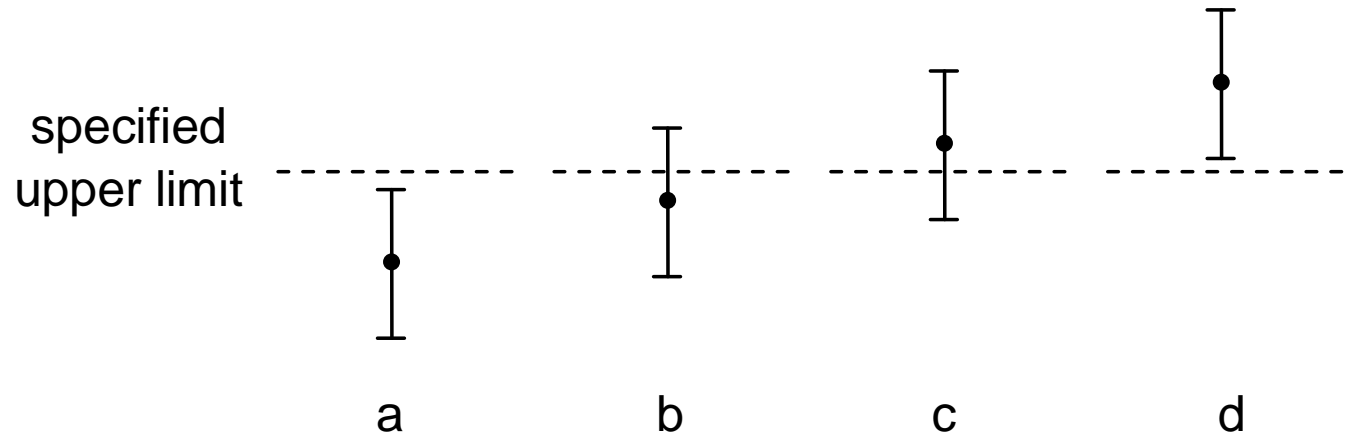
Proces

Proeftocht

Model testen

Onzekerheden

Vier meetresultaten (attained EEDI's) met betrouwbaarheden tov een limiet:



Geval a voldoet, d te hoge EEDI

Voor geval b&c geen conclusie mogelijk

Moet de attained EEDI bv 2% onder de required blijven? Of is dit een marge? Wanneer voldoet het schip?

- Model proeven altijd verplicht behalve bij 'ship of the same type' Wat wordt rol CFD? Beter specificatie wanneer wel en niet.
- ISO 15016 en STA methode beiden toegestaan voor proeftochtcorrectie. Te veel vrijheid. Naar een methode?
- 'Experience based coefficients' in extrapolatiemethode zijn nodig, maar ITTC heeft geen concrete aanbeveling voor verschillen ballast beladen, grote invloed V_{ref}
- Meten van V_{ref} met eindige betrouwbaarheid, gevolgen voor required EEDI? Mag je bv 2% erboven zitten? (CJIB)

THANK YOU!



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