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To relevant departments of CCS Headquarters, CCS surveyors, plan approval centers, relevant shipowners, ship management companies, shipyards and designers

### **Notice on Implementation of Resolution MEPC. 203(62) regarding the Requirements on Energy Efficiency for Ships in MARPOL Annex VI**

The Amendments to MARPOL Annex VI - Inclusion of regulations on energy efficiency for ships was adopted by Resolution MEPC.203 (62) on 15 July 2011 by the Marine Environment Protection Committee of the International Maritime Organization at its 62nd session and will enter into force on 1 January 2013. The requirements on energy efficiency for ships include two aspects: Energy Efficiency Design Index for new ships (EEDI) and Ship Energy Efficiency Management Plan (SEEMP), which are closely related with ship design, construction, plan approval and survey stages. EEDI is an important index to measure the technical capability on energy efficiency of new ships. SEEMP is an important operational document to promote the management of energy efficiency for ships in operation. The requirements on energy efficiency, by being included into the framework of MARPOL Annex VI, are related to and still independent from the requirements for prevention of air pollution. The resolution in both Chinese and English languages is hereby forwarded for reference, and attention is to be paid to the following technical key points:

#### **1. Application of the EEDI and SEEMP requirements**

##### **(1) Ships to which EEDI applies**

The EEDI requirements apply to all ships of 400 gross tonnage and above engaged in international voyages falling into the following 11 ship types: bulk carrier, gas carrier, tanker, container ship, general cargo ship, refrigerated cargo carrier, combination carrier, ro-ro cargo ship (vehicle carrier), ro-ro cargo ship, ro-ro passenger ship and passenger ship. However, the EEDI requirements do not apply to ships which have non-conventional propulsion systems including diesel-electric propulsion, turbine propulsion and hybrid propulsion systems falling into these ship types.

##### **(2) Ships to which SEEMP applies**

The SEEMP requirements apply to all ships of 400 gross tonnage and above engaged in international voyages.

**(3) Definitions of New ship and Existing ship**

The EEDI requirements apply to new ships in principle. However, to an existing ship which has undergone a major conversion which is so extensive, the EEDI requirements will also be required to apply retroactively.

New ship means a ship:

- 1) for which the building contract is placed on or after 1 January 2013; or
- 2) in the absence of a building contract, the keel of which is laid or which is at a similar stage of construction on or after 1 July 2013; or
- 3) the delivery of which is on or after 1 July 2015.

**(4) Waiver of EEDI requirements**

The Administration may waive the requirement for a ship of 400 gross tonnage and above from complying with the requirements on Attained EEDI and Required EEDI. However, such waiver does not apply to ships of 400 gross tonnage and above:

- 1) for which the building contract is placed on or after 1 January 2017; or
- 2) in the absence of a building contract, the keel of which is laid or which is at a similar stage of construction on or after 1 July 2017; or
- 3) the delivery of which is on or after 1 July 2019; or
- 4) in cases of a major conversion of a new or existing ship on or after 1 January 2017.

The intent of this regulation is to entitle the Administration to the right of delaying or waiver of the implementation of the EEDI requirements. However such a delay or waiver is not to be longer than 4 years. The Administration with delaying or waiver of implementation shall forthwith communicate to the Organization for circulation to the Parties to the present Protocol particularly thereof for their information..

## 2. Relevant requirements of EEDI

The EEDI requirements include two aspects: calculation of the Attained EEDI for ships and compliance of ships with the Required EEDI. Ships for which the Attained EEDI are to be calculated and ships which are to comply with the Required EEDI are listed as follows:

**Table 1 Ship types to which the EEDI requirements apply**

Ship Type	Calculation of Attained EEDI	Compliance with Required EEDI
Bulk carrier	√	√
Gas carrier	√	√
Tanker	√	√
Container ship	√	√
General cargo ship	√	√
Refrigerated cargo carrier	√	√
Combination carrier	√	√
Ro-ro cargo ship(vehicle carrier)	√	
Ro-ro cargo ship	√	
Passenger ship	√	
Ro-ro passenger ship	√	

### (1) Requirements for calculation of the Attained EEDI and compliance with the Required EEDI

For any ship listed as follows which falls into one of the 11 ship types given in Table 1 above, its Attained EEDI is to be calculated. Additionally, the 7 ship types of them are to comply with the Required EEDI:

- 1) each new ship;
- 2) each new ship which has undergone a major conversion; and
- 3) each new or existing ship which has undergone a major conversion that is so extensive that the ship is regarded by the Administration as a newly constructed ship.

The Attained EEDI is calculated by the following formula:

$$\frac{\left( \prod_{j=1}^M f_j \right) \left( \sum_{i=1}^{nME} P_{ME(i)} \cdot C_{FME(i)} \cdot SC_{ME(i)} \right) + \left( P_{AE} \cdot C_{FAE} \cdot SC_{AE} \right) + \left( \left( \prod_{j=1}^M f_j \cdot \sum_{i=1}^{nPI} P_{PI(i)} - \sum_{i=1}^{nff} f_{eff(i)} \cdot P_{AEff(i)} \right) C_{FAE} \cdot SC_{AE} \right) - \left( \sum_{i=1}^{nff} f_{eff(i)} \cdot P_{eff(i)} \cdot C_{FME} \cdot SC_{ME} \right)}{f_i \cdot capacity \cdot V_{ref} \cdot f_w}$$

The Attained EEDI should be calculated in accordance with Guidelines on the Method of Calculation of the Attained Energy Efficiency Design Index for New ships developed by IMO.

The Attained EEDI for these ships are to be as follows:

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

where X is the reduction factor specified in Table 2 for the required EEDI compared to the

EEDI Reference line.

**Table 2 Reduction factors (in percentage) for the EEDI relative to the EEDI Reference line**

Ship type	Size	Phase 0 1 Jan 2013- 31 Dec 2014	Phase 1 1 Jan 2015 -31 Dec 2019	Phase 2 1 Jan 2020-31 Dec 2024	Phase 3 1 Jan 2025 and onwards
Bulk carrier	20,000 DWT and above	0	10	20	30
	10,000-20,000DWT	n/a	0-10*	0-20*	0-30*
Gas carrier	10,000DWT and above	0	10	20	30
	2,000-10,000DWT	n/a	0-10*	0-20*	0-30*
Tanker	20,000DWT and above	0	10	20	30
	4,000-20,000DWT	n/a	0-10*	0-20*	0-30*
Container ship	15,000DWT and above	0	10	20	30
	10,000-15,000DWT	n/a	0-10*	0-20*	0-30*
General cargo ship	15,000DWT and above	0	10	15	30
	3,000-15,000DWT	n/a	0-10*	0-15*	0-30*
Refrigerated cargo carrier	5,000DWT and above	0	10	15	30
	3,000-5,000DWT	n/a	0-10*	0-15*	0-30*
Combination carrier	20,000DWT and above	0	10	20	30
	4,000-20,000DWT	n/a	0-10*	0-20*	0-30*

\* Reduction factor to be linearly interpolated between the two values dependent upon vessel size. The lower value of the reduction factor is to be applied to the smaller ship size.

n/a means that no required EEDI applies.

## (2) Method for calculation of reference line values

The reference line value given in the formula (1) above is to be calculated as follows:

$$\text{Reference line value} = a \times b^{-c} \quad (2)$$

where a, b and c are the parameters given in Table 3.

**Table 3 Parameters for determination of reference values for the different ship types**

Ship type	a	b	c
Bulk carrier	961.79	DWT of the ship	0.477
Gas carrier	1120.00	DWT of the ship	0.456
Tanker	1218.80	DWT of the ship	0.488
Container ship	174.22	DWT of the ship	0.201
General cargo ship	107.48	DWT of the ship	0.216
Refrigerated cargo carrier	227.01	DWT of the ship	0.244
Combination carrier	1219.00	DWT of the ship	0.488

## (3) Required EEDI for ships undergone major conversion

According to the provisions in the above (1) for the Required EEDI, a new ship which has undergone a major conversion and an existing ship which has undergone a major conversion which is so

extensive may both be required to comply with the Required EEDI. However, the Required EEDI is different for them:

- 1) For a major conversion belonging to the case of the above (1) 2), the Required EEDI is such that it was determined with the reduction factor applicable to the ship type and size of the converted ship in the phase corresponding to the date of contract or keel laying or delivery determined for the original ship in accordance with the definition of new ship.
- 2) For a major conversion belonging to the case of the above (1) 3), the Required EEDI is such that it was determined with the reduction factor applicable corresponding to the ship type and size of the converted ship at the date of the contract of the conversion, or in the absence of a contract, the commencement date of the conversion.

The above (1)2) is for major conversion of ships which are in accordance with the definition of new ship, while (1)3) applies to both new ships and existing ships.

### **3. SEEMP requirements**

Each ship is to keep on board a ship specific Ship Energy Efficiency Management Plan (SEEMP). This may form part of the ship's Safety Management System (SMS). The SEEMP is to be developed taking into account the Guidance for the Development of a Ship Energy Efficiency Management Plan (SEEMP) adopted by IMO.

### **4. Survey, certification and PSC requirements**

According to the regulations on energy efficiency, all ships of 400 gross tonnage and above engaged in international voyages are to be subject to related surveys and issued with an International Energy Efficiency Certificate (IEE).

#### **(1) Survey requirements**

Surveys related to all ships of 400 gross tonnage and above engaged in international voyages generally fall into two groups: initial survey and initial issuance of the IEE certificate; survey after a major conversion and renewal of IEE certificate.

For an existing ship that has not undergone a major conversion, there is no EEDI requirement and only a SEEMP is needed to keep onboard. In this case the survey is carried out to verify that the ship is provided with a SEEMP which is in compliance with the Guidance for the Development of a Ship Energy Efficiency Management Plan (SEEMP) developed by IMO. Such a survey is to take place at the first intermediate or renewal survey identified in the IAPP certificate, whichever is the first, on or after 1 January 2013.

#### **(2) Certification requirements**

Once authorized, an IEE certificate for the ship is to be issued after a satisfactory survey to any ship of 400 gross tonnage and above to which the energy efficiency requirements apply. The IEE certificate is

to be valid throughout the life of the ship except in the following cases where the certificate will cease to be valid:

- if the ship is withdrawn from service or if a new IEE certificate is issued following major conversion of the ship; or
- upon transfer of the ship to the flag of another State.

### **(3) Port state control (PSC)**

Any ship to which the energy efficiency requirements apply is to be subject to port state inspection. However, such an inspection is to be limited to verifying, when appropriate, that there is a valid IEE Certificate on board, not the check of operational requirements (e.g. whether specific measures provided in the SEEMP are actually carried out and what the result is).

## **5. Relationship between the IEE certificate and the IAPP certificate**

After the energy efficiency requirements on EEDI and SEEMP are included into the framework of MARPOL Annex VI, the ship may hold both the IEE and the IAPP certificates at the same time. These two certificates are independent from each other. The IEE certificate indicates a ship's compliance with energy efficiency requirements while the IAPP certificate indicates a ship's compliance with air pollution prevention requirements. Cease of validity of either of them will not affect the validity of the other.

The relationship between the two certificates lies in the fact that for an existing ship the time of survey for initial issuance of the IEE certificate is determined by the time of intermediate or renewal survey identified in the IAPP certificate, on or after 1 January 2013.

## **6. The verifications and calculations of EEDI**

6.1. In terms of issues related to verifications and calculations on attained EEDI, IMO will circulate relevant Guidelines, CCS will follow the trend and circulate updated circulars accordingly therewith.

6.2. On March 9, 2010 CCS has issued Circular (2010) Circ. No. 10 total No.10 "Notice on Voluntary Applying IMO "Interim Guidelines on the Method of Calculation of the Energy Efficiency Design Index for New Ships" and "Interim Guidelines on Voluntary Verification of the Energy Efficiency Design Index" for guidance on preparation and interim implementation of energy efficiency Regulations.

## **7. Document of Compliance(DOC)**

CCS can issue DOCs to relevant applicants before Regulations on energy efficiency in MARPOL Annex VI enter into force. The Forms of DOCs will be formulated and issued later.

This circular will be released on CCS website: [www.ccs.org.cn](http://www.ccs.org.cn) and forwarded by CCS branches to relevant shipowners, ship management companies, shipyards and ship designers within their respective geographical business area.

Annex: Resolution MEPC.203(62) - **Amendments to MARPOL Annex VI - Inclusion of regulations on energy efficiency for ships**