Subject

Survey and Certification for EEDI and SEEMP required by the Amendments to ANNEX VI of MARPOL 73/78

ClassNK

Technical Information

No. TEC-1048
Date 5 October 2015
Rev. Date 1 April 2024

To whom it may concern

For the amendments to MARPOL Annex VI that make the "Energy Efficiency Design Index (EEDI)" and the "Ship Efficiency Management Plan (SEEMP)" mandatory from 1 January 2013, relevant requirements, survey and certification processes have already been provided by ClassNK Technical Information No. TEC-0929 issued on 31 October 2012.
At the 66th session of the Marine Environment Protection Committee (MEPC 66) held in April 2014, further amendments to MARPOL Annex VI for adding the certain ship types into the EEDI regulations were adopted (IMO Resolution MEPC.251(66)), and entered into force from 1 September 2015.
In addition, for Japanese flagged platforms (including FPSOs and FSUs), drilling rigs and any other ship without means of propulsion, SEEMP is not required to these ships from 1 September 2015, by the circular notice.
This Technical Information re-provides details on survey and certification procedures with the relevant information on these amendments, and ClassNK Technical Information No. TEC-0929, TEC-0939 and TEC-0955 are thus revoked, accordingly.

1. Terminology
   The following definitions for terminology will apply in this Technical Information.
   (1) "New ship" means a ship:
      (i) for which the building contract is placed on or after 1 January 2013; or
      (ii) 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
      (iii) the delivery of which is on or after 1 July 2015.
   (2) "Existing ship" means a ship which is not a new ship.
   (3) "Major Conversion" means a conversion of a ship:
      (i) which substantially alters the dimensions, carrying capacity or engine power of the ship; or
      (ii) which changes the type of the ship; or
      (iii) the intent of which in the opinion of the Administration is substantially to prolong the life of the ship; or
      (iv) which otherwise so alters the ship that, if it were a new ship, it would become subject to relevant provisions of the present Convention not applicable to it as an existing ship; or
      (v) which substantially alters the energy efficiency of the ship and includes any modifications that could cause the ship to exceed the applicable required EEDI.

(To be continued)

(4) "Attained EEDI" is the EEDI value achieved by an individual ship.
(5) "Required EEDI" is the allowable maximum value of attained EEDI for the specific ship type and size.
(6) "Reference line" is the average line of the EEDI determined for existing ships of the same type expressed by an exponential function of the deadweight calculated by the IMO by using data on ships built during the ten year period from 1999 to 2008. (For cruise passenger ships, reference line is expressed by an exponential function of the gross tonnage.)
(7) "EEDI Technical File" is a document that contains the information necessary for the calculation of the attained EEDI and that shows the process of calculation.
(8) "Additional Information" consists of documents that provide supplementary information for the verification of the EEDI, which need to be submitted to ClassNK.
(9) "Industry Guidelines" refers to guidelines developed by IACS and other industries such as shipowners shipbuilders, research institutes, or similar industry based organizations, etc. to provide details and examples of calculating attained EEDI as well as support the method and role of the verifier in charge of conducting the survey and certification of EEDI in compliance with IMO Guidelines.
Note:
Industry guidelines have been adopted as IACS Procedural Requirement No.38 (PR38). Please refer to ClassNK Technical Information No. TEC-0956 for more details.
(10) "EEDI Condition" is a ship's loading condition corresponding to the maximum summer load draught in order to determine the capacity under EEDI calculations. However, for container ships, a draught corresponding to 70% of the ship's deadweight is to be applied instead of the maximum summer load draught.
(11) "Conventional propulsion" means a method of propulsion where a main reciprocating internal combustion engine(s) is the prime mover and coupled to a propulsion shaft either directly or through a gear box.
(12) "Non-conventional propulsion" means a method of propulsion, other than conventional propulsion, including diesel-electric propulsion, turbine propulsion, and hybrid propulsion systems.
(13) "A ship delivered on or after 1 September 2019" means a ship:
(i) for which the building contract is placed on or after 1 September 2015; or
(ii) 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 March 2016; or
(iii) the delivery of which is on or after 1 September 2019.
Note:
A ship for which the building contract is placed on or after 1 September 2015, and the delivery is before 1 September 2019 falls into this definition.

2. Application
The amendments to MARPOL ANNEX VI apply to all ships of 400 gross tonnage and above which are engaged in the international voyages. However, they are not applied to ships not propelled by mechanical means, and platforms including FPSOs, FSUs and drilling rigs, regardless of their propulsion.

(To be continued)

Notwithstanding the above, the regulations on EEDI mentioned in subparagraphs (1) and (2) is not to apply to the following ships:

- which have non-conventional propulsion (However, this does not include cruise passenger ships and LNG carriers delivered on or after 1 September 2019); or
- which have ice-breaking capability (A cargo ship designed to break level ice independently with a speed of at least 2 knots when the level ice thickness is 1.0m or more having ice bending strength of at least 500kPa); or
- which are waived by the Administration from having to comply with the requirements.

(1) Attained EEDI

For each new ship that falls into one or more of the categories defined in Regulation 2.25 to 2.35, 2.38 and 2.39 of MARPOL ANNEX VI, Attained EEDI is to be calculated in accordance with "2014 Guidelines on the method of calculation of the attained energy efficiency design index (EEDI) for new ships" (IMO Resolution MEPC.245(66), as amended). For the definition of each type of ship, please refer to Attachment 1.

(2) Required EEDI

In the case of new ships that fall into one of the categories defined in Regulation 2.25 to 2.31, 2.33 to 2.35, 2.38 and 2.39, a ship's Attained EEDI is to be fall on or below the Required EEDI for that ship type and size. Required EEDI is scheduled to become more stringent in a phased manner (Phase 0 to Phase 3) using a reduction factor from the reference line. For the details on the Required EEDI, please refer to Attachment 2 and Attachment 3.

(3) SEEMP

All ships (both new and existing ships) with a gross tonnage of 400 tons and above will be required to retain a SEEMP on board by the completion date of the Initial Survey given in Section 4 of this Technical Information on or after 1 January 2013.

3. Issuance of International Energy Efficiency Certificate (hereafter referred to as "IEE Certificate")

After completion of the Initial Survey, an IEE Certificate is issued for all ship of 400 gross tonnage and above engaged in international voyages. In the case where the Flag Administration has not ratified Annex VI of MARPOL 73/78, ClassNK will carry out the relevant surveys and issue a Document of Compliance on behalf of the Administration or a Statement of Compliance.
The IEE certificate has no expiry date, since it will be valid throughout the life of the ship, except in cases where the certificate is rewritten or reissued.

Ships which are not required to keep an SEEMP on board (e.g. drilling rigs) are not required to be issued with an IEE Certificate.

4. Surveys for IEE Certificate

(1) General

For an IEE Certificate, only an Initial Survey is carried out, in principle, and subsequent periodical surveys are not required. However, in cases where any of the following major conversions of the ship is conducted, it is necessary to carry out an Occasional Survey to verify the EEDI and to rewrite the IEE Certificate.

(To be continued)

(i) For new ships, when a major conversion referred to Section 1.(3) of this Technical Information is carried out after delivery; or
(ii) For new or existing ships, a major conversion regarded by the Administration as being equivalent to a newly constructed ship is carried out.

(2) Timing of Initial Survey
(i) New ship: before a new ship is put in service
(ii) Existing ship: at the first intermediate or renewal survey of the International Air Pollution Prevention Certificate (IAPP Certificate), whichever is the first, on or after 1 January 2013.

5. Details of survey regarding EEDI

EEDI verification is conducted in accordance with "2014 Guidelines on survey and certification of the energy efficiency design index (EEDI)" (IMO Resolution MEPC.254(67), as amended) and "Industry Guidelines", through two steps: preliminary verification at the design stage and final verification during sea trials.

In addition, if a ship is equipped with innovative energy efficiency technologies (e.g. air lubrication system, waste heat recovery system), relevant verification will be carried out in accordance with "2013 Guidance on treatment of innovative energy efficiency technologies for calculation and verification of the attained EEDI" (IMO MEPC.1/Circ.815).

The basic flow of the EEDI verification process is shown in Attachment 4.

(1) Procedure of preliminary verification of EEDI
(i) Review of the tank test plan*
(ii) Witnessing of the tank tests*
Surveyor of ClassNK service site having jurisdiction over the tank test facility attends the tank tests according to the test plan, and confirms the following items, in principle.
(a) Quality control of the tank test facility
(b) Ship model: Manufacturing accuracy
(c) Propeller Model: Manufacturing accuracy
(d) Calibration records of measuring equipment
(e) Draught at the resistance test and self-propulsion test
(f) Measurement items of resistance test, self-propulsion test and propeller open water test
(iii) Document review (Please refer to Section 6 of this Technical Information regarding the documents for submission.)
The ClassNK EEDI Department will review the calculation process used for determining the Attained EEDI, which is calculated using a power curve (the relationship between ship speed and main engine output) estimated under the EEDI Condition and principal particulars of the ship, in order to verify the results for the design stage based on the EEDI Technical File and Additional Information.
(iv) Issuance of preliminary verification report
A preliminary verification report will be issued by ClassNK after the completion of the preliminary verification of EEDI at design stage.

(To be continued)

* A tank test for an individual ship may be omitted in the following cases:
(a) The results of tank tests for ships of the same type are available;
(b) Required EEDI is not applied;
(c) Speed trials are conducted under the EEDI Condition; or
(d) Other cases may be omitted based on suitable technical justifications

Note:
In cases where the tank tests will be carried out at the time of the planning stage of ship construction before making a class entry application, ClassNK can conduct a preliminary verification of EEDI for the proposed ship as an appraisal service instead of as a statutory survey.

(2) Procedure of final verification of EEDI
(i) Review of the Sea Trial procedure
(ii) Witnessing of the sea trial
A Surveyor of the ClassNK service site having jurisdiction over the shipbuilder will attend the sea trial, and confirm the following items for EEDI verification in principle:
(a) propulsion and power supply system, particulars of the engines, and other relevant items described in the EEDI Technical File;
(b) speed trial conditions, including
weather conditions, sea conditions, draught, trim and displacement; and
(c) ship speed and output of the main engine.
(iii) Confirmation of Attained EEDI
The relevant data measured during the speed trials is to be confirmed and the correction process for the Attained EEDI is to be verified. Specifically, it is to be confirmed that the reference ship speed (Vref), normally the ship speed at 75% MCR power under EEDI Condition, is determined based on the power curves developed by the results of speed trial and speed correction.
(iv) Approval of EEDI Technical File
The final EEDI Technical File is to be confirmed and approved by the ClassNK service site.

6. Documents to be submitted for EEDI verification
(1) Documents to be submitted
The minimum necessary number of documents and location where they are to be submitted are as follows.
(i) Preliminary verification
(a) Tank tests plan (3 copies, EEDI Department)
(b) EEDI Technical File (3 copies, EEDI Department)
(c) Additional Information (1 copy, EEDI Department)

(To be continued)

(ii) Final verification
  (a) Procedure of Sea Trial (2 copies, Service site)
  (b) Results of Speed trial (1 copy, Service site)
  (c) EEDI Technical File (Final) (4 copies, Service site)

(iii) Other documents
  (a) NOx Technical File (for confirmation of SFC)
  (b) Results of lightweight measurements (for confirmation of deadweight)

(2) Items to be included in the EEDI Technical File
  (i) Basic data such as deadweight/gross tonnage, maximum continuous ratings of the main and auxiliary engines, estimated ship speed, specific fuel consumptions of the main and auxiliary engines;
  (ii) Estimated power curves under the fully loaded condition and sea trial condition;
  (iii) Principal particulars of the propulsion system and electric power supply system on board;
  (iv) Estimation process and methodology for determining power curves;
  (v) Description of energy saving equipment;
  (vi) Calculated value of Attained EEDI;
  (vii) Calculated values of attained $EEDI_{weather}$ and f_w values (not equal to 1.0), if those values are calculated; and
  (viii) For LNG carriers, relevant data required.

(3) Documents to be submitted as Additional Information
  (i) Description of tank test facility;
  (ii) Lines of the model ship and actual ship;
  (iii) Lightweight of the ship and displacement table;
  (iv) Detailed report on the method and results of the tank tests;
  (v) Detailed calculation process for determining the ship's speed, which includes the way to estimate the power curves;
  (vi) Technical justifications for exempting tank test (in cases where the tank test is exempted);
  (vii) For LNG carriers, detailed calculation process of auxiliary engine power (P_{AE}) and specific fuel consumption for steam turbine ($SFC_{SteamTurbine}$) ; and
  (viii) Other documents as deemed necessary.

Note:
Since the additional information may contain the submitter's confidential information, ClassNK will return such information to the submitter after completion of the verification, if requested. In addition, ClassNK will conclude a confidentiality agreement with the submitter, as necessary.

7. Details of survey regarding SEEMP
Although the SEEMP itself needs not be approved by the Administration or Classification Society under the revised MARPOL ANNEX VI, it is to be retained onboard. During the Initial Survey, the following items are to be confirmed regarding the SEEMP.

(To be continued)

(1) Confirmation items
  (i) The ship specific SEEMP is provided onboard.
  (ii) The SEEMP is established in a working language or languages understood by ship's personnel.
  (iii) The SEEMP is developed taking into account "2012 Guidelines for the development of a ship energy efficiency management plan (SEEMP)" (IMO Resolution MEPC.213(63)), and at least, the following items are included:

    (a) Energy efficiency improvement measures (representative example of the measures are presented in chapter 5 of IMO Guidelines, e.g. weather routeing, speed optimization, etc.);
    (b) Monitoring methods for energy efficiency;
    (c) Measurable goals for energy efficiency; and
    (d) Procedures of evaluation.

8. Application for Initial Survey
(1) New ships
Please submit an "Application for Classification and Statutory Services during Construction (Form 1A (Rev. January 2013)) " to the appropriate service site after ticking the box for Survey and Certificate of "Energy Efficiency" under Survey and Issuance of Certificates.
(2) Existing ships
Please submit an "Application for Surveys and Issue of Certificate (Form 2A (Rev. January 2013))" to the appropriate service site after ticking the box "Initial" for "Energy Efficiency(EE)" under 1.(3) Statutory Survey and ticking the left box of "EE certificate" under item 2. Certificate(s) to be issued.

9. Application for issuance of a Statement of Compliance or Statement of Fact
(1) ClassNK can issue a Statement of Compliance on a voluntary basis for ships whose flag Administrations have not ratified ANNEX VI and have not delegated authorization to the Society to issue a Document of Compliance. In order to obtain a "STATEMENT OF COMPLIANCE FOR ENERGY EFFICIENCY", which is equivalent to an IEE Certificate, please complete and submit the prescribed application form to the appropriate service site in the same way as described in paragraph 8 above on the issuance of IEE Certificate.
(2) As already explained in ClassNK Technical Information No. TEC-0863, ClassNK has already started to offer appraisal services regarding EEDI of ships prior to the amendments of MARPOL ANNEX VI coming into effect. This appraisal service, which differs from the service described in paragraph (1) of this Section, will be conducted for the following cases upon request from the applicant.

  (i) Preliminary verification of EEDI of the ship before making a class entry application (Please refer to Note in Section 5 of this Technical Information)
  (ii) EEDI verification for existing ships
  (iii) EEDI verification for a ship that is not engaged in international voyages

(To be continued)

You can download the IMO Guidelines mentioned in this Technical Information from the following URL.
http://www.imo.org/en/OurWork/Environment/PollutionPrevention/AirPollution/Pages/Index-of-MEPC-Resolutions-and-Guidelines-related-to-MARPOL-Annex-VI.aspx

For any questions about the above, please contact:

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Attachment:

1. Definition of each type of ship defined in Regulation 2 of MARPOL ANNEX VI
2. Details of the Required EEDI
3. Details of the applicable phase for Required EEDI
4. Basic flow of EEDI verification process

Attachment 1. to
ClassNK Technical Information No. TEC-1048

Definition of Each Type of Ship Defined in Regulation 2 of MARPOL ANNEX VI

Reg.	Ship Type	Definition
2.25	Bulk carrier	A ship which is intended primarily to carry dry cargo in bulk, including such types as ore carriers as defined in SOLAS chapter XII, regulation 1, but excluding combination carriers.
2.26	Gas carrier	A cargo ship, other than an LNG carrier as defined in paragraph 38 of this regulation, constructed or adapted and used for the carriage in bulk of any liquefied gas.
2.27	Tanker	An oil tanker as defined in MARPOL Annex I, regulation 1 or a chemical tanker or an NLS tanker as defined in MARPOL Annex II, regulation 1.
2.28	Container ship	A ship designed exclusively for the carriage of containers in holds and on deck.
2.29	General cargo ship	A ship with a multi-deck or single deck hull designed primarily for the carriage of general cargo. This definition excludes specialized dry cargo ships, which are not included in the calculation of reference lines for general cargo ships, namely livestock carrier, barge carrier, heavy load carrier, yacht carrier, nuclear fuel carrier.
2.30	Refrigerated cargo carrier	A ship designed exclusively for the carriage of refrigerated cargoes in holds.
2.31	Combination carrier	A ship designed to load 100% deadweight with both liquid and dry cargo in bulk.
2.32	Passenger ship	A ship which carries more than 12 passengers.
2.33	Ro-ro cargo ship (Vehicle carrier)	A multi deck roll-on-roll-off cargo ship designed for the carriage of empty cars and trucks.
2.34	Ro-ro cargo ship	A ship designed for the carriage of roll-on-roll-off cargo transportation units.
2.35	Ro-ro passenger ship	A passenger ship with roll-on-roll-off cargo spaces.
2.38	LNG carrier	A cargo ship constructed or adapted and used for the carriage in bulk of liquefied natural gas (LNG).
2.39	Cruise passenger ship	A passenger ship not having a cargo deck, designed exclusively for commercial transportation of passengers in overnight accommodations on a sea voyage.

Attachment 2. to
ClassNK Technical Information No. TEC-1048

$$Required\ EEDI = \left(1 - \frac{X}{100}\right) \times Reference\ \ line\ value$$
$$= \left(1 - \frac{X}{100}\right) \times (a \times DWT^{-c})$$

Parameters for Determination of Reference Line Values for the Different Ship Types

Ship Type		Reference line
Bulk carrier		961.79 x $DWT^{-0.477}$
Gas carrier		1120.00 x $DWT^{-0.456}$
Tanker		1218.80 x $DWT^{-0.488}$
Container ship		174.22 x $DWT^{-0.201}$
General cargo ship		107.48 x $DWT^{-0.216}$
Refrigerated cargo carrier		227.01 x $DWT^{-0.244}$
Combination carrier		1219.00 x $DWT^{-0.488}$
Ro-ro cargo ship (Vehicle carrier)	DWT/GT < 0.3	$((DWT/GT)^{-0.7}$ x 780.36) x $DWT^{-0.471}$
	DWT/GT ≥ 0.3	1812.63 x $DWT^{-0.471}$
Ro-ro cargo ship		1405.15 x $DWT^{-0.498}$
Ro-ro passenger ship		752.16 x $DWT^{-0.381}$
LNG carrier		2253.7 x $DWT^{-0.474}$
Cruise passenger ship having non-conventional propulsion		170.84 x $GT^{-0.214}$

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

Ship type	Size	Reduction factor (X) %			
		Phase 0	Phase 1	Phase 2	Phase 3
		2013/1/1 ~	2015/1/1 ~	2020/1/1 ~	2025/1/1 ~
Bulk carrier	20,000 DWT -	0	10	20	30
	10,000 - 20,000 DWT	n/a	0 - 10 (1)	0 - 20 (1)	0 - 30 (1)
Gas carrier	10,000 DWT -	0	10	20	30
	2,000 - 10,000 DWT	n/a	0 - 10 (1)	0 - 20 (1)	0 - 30 (1)
Tanker	20,000 DWT -	0	10	20	30
	4,000 - 20,000 DWT	n/a	0 - 10 (1)	0 - 20 (1)	0 - 30 (1)
Container ship	15,000 DWT -	0	10	20	30
	10,000 - 15,000 DWT	n/a	0 - 10 (1)	0 - 20 (1)	0 - 30 (1)
General cargo ship	15,000 DWT -	0	10	15	30
	3,000 - 15,000 DWT	n/a	0 - 10 (1)	0 - 15 (1)	0 - 30 (1)
Refrigerated cargo carrier	5,000 DWT -	0	10	15	30
	3,000 - 5,000 DWT	n/a	0 - 10 (1)	0 - 15 (1)	0 - 30 (1)
Combination carrier	20,000 DWT -	0	10	20	30
	4,000 - 20,000 DWT	n/a	0 - 10 (1)	0 - 20 (1)	0 - 30 (1)
LNG carrier(3)	10,000 DWT -	n/a	10 (2)	20	30
Ro-ro cargo ship(3) (Vehicle carrier)	10,000 DWT -	n/a	5 (2)	15	30
Ro-ro cargo ship(3)	2,000 DWT -	n/a	5 (2)	20	30
	1,000 - 2,000 DWT	n/a	0 - 5 (1) (2)	0 - 20 (1)	0 - 30 (1)
Ro-ro passenger ship(3)	1,000 DWT -	n/a	5 (2)	20	30
	250 - 1,000 DWT	n/a	0 - 5 (1) (2)	0 - 20 (1)	0 - 30 (1)
Cruise passenger ship(3) having non-conventional propulsion	85,000 GT -	n/a	5 (2)	20	30
	25,000 - 85,000 GT	n/a	0 - 5 (1) (2)	0 - 20 (1)	0 - 30 (1)

Note: "n/a" means that no required EEDI applies

(1) Reduction factor to be linearly interpolated between the two values dependent upon ship size.

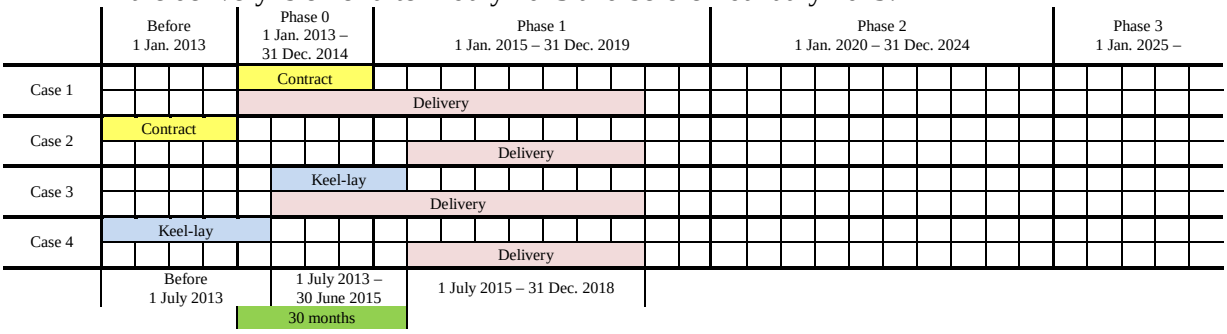
(2) Phase 1 commences for those ships on 1 September 2015.

(3) Reduction factor applies to those ships delivered on or after 1 September 2019.

Attachment 3. to
ClassNK Technical Information No. TEC-1048

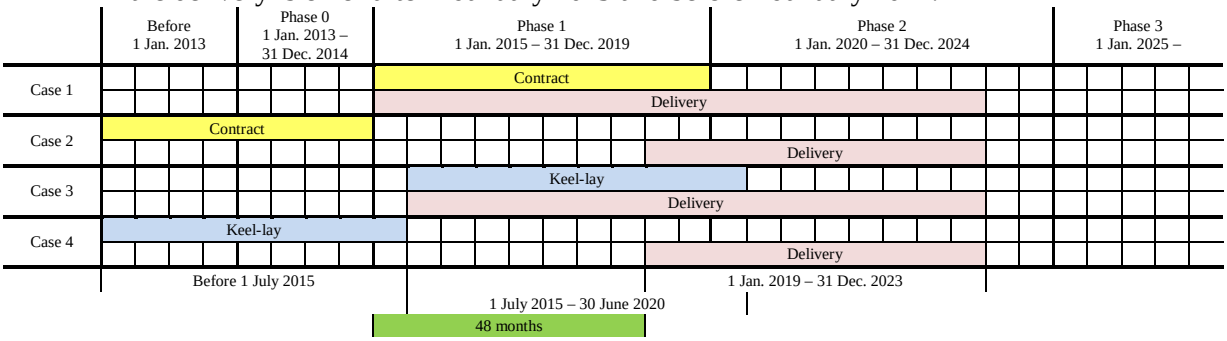
A) The required EEDI of Phase 0 is applied to the following new ship:
   (1) for which the building contract is placed in Phase 0, and the delivery is before 1 January 2019; or
   (2) the building contract of which is placed before Phase 0, and the delivery is on or after 1 July 2015 and before 1 January 2019; or

   in the absence of a building contract,
   (3) the keel of which is laid or which is at a similar stage of construction on or after 1 July 2013 and before 1 July 2015, and the delivery is before 1 January 2019; or
   (4) the keel of which is laid or which is at a similar stage of construction before 1 July 2013, and the delivery is on or after 1 July 2015 and before 1 January 2019.



B) The required EEDI of Phase 1 is applied to the following new ship:
   (1) for which the building contract is placed in Phase 1, and the delivery is before 1 January 2024; or
   (2) the building contract of which is placed before Phase 1, and the delivery is on or after 1 January 2019 and before 1 January 2024; or

   in the absence of a building contract,
   (3) the keel of which is laid or which is at a similar stage of construction on or after 1 July 2015 and before 1 July 2020, and the delivery is before 1 January 2024; or
   (4) the keel of which is laid or which is at a similar stage of construction before 1 July 2015, and the delivery is on or after 1 January 2019 and before 1 January 2024.



C) The required EEDI of Phase 2 is applied to the following new ship:

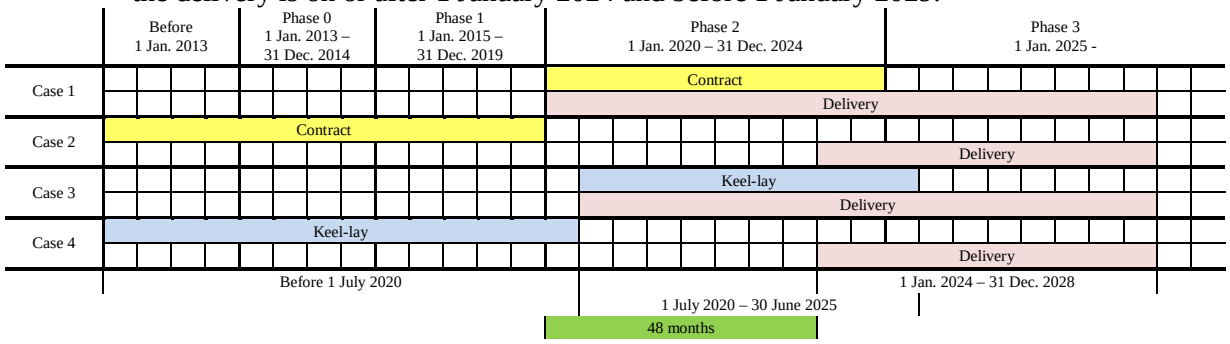
(1) for which the building contract is placed in Phase 2, and the delivery is before 1 January 2029; or

(2) the building contract of which is placed before Phase 2, and the delivery is on or after 1 January 2024 and before 1 January 2029; or

in the absence of a building contract,

(3) the keel of which is laid or which is at a similar stage of construction on or after 1 July 2020 and before 1 July 2025, and the delivery is before 1 January 2029; or

(4) the keel of which is laid or which is at a similar stage of construction before 1 July 2020, and the delivery is on or after 1 January 2024 and before 1 January 2029.

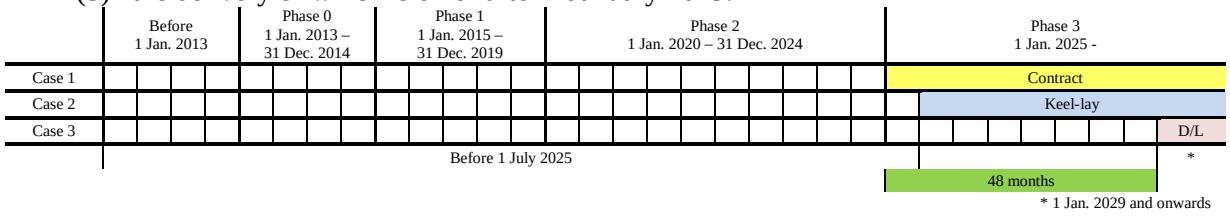


D) The required EEDI of Phase 3 is applied to the following new ship:

(1) for which the building contract is placed on or after 1 January 2025; 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 2025; or

(3) the delivery of which is on or after 1 January 2029.



Summary Table of Applicable Phase by Combination of Contract and Delivery Date

1. For Bulk carrier, Gas carrier, Tanker, Container ship, General cargo ship, Refrigerated cargo carrier and Combination carrier:

Contract / Delivery	Before 1 Jan. 2013	1 Jan. 2013 – 31 Dec. 2014	1 Jan. 2015 – 31 Dec. 2019	1 Jan. 2020 – 31 Dec. 2024	1 Jan. 2025 -
Before 1 July 2015	n/a	Phase 0	Phase 1		
1 July 2015 - 31 Dec. 2018	Phase 0	Phase 0	Phase 1		
1 Jan. 2019 - 31 Dec. 2023	Phase 1	Phase 1	Phase 1	Phase 2	
1 Jan. 2024 - 31 Dec. 2028	Phase 2	Phase 2	Phase 2	Phase 2	Phase 3
1 Jan. 2029 -	Phase 3	Phase 3	Phase 3	Phase 3	Phase 3

2. For Ro-Ro cargo ship (Vehicle), Ro-ro cargo ship, Ro-ro passenger ship, LNG carrier and Cruise passenger ship:

Contract / Delivery	Before 1 Jan. 2013	1 Jan. 2013 – 31 Aug. 2015	1 Sep. 2015 – 31 Dec. 2019	1 Jan. 2020 – 31 Dec. 2024	1 Jan. 2025 -
Before 1 July 2015	n/a	n/a			
1 July 2015 - 31 Aug. 2019	n/a	n/a	Phase 1		
1 Sep. 2019 - 31 Dec. 2023	Phase 1	Phase 1	Phase 1	Phase 2	
1 Jan. 2024 - 31 Dec. 2028	Phase 2	Phase 2	Phase 2	Phase 2	Phase 3
1 Jan. 2029 -	Phase 3	Phase 3	Phase 3	Phase 3	Phase 3

Attachment 4. to
ClassNK Technical Information No. TEC-1048

Basic Flow of EEDI Verification Process