20-450

RULES FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS

Part I Ships Operating in Polar Waters, Polar Class Ships and Ice Class Ships

Rules for the Survey and Construction of Steel Ships
Part I 2020 AMENDMENT NO.2

Rule No.112 24 December 2020
Resolved by Technical Committee on 5 August 2020

ClassNK
NIPPON KAIJI KYOKAI

An asterisk (*) after the title of a requirement indicates that there is also relevant information in the corresponding Guidance.

Rule No.112   24 December 2020
AMENDMENT TO THE RULES FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS

"Rules for the survey and construction of steel ships" has been partly amended as follows:

Part I SHIPS OPERATING IN POLAR WATERS, POLAR CLASS SHIPS AND ICE CLASS SHIPS

ANNEX 1   SPECIAL REQUIREMENTS FOR THE MATERIALS, HULL STRUCTURES, EQUIPMENT AND MACHINERY OF POLAR CLASS SHIPS

Chapter 1   GENERAL

1.2   Definitions

1.2.3   Hull Areas

Sub-paragraphs (1) to (3) have been amended as follows.

The hull areas are defined as areas reflecting the magnitude of the loads that are expected to act upon them, and divided into the following (see **Fig. 1.2.3-1**). If a polar class ship that installed special icebreaking stern structure and propulsion unit intended to operate astern in ice regions, the hull area of the ship is to refer to **Fig. 1.2.3-2**.

(1) Bow area
  (a) Bow area of *PC*1, *PC*2, *PC*3 and *PC*4 polar class ships
  "Bow area" is defined as the hull area which is located forward of the intersection point of the *UIWL* and the line with a waterline angle (as defined in **1.2.4**) of 10 degrees at the *UIWL* (hereinafter referred to as "the aft boundary of the Bow area"), and below the line connecting the point 1.5 *m* above the *UIWL* at the aft boundary of the Bow area and the point 2.0 *m* above the *UIWL* at the stem.
  (b) Bow area of *PC*5, *PC*6 and *PC*7 polar class ships
  "Bow area" is defined as the hull area which is located forward of the intersection point of the *UIWL* and the line with a waterline angle (as defined in **1.2.4**) of 10 degrees at the *UIWL*, and below the line connecting the point 1.0 *m* above the *UIWL* at the aft boundary of the Bow area and the point 2.0 *m* above the *UIWL* at the stem.
  Notwithstanding the provision in **(a)** and **(b)**, the aft boundary of the Bow area is not to be forward of the intersection point of the extended line of the stem frame and the baseline of the ship. In addition, the aft boundary of the Bow area need not be more than 0.45 times L_{UI}~~$_{WL}$~~ ~~(length of the ship at the *UIWL*)~~ aft of the ~~*F.P*~~ fore side of the stem at the intersection with the *UIWL*.
(2) Bow Intermediate area
  (a) Bow Intermediate area of *PC*1, *PC*2, *PC*3 and *PC*4 polar class ships with
  "Bow Intermediate area" is defined as the hull area which is located aft of the aft boundary of and forward of the vertical line 0.04L_{UI}~~$_{WL}$~~ aft of the point on the *UIWL* where the waterline angle is 0 degrees (hereinafter referred to as "the aft boundary of the Bow Intermediate area"), and below the line 1.5 *m* above the *UIWL*.

(b) Bow Intermediate area of *PC*5, *PC*6 and *PC*7 polar class ships with

"Bow Intermediate area" is defined as the hull area which is located aft of the aft boundary of the Bow area, and forward of the vertical line 0.04L_{UI}~~WL~~ aft of the point on the *UIWL* where the waterline angle is 0 degrees, and below the line 1.0 *m* above the *UIWL*.

(3) Stern area

(a) Stern area of *PC*1, *PC*2, *PC*3 and *PC*4 polar class ships with

"Stern area" is defined as the hull area aft of the *A.P.* to the vertical line located 70 % of the distance from the *A.P.* forward the maximum breadth point at the *UIWL* (hereinafter referred to as "the fore boundary of the Stern area"), and below the line 1.5 *m* above the *UIWL*.

(b) Stern area of *PC*5, *PC*6 and *PC*7 polar class ships

"Stern area" is defined as the hull area aft of the *A.P.* to the vertical line located 70 % of the distance from the *A.P.* forward the maximum breadth point at the *UIWL*, and below the line 1.0 *m* above the *UIWL*. However, the distance from the *A.P.* to the fore boundary of the Stern area is not to be less than 0.15 times L_{UI}~~WL~~. If the ship is assigned the additional notation "*Icebreaker*" (abbreviated to *ICB*), the forward boundary of the stern region is to be at least 0.04L_{UI} forward of the section where the parallel ship side at the *UIWL* ends.

((4) to (7) are omitted.)

Paragraph 1.2.4 has been amended as follows.

1.2.4 ~~Waterline Angle~~ Terms

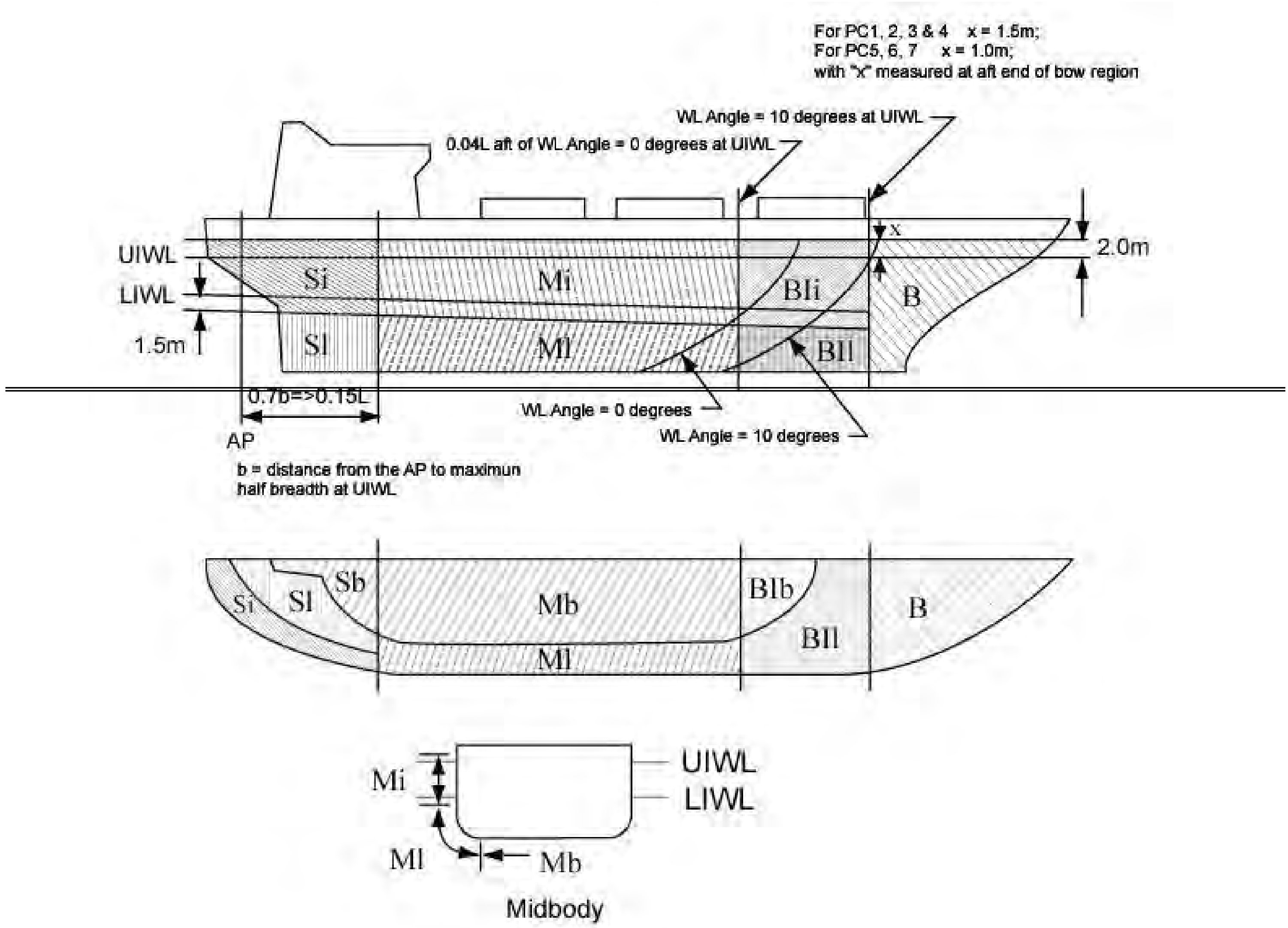
1 Waterline angle is defined as the angle between the tangential line of side shell and the line of longitudinal direction of a ship at water line. (See **Fig. 1.2.4-1**)

2 The length L_{UI} is the distance, in m, measured horizontally from the fore side of the stem at the intersection with the *UIWL* to the after side of the rudder post or the centre of the rudder stock if there is no rudder post. L_{UI} is not to be less than 96 %, and need not be greater than 97 %, of the extreme length of the *UIWL* measured horizontally from the fore side of the stem. In ships with unusual stern and bow arrangement the length L_{UI} will be specially considered.

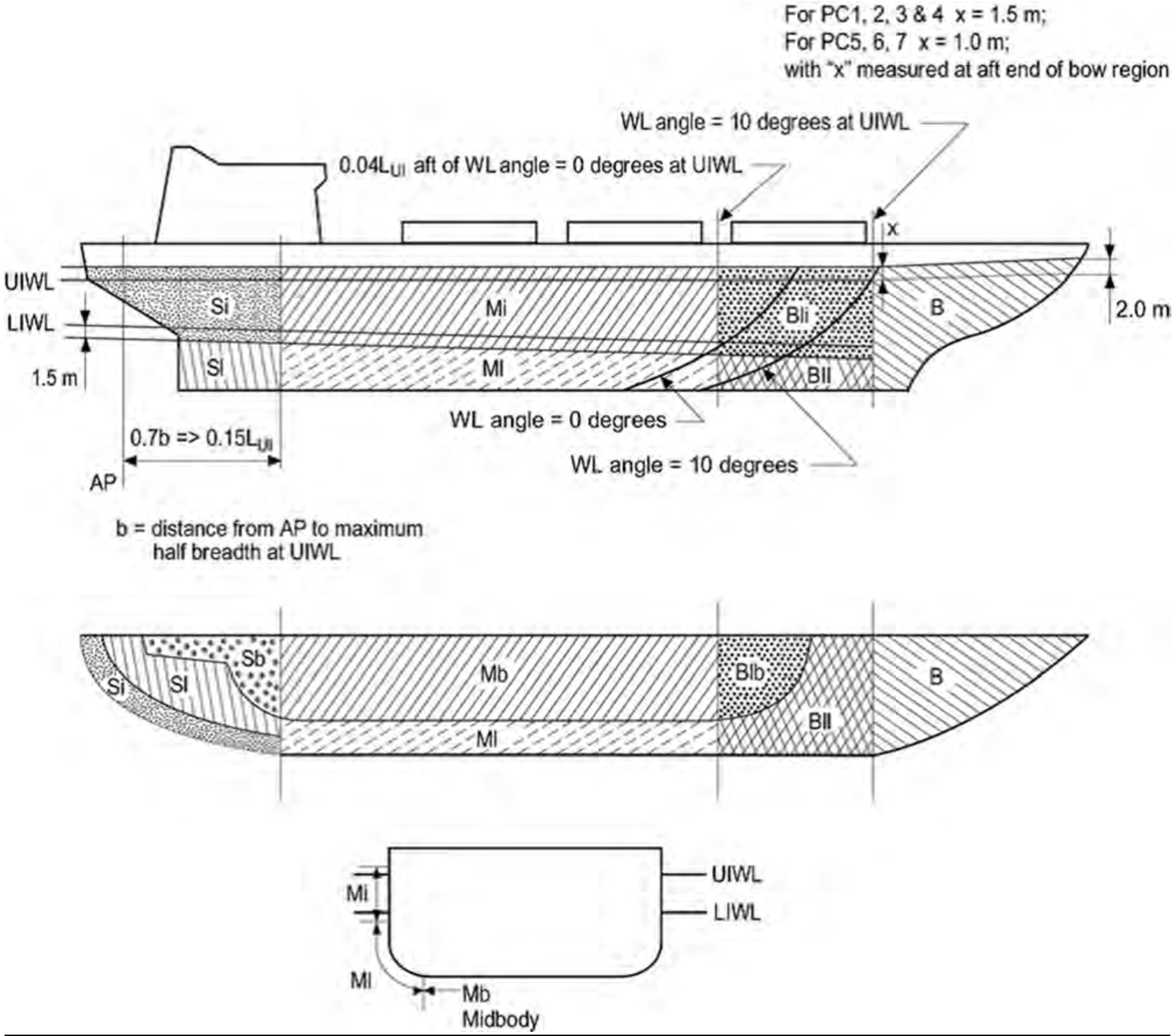
3 The ship displacement D_{UI} is the displacement, in *kt*, of the ship corresponding to the *UIWL*. Where multiple waterlines are used for determining the *UIWL*, the displacement is to be determined from the waterline corresponding to the greatest displacement.

Fig. 1.2.3-1 and Fig. 1.2.3-2 have been amended as follows.

Fig. 1.2.3-1 Hull areas of polar class ship



~~Notes:~~
~~Notation in the figure are as follows:~~
~~B: Bow area~~
~~BIi: Bow Intermediate Icebelt area~~
~~BIl: Bow Intermediate Lower area~~
~~Bib: Bow Intermediate Bottom area~~
~~Mi: Midbody Icebelt area~~
~~Ml: "Midbody Lower area~~
~~Mb: Midbody Bottom area~~
~~Si: Stern Icebelt area~~
~~Sl: Stern Lower area~~
~~Sb: Stern Bottom area~~



Notes:

Notation in the figure are as follows:

B: Bow area

BIi: Bow Intermediate Icebelt area

BIl: Bow Intermediate Lower area

Bib: Bow Intermediate Bottom area

Mi: Midbody Icebelt area

Ml: Midbody Lower area

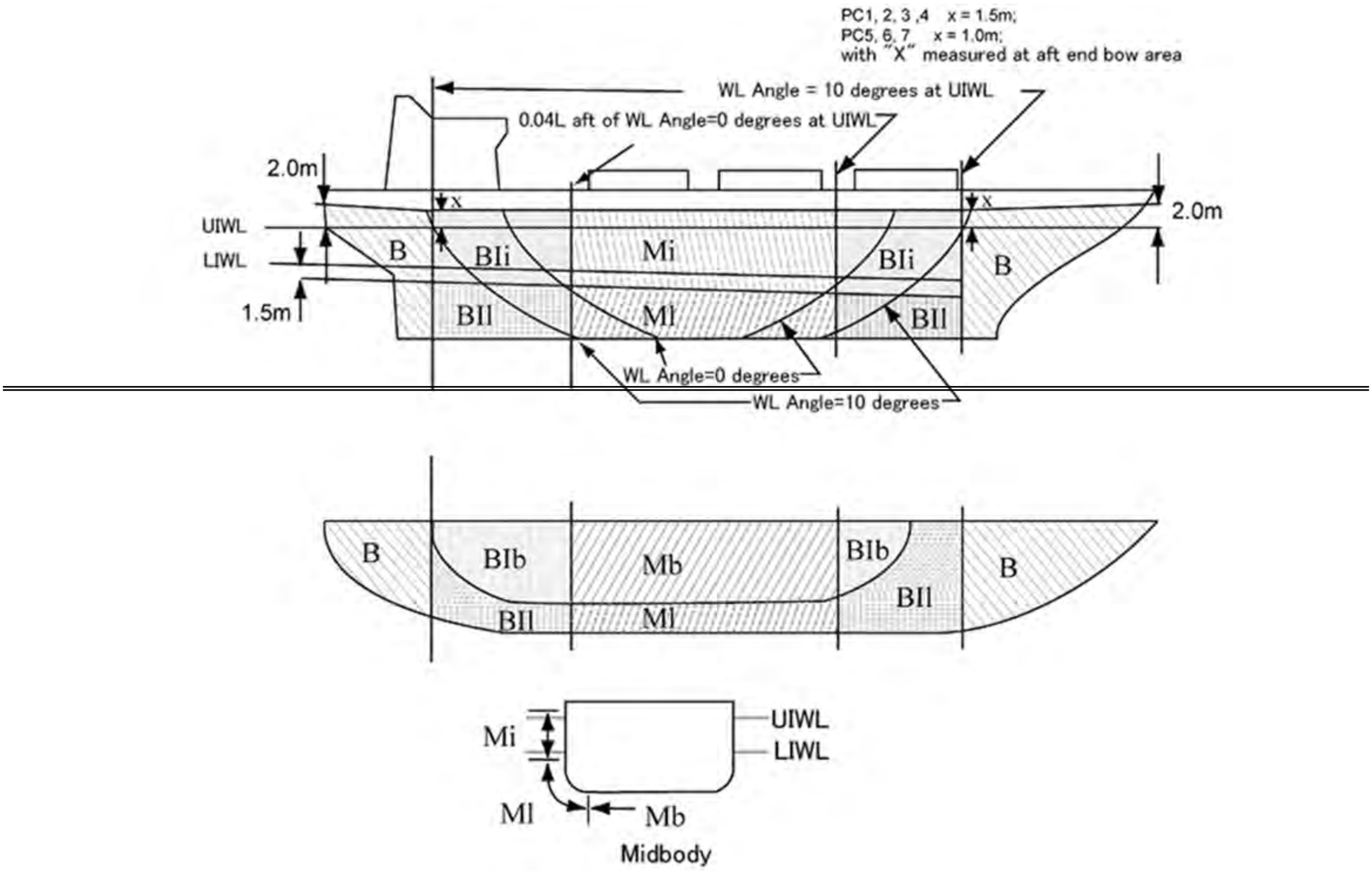
Mb: Midbody Bottom area

Si: Stern Icebelt area

Sl: Stern Lower area

Sb: Stern Bottom area

Fig. 1.2.3-2 Hull area for polar class ship intended to operate astern in ice regions



Notes:
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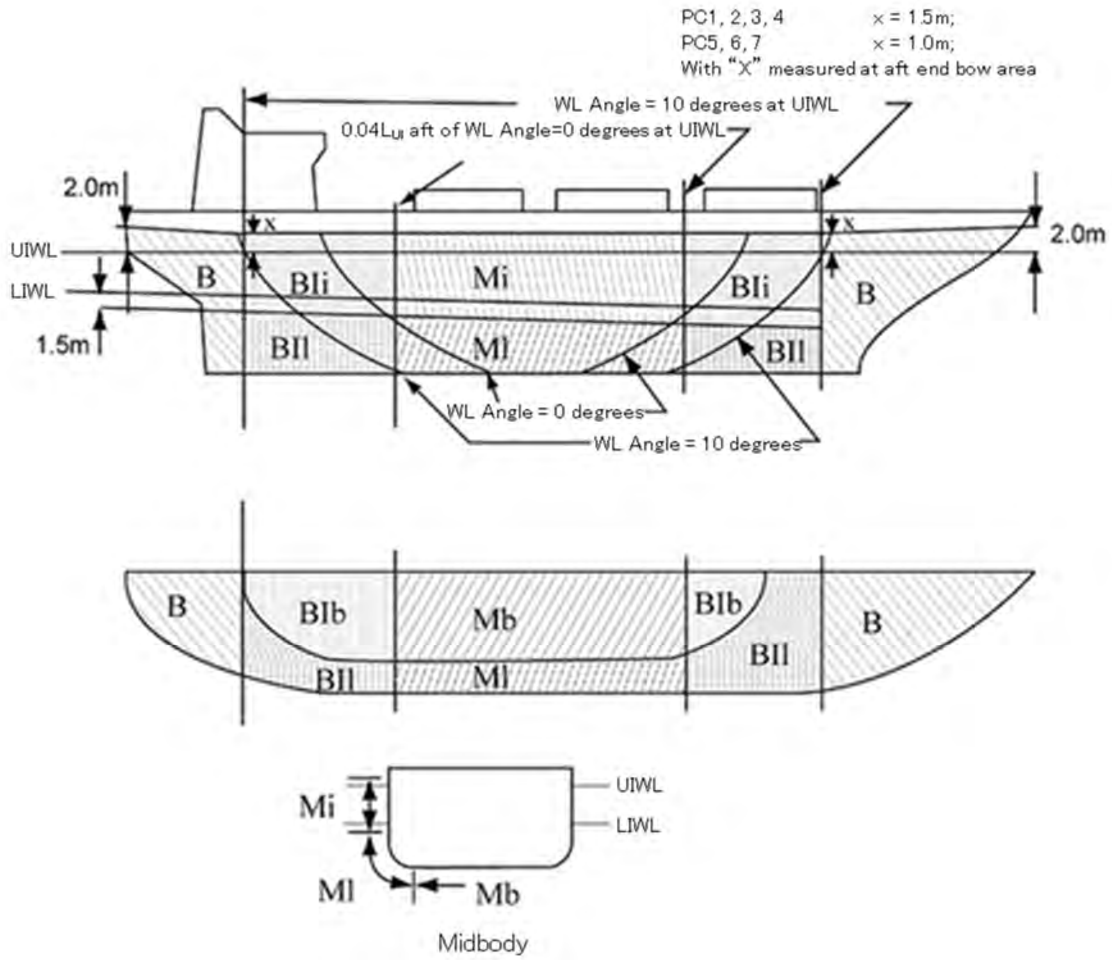

Notes:
Notation in the figure are as follows:
B: Bow area
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Ml: Midbody Lower area
Mb: Midbody Bottom area

Chapter 2 MATERIALS AND WELDING

2.1 Material

2.1.2 Material Classes and Grades*

1 Material classes and grades used for the hull structure are given in **Table 2.1.2-1** to **Table 2.1.2-4**.

2 In addition, material classes for weather and sea exposed structural members and for members attached to the weather and sea exposed shell plating of polar class ships are given in **Table 2.1.2-5**.

3 For polar class ships designed base on a designated design temperature, the steels used for hull structures are to comply with the requirements in **1.1.12, Part C of the Rules**. However, regardless of the design temperature, the steel grades are not to be of lower than the steel grade provided in **Part I of the Rules**.

4 The steel grade of rolled steels with a thickness of 50 *mm* or more and/or a minimum upper yield stress of 390 N/mm^2 or more is deemed appropriate by the Society.

5 Where stainless clad steel is used for hull structure, **Table 2.1.3-1** and **Table 2.1.3-2** are to apply according to thickness of the base metal in lieu of thickness of the plates.

Table 2.1.2-5 has been amended as follows.

Table 2.1.2-5 Material Classes for Structural Members of Polar Class Ships

Structural Members	Material Class
Shell plating within the Bow and Bow Intermediate Icebelt hull areas (B, B_{Ii})	II
All weather and sea exposed Secondary and Primary, as defined in **Table 2.1.2-1**, structural members outside $0.4L_{UI}$ amidships	I
Plating materials for stem and stern frames, rudder hone, rudder, propeller nozzle, shaft brackets, ice skeg, ice knife and other appendages subject to ice impact loads	II
All inboard framing members attached to the weather and sea-exposed plating including any contiguous inboard member within 600 *mm* of the plating	I
Weather-exposed plating and attached framing in cargo holds of ships which by nature of their trade have their cargo hold hatches open during cold weather operations	I
All weather and sea exposed Special, as defined in **Table 2.1.2-1**, structural members within $0.2L_{UI}$ from *FP*	II

Chapter 3 HULL STRUCTURE

3.2 Subdivision and Stability

3.2.2 Stability in Damaged Condition

Sub-paragraph (1) has been amended as follows.

Ships are to be able to withstand flooding resulting from hull penetration due to ice impact, of which the damage extent is to be in accordance with the following **(1)** to **(3)**. The residual stability following ice damage is to be such that the factor s_i, as defined in **4.2.3-1, Part C or 4.2.3-1, Part** CS, is equal to one for all loading conditions used to calculate the attained subdivision index A in **4.2.1-2, Part C** or **4.2.1-2, Part CS**. However, for cargo ships that comply with subdivision and damage stability regulations, the residual stability criteria of that instrument is to be met for each loading condition.

(1) the longitudinal extent is 0.045 times ~~the upper ice waterline length~~ L_{UI} if centred forward of the maximum breadth on the upper ice waterline, and 0.015 times L_{UI} otherwise, and are to be assumed at any longitudinal position along the ship's length;

(2) the transverse penetration extent is 760 *mm*, measured normal to the shell over the full extent of the damage; and

(3) the vertical extent is the lesser of 0.2 times the upper ice waterline draught or the longitudinal extent, and is to be assumed at any vertical position between the keel and 1.2 times the upper ice waterline draught.

3.3 Design Ice Load

3.3.1 Glancing Impact Load Characteristics

Sub-paragraphs -1(3) and (4) have been amended as follows.

1 Bow area

(1) In the Bow area, the force *F*, line load *Q*, pressure *P* and load patch aspect ratio *AR* associated with the glancing impact load scenario are functions of the hull angles measured at the *UIWL*. The influence of the hull angles is captured through calculation of a bow shape coefficient f_a. The hull angles are defined in **Fig. 3.3.2-1**.

(2) The waterline length of the bow region is generally to be divided into 4 sub-regions of equal length. The force *F*, line load *Q*, pressure *P* and load patch aspect ratio *AR* are to be calculated with respect to the mid-length position of each sub-region (each maximum of *F*, *Q* and *P* is to be used in the calculation of the ice load parameters P_{avg}, *b* and *w*).

(3) The Bow area load characteristics for bow forms defined in **3.1.1-1** are determined as follows:

(a) Shape coefficient fa_i is to be taken as the minimum value obtained from the following two formulas. However, when the shape coefficient fa_i is 0.6 or more, it is taken to be 0.6.

~~$$fa_{i,1} = \left\{0.097 - 0.68\left(\frac{x}{L} - 0.15\right)^2\right\}\frac{\alpha_i}{\sqrt{\beta_i}}$$~~

$$fa_{i,1} = \left\{0.097 - 0.68\left(\frac{x}{L_{UI}} - 0.15\right)^2\right\}\frac{\alpha_i}{\sqrt{\beta_i'}}$$

~~$fa_{i,2} = \frac{1.2CF_F}{sin(\beta_i')CF_C(\frac{\Delta_I}{1000})^{0.64}}$~~

<u>$fa_{i,2} = \frac{1.2CF_F}{sin(\beta_i')CF_C(\frac{\Delta_{UI}}{1000})^{0.64}}$</u>

(b) Force F is to be obtained from the following formula.

~~$F_i = fa_i CF_C \left(\frac{\Delta_I}{1000}\right)^{0.64} \times 1000$~~

<u>$F_i = fa_i CF_C \left(\frac{\Delta_{UI}}{1000}\right)^{0.64} \times 1000$</u> (kN)

(c) Load patch aspect ratio AR_i is to be obtained from the following formula, however, when load patch aspect ratio AR_i is less than 1.3, it is taken to be 1.3.

$AR_i = 7.46 \sin(\beta'_i)$

(d) Line load Q is to be obtained from the following formula.

$Q_i = \left(\frac{F_i}{1000}\right)^{0.61} \frac{CF_D}{AR_i^{0.35}} \times 1000$ (kN/m)

(e) Pressure P is to be obtained from the following formula:

$P_i = \left(\frac{F_i}{1000}\right)^{0.22} CF_D^{\,2} AR_i^{0.3} \times 1000$ (kN/m^2)

where

i : sub-region considered

~~L'~~<u>L_{UI}</u> : ship length (m) <u>as defined in **1.2.4-2**</u> measured on the ~~*UIWL*~~ from the forward side of the stem to the after side of the rudder post, or the centre of the rudder stock if there is no rudder post. ~~L'~~ is to be not less than 96% and need not exceed 97% of the extreme length on the ~~*UIWL*~~.

x :distance (m) from the ~~forward perpendicular~~ <u>fore side of the stem at the intersection with the *UIWL*</u> to station under consideration

α :waterline angle (deg), see **Fig. 3.3.2-1**

β' :normal frame angle (deg), see **Fig. 3.3.2-1**

~~Δ_I~~ <u>Δ_{UI}</u> :ship displacement (t) <u>as defined in **1.2.4-3**</u> ~~at the *UIWL*~~, not to be taken as less than 5,000 t

CF_C :Crushing failure Class Factor from **Table 3.3.1-1**

CF_F :Flexural failure Class Factor from **Table 3.3.1-1**

CF_D :Load patch dimensions Class Factor from **Table 3.3.1-1**

Table 3.3.1-1 Class Factors

Polar Class	Crushing failure Class Factor (CF_C)	Flexural failure Class Factor (CF_F)	Load patch dimensions Class Factor (CF_D)	Displacement Class Factor (CF_{DIS})	Longitudinal strength Class Factor (CF_L)
*PC*1	17.69	68.60	2.01	250	7.46
*PC*2	9.89	46.80	1.75	210	5.46
*PC*3	6.06	21.17	1.53	180	4.17
*PC*4	4.50	13.48	1.42	130	3.15
*PC*5	3.10	9.00	1.31	70	2.50
*PC*6	2.40	5.49	1.17	40	2.37
*PC*7	1.80	4.06	1.11	22	1.81

(4) The bow area load characteristics for bow forms defined in **3.1.1-2** are determined as follows:

(a) Shape coefficient, fa_i, is to be taken as

$$fa_i = \frac{\alpha_i}{30}$$

(b) Force, F_i:

~~$$F_i = fa_i CF_{CV}\left(\frac{\Delta_I}{1000}\right)^{0.64} \times 1000$$~~

$$F_i = fa_i CF_{CV}\left(\frac{\Delta_{UI}}{1000}\right)^{0.64} \times 1000 \ (kN)$$

(c) Line load, Q_i:

$$Q_i = \left(\frac{F_i}{1000}\right)^{0.22} CF_{QV} \times 1000 \quad (kN/m)$$

(d) Pressure, P_i:

$$P_i = \left(\frac{F_i}{1000}\right)^{0.56} CF_{PV} \times 1000 \quad (kN/m^2)$$

where

i :sub-region considered

α :waterline angle (*deg*), see **Fig. 3.3.2-1**

~~Δ_I~~ Δ_{UI} : ship displacement (t) as defined in **1.2.4-3** ~~at the *UIWL*~~, not to be taken as less than 5,000 t

CF_{CV} : Crushing failure Class Factor from **Table 3.3.1-2**

CF_{QV} : Line load Class Factor from **Table 3.3.1-2**

CF_{PV} : Pressure Class Factor from **Table 3.3.1-2**

Table 3.3.1-2 Class Factors

Polar Class	Crushing failure Class Factor (CF_{CV})	Line load Class Factor (CF_{QV})	Pressure Class Factor (CF_{PV})
PC6	3.43	2.82	0.65
PC7	2.60	2.33	0.65

Sub-paragraph -2(1) has been amended as follows.

2 Hull areas other than the bow

(1) In the hull areas other than the bow, the force F_{NonBow} and line load Q_{NonBow} used in the determination of the load patch dimensions (b_{NonBow}, w_{NonBow}) and design pressure P_{avg} are determined as follows:

(a) Force, F_{NonBow}

$F_{NonBow} = 0.36\ CF_C\ DF \times 1000 \quad (kN)$

(b) Line load, Q_{NonBow}

$$Q_{NonBow} = 0.639\left(\frac{F_{NonBow}}{1000}\right)^{0.61} CF_D \times 1000 \qquad (kN/m)$$

where

CF_C : Crushing failure Class Factor from **Table 3.3.1-1**

DF : ship displacement factor, obtained from the following formula.

~~$$DF = \left(\frac{\Delta_I}{1000}\right)^{0.64} \text{ if } \frac{\Delta_I}{1000} \le CF_{DIS}$$~~

~~$$DF = CF_{DIS}{}^{0.64} + 0.10\left(\frac{\Delta_I}{1000} - CF_{DIS}\right) \text{ if } \frac{\Delta_I}{1000} > CF_{DIS}$$~~

$$DF = \left(\frac{\Delta_{UI}}{1000}\right)^{0.64} \text{ if } \frac{\Delta_{UI}}{1000} \le CF_{DIS}$$

$$DF = CF_{DIS}^{0.64} + 0.10\left(\frac{\Delta_{UI}}{1000} - CF_{DIS}\right) \text{ if } \frac{\Delta_{UI}}{1000} > CF_{DIS}$$

where

~~Δ_2 : ship displacement (t) at the *UIWL*, not to be taken as less than 10,000 t~~

Δ_{UI} : ship displacement (t) as defined in **1.2.4-3,** not to be taken as less than 10,000 t

CF_{DIS} : Displacement Class Factor from **Table 3.3.1-1**

CF_D : Load patch dimensions Class Factor from **Table 3.3.1-1**

3.5 Longitudinal Strength

Paragraph 3.5.2 has been amended as follows.

3.5.2 Design Vertical Ice Force at the Bow

The design vertical ice force at the bow F_{IB} is to be taken the minimum value of following $F_{IB,1}$ and $F_{IB,2}$.

~~$$F_{IB,1} = 1000 \times 0.534 K_I^{0.15} \sin^{0.2}(\gamma_{stem}) \sqrt{\frac{\Delta_2}{1000}\frac{K_h}{1000}} CF_L$$~~

$$F_{IB,1} = 1000 \times 0.534 K_I^{0.15} \sin^{0.2}(\gamma_{stem}) \sqrt{\frac{\Delta_{UI}}{1000}\frac{K_h}{1000}} CF_L (kN)$$

$$F_{IB,2} = 1000 \times 1.20 CF_F \ (kN)$$

where

K_I : indentation parameter, $K_I = 1000\frac{K_f}{K_h}$

where

(a) for the case of a blunt bow form

~~$$K_f = \left(\frac{2CB^{1-e_b}}{1+e_b}\right)^{0.9} \tan(\gamma_{stem})^{-0.9(1+e_b)}$$~~

$$K_f = \left(\frac{2CB_{UI}^{1-eb}}{1+e_b}\right)^{0.9} \tan(\gamma_{stem})^{-0.9(1+e_b)}$$

(b) for the case of wedge bow form (α_{stem} < 80 *deg*), e_b =1 and above simplifies to:

$$K_f = \left(\frac{\tan(\alpha_{stem})}{\tan^2(\gamma_{stem})}\right)^{0.9}$$

$K_h = 10\,A_{WP}$ (kN/m)

CF_L : Longitudinal strength class factor from **Table 3.3.1-1**

e_b : bow shape exponent which best describes the waterplane, see **Fig. 3.5.2-1** and **Fig. 3.5.2-2**

e_b = 1.0 for a simple wedge bow form

e_b = 0.4 to 0.6 for a spoon bow form

e_b = 0 for a landing craft bow form

An approximate e_b determined by a simple fit is acceptable

γ_{stem}: stem angle (*deg*) to be measured between the horizontal axis and the stem tangent at the *UIWL* (buttock angle (*deg*) as per **Fig. 3.3.2-1** measured on the centreline)

α_{stem}: waterline angle (*deg*) measured in way of the stem at the *UIWL*, see **Fig. 3.5.2-1**

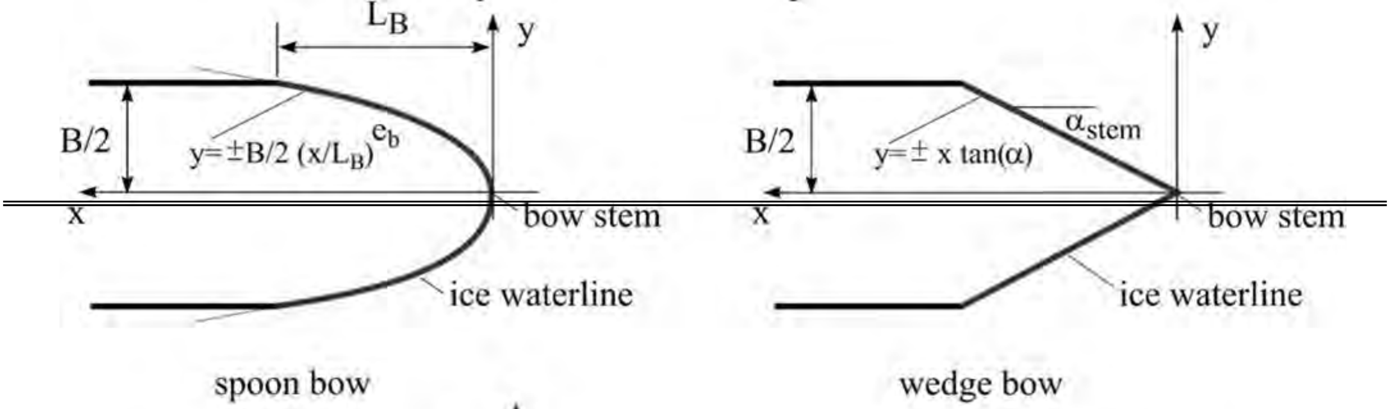
$$C = \frac{1}{2\left(\frac{L_B}{B}\right)^{e_b}}$$

$$C = \frac{1}{2\left(\frac{L_B}{B_{UI}}\right)^{e_b}}$$

B : ship moulded breadth (m) at the *UIWL*
L_B : bow length (m), see **Fig. 3.5.2-1** and **Fig. 3.5.2-2**.
~~Δ_2~~ Δ_{UI}: ship displacement (t) as defined in **1.2.4-3**, not to be taken less than 10,000t
A_{wp} : ship waterplane area (m^2) at the *UIWL*
CF_F : Flexural failure class factor from **Table 3.3.1-1**
~~Where applicable, draught dependent quantities are to be determined at the waterline corresponding to the loading condition under consideration.~~

Fig. 3.5.2-1 and Fig. 3.5.2-2 have been amended as follows.

Fig. 3.5.2-1 Bow Shape Definition



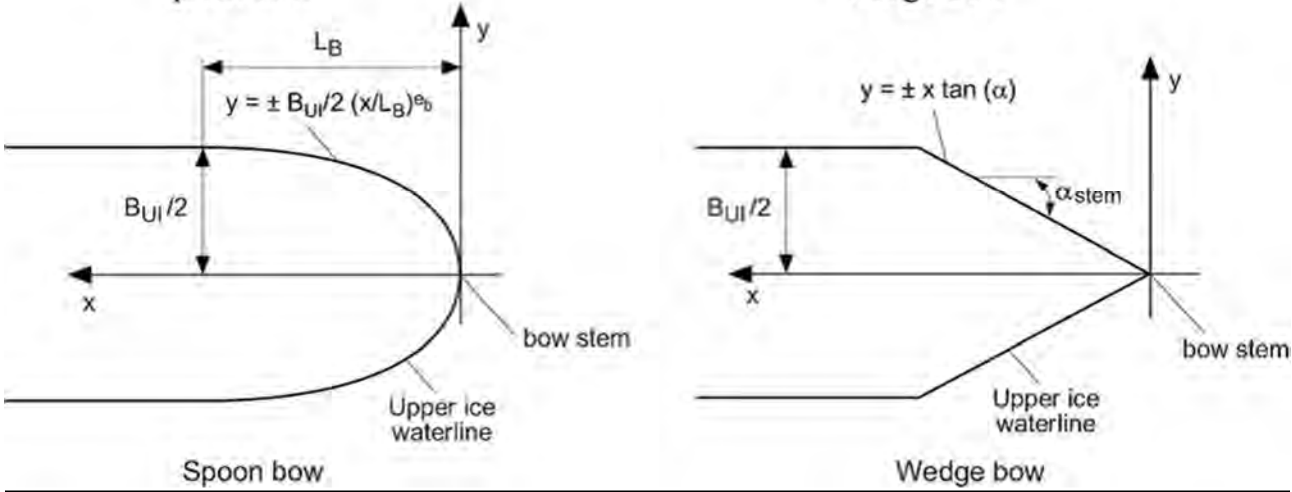
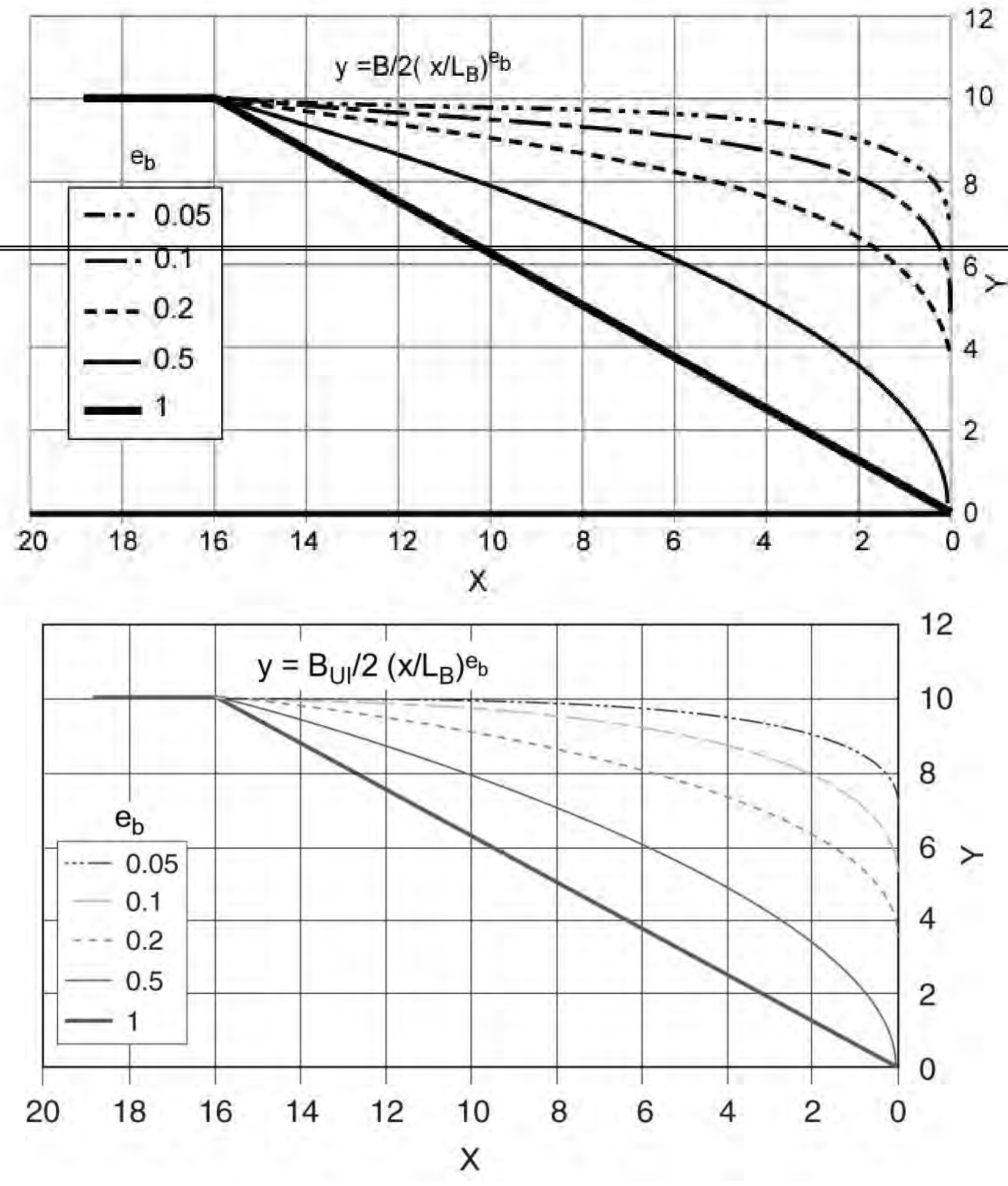


Fig. 3.5.2-2 Illustration of e_b Effect on the Bow Shape for B=20 and L_B=16



3.5.3 Design Vertical Shear Force

Sub-paragraph -1 has been amended as follows.

1 The design vertical ice shear force F_I along the hull girder is to be taken as:
$F_I = C_f F_{IB}$ (kN)
where
C_f = longitudinal distribution factor to be taken as follows:
(a) Positive share force
C_f = 0.0 between the aft end of L_{UI} and $0.6L_{UI}$ from aft
C_f = 1.0 between $0.9L_{UI}$ from aft and the forward end of L_{UI}
(b) Negative share force
C_f = 0.0 at the aft end of L_{UI}
C_f = -0.5 between $0.2L_{UI}$ and $0.6L_{UI}$ from aft
C_f = 0.0 between $0.8L_{UI}$ from aft and the forward end of L_{UI}
Intermediate values are to be determined by linear interpolation

2 The applied vertical shear stress τ_a is to be determined along the hull girder in a similar manner as in **15.4.2-2, Part C of the Rules** by substituting the design vertical ice shear force for the design vertical wave shear force.

Paragraph 3.5.4 has been amended as follows.

3.5.4 Design Vertical Ice Bending Moment

1 The design vertical ice bending moment M_I along the hull girder is to be taken as:
~~$M_I = 0.1 C_m L' \sin^{-0.2}(\gamma_{stem}) F_{IB}$~~
$M_I = 0.1 C_m L_{UI} \sin^{-0.2}(\gamma_{stem}) F_{IB}$ (kNm)
where
~~L'~~L_{UI}: ~~ship length (m) measured on the *UIWL* from the forward side of the stem to the after side of the rudder post, or the centre of the rudder stock if there is no rudder post. L' is to be not less than 96% and need not exceed 97% of the extreme length on the *UIWL*.~~as given in **1.2.4-2.**
γ_{stem}: as given in **3.5.2**
F_{IB}: design vertical ice force (kN) at the bow, see **3.5.2**
C_m: longitudinal distribution factor for design vertical ice bending moment to be taken as follows:
C_m = 0.0 at the aft end of L
C_m = 1.0 between $0.5L$ and $0.7L$ from aft
C_m = 0.3 at $0.95L$ from aft
C_m = 0.0 at the forward end of L
Intermediate values are to be determined by linear interpolation.
~~Where applicable, draught dependent quantities are to be determined at the waterline corresponding to the loading condition under consideration.~~

2 The applied vertical bending stress σ_a is to be determined along the hull girder in a similar manner as in **15.4.2-1, Part C of the Rules**, by substituting the design vertical ice bending moment for the design vertical wave bending moment. The ship still water bending moment is to be taken as the permissible still water bending moment in the sagging condition.

EFFECTIVE DATE AND APPLICATION

1. The effective date of the amendments is 1 January 2021.

2. Notwithstanding the amendments to the Rules, the current requirements apply to ships for which the date of contract for construction* is before the effective date.

* "contract for construction" is defined in the latest version of IACS Procedural Requirement (PR) No.29.

IACS PR No.29 (Rev.0, July 2009)

1. The date of "contract for construction" of a vessel is the date on which the contract to build the vessel is signed between the prospective owner and the shipbuilder. This date and the construction numbers (i.e. hull numbers) of all the vessels included in the contract are to be declared to the classification society by the party applying for the assignment of class to a newbuilding.

2. The date of "contract for construction" of a series of vessels, including specified optional vessels for which the option is ultimately exercised, is the date on which the contract to build the series is signed between the prospective owner and the shipbuilder.

For the purpose of this Procedural Requirement, vessels built under a single contract for construction are considered a "series of vessels" if they are built to the same approved plans for classification purposes. However, vessels within a series may have design alterations from the original design provided:

(1) such alterations do not affect matters related to classification, or

(2) If the alterations are subject to classification requirements, these alterations are to comply with the classification requirements in effect on the date on which the alterations are contracted between the prospective owner and the shipbuilder or, in the absence of the alteration contract, comply with the classification requirements in effect on the date on which the alterations are submitted to the Society for approval.

The optional vessels will be considered part of the same series of vessels if the option is exercised not later than 1 year after the contract to build the series was signed.

3. If a contract for construction is later amended to include additional vessels or additional options, the date of "contract for construction" for such vessels is the date on which the amendment to the contract, is signed between the prospective owner and the shipbuilder. The amendment to the contract is to be considered as a "new contract" to which **1.** and **2.** above apply.

4. If a contract for construction is amended to change the ship type, the date of "contract for construction" of this modified vessel, or vessels, is the date on which revised contract or new contract is signed between the Owner, or Owners, and the shipbuilder.

Note:
This Procedural Requirement applies from 1 July 2009.