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# RULES FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS

## Part A GENERAL RULES

### Chapter 1 GENERAL

#### 1.1 Application of these Rules

##### 1.1.1 Application\*

1 The survey and construction of steel ships to be registered in accordance with the Regulations for the Classification and Registry of Ships are to be as prescribed in these Rules.

2 Notwithstanding preceding -1, ships flying the Japanese flag are to comply with the requirements in other Rules of NIPPON KAIJI KYOKAI (hereinafter referred to as “the Society”).

3 The Society may make special requirements as instructed by the flag-government of ships or the government of sovereign nations in which ships navigate.

##### 1.1.2 Special Consideration for the Application to Bulk Carriers and Oil Tankers

1 Bulk carriers with unrestricted international navigation, having length of 90 *m* or above and contracted for construction on or after 1 April 2006 but before 1 July 2015, are to comply with **Part CSR-B**. Issues other than those specified in **Part CSR-B** are to comply with the provisions of other Parts of the Rules, with appropriate consideration to related provisions of **Part CSR-B**.

2 Double hull oil tankers with unrestricted international navigation, having length of 150 *m* or above and contracted for construction on or after 1 April 2006 but before 1 July 2015, are to comply with **Part CSR-T**. Issues other than those specified in **Part CSR-T** are to comply with the provisions of other Parts of the Rules, with appropriate consideration to related provisions of **Part CSR-T**.

3 For the provisions of -1 and -2 above, the following definitions are to apply.

(1) Length of ship is the distance, in *metres*, measured on the summer load waterline, from the forward side of the stem to the after side of the rudder post, or to the centre of the rudder stock where there is no rudder post. This length is to be not less than 96% and need not exceed 97% of the extreme length on the summer load waterline.

(2) Bulk carrier means a sea going self-propelled ship which is constructed generally with single deck, double bottom, hopper side tanks and topside tanks, and with single or double side skin construction in cargo length area; and intended primarily to carry dry cargoes in bulk, excluding ore carriers and combination carriers.

Ships which have at least one cargo hold constructed with hopper tanks and topside tanks as specified in above, apply **Part CSR-B**. In this case, the structural strength of members in holds constructed without hopper tank and/or topside tank is to comply with the strength criteria specified in **Part CSR-B**.

(3) Oil tanker means a ship constructed or adapted primarily to carry oil in bulk in its cargo spaces and including combination carriers and any chemical tanker when it is carrying a cargo or part cargo of oil in bulk. Double hull oil tanker means an oil tanker which has the cargo tanks protected by a double hull which extends for the entire length of the cargo area, consisting of double sides and double bottom spaces.

4 Bulk carriers having length of 90 *m* or above and double hull oil tankers having length of 150 *m* or above, which are self-propelled ships with unrestricted international navigation and contracted for construction on or after 1 July 2015, are to comply with **Part CSR-B&T**. Issues other than those specified in **Part CSR-B&T** are to comply with the provisions of other Parts of the Rules, with appropriate consideration being given to related provisions of **Part CSR-B&T**.

5 For the provisions of -4 above, the following definitions are to apply.

(1) Length of ship is as defined in 3.1.1, Section 4, Chapter 1, Part 1 of **Part CSR-B&T**

- (2) Bulk carrier means a ship which is constructed generally with single deck, double bottom, hopper side tanks and topside tanks, and with single or double side skin construction in cargo hold region and intended primarily to carry dry cargoes in bulk. Ships which have at least one cargo hold constructed with hopper tanks and topside tanks as specified in above, apply **Part CSR-B&T**. In this case, the structural strength of members in holds constructed without hopper tank and/or topside tank is to comply with the strength criteria specified in **Part CSR-B&T**.

However, the following ship types are not required to apply **Part CSR-B&T**:

- Ore carriers
  - Combination carrier
  - Woodchip carrier
  - Cement, fly ash and sugar carriers provided that loading and unloading is not carried out by grabs heavier than 10 tons, power shovels and other means which may damage cargo hold structure
  - Ships with inner bottom construction adapted for self-unloading.
- (3) Oil tanker means a ship constructed or adapted primarily to carry oil in bulk in its cargo spaces and including combination carriers and any chemical tanker when it is carrying a cargo or part cargo of oil in bulk. Double hull oil tanker means an oil tanker which has the cargo tanks protected by a double hull which extends for the entire length of the cargo area, consisting of double sides and double bottom spaces.

6 Notwithstanding the provisions of -4 above, bulk carriers having length of 90 m or above which are self-propelled ships with unrestricted international navigation and contracted for construction on or after 1 July 2015 but before 30 June 2016, are to comply with **Part CSR-B&T** and **Section 1, Chapter 10, Part CSR-B**. Issues other than those specified in **Part CSR-B&T** and **Section 1, Chapter 10, Part CSR-B** are to comply with the provisions of other Parts of the Rules, with appropriate consideration being given to related provisions of **Part CSR-B&T** and **Section 1, Chapter 10, Part CSR-B**. Furthermore, the above application is to be in accordance with the definitions specified -5 above.

- 7 Ships subject to *SOLAS Chapter II-1 Regulation 3-10* are to comply with **Part CSR-B&T**.

## 1.2 Class Notations

### 1.2.1 General\*

1 For ships complying with additional requirements and/or those exempted from requirements related to the subjects specified in the following paragraphs in accordance with the provisions of these Rules, an appropriate notation is affixed to the Classification Characters in accordance with the provisions of **Chapter 2 of the Regulation for the Classification and Registry of Ships** as follows;

NS\* ( (1) ) ( (2), (3) ) ( (4) ) ( (5) ) ( (6) )

- (1) Restricted services specified in **1.2.2**
- (2) Structural materials for main hull specified in **1.2.3**
- (3) Hull construction and equipment, etc. specified in **1.2.4**
- (4) Strengthening for navigation in ice, etc. specified in **1.2.5**
- (5) Application of hull structural analysis specified in **1.2.6**
- (6) Application of special survey scheme specified in **1.2.7**

2 For bulk carriers subject to the application of **Part CSR-B** or **Part CSR-B&T** as required in the provisions of **1.1.2**, notations related to hull construction and equipment are affixed to the Classification Characters in accordance with the provisions in **Part CSR-B** or **Part CSR-B&T** respectively. In this case, the notation of “CSR” is affixed at the head of the related notations (e.g. *CSR, BC-A*).

3 For double hull oil tankers subject to the application of **Part CSR-T** or **Part CSR-B&T** as required in the provisions of **1.1.2**, the notation of “CSR” is affixed to the Classification Characters in accordance with the provisions in **Part CSR-T** or **Part CSR-B&T** respectively, in addition to at the head of the related provisions of **1.2.4** (e.g. *CSR, TOB*).

4 For ships subject to the application of **Part C** and contracted for construction on or after 1 July 2023, the notation of “Advanced Structural Rules” (abbreviated to *ASR*) is affixed to the Classification Characters in addition to at the head of the related provisions of **1.2.4** (e.g. *ASR, CNC*).

### 1.2.2 Restricted Services\*

For ships classed to be engaged in restricted services, an appropriate notation is affixed to the Classification Characters as

follows.

- (1) For ships engaged in service restricted to only coastal areas within generally 20 miles from the nearest land or areas deemed equivalent by the Society (hereinafter, referred to as coasting service):

*Coasting Service* (abbreviated to *CS*)

- (2) For ships engaged in service restricted to only calm water areas generally sheltered from the open sea by land or areas deemed equivalent by the Society (hereinafter, referred to as smooth water service):

*Smooth Water Service* (abbreviated to *SWS*)

- (3) For ships that are classed on their relationship with shore support facilities and that are engaged in service within a specific sea area where the aforementioned shore support can reach; or ships operated when moored or positioned in a specific sea area:

*Designated Service Area* (abbreviated to *DSA*)

- (4) For ships other than those specified above that are engaged in restricted service where the Rules deemed necessary by the Society are applied, an appropriate notation may be affixed.

### 1.2.3 Structural Materials for Main Hull

For ships that use materials other than steel as the structural material for the main hull in accordance with the provisions of **3.2.1.1-2, Chapter 3, Part 1, Part C** or **1.3.1-3, Part CS**, an appropriate notation is affixed to the Classification Characters as follows.

- (1) For ships made of aluminium alloy:

*Aluminium Alloy* (abbreviated to *AL*)

- (2) For ships other than those specified in (1), a notation deemed appropriate by the Society may be affixed.

### 1.2.4 Hull Construction and Equipment, etc.\*

1 For ships intended for the carriage of liquid cargoes in tank(s) integrated with their hull structures and complying with the provisions of **Part 2-7, Part C, Part CSR-B&T** or **Chapter 24, Part CS** as appropriate, the notation of “*Tanker*” is affixed to the Classification Characters. For such ships intended for carriage of flammable liquid cargoes (except those specified in **-2** or **-3** below) and complying with the appropriate requirements specified in **Part D, Part H** and **Part R**, an additional notation corresponding to the flashpoints of the cargoes is affixed as follows.

- (1) For ships intended for the carriage of liquid cargoes having a flash point on and below 60°C other than oils:

*Tanker, flammable liquid-flash point on and below 60 °C* (abbreviated to *TFLB*)

- (2) For ships intended for the carriage of liquid cargoes having a flash point above 60°C other than oils:

*Tanker, flammable liquid-flash point above 60 °C* (abbreviated to *TFLA*)

- (3) For ships intended for the carriage of oils having a flash point on and below 60°C:

*Tanker, oils-flash point on and below 60 °C* (abbreviated to *TOB*)

- (4) For ships intended for the carriage of oils having a flash point above 60°C:

*Tanker, oils-flash point above 60 °C* (abbreviated to *TOA*)

2 Notwithstanding the provisions specified in **-1**, for ships carrying dangerous chemicals in bulk complying with the provisions of **Part S**, an appropriate notation corresponding to the type of ships specified in **2.1.2, Part S**, is affixed to the Classification Characters as follows.

- (1) For type I ships:

*Chemical Tanker Type I* (abbreviated to *CT I*)

- (2) For type II ships:

*Chemical Tanker Type II* (abbreviated to *CT II*)

- (3) For type III ships:

*Chemical Tanker Type III* (abbreviated to *CT III*)

- (4) For ships complying with the requirements for both type II and type III ships:

*Chemical Tanker Types II & III* (abbreviated to *CT II&III*)

3 For ships carrying liquefied gases in bulk complying with the provisions of **Part N**, an appropriate notation corresponding to the type of ships specified in **2.1.2, Part N** is affixed to the Classification Characters as follows.

- (1) For type 1G ships:

*Liquefied Gas Carrier Type 1G* (abbreviated to *LGC 1G*)

- (2) For type 2G ships:

*Liquefied Gas Carrier Type 2G* (abbreviated to *LGC 2G*)

(3) For type *2PG* ships:

*Liquefied Gas Carrier Type 2PG* (abbreviated to *LGC 2PG*)

(4) For type *3G* ships:

*Liquefied Gas Carrier Type 3G* (abbreviated to *LGC 3G*)

4 In addition to the requirements in -3 above, for ships carrying liquefied gases in bulk complying with the provisions of **Part N**, an appropriate additional notation corresponding to the type of tanks is affixed as follows.

(1) For independent prismatic tanks of type A:

*Independent Prismatic Tanks of Type A* (abbreviated to *IPT Type A*) (e.g. *LGC 2G, IPT Type A*)

(2) For independent prismatic tanks of type B:

*Independent Prismatic Tanks of Type B* (abbreviated to *IPT Type B*) (e.g. *LGC 2G, IPT Type B*)

(3) For independent spherical tanks of type B:

*Independent Spherical Tanks of Type B* (abbreviated to *IST Type B*) (e.g. *LGC 2G, IST Type B*)

(4) For independent tanks of type C:

*Independent Tanks of Type C* (abbreviated to *IT Type C*) (e.g. *LGC 2PG, IT Type C*)

(5) For membrane tanks:

*Membrane Tanks* (abbreviated to *MT*) (e.g. *LGC 2G, MT*)

(6) For others tanks:

*Other Tanks* (abbreviated to *OT*) (e.g. *LGC 2G, OT*)

5 For ships intended for the carriage of liquid cargoes in independent tank(s) (except those specified in -2 or -3 above), the notation of “*Tank Carrier*” (abbreviated to *TC*) is affixed to the Classification Characters. In this case, an additional notation corresponding to its cargoes may be affixed in the same manner as specified in -1 above.

6 For ships intended for the carriage of ore cargoes or similar cargoes having equivalent high density, generally having two longitudinal watertight bulkheads and a double bottom throughout the cargo spaces and complying with the provisions of **Part 2-3, Part C**, the notation of “*Ore Carrier*” (abbreviated to *OC*) is affixed to the Classification Characters.

7 For ships intended for the carriage of dry cargoes in bulk, having a single deck, and a double bottom and double-side skin for the length of cargo region, but not having bilge hopper tanks and topside tanks and complying with the provisions of **Part 2-2, Part C**, the notation of “*Bulk Carrier modified*” (abbreviated to *BCM*) is affixed to the Classification Characters.

8 For bulk carriers as defined in **An1.2.1(1), Annex 1.1, Part 2-2 “Additional Requirements for Bulk Carriers in Chapter XII of the SOLAS Convention”, Part C** and complying with the applicable provisions of **Annex 1.1, Part 2-2, Part C, 13.5.10 and 13.8.5, Part D and 1.2.3, Part U**, the notation of “*BC-XII*” is affixed to the Classification Characters.

9 For ships intended for the carriage of containers, generally having a double bottom in cargo spaces and complying with the provisions of **Part 2-1, Part C**, the notation of “*Container Carrier*” (abbreviated to *CNC*) is affixed to the Classification Characters.

10 For ships intended for the carriage of wood chips, generally are ships of single-side skin construction having a single deck, double bottom and bilge hopper tanks and complying with the provisions of **Part 2-4, Part C**, the notation of “*Chip Carrier*” (abbreviated to *CPC*) is affixed to the Classification Characters.

11 For ships intended for the carriage of heavy cargoes on their upper decks complying with the provisions of **10.6, Part 2-5, Part C** and having no cargo holds below the upper deck, the notation of “*Heavy Deck Carrier*” (abbreviated to *HDCA*) is affixed to the Classification Characters.

12 For ships intended for the carriage of unoccupied motor vehicles without cargo, having multiple decks and complying with the provisions of **Part 2-6, Part C**, the notation of “*Vehicles Carrier*” (abbreviated to *VC*) is affixed to the Classification Characters.

13 For ships having cargo spaces not normally subdivided in any way and normally extending to either a substantial length or the entire length of the ship in which cargoes can be loaded and unloaded normally in a horizontal direction, and complying with the provisions of **Part 2-6, Part C** as well as the relevant requirements of these Rules, the notation of “*Roll on-Roll off*” (abbreviated to *RORO*) is affixed to the Classification Characters.

14 For ships which are engaged in designated operations such as dredging, lifting heavy loads, fire fighting, offshore supply, towing, etc. and which comply with the requirements in **Part O** (hereinafter, referred to as work-ships), an appropriate notation is affixed to the Classification Characters in accordance with the provisions of **Part O**.

15 For structures positioned for a long period of time or semi-permanently at a specific sea area, an appropriate notation is affixed to the Classification Characters in accordance with the provisions of **Part P**.

16 For floating offshore facilities complying with the provisions of **Part PS** which are not primarily intended for the transport of cargo and are positioned at specific oil producing sea areas for long periods of time or semi-permanently, which are also fitted with crude oil/petroleum gas production, storage and offloading systems, appropriate notation is to be affixed to the Classification Characters in accordance with the provisions given in **Part PS**.

17 For floating structures intended for the carriage of cargoes in cargo holds, on decks and/or in tanks integrated with hull structures, not propelled by mechanical means and complying with the provisions of **Part Q** (hereinafter referred to as barges), the notation of “Barge” (abbreviated to *B*) is affixed to the Classification Characters. Additional notation corresponding to hull structure and type of cargo is affixed as follows:

- (1) For barges of pontoon type intended for the carriage of cargoes only on upper decks:

*Barge, Pontoon Type* (abbreviated to *BP*)

- (2) For barges intended for the carriage of liquid cargoes in tank(s) integrated with their hull structures. In this case, an additional notation corresponding to cargoes is affixed in the same manner as specified in **-1** or **-2**, as appropriate:

*Barge, Tanker* (abbreviated to *BT*)

- (3) For barges carrying liquefied gases in bulk in accordance with the provisions of **Part N**. In this case, an additional notation corresponding to cargoes is affixed in the same manner as specified in **-3**. :

*Barge, Liquefied Gas Carrier* (abbreviated to *BLGC*)

18 For submersibles complying with the provisions of **Part T**, the notation of “Submersible” (abbreviated to *SBM*) is affixed to the Classification Characters.

19 For ships equipped with support systems for submersibles (mother ships/support ships) complying with the provisions of **Part T**, the notation of “Equipped with Support System for Submersible” (abbreviated to *EQ SS SBM*) is affixed to the Classification Characters.

20 For ships equipped for the carriage of dangerous goods (refer to **3.2.20, Part R**) in accordance with the provisions of **Chapter 19, Part R** and **4.10, Part H**, the notation of “Equipped for Carriage of Dangerous Goods” (abbreviated to *EQ C DG*) is affixed to the Classification Characters.

21 For ships equipped for the carriage of motor vehicles with fuel in their tanks for their own propulsion in accordance with the provisions of **20.2.1-1, Part R** and **4.8.1, Part H**, the notation of “Equipped for Carriage of Vehicles” (abbreviated to *EQ C V*) is affixed to the Classification Characters.

22 For vehicle carriers, as defined in **3.2.54, Part R**, equipped for the carriage of motor vehicles with compressed natural gas in their tanks for their own propulsion in accordance with the provisions of **Chapter 20A, Part R** and **4.8.2, Part H**, the notation of “Equipped for Carriage of Compressed Natural Gas Powered Motor Vehicles” (abbreviated to *EQ C CNGPMV*) is affixed to the Classification Characters.

23 For vehicle carriers, as defined in **3.2.54, Part R**, equipped for the carriage of motor vehicles with compressed hydrogen in their tanks for their own propulsion in accordance with the provisions of **Chapter 20A, Part R** and **4.8.3, Part H**, the notation of “Equipped for Carriage of Compressed Hydrogen Powered Motor Vehicles” (abbreviated to *EQ C CHPMV*) is affixed to the Classification Characters.

24 For ships equipped for the carriage of coal in accordance with the provisions of **10.6.1, Part 2-2, Part C** and **4.9, Part H**, the notation of “Equipped for Carriage of Coal” (abbreviated to *EQ C C*) is affixed to the Classification Characters.

25 For ships equipped for the carriage of lumber in accordance with related provisions of **14.8.3.1, Part 1, Part C**; **2.3.2.3-12, Part 1, Part C**; **10.4, Part 2-5, Part C** and **Part U**, the notation of “Equipped for Carriage of Lumber” (abbreviated to *EQ C LB*) is affixed to the Classification Characters.

26 For ships strengthened for cargo operations with the use of a grab deemed as appropriate by the Society, in accordance with the provisions of **10.5, Part 2-2, Part C**, the notation of “GRAB” is affixed to the Classification Characters.

27 For ships complying with the provisions of **3.3.5.3, Part 1, Part C**, **22.4.2, Part CS**, **1.2.2 Section 5 Chapter 3, Part CSR-B** or **2.1.1.2 Section 6, Part CSR-T**, the notation of “Performance Standard for Protective Coatings for Dedicated Seawater Ballast Tanks in All Types of Ships and Double-side Skin Spaces of Bulk Carriers” (abbreviated to *PSPC-WBT*) is affixed to the Classification Characters.

**28** For ships complying with the provisions of **3.3.5.4, Part 1, Part C** or **22.4.3, Part CS**, an appropriate notation corresponding to corrosion protection is affixed to the Classification Characters in accordance with the following **(1)** to **(3)**:

- (1)** Where coatings in accordance with *IMO Resolution MSC.288(87)* are applied:  
*Performance Standard for Protective Coatings for Cargo Oil Tanks of Crude Oil Tankers* (abbreviated to *PSPC-COT*)
- (2)** Where corrosion protection by corrosion resistance steel in accordance with *IMO Resolution MSC.289(87)* is applied:  
*Performance Standard for Corrosion Resistant Steel for Cargo Oil Tanks of Crude Oil Tankers* (abbreviated to *PSCRS-COT*)
- (3)** Where coatings in accordance with *IMO Resolution MSC.288(87)* and corrosion protection by corrosion resistance steel in accordance with *IMO Resolution MSC.289(87)* are applied in combination:  
*Performance Standard for Protective Coatings / Performance Standard for Corrosion Resistant Steel for Cargo Oil Tanks of Crude Oil Tankers* (abbreviated to *PSPC/PSCRS-COT*)

**29** For ships intended for the carriage of cargoes having moisture contents which exceed transportable moisture limit in accordance with the provisions of **10.5.1, Part 2-3, Part C, 1.1.3-2, Part CS** and **1.1.1-3, Part U**, the notation of “*Specially Constructed Cargo Ship*” (abbreviated to *SCCS*) is affixed to the Classification Characters.

**30** For ships with helidecks as defined in **3.2.26, Part R** and subject to the provisions of **10.4.6, Part 1, Part C**, the notation of “*HELIDK*” is affixed to the Classification Characters.

**31** For ships complying with the provisions of item 10 of **Table B2.11, Part B**, the notation of “*Noise Code*” (abbreviated to *NC*) is affixed to the Classification Characters.

**32** For self-unloading ships, as defined in **1.3.1(19) of Part B**, that complying with the provisions of **10.5, Part 2-5, Part C**, the notation of “*Self-unloader*” (abbreviated to *SUL*) is affixed to the Classification Characters.

**33** For ships complying with the provisions of **Part GF**, the notation of “*Gas or Low-flashpoint Fuel*” (abbreviated to *GLF*) is affixed to the Classification Characters, and kind of fuel being used is listed after *GLF* and slash.

**34** For ships complying with the provisions of **Chapter 16, Part N**, the notation of “*Cargo as Fuel*” (abbreviated to *CF*) is affixed to the Classification Characters, and kind of fuel being used is listed after *CF* and slash.

**35** For ships having a propeller shaft Kind 1C complying with the provisions of **6.2.11, Part D**, the notation of “*1C*” is affixed to the Classification Characters.

**36** The notation “*LiBattery*” (abbreviated to *LiB*) is to be affixed to the Classification Characters of ships complying with **2.11.1-2, Chapter 2, Part H**.

**37** For ships complying with the provisions of **Chapter 4, Part X** and **Chapter 5, Part X**, the notation of “*Cyber Resilience*” (abbreviated to *Cybr*) is affixed to the Classification Characters.

**38** Unless otherwise specified above, for ships deemed necessary by the Society, an appropriate notation may be affixed to the Classification Characters.

#### **1.2.5 Polar Class Ships and Ice Class Ships\***

**1** For polar class ships in accordance with the provisions of **Chapter 1, Part I**, the following notation corresponding to the polar classes specified in **1.2.2 of Annex 1, Part I**, is affixed to the Classification Characters. For ships which are subject to relevant requirements in **Annex 1, Part I** in accordance with **1.2.2-3 of Annex 1, Part I**, the notation of “*Icebreaker*” (abbreviated to *ICB*) is added to the following notation specified in **(1)** to **(7)**:

- (1)** *PC1: Polar Class 1* (abbreviated to *PC1*)
- (2)** *PC2: Polar Class 2* (abbreviated to *PC2*)
- (3)** *PC3: Polar Class 3* (abbreviated to *PC3*)
- (4)** *PC4: Polar Class 4* (abbreviated to *PC4*)
- (5)** *PC5: Polar Class 5* (abbreviated to *PC5*)
- (6)** *PC6: Polar Class 6* (abbreviated to *PC6*)
- (7)** *PC7: Polar Class 7* (abbreviated to *PC7*)

**2** For ice class ships in accordance with the provisions of **Chapter 1, Part I**, the following notation corresponding to the ice classes specified in **1.2.2, Part I**, is affixed to the Classification Characters.

- (1)** *IA Super: Class IA Super Ice Strengthening* (abbreviated to *IA SUPER IS*)
- (2)** *IA: Class IA Ice Strengthening* (abbreviated to *IA IS*)
- (3)** *IB: Class IB Ice Strengthening* (abbreviated to *IB IS*)



(4) IC: *Class IC Ice Strengthening* (abbreviated to IC IS)

(5) ID: *Class ID Ice Strengthening* (abbreviated to ID IS)

**3** For ships operating in polar waters in accordance with the provisions of **Chapter 1, Part I**, the following notation corresponding to the categories specified in **1.2.1(1) to (3), Part I** or applicable to the ships specified in **1.1.1-4, Part I**, is affixed to the Classification Characters.

(1) *Category A: Polar Code Category A* (abbreviated to PC A)

(2) *Category B: Polar Code Category B* (abbreviated to PC B)

(3) *Category C: Polar Code Category C* (abbreviated to PC C)

(4) Ships subject to **1.1.1-4, Part I: Polar Code for Ships Other than Those Certified in accordance with SOLAS Chapter I** (abbreviated to PC O)

**4** For ships made of steel corresponding to a design temperature ( $T_D$ ) for operation in water areas with low temperatures (e.g. Arctic or Antarctic waters) in accordance with the provisions of **3.2.2.2, Part 1, Part C**, the notation of “*Design Temperature Category: TD*” (abbreviated to TD) is affixed to the Classification Characters.

### 1.2.6 Application of Hull Structural Analysis

The class notations indicated below in (1) to (4) are added to classification characters for ships for which direct strength calculations and/or fatigue strength assessments are carried out by a method approved by the Society for determining structural scantlings or structural details.

(1) Where the strength assessment by cargo hold analysis are carried out in accordance with the relevant requirements in **Chapter 8, Part 1** or **Part 2, Part C**:

*PrimeShip-Direct Assessment* (abbreviated to PS-DA)

(2) Where the fatigue strength assessment by finite element analysis are carried out in accordance with the relevant requirements in **Chapter 9, Part 1** or **Part 2, Part C**:

*PrimeShip-Fatigue Assessment* (abbreviated to PS-FA)

In addition, an appropriate additional notation corresponding to the wave load and the design fatigue life  $T_{DF}$  to be considered is affixed as follows.

(a) Where the fatigue strength assessment by using the worldwide loads

*PrimeShip-Fatigue Assessment (World Wide,  $T_{DF}$ )* (abbreviated to PS-FA(WW,  $T_{DF}$ ))

(b) Where the fatigue strength assessment by using the North Atlantic Ocean load

*PrimeShip-Fatigue Assessment (North Atlantic,  $T_{DF}$ )* (abbreviated to PS-FA(NA,  $T_{DF}$ ))

Where the fatigue strength assessment is carried out in accordance with the provisions of **9.2.1.1-2, Part 2-9, Part C**, the notation of “-Superior” (abbreviated to -S) is added. (e.g. PS-FA-S(WW,  $T_{DF}$ ))

(3) Where the yield strength assessments and buckling strength assessments of primary members in all cargo spaces are carried out based upon direct load analysis and direct strength calculations deemed appropriate by the Society using individual design regular waves obtained from direct load analysis in accordance with **1.1.2.4-3 (1) or (2), Part 1, Part C**:

*PrimeShip-Direct Assessment-Direct Load Analysis* (abbreviated to PS-DA-DLA)

(4) Where the fatigue strength assessment of structural details of primary members in all cargo spaces that are deemed necessary by the Society are carried out based upon direct strength calculations using loads obtained from direct load analysis in accordance with **1.1.2.4-3(1), (2) or (5), Part 1, Part C**:

*PrimeShip-Fatigue Assessment-Direct Load Analysis* (abbreviated to PS-FA-DLA)

### 1.2.7 Application of Special Survey Scheme

**1** For oil tankers defined in **1.3.1(11), Part B**, chemical tankers defined in **1.2.4-2** with integral tanks including hybrid configurations constructed with both integral and independent tanks, bulk carriers defined in **1.3.1(13), Part B** and self-unloading ships defined in **1.3.1(19), Part B**, for which enhanced surveys are carried out in class maintenance surveys in accordance with the relevant provisions of **Part B**, the notation of “*Enhanced Survey Programme*” (abbreviated to ESP) is affixed to the Classification Characters.

**2** For ships approved for In-water Surveys in accordance with the provisions of **6.1.2, Part B**, the notation of “*In Water Survey*” (abbreviated to IWS) is affixed to the Classification Characters.

**3** The notation “*Propeller Shaft Condition Monitoring System*” (abbreviated to PSCM) is affixed to the Classification Characters of ships whose propeller shafts surveys are carried out based upon the preventive maintenance system specified in the provisions of



**8.1.2-1, Part B.**

4 The notation “*Propeller Shaft Condition Monitoring System of Shaft Kind 1A*” (abbreviated to *PSCM-1A*) is affixed to the Classification Characters of ships whose propeller shafts surveys are carried out based upon the preventive maintenance system specified in the provisions of **8.1.2-2, Part B**.

5 The notation of “*Extended Drydock*” (abbreviated to *EDD*) is affixed to the Classification Characters of ships for which In-water Surveys are consecutively carried out in lieu of docking surveys in accordance with the requirements in **6.1.2-2, Part B**.

6 The notation “*Hull Construction Monitoring*” (abbreviated to *HCM*) is affixed to the Classification Characters of ships whose surveys for critical structural areas are carried out based upon a construction monitoring plan in accordance with the requirements in **2.1.2, Part B**. For ships subject to *SOLAS Chapter II-1 Regulation 3-10*, the additional notation of “*Goal-based Ship Construction Standards*” (abbreviated to *GBS*) is suffixed to the notation “*HCM*” (e.g. *HCM-GBS*).

## Chapter 2 DEFINITIONS

### 2.1 Application and Definitions

#### 2.1.1 Application\*

The definitions of terms which appear in the Rules are as specified in this Chapter, unless otherwise specified elsewhere.

#### 2.1.2 Length of Ship\*

Length of ship ( $L$ ) is the distance in *metres* on the designed maximum load line defined in 2.1.11(2), from the fore side of the stem to the aft side of the rudder post for ships with a rudder post, or to the axis of the rudder stock for ships without a rudder post. However, for ships with a cruiser stern,  $L$  is as defined above or 96% of the total length on the designed maximum load line, whichever is the greater.

#### 2.1.3 Length for Freeboard\*

The length for freeboard ( $L_f$ ) is 96% of the length in *metres* measured from the fore side of stem to the aft side of the aft end shell plate on a waterline at 85% of the least moulded depth measured from the top of the keel, or the length in *metres* measured from the fore side of the stem to the axis of the rudder stock on that waterline, whichever is the greater. However, where the stem contour is concave above the waterline at 85% of the least moulded depth, the forward terminal of this length is to be taken at the vertical projection to this waterline of the aftermost point of the stem contour. For ships without a rudder stock, the length is to be taken as 96% of the waterline at 85% of the least moulded depth. The waterline on which this length is measured is to be parallel to the load line defined in 2.1.11 in this Chapter.

#### 2.1.4 Breadth of Ship

The breadth of ship ( $B$ ) is the horizontal distance in *metres* from outside of frame to outside of frame measured at the broadest part of the hull.

#### 2.1.5 Breadth for Freeboard

The breadth for freeboard ( $B_f$ ) is the maximum horizontal distance in *metres* from outside of frame to outside of frame measured at the middle of  $L_f$ .

#### 2.1.6 Depth of Ship\*

The depth of ship ( $D$ ) is the vertical distance in *metres*, measured at the middle of  $L$ , from the top of the keel to the top of the freeboard deck beam at side. In the case where watertight bulkheads extend to a deck above the freeboard deck and are recorded in the Register Book as effective up to that deck, the depth is to be measured to the bulkhead deck.

#### 2.1.7 Depth for Strength Computation\*

The depth for strength computation ( $D_s$ ) is the vertical distance in *metres*, measured at the middle of  $L$ , from the top of the keel to the top of the freeboard deck beam at side; or in the case where the superstructure deck is the strength deck, to the top of the superstructure deck beam at side. Where the deck does not cover the midship, the depth is to be measured at the imaginary deck line which is extended to the middle of  $L$  along the strength deck line.

#### 2.1.8 Speed of Ship

Speed of ship ( $V$ ) is the designed speed in *knots* which the ship with clean bottom can attain at the maximum continuous output on calm sea in a loaded condition corresponding to the designed maximum load line (hereinafter referred to as “the full load condition” in the Rules).

#### 2.1.9 Midship Part of Ship

The midship part of ship is the part  $0.4L$  amidships unless otherwise specified.

#### 2.1.10 End Parts of Ship

The end parts of ship are the parts  $0.1L$  from each end of the ship.

#### 2.1.11 Load Line and Designed Maximum Load Line\*

- (1) Load line is the water line corresponding to each freeboard assigned in accordance with the provisions of Part V.
- (2) Designed maximum load line is the water line corresponding to the full load condition.

**2.1.12 Load Draught and Designed Maximum Load Draught**

- (1) Load draught is the vertical distance in *metres* from the top of the keel plate to the load line measured at the middle of  $L_f$ .
- (2) Designed maximum load draught ( $d$ ) is the vertical distance in *metres* from the top of keel plate to the designed maximum load line measured at the middle of  $L$ .

**2.1.13 Full Load Displacement**

Full load displacement ( $W$ ) is the moulded displacement in *tons* corresponding to the full load condition.

**2.1.14 Block Coefficient**

Block coefficient ( $C_b$ ) is the coefficient given by dividing the volume corresponding to full load displacement ( $W$ ) by  $LBd$ .

**2.1.15 Freeboard Deck\***

**1** The freeboard deck is normally the uppermost continuous deck. However, in cases where openings without permanent closing appliances exist on the exposed part of the uppermost continuous deck or where openings without permanent watertight closing appliances exist on the side of the ship below that deck, the freeboard deck is the continuous deck below that deck.

**2** For ships having a discontinuous freeboard deck (e.g. a stepped freeboard deck), the freeboard deck is to be determined as follows.

- (1) Where a recess in the freeboard deck extends to both sides of the ship and is in excess of 1 *m* in length, the lowest line of the exposed deck and the continuation of that line parallel to the upper part of the deck is taken as the freeboard deck.
- (2) Where a recess in the freeboard deck does not extend to the sides of the ship or is not in excess of 1 *m* in length, the upper part of the deck is taken as the freeboard deck.
- (3) Recesses not extending from side to side in the deck designated as the freeboard deck in accordance with the provisions of **-3** below the exposed deck may be disregarded, provided all openings in the exposed deck are fitted with weathertight closing appliances.

**3** Where a ship has multiple decks, an actual deck lower than one that complies with the freeboard deck defined above in **-1** or **-2** can be deemed the freeboard deck, and the load line can be marked corresponding to this deck in accordance with the requirements in **Part V**. However, this lower deck is to be continuous in a fore and aft direction at least between the machinery space and peak bulkheads and continuous athwartships. Within cargo spaces, the deck is to be of suitably framed decks or stringers having adequate width and continuous in a fore and aft direction at the ship sides and transversely at each watertight bulkhead that extends to the upper deck. When this lower deck is stepped, the lowest line of the deck and the continuation of that line parallel to the upper part of the deck is taken as the freeboard deck.

**2.1.16 Bulkhead Deck**

The bulkhead deck is the highest deck to which the watertight transverse bulkheads (except both peak bulkheads) extend and are made effective.

**2.1.17 Strength Deck**

The strength deck is the uppermost deck to which the shell plates extend at each section on the length of the ship. However, for superstructures (not including sunken superstructures) not exceeding  $0.15L$  in length, the strength deck is the deck just below the superstructure deck. For design reasons, this deck may be taken as the strength deck even for superstructures exceeding  $0.15L$  in length.

**2.1.18 Raised Quarterdeck\***

The raised quarterdeck is a sunken superstructure deck which has no decks below it.

**2.1.19 Superstructure**

The superstructure is the decked structure on the freeboard deck, extending from side to side of the ship or having its side walls no further than  $0.04B_f$  inboard from the sides of the ship. Superstructures are classified as follows.

- (1) A bridge is a superstructure which does not extend to either the forward or after perpendicular.
- (2) A poop is a superstructure which extends from the after perpendicular forward to a point which is aft of the forward perpendicular. The poop may originate from a point aft of the after perpendicular.
- (3) A forecastle is a superstructure which extends from the forward perpendicular aft to a point which is forward of the after perpendicular. The forecastle may originate from a point forward of the forward perpendicular.
- (4) A full superstructure is a superstructure which, as a minimum, extends from the forward to the after perpendicular.

**2.1.20 Enclosed Superstructure**

The enclosed superstructure is the superstructure complying with the following conditions:

- (1) Access openings in the end bulkheads of the superstructure are provided with doors complying with the requirements in [11.3.2.6, Part 1, Part C of the rules](#).
- (2) All other openings in side or end bulkheads of the superstructure are provided with efficient weathertight means of closing.
- (3) A means of access for the crew to reach machinery and other working spaces within a bridge or poop starting from any point on the uppermost complete exposed deck or higher is available at all times even when bulkhead openings are closed.

#### **2.1.21 Approved Working Pressure of Boiler and Pressure Vessel**

The approved working pressure of a boiler or a pressure vessel is the maximum pressure at its drum intended by the manufacturer or user, and is not to exceed the minimum value among the allowable pressures of various parts determined in accordance with the requirements in [Chapter 9](#) and [10, Part D](#).

#### **2.1.22 Nominal Pressure of Boiler with Superheater**

The nominal pressure of a boiler with superheater is the maximum steam pressure at superheater outlet intended by the manufacturer or user, under which the safety valve of the superheater is to be set.

Note: Engines, pipes, etc. connected with a boiler or a pressure vessel are to be designed so as to withstand greater pressures than the nominal pressure (the approved working pressure in case of a pressure vessel or boiler without superheater).

#### **2.1.23 Maximum Continuous Output of Engine**

Maximum continuous output of engine is the maximum output at which the engine can run safely and continuously in the design condition (the full load running condition for a main engine).

#### **2.1.24 Number of Maximum Continuous Revolutions**

The number of maximum continuous revolutions is the number of revolutions at maximum continuous output.

Note: The strength calculations of engines are to be based upon the maximum continuous output and the number of maximum continuous revolutions.

#### **2.1.25 Propeller Shaft Kind 1 and Propeller Shaft Kind 2**

**1** Propeller shaft Kind 1 is a propeller shaft which is effectively protected against corrosion by water (sea water, outboard freshwater and inboard freshwater) with a means approved by the Society or which is made of corrosion resistant materials approved by the Society. The shafts which comply with the following **(1)**, **(2)**, **(3)** or **(4)** are categorized respectively as propeller shaft Kind 1A, propeller shaft Kind 1B, propeller shaft Kind 1C or propeller shaft Kind 1W.

- (1) Propeller shaft Kind 1A is a propeller shaft, at the after end, with a keyed propeller attachment (hereinafter referred to “keyed connection”), with a keyless propeller attachment (hereinafter referred to “keyless connection”) or with a coupling flange (hereinafter referred to “flanged connection”); to which a seawater lubricated stern tube bearing (including shaft bracket bearing, hereinafter the same in this Chapter) or stern tube bearing, utilising outboard freshwater, is attached.
- (2) Propeller shaft Kind 1B is a propeller shaft of keyed connection, keyless connection or flanged connection; to which an oil lubricated stern tube bearing is attached except for the shafts complying with **(3)**.
- (3) Propeller shaft Kind 1C is a propeller shaft satisfying the conditions in **(2)** and the requirements in [6.2.11, Part D](#).
- (4) Propeller shaft Kind 1W is a propeller shaft of keyed connection, keyless connection or flanged connection; to which a freshwater lubricated stern tube bearing, utilising inboard freshwater, is attached.

**2** Propeller shaft Kind 2 is a propeller shaft other than those specified in **-1**.

#### **2.1.26 Stern Tube Shaft**

Stern tube shaft is an intermediate shaft which lies in a stern tube.

#### **2.1.27 Stern Tube Shaft Kind 1 and Stern Tube Shaft Kind 2**

**1** Stern tube shaft Kind 1 is a stern tube shaft which is effectively protected against corrosion by sea water with a means approved by the Society or which is made of corrosion resistant materials approved by the Society. The shafts which are listed in the following **(1)**, **(2)** or **(3)** are categorized respectively as stern tube shaft Kind 1A, stern tube shaft Kind 1B or stern tube shaft Kind 1W:

- (1) Stern tube shafts to which a seawater lubricated stern tube bearing or stern tube bearing, utilising outboard freshwater, is adopted;
- (2) Stern tube shafts to which an oil lubricated stern tube bearing is adopted; or
- (3) Stern tube shafts to which a freshwater lubricated stern tube bearing, utilising inboard freshwater, is adopted.

**2** Stern tube shaft Kind 2 is a stern tube shaft other than those specified in **-1**.

**2.1.28 Deadweight Tonnage**

Deadweight tonnage ( $DW$ ) is the difference in *tons* between full load displacement ( $W$ ) and lightweight ( $LW$ ).

**2.1.29 Lightweight\***

Lightweight ( $LW$ ) is the displacement in *tons* excluding cargoes, fuel oil, lubricating oil, ballast and fresh water in tanks, stored goods, and passengers and crew and their effects.

**2.1.30 Maximum Astern Speed**

Maximum astern speed of ship is the design speed in *knots* which the ship with clean bottom can attain at the maximum astern output on calm sea in the full load condition.

**2.1.31 Dead Ship Condition**

Dead ship condition is the condition under which the main propulsion plant, boilers and auxiliaries are not in operation due to the absence of power.

**2.1.32 Machinery Space of Category A\***

Machinery spaces of category *A* are those spaces and trunks to such spaces which contain:

- (1) internal combustion machinery used for main propulsion; or
- (2) internal combustion machinery used for purposes other than main propulsion where such machinery has in the aggregate a total power output of not less than 375 *kW*, or
- (3) any oil-fired boiler (including inert gas generators) or oil fuel unit (including incinerators)

**2.1.33 Machinery Space**

Machinery spaces are all machinery spaces of category *A* and all other spaces containing propulsion machinery, boilers, oil fuel units, steam and internal combustion engines, generators and major electrical machinery, oil filling stations, refrigerating, stabilizing, ventilation and air conditioning machinery, and similar spaces, and trunks to such spaces.

**2.1.34 Cargo Space**

Cargo spaces are all spaces used for cargo (including cargo oil tanks) and trunks to such spaces.

**2.1.35 Cargo Area**

Cargo area is that part of the ship that contains cargo tanks, slop tanks and cargo pump rooms including pump rooms, cofferdams, ballast and void spaces adjacent to cargo tanks and also deck areas through out the entire length and breadth of the part of the ship over the aforementioned spaces.

**2.1.36 Accommodation Space\***

Accommodation spaces are those spaces used for public spaces, corridors, lavatories, cabins, offices, hospitals, cinemas, games and hobby rooms, barber shops, pantries containing no cooking appliances and similar spaces.

**2.1.37 Public Space\***

Public spaces are those portions of the accommodation which are used for halls, dining rooms, lounges and similar permanently enclosed spaces.

**2.1.38 Service Space**

Service spaces are those spaces used for galleys, pantries containing cooking appliances, lockers, mail and specie rooms, storerooms, workshops other than those forming part of the machinery spaces, and similar spaces and trunks to such spaces.

**2.1.39 Passenger Ship**

A passenger ship is a ship which carries more than twelve passengers where a passenger is every person other than:

- (1) the master and the members of the crew or other persons employed or engaged in any capacity on board a ship on the business of that ship ; and
- (2) a child under one year of age.

**2.1.40 Cargo Ship**

A cargo ship is any ship which is not a passenger ship.

**2.1.41 Tanker**

A tanker is a cargo ship constructed or adapted for the carriage in bulk of liquid cargoes of a flammable nature except ships carrying liquefied gases in bulk and ships carrying dangerous chemicals in bulk.

**2.1.42 Ship Carrying Liquefied Gases in Bulk**

A ship carrying liquefied gases in bulk is a cargo ship constructed or adapted and used for the carriage in bulk of liquefied gases

specified in [Part N](#).

#### **2.1.43 Ship Carrying Dangerous Chemicals in Bulk**

A ship carrying dangerous chemicals in bulk is a cargo ship constructed or adapted and used for the carriage in bulk of dangerous chemicals specified in [Part S](#).

#### **2.1.44 Ships Using Low-flashpoint Fuels**

Ships using low-flashpoint fuels mean ships which use low-flashpoint fuels as defined in [2.2.1-28, Part GF](#).

#### **2.1.45 Ships at Beginning Stage of Construction**

A ship at beginning stage of construction is a ship whose keel is laid or a ship at a similar stage of construction. For this purpose, the term “a similar stage of construction” means the stage at which:

- (1) construction identifiable with a specific ship begins; and
- (2) assembly of that ship has commenced comprising at least 50 *tonnes* or 1% of the estimated mass of all structural material, whichever is less.

#### **2.1.46 Watertight**

Watertight means having scantlings and arrangements capable of preventing the passage of water in any direction under the head of water that is likely to occur in intact and damaged conditions. In the damaged condition, including intermediate stages of flooding, the head of water is to be considered in the worst situation at equilibrium.

#### **2.1.47 Weathertight**

Weathertight means that in any sea conditions water will not penetrate into the ship.

#### **2.1.48 Keel Line**

Keel line is a line parallel to the slope of the keel passing amidships through the top of the keel at the centreline or at the line of intersection of the inside of a shell plating with the keel if a bar keel extends below that line, on a ship with a metal shell.

#### **2.1.49 Transportable Moisture Limit**

Transportable moisture limit means the maximum moisture content of the cargo which is considered safe for carriage.

#### **2.1.50 Moisture Content**

Moisture content means that portion of a representative sample consisting of water, ice, or other liquid expressed as a percentage of the total wet mass of the sample.

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# GUIDANCE FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS

## Part A GENERAL RULES

### A1 GENERAL

#### A1.1 Application of these Rules

##### A1.1.1 Application

1 Gross tonnage mentioned in these Rules means:

- (1) The gross tonnage stated on the National Registry Certificate issued by the government of the country to which the ship is registered.
- (2) Notwithstanding the gross tonnage defined in (1), the gross tonnage measured under the national tonnage rules where: the keel of the ship was laid before 18 July 1994, and the flag state to which the ship is registered has authorized the use of the gross tonnage measured under the national tonnage rules in accordance with *IMO Resolution A.494* which were effective prior to the implementation of the “International Convention on Tonnage Measurement of Ships, 1969,” for the purpose of applying the provisions of *SOLAS*, and the shipowner is in agreement.

2 With respect to the provisions of these Rules, unless explicitly specified otherwise in the relevant requirements, distances regarding ship length, breadth, depth, and tank length, breadth, height, etc. are to be measured by using moulded dimensions. However, where the effects of plate thickness are not negligible, this requirement is not applicable. For the distance between an independent cargo tank and the hull construction, such distance is to be measured from the external face of the tank.

#### A1.2 Class Notations

##### A1.2.1 General

1 With respect to the provisions of **1.2.1, Part A of the Rules**, ships that have two or more function, such as combination carriers are given notation based on the primary characteristic of the structure or equipment as follows:

- (1) For ore and oil carriers: *OC / TOB*
- (2) For bulk carriers having necessary installations for carriage of lumber cargoes: *BC, EQ C LB*

2 With respect to the provisions of **1.2.1-2** and **-3, Part A of the Rules**, and for bulk carriers and double hull oil tankers complying with **Part CSR-B&T of the Rules**, the details are to be entered into the Classification Register as descriptive notes.

##### A1.2.2 Restricted Services

The term “specific sea area” referred to in **1.2.2(3), Part A of the Rules** means the operation area specified in the provisions of **Chapter 3, Part P** and **Chapter 2, Part PS of the Rules** and the designated service area specified in **1.1.1-1(2), Part T of the Rules**, the details of which are entered as descriptive notes in the Classification Register.

##### A1.2.4 Hull Construction and Equipment

1 With respect to the provisions of **1.2.4, Part A of the Rules**, for catamarans or trimarans complying with relevant requirements specified in these Rules, the notation of “*Catamaran*” (abbreviated to *CAT*) or “*Trimaran*” (abbreviated to *TRI*) is affixed after the notation relating to the structural materials for main hull specified in **1.2.3, Part A of the Rules**.

2 With respect to the provisions of **1.2.4, Part A of the Rules**, in case that the provisions of **C14.3.1.1, Part C of the Guidance** are applied, the design conditions for anchors, chain cables and windlass are to be entered in the Class Register as descriptive notes for the ship.

3 For ships complying with the provisions of **1.2.4-1, -2, -3, and -29, Part A of the Rules** that are designed for the carriage of

specific cargoes, the details are to be entered as descriptive notes in the Classification Register for the ship.

4 With respect to the provisions of **1.2.4-2** and **-3, Part A of the Rules**, design pressure and design temperatures of cargo spaces are to be entered in the Classification Register as descriptive notes for the ship.

5 With respect to the provisions of **1.2.4-15** and **-16, Part A of the Rules**, design criteria such as water depth and wave height are to be entered into the Classification Register as descriptive notes for the ship.

6 With respect to the provisions of **1.2.4-18, Part A of the Rules**, design conditions such as maximum diving depth are to be entered in the Classification Register as descriptive notes for the ship.

7 For ships complying with the provisions of **1.2.4-7** and **1.2.4-26, Part A of the Rules**, the notation “GRAB” is to be affixed as in the following example: “BC-XII, GRAB”

8 In applying **1.2.4-33, Part A of the Rules**, the kinds of fuels are listed as follows:

- (1) Natural gas used as fuel: “Gas or Low-flashpoint Fuel / Natural Gas” (abbreviated as GLF/NG)
- (2) Others than (1) above used as fuel: According to “Guidelines for Ships Using Alternative Fuels”

9 In applying **1.2.4-34, Part A of the Rules**, the kinds of fuels listed as follows:

- (1) Natural gas used as fuel: “Cargo as Fuel / Natural Gas” (abbreviated as CF/NG)
- (2) Others than (1) above used as fuel: According to “Guidelines for Ships Using Alternative Fuels”

#### **A1.2.5 Polar Class Ships and Ice Class Ships**

With respect to the provisions of **1.2.5-4, Part A of the Rules**, the character corresponding to the appropriate design temperature category specified in **Table 3.2.2-5, Chapter 3, Part 1, Part C of the Rules** (“a” to “e” for “ $T_{Da}$ ” to “ $T_{De}$ ” respectively) is to be added to the notation of “TD”.

## A2 DEFINITIONS

### A2.1 Application and Definitions

#### A2.1.1 Application

$L$ ,  $B$ ,  $D$ ,  $D_s$ ,  $d$  and other principal dimensions are to be rounded to two decimal places, except that  $D$  and  $d$  are to be rounded to three decimal places in the freeboard calculations.

#### A2.1.2 Length of Ship

1 Where the requirements of **2.1.2, Part A of the Rules** apply to ships with rudder posts which do not reach the shoe piece, the ships are treated as ships without rudder posts.

2 In cases where  $L$  is determined by 96% of the extreme length on the designed maximum load line, the aft end of  $L$  is to be the point situated at a distance  $L$  from the fore side of the stem parallel to the base line.

3 For ships having neither rudder post nor rudder stock (for example, a ship equipped with a Voith-Schneider Propeller),  $L$  is to be 96% of the extreme length on the designed maximum load line.

4 If the difference between the scantling draught ( $d_s$ ) and the designed maximum load draught does not exceed 300mm, the length of ship and the extreme length on load line are to be those measured according to the designed maximum load draught. If the difference exceeds 300mm, they are to be those measured according to  $d_s$ .

#### A2.1.3 Length for Freeboard

1 The fore end of the length for freeboard is to be as specified in the following:

- (1) In ships with a stem which has no hollowed part above the waterline at 85% of the least moulded depth measured from the top of keel

The fore end of  $L_f$  is the perpendicular at the intersection of the waterline at 85% of the least moulded depth with the fore side of the stem. (See **Fig. A2.1.3-1**)

- (2) In ships with a stem which has a hollowed part above the waterline at 85% of the least moulded depth measured from the top of keel (See **Fig. A2.1.3-2**)

2 In ships designed with a rake of keel, the waterline on which this length is measured is to be parallel to the designed waterline at 85% of the least moulded depth  $D_{\min}$ , found by drawing a line parallel to the keel line of the vessel (including skeg) tangent to the moulded sheer line of the freeboard deck. The least moulded depth is the vertical distance measured from the top of the keel to the top of the freeboard deck beam at side at the point of tangency. (See **Fig. A2.1.3-3**)

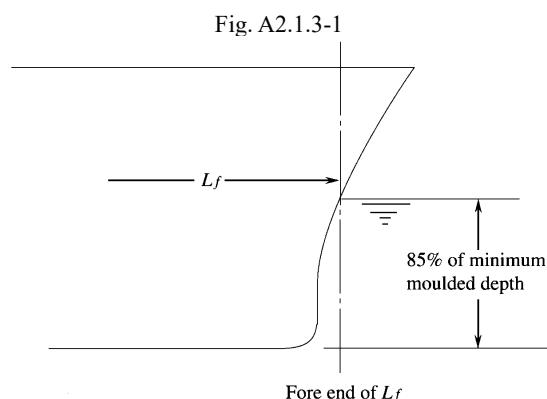


Fig. A2.1.3-2

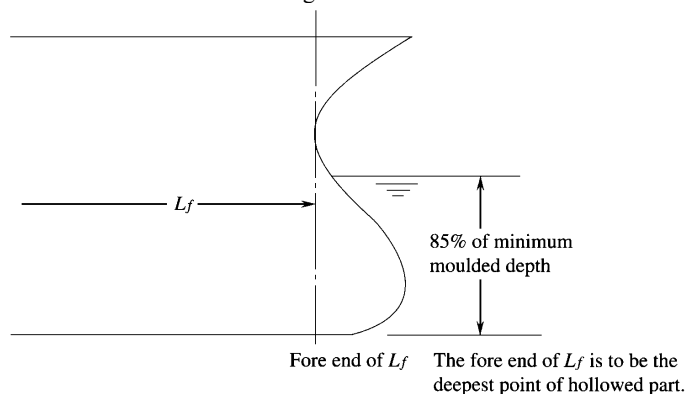
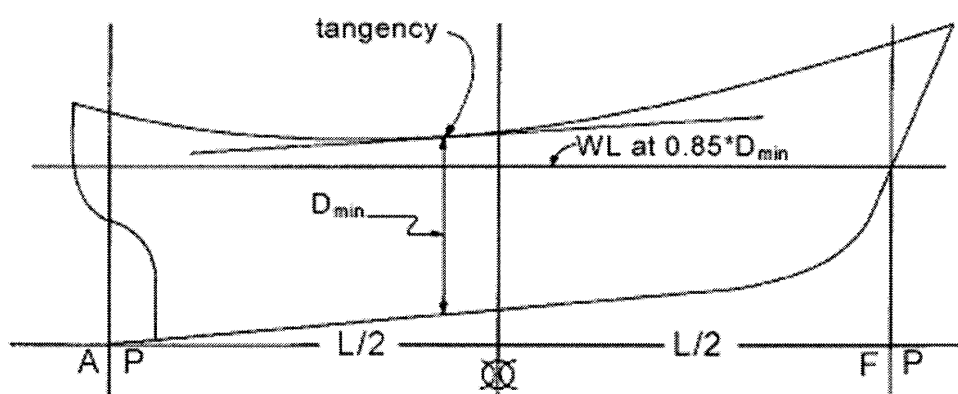


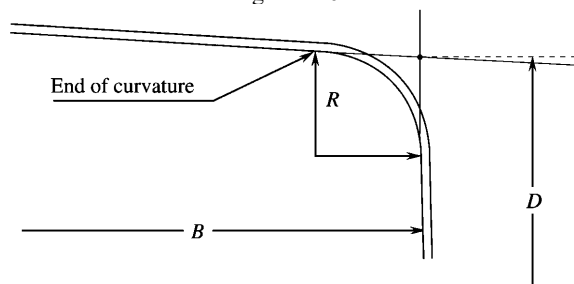
Fig. A2.1.3-3



### A2.1.6 Depth of Ship

The depth of ship  $D$  for ships having rounded gunwales is to be the depth measured up to the intersection of the extension of the lower surface of deck plating at the end of curvature and the extension of the inner surface of side shell plating. (See Fig. A2.1.6-1)

Fig. A2.1.6-1



### A2.1.7 Depth for Strength Computation

Where the lowest point of sheer of the strength deck at side is not situated amidships, the depth for strength computation  $D_s$  is to be the minimum depth up to the strength deck in the range of  $0.4L$  amidships.

### A2.1.11 Load Line and Designed Maximum Load Line

Generally, “the water line corresponding to the full load condition” stated in 2.1.11(2), Part A of the Rules refers to the water line corresponding to the designed summer freeboard.

### A2.1.15 Freeboard Deck

1 “Adequate width” specified in 2.1.15-3, Part A of the Rules is to be determined by taking into account the ship’s construction, and operation, and at the minimum, is to accommodate the passages specified in 14.13, Part C of the Rules.

2 With respect to the provisions of 2.1.15, Part A of the Rules, the freeboard deck on a ship which has openings at the after end

and the bottom of cargo spaces (hereinafter referred to as “well deck”) can be submerged below the waterline by ballasting for loading/unloading cargoes from such after end openings is to be in accordance with the following.

- (1) If such a ship is fitted with weathertight closures for the cargo space(s) and a watertight closure at the stern, the uppermost complete deck may be taken as the freeboard deck.
- (2) If such a ship is not fitted with weathertight closures for the cargo space(s) or a watertight closure at the stern, the well deck is to be taken as the freeboard deck. In this case, buoyant spaces in the hull structure above such well decks may be considered as superstructures in accordance with the provisions of **2.1.19, Part A of the Rules**.
- (3) If such a ship is not fitted with weathertight closures for the cargo space(s) but has a watertight closure at the stern, the uppermost complete deck may be taken as the freeboard deck provided that the calculated freeboard is corrected for any missing buoyancy above the well deck in accordance with **Part V of the Rules**. In this case, the structure of the freeboard deck, where provided within cargo spaces, is to be continuous forward and afterward at the ship’s sides and continuous athwartship at the transverse bulkheads, and capable of passage.

#### **A2.1.18 Raised Quarterdeck**

The raised quarterdeck specified in **2.1.18, Part A of the Rules** is a poop having a height less than the standard height of superstructures given in **V2.2.1-1, Part V of the Guidance**.

#### **A2.1.29 Light Weight**

With respect to the provisions of **2.1.29, Part A of the Rules**, the weight of mediums on board for the fixed firefighting systems (e.g. freshwater, CO<sub>2</sub>, dry chemical powder, foam concentrate, etc.) is to be included in the light weight.

#### **A2.1.32 Machinery Space of Category A**

“Incinerators” referred to in **2.1.32, Part A of the Rules** mean those with a maximum combustion capacity over 34.5kW.

#### **A2.1.36 Accommodation Space**

Coffee automates, toasters, dish washers, microwave ovens, water boilers and similar appliances with a maximum power of 5kW may be provided in “pantries containing no cooking appliances” specified in **2.1.36, Part A of the Rules**. However, the power for electrically heated cooking plates or hot plates is not to be more than 2kW and those surface temperatures are not to exceed 150 °C.

#### **A2.1.37 Public Space**

Electrical equipment specified in **A2.1.36** may be provided in “dining rooms” specified in **2.1.37, Part A of the Rules**.