RULES FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS

GUIDANCE FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS

Part C Hull Construction and Equipment

Rules for the Survey and Construction of Steel Ships
Part C 2012 AMENDMENT NO.1
Guidance for the Survey and Construction of Steel Ships
Part C 2012 AMENDMENT NO.1

Rule No.29 / Notice No.43 15th June 2012
Resolved by Technical Committee on 10th February 2012
Approved by Board of Directors on 6th March 2012

ClassNK
NIPPON KAIJI KYOKAI

RULES FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS

RULES

Part C Hull Construction and Equipment

2012 AMENDMENT NO.1

Rule No.29 15th June 2012

Resolved by Technical Committee on 10th February 2012

Approved by Board of Directors on 6th March 2012

Rule No.29 15th June 2012
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 C HULL CONSTRUCTION AND EQUIPMENT

Amendment 1-1

Chapter 35 MEANS OF ACCESS

35.2 Special Requirements for Oil Tankers and Bulk Carriers

35.2.3 Means of Access to Spaces

Sub-paragraph -4 has been amended as follows.

4 For oil tankers, access ladders to cargo tanks and other spaces in the cargo area (excluding fore peak tanks) are to be in accordance with the following.

((1) to (3) are omitted)

(4) In ~~double hull~~ spaces of less than 2.5 *m* width, access to the space may be made by means of vertical ladders that are connected to one or more ladder linking platforms generally spaced not more than 6 *m* apart vertically and displaced to one side of the ladder. Adjacent sections of ladder are to be laterally offset from each other by at least the width of the ladder. The uppermost entrance section of the ladder is to be in accordance with the provisions of **-3** above.

(5) (omitted)

35.2.5 Specifications for Means of Access and Ladders

Sub-paragraph -4 has been amended as follows.

4 Elevated passageways forming sections of a permanent means of access, are to be provided with guard rails of 1,000 *mm* in height and consist of a rail and an intermediate bar 500 *mm* in height and of substantial construction, with stanchions not more than 3 *m* apart, on the open side. Guardrail stanchions are to be attached to the permanent means of access.

EFFECTIVE DATE AND APPLICATION (Amendment 1-1)

1. The effective date of the amendments is 1 July 2012.

2. Notwithstanding the amendments to the Rules, the current requirements may 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.

Amendment 1-2

Chapter 7 FRAMES

7.1 General

Paragraph 7.1.8 has been amended as follows.

7.1.8 ~~Frames at Large Flare Locations~~Consideration of Bow Impact Pressure

The transverse frames, side longitudinals and web frames supporting side longitudinals that are fitted where the bow ~~flare~~ is considered to endure large wave impact pressure are to be properly strengthened and particular attention is to be paid to the effectiveness of their end connections.

7.5 Cantilever Beam System

Paragraph 7.5.1 has been amended as follows.

7.5.1 Cantilever Beams

Cantilever beams are to comply with the requirements in **(1)** to **(~~7~~8)**:

((1) to (7) are omitted)

(8) Cantilever beams supporting hatch covers on lower decks are to comply with the requirements in **(a)** and **(b)**:

(a) The leg length of the fillet welds between webs and hatch side girders is to be *F*1.

(b) Where the stiffeners are provided to prevent web plates from buckling, consideration is to be given to the arrangement of the ends of such stiffeners to ensure that there are no stress concentrations at the connections between web plates and the members supporting hatch covers on lower decks.

Chapter 8 WEB FRAMES AND SIDE STRINGERS

8.1 General

Paragraph 8.1.4 has been amended as follows.

8.1.4 ~~Web Frames and Side Stringers at Large Flare Locations~~Consideration of Bow Impact Pressure

The side stringers supporting transverse hold frames that are fitted where the bow ~~flare~~ is considered to endure large wave impact pressure, and the web frames supporting these side stringers are to be properly strengthened and particular attention is to be paid to the effectiveness of their end connections.

Chapter 16 PLATE KEELS AND SHELL PLATING

16.4 Special Requirements for Shell Plating

Paragraph 16.4.1 has been amended as follows.

16.4.1 ~~Shell Plating at Large Flare Locations~~Consideration of Bow Impact Pressure

For shell plating where ~~the flare is especially large~~ the bow impact pressure is assumed to be large, sufficient consideration is to be made regarding reinforcement against forces acting on the bow such as wave impact pressure.

EFFECTIVE DATE AND APPLICATION (Amendment 1-2)

1. The effective date of the amendments is 15 December 2012.

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

Amendment 1-3

Chapter 25 CEMENTING AND PAINTING

25.2 Painting

25.2.2 Protective Coatings in Dedicated Seawater Ballast Tanks and Double-side Skin Spaces

Sub-paragraph -1 has been amended as follows.

1 For dedicated seawater ballast tanks of all type of ships of not less than 500 *gross tonnage* engaged on international voyages and double-side skin spaces arranged in bulk carriers engaged on international voyages of 150*m* in length and upwards as defined in **31A.1.2(1)**, the requirements are to be complied with *"PERFORMANCE STANDARD FOR PROTECTIVE COATINGS FOR DEDICATED SEAWATER BALLAST TANKS IN ALL TYPE OF SHIPS AND DOUBLE-SIDE SKIN SPACES OF BULK CARRIERS"* (*IMO Performance Standard for Protective Coatings for Seawater Ballast Tanks, etc. / IMO* resolution *MSC*.215(82) as may be amended).

Paragraph 25.2.3 has been added as follows.

25.2.3 Corrosion Protection for Cargo Oil Tanks

Corrosion protection in accordance with the following **(1)** or **(2)** is to be applied to the cargo oil tanks of crude oil tankers of not less than 5,000 *tonnes* deadweight engaged on international voyages:

(1) Coatings in accordance with the *"PERFORMANCE STANDARD FOR PROTECTIVE COATINGS FOR CARGO OIL TANKS OF CRUDE OIL TANKERS"* (*IMO Performance Standard for Protective Coatings for Cargo Oil Tanks / IMO* resolution *MSC*.288(87) as may be amended); or

(2) Alternative means in accordance with the *"PERFORMANCE STANDARD FOR ALTERNATIVE MEANS OF CORROSION PROTECTION FOR CARGO OIL TANKS OF CRUDE OIL TANKERS"* (*IMO Performance Standard for Alternative Means of Corrosion Protection for Cargo Oil Tanks / IMO* resolution *MSC*.289(87) as may be amended).

EFFECTIVE DATE AND APPLICATION (Amendment 1-3)

1. The effective date of the amendments is 1 January 2013.

2. Notwithstanding the amendments to the Rules, the current requirements may apply to ships other than ships that fall under the following:

(1) for which the building contract is placed on or after 1 January 2013; or

(2) in the absence of a building contract, the keels of which are laid or which are at *a similar stage of construction* on or after 1 July 2013; or

(Note) The term "*a similar stage of construction*" means the stage at which the construction identifiable with a specific ship begins and the assembly of that ship has commenced comprising at least 50 *tonnes* or 1% of the estimated mass of all structural material, whichever is the less.

(3) the delivery of which is on or after 1 January 2016

GUIDANCE FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS

GUIDANCE

Part C Hull Construction and Equipment

2012 AMENDMENT NO.1

Notice No.43 15th June 2012

Resolved by Technical Committee on 10th February 2012

Notice No.43 15th June 2012
AMENDMENT TO THE GUIDANCE FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS

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

Part C HULL CONSTRUCTION AND EQUIPMENT

Amendment 1-1

C25 CEMENTING AND PAINTING

C25.2 Painting

C25.2.2 Protective Coatings in dedicated seawater ballast tanks and double-side skin spaces

Sub-paragraph -2 has been added as follows.

2 With respect to the provision of **25.2.2-1, Part C of the Rules,** the following tanks ~~identified as "Spaces included in Net Tonnage" in the International Convention on Tonnage Measurement of Ships, 1969~~ are not considered to be dedicated seawater ballast tanks~~.~~:

(1) tanks identified as "Spaces included in Net Tonnage" in the International Convention on Tonnage Measurement of Ships, 1969; and

(2) sea water ballast tanks in livestock carriers also designated for the carriage of the livestock dung.

EFFECTIVE DATE AND APPLICATION (Amendment 1-1)

1. The effective date of the amendments is 15 June 2012.

Amendment 1-2

Annex C1.1.7-5 GUIDANCE FOR THE USE OF FIBER REINFORCED PLASTIC (FRP)

1.3 Requirements for FRP Depending on Service and/or Locations

Paragraph 1.3.1 has been amended as follows.

1.3.1 Requirements for FRP Depending on Service and/or Locations

1 The requirements for fire integrity, fire retardance, flame spread and surface flammability as well as~~and~~ smoke generation required for FRP are, in principle, to be in accordance with those given in **Table 1.3.1**. If a FRP corresponds to the multiple classifications of service in **Table 1.3.1**, it is to satisfy the most stringent requirements.

2 (omitted)

3 (omitted)

4 (omitted)

Table 1.3.1 has been amended as follows.

Table 1.3.1 Applicable Requirements of FRP

Location	Service	Fire Integrity	Fire Retardance	Flame Spread and Surface Flammability	Smoke Generation
(omitted)					

Note of Table 1.3.1 has been amended as follows.

Note:

1) SYMBOL

○: Fire retardance test specified in **9.4.2-2**, flame spreading~~ test~~ and surface flammability test specified in **9.4.2-3**, smoke generation test specified in **9.4.2-3**, **Chapter 9**, **Part 2** of **Guidance for the Approval and Type Approval of Materials and Equipment for Marine Use** are to be satisfied.

- : Not applicable

(2) to 6) are omitted)

EFFECTIVE DATE AND APPLICATION (Amendment 1-2)

1. The effective date of the amendments is 1 July 2012.

Amendment 1-3

C35 MEANS OF ACCESS

C35.2 Special Requirements for Oil Tankers and Bulk Carriers

C35.2.2 General

Sub-paragraph -1 has been amended as follows.

1 For the purpose of **35.2, Part C** of the Rules, appropriate means of access are to be provided to enable close-up examinations of positions where close-up examinations and thickness measurements are required in accordance with the provisions of **Part B** of the Rules and positions with critical structural areas. In application, "critical structural areas" are locations which have been identified from calculations to require monitoring or from the service history of similar or sister ships to be susceptible to cracking, buckling, deformation or corrosion which would impair the structural integrity of the ship. Each space for which close-up inspection is not required such as fuel oil tanks and void spaces forward of cargo area, may be provided with a means of access necessary for overall survey intended to report on the overall conditions of the hull structure.

Paragraph C35.2.4 has been amended as follows.

C35.2.4 Means of Access within Spaces

(-1 to -9 are omitted)

10 In the application of **35.2.4-1(1)(d)**, **Part C of the Rules**, for water ballast tanks of 5 *m* or more in width, such as on an ore carrier, side shell plating shall be considered in the same way as "longitudinal bulkhead".

~~**10**~~**11** (omitted)

~~**11**~~**12** (omitted)

~~**12**~~**13** (omitted)

~~**13**~~**14** (omitted)

~~**14**~~**15** (omitted)

~~**15**~~**16** (omitted)

~~**16**~~**17** (omitted)

~~**17**~~**18** (omitted)

~~**18**~~**19** (omitted)

~~**19**~~**20** (omitted)

21 "Readily available" referred to in **35.2.4-4(3)**, **Part C of the Rules**, means capable of being transported to location in cargo hold and safely erected by ship's staff.

~~**20**~~**22** (omitted)

~~**21**~~**23** (omitted)

24 In the application of **35.2.4-6(1)(b)**, **Part C of the Rules,** the foremost and aftermost bilge hopper ballast tanks with raised bottom, a combination of transverse and vertical means of access for access to the sloping plate of hopper tank connection with side shell plating for each transverse web can be accepted in place of the longitudinal permanent means of access.

~~**22**~~**25** (omitted)

~~**23**~~**26** (omitted)

Paragraph C35.2.5 has been amended as follows.

C35.2.5 Specifications for Means of Access and Ladders

(-1 to -8 are omitted)

9 In the application of **35.2.5-5** and **-6**, **Part C of the Rules**, for access through vertical and horizontal openings within spaces, where the opening of the dimensions required in **35.2.5-5** and **-6**, **Part C of the Rules** cannot be provided, smaller dimension openings may be accepted provided that it is demonstrated that an injured person can be removed from the space and such openings are approved by the Society.

~~**9**~~**10** (omitted)

~~**10**~~**11** (omitted)

~~**11**~~**12** With respect to the provisions of **35.2.5-9**, **Part C** of the Rules, details of ladders and other means are to be in accordance with the following.

(1) (omitted)

(2) The width of inclined ladders between stringers is not to be less than 400 *mm*. The width of inclined ladders for access to a cargo hold in bulk carriers is to be at least 450 *mm*. The treads are to be equally spaced at a distance apart, measured vertically, of between 200 *mm* and 300 *mm*. When steel is used, the treads are to be formed of two square bars of not less than 22 *mm* × 22 *mm* in section, fitted to form a horizontal step with the edges pointing upward. The treads are to be carried through the side stringers and attached thereto by double continuous welding. All inclined ladders are to be provided with ~~two course~~ handrails of substantial construction on both sides. The vertical height of handrails is not to be less than 890 *mm* from the centre of the step and two course handrails is to be provided where the gap between stringer and top handrail is greater than 500 *mm*.

((3) to (7) are omitted)

Annex C35.2.4 GUIDANCE FOR DECISION OF ALTERNATIVE MEANS OF ACCESS

1 General

1.2 General Provisions

1.2.1 General

Sub-paragraph -8 has been amended as follows.

8 All surveyors should apply appropriately safe methods of working requirements. See also the relevant provisions of **1.4.2-1**, **Part B of the Rules** for Access to Structures.

2 Alternative Means of Access

Sections 2.1 to 2.7 have been renumbered to Sections 2.2 to 2.8, and Section 2.1 has been added as follows.

2.1 General

2.1.1 General

1 The Owners are responsible for ensuring that alternative means of access are suitable for the purpose of the appropriate use. The equipment where applicable should be operated by qualified personnel and evidence should be provided that the equipment has been properly maintained by a shore-based provider. The standing platform should be fitted with anchor points for attaching fall arrest systems. For equipment provided with a self levelling platform, care should be taken that the locking device is engaged after completion of manoeuvring to ensure that the platform is fixed.

~~2.1~~2.2 Hydraulic Arm Vehicles ("Cherry Pickers")

Paragraph 2.2.2 has been amended as follows.

~~2.1.2~~2.2.2 Safety Routines

~~**1** The Owners are responsible for ensuring that movable means of access are suitable for the intended purpose. The equipment should be operated by qualified personnel and evidence should be provided that the equipment has been properly maintained by a shore-based provider. The standing platform should be fitted with anchor points for attaching fall arrest systems. For equipment provided with a self levelling platform, care should be taken that the locking device is engaged after completion of manoeuvring to ensure that the platform is fixed.~~

~~**2**~~**1** Safety measures, including the following, should be taken by an authorised person prior to survey to the satisfaction of the attending surveyor(s):

((1) to (11) are omitted)

~~**3**~~**2** The operation and training in the use of this type of equipment should be addressed by the Ships Safety Management System.

~~2.2~~2.3 Wire Lift Platform

~~2.2.1~~2.3.1 Application

Sub-paragraph -1 has been amended as follows.

1 Wire lift platforms may be used for inspection of structural members of ballast tanks, cargo oil tanks and cargo holds. Such equipment should be rated for more than one person and be operated by suitably authorised personnel. If carried on board and included in the Ship Structure Access Manual, the designer will have to take into consideration safety aspects associated with deployment and use of such means of access. The platform and equipment, including fixed points to the ships structure should be approved on behalf of the Administration being based on a recognized International or National Standard.

~~2.2.2~~2.3.2 Safety Routines

Sub-paragraph -1 has been amended as follows.

1 Safety measures, including the following, should be taken by an authorised person prior to survey to the satisfaction of the attending surveyor(s):

(1) Lift controls, including safety devices and brakes should be serviceable and should be operated throughout the range prior to use. Operators should be trained.

(~~1~~2) Rigging of wires should be in accordance with manufacturer's recommendations and conducted by qualified personnel.

(~~2~~3) Fix points to which the wires will be connected should be examined before each use and verified as in good condition (free of wastage, fractures).

(4) Permissible load limitations should not be exceeded.

(5) Personnel should work from within the lift basket.

(6) Body belts (such as harnesses) with lanyards should be used.

(~~3~~7) Means should be provided for using fall protection with a lifeline that can be tended from above the platform.

~~2.6~~2.7 Portable Ladders

~~2.6.1~~2.7.1 Application

Sub-paragraph -3 has been added as follows.

3 In accordance with **B1.4.2-10(3)(a), Part B of the Guidance**, portable ladders may be used for close-up surveys of the cargo hold shell frames of bulk carriers.

Appendix C4 PERFORMANCE STANDARD FOR PROTECTIVE COATINGS FOR DEDICATED SEAWATER BALLAST TANKS IN ALL TYPES OF SHIPS AND DOUBLE-SIDE SKIN SPACES OF BULK CARRIERS (Resolution MSC.215(82) and IACS Unified Interpretations SC223)

Interpretation regarding Table 1

1 Design of coating system

1.3 Coating pre-qualification test

Procedure for Coating System Approval

Method A: Laboratory Test

Sub-paragraph 1.3.5 has been added as follows.

1.3.5 For the coating pre-qualification test, the measured average dry film thickness (DFT) on each prepared test panels shall not exceed a nominal DFT (NDFT) of 320 microns plus 20% unless a paint manufacturer specifies a NDFT greater than 320 microns. In the latter case, the average DFT shall not exceed the specified NDFT plus 20% and the coating system shall be certified to the specified NDFT if the system passes the tests according to Annex 1 of MSC 215(82). The measured DFT shall meet the "90/10" rule and the maximum DFT shall be below the maximum DFT value specified by the manufacturer.

2 PSP (Primary Surface Preparation)

Paragraph 2.2 has been amended as follows.

Interpretation regarding 2.2 Water soluble salt limit equivalent to NaCl

The conductivity of soluble salts is measured in accordance with ISO 8502-6 and ISO 8502-9 or equivalent method as validated according to NACE SP0508-2010, and compared with the conductivity of 50mg/m^2 NaCl. If the measured conductivity is less than or equal to, then it is acceptable. Minimum readings to be taken are one (1) per plate in the case of manually applied shop primer. In cases where an automatic process for application of shop primer is used, there should be means to demonstrate compliance with PSPC through a Quality Control System, which should include a monthly test.

3 SSP (Secondary Surface Preparation)

Section 3 has been amended as follows.

Interpretation regarding 3.2 Surface treatment, 3.3 Surface treatment after erection, and 3.4 Profile requirement

Methods such as, but not limited to, UHP Water Jetting may be considered for Secondary Surface Preparation, where it can be demonstrated that the surface conditions specified by PSPC Table 1, Section 3 can be achieved before the application of the main coatings.

Usually, the fillet welding on tank boundary watertight bulkhead is left without coating on block stage (because not yet be leakage tested), in which case it can be categorized as erection joint ("butt") to be power tooled to St 3.

Interpretation regarding 3.6 Water soluble salts limit equivalent to NaCl after blasting/grinding

The conductivity of soluble salts is measured in accordance with ISO 8502-6 and ISO 8502-9 or equivalent method as validated according to NACE SP0508-2010, and compared with the conductivity of $50 mg/m^2$ NaCl. If the measured conductivity is less then or equal to, then it is acceptable.

All soluble salts have a detrimental effect on coatings to a greater or lesser degree. ISO 8502-9:1998 does not provide the actual concentration of NaCl. The % NaCl in the total soluble salts will vary from site to site. Minimum readings to be taken are one (1) reading per block/section/unit prior to applying.

Section 8 has been amended as follows.

8 ALTERNATIVE SYSTEMS

8.1 All systems that are not an epoxy based system applied according to **table 1** of this Standard are defined as an alternative system.

8.2 This Standard is based on recognized and commonly used coating systems. It is not meant to exclude other, alternative, systems with proven equivalent performance, for example non epoxy based systems.

8.3 Acceptance of alternative systems will be subject to documented evidence that they ensure a corrosion prevention performance at least equivalent to that indicated in this Standard.

8.4 As a minimum, the documented evidence shall consist of satisfactory performance corresponding to that of a coating system which conforms to the coating standard described in **section 4**, a target useful life of 15 years in either actual field exposure for 5 years with final coating condition not less than "GOOD" or laboratory testing. Laboratory test shall be conducted in accordance with the test procedure given in **annex 1** of this Standard.

****

Interpretation

1 The definition of alternative systems

1.1 Normal coating systems, i.e. not alternative systems, are epoxy-based systems applied according to table 1 of PSPC.

1.2 Alternative systems can be coating systems which are:

・ epoxy-based systems, but not applied according to table 1 of PSPC;

・ non epoxy-based systems applied according to table 1 of PSPC; or

・ non epoxy-based systems, but not applied according to table 1 of PSPC.

2 The requirement of coating system approval for alternative systems

2.1 Type Approval Certificate shall be issued subject to satisfaction of the test procedure given in **Annex 1** to this standard, evaluated according to the acceptance criteria for alternative systems.

3 The inspection of application of alternative systems

3.1 The coatings are to be inspected according to the coating inspection requirement in PSPC.

4 The application of alternative systems

4.1 The necessary conditions for application, especially for difference from conventional epoxy coating system should be specified in the coating technical file as per section 3.4. of MSC.215 (82).

4.2 It is recommended that the work for confirmation of the suitability of application (workability, coating quality, worker's skill and so on) is demonstrated before the project starts.

****

EFFECTIVE DATE AND APPLICATION (Amendment 1-3)

1. The effective date of the amendments is 1 July 2012.

2. Notwithstanding the amendments to the Guidance, the current requirements may 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.

Amendment 1-4

C7 FRAMES

C7.1 General

Paragraph C7.1.8 has been amended as follows.

C7.1.8 ~~Frames at Large Flare Locations~~Consideration of Bow Impact Pressure

1 For pure car carriers, the thickness t_w of web plates and the plastic section modulus Z_p of transverse frames and side longitudinals, which are fitted where the bow flare located above the load line and forward of 0.2*L* is considered to endure large wave impact pressure, are not to be less than those obtained from the following formulae.
(omitted)
2 For pure car carriers, the scantling of web frames supporting side longitudinals, which are fitted where the bow flare located above the load line and forward of 0.2*L* is considered to endure large wave impact pressure is to be in accordance with the requirements of side stringers supporting transverse frames in **C8.1.4**.
3 For ships whose *L* and C_b are not less than 250*m* and 0.8 respectively, the provisions of **Section 8/6.4, Part CSR-T of the Rules** are to be applied.

C8 WEB FRAMES AND SIDE STRINGERS

C8.1 General

Paragraph C8.1.4 has been amended as follows.

C8.1.4 ~~Web Frames and Side Stringers at Large Flare Locations~~Consideration of Bow Impact Pressure

1 For pure car carriers, the thickness t_{wG} of web plates and the section modulus Z_G of side stringers supporting transverse frames and the web frames supporting these side stringers fitted where the bow flare located above the load line and forward of 0.2*L* is considered to endure large wave impact pressure are not to be less than those obtained from the following formulae.
(omitted)
2 The buckling strength of the web plates of girders supporting frames in **-1** above is to be in accordance with the following.
(omitted)
3 The buckling strength of the web plates at the ends of girders in **-1** above is to be in accordance with the following **(1)** and **(2)**.
(omitted)
4 For ships whose *L* and C_b are not less than 250*m* and 0.8 respectively, the provisions of **Section 8/6.4, Part CSR-T of the Rules** are to be applied.

C16 PLATE KEELS AND SHELL PLATING

C16.4 Special Requirements for Shell Plating

Paragraph C16.4.1 has been amended as follows.

C16.4.1 ~~Shell Plating at Large Flare Locations~~Consideration of Bow Impact Pressure

1 For pure car carriers, the thickness of shell plating above the load line for 0.2*L* forward is not to be less than that obtained from the following formula:

$$S\sqrt{\frac{\psi P}{\sigma_y}\times 10^3} \quad (mm)$$

S : Spacing (m) of frames or spacing of girders or longitudinal shell stiffeners measured along the shell plating, whichever is the smaller

σ_y : Specified yield stress (N/mm^2) of materials

ψ : As obtained from following formula

$$\psi = \frac{3\eta^2 - 2\sqrt{1+3\eta^2} + 2}{12\eta^2}$$

η : Spacing (m) of frames or spacing of girders or longitudinal shell stiffeners measured along the shell plating, whichever is the greater, divided by S

P : Slamming impact pressure (kPa) as specified in **C7.1.8-1**

2 For ships whose L and C_b are not less than 250m and 0.8 respectively, the provisions of **Section 8/6.4, Part CSR-T of the Rules** are to be applied.

C35 MEANS OF ACCESS

C35.1 General Rules

Paragraph C35.1.2 has been amended as follows.

C35.1.2 Means of Access to Spaces

1 With respect to the provisions of **35.1.2**, **Part C** of the Rules, permanent means of access where deemed as impracticable by the Society may be placed with portable ladders.

2 The openings of hatches or manholes for the means of access to the hold spaces for independent tanks are to be not less than those required by **g.** of **Table C35.1.2**.

C35.1.3 Means of Access within Spaces

Sub-paragraph -3 has been added as follows.

3 The clearances for inspections and means of access within the hold spaces for independent tanks is to be not less than those required by **a.** to **f.** of **Table C35.1.2**.

Table C35.1.2 has been added as follows.

Table C35.1.2

Location[1]	ships not less than 5,000 tonnes deadweight	ships less than 5,000 tonnes deadweight
a. insulation ~ inner bottom plate	600 *mm*	600 *mm*
b. insulation ~ side frame	600 *mm*	450 *mm*
c. insulation ~ girder	450 *mm*[2]	450 *mm*[2]
d. insulation ~ upper deck	600 *mm*	600 *mm*
e. insulation ~ deck beam	600 *mm*	450 *mm*
f. insulation ~ deck girder	450 *mm*[2]	450 *mm*[2]
g. horizontal opening	600 *mm* ×600 *mm*	500 *mm* ×500 *mm*

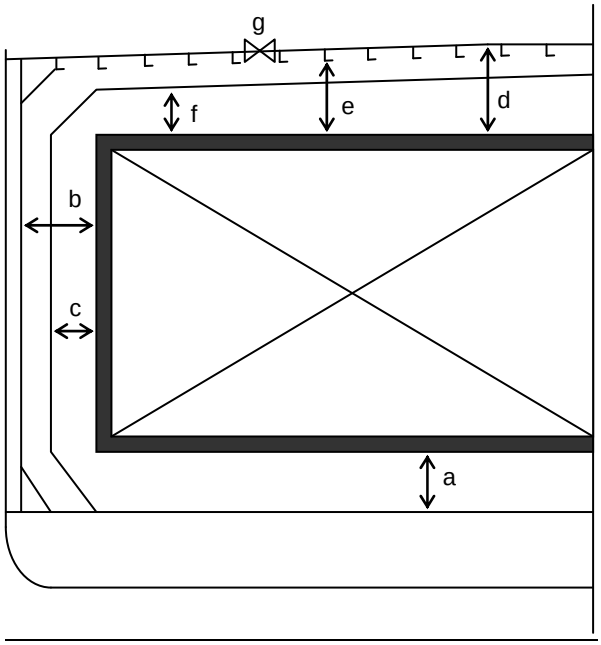
Note:

(1) Refer to **Fig. C35.1.2** for the relevant locations

(2) Where openings are provided in order to make the relevant location readily accessible from each side, it may be 0.5 times the width of face plate or 50 *mm*, whichever is smaller.

Fig. C35.1.2 has been added as follows.

Fig. C35.1.2



C35.2 Special Requirements for Oil Tankers and Bulk Carriers

C35.2.1 Application

Sub-paragraph -1 has been amended as follows.

1 With respect to the provisions of **35.2**, **Part C** of the Rules, this regulation does not apply to oil tankers other than those having integral tanks for the carriage of oil in bulk. Even in cases where the provisions of **35.2**, **Part C of the Rules** are applied, **C35.1.2-2** and **C35.1.3-3** are also to be applied to the means of access to the hold spaces for independent tanks as well as and to the means of access within said hold spaces.

EFFECTIVE DATE AND APPLICATION (Amendment 1-4)

1. The effective date of the amendments is 15 December 2012.
2. Notwithstanding the amendments to the Guidance, the current requirements may apply to ships for which the date of contract for construction is before the effective date.

Amendment 1-5

Annex C1.1.7-5 GUIDANCE FOR THE USE OF FIBER REINFORCED PLASTIC (FRP)

1.3 Requirements for FRP Depending on Service and/or Locations

1.3.1 Requirements for FRP Depending on Service and/or Locations

Table 1.3.1 has been amended as follows.

Table 1.3.1 Applicable Requirements of FRP

Location	Service	Fire Integrity	Fire Retardance	Flame Spread and Surface Flammability	Smoke Generation	Toxicity
Cargo Pump Rooms	All personnel walkways, catwalk, ladder, platforms or access areas	L1	○	○	-	-
Cargo Holds	Walkways or areas which may be used for escape, or access for firefighting, emergency operation or rescue	L1	○	-	-	-
	Personnel walkways, catwalks, ladders, platforms or access areas other than those described above	-	○	-	-	-
Cargo Tanks	All personnel walkways, catwalks, ladders, platforms or access areas	-[3)]	○	-	-	-
Fuel Oil Tanks	All personnel walkways, catwalks, ladders, platforms or access areas	-[3)]	○	-	-	-
Ballast Water Tanks	All personnel walkways, catwalks, ladders, platforms or access areas	-[4)]	○	-	-	-
Cofferdams, void spaces, double bottoms, pipe tunnels, etc.	All personnel walkways, catwalks, ladders, platforms or access areas	-[4)]	○	-	-	-
Accommodation, service, and control spaces	All personnel walkways, catwalks, ladders, platforms or access areas	L1	○	○	○	-
Lifeboat embarkation or temporary safe refuse stations in open deck areas	All personnel walkways, catwalks, ladders, platforms or access areas	L2	○	-	-	-
Open Decks or semi-enclosed areas	Walkways or areas which may be used for escape, or access for firefighting, emergency operation or rescue [6)]	L3[5)]	○	-[7)]	-[7)]	-[7)]
	Personnel walkways, catwalks, ladders, platforms or access areas other than those described above	-	○	-	-	-

Note:

1) SYMBOL
   ○: Fire retardance test specified in **9.4.2-2**, the flame spread~~ing~~ and surface flammability test specified in **9.4.2-3**, the smoke generation test specified in **9.4.2-4**, and the toxicity test specified in **9.4.2-5**, **Chapter 9**, **Part 2** of **Guidance for the Approval and Type Approval of Materials and Equipment for Marine Use** are to be satisfied.
   - : Not applicable
2) ABBREVIATIONS
   L1: L1 is the abbreviations of fire retardance Level 1. FRP complying with L1 means it complies with the standard of fire retardance test specified in **9.4.2-1(3)**, **Chapter 9**, **Part 2** of **Guidance for the Approval and Type Approval of Materials and Equipment for Marine Use**.
   L2: L2 is the abbreviations of fire retardance Level 2. FRP complying with L2 means it complies with the standard of fire retardance test specified in **9.4.2-1(2)**, **Chapter 9**, **Part 2** of **Guidance for the Approval and Type Approval of Materials and Equipment for Marine Use**.
   L3: L3 is the abbreviations of fire retardance Level 3. FRP complying with L3 means it complies with the standard of fire retardance test specified in **9.4.2-1(3)**, **Chapter 9**, **Part 2** of **Guidance for the Approval and Type Approval of Materials and Equipment for Marine Use**.
3) If these spaces are normally entered when underway, FRP of L1 integrity is to be required.
4) If these spaces are normally entered when underway, FRP of L3 integrity is to be required.
5) Vessels fitted with fixed foam fire-extinguishing systems and fixed dry chemical powder type extinguishing systems on deck require FRP of L1 integrity for foam system operational areas and access routes.
6) Including the gangways to bow specified in **23.7.2**, **Part C of the Rules**.
7) The gangways to bows specified in **23.7.2**, **Part C of the Rules** are to comply with the standards of the surface flammability test specified in **9.4.2-3(2)**, the smoke generation test specified in **9.4.2-4(2)**, and the toxicity test specified in **9.4.2-5(1)** in **9.4.2-5**, **Chapter 9**, **Part 2** of the **Guidance for the Approval and Type Approval of Materials and Equipment for Marine Use**.

EFFECTIVE DATE AND APPLICATION (Amendment 1-5)

1. The effective date of the amendments is 1 January 2013.

2. Notwithstanding the amendments to the Guidance, the current requirements may apply to ships the keels of which were laid or which were at *a similar stage of construction* before the effective date.

(Note) The term "*a similar stage of construction*" means the stage at which the construction identifiable with a specific ship begins and the assembly of that ship has commenced comprising at least 50 *tonnes* or 1% of the estimated mass of all structural material, whichever is the less.

Amendment 1-6

C25 CEMENTING AND PAINTING

C25.2 Painting

Paragraph C25.2.3 has been added as follows.

C25.2.3 Corrosion Protection for Cargo Oil Tanks
1 "Crude oil tankers" in **25.2.3, Part C of the Rules** refers to ships defined in **2.1.1(19), Part 1 of the Rules for Marine Pollution Prevention Systems**, and falling under items 1.11.1 or 1.11.4 of the Supplement to the International Oil Pollution Prevention Certificate (Form B).
2 The requirements of **25.2.3, Part C of the Rules** need not be applied to "combination carrier" defined in **2.1.1(8), Part 1 of the Rules for Marine Pollution Prevention Systems** and "ships carrying dangerous chemicals in bulk" including ships certified to carry oil stipulated in **2.1.1(1), Part 1 of the Rules for Marine Pollution Prevention Systems**.

EFFECTIVE DATE AND APPLICATION (Amendment 1-6)

1. The effective date of the amendments is 1 January 2013.
2. Notwithstanding the amendments to the Guidance, the current requirements may apply to ships other than ships that fall under the following:
(1) for which the building contract is placed on or after 1 January 2013; or
(2) in the absence of a building contract, the keels of which are laid or which are at *a similar stage of construction* on or after 1 July 2013; or
(Note) The term "*a similar stage of construction*" means the stage at which the construction identifiable with a specific ship begins and the assembly of that ship has commenced comprising at least 50 *tonnes* or 1% of the estimated mass of all structural material, whichever is the less.
(3) the delivery of which is on or after 1 January 2016