RULES

FOR THE CLASSIFICATION AND CONSTRUCTION OF SEA-GOING SHIPS

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RULE CHANGE NOTICE

ENTERS INTO FORCE:

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RULES FOR THE CLASSIFICATION AND CONSTRUCTION OF SEA-GOING SHIPS

The present Rule Change Notice to Rules for the Classification and Construction of Sea-Going Ships (hereinafter — RCN) has been approved in accordance with the established approval procedure and contains information on amendments, except for editorial amendments. RCN amendments come in force on 1 July 2026

REVISION HISTORY

PART I. CLASSIFICATION

Item	Applicability	Description	Remarks
Table 2.2, item 3	Class notation	Examples of ice class marks have been replaced in connection with amended requirements for their indication in the class notation	
Table 2.2, note 3	Class notation	Example of complete class notation has been replaced by examples of distinguishing marks with relevant limitations	
Para 2.2.3.3.1	Ice class ships Class notation	Entries **hull** and **machinery** after ice class mark have been excluded for ships compliant with the requirements for such ice class in full scope (hull and machinery installation)	
Table 2.2.3.3.2, note 2	Double acting ships	Requirements have been specified regarding assignment of ice conditions to double acting ships	
Para 2.2.3.3.5	Double acting ships Class notation	Distinguishing mark **DAS (‹ice class mark›)** has been replaced by distinguishing marks **DAS-Arc6**, **DAS-Arc7**, **DAS-Arc8** and **DAS-Arc9**	

Item	Applicability	Description	Remarks
Table 2.5, section 2.2	Double acting ships Class notation	Distinguishing mark **DAS (‹ice class mark›)** and its brief description have been replaced by distinguishing marks **DAS-Arc6**, **DAS-Arc7**, **DAS-Arc8** and **DAS-Arc9**	

PART II. HULL

Item	Applicability	Description	Remarks
Para 1.1.6	Ships covered by international conventions and codes Hull	Para has been completely revised. Requirements for ships in service have been deleted	
Para 1.7.4.6	Ships under construction Welded joints	To prevent concentration of welds the distance between parallel butt and fillet welds has been specified	
Para 3.10.5.4.3 (deleted)	Long-term positioned ships Hull Shell plating in ice strengthening region	Requirement for maximum difference in the thickness of adjacent plates of shell plating has been deleted	

PART IV. STABILITY

Item	Applicability	Description	Remarks
Chapter 1.7 (deleted)	Passage of ships	Stability during passage of a ship	Requirements are contained in Chapter 4 of the Rules for Technical Supervision of Ships in Service (Part IV)

PART VI. FIRE PROTECTION

Item	Applicability	Description	Remarks
Table 3.1.2.1, items 1, 4 and 6, Footnotes 1 and 6	Ships fitted with fixed diving system Diving operation control stations, compression chamber control and support stations and such control stations with pressure vessels, storerooms for cylinders with gases and breathing gas mixtures Pressure water-spraying and dry powder fire extinguishing systems	Type of water fire extinguishing system used for protection of ship's spaces has been specified. Footnote has been introduced regarding storerooms protection by a dry powder fire extinguishing system	In connection with replacement of term "drenching system" by term "pressure water-spraying system" in Part V "Fire Protection" of the MS and SDS Rules

Item	Applicability	Description	Remarks
Table 3.1.2.1, item 9, Footnotes 12 and 15	Cargo ships of 2000 gross tonnage and upwards and passenger ships of 1000 gross tonnage and upwards Cargo spaces, except ro-ro spaces as well as spaces for carriage of vehicles Fixed fire extinguishing systems	Installation of fixed medium expansion foam fire extinguishing systems has been excluded. Footnotes regarding applicable requirements for fixed foam extinguishing systems have been updated. Text of Footnote 15 has been supplemented with provisions on possible replacement of a fixed carbon dioxide smothering system by a fixed high expansion foam fire extinguishing system to harmonize with the current international requirements	Regulations II-2/10.7.1.1 and II-2/10.7.1.3 of SOLAS-74 (IMO resolution MSC.327(90))
Table 3.1.2.1, item 11, Footnote 21	Exhaust gas boilers Fixed carbon dioxide smothering system	Types of exhaust gas boilers requiring no protection by a fire extinguishing system have been specified	
Para 3.2.3.6	**Arc4** – **Arc9** ice class ships Water fire main system Fire pumps Connection to ice boxes	Ice classes have been specified for ships which fire pumps shall be connected to ice boxes according to 4.3.1.1 of Part VIII "Systems and Piping"	
Para 3.6.1	Drenching system Protected spaces	System's scope of application has been amended	In connection with replacement of term "drenching system" by term "pressure water-spraying system" in Part V "Fire Protection" of the MS and SDS Rules

Item	Applicability	Description	Remarks
Table 5.1.2, column 3, item 1.1	Ships carrying dangerous goods and ships equipped for fire fighting aboard other ships and having relevant distinguishing marks **FF1**, **FF1WS**, **FF2**, **FF2WS**, **FF3** and **FF3WS** in the class notation Fire-fighting outfit Fire hoses	Requirements of para 7.2.5.2 and Table 6.6.3-2 of this Part regarding additional fire hoses have been introduced	
Table 5.1.2, column 3, item 2.1	Ships carrying dangerous goods and ships equipped for fire fighting aboard other ships and having relevant distinguishing marks **FF1**, **FF1WS**, **FF2**, **FF2WS**, **FF3** and **FF3WS** in the class notation Fire-fighting outfit Dual-purpose fire nozzles	Requirements of para 7.2.5.2 and Table 6.6.3-2 of this Part regarding additional fire nozzles have been introduced	
Table 5.1.2, column 3, item 4.20 (new)	Cargo ships of less than 500 gross tonnage Fire-fighting outfit Portable fire extinguishers	Requirements of para 8.9.1 of this Part regarding quantity and arrangement of portable fire extinguishers have been introduced	

Item	Applicability	Description	Remarks
Table 5.1.2, item 22 (new)	Passenger ships carrying more than 36 passengers and ships equipped for fire fighting aboard other ships and having relevant distinguishing marks **FF1**, **FF1WS**, **FF2**, **FF2WS**, **FF3** and **FF3WS** in the class notation Fire-fighting outfit Air compressors for charging cylinders of self-contained compressed air breathing apparatus	Requirements of paras 5.1.15.4 and 6.6.11.3 of this Part regarding provision of ships with air compressors have been introduced	
Table 6.6.3-2	Ships equipped for fire fighting aboard other ships and having relevant distinguishing marks **FF3** and **FF3WS** in the class notation Special water fire extinguishing system Fire pumps and water monitors	Requirements have been amended regarding the minimum total capacity of fire pumps, minimum capacity of one water monitor and its throw length	
Para 6.6.8.2	Ships equipped for fire fighting aboard other ships and having relevant distinguishing marks **FF3** and **FF3WS** in the class notation Special water fire extinguishing system	Use of ship water fire main system as part of the special water fire extinguishing system has been excluded	
Para 6.6.8.8	Ships equipped for fire fighting aboard other ships and having relevant distinguishing marks **FF3** and **FF3WS** in the class notation Special water fire extinguishing system	Amendments have been introduced due to amendments to para 6.6.8.2	

PART VIII. SYSTEMS AND PIPING

Item	Applicability	Description	Remarks
Para 1.1.5 (new)	General Application Ships subject to the IBC, IGC and IGF Codes	Restrictions have been introduced on the application of the requirements of Chapter 1.3 and Section 2 to cargo piping systems and process piping systems of ships subject to the IBC, IGC and IGF Codes. New Footnotes 2 — 6 have been introduced	IACS UR P1.1 (Rev.6 June 2025)
Chapter 1.3	Scope of surveys	Chapter has been renamed "Pipeline Classes"	
Para 1.3.1 (deleted)	General Scope of surveys	Para 1.3.1 containing general requirements has been deleted. Para 1.3.2 and references thereto have been renumbered 1.3.1.	
Para 1.3.3 (deleted)	General Scope of surveys	Requirements for carrying out of surveys during manufacture have been deleted to avoid duplication of the requirements in Part IV "Technical Supervision during Manufacture of Products" of the Rules for Technical Supervision during Construction of Ships and Manufacture of Materials and Products for Ships	

Item	Applicability	Description	Remarks
Para 2.1.8	Metal piping Material, manufacture and application	Requirement for material of threaded portion of deck bushes of sounding pipes has been deleted. Requirement has been introduced for fitting plugs of deck bushes of sounding pipes with watertight gaskets	
Formula (2.3.1)	Metal piping Metal pipe wall thickness	Denominator has been specified	IACS UR P1.2.3 (Rev.6 June 2025)
Para 4.3.2.6, first paragraph	Elements of systems and piping Openings in shell plating Wall thickness of scuppers and discharge pipes	Values of wall thickness of scuppers and discharge pipes from open decks have been introduced	IACS UR P1 (Rev.6 June 2025)

PART XI. ELECTRICAL EQUIPMENT

Item	Applicability	Description	Remarks
Para 2.9.11.1	Electrical equipment Safe-type equipment Electrical cables	Requirements for cable installation in dangerous spaces and zones have been specified.	
Para 3.2.1.5 (new)	Generator sets Parallel operation of generator sets Grade of quadrature-current compensation voltage and frequency droop	Requirements for the setting range of grade of quadrature-current compensation voltage and frequency droop of generator sets running in parallel have been introduced	

Item	Applicability	Description	Remarks
Para 7.1.4	Electrical equipment Internal communication and signalling Electric engine room telegraphs	Requirements for feeding engine room telegraphs have been specified and brought into compliance with the requirements of Part V "Navigational Equipment" of the RS Rules/E	
Para 10.6.2.1	Alternating-current generators Automatic voltage regulation systems Grade of quadrature-current compensation voltage droop	Requirements for the necessity to consider grade of quadrature-current compensation voltage droop when setting automatic voltage regulation systems of alternating-current generators have been introduced	
Para 10.6.2.2	Alternating-current generators Sudden change in the balanced load of generators Grade of quadrature-current compensation voltage droop	Requirements for the necessity to consider grade of quadrature-current compensation voltage droop at a sudden change in the balanced load of a generator have been introduced	
Para 13.1.7	Electrical equipment Accumulator batteries Location and ventilation of batteries	Requirements have been specified regarding location and ventilation of accumulator batteries.	IACS Unified Requirement (UR) E18 (Rev.2 June 2025)
Para 16.8.1.1	Electrical equipment Cabling Fire resistant cables	Reference to IEC standard for fire resistant cables has been specified.	IACS Unified Requirement (UR) E15 (Rev.5 Jan 2025)
Para 16.8.1.11	Electrical equipment Cabling Services required to be operable under fire conditions	List of services has been supplemented by an emergency fire pump.	IACS Unified Requirement (UR) E15 (Rev.5 Jan 2025)

Item	Applicability	Description	Remarks
Para 16.8.4.7	Electrical equipment Cabling Installation of cables	Requirements for cable installation under the flooring of machinery spaces have been added.	
Para 16.8.6.5	Electrical equipment Electrical cables Cable penetrations in decks and bulkheads	Para has been deleted.	IACS Unified Interpretation (UI) SC299 (July 2023)
Para 16.8.8.1	Electrical equipment Cabling Installation of cables in pipes and conduits	Requirements for cable installation in a flexible metal hose and a reinforced corrugated pipe have been added.	
Para 16.8.8.2	Electrical equipment Cabling Installation of cables in pipes and conduits	Requirements for bending radii for cable installation in a flexible metal hose and a reinforced corrugated pipe have been added.	
Para 16.8.8.3	Electrical equipment Cabling Installation of cables in pipes and conduits	Requirements for the fill factor for cable installation in a flexible metal hose and a reinforced corrugated pipe have been added.	
Para 16.8.8.4 (new)	Electrical equipment Cabling Installation of cables in pipes and conduits	Requirements for fastening of cables installed in a flexible metal hose or a reinforced corrugated pipe have been introduced.	

Item	Applicability	Description	Remarks
Para 23.1.3	Electrical equipment Ship's electric power system with electrical power distribution for direct current Sources of d.c. electrical power	List of sources of d.c. electrical power that can be used with ship's electric power system with d.c. electrical power distribution has been specified.	

PART XIII. MATERIALS

Item	Applicability	Description	Remarks
Para 2.2.10.5.4.2	Metallic materials CTOD testing method Requirements for testing equipment	Value of force measuring error of testing equipment measuring instruments has been aligned with the value specified in GOST R 52927-2023.	
Tables 3.2.2-1, 3.2.2-2, 3.2.4-2, 3.2.2-3 and 3.2.3	Metallic materials Hull structural steel of a normal and higher strength of 100 mm to 150 mm thick	Requirements for condition of supply, carbon equivalent and impact energy have been harmonized with IACS Rec. 197 (Mar 2026).	
Table 3.5.2.4	Metallic materials Hull structural F grade higher strength steel of 100 mm to 150 mm thick	Requirements for impact energy have been harmonized with IACS Rec. 197 (Mar 2026).	
Para 3.5.2.5	Metallic materials Hull structural F grade higher strength steel	Reference to the para with the requirement for condition of supply has been specified.	

Item	Applicability	Description	Remarks
Para 3.5.5.2	Metallic materials Steel for structures operating at low temperatures Forgings	Ambiguous wording has been deleted	
Para 3.5.6.2	Metallic materials Steel for structures operating at low temperatures Castings	Ambiguous wording has been deleted	

PART XIV. WELDING

Item	Applicability	Description	Remarks
Para 2.1.4.2	Ships under construction Technological requirements for welding Welding at ambient temperatures below zero	Ambient temperature value, at which edges of parts to be welded for normal steels are preheated for their drying, has been specified	
Chapter 2.14	Ships Metal structures Underwater welding Welding of structures having their back side in contact with water	Chapter requirements have been transferred to new Appendix 4 of the Rules for Technical Supervision of Ships in Service (Rules TSSS), relevant reference has been introduced	Chapter requirements generally relate to ship repair by may apply during construction of ships as well, for example, when attaching hull blocks afloat

Item	Applicability	Description	Remarks
Para 2.15.2.3	Ships under construction Laser-arc hybrid welding by consumable electrode Applicability	Restrictions on application of laser-arc hybrid welding have been specified	
Paras 3.1.3.1.1 and 3.1.3.1.2	Ships under construction Non-destructive testing of welded joints Documentation	Information included in the testing plan of welded joints of hull structures has been specified.	
Para 3.3.2	Ships under construction Hull structures of container ships manufactured of extremely thick steel plates Non-destructive testing of welded joints	Range of thicknesses and scope of non-destructive testing have been determined	IACS UR S33 (Rev.3 Feb 2020)
Para 4.8.4.1 Fig. 4.8.4.1-1 (deleted)	Ships under construction Welding consumables for welding of corrosion-resistant steel and for surfacing Impact test	Instructions on performance of impact tests have been brought into compliance with the international requirements and supplemented with the reference to requirements of 4.2.2.3. Herewith, Fig. 4.8.4.1-1 has been deleted as noncompliant with 4.2.2.3. Fig. 4.8.4.1-2 has been renumbered 4.8.4.1-1	IACS UR W17 (Rev.6 Sep 2021)
Para 5.1.2	Ships under construction Approval test for welders Certification standards	Requirements for application of national and international standards have been specified	IACS UR W32 (Rev.1 Sep 2020)

PART XVII. DISTINGUISHING MARKS AND DESCRIPTIVE NOTATIONS IN THE CLASS NOTATION SPECIFYING STRUCTURAL AND OPERATIONAL PARTICULARS OF SHIPS

Item	Applicability	Description	Remarks
Para 9.5.5.1	Ships equipped for using gases as fuel Fuel system Gas fuel piping	Requirements for the flange connections have been deleted and transferred to paras 9.5.5.2 and 9.5.5.3	—
Paras 9.5.5.2 and 9.5.5.3 (both new)	Ships equipped for using gases as fuel Fuel system Gas fuel piping	Requirements have been introduced for the flange connections as well as the criteria of using a single flange connection in the gas fuel piping. Existing paras 9.5.5.2 and 9.5.5.3 are renumbered 9.5.5.5 and 9.5.5.6 accordingly	IACS UI GF19 (Dec 2023) (Rev.1 June 2025)
Para 9.5.5.4 (new)	Ships equipped for using gases as fuel Fuel system	Requirements have been introduced for the piping intended for purging, venting, or bleeding of fuel gas lines	IACS UI GF22 (Mar 2025)
Para 18.2.4.1	Ship's spaces Measurements of noise level	Requirement has been supplemented with references to the applicable IEC standards, as well as a reference to the relevant requirements of the Rules TSDCS	IACS UI SC 304 (Oct 2024) MSC.1/Circ.1509/Rev.1
Para 18.2.4.3	Ship's spaces Measurements of noise level Equipment for measuring noise level	Requirements have been supplemented with references to IEC standards used for periodic verification of sound level meters and sound calibrators	IACS UI SC 304 (Oct 2024) MSC.1/Circ.1509/Rev.1

Item	Applicability	Description	Remarks
Para 19.1.1	Double acting ships Class notation	Distinguishing mark **DAS (‹ice class mark›)** has been replaced by distinguishing marks **DAS-Arc6**, **DAS-Arc7**, **DAS-Arc8** and **DAS-Arc9**	
Para 19.2.1	Double acting ships	Additional condition on application of requirements of Chapter 19.2 has been introduced	
Paras 19.2.2.1 — 19.2.2.3	Double acting ships Ice strengthening regions	Duplication of requirements of Chapter 3.10 of Part I "Classification" has been deleted regarding arrangement of ice strengthening regions. Requirement has been amended on arrangement of stern region of ice strengthening	
Figure 19.2.2.3	Double acting ships Ice strengthening regions	Figure and legend thereto have been amended in accordance with amendments in paras 19.2.2.1 — 19.2.2.3	
Paras 19.2.2.4, 19.2.2.5, Figure 19.2.2.4, Tables 19.2.2.4, 19.2.2.5-1 and 19.2.2.5-2 (deleted)	Double acting ships Ice strengthening regions	Requirements have been deleted as non-applicable in connection with replacement of distinguishing mark **DAS** by **DAS-Arc6**, **DAS-Arc7**, **DAS-Arc8** and **DAS-Arc9**	
Para 19.2.2.4 and Table 19.2.2.4 (new)	Double acting ships Ice strengthening regions	Requirements have been introduced regarding ice strengthening regions for ships having distinguishing marks **DAS-Arc6**, **DAS-Arc7**, **DAS-Arc8** and **DAS-Arc9**	

Item	Applicability	Description	Remarks
Para 19.2.4.2.1	Double acting ships Ice pressure	Requirements for ice pressure in regions AI and CI have been harmonized with similar requirements of Part II "Hull"	
Para 19.2.4.2.3, Tables 19.2.4.2.3 and 19.2.4.2.4 (deleted)	Double acting ships Ice pressure	Requirements have been deleted as non-applicable due to amendments in para 19.2.4.2.1 and replacement of distinguishing mark **DAS** by **DAS-Arc6**, **DAS-Arc7**, **DAS-Arc8** and **DAS-Arc9**. Existing para 19.2.4.2.4 and references thereto have been renumbered 19.2.4.2.3. Formula (19.2.4.2.4) and references thereto have been renumbered (19.2.4.2.3)	
Table 19.2.4.2.3 (new)	Double acting ships Ice pressure	Requirements have been introduced regarding ice pressure in regions II, III, IV for ships having distinguishing marks **DAS-Arc6**, **DAS-Arc7**, **DAS-Arc8** and **DAS-Arc9**	
Para 19.2.4.3.1	Double acting ships Vertical distribution of ice pressure	Requirements for vertical distribution of ice pressure in regions AI, AII, AIII, AIV and CI, CII, CIII, CIV have been harmonized with similar requirements of Part II "Hull". Para 19.2.4.3.3 and Table 19.2.4.3.3 have been deleted	

Item	Applicability	Description	Remarks
Para 19.2.4.4.1	Double acting ships Horizontal distribution of ice pressure	Requirements for horizontal distribution of ice pressure in regions AI, AII, AIII, AIV and CI, CII, CIII, CIV have been harmonized with similar requirements of Part II "Hull". Para 19.2.4.4.3 has been deleted	
Paras 19.2.4.5, 19.2.4.5.1 — 19.2.4.5.3, 19.2.4.6 и 19.2.4.7 (deleted)	Double acting ships	Requirements for ice pressure and horizontal and vertical distribution of ice pressure of ships with ice classes **Icebreaker6** and **Icebreaker7** have been deleted as non-applicable due to replacement of distinguishing mark **DAS** by **DAS-Arc6**, **DAS-Arc7**, **DAS-Arc8** and **DAS-Arc9** Existing paras 19.2.4.8, 19.2.4.8.1 — 19.2.4.8.7, 19.2.4.8.7.1 — 19.2.4.8.7.7, 19.2.4.8.8, 19.2.4.8.8.1 and references thereto have been renumbered 19.2.4.5, 19.2.4.5.1 — 19.2.4.5.7, 19.2.4.5.7.1 — 19.2.4.5.7.7, 19.2.4.5.8, 19.2.4.5.8.1 accordingly. Figures 19.2.4.8.3, 19.2.4.8.7.1, 19.2.4.8.7.2, 19.2.4.8.7.3, 19.2.4.8.7.4, 19.2.4.8.7.5 and 19.2.4.8.7.6 and references thereto have been renumbered 19.2.4.5.3, 19.2.4.5.7.1, 19.2.4.5.7.2, 19.2.4.5.7.3, 19.2.4.5.7.4, 19.2.4.5.7.5 and 19.2.4.5.7.6 accordingly.	

Item	Applicability	Description	Remarks
		Formulae (19.2.4.8.4-1) — (19.2.4.8.4-4), (19.2.4.8.6), (19.2.4.8.7.1-1) — (19.2.4.8.7.1-3), (19.2.4.8.7.2-1) — (19.2.4.8.7.2-6), (19.2.4.8.7.3-1) — (19.2.4.8.7.3-9), (19.2.4.8.7.4-1) — (19.2.4.8.7.4-3), (19.2.4.8.7.5-1) — (19.2.4.8.7.5-9), (19.2.4.8.7.6-1) — (19.2.4.8.7.6-9), (19.2.4.8.7.7), (19.2.4.8.8.1-1), (19.2.4.8.8.1-2) and references thereto have been renumbered (19.2.4.5.4-1) — (19.2.4.5.4-4), (19.2.4.5.6), (19.2.4.5.7.1-1) — (19.2.4.5.7.1-3), (19.2.4.5.7.2-1) — (19.2.4.5.7.2-6), (19.2.4.5.7.3-1) — (19.2.4.5.7.3-9), (19.2.4.5.7.4-1) — (19.2.4.5.7.4-3), (19.2.4.5.7.5-1) — (19.2.4.5.7.5-9), (19.2.4.5.7.6-1) — (19.2.4.5.7.6-9), (19.2.4.5.7.7), (19.2.4.5.8.1-1), (19.2.4.5.8.1-2) accordingly	

Item	Applicability	Description	Remarks
Tables 19.2.4.5.1-1 and 19.2.4.5.1-2 (new)	Double acting ships Global ice loads on the azimuth thruster	Requirements have been introduced for the design parameters of an ice feature for distinguishing marks **DAS-Arc6** — **DAS-Arc-9**. Existing Tables 19.2.4.8.1-1 and 19.2.4.8.1-2 have been deleted. References to Tables 19.2.4.8.1-1 and 19.2.4.8.1-2 in renumbered paras 19.2.4.5.1, 19.2.4.5.7.1, 19.2.4.5.7.2, 19.2.4.5.7.3 and 19.2.4.5.8.1 have been replaced by references to Tables 19.2.4.5.1-1 and 19.2.4.5.1-2 accordingly	
Para 19.3.1	Double acting ships Subdivision	Application of the requirement has been amended due to replacement of distinguishing mark **DAS (‹ice class mark›)** by **DAS-Arc6**, **DAS-Arc7**, **DAS-Arc8** and **DAS-Arc9**	

Item	Applicability	Description	Remarks
Para 33.8.4.1.3 and Table 33.8.4.1.3 (deleted)	Maritime autonomous surface ships (MASS) Development of concept of MASS operation	Provisions of a reference nature are excluded. Existing paras 33.8.4.1.4, 33.8.4.1.4.1 — 33.8.4.1.4.5, 33.8.4.1.5 and references thereto have been renumbered 33.8.4.1.3, 33.8.4.1.3.1 — 33.8.4.1.3.5, 33.8.4.1.4 accordingly. Existing Tables 33.8.4.1.4.1, 33.8.4.1.4.2, 33.8.4.1.4.3-1 — 33.8.4.1.4.3-3, 33.8.4.1.4.4 and references thereto have been renumbered 33.8.4.1.3.1, 33.8.4.1.3.2, 33.8.4.1.3.3 1 — 33.8.4.1.3.3-3, 33.8.4.1.3.4 accordingly	
Para 33.10.7.3.1	Maritime autonomous surface ships (MASS) Remote control centre (RCC) RCC personnel	Requirement to submit medical certificates of the MASS remote master and the MASS control operators to comply with the requirements during survey of RCC has been deleted	

PART I. CLASSIFICATION

2 CLASS OF A SHIP

2.2 CLASS NOTATION OF A SHIP. MANDATORY AND OPTIONAL DISTINGUISHING MARKS AND DESCRIPTIVE NOTATIONS IN THE CLASS NOTATION ASSIGNED BY RUSSIAN MARITIME REGISTER OF SHIPPING

Item 3 of Table 2.2 is replaced by the following text:

"

3. Ice class mark (if any). Distinguishing mark for double acting ships DAS, if applicable	**Arc4** **DAS-Arc6**

".

Note 3 of Table 2.2 is amended as follows:

"3. When particular scope of the RS rules requirements, serving as the basis for introduction of the appropriate distinguishing marks in the class notation, is met only under limitations specified by the Register, the limitations, exceeding which these distinguishing marks will become invalid, shall be indicated in the class notation in brackets after such distinguishing marks, e.g. ~~**KM ⍟ Arc7 (hull at d ≤ 8,44 m; machinery) [2] (at d ≤ 8,4 m) AUT2 Ro-ro cargo ship**~~ **Arc7 (hull at $d \leq 8{,}4$ m); [2] (at $d \leq 8{,}4$ m)**. At the shipowner's discretion, at the assignment of ice class limitation for ships, maximum draught in fresh water, at which the RS requirements for the specified ice class are complied with, may be additionally indicated, e.g. **Arc7 (hull at $d/d_f \leq 11{,}0$ m/11,265 m)**, where d_f is the maximum draught in fresh water at which the requirements for ice class are met and which is determined as the sum of draught d and fresh water allowance in accordance with Formula (4.5.5.1) of the RS Rules/LL.".

Para 2.2.3.3.1 is amended as follows:

"**2.2.3.3.1** If a self-propelled ice class ship complies with the ~~relevant~~ requirements of these Rules for a specific ice class in full scope, one of the following ice class marks is added to its character of classification: **Ice1**, **Ice2**, **Ice3**, **Arc4**, **Arc5**, **Arc6**, **Arc7**, **Arc8**, **Arc9**~~, and compliance of hull **(hull)** and machinery installation **(machinery)** with the requirements of these Rules in full scope is indicated in brackets, e.g. **KM ⍟ Arc4 (hull; machinery)**~~.

In case the ship hull corresponds to one ice class and the machinery installation corresponds to another ice class, the applicable ice classes shall be specified separately, e.g. **KM ⍟ Arc4 (hull) Ice3 (machinery)**. In such case, a ship with mark **(hull)** in the class notation shall comply with the applicable requirements of Part III "Equipment, Arrangements and Outfit", Part IV "Stability", Part V "Subdivision" of these Rules and 3.1.3.3 of Part III "Signal Means" of the RS Rules/E, in addition to the requirements of Part II "Hull". A ship with mark **(machinery)** in the class notation shall comply with the applicable requirements of Part VI "Fire Protection" of Part VII "Machinery Installations", Part VIII "Systems and Piping" and Part IX "Machinery" of these Rules.

Where a non-self-propelled ship complies with the requirements for ice class, a mark **(hull)** shall be added to its character of classification.".

Note 2 of Table 2.2.3.3.2 is amended as follows:

"2. For double acting ships having distinguishing ~~mark **DAS**~~ marks **DAS-Arc6 — DAS-Arc9** in the class notation, ice conditions for stern-first operation are assigned on the basis of the descriptions of ice classes **Arc6 — Arc9** accordingly.".

Para 2.2.3.3.5 is amended as follows:

"**2.2.3.3.5** Double acting ships (DAS) are ice ~~navigation~~ class ships fitted with active means of the ship's steering (refer to 1.2 Part VII "Machinery Installations") and designed for both bow-first operation and stern-first operation in ice condition.

If double acting ships comply at least with the requirements of Section 19, Part XVII "Distinguishing Marks and Descriptive Notations in the Class Notation Specifying Structural and Operational Particulars of Ships", ~~the distinguishing mark **DAS (‹ice class mark›)**~~ one of the distinguishing marks **DAS-Arc6**, **DAS-Arc7**, **DAS-Arc8**, **DAS-Arc9** may be added to the character of classification~~, where the RS ice class is indicated in brackets according to 2.2.3.3.1 or 2.2.3.3.4 in case of stern-first operation.~~

~~When the RS ice class in case of stern-first operation differs from that in case of bow-first operation, the appropriate limitation is introduced to the RS ice class assigned according to 2.2.3.3.1 or 2.2.3.3.4, for example: **Arc4 (hull at *d* ≤11 m; ahead) DAS (Arc6 hull at *d* ≤11 m) Arc6 (machinery)**~~.".

2.5 SUMMARY INFORMATION ON DISTINGUISHING MARKS IN THE CLASS NOTATION OF A SHIP

Section 2.2 of Table 2.5 is replaced by the following text:

"**2.2 DAS — distinguishing marks for double acting ships**

Distinguishing mark	Brief description	References to additional RS requirements for the distinguishing mark
DAS-Arc6 **DAS-Arc7** **DAS-Arc8** **DAS-Arc9**	Double acting ship in accordance with 2.2.3.3.5	**RS Rules/C** Part I "Classification", 2.2.3.3.5 Part XVII "Distinguishing Marks and Descriptive Notations in the Class Notation Specifying Structural and Operational Particulars of Ships", Section 19

".

PART II. HULL

1 DESIGN PRINCIPLES

1.1 GENERAL

Para1.1.6 is replaced by the following text:

"**1.1.6 Compliance with the requirements of international conventions and codes.**

1.1.6.1 In passenger ships and cargo ships, the peak and machinery space bulkheads, shaft tunnels, etc. shall comply with the following requirements:

.1 a forepeak bulkhead shall be fitted which shall be watertight up to the bulkhead deck of passenger ships and the freeboard deck of cargo ships. This bulkhead shall be located at a distance from the forward perpendicular of not less than 5 % of the length of the ship L_{LL} or 10 m, whichever is the less. Another distance may be permitted, but not more than 8 % of the length of the ship L_{LL} or 5 % of the length of the ship L_{LL} + 3 m, whichever is the greater, provided the safety of the ship in the event of bottom or side damage is not thereby diminished.

Where the stem forms the external contour of the hull from the forward end with no protruding parts except the bulbous bow, the forward perpendicular shall coincide with the forward edge of the stem on the level of the deepest subdivision load line;

.2 where any part of the ship below the waterline extends forward of the forward perpendicular, e.g. a bulbous bow, the distances stipulated in 1.1.6.1.1 shall be measured from a point either at the midlength of such extension, or at a distance 1,5 % of the length of the ship L_{LL} forward of the forward perpendicular, or at a distance 3 m forward of the forward perpendicular, whichever gives the smallest measurement;

.3 a forepeak bulkhead may have steps or recesses provided that they are within the limits prescribed in 1.1.6.1.1 or 1.1.6.1.2;

.4 no doors, manholes, access openings, ventilation ducts or any other openings shall be fitted in the forepeak bulkhead below the bulkhead deck of passenger ships and below the freeboard deck of cargo ships, except for the case when the forepeak bulkhead is pierced by the pipe for dealing with fluid in the forepeak tank (refer to 5.1.2 of Part VIII "Systems and Piping").

.5 where a long forward superstructure is fitted, the forepeak bulkhead shall be extended weathertight to the deck next above the bulkhead deck of passenger ships and the freeboard deck of cargo ships. The extension need not be fitted directly above the bulkhead below provided that all parts of the extension, including any part of the ramp attached to it are located within the limits prescribed in 1.1.6.3.1 or 1.1.6.3.2, and that the part of the deck which forms the step is made effectively weathertight. The extension shall be so arranged as to preclude the possibility of the bow door or ramp, where fitted, causing damage to it in the case of damage to, or detachment of, a bow door or any part of the ramp;

.6 where bow doors are fitted and a sloping loading ramp forms part of the extension of the forepeak bulkhead above the bulkhead deck of passenger ships and the freeboard deck of cargo ships the ramp shall be weathertight over its complete length. In cargo ships the part of the ramp which is more than 2,3 m above the freeboard deck may extend forward of the limit specified in 1.1.6.3.1 or 1.1.6.3.2. Ramps not meeting the above requirements shall be disregarded as an extension of the forepeak bulkhead;

.7 the number of openings in the extension of the forepeak bulkhead above the freeboard deck shall be restricted to the minimum compatible with the design and normal operation of the ship. All such openings shall be capable of being closed weathertight;

.8 bulkheads shall be fitted separating the machinery space from cargo and accommodation spaces forward and aft. These bulkheads shall be made watertight up to the bulkhead deck or the freeboard deck. The afterpeak bulkhead may be stepped below the bulkhead deck or the freeboard deck, provided the degree of safety of the ship as regards subdivision is not thereby diminished.

1.1.6.2 In passenger ships and cargo ships other than tankers, the double bottom shall comply with the following requirements:

.1 a double bottom shall be fitted extending from the forepeak bulkhead to the afterpeak bulkhead, as far as this is practicable and compatible with the design and proper working of the ship;

.2 the inner bottom shall be continued out to the ship's sides in such a manner as to protect the bottom to the turn of the bilge. Such protection is deemed satisfactory if the inner bottom is not lower than a plane parallel with the plate keel and which is located at a distance $h = B/20$ measured from the plate keel. However, the value of h shall not be taken less than 760 mm and more than 2000 mm;

.3 small wells constructed in the double bottom in connection with drainage arrangements of holds, etc. shall not extend downward more than necessary. The vertical distance from the bottom of such a well to a plane coinciding with the plate keel shall not be less than $h/2$ or 500 mm, whichever is greater;

.4 other wells (e.g. for lubricating oil under main engines) are permitted if satisfied that the arrangements give protection equivalent to that afforded by a double bottom complying with the following requirements:

.4.1 for cargo ships of 80 m in length L_{LL} and upwards or for a passenger ships, proof of equivalent protection shall be shown by demonstrating that the ship is capable of withstanding bottom damages as specified in 2.9.3 of Part V "Subdivision". Alternatively, the vertical distance between the bottom of the well for lubricating oil below main engines and a plane coinciding with the plate keel shall not be less than $h/2$ or 500 mm, whichever is greater;

.4.2 for cargo ships of less than 80 m in length L_{LL}, a double bottom need not be fitted in way of watertight compartments of small size used exclusively for the carriage of liquids, provided the safety of the ship is not impaired in the event of bottom or side damage;

.5 a double bottom need not be fitted in way of watertight compartments, including dry compartments of moderate size, provided the safety of the ship is not impaired in the event of bottom or side damage.

1.1.6.3 Any part of a passenger ship or of a cargo ship that is not fitted with a double bottom in accordance with 1.1.6.2, shall comply with the requirements of 2.9 of Part V "Subdivision".

1.1.6.4 In the case of unusual bottom arrangements in a passenger ship or a cargo ship, it shall be demonstrated that the ship is capable of withstanding bottom damages as specified in 2.9.3 of Part V "Subdivision".".

1.7 WELDED STRUCTURES AND JOINTS

Para 1.7.4.6 is amended as follows:

"**1.7.4.6** It is recommended that local concentration of welds, ~~crossings~~intersection of welds at an acute angle, as well as close locations of parallel butts or fillet welds and butt welds, be avoided.

The distance between parallel welded joints, whatever their direction, shall not be less than:

$50\ \text{mm} + 4s \geq 100$ — between parallel butt welds;

$30\ \text{mm} + 2s$ — between parallel fillet welds and between parallel fillet and butt welds,

where s — lesser thickness of the plates to be welded.

The angle between two butt welds shall not be less than 60° (refer to Fig. 2.1.7.4.6).".

Figure 1.7.4.6 remains as it stands.

3 REQUIREMENTS FOR STRUCTURES OF SHIPS OF SPECIAL DESIGN

3.10 STRENGTHENING OF ICE CLASS SHIPS AND ICEBREAKERS

Para 3.10.5.4.3 is deleted.

PART IV. STABILITY

1 GENERAL

1.7 PASSAGE OF SHIPS FROM ONE PORT TO ANOTHER

Chapter 1.7 is deleted.

PART VI. FIRE PROTECTION

3 FIRE-FIGHTING EQUIPMENT AND SYSTEMS

3.1 GENERAL

Table 3.1.2.1 is replaced by the following text:

"Table 3.1.2.1

Nos.	Description of spaces	Fixed fire extinguishing systems							
		Sprinkler	Pressure water spraying	Water screen	Drenching	Foam fire extinguishing	Carbon dioxide smothering	Dry powder	Aerosol
1	Control stations, refer to 1.5.1.1, 1.5.1.5[1]	+[2]	+[1]						
2	Control stations, refer to 1.5.1.2[3]		+			+	+		+
3	Accommodation spaces, refer to 1.5.2.1 and 1.5.2.2	+[2]							
4	Service spaces, refer to 1.5.3.1, 1.5.3.2.3[1] and 1.5.3.2.4	+[2]	+[1]						
5	Storerooms, refer to 1.5.3.2.1				+				
6	Service spaces, refer to 1.5.3.2.2[4]	+[2]	+			+[5]	+	+[6]	+[7]
7	Cargo spaces, refer to 1.5.4.3, 1.5.4.4		+	+[8]		+[9]	+[10]		
8	Tanks for petroleum products, refer to 1.5.4.1					+			
9	Cargo spaces, refer to 1.5.4.2[11, 12]		+[13,14]			+[9, 11, 15]	+[15]		
10	Machinery spaces of category A[3,16], hangers and spaces where refueling and hanger facilities are located; spaces containing equipment for the fuel preparation specified in 9.7.2.5 of Part XVII "Distinguishing Marks and Descriptive Notations in the Class Notation Specifying Structural and Operational Particulars of Ships"; BWMR containing ozone-based BWMS[17]		+			+[9]	+		+
11	Silencers of internal combustion engines[18], generators of gas turbine installation[19] and exhaust ducts from galley ranges[20], waste-heat boilers[21]						+[21]		

12	Unattended machinery spaces containing propulsion electric motors, steam engines or steam turbines having power output not less than 375 kW		+[22]			+[9]	+		+
13	Pump rooms listed in 1.5.7.1		+			+[9]	+[23]		+[7]
14	Working spaces listed in 1.5.8.1		+			+[9]	+		+
15	Fire zones of category A machinery spaces		+[24]						
16	Special category spaces listed in 1.5.9		+						
17	The deck of gas carriers in the cargo area, including any parts of the exposed liquid cargo or vapour piping, any liquid or gaseous product loading and unloading lines on the deck and in the bow and stern cargo handling areas, as applicable, and the exposed gas process units							+	
18	Scavenge spaces of the crosshead type internal combustion engines (refer to 2.2.4, Part IX "Machinery")						+		
19	Area of forward and aft loading/unloading arrangements in oil tankers, helidecks					+			
20	Chain stoppers and cargo hose connections on oil tankers accommodated to mooring at point berths carried out to sea and fitted up with a forward cargo gear		+						
21	Corridors and stairways	+[25]							

[1] On ships fitted with fixed diving system to protect diving operation control stations, compression chamber control and support stations and such control stations with pressure vessels, including cylinders with gases (O_2, N_2, He) or breathing gas mixtures (O_2/He, O_2/He/N_2, N_2/O_2), as well as separate storerooms with such cylinders.

[2] Automatic sprinkler system shall be installed:

in passenger ships carrying more than 36 passengers in control stations, accommodation and service spaces, including corridors and stairways. Alternatively, control stations, where water may damage essential equipment may be fitted with an approved fixed fire extinguishing system of another type (refer to 3.3.1.1). The system may not be fitted in spaces of minor or no fire risk as void spaces, public toilets, carbon dioxide cylinder rooms and similar spaces;

in passenger ships carrying not more than 36 passengers (where fixed smoke detection alarm system is fitted only in corridors, stairways and escape routes within accommodation spaces) in accommodation and service spaces and if the Register deems it necessary, in control stations (refer to 1.5.1.2), except in spaces of minor or no fire risk as void spaces, sanitary rooms, etc.;

in cargo ships where method IIC is adopted in accommodation spaces, galleys and other service spaces, except spaces of minor or no fire risk as void spaces, sanitary rooms, etc.;

incinerator and combined incinerator/waste storage spaces, and the flue uptakes from such spaces (refer to 2.1.5.8).

[3] Where the capacity of emergency diesel-generator is lower than 375 kW, the control station space may be protected by portable fire extinguishers according to Table 5.1.2.
[4] Paint lockers, storerooms for flammable liquids, liquefied and compressed gases need not be fitted with a fixed fire extinguishing system, if the area of each storage space is not more than 4 m² (refer to 3.1.3.3). Spaces for storage of cargo specimen located in the tanker cargo area may not be fitted with fire extinguishing system.
[5] A system using medium expansion foam shall be used.
[6] Refer to 3.10.2.5.
[7] Explosion-proof aerosol generators shall be installed.
[8] Water screens are used in addition to the systems specified in columns 4, 7, 10 in cases indicated in 2.2.1.2.
[9] A system using high expansion foam shall be used. The selected foam concentrate shall be suitable, depending on the protected ship's space, for extinguishing of fuel oil, aviation fuel, flammable liquids, combustible materials and carried cargoes applied on the ship.
[10] A carbon dioxide smothering system may be installed only in the cargo spaces, which may be closed tightly from a location outside the said spaces. Refer also to 3.1.2.13.
[11] A foam fire extinguishing system shall not be used for the protection of cargo spaces of container ships.
[12] Spaces for general cargoes, except dangerous goods, may not be fitted with fixed fire extinguishing systems in the following cases:
in passenger ships engaged in short voyages;
in passenger ships of less than 1000 gross tonnage, provided the ship is fitted with portable fire-fighting equipment for cargo spaces, as well as with steel hatch covers and effective closing appliances of all ventilating and other openings leading to cargo spaces;
in cargo ships of less than 2000 gross tonnage constructed or intended only for the carriage of ore, coal, grain, green timber, non-combustible cargoes and cargoes of minor fire risk (refer to Table 1 of IMO circular MSC.1/Circ.1395/Rev.7), provided the ship is fitted with steel hatch covers and effective closing appliances of all ventilating and other openings leading to cargo spaces;
in cargo spaces are carried only such cargoes, for which fixed gas fire extinguishing system is not efficient (refer to Table 2 of IMO circular MSC.1/CIrc.1395/Rev.7), provided the requirement of 7.2.5.2 is fulfilled.
[13] In fish meal cargo spaces the rate of water discharge shall be 1,5 l/min per 1 m^2; in combined cargo spaces for fish meal and intended also for carriage and storage of packages the rate of water discharge shall be 5 l/min per 1 m^2.
[14] Spaces for the carriage of Class 1 dangerous goods, except 1.4S, in addition to the total flooding fire-extinguishing system shall be protected according to 7.2.5.3.
[15] Cargo spaces of passenger ships of 1000 gross tonnage and upwards shall be protected with a fixed carbon dioxide or inert gas fire extinguishing system or a fixed high expansion foam fire extinguishing system providing equivalent protection;
cargo spaces on cargo ships of 2000 gross tonnage and upwards, except ro-ro spaces and spaces for carriage of vehicles shall be protected with a fixed carbon dioxide or inert gas fire extinguishing system or a fixed high expansion foam fire extinguishing system providing equivalent protection;
a carbon dioxide smothering system or any equivalent fire extinguishing system may not be installed in fishing vessels for protection of the refrigerated cargo holds, provided they are not cargo spaces of high fire risk and/or not intended for storage and carriage of packages.
[16] Where an auxiliary oil-fired boiler or boilers as well as incinerators operating on fuel oil situated inside the machinery space is (are) not isolated from the rest of the space by gastight enclosure bulkheads and platforms, the machinery space shall be fitted with one of the above fire extinguishing systems, this system being capable of protecting the entire space, even where this machinery space does not contain any other oil-fired equipment or machinery, besides the above boilers.
[17] Refer to 2.1.5.9.8.
[18] The silencers of medium- and high-speed engines need not to be fitted with the fixed fire extinguishing system, when there are spark arresters in the exhausts. This requirement does not apply to fishing vessels of less than 500 gross tonnage.
[19] Installation of one of the above systems is compulsory in all oil tankers and oil recovery tankers, supply vessels, ships adapted for the carriage of explosive and fire hazardous cargoes and on ships servicing and towing the above-mentioned ships.
[20] In passenger ships carrying not more than 36 passengers and in cargo ships is required when ducts pass through some spaces located in way of accommodation spaces.
[21] Gas-tube and water-tube waster-heat boilers with natural circulation may not be equipped with a fixed carbon dioxide smothering system according to 3.2.17 of Part X "Boilers, Heat Exchangers and Pressure Vessels".

[22] Pressure water-spraying system may be used only for spaces where steam turbines or steam engines are of enclosed type.
[23] A warning notice shall be provided at the carbon dioxide smothering system controls stating that because of ignition hazard caused by electrostatic discharges the system shall be used only for fire extinguishing but not for inerting purposes.
[24] Refer to 3.12.
[25] The sprinkler system is compulsory only on passenger ships carrying more than 36 passengers.

".

3.2 WATER FIRE MAIN SYSTEM

Para 3.2.3.6. The last paragraph is amended as follows:

"In the case of **Arc4 — Arc9** ice class ships, at least one of the pumps shall be connected with the heated ice box (refer to 4.3.1.2, Part VIII "Systems and Piping").".

3.6 DRENCHING SYSTEM

Para 3.6.1 is amended as follows:

"**3.6.1** These Rules provide for the use of water drenching system for drenching the racks of magazines (refer to 6.2.2.18 and Table 3.1.2.1)~~, as well as for protection of pressure vessels on ships fitted with fixed diving system (refer to 3.2.2, Part V "Fire Protection" of the MS and SDS Rules)~~.".

5 FIRE-FIGHTING OUTFIT, SPARE PARTS AND TOOLS

5.1 FIRE-FIGHTING OUTFIT

Table 5.1.2. **Column 3 "Number of items of outfit to be available in each ship"**.

Para 1.1 is amended as follows:

"In accordance with the number of hydrants fitted on board ship.
In a ship carrying dangerous goods — additionally 3 hoses.
In ships having distinguishing marks **FF3** and **FF3WS** in the class notation — additionally 8 hoses.
In ships having distinguishing marks **FF2** and **FF2WS** in the class notation — additionally 12 hoses.
In ships having distinguishing marks **FF1** and **FF1WS** in the class notation — additionally 16 hoses".

Para 2.1 is amended as follows:

"In accordance with the number of hydrants fitted on board ship.
In a ship carrying dangerous goods — additionally 3 nozzles.
In ships having distinguishing marks **FF3** and **FF3WS** in the class notation — additionally 4 nozzles.
In ships having distinguishing marks **FF2** and **FF2WS** in the class notation — additionally 6 nozzles.
In ships having distinguishing marks **FF1** and **FF1WS** in the class notation — additionally 8 nozzles".

New para 4.20 is introduced reading as follows:

"**20** Cargo ships of less than 500 gross tonnage shall be equipped with not less than 3 portable fire extinguishers (refer to 8.9.1). The extinguishers shall be stowed in readily accessible positions and shall be spread as widely as possible and not be grouped. One of the portable fire extinguishers intended for use in any space shall be stowed near the entrance to that space. Their total number shall be determined by the arrangement according to the following instructions.

1 Control stations, accommodation and service spaces:

1.1 in ships of less than 150 gross tonnage — not less than 1 dry powder fire extinguisher; fire extinguishers shall be arranged so that at least 1 dry power fire extinguisher is easily available for use in each of the specified compartment;

1.2 in ships of 150 gross tonnage and upwards — not less than 3 dry powder fire extinguishers, except where this is impractical for very small ships. In these cases, 1 dry powder fire extinguisher shall be available at each deck having accommodation or service spaces, or control stations.

2 In machinery spaces — 1 foam fire extinguisher per every 375 kW of internal combustion engine power. However, their number shall be not less than 2 and not more than 6.".

Table 5.1.2 is supplemented by **new para 22** reading as follows:

"

Nos.	Description of items of outfit	Number of items of outfit to be available in each ship
22	Air compressors for charging cylinders of self-contained compressed air breathing apparatus (refer to 5.1.15.4 and 6.6.11.3)	**1** in passenger ships carrying more than 36 passengers — 1; **2** in ships having distinguishing marks **FF1**, **FF1WS**, **FF2**, **FF2WS**, **FF3** and **FF3WS** in the class notation — 1

".

6 REQUIREMENTS FOR FIRE PROTECTION OF SPECIAL PURPOSE SHIPS AND SPECIAL FACILITIES ON SHIPS

6.6 SHIPS EQUIPPED FOR FIRE FIGHTING ABOARD OTHER SHIPS AND HAVING RELEVANT DISTINGUISHING MARKS FF1, FF1WS, FF2, FF2WS, FF3, FF3WS IN THE CLASS NOTATION

Table 6.6.3-2 is amended as follows:

"Table 6.6.3-2

Special equipment	Distinguishing mark in the class notation				
	FF1, FF1WS	**FF2, FF2WS**			**FF3, FF3WS**
Pumps, in pcs	2 — 4	2 — 4			1 — 2
minimum total supply[1], m^3/h	9600	7200			~~200[2]~~/600 — 2400
Monitors:					
water monitors, in pcs	4	2	3	4	2
supply rate of each monitor, in m^3/h	2400	3600	2400	1800	~~100[2]~~/300 — 1200[2]
length of throw, in m	150	180	150		80 — 120[2]/~~120~~
height of throw[3], in m	70	110	70		45[3]
foam monitors, in pcs	2	—[4]			—[4]
supply rate of each monitor, m^3/h	300	—[4]			—[4]
height of throw[5], in m	50	—[4]			—[4]
dry powder monitors[6], in pcs	1	1			1
supply rate of each monitor[7], in kg/s	40	40			40
dry powder length of throw, in m	40	40			40
Distribution valve manifolds[8], in pcs	~~4~~	~~4~~			2
Number of fire hydrants on each distribution valve manifold[8], in pcs	4	2 — 4			4
Total number of fire hydrants on all distribution valve manifolds, in pcs	16	12			8
Additional fire hoses, in pcs	16	12			8
Additional fire nozzles, in pcs	8	6			4

[1] Capacity of pumps given in the Table does not consider additional capacity required for water supply to the water-screen and/or pressure water-spraying system and to the distribution valve manifolds (refer to 6.6.8.1).

[2] The smaller value ~~is for ships referred to in 6.6.8.2~~ of the water monitor's capacity corresponds to the shorter throw length.

[3] In ships having distinguishing marks **FF1**, **FF1WS**, **FF2** and **FF2WS** in the class notation, the throw height shall be at least 70 m measured from sea level and 70 m away from the nearest part of the ship.
In ships having distinguishing marks **FF3** and **FF3WS** in the class notation, the throw height is regulated only for the water monitors of 1200 m^3/h capacity and shall be at least 45 m measured from sea level and 70 m away from the nearest part of the ship.

[4] A necessity in installation and characteristics to be indicated by the customer in accordance with the requirements of 6.6.9.2.
[5] Height measured from sea level is indicated.
[6] For ships referred to in 6.6.10.1.
[7] Refer to 6.6.10.3.
[8] Refer to 6.6.8.7.

".

Para 6.6.8.2 is amended as follows:

"**6.6.8.2** The special water fire extinguishing system in ships having distinguishing marks **FF1**, **FF1WS**, **FF2**, ~~or~~ **FF2WS**, **FF3** and **FF3WS** in the class notation shall be independent.

~~In ships having distinguishing marks **FF3** and **FF3WS** in the class notation, the ship water fire main system may be used as part of the special water fire extinguishing system.~~".

Para 6.6.8.8. The last paragraph is amended as follows:

"For the special ~~independent~~ water fire extinguishing systems ~~(refer to 6.6.8.2)~~, the requirements of 3.4.4 need not apply.".

PART VIII. SYSTEMS AND PIPING

1 GENERAL

1.1 APPLICATION

The Chapter is supplemented by **new para 1.1.5** reading as follows:

"**1.1.5** Requirements of 1.3 and Section 2 do not apply to the following:

chemical cargo piping systems of ships subject to the International Code for Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk[2] and to the shipboard hydrocarbon/chemical process piping system that shall meet the requirements in Part VI "Systems and Piping" of the Rules for the Classification and Construction of Chemical Tankers[3];

gas cargo/fuel and process piping systems of ships subject to the International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk[4] and to gas fuel piping systems of ships subject to the International Code of Safety for Ships Using Gases or Other Low-flashpoint Fuels[5] that shall meet the requirements in Part VI "Systems and Piping" of the Rules for the Classification and Construction of Ships Carrying Liquefied Gases in Bulk[6];

piping systems for other low flashpoint fuels defined in regulation II-1/2.29 of SOLAS-74 that that shall meet the requirements in Section 9 of Part XVII "Distinguishing Marks and Descriptive Notations in the Class Notation Specifying Structural and Operational Particulars of Ships".".

New Footnotes 2 — 6 are introduced, appropriately, reading as follows:

"

[2] Hereinafter referred to as "the IBC Code".
[3] Hereinafter referred to as "the Chem Rules".
[4] Hereinafter referred to as "the IGC Code".
[5] Hereinafter referred to as "the IGF Code".
[6] Hereinafter referred to as "the LG Rules".".

1.3 SCOPE OF SURVEYS

The **Chapter** is renamed as follows:

"**1.3 PIPELINE CLASSES**".

Para 1.3.1 is deleted.

Para 1.3.2 and references thereto are renumbered **1.3.1**.

Para 1.3.3 is deleted.

2 METAL PIPING

2.1 MATERIAL, MANUFACTURE AND APPLICATION

Para 2.1.8 is replaced by the following text:

"**2.1.8** The plugs of deck bushes of sounding pipes, terminating on the open decks, shall be fitted with watertight gaskets and threaded plugs of bronze or brass.".

2.3 METAL PIPE WALL THICKNESS

Formula (2.3.1) is replaced by the following text:

"$S = \frac{S_0+b+c}{1-(|a|/100)}$ (2.3.1)".

The text of explication remains as it stands.

4 ELEMENTS OF THE SYSTEMS AND PIPING

4.3 SEA CHESTS AND ICE BOXES. BOTTOM AND SIDE VALVES. OPENINGS IN SHELL PLATING

Para 4.3.2.6. The first paragraph is amended as follows:

"**4.3.2.6** The scuppers and overboard discharge pipes from open decks and spaces not specified in 4.3.2.4 either 450 mm below the freeboard deck or less than 600 mm above the summer load waterline shall be fitted with non-return valves (dampers) at the outer shell. In this case, the wall thickness of scuppers and discharge pipes shall not be less than ~~stated in column 3 of Table 2.3.8.~~:

4,5 mm for $d \leq 155$ mm;

6,0 mm for $d = 230$ mm;

where d = external diameter of pipes.

Intermediate sizes shall be determined by linear interpolation.".

PART XI. ELECTRICAL EQUIPMENT

2 GENERAL REQUIREMENTS

2.9 SAFE-TYPE ELECTRICAL EQUIPMENT

Para 2.9.11 is amended as follows:

"**2.9.11** Cables installed in dangerous spaces and zones shall have protective covering of one of the following types:

.1 metal armour or braid with additional insulation covering complying with the requirements of 16.5; or

.2 lead sheath with additional mechanical protection; or

.3 copper or stainless steel sheath (only for cables with mineral insulation).".

3 MAIN ELECTRICAL POWER SOURCE

3.2 GENERATOR SETS

New para 3.2.1.5 is introduced reading as follows:

"**3.2.1.5** To ensure parallel operation of generator sets, grades of quadrature-current compensation voltage and frequency droop shall be set for each generator in the range not exceeding 5 %. All generators operating in parallel shall have equal grades of quadrature-current compensation voltage and frequency droop.".

7 INTERNAL COMMUNICATION AND SIGNALLING

7.1 ELECTRIC ENGINE ROOM TELEGRAPHS

Para 7.1.4 is amended as follows:

"**7.1.4** Engine room telegraphs shall be fed from the ~~main switchboard or from the navigation equipment switchboard~~ main and emergency sources of electrical power from the nearest switchboards intended for power supply of essential consumers.

If the ship is provided with the integrated bridge control console the engine room telegraph may be fed from this control console.".

10 ELECTRICAL MACHINES

10.6 ALTERNATING-CURRENT GENERATORS

Para 10.6.2.1 is amended as follows:

"**10.6.2.1** Alternating-current generators shall have automatic voltage regulation systems ensuring that the voltage may be maintained within ±2,5 % of the rated value (up to 3,5 % for emergency generators) at ~~all~~ specific load ~~changes~~ set within the change range from no-load to rated load values taking into account grade of quadrature-current compensation voltage droop at the rated power factor. The speed in this case shall be within the range specified in 2.11.3, Part IX "Machinery".".

Para 10.6.2.2 is amended as follows:

"**10.6.2.2** A sudden change in the balanced load of a generator running at rated speed and rated voltage, under given current and power-factor conditions, shall not cause a drop of voltage

below 85 % or a rise above 120 % of the rated value. After the completion of transient processes, the generator voltage shall be restored within not more than 1,5 s with a deviation from the rated value being ±3 % taking into account grade of quadrature-current compensation voltage droop at a specific steady-state load. For emergency sets these values may be increased, respectively, to 5 s and ±4 % of the rated voltage.

Where no precise data are available on peak values of sudden load that may be connected additionally to the existing generator load, these may be taken equal to a load of 60 % of the rated current at a power factor of 0,4 or less, which is connected at idle speed and then disconnected. The speed in this case shall be within the range specified in 2.11.3, Part IX "Machinery".".

13 ACCUMULATOR BATTERIES

Para 13.1.7 is amended as follows:

"**13.1.7** Where ~~vented type battery shall replace sealed battery at its location, the requirements of the Rules relevant to the location and ventilation of the batteries shall be met~~ vented type batteries and/or valve-regulated sealed type batteries are installed, the adequate ventilation shall be ensured and the requirements of the Rules relevant to the batteries location shall be met.".

16 CABLES AND WIRES

16.8 CABLING

Para 16.8.1.1. The last paragraph is amended as follows:

"As far as the fire resistance testing of cables is concerned, use shall be made of IEC 60331-1:2018 for cables with outside diameter more than 20 mm and ~~IEC 60331-21 or~~ 60331-2:2018 for other cables.".

Para 16.8.1.11 is amended as follows:

"**16.8.1.11** Among the services required for operation under fire conditions are the following:

general alarm;
fire extinguishing systems;
fire detection and alarm systems;
warning alarm of fire extinguishing system release;
controls of fire doors with door-position indicators;
control of watertight doors with door-position indicators and warning alarm;
emergency fire pump;
emergency lighting;
public address system;
low-location lighting;
remote emergency shutdown arrangements for systems, which operation may support the propagation of fire and/or explosion.".

Para 16.8.4.7 is amended as follows:

"**16.8.4.7** No cables are recommended to be installed under the flooring of machinery spaces. If such installation is required, cables shall be laid in metallic pipes, ~~or~~ in closed conduits, in insulated flexible metal hoses, or reinforced corrugated pipes (refer to 16.8.8). The insulation of metal hoses and reinforced corrugated pipes shall be made of non-combustible or flame-retarding material.".

Para 16.8.6.5 is deleted.

Para 16.8.8.1 is amended as follows:

"**16.8.8.1** Metallic pipes and conduits wherein cables are installed shall be protected from corrosion on the inside and the outside surfaces. The inside surface of pipes and conduits shall be even and smooth. Ends of pipes and conduits shall be machined or protected in such a manner that no damage is caused to the cables when they are being pulled in. End terminals shall be used for cable protection when installing the cable in a flexible metal hose or in a reinforced corrugated pipe.

Cables with lead sheaths not having any additional protective covering shall not be installed in pipes and conduits.".

Para 16.8.8.2 is amended as follows:

"**16.8.8.2** The bending radius of ~~P~~pipe, ~~bending radius~~ conduit, flexible metal hose and reinforced corrugated pipe shall not be smaller than the permissible radius for cable of the largest diameter installed in this pipe (refer to 16.8.4.1~~8~~7).".

Para 16.8.8.3 is amended as follows:

"**16.8.8.3** The total cross-sectional areas of all cables measured on their outside diameters shall not exceed 40 % of the inside cross-sectional area of the pipe and the conduit.

Installation of two or more cables in a flexible metal hose or a reinforced corrugated pipe shall not be permitted. The conduit fill factor for cable installation in a flexible metal hose or a reinforced corrugated pipe shall not exceed 0,6.".

New para 16.8.8.4 is introduced reading as follows:

"**16.8.8.4** Fastening of flexible metal hoses and reinforced corrugated pipes shall meet the requirements of 16.8.5. No common installation of cables in one bunch in flexible metal hoses, in reinforced corrugated pipes and without them shall be permitted.".

Existing **paras 16.8.8.4** — **16.8.8.12** are renumbered **16.8.8.5** — **16.8.8.13** respectively.

23 SPECIAL REQUIREMENTS FOR ELECTRICAL EQUIPMENT OF SHIP'S ELECTRIC POWER SYSTEM WITH ELECTRICAL POWER DISTRIBUTION FOR DIRECT CURRENT

23.1 GENERAL

Para 23.1.3 is amended as follows:

"**23.1.3** ~~Both~~ A direct current generator, ~~and rectifier supplied from the alternating current generator~~ a d.c. valve-type generator complying with the requirements of Section 24, or a valve-type static source of electrical power complying with the requirements of Section 26 may be the sources of d.c. electrical power~~, as well as accumulator battery connected to the d.c. switchboard busbars with the use of its local monitoring, control, protection and alarm system~~.".

PART XIII MATERIALS

2 PROCEDURES OF TESTING

2.2 TESTING PRECEDURES FOR METALS

Para 2.2.10.5.4.2 is amended as follows:

"**2.2.10.5.4.2** Hydraulic servomotor-operated or electromechanical machines with the upper limit of operating load range between 100 and 3000 kN capable of applying force at rates specified by 2.2.10.5.1 and force measuring error not exceeding ± ~~0,1~~ 1 % ~~of the operating range upper limit,~~ shall be employed as the machines for testing. The systems for measuring of applied forces and recording of the results shall allow the applied force to be recorded against notch edges opening.".

3 STEEL AND CAST IRON

3.2 HULL STRUCTURAL STEEL

Table 3.2.2-1 is amended as follows:

"Table 3.2.2-1

Chemical composition and mechanical properties of normal strength steel

Grade		A	B	D	E
Deoxidation practice for thickness t, mm		$t \le 50$ Killed or semi-killed	$t \le 50$ Killed or semi-killed	$t \le 25$ Killed	Killed, fine-grained, aluminium treated
		t >50 Killed	t >50 Killed	t >25 Killed, fine-grained, aluminium treated	
Condition of supply		According to Table 3.2.4-1			
Chemical composition (ladle analysis), %	C_{max}	0,21	0,21	0,21	0,18
	Mn_{min}	2,5 × C	0,80	0,60	0,70
	Si_{max}	0,50	0,35	0,35	0,35
	P_{max}	0,035	0,035	0,035	0,035
	S_{max}	0,035	0,035	0,035	0,035
	Al_{min}	–	–	0,015	0,015
Tensile properties	Tensile strength R_m, MPa	400 — 520			
	Yield stress R_{eH}, min, MPa	235			
	Elongation A_5, min, %	22			
Impact testing	Test temperature, °C	+ 20	0	- 20	- 40
Impact energy, min, J, longitudinal specimens of thickness t, mm, KV_L	$t \le 50$	-	27	27	27
	50 < t ≤ 70	34	34	34	34
	70 < t ≤ 100	41	41	41	41
	100 < t ≤ 125	50	50	50	50
	125 < t ≤ 150	55	55	55	55
Impact energy, min, J, transverse specimens of thickness t, mm, KV_T	$t \le 50$	-	20	20	20
	50 < t ≤ 70	24	24	24	24
	70 < t ≤ 100	27	27	27	27
	100 < t ≤ 125	34	34	34	34
	125 < t ≤ 150	37	37	37	37

N o t e s : 1. In case of the positive test results of the works' survey Grade A steel of 12,5 mm thickness may be rimmed.
2. Maximum 0,23 % carbon content for Grade A sections.
3. In case of the positive test results of the works' survey in the impact tested Grade B steel manganese content can be reduced to 0,60 %.
4. In case of the positive test results of the works' survey at the supply of steel of all grades slight deviations in the chemical composition are permitted after TM rolling, refer to 3.2.2.
5. For Grade D steel of 25 mm thick and less, the aluminium content is allowed to be other than indicated in the Table.
6. For Grade D steel over 25 mm thick and Grade E steel the total aluminium content may be determined instead of acid soluble content. In such cases the total aluminium content shall be not less than 0,020 %. A maximum aluminium content may also be specified by the Register. In case of the positive test results of the works' survey other suitable grain refining elements may be used.
7. The Register may limit the amount of residual elements which may have an adverse effect on the working and use of the steel (e.g. copper and tin).
8. Where additions of any other element have been made as part of the steelmaking practice, the content shall be indicated and agreed with the Register.
9. In case of the positive test results of the works' survey and statistical data justification for all thicknesses of Grade A sections the upper limit for the specified tensile strength range may be exceeded.

10. Refer to 3.2.3 and 3.2.6 for impact tests.
11. Charpy V-notch impact tests are generally not required for Grade B steel with thickness of 25 mm or less.
12. Impact tests for Grade A over 50 mm thick are not required when the material is produced using fine grain practice and furnished normalised. In case of the positive test results of the works' survey TM rolling may be accepted without impact testing.
13. Sampling tests may be carried out selectively for steel allowed for supply without impact tests. The results shall meet the relevant requirements of the Table, and for Grade A steel up to 50 mm thick, *KVL* > 27 J at 20 °C.
14. For full thickness flat tensile test specimens with a width of 25 mm and a gauge length of 200 mm the elongation shall comply with the following minimum values:

Thickness t, mm	$t \le 5$	$5 < t \le 10$	$10 < t \le 15$	$15 < t \le 20$	$20 < t \le 25$	$25 < t \le 30$	$30 < t \le 40$	$40 < t \le 150$
Elongation, %	14	16	17	18	19	20	21	22

".

Table 3.2.2-2 is amended as follows:

"Table 3.2.2-2

Chemical composition and mechanical properties of higher strength steel

Grade		A32	D32	E32	A36	D36	E36	A40	D40	E40
Deoxidation		Killed, fine-grained, aluminium treated								
Condition of supply		According to Table 3.2.4-2								
Chemical composition (ladle analysis), %	C_{max}	0,18								
	Mn	0,9 — 1,6								
	Si_{max}	0,5								
	P_{max}	0,035								
	S_{max}	0,035								
	Cu_{max}	0,35								
	Cr_{max}	0,20								
	Ni_{max}	0,40								
	Mo_{max}	0,08								
	Al_{min}	0,015								
	Nb	0,02 — 0,05						≤0,12		
	V	0,05 — 0,10								
	Ti_{max}	0,02								
Tensile properties	Tensile strength, R_m, MPa	440 — 570			490 — 630			510 — 660		
	Yield stress, R_{eH}, min, MPa	315			355			390		
	Elongation A_5, min, %	22			21			20		

N o t e s : 1. The letter "H" may be added either in front or behind the grade mark of higher strength steel (e.g. DH36).
2. Up to a thickness of 12,5 mm the minimum manganese content may be reduced to 0,70 %.
3. The total aluminium content may be determined instead of the acid soluble content. In such cases the total aluminium content shall be not less than 0,020 %.
4. The steel ~~shall~~ may contain aluminium, niobium, vanadium or other suitable grain refining elements, either singly or in any combination. When used singly the steel shall contain the specified minimum content of the grain refining element according to Table 3.2.2-2. When used in combination, the specified minimum content of a fine graining element is not applicable.
5. In case of the positive test results of the works' survey at the supply of higher strength steel of any grade in the TM rolled condition variations in the specified chemical composition may be permitted, refer to 3.2.2.
6. Refer to 3.2.2 and 3.2.6 for C_{eq} and P_{cm}.
7. Where additions of any other element have been made as part of the steelmaking practice, the content shall be indicated and agreed with the Register.
8. For full thickness flat tensile test specimens with a width of 25 mm and a gauge length of 200 mm the elongation shall comply with the following minimum values:

Grade of steel	Thickness t, mm							
	$t \le 5$	$5 < t \le 10$	$10 < t \le 15$	$15 < t \le 20$	$20 < t \le 25$	$25 < t \le 30$	$30 < t \le 40$	$40 < t \le 150$
A32, D32, E32, F32	14	16	17	18	19	20	21	22
A36, D36, E36, F36	13	15	16	17	18	19	20	21
A40, D40, E40, F40	12	14	15	16	17	18	19	20

9. Refer to 3.2.3 and 3.2.6 for impact tests.
10. For Grades A32 and A36 steels a relaxation in the number of impact tests for acceptance purposes may be permitted, provided that satisfactory results are obtained from occasional check tests.

".

Table 3.2.4-2 is amended as follows:

"Table 3.2.4-2

Condition of supply for higher strength steel

Grade	Grain refining elements	Thickness, mm	Condition of supply
A32, A36	Nb and/or V	$t \le 12,5$	Any
		$12,5 < t \le 150$	Normalized (N), controlled rolled (CR) or thermo-mechanically rolled (TM)
A32, A36	Al or Al with Ti	$t \le 20$	Any
		$20 < t \le 35$	Any, subject to special approval if as rolled (AR)
		$35 < t \le 150$	Normalized (N), controlled rolled (CR) or thermo-mechanically rolled (TM)
A40	Any	$t \le 12,5$	Any
		$12,5 < t \le 150$	Normalized (N), controlled rolled (CR) or thermo-mechanically rolled (TM)
D32, D36	Nb and/or V	$t \le 12,5$	Any
		$12,5 < t \le 150$	Normalized (N), controlled rolled (CR) or thermo-mechanically rolled (TM)
D32, D36	Al or Al with Ti	$t \le 20$	Any
		$20 < t \le 25$	Any, subject to special approval if as rolled (AR)
		$25 < t \le 150$	Normalized (N), controlled rolled (CR) or thermo-mechanically rolled (TM)
D40	Any	$t \le 50$	Normalized (N), controlled rolled (CR) or thermo-mechanically rolled (TM)
E32, E36	Any	$t \le 50$	Normalized (N), controlled rolled (CR) or thermo-mechanically rolled (TM)
		$50 < t \le 150$	Normalized (N), thermo-mechanically rolled (TM)
E40	Any	$t \le 50$	Normalized (N), thermo-mechanically rolled (TM) or quenched and tempered (QT)
		$50 < t \le 150$	Normalized (N), thermo-mechanically rolled (TM) or quenched and tempered (QT)
F32 F36 F40	Any	t ≤ 50	Normalized (N), thermo-mechanically rolled (TM) or quenched and tempered (QT)
		$50 < t \le 150$	Normalized (N), thermo-mechanically rolled (TM) or quenched and tempered (QT)
Note. Sections in Grades A32, A36, D32 and D36 steels may be supplied in as rolled condition, provided the results of impact tests are satisfactory. Similarly, sections in Grades E32 and E36 steels may be supplied in as rolled condition or after controlled rolling. The number of impact tests is determined according to 3.2.6.4-2.			

".

Table 3.2.2-3 is amended as follows:

"Table 3.2.2-3

Steel grades	Carbon equivalent, max, %		
	$t \le 50$ mm	50 mm < $t \le$ ~~150~~100 mm	100 mm < $t \le 150$ mm
A32, D32, E32, F32	0,36	0,38	0,40
A36, D36, E36, F36	0,38	0,40	0,42
A40, D40, E40, F40	0,40	0,42	0,45
Note. The value of the carbon equivalent shall be agreed upon between the Manufacturer and shipyard in each case, if its value exceeds the indicated one.			

".

Table 3.2.3 is amended as follows:

"Table 3.2.3

Steel grade	Temperature, C°	Average impact energy *KV*, min, J									
		$t \le 50$ mm		$50 < t \le 70$ mm		$70 < t \le$ ~~150~~ 100 mm		$100 < t \le$ 125 mm		$125 < t \le$ 150 mm	
		KV_L	KV_T	KV_L	KV_T	KV_L	KV_T	KV_L	KV_T	KV_L	KV_T
A32	0	31	22	38	26	46	31	55	34	60	40
D32	– 20	31	22	38	26	46	31	55	34	60	40
E32	– 40	31	22	38	26	46	31	55	34	60	40
A36	0	34	24	41	27	50	34	60	40	64	42
D36	– 20	34	24	41	27	50	34	60	40	64	42
E36	– 40	34	24	41	27	50	34	60	40	64	42
A40	0	39	26	46	31	55	37	64	42	70	46
D40	– 20	39	26	46	31	55	37	64	42	70	46
E40	– 40	39	26	46	31	55	37	64	42	70	46

".

3.5 STEEL FOR STRUCTURES USED AT LOW TEMPERATURES

Table 3.5.2.4 is amended as follows:

"Table 3.5.2.4

Mechanical properties of F grade high strength steel

Grade	Yield stress R_{eH}, min, MPa	Tensile strength R_m, MPa	Elongation A_5, min, %	Impact test									
				Test temperature, °C	Average impact energy value *KV*, min, J								
					t ≤ 50 mm		50 < t ≤ 70 mm		70 < t ≤100 mm		100 < t ≤125 mm		125 < t ≤150 mm	
					KV_L	KV_T	KV_L	KV_T	KV_L	KV_T	KV_L	KV_T	KV_L	KV_T
F32	315	440 — 570	22	–60	31	22	38	26	46	31	55	37	60	40
F36	355	490 — 630	21	–60	34	24	41	27	50	34	60	40	64	42
F40	390	510 — 660	20	–60	39	26	46	31	55	37	64	42	70	46
Note. Refer to Notes 8 and 9 in Table 3.2.2-2.														

".

Para 3.5.2.5 is amended as follows:

"**3.5.2.5** Condition of supply.

Condition of steel supply for Grades F32, F36 and F40 — according to the requirements of Table ~~3.2.6.4-2~~ 3.2.4-2.".

Para 3.5.5.2 is amended as follows:

"**3.5.5.2** Mechanical properties.

The mechanical properties of forged steel shall meet the requirements of 3.7.3. The required impact energy value during impact testing at the minimum design temperature T_D is specified in the RS-agreed standards and/or an approved specification, but shall be as follows:

not less than 27 J at the yield stress of steel less than 400 MPa;

not less than 41 J at the yield stress of steel from 400 to 690 MPa.

The percentage of fibrous component in the fracture of a specimen determined after impact testing shall be not less than 50 %.

~~To approve steel for essential forgings used at –30 °C and below, resistance to brittle fracture may be confirmed either by testing according to the *NTD* procedure (refer to 2.2.10.3) or by other test methods agreed with the Register, e.g. crack resistance tests.~~

~~The requirements for forgings for cargo handling gear are set forth in Section 3 of the Rules for the Cargo Handling Gear of Sea-Going Ships~~*.".

Para 3.5.6.2 is amended as follows:

"**3.5.6.2** Mechanical properties.

The mechanical properties of cast steel shall meet the requirements of 3.8.3. The required impact energy value during impact testing at the design temperature is specified by standards or technical requirements, but shall be as follows:

not less than 27 J at the yield stress of steel less than 400 MPa;

not less than 41 J at the yield stress of steel from 400 to 690 MPa.

The percentage of fibrous component in the fracture of a specimen determined after impact testing shall be not less than 50 %.

~~To approve steel for essential castings used at –30 °C and below, resistance to brittle fracture may be confirmed either by testing according to the NTD procedure (refer to 2.2.10.3) or by other test methods agreed with the Register, e.g. crack resistance tests.~~

~~The requirements for castings for cargo handling gear are set forth in Section 3 of the RS Rules/CHG.~~".

~~*Hereinafter referred to "the RS Rules/CHG".~~

PART XIV. WELDING

2 TECHNOLOGICAL REQUIREMENTS FOR WELDING

2.1 GENERAL

Para 2.1.4.2. **The first paragraph** is amended as follows:

"**2.1.4.2** On condition proper quality of welded joints is ensured, welding and all related operations on the structures subject to technical supervision by the Register made of hull structural steel of normal and higher strength 20 mm in thickness are generally permitted at ambient temperature up to –25 °C. For specific conditions, the minimum permissible ambient temperature for unheated welding shall be agreed with the Register at approving welding procedures. Preheating of the edges of parts to be welded intended for their drying shall be carried out at ambient temperature below ~~–5 °C; for normal strength steels and below~~ 0 °C for normal strength and higher strength steels. For high strength steels, preheating of the edges of parts to be welded shall be carried out at ambient temperature specified in Table 6.4.4.~~8~~7.3, Part III "Technical Supervision during Manufacture of Materials" of the Rules TSDCS.".

2.14 UNDERWATER WELDING AND WELDING OF STRUCTURES HAVING THEIR BACK SIDE IN CONTACT WITH WATER

Chapter 2.14 is replaced by the following text:

"**2.14.1** In cases agreed with the Register, the underwater welding and welding of structures having their back side in contact with water shall be performed under the RS technical supervision taking into account the requirements of Appendix 4 of the Rules for Technical Supervision of Ships in Service (Rules TSSS).".

2.15 LASER AND LASER-ARC HYBRID WELDING

Para 2.15.2.3 is amended as follows:

"**2.15.2.3** Laser-arc hybrid welding by metal inert gas (MIG) welding and tungsten inert gas (TIG) welding is permitted for use for structures not involved in ensuring the overall strength of a ship (offshore installation) and structures not subjected to high vibrations (for example, machinery bedplates) made of normal and higher strength shipbuilding steels.".

3 TESTING OF WELDED JOINTS

3.1 GENERAL

Paras 3.1.3.1.1 and **3.1.3.1.2** are amended as follows:

"**.1** structures (details) and welded joints subject to testing during the acceptance of welded structures;

.2 scope according to 3.3 and methods of testing;".

3.3 SCOPE OF NON-DESTRUCTIVE TESTING

Para 3.3.2. **The first** and **the second paragraphs** are amended as follows:

"**3.3.2** Non-destructive testing of welded joints of hull structures of container ships manufactured of extremely thick steel plates with thickness of 50 to 100 mm of categories specified in 3.1.1.3, Part II "Hull" shall be carried out by visual testing along the entire length and ultrasonic testing (UT) in compliance with 3.2.6 ~~shall be carried out~~ on all block-to-block butt joints of all upper flange longitudinal structural members in the cargo hold region, including the topmost strakes of the inner hull/bulkhead, the sheer strake, main deck, coaming plate, coaming top plate, and all attached longitudinal stiffeners (refer to Fig. 3.3.2) to the extent not less than 10% of the entire length.".

4 WELDING CONSUMABLES

4.8 WELDING CONSUMABLES FOR WELDING OF CORROSION-RESISTANT (STAINLESS) STEEL AND FOR SURFACING

Para 4.8.4.1 is amended as follows:

"**4.8.4.1** Determination of mechanical properties of deposited metal and welded joint.

Cut out from the deposited metal test assembly and tested shall be longitudinal cylindrical proportional specimens, shown in Fig. 2.2.2.3 (*a*), Part XIII "Materials" and having dimensions:

$$d_{~~m~~} = 10 \text{ mm}, L_{~~m~~0} = 50 \text{ mm}, L_c = 60 \text{ mm and } ~~r~~ R \geq 5 \text{ mm}.$$

The longitudinal axis of the specimen shall coincide with the centre of the weld and the middle point of the metal deposit thickness. One specimen is required (when testing specimens with working part diameter of 6 mm, three specimens from each test assembly shall be tested).

The impact energy for deposited metal is determined on V-notch specimens meeting the requirements of 2.2.3, Part XIII "Materials" and requirements of 4.2.2.3. ~~The plan of specimens cutting out is shown in 4.8.4.1-1.~~ Three specimens are taken from each test assembly.

A butt weld test assembly is employed for preparation and testing of:

2 transverse flat fracture specimens with dimensions as shown in Fig. 4.2.2.1;

2 transverse static bend specimens in accordance with Fig. 2.2.5.1, Part XIII "Materials" complying with the ~~directions~~ requirements of 4.2.2.2.2 (specimen dimensions: *a* = *t* — thickness of the test assembly metal, *b* = 30 mm);

3 Charpy impact test specimens~~. They shall be cut out as shown in Fig. 4.8.4.1-1, their type~~ shall meet the requirements of 2.2.3, Part XIII "Materials" and requirements of 4.2.2.3.

For dissimilar welded joints, made with the use of welding consumables of Grade A-9sp or A-10sp, in static bending tests instead of transverse specimens longitudinal specimens shall be used, in compliance with Fig. 4.8.4.1~~-2~~. Length of the test assembly shall be sufficient for manufacture of such specimens.

General requirements for mechanic~~h~~al test procedures are given in 4.2.2, and criteria for evaluation of test results are contained in Tables 4.8.4.1-1 and 4.8.4.1-2.".

Figure 4.8.4.1-1 is deleted. **Figure 4.8.4.1-2** is renumbered **4.8.4.1**.

5 APPROVAL TEST FOR WELDERS

5.1 GENERAL

Para 5.1.2. **The second paragraph** is amended as follows:

"**5.1.2** The welders who have passed the tests according to the international and/or national standards (for example, ISO 9606-1:2012/COR 2:2013~~, ASME Sec. IX, ANSI/AWS D1.1~~) may be admitted to the welding operations. In this case, all requirements of the applied standard for welders' approval shall be considered in full for their adequacy and compliance with the requirements of the RS rules. Welders' certification based on cross-mixed provisions of different standards is not permitted.".

PART XVII. DISTINGUISHING MARKS AND DESCRIPTIVE NOTATIONS IN THE CLASS NOTATION SPECIFYING STRUCTURAL AND OPERATIONAL PARTICULARS OF SHIPS

9 REQUIREMENTS FOR SHIPS EQUIPPED FOR USING GASES OR LOW-FLASHPOINT FUELS

9.5 FUEL SYSTEM

Para 9.5.5.1 is amended as follows:

"**9.5.5.1** Fuel piping in gas-safe machinery spaces shall be completely enclosed in external pipes or ducts fulfilling one of the following conditions:

.1 the gas piping shall be a double wall piping system with the gas fuel contained in the inner pipe. The space between the concentric pipes shall be pressurized with inert gas at a pressure greater than the gas fuel pressure. Suitable alarms shall be provided to indicate a loss of inert gas pressure between the pipes; or

.2 the gas fuel piping shall be installed within a ventilated pipe or duct. The air space between the gas fuel piping and the wall of the outer pipe or duct shall be equipped with mechanical underpressure ventilation having a capacity of at least 30 air changes per hour. This ventilation capacity may be reduced to 10 air changes per hour provided automatic filling of the duct with nitrogen upon detection of gas is arranged for. The fan motors shall comply with the required explosion protection in the installation area. The ventilation outlet shall be screened and placed in a position where there are no flammable sources.

~~Gas fuel piping enclosed in external pipes or ducts, shall, as far as practicable, use a minimum of flange connection. There shall be no single flange or other components of piping system, where one single failure itself may result in a gas leak into surrounding area causing danger to the persons on board, the environment or the ship.~~

~~A single common flange with two sealing systems may be using at the fuel connection to the gas consumers including gas combustion unit (GCU), boilers and components of the engine, such as gas regulating units.~~».

New paras 9.5.5.2 and 9.5.5.3 are introduced reading as follows:

«**9.5.5.2** Gas fuel piping enclosed in external pipes or ducts, shall, as far as practicable, use a minimum of flange connection. There shall be no single flange or other components of

piping system un use, where one single failure itself may result in a gas leak into surrounding area causing danger to the persons on board, the environment or the ship.

9.5.5.3 A single common flange with two sealing systems ensuring ventilation flow between the gas fuel piping and external pipe wall or a duct, may be using at the fuel connection to the gas consumers including internal combustion engines, gas combustion units (GCU), boilers and components, such as gas valve units provided that the technical justification is submitted to the Register demonstrating:

.1 the impracticability of the installation of a double flange connection (two independent flanges, one on the gas pipe and one on the secondary enclosure), and

.2 compliance of a single common flange with the safety criterion in 9.5.5.2 regarding a failure that may result in a gas leak into surrounding area. There shall be considered at least the cases of rupture or loosening of the flange connection bolts, depending on arrangement of components which should not result in a gas leak when the piping is exposed to a sudden movement (e.g. due to hog and sag of the ship or excessive vibration).".

Existing paras 9.5.5.2, 9.5.5.3, and references thereto are renumbered **9.5.5.5** and **9.5.5.6** accordingly.

New Para 9.5.5.4 is introduced reading as follows:

"**9.5.5.4** Single wall piping intended for purging, venting, or bleeding fuel gas lines may be located within gas-safe machinery spaces, provided that the following conditions are ensured:

.1 this piping shall be originated from a gas fuel piping system having a design pressure not greater than 1 MPa or the maximum built-up back pressure in the vent piping shall be calculated not to exceed 0,5 MPa;

.2 this piping shall be of fully welded construction. The connection to the consumer, if not connected by welding, as well as any flexible elements, shall comply with 9.5.5.1 — 9.5.5.3;

.3 this piping shall be open ended;

.4 this piping shall not contain fuel gas or a gas fuel/air mixture, except for the sole purpose of safely purging, venting and bleeding the gas fuel and/or gas fuel/air mixture when isolating gas fuel to consumers; and

.5 the gas-safe machinery spaces in which gas consumers are located shall be permanently mechanically ventilated.

Vent piping of internal combustion engines shall be of double-walled construction unless single-walled construction is justified in the safety concept of the engine.".

18 INDOOR HYGIENE AND SANITARY CONDITIONS

18.2 NOISE LEVEL IN SHIP'S SPACES

Para 18.2.4.1 is replaced by the following text:

"**18.2.4.1** Noise level measurement and periodic equipment verification/calibration shall be carried out considering the requirements of ISO 2923, IEC 61672-1, IEC 61672-3, IEC 61260, EC 60942, and 9.3.15 of Part I "General Regulations for Technical Supervision" of the Rules TSDCS.".

Para 18.2.4.3 is amended as follows:

"**18.2.4.3** Measuring equipment shall be verified in accordance with IEC 61672-3 (for sound level meters) and IEC 60942, Appendix B (for sound calibrators) at least every 2 years

by a competent laboratory accredited according to ~~ISO 17025, as amended~~ the latest version of ISO 17025.

~~The instrumentation~~ The sound level meters shall be calibrated using the sound calibrator in situ before and after the ~~tests~~ measurements ~~and verified after~~. The deviation shall not exceed 0,5 dB.".

19 REQUIREMENTS FOR DOUBLE ACTING SHIPS

19.1 APPLICATION

Para 19.1.1 is amended as follows:

"**19.1.1** Ships complying with the requirements of this Section, may be assigned ~~the distinguishing mark **DAS (‹the ice class mark›)**~~ one of the distinguishing marks **DAS-Arc6**, **DAS-Arc7**, **DAS-Arc8**, **DAS-Arc9** (whatever is applicable) added to the character of classification in accordance with 2.2.3.3.5 of Part I "Classification".".

19.2 REQUIREMENTS FOR HULL STRUCTURE

Para 19.2.1 is replaced by the following text:

"**19.2.1** The requirements of this Chapter are additional to the requirements of Chapter 3.10 of Part II "Hull" and apply to the ships operating stern-first in ice.".

Paras 19.2.2.1 — 19.2.2.3 are amended as follows:

"**19.2.2.1** There are ice strengthening regions lengthwise in double acting ships as follows:

~~*for ships designed for both bow- and stern-first ice operation:*~~

~~forward region — A;~~

~~intermediate region — A_1;~~

~~midship region — B;~~

~~aft region — C;~~

~~*for ships designed for stern-first ice operation only:*~~

forward region — A;

intermediate region — A_1;

midship region — B;

aft region — C.

19.2.2.2 There are ice strengthening regions transversely as follows:

region of alternating draughts and similar regions — I;

region from the lower edge of region I to the upper edge of bilge strake — II;

bilge strake — III;

region from the lower edge of bilge strake where the shell is inclined 7° from horizontal, to the centre line — IV.

~~For ships designed for stern-first operation only, the position of the forward, midship and aft regions of ice strengthening are set relative to the borderline of the flat side of hull:~~

~~forward region — from the stem to a line at a distance of L_3 aft from the forward boundary of the flat side of hull;~~

~~midship region — from the aft boundary of the forward region to a line at a distance of L_3 forward from the aft boundary of the flat side of hull;~~

~~aft region — from the aft boundary of the midship region to the sternframe.~~

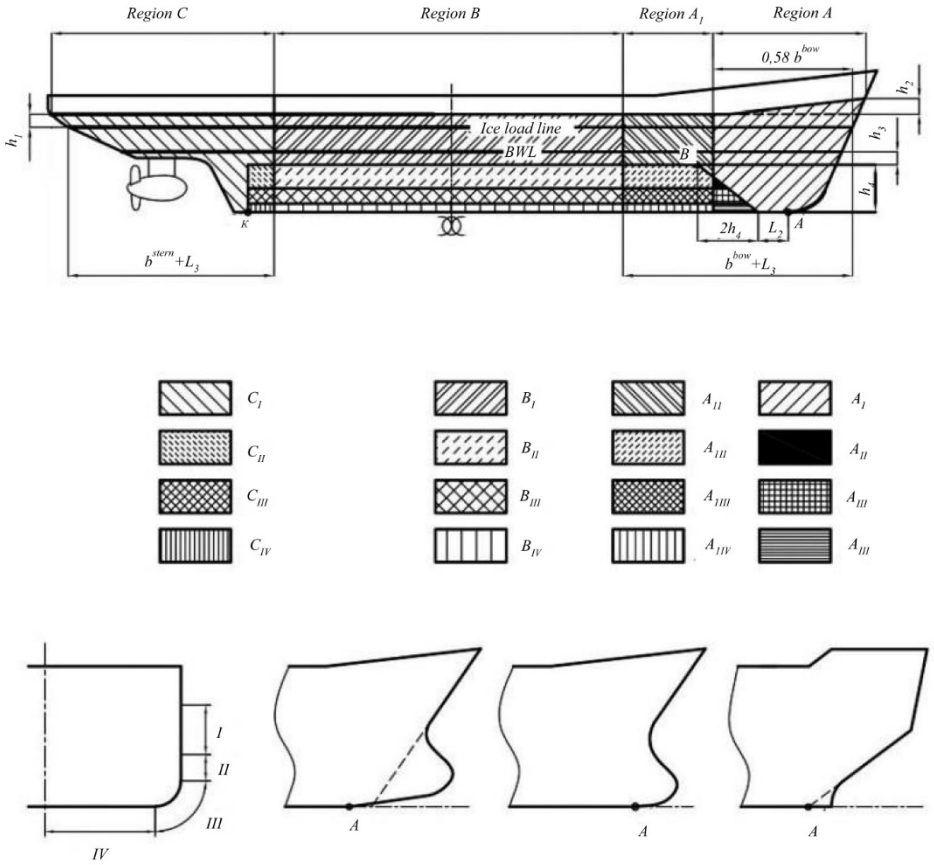
~~Ice belt extension in the forward region of the bottom is regulated by parameter L_2, which is equal to a distance from point *A* to the point of intersection of the base line with the vertical line that defines the bow region boundary at the level of the lower limit of the ice belt.~~

~~These requirements shall be complied with both at the upper and lower service waterlines.~~

Position of the aft region of ice strengthening of the double acting ships is set relative to the borderline of the flat side of hull: at a distance of L_3 aft from the aft boundary of the flat side of hull to the stem.

19.2.2.3 The length of ice strengthening regions of the ~~ice class~~ double acting ships shall be determined according to Fig. 19.2.2.3 of this Part and Table 3.10.1.3.2 of Part II "Hull".".

Figure 19.2.2.3 and legend thereto are replaced by the following figure and legend:



"

Fig. 19.2.2.3

Regions of ice strengthening of the double acting ships:

b^{bow} — distance from the point of the ice load line and stem intersection to the section where the ice load line is the widest, but no greater than $0{,}4L$;

b^{stern} — distance from the point of the ice load line and sternframe intersection to the section where the ice load line is the widest, but no greater than $0{,}2L$;

position of point K is defined as a point located at a distance of at least five standard spacings (refer to 1.1.3 of Part II "Hull") forward of the fore point of the skeg.".

Existing paras 19.2.2.4 and **19.2.2.5** are deleted.

New para 19.2.2.4 is introduced reading as follows:

"**19.2.2.4** Proceeding from the ice class, the requirements of this Section apply to the regions of ice strengthening marked with "+" in Table 19.2.2.4. For the purpose of Table 19.2.2.4, the absence of mark "+" means that the particular region of ice strengthening is not covered by the requirements of this Section.

Table 19.2.2.4

Distinguishing mark	Vertical regioning															
	I				II				III				IV			
	Horizontal regioning															
	A	A_1	B	C	A	A_1	B	C	A	A_1	B	C	A	A_1	B	C
DAS-Arc8, DAS-Arc9	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
DAS-Arc7	+	+	+	+	+	+	+	+	+	+	+	+	+	+		+
DAS-Arc6	+	+	+	+	+	+	+	+	+	+	+	+	+	+		+

".

Para 19.2.4.2.1 is replaced by the following text:

"**19.2.4.2.1** In regions AI and CI — in accordance with 3.10.3.2.1 of Part II "Hull".".

Existing para 19.2.4.2.3, Tables 19.2.4.2.3 and **19.2.4.2.4** are deleted.

Existing para 19.2.4.2.4 and **references thereto** are renumbered **19.2.4.2.3**.

Formula (19.2.4.2.4) and **references thereto** are renumbered **(19.2.4.2.3)**.

New Table 19.2.4.2.3 is introduced reading as follows:

"Table 19.2.4.2.3

Distinguishing mark	Horizontal regioning								
	forward and intermediate regions (A, A_1)			midship region (B)			aft region (C)		
	Vertical regioning								
	II	III	IV	II	III	IV	II	III	IV
DAS-Arc6	0,65	0,65	0,5	0,5	0,45	—	0,65	0,65	0,5
DAS-Arc7	0,65	0,65	0,5	0,5	0,45	—	0,65	0,65	0,5
DAS-Arc8	0,7	0,65	0,5	0,55	0,45	0,25	0,7	0,65	0,5
DAS-Arc9	0,7	0,65	0,5	0,55	0,45	0,3	0,7	0,65	0,5

".

Para 19.2.4.3.1 is replaced by the following text:

"**19.2.4.3.1** In regions AI, AII, AIII, AIV and CI, CII, CIII, CIV — in accordance with 3.10.3.3.1 of Part II "Hull".".

Para 19.2.4.4.1 is replaced by the following text:

"**19.2.4.4.1** In regions AI, AII, AIII, AIV and CI, CII, CIII, CIV — in accordance with 3.10.3.4.1 of Part II "Hull".".

Para 19.2.4.4.3 is deleted.

Paras 19.2.4.5, 19.2.4.5.1 — 19.2.4.5.3, 19.2.4.6 and **19.2.4.7** are deleted.

Existing paras 19.2.4.8, 19.2.4.8.1 — 19.2.4.8.7, 19.2.4.8.7.1 — 19.2.4.8.7.7, 19.2.4.8.8, 19.2.4.8.8.1 and **references thereto** are renumbered **19.2.4.5, 19.2.4.5.1 — 19.2.4.5.7, 19.2.4.5.7.1 — 19.2.4.5.7.7, 19.2.4.5.8, 19.2.4.5.8.1** accordingly.

In **the renumbered paras 19.2.4.5.1, 19.2.4.5.7.1, 19.2.4.5.7.2, 19.2.4.5.7.3** and **19.2.4.5.8.1** references to **Tables 19.2.4.8.1-1** and **19.2.4.8.1-2** are replaced by the references to **Tables 19.2.4.5.1-1** and **19.2.4.5.1-2** accordingly.

Existing Tables 19.2.4.8.1-1 and **19.2.4.8.1-2** are accordingly replaced by **new Tables 19.2.4.5.1-1 and 19.2.4.5.1-2** reading as follows:

"Table 19.2.4.5.1-1

Distinguishing mark	H_{con}, m	H_{ch}, m	σ_v, MPa	σ_H, MPa	l_d, m	b_d, m	H_d, m	m_d, kg
DAS-Arc6	2,6	2,5	13	10,5	3,6	5,7	2,7	25763
DAS-Arc7 **DAS-Arc8** **DAS-Arc9**	4,5	4,0	14	11,5	6,22	10,44	4,8	144938

where H_{con} — design thickness of the ridge consolidated layer, m;
H_{ch} — design thickness of ice packed in the channel, m;
σ_v — design ice strength due to coaxial compression under vertical loading, MPa;
σ_H — design ice strength due to uniaxial compression under horizontal loading, MPa;
l_d — design length of an ice block;
b_d — design width of an ice block, m;
H_d — design thickness of an ice block, m;
m_d — weight of an ice block, kg

Table 19.2.4.5.1-2

Distinguishing mark	Design depth of a ridge keel H_{keel}, m	Design thickness of ice packed in the channel H_{ch}, m
DAS-Arc6	12	2,7

Distinguishing mark	Design depth of a ridge keel H_{keel}, m	Design thickness of ice packed in the channel H_{ch}, m
DAS-Arc7 **DAS-Arc8** **DAS-Arc9**	15,5	4,0

".

Figures 19.2.4.8.3, 19.2.4.8.7.1, 19.2.4.8.7.2, 19.2.4.8.7.3, 19.2.4.8.7.4, 19.2.4.8.7.5, 19.2.4.8.7.6 and **references thereto** are renumbered **19.2.4.5.3, 19.2.4.5.7.1, 19.2.4.5.7.2, 19.2.4.5.7.3, 19.2.4.5.7.4, 19.2.4.5.7.5** and **19.2.4.5.7.6** accordingly.

Formulae (19.2.4.8.4-1) — (19.2.4.8.4-4), (19.2.4.8.6), (19.2.4.8.7.1-1) — (19.2.4.8.7.1-3), (19.2.4.8.7.2-1) — (19.2.4.8.7.2-6), (19.2.4.8.7.3-1) — (19.2.4.8.7.3-9), (19.2.4.8.7.4-1) — (19.2.4.8.7.4-3), (19.2.4.8.7.5-1) — (19.2.4.8.7.5-9), (19.2.4.8.7.6-1) — (19.2.4.8.7.6-9), (19.2.4.8.7.7), (19.2.4.8.8.1-1), (19.2.4.8.8.1-2) and **references thereto** are renumbered **(19.2.4.5.4-1) — (19.2.4.5.4-4), (19.2.4.5.6), (19.2.4.5.7.1-1) — (19.2.4.5.7.1-3), (19.2.4.5.7.2-1) — (19.2.4.5.7.2-6), (19.2.4.5.7.3-1) — (19.2.4.5.7.3-9), (19.2.4.5.7.4-1) — (19.2.4.5.7.4-3), (19.2.4.5.7.5-1) — (19.2.4.5.7.5-9), (19.2.4.5.7.6-1) — (19.2.4.5.7.6-9), (19.2.4.5.7.7), (19.2.4.5.8.1-1), (19.2.4.5.8.1-2)** accordingly.

19.3 SUBDIVISION

Para 19.3.1 is amended as follows:

"**19.3.1** For the purpose of damage trim and stability calculations of the double acting ships ~~of the ice classes **Arc4** — **Arc9** with the distinguishing mark **DAS** in the class notation~~, the longitudinal extent $0{,}045L_{ice}$ shall be assumed for ice damage in the forward and aft part of the hull, if the centre of damage lies within $0{,}4L_{ice}$ from the forward and aft perpendiculars, respectively, and $0{,}015L_{ice}$ in other areas.".

33 REQUIREMENTS FOR MARITIME AUTONOMOUS SURFACE SHIPS AND THE TECHNICAL MEANS OF CONTROLLING THEREOF

33.8 RISK-ORIENTED PROCESS OF MASS APPROVAL

Para 33.8.4.1.3 and Table 33.8.4.1.3 are deleted.

Existing paras 33.8.4.1.4, 33.8.4.1.4.1 — 33.8.4.1.4.5, 33.8.4.1.5 and references thereto are renumbered **33.8.4.1.3, 33.8.4.1.3.1 — 33.8.4.1.3.5, 33.8.4.1.4** accordingly.

Existing Tables 33.8.4.1.4.1, **33.8.4.1.4.2**, **33.8.4.1.4.3-1 — 33.8.4.1.4.3-3**, **33.8.4.1.4.4 and references thereto** are renumbered **33.8.4.1.3.1**, **33.8.4.1.3.2**, **33.8.4.1.3.3-1 — 33.8.4.1.3.3-3**, **33.8.4.1.3.4** accordingly.

33.10 REMOTE CONTROL CENTRE (FIXED OR MOBILE)

Para 33.10.7.3.1 is amended as follows:

"**33.10.7.3.1** The following documents shall be submitted to RS for the survey:
the manning table including a shift composition, schedule and work arrangement;

a list of MASS subjected to the RCC monitoring and control;

a list of areas and possible modes of the RCC operation therein (monitoring, decision support, remote control, autonomous control);

job descriptions of the RCC personnel;

regulations on sharing responsibilities during MASS operation in various modes;

documents to endorse competence of RCC personnel, including valid pilot certificates for the areas where remote control of ships is possible and valid certificates of completed simulator-based training on remote and autonomous operation;

~~medical certificates of the MASS remote master and the MASS control operators to comply with the requirements for certification of masters and watch officers in accordance with the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978, as amended in 1995 (STCW Convention 78/95);~~

labor agreements of the RCC personnel;

operating procedures developed by the RCC administration;

an applicable certificate issued by an organization competent in autonomous navigation.".

Russian Maritime Register of Shipping

Rule Change Notice to the Rules for the Classification and Construction of Sea-Going Ships

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