

RULES

FOR THE CLASSIFICATION AND CONSTRUCTION OF SEA-GOING SHIPS

PART XIX

ADDITIONAL REQUIREMENTS FOR CARGO SHIPS OF LESS THAN 500 GROSS TONNAGE

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RULES FOR THE CLASSIFICATION AND CONSTRUCTION OF SEA-GOING SHIPS

Rules for the Classification and Construction of Sea-Going Ships of Russian Maritime Register of Shipping have been approved in accordance with the established approval procedure and come into force on 1 January 2021 (except for Part XIX "Additional Requirements for Cargo Ships of Less Than 500 Gross Tonnage" which comes into force on 1 October 2021).

The present edition of the Rules is based on the 2020 edition taking into account the amendments and additions developed immediately before publication.

The procedural requirements, unified requirements, unified interpretations and recommendations of the International Association of Classification Societies (IACS) and the relevant resolutions of the International Maritime Organization (IMO) have been taken into consideration.

The Rules are published in the following parts:

Part I "Classification";

Part II "Hull";

Part III "Equipment, Arrangements and Outfit";

Part IV "Stability";

Part V "Subdivision";

Part VI "Fire Protection";

Part VII "Machinery Installations";

Part VIII "Systems and Piping";

Part IX "Machinery";

Part X "Boilers, Heat Exchangers and Pressure Vessels";

Part XI "Electrical Equipment";

Part XII "Refrigerating Plants";

Part XIII "Materials";

Part XIV "Welding";

Part XV "Automation";

Part XVI "Structure and Strength of Fiber-Reinforced Plastic Ships";

Part XVII "Distinguishing Marks and Descriptive Notations in the Class Notation Specifying Structural and Operational Particulars of Ships";

Part XVIII "Additional Requirements for Structures of Container Ships and Ships, Dedicated Primarily to Carry their Load in Containers". The text of the Part is identical to IACS UR S11A "Longitudinal Strength Standard for Container Ships" (June 2015) and S34 "Functional Requirements on Load Cases for Strength Assessment of Container Ships by Finite Element Analysis" (May 2015);

Part XIX "Additional Requirements for Cargo Ships of Less Than 500 Gross Tonnage";

Supplement to Rules and Guidelines of Russian Maritime Register of Shipping "IACS Procedural Requirements, Unified Requirements, Unified Interpretations and Recommendations".

REVISION HISTORY

(purely editorial amendments are not included in the Revision History)

For this version, there are no amendments to be included in the Revision History.

1 DEFINITIONS AND EXPLANATIONS

Definitions and explanations used in this Part are detailed in the relevant parts of the Rules for the Classification and Construction of Sea-Going Ships, Rules for the Equipment of Sea-Going Ships, Load Line Rules for Sea-Going Ships, Rules for the Cargo Handling Gear of Sea-Going Ships.

2 APPLICATION

2.1 The requirements of this Part apply to:

.1 self-propelled and non-self-propelled cargo ships of less than 500 gross tonnage, including tugs, dredgers, pilot boats and similar ships, except for gas carriers, chemical tankers, fishing vessels, high-speed craft and pleasure craft;

.2 ships, mentioned in [2.1.1](#), contracted for construction or conversion on and after 01.10.2021, or ships, the keels of which are laid or which are at a similar stage of construction on or after 01.10.2021 (in the absence of a contract for construction). The provisions of this Part may also apply to cargo ships referred to in [2.1.1](#), contracted for construction or which keel is laid before 01.10.2021, as far as is reasonable and practicable, taking into account the available guidelines of a ship's Flag State MA, if applicable.

2.2 Ships of less than 500 gross tonnage are also subject to the Rules for the Prevention of Pollution from Ships Intended for Operation in Sea Areas and Inland Waterways of the Russian Federation, Rules for the Cargo Handling Gear of Sea-Going Ships, Load Line Rules for Sea-Going Ships, where applicable, the relevant requirements of the Rules for the Equipment of Sea-Going Ships, Rules for the Classification Surveys of Ships in Service, Rules for Technical Supervision during Construction of Ships and Manufacture of Materials and Products for Ships, as well as the relevant provisions of the Guidelines on Technical Supervision of Ships under Construction and Guidelines on Technical Supervision of Ships in Service.

2.3 The relevant international conventions and codes may apply to the ships specified in [2.1.1](#), depending on their scope of application.

3 CLASS OF A SHIP

3.1 The character of classification, distinguishing marks and descriptive notations in the class notation are assigned in accordance with the general provisions and conditions given in Section 2, Part I "Classification".

4 TECHNICAL DOCUMENTATION

4.1 The requirements for the scope of technical documentation to be submitted are specified in Section 3, Part I "Classification", Part XVII "Distinguishing Marks and Descriptive Notations in the Class Notation Specifying Structural and Operational Particulars of Ships" as applicable, Section 2, Part I "General" of the Rules for the Equipment of Sea-Going Ships.

4.2 Prior to the commencement of survey of the items of technical supervision during manufacture, the documentation in the scope specified in the corresponding parts of these Rules, as well as the Rules for the Equipment of Sea-Going Ships, Rules for the Cargo Handling Gear of Sea-Going Ships, Load Line Rules for Sea-Going Ships, as applicable, shall be submitted to the Register for review.

5 SCOPE OF SURVEYS

5.1 General provisions applicable to the classification procedure, survey during ship's construction and manufacture of the equipment, as well as in service, are stated in the General Regulations for the Classification and Other Activity and the relevant parts of these Rules.

6 TECHNICAL REQUIREMENTS

6.1 HULL

6.1.1 The hull structure shall meet the requirements of Part II "Hull", except for the requirements specified in 1.1.6.

6.2 EQUIPMENT, ARRANGEMENTS AND OUTFIT

6.2.1 Scope of survey, general requirements, working and allowable stresses, requirements for materials and welding, design accelerations due to heave of the sea are described in Section 1, Part III "Equipment, Arrangements and Outfit".

6.2.2 General provisions and requirements for the rudder and steering gear set out in Section 2, Part III "Equipment, Arrangements and Outfit" shall apply to the ships covered by this Part of the Rules.

6.2.2.1 The rudder tackle may be considered as an auxiliary steering gear.

6.2.2.2 The auxiliary steering gear control may not be provided from the steering gear compartment.

6.2.3 General provisions and requirements for anchor arrangements set out in Section 3, Part III "Equipment, Arrangements and Outfit" shall apply to the ships covered by this Part of the Rules.

6.2.4 General provisions and requirements for mooring arrangements set out in Section 4, Part III "Equipment, Arrangements and Outfit" shall apply to the ships covered by this Part of the Rules.

6.2.5 General provisions and requirements for towing arrangements set out in 5.1 — 5.6, Part III "Equipment, Arrangements and Outfit" shall apply to the ships covered by this Part of the Rules.

6.2.6 General provisions and requirements for signal masts are given in Section 6, Part III "Equipment, Arrangements and Outfit".

6.2.7 General provisions and requirements for openings in hull, superstructures and deckhouses and their closing appliances set out in Section 7, Part III "Equipment, Arrangements and Outfit" shall apply to the ships covered by this Part of the Rules.

6.2.7.1 All the companion hatches, skylights and ventilating trunks shall be provided with covers made of steel or other material approved by the Register and being permanently attached to the coamings.

6.2.7.2 Where the covers are made of steel, the thickness of their plate shall be equal to at least 0,01 times the spacing of stiffeners, but not less than 6 mm.

6.2.7.3 In ships having the deck thickness less than 6 mm the required minimum thickness may be reduced down to the deck thickness but in no case the plate thickness shall be less than 4 mm.

6.2.8 General provisions and requirements for location and equipment of ship's spaces, equipment of dry cargo holds, exits, doors, corridors, stairways and vertical ladders, guard rails, bulwark and gangways, hoisting gear of shipborne barges, pilot transfer arrangements, and means of embarkation and disembarkation set out in Section 8, Part III "Equipment, Arrangements and Outfit" shall apply to the ships covered by this Part of the Rules.

6.2.8.1 Corridors used as means of escape shall be at least 0,7 m wide.

6.2.8.2 Stairways used as means of escape shall be at least 600 mm wide. In case of insufficient space at egress from the stairway, the stairways with angle of slope of ladders of 55° shall be installed in accommodation and service spaces, and with 60° — on the decks. The size of doors providing an access to any stairway shall be of the same size as the stairway.

6.2.8.3 Alternative arrangements may be used instead of guard rails for ships involved in certain operations at sea (e.g. pilot boats) if they ensure equivalent safety level.

6.2.9 General provisions and requirements for emergency outfit set out in Section 9, Part III "Equipment, Arrangements and Outfit" shall apply to the ships covered by this Part of the Rules.

6.3 STABILITY, SUBDIVISION, FREEBOARD

6.3.1 Stability.

6.3.1.1 Stability of ships to which the requirements of this Part are applicable, shall be checked in accordance with the requirements of Part IV "Stability".

6.3.2 Subdivision.

6.3.2.1 The requirements of [6.3.2](#) are applicable to ships specified in [2.1](#), and covered by Part V "Subdivision".

6.3.2.2 Definitions and explanations, scope of survey, general technical requirements, satisfactory subdivision, permeability index set out in 1.2 — 1.6, Part V "Subdivision" shall apply to the ships specified in [6.3.2.1](#).

6.3.2.3 General provisions, extent of design damage, requirements for damage trim and stability characteristics, additional requirements for damage trim and stability set out in 3.1 — 3.4, Part V "Subdivision" shall apply to the ships specified in [6.3.2.1](#).

6.3.3 Freeboard.

6.3.3.1 Assignment of minimum freeboard and load line marking shall be carried out in accordance with the requirements of the Load Line Rules for Sea-Going Ships depending on the length of ship determined in compliance with 1.2.1 of the above Rules.

6.4 FIRE PROTECTION

6.4.1 The provisions of Section 8, Part VI "Fire Protection" shall apply to the cargo ships subject to the requirements of this Part.

6.5 MACHINERY INSTALLATIONS

6.5.1 The provisions of Part VII "Machinery Installations" shall apply to the ships subject to the requirements of this Part with account taken of the following:

.1 it is allowed to use fuel oil with flash point not below 55° C for the engines and boilers, and flash point not below 43° C for emergency generator engines in ships of unrestricted service (additional requirements are given in 1.1.2, Part VII "Machinery Installations");

.2 it is not necessary to have an engine-room telegraph as one of the means of communication in accordance with the requirements of 3.3.1, Part VII "Machinery Installations";

.3 fuel oil tanks situated within the boundaries of machinery spaces of category A shall contain fuel oil having flash point not below 55° C, while other requirements of 4.3.1, Part VII "Machinery Installations" shall be met.

6.6 SYSTEMS AND PIPING

6.6.1 The provisions of Part VIII "Systems and Piping" shall apply to the ships subject to the requirements of this Part with account taken of the following:

.1 requirements given in Section 4, Part V "Machinery Installations. Machinery. Systems and Piping" of the Rules for the Classification and Construction of Pleasure Craft are allowed to be applied as for craft of design category A, instead of Part VIII "Systems and Piping" of these Rules for the following systems of cargo ships: bilge, ballast, exhaust gas, ventilation, fuel oil, oil, cooling systems, air, overflow and sounding pipes. In this case the requirements of the International Convention for the Control and Management of Ships' Ballast Water and Sediments, requirements of MARPOL and the Rules for the Prevention of Pollution from Ships Intended for Operation in Sea Areas and Inland Waterways of the Russian Federation, as applicable, shall be met.

6.7 MACHINERY

6.7.1 The provisions of Part IX "Machinery" shall apply to machinery intended for the ships subject to the requirements of this Part with account taken of the following:

.1 for high-pressure fuel delivery lines of internal combustion engines, as an alternative to the requirements of 2.6.3, Part IX "Machinery", other leakage protection systems are allowed to be used, provided that they include a leakage alarm, and the system itself reliably prevents ingress of fuel in case of damage to the pipeline on the surface under insulation with a temperature above 220° C.

6.8 BOILERS, HEAT EXCHANGERS AND PRESSURE VESSELS

6.8.1 The full provisions of Part X "Boilers, Heat Exchangers and Pressure Vessels" shall apply to the ships subject to the requirements of this Part.

6.9 REFRIGERATING PLANTS

6.9.1 The full provisions of Part XII "Refrigerating Plants" shall apply to the ships subject to the requirements of this Part.

6.10 ELECTRICAL EQUIPMENT

6.10.1 General requirements for electrical equipment are specified in Section 2, Part XI "Electrical Equipment".

6.10.2 Main electrical power source.

6.10.2.1 Composition and capacity of main electrical power source.

6.10.2.1.1 In every ship, a main electric power source shall be provided with a capacity sufficient to supply all the electrical equipment on board under conditions specified in [6.10.2.1.5](#). Such a source shall consist of at least one independently driven generator or an accumulator battery.

6.10.2.1.2 The number and capacity of electrical power sources shall be such as to ensure:

.1 supply to electrical equipment essential for propulsion, steering and safety of the ship with the normal habitable conditions on board guaranteed;

.2 start of the most powerful electric motor with the greatest starting current. The motor start shall not involve a voltage and frequency drop in the mains that could result in a fall out of synchronism, stop of generator engine or disconnection of machinery and apparatus being in operation;

.3 supply to consumers necessary to start the propulsion plant (refer to 1.2.1, Part VII "Machinery Installations") when the ship is de-energized. For this purpose, emergency electrical power source may be used if its capacity proper or in association with the capacity of any other electrical power source would ensure a simultaneous supply of consumers listed under [6.10.8.3.1 — 6.10.8.3.3](#) (refer also to 2.1.6, Part VII "Machinery Installations"), for this purpose their parallel operation may be provided.

6.10.2.1.3 Where the main electrical power source is needed to ensure propulsion and steering of the ship, provision shall be made that the power supply to the equipment essential for propulsion and steering and to ensure safety of the ship is maintained continuously or restored immediately in case of failure of any generator being in operation.

Along with that, in ships where electrical power is normally supplied by two or more generators running in parallel, provision shall be made for automatic switching-off of less essential consumers without any overloading of the remaining generators, with retention of power supply to consumers essential for propulsion, steering and to ensure safety of the ship.

In ships where electrical power is normally supplied by one generator, in case of its failure and deenergization of the main switchboard, provision shall be made for:

automatic starting of stand-by generator of sufficient capacity and its connection to busbars of the main switchboard within 45 s;

automatic re-starting, in the necessary sequence, of essential devices ensuring propulsion, steering and safety of the ship.

6.10.2.1.4 Instead of one independently driven generator as mentioned under [6.10.2.1.1](#), a generator driven by the main engine (shaft generator) may be used if it complies with [6.10.2.2](#) under conditions listed below:

.1 the shaft generator operates practically at a constant speed (in the set frequency range for an electrical power plant with variable frequency main power source) under different operating conditions of the ship;

.2 provision is made for actuation of the ship's propulsion plant in case of failure of any generator with an independent prime mover.

6.10.2.1.5 The number and power output of generators forming the main source of electrical power shall be determined with regard to the following operating conditions of the ship:

.1 running conditions;

.2 manoeuvring;

.3 in case of fire, hole in the ship's hull or other conditions affecting the safety of navigation, with the main source of electrical power in operation;

.4 other operating conditions according to ship's purpose.

6.10.2.1.6 Where accumulator batteries are the main source of electrical power, their capacity shall be sufficient to satisfy the requirements of [6.10.2.1.2.1](#) for 8 h without recharging;

provision shall be made for charging of accumulator batteries from the source of electrical power installed on board.

6.10.2.2 Generator sets.

6.10.2.2.1 The requirements for generator sets, of which the main electrical power source is composed, are specified in 3.2, Part XI "Electrical Equipment".

6.10.2.3 Number and capacity of transformers.

6.10.2.3.1 In ships, where lighting and other circuits of essential services are powered through transformers, at least one transformer shall be provided of such a capacity as to satisfy the complete need in electrical power under all operating conditions of the ship.

6.10.2.4 Power supply from an external source of electrical power.

6.10.2.4.1 The requirements for power supply from an external source of electrical power are specified in 3.4, Part XI "Electrical Equipment".

6.10.2.5 Connection of electrical power supply units.

6.10.2.5.1 The requirements for connection of electrical power supply units are specified in 3.5, Part XI "Electrical Equipment".

6.10.3 **Distribution of electrical power.**

6.10.3.1 Distribution systems.

6.10.3.1.1 The list of acceptable systems of electrical power distribution is provided in 4.1, Part XI "Electrical Equipment".

6.10.3.2 Permissible voltage.

6.10.3.2.1 The requirements for permissible voltage of ship's electrical circuits are specified in 4.2, Part XI "Electrical Equipment".

6.10.3.3 Power supply of essential services.

6.10.3.3.1 The requirements for power supply of essential services are specified in 4.3, Part XI "Electrical Equipment".

6.10.3.4 Power supply of electrical (electronic) automation systems.

6.10.3.4.1 The power supply of electrical (electronic) automation systems shall satisfy the requirements of Part XV "Automation".

6.10.3.4.2 Power supply of automation devices necessary for starting and operating the emergency diesel generator shall be taken from a starter battery or another independent accumulator battery installed in the emergency diesel generator space.

6.10.3.5 Power supply to integrated bridge control console.

6.10.3.5.1 The requirements for power supply to integrated bridge control console are specified in 4.5, Part XI "Electrical Equipment".

6.10.3.6 Switchboard and switchgear.

6.10.3.6.1 Switchboard design and construction.

6.10.3.6.1.1 The switchboard design and construction shall comply with the requirements specified in 4.6.1, Part XI "Electrical Equipment".

6.10.3.6.2 Busbars and uninsulated conductors.

6.10.3.6.2.1 The requirements for busbars and uninsulated conductors are specified in 4.6.2, Part XI "Electrical Equipment".

6.10.3.6.3 Calculation of short-circuit currents and selection of electrical switch apparatus.

6.10.3.6.3.1 The short-circuit currents shall be calculated in accordance with the requirements of 4.6.3, Part XI "Electrical Equipment".

6.10.3.6.4 Electric switch apparatus and instrumentation.

6.10.3.6.4.1 The requirements for the electric switch apparatus and instrumentation are specified in 4.6.4, Part XI "Electrical Equipment".

6.10.3.6.5 Light signals.

6.10.3.6.5.1 The requirements for the light signals are specified in 4.6.5, Part XI "Electrical Equipment".

6.10.3.6.6 Arrangement of distribution gear.

6.10.3.6.6.1 The requirements for the arrangement of distribution gear are specified in 4.6.6, Part XI "Electrical Equipment".

6.10.3.6.7 Access to switchboards.

6.10.3.6.7.1 In front of and behind the switchboard, passageways shall be provided not less than 600 mm wide.

6.10.3.6.7.2 The distance between the free standing switchboards shall be at least 600 mm.

6.10.3.6.7.3 The space behind the free standing switchboards with open live parts shall be enclosed and fitted with doors in accordance with 2.8.1, Part XI "Electrical Equipment".

6.10.3.6.7.4 For switchboards more than 3 m in length mentioned in [6.10.3.6.7.3](#) at least two doors shall be provided leading from the space where the switchboard is installed to the space behind the switchboard. These doors shall be as widely spaced as possible.

It is allowed that one of these doors shall lead to the adjacent space having at least another exit.

6.10.3.6.7.5 Passageways specified in [6.10.3.6.7.1](#) and [6.10.3.6.7.2](#) are measured from the most protruding parts of apparatus and structure of the switchboard to the protruding parts of equipment or hull structures.

6.10.4 Electric drives for shipboard mechanisms and equipment.

6.10.4.1 The electric drives for shipboard mechanisms and equipment shall comply with the requirements of Section 5, Part XI "Electrical Equipment".

6.10.5 Lighting.

6.10.5.1 The ship's lighting shall comply with the requirements of Section 6, Part XI "Electrical Equipment".

6.10.6 Internal communication and signalling.

6.10.6.1 The internal communication and signalling shall comply with the requirements of Section 7, Part XI "Electrical Equipment".

6.10.7 Protective devices.

6.10.7.1 The protective devices shall comply with the requirements of Section 8, Part XI "Electrical Equipment".

6.10.8 Emergency electrical installations.

6.10.8.1 General.

6.10.8.1.1 General provisions concerning the emergency electrical installations are specified in 9.1, Part XI "Electrical Equipment".

6.10.8.2 Spaces of emergency sources of electrical power.

6.10.8.2.1 The spaces of emergency sources of electrical power and of their transformers (if any), of emergency transitional sources of electrical power, emergency distribution switchboard and distribution board of emergency lighting shall be located in any case above the freeboard deck.

6.10.8.2.2 The arrangement of emergency sources of electrical power and pertinent transformers, if any, of transitional sources of electrical power, emergency distribution board and distribution board of emergency lighting with regard to the main sources of electrical power and pertinent transformers, and with regard to the main distribution board, shall be such that a fire or another emergency in the space of the main source of electrical power, of pertinent transformers, main distribution board or in any machinery space of category A would not hamper the supply, control and distribution of electrical power from the emergency source.

6.10.8.2.3 Spaces containing emergency sources of electrical power, pertinent transformers, transitional sources of electrical power, emergency distribution board and distribution board of emergency lighting shall not, where possible, be adjacent to machinery and boiler spaces or to spaces containing the main source of electrical power, pertinent transformers and main distribution board.

In case of adjacent arrangement, the decks and bulkheads separating these spaces shall be constructed in accordance with the requirements of Part VI "Fire Protection" relating to control stations.

6.10.8.2.4 Emergency distribution board shall be as close as possible to the emergency source of electrical power.

6.10.8.2.5 Where a generator serves as the emergency source of electrical power, the emergency distribution board shall be installed in the same space as the diesel generator except where such an arrangement would adversely affect the distribution board operation.

All starting arrangements, charging facilities and starter accumulator batteries of the emergency unit shall also be installed in this space, provided the requirements of [6.10.12](#) are complied with.

6.10.8.2.6 The emergency diesel generator space shall be provided with heating appliances to ensure the temperature in the space sufficient for starting, without fail, of the emergency generating set and ventilation in accordance with the requirements of 12.5.3, Part VIII "Systems and Piping".

6.10.8.2.7 Where the emergency source of electrical power is an accumulator battery, this battery and the emergency switchboard shall be installed in separate spaces.

The requirements for the battery compartments are given in Section 13, Part XI "Electrical Equipment".

6.10.8.3 Emergency sources of electrical power in cargo ships.

6.10.8.3.1 In cargo ships, the emergency sources of electrical power shall supply the following services:

- .1 emergency lighting for:
 - all corridors, stairways and exits from service spaces;
 - machinery spaces, main generating stations;
 - all control stations, main and emergency switchboards;
 - emergency diesel generator space;
 - wheelhouse;
 - chartroom and radioroom;
 - stowage positions for emergency and fireman's outfit and also positions where manual fire alarms are fitted;
 - steering gear compartments;
 - positions at fire and sprinkler pumps, emergency bilge pump and starting positions of their motors;
 - gyrocompass space;
- .2 navigation lights, lights of "Vessel not under command" signal and other lights required by Part III "Signal Means" of the Rules for the Equipment of Sea-Going Ships;
- .3 internal communication means and general alarm signals;
- .4 radio equipment and navigational equipment according to the requirements of Part IV "Radio Equipment" and Part V "Navigational Equipment" of the Rules for the Equipment of Sea-Going Ships where the emergency source of power is a diesel generator;
- .5 fire detection and alarm systems;
- .6 all signals required under emergency conditions;
- .7 machinery and devices mentioned under 3.2.1.2, 3.4.7, 3.7.3.2.1, Part VI "Fire Protection";
- .8 other systems, the operation of which would be found necessary by the Register to ensure the safety of the ship and the persons on board.

The emergency sources of electrical power shall ensure the supply of services listed above during 6 h in ships of unrestricted service and restricted area of navigation **R1**, and during 3 h in ships of restricted areas of navigation **R2**, **R2-RSN**, **R2-RSN(4,5)**, **R3-RSN** and **R3**.

For ships of less than 300 gross tonnage, the period of 18 h may be changed to 6 h in the case of unrestricted service and restricted area of navigation **R1** and to 3 h in the case of restricted areas of navigation **R2**, **R2-RSN**, **R2-RSN(4,5)**, **R3-RSN** and **R3**.

6.10.8.3.2 The emergency source of electrical power shall ensure, during 3 h, the emergency lighting of muster and embarkation stations for boarding life-saving appliances on deck and overboard according to 2.3.4 and 2.7.7, Part II "Life-Saving Appliances" of the Rules for the Equipment of Sea-Going Ships.

6.10.8.3.3 The supply of steering gear shall be effected from the emergency source of electrical power in accordance with 5.5.6, Part XI "Electrical Equipment".

6.10.8.3.4 Where a generator is used as the emergency source of electrical power, it shall be:

- .1 driven by an internal combustion engine (refer to 2.2.5, Part IX "Machinery");
- .2 automatically started upon failure of the electrical supply from the main source of electrical power monitored at the emergency switchboard busbars and automatically connected to the emergency switchboard, and consumers stipulated under [6.10.8.3.1](#) shall be automatically supplied by the emergency generator. The total time of starting and load take-over by the generator shall not exceed 45 s;

.3 in case the automatic start of emergency unit stipulated by [6.10.8.3.4.2](#) shall not take place within 45 s, an emergency transitional source of electrical power shall be provided, which shall start immediately on failure of the main source of electrical power.

6.10.8.3.5 Where an accumulator battery is used as the emergency source of electrical power, it shall:

.1 operate without recharging with voltage variations across the terminals within 12 % of rated voltage during the whole discharge period, where voltage variations across the terminals of accumulator battery connected to an electronic voltage converter are determined by the permissible range of voltage variation across the terminals of the converter;

.2 be automatically connected to emergency distribution board busbars in case of failure of the main source of electrical power and supply at least the consumers mentioned under [6.10.8.3.7](#) during the time stipulated by [6.10.8.3.1](#) excepting electric drives of watertight doors with their indicators and alarms, which can be supplied during 30 min.

6.10.8.3.6 As transitional emergency source of electrical power stipulated by [6.10.8.3.4.3](#), an accumulator battery shall be used, which shall operate without recharging with voltage variations across the terminals within 12 % of rated voltage during the whole discharge period. Voltage variations across the terminals of accumulator battery connected to an electronic voltage converter are determined by the permissible range of voltage variation across the terminals of the converter, which shall not be above values specified in 2.1.3.1, Part XI "Electrical Equipment".

6.10.8.3.7 The capacity of the battery serving as the transitional source of electrical power shall be sufficient to supply, during 30 min, the following consumers:

.1 lighting and essential navigating lights according to [6.10.8.3.1.1](#), [6.10.8.3.1.2](#) and [6.10.8.3.2](#);

.2 all internal communications and announcing systems required in an emergency;

.3 general alarm system, fire detection and alarm system and warning system on starting a smothering fire-extinguishing system;

.4 daylight signalling lamps, sound signal means (whistles, gongs, etc.);

.5 command broadcast apparatus in accordance with item 11 of Table 2.3.4, Part IV "Radio Equipment" of the Rules for the Equipment of Sea-Going Ships;

.6 closing gear of watertight doors, their position indicators and signals warning of their closure;

.7 ship's security alarm system required by Part IV "Radio Equipment", as well as AIS installation and long-range identification and tracking system equipment, as required by Part V "Navigational Equipment" of the Rules for the Equipment of Sea-Going Ships.

Services listed under [6.10.8.3.7.2 — 6.10.8.3.7.7](#) may not be supplied from the transitional source if they have their own accumulator batteries, by which they are supplied during the required period of time.

6.10.8.4 Distribution of electrical power from emergency sources.

6.10.8.4.1 The requirements for distribution of electrical power from emergency sources are specified in 9.4, Part XI "Electrical Equipment".

6.10.8.5 Starting arrangements for emergency diesel generators.

6.10.8.5.1 The following arrangements may be used as starting arrangements for emergency diesel generators:

.1 electric starter with its own accumulator battery and charging device;

.2 compressed air system with its own independent air receiver;

.3 hydraulic starting system;

.4 manual starting arrangements: starting handle for manual cranking, inertia starters, manually charged hydraulic accumulators or powder charge cartridges.

6.10.8.5.2 Each emergency generating set arranged to be automatically started shall be equipped with a starting device of an approved type with a stored energy capability of at least three consecutive starts. The source of stored energy shall be protected to preclude critical depletion by the automatic starting system, unless a second independent means of starting is provided.

6.10.8.5.3 Where automatic starting of the emergency diesel generator is not required, manual starting is permissible with the use of one of the starting arrangements specified in [6.10.8.5.1.4](#).

When manual starting is not practicable, the starting arrangements shall comply with the requirements of [6.10.8.5.2](#).

6.10.8.5.4 The starting arrangements of the accumulator batteries and the electric drives of the machinery ensuring the functioning of the compressed air or hydraulic systems of the emergency diesel generator starting shall be supplied from the emergency switchboard by separate feeders.

6.10.8.6 Alarm system and protection of emergency diesel generator drives.

6.10.8.6.1 The requirements for alarm system and protection of emergency diesel generator drives are given in 9.6, Part XI "Electrical Equipment".

6.10.8.7 Uninterruptible power systems (UPS).

6.10.8.7.1 The requirements for UPS are given in 9.7, Part XI "Electrical Equipment".

6.10.9 Electrical machines.

6.10.9.1 The electrical machines shall comply with the requirements of Section 10, Part XI "Electrical Equipment".

6.10.10 Transformers.

6.10.10.1 The transformers shall comply with the requirements of Section 11, Part XI "Electrical Equipment".

6.10.11 Power semiconductor units.

6.10.11.1 The power semiconductor units shall comply with the requirements of Section 12, Part XI "Electrical Equipment".

6.10.12 Accumulator batteries.

6.10.12.1 The accumulator batteries shall comply with the requirements of Section 13, Part XI "Electrical Equipment".

6.10.13 Electrical apparatus and accessories.

6.10.13.1 The electrical apparatus and accessories shall comply with the requirements of Section 14, Part XI "Electrical Equipment".

6.10.14 Electrical cooking and heating appliances.

6.10.14.1 The electrical cooking and heating appliances shall comply with the requirements of Section 15, Part XI "Electrical Equipment".

6.10.15 Cables and wires.

6.10.15.1 The cables and wires shall comply with the requirements of Section 16, Part XI "Electrical Equipment".

6.10.16 Electric propulsion plants.

6.10.16.1 The electric propulsion plants shall comply with the requirements of Section 17, Part XI "Electrical Equipment".

6.10.17 Additional requirements for electrical equipment designed for a voltage in excess of 1000 V up to 15 kV.

6.10.17.1 The electrical equipment designed for a voltage in excess of 1000 V up to 15 kV shall comply with the requirements of Section 18, Part XI "Electrical Equipment".

6.10.18 Requirements for electrical equipment proceeding from ship purpose.

6.10.18.1 Oil tankers and oil recovery ships.

6.10.18.1.1 Oil tankers and oil recovery ships shall comply with the requirements specified in 19.2, Part XI "Electrical Equipment".

6.10.18.2 Ships intended for carriage of motor vehicles with fuel in their tanks for their propulsion.

6.10.18.2.1 Ships intended for carriage of motor vehicles with fuel in their tanks shall comply with the requirements specified in 19.3, Part XI "Electrical Equipment".

6.10.18.3 Special purpose ships.

6.10.18.3.1 Special purpose ships shall comply with the requirements specified in 19.4, Part XI "Electrical Equipment".

6.10.18.4 Container ships.

6.10.18.4.1 Container ships shall comply with the requirements specified in 19.5, Part XI "Electrical Equipment".

6.10.18.5 Catamarans.

6.10.18.5.1 Catamarans shall comply with the requirements specified in 19.6, Part XI "Electrical Equipment".

6.10.18.6 Floating cranes and crane ships.

6.10.18.6.1 Floating cranes and crane ships shall comply with the requirements specified in 19.7, Part XI "Electrical Equipment".

6.10.18.7 Berth-connected ships.

6.10.18.7.1 Berth-connected ships shall comply with the requirements specified in 19.9, Part XI "Electrical Equipment".

6.10.18.8 Ships carrying dangerous goods.

6.10.18.8.1 Ships carrying dangerous goods shall comply with the requirements specified in 19.11, Part XI "Electrical Equipment".

6.10.19 Requirements for electrical equipment of refrigerating plants.

6.10.19.1 The electrical equipment of refrigerating plants shall comply with the requirements of Section 20, Part XI "Electrical Equipment".

6.10.20 Spare parts.

6.10.20.1 The requirements for spare parts are specified in Section 21, Part XI "Electrical Equipment".

6.10.21 Special requirements for electrical equipment of ship's electric power system with electrical power distribution for direct current.

6.10.21.1 Special requirements for electrical equipment of ship's electric power system with electrical power distribution for direct current are specified in Section 22, Part XI "Electrical Equipment".

6.10.22 Special requirements for valve-type generator sets.

6.10.22.1 Special requirements for valve-type generator sets are specified in Section 23, Part XI "Electrical Equipment".

6.10.23 Special requirements for composite (hybrid) propulsive systems.

6.10.23.1 Special requirements for composite (hybrid) propulsive systems are specified in Section 24, Part XI "Electrical Equipment".

6.11 AUTOMATION

6.11.1 The requirements for automation equipment are specified in Part XV "Automation".

6.12 MATERIALS AND WELDING

6.12.1 Scope of supervision.

The scope of supervision of materials for ships subject to the requirements of this Part is specified in Parts I "General Regulations for Technical Supervision" and III "Technical Supervision during Manufacture of Materials" of the Rules for Technical Supervision during Construction of Ships and Manufacture of Materials and Products for Ships taking into account the relevant provisions in Part XIII "Materials".

6.12.2 General.

6.12.2.1 The procedures and conditions of testing of materials that are subject to the survey by the Register are set out in Section 2, Part XIII "Materials".

The provisions of Sections 3 to 9, 11, Part XIII "Materials", except for 6.5.1.1.1, 6.5.1.2, shall apply to the ships subject to the requirements of this Part.

6.12.3 Welding.

The provisions of Part XIV "Welding" shall apply to the ships subject to the requirements of this Part.

6.13 LIFE-SAVING APPLIANCES

6.13.1 The provisions of Part II "Life-Saving Appliances" of the Rules for the Equipment of Sea-Going Ships except for Section 3 shall apply to the ships subject to the requirements of this Part.

6.14 RADIO EQUIPMENT

6.14.1 List of radio equipment.

6.14.1.1 The minimum list of radio equipment is determined by the sea areas where the ship is intended to operate:

- A1;
- A1 and A2;
- A1, A2 and A3;
- A1, A2, A3 and A4.

Every ship, except for the ships mentioned in [6.14.1.2](#) and [6.14.1.3](#), unless otherwise stipulated by the Administration of the ship Flag State, according to the navigation areas shall be fitted with the radio equipment in compliance with 2.2.1, Part IV "Radio Equipment" of the Rules for the Equipment of Sea-Going Ships.

6.14.1.2 Every cargo ship of under 300 gross tonnage, non-self-propelled ship with people on board towed or pushed at sea, or intended for the prolonged anchorage outside the port water area and roads, as well as ships not engaged in international voyages while navigating in sea area A1 shall be fitted with the following equipment:

- .1 VHF radio installation;
- .2 float-free COSPAS-SARSAT satellite EPIRB;
- .3 ship's and survival craft search and rescue locating device (SART or AIS-SART);
- .4 two-way VHF radiotelephone apparatus (2 sets).

In addition to the above-said the following radio equipment shall be fitted:

for the ships intended for navigation in sea areas A1 and A2:

MF radio installation;

NAVTEX service receiver or EGC receiver if the ship operates in areas not covered by the international NAVTEX service;

for ships intended for navigation in sea areas A1, A2 and A3 or in sea areas A1, A2, A3 and A4:

MF radio installation;

a recognized mobile satellite service ship earth station and EGC receiver or MF/HF radio installation and maritime safety information receiver;

NAVTEX service receiver, except for the ships continually operated outside the coverage of this service.

6.14.1.3 Every ship intended for navigation inside the port water area on the inner road within the harbour water area (regardless of the established sea area), shall be fitted with the following radio equipment:

- .1 VHF radio installation;
- .2 ship's and survival craft search and rescue locating device (SART or AIS-SART);
- .3 two-way VHF radiotelephone apparatus (1 set).

In addition to the list of equipment as indicated every ship intended for navigation outside the port water area on the outer road within the harbour water area, shall be fitted with a free-floating COSPAS-SARSAT satellite EPIRB.

6.14.1.4 Radio equipment not specified in this section may be accepted for installation on board ships as additional equipment, provided that its operation does not affect the operation of the main radio equipment or impair safety of navigation.

6.14.1.5 Every ship which after completion of construction shall undertake a single voyage to the place of its supplementary outfitting may be exempted from the requirement for installation of the full complement of the statutory radio equipment, if it is capable of transmitting shore-to-ship distress alerts by at least two separate and independent facilities, each using different types of radio communication.

The full complement of the radio equipment shall be approved at the review of the draft passage of the ship.

6.14.2 Sources of power.

6.14.2.1 All radio equipment installed on board shall be supplied from the distribution board of the radio equipment.

6.14.2.2 The distribution board of the radio equipment shall be supplied in accordance with the requirements of Part XI "Electrical Equipment".

6.14.2.3 A reserve source of electrical power shall be provided on every ship to supply radio installation, for the purpose of conducting distress and safety radiocommunications. The requirements for the reserve source of electrical power are specified in 2.3, Part IV "Radio Equipment" of the Rules for the Equipment of Sea-Going Ships.

6.14.3 Maintenance and repair of radio equipment.

6.14.3.1 On ships engaged in voyages in sea area A1, as well as in sea areas A1 and A2, the serviceability shall be ensured by one of the following ways: duplication of equipment, shore-based maintenance and repair or at-sea electronic maintenance and repair capability, or a combination of these.

6.14.3.2 On ships engaged in voyages in sea areas A1, A2 and A3 as well as A1, A2, A3 and A4, the serviceability shall be ensured by using a combination of at least two methods such as duplication of equipment, shore-based maintenance and repair or at-sea electronic maintenance and repair capability.

6.15 NAVIGATIONAL EQUIPMENT

6.15.1 List of navigational equipment.

6.15.1.1 Navigational equipment, appliances and instruments, which shall be installed on board ship or with which the ship shall be supplied, shall be provided depending on the gross tonnage of the ship, area of navigation and ship's purpose in accordance with [Table 6.15.1.1](#) unless the Administration whose flag the ship is flying has decided otherwise to fit these categories of ships with navigational equipment.

Table 6.15.1.1

Nos.	Navigational equipment	<150	≥150	≥300	Remarks
1	Magnetic compass	1	1	1	
2	Spare magnetic compass	–	1	1	
3	Radionavigation system/systems receiver	1	1	1	The radionavigation system used (global navigation satellite system or terrestrial radionavigation system) shall be available for use at all times throughout the intended voyage. The ship's position shall be established by automatic means
4	Radar with electronic plotting aid (EPA)	–	–	1	
5	Transmitting heading device or gyrocompass	–	–	1	Provision shall be made for transmitting heading information for input to radar and AIS
6	Echosounder	–	–	1	
7	Speed and distance measuring device through the water (log)	–	–	1	Shall measure speed and the distance run through the water
8	Automatic identification system (AIS)	–	–	1	Not required in ships not engaged in international voyages
9	Sound reception system	1	1	1	Required in ships with totally enclosed navigation bridge and OMBO ships
10	Equipment of long range identification and tracking system (LRIT system)	–	–	1	Not required in ships not engaged in international voyages. Ships fitted with an automatic identification system and operated exclusively within sea area A1 shall be exempted from the requirement for installation of LRIT system equipment
11	Bridge navigational watch alarm system (BNWAS)	–	1	1	
12	Radar reflector	1	–	–	Not required where the ship's effective echoing area is sufficient to enable detection by radar at 9 GHz and 3 GHz (corresponding to a wave length of 3 and 10 cm, respectively). The provisions for the equipment are set out in Part III "Signal Means" of the Rules for the Equipment of Sea-Going Ships
<p>Note. The ships of river-sea navigation (marks for restricted areas of navigation in the character of classification of a ship are R2-RSN and R3-RSN) engaged on inland waterways voyages shall be fitted with the additional radar meeting the requirements in 5.7.59, Part V "Navigational Equipment" of the Rules for the Equipment of Sea-Going Ships. The additional radar is not required in case the radar ultimately complying with the requirements of 5.7, Part V "Navigational Equipment" of the Rules for the Equipment of Sea-Going Ships is installed on board such ships. The definitions of the areas of navigation are given in 1.2, Part I "General" of the Rules for the Equipment of Sea-Going Ships.</p>					

6.15.1.2 Navigational equipment in excess of that required by this Part may be installed on board ship as additional equipment, provided its arrangement and operation do not interfere with the normal use of required navigational devices and instruments, influence the readings thereof and diminish safety of navigation.

6.15.2 Magnetic compass.

6.15.2.1 Ships of 150 gross tonnage and upwards engaged in international voyages shall be fitted with a class A standard magnetic compass. Ships with gross tonnage less than 150 and not engaged in international voyages may be fitted with a class A or class B magnetic compass (refer to ISO 25862:2009).

6.15.2.2 The readings of the standard magnetic compass shall be readable at the principal steering position.

6.15.2.3 The magnetic compass shall be complete with a bearing device independent of any power source to take bearings over most of the horizon, in all cases in sector 230°, from right ahead to 115° to each side.

6.15.2.4 On ships with gross tonnage less than 150 with no compass bridge, installation of the standard magnetic compass shall be provided as far as practicable and expedient.

6.15.2.5 The spare magnetic compass shall be interchangeable with the standard magnetic compass. Gyrocompass which shall be supplied from the main and emergency source of electrical power as well as from the transitional source of power which may be an accumulator battery may be used as a spare magnetic compass.

6.15.3 Sources of power.

6.15.3.1 All navigational equipment installed on board ship shall be provided with power supply from the switchboard of navigational equipment.

6.15.3.2 The switchboard of navigational equipment shall be supplied in accordance with the requirements in [6.10](#).

6.15.3.3 Radio navigation system receivers used for automatic input into GMDSS radio installations of data concerning ship's position and time when it was fixed shall be also supplied from the reserve source of electrical power required by [6.14.2.3](#).

6.15.4 Spaces and arrangement of equipment.

6.15.4.1 For ships with overall length 55 m and more, the requirements specified in 3.2.3 — 3.2.14, Part V "Navigational Equipment" of the Rules for the Equipment of Sea-Going Ships apply. These requirements are applicable as far as practicable and expedient to ships with overall length less than 55 m.

6.16 SIGNAL MEANS

6.16.1 The relevant provisions of Part III "Signal Means" of the Rules for the Equipment of Sea-Going Ships shall apply to the ships subject to the requirements of this Part depending on the ship's purpose, gross tonnage, ship's length, availability of propelling machinery.

The ships shall be equipped with pyrotechnic signal means in accordance with Table 2.5.1, Part III "Signal Means" of the Rules for the Equipment of Sea-Going Ships depending on the area of navigation.

Russian Maritime Register of Shipping

**Rules for the Classification and Construction of Sea-Going Ships
Part XIX
Additional Requirements for Cargo Ships
of Less Than 500 Gross Tonnage**

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