

**PHILIPPINE SHIP SAFETY
RULES AND REGULATIONS**

(PSSRR)

BOOK II

VOLUME V

TUGBOAT

2018

SUBJECT FOR FINAL REVIEW

DRAFT
24 JANUARY 2019

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CHAPTER I
SCOPE AND COVERAGE

Regulation 1

General

These Rules and Regulations are geared to ensure that all Tugboat of Philippine ownership and/or registry are so designed, constructed, maintained, operated and inspected in accordance with the standards necessary to enhance the safety of life and property at sea and the protection of the marine environment.

Regulation 2

Application

1 Unless expressly provided otherwise, Volume VI, Book II shall apply to tugboat ships the keels of which are laid or which are at a similar stage of construction on or after the effectivity of these Rules and Regulations.

2 For the purpose of these Regulations, the term a similar stage of construction means the stage at which:

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

3 For the purpose of these Regulations:

- .1 the expression ships constructed means ships the keels of which are laid or which are at a similar stage of construction;
- .2 the expression all ships means ships constructed before, on or after the effectivity of this Rules and Regulations;
- .3 Any other ship which is converted to a tugboat ship shall be treated as a tugboat ship constructed on the date on which such a conversion commences.

4 Applicable requirements for existing ships:

Unless expressly provided otherwise, for ships constructed before the effectivity of these Rules and Regulations, the Administration shall ensure that the requirements which are applicable under the Philippine Merchant Marine Rules & Regulations 1997 are complied with.

5 Repairs, alteration, modifications and outfitting.

- .1 All ships which undergo repairs, alterations, modifications and outfitting related thereto shall continue to comply with at least the requirements previously applicable to these ships. Such ships if constructed before the effectivity of these Rules and Regulations shall, as a rule, comply with the requirements for ships constructed on or after that date to at least the same extent as they did before undergoing such repairs, alterations, modifications or outfitting.
- .2 Repairs, alterations and modifications which substantially alter the dimensions of ship or substantially increase a ship service life and outfitting related thereto shall meet the requirements for ships constructed

on or after the effectivity of these Rules and Regulations in so far as the Administration deems reasonable and practicable.

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CHAPTER II

CONSTRUCTION

Regulation 1

General

1 All existing tugboat shall, as a rule, comply with the requirements existing prior to coming into force of these Rules and Regulations. Where no such requirements are applicable, ships shall comply with these Rules and Regulations to the extent the Administration considers to be reasonable or practicable. Existing ships which undergo replacement of equipment or outfitting related thereto shall comply with the requirements specified in this Chapter.

2 All machinery and electrical installations, mechanical and electrical equipment and appliances, boilers and other pressure vessels, associated piping systems, fittings and electrical cables and wiring shall be of a design and construction adequate for the service for which they are intended and shall be so installed and protected as to reduce to a minimum any danger to persons on board, due regard being paid to moving parts, hot surfaces and other hazards. The design shall have regard to materials used in construction, and to purposes for which the equipment is intended, the working conditions and the environmental conditions to which it will be subjected.

Regulation 2

Construction

1 The strength and construction of hull, superstructures, deckhouses, machinery casings, companion ways and any other structure and equipment shall be sufficient to withstand all foreseeable conditions of the intended service. Tugboat built and maintained in conformity with the applicable rules of a classification society or any other body recognized by the Administration may be considered as adequate in this respect.

2 Tugboat shall be fitted with a collision bulkhead in accordance with Regulation 4/2 and with watertight bulkheads bounding the machinery spaces. Such bulkheads shall be extended up to the freeboard deck.

3 Propeller shafts and shafts logs or stern tubes shall not be situated in any space other than machinery spaces containing main propulsion machinery unless they are enclosed in watertight spaces or enclosures inside such spaces acceptable to the Administration. Ships having constraint of space or engaged on sheltered voyages, provided it is demonstrated that any progressive flooding of such space can be easily controlled and that the safety of the ship is not impaired.

4 Stern glands shall be located in spaces which are easily accessible at all times for inspection and maintenance to the satisfaction of the Administration.

Regulation 3

Collision Bulkhead

1 For the purpose of this Regulation freeboard deck, lengths of ship and perpendiculars (forward and aft) have the meanings as defined in Book I.

2 A collision bulkhead shall be fitted which shall be watertight up to the freeboard deck. This bulkhead shall, as far as practicable, be located at a distance from the forward perpendicular of not less than five percent and not more than eight percent of the length of the ship. Where it can be shown to the satisfaction of the Administration that it is impractical for the collision bulkhead to be located at distance from the forward

perpendicular of not more than eight percent of the length of the ship, the Administration may allow relaxation therefrom, subject to the condition that, should the space forward of the bulkhead be flooded, the ship at full load condition will not be submerged to a line drawn at least 76 mm below the upper surface of the bulkhead deck at side.

3 The collision bulkhead may have steps or recesses in it provided that they are within the limits prescribed in paragraph 2. Pipes piercing the collision bulkhead shall be kept to the minimum. Such pipes shall be fitted with suitable valves operable from above the freeboard deck and the valves chest shall be secured at the collision bulkhead inside the forepeak. The Administration may permit the location of such valves on the after side of the collision bulkhead, provided that they are readily accessible under all service conditions and the space in which they are located is not a tugboat space. All such valves shall be of material acceptable to the Administration.

4 Where a long forward superstructure is fitted, the collision bulkhead shall be extended weathertight to the deck immediately above the freeboard deck. The extension shall subject to the requirements of paragraph 3, be located within the limits prescribed in paragraph 2. The part of the deck, if any, between the collision bulkhead and its extension shall be weathertight.

5 The number of openings in the extension of the collision bulkhead above the freeboard deck shall be reduced to the minimum compatible with the design and normal operation of the ship. All such openings shall be capable of being closed weathertight.

6 No doors, manholes, ventilation ducts or access openings are permitted in the collision bulkhead below the freeboard deck.

7 Where a chain locker is located abaft the collision bulkhead or extends into the forepeak tank, it shall be watertight and provided with efficient means of drainage.

8 A chain locker shall not be used for any purpose other than stowage of anchor chain cables.

Regulation 4

Watertight Bulkheads, Decks, Doors, Trunks, etc.

1 These Rules and Regulations shall apply to new tugboat

2 Each weathertight subdivision bulkhead whether transverse or longitudinal shall be constructed in such a manner that it shall be capable of supporting with a proper margin of resistance, the pressure due to the maximum head of water which it might have to sustain in the event of damage to the ship but at least the pressure due to a head of water up to the margin line. The construction of these bulkheads shall be to the satisfaction of the Administration.

3 Steps and recesses in bulkheads shall be watertight and of the same strength as the bulkhead at the place where each occurs.

4 Where frames or beams pass through a watertight deck or bulkhead, such deck or bulkhead shall be made structurally watertight to the satisfaction of the Administration.

5 The number of openings in watertight bulkheads shall be reduced to the minimum compatible with the general arrangements and operational needs of the ship. Openings shall be fitted with watertight closing appliances to the satisfaction of the

Administration. Watertight doors shall be of equivalent strength to the adjacent unpierced structure.

6 Watertight decks, trunks, tunnels, duct keels and ventilators shall be of the same strength as watertight bulkheads at corresponding levels. The means used for making them watertight, and the arrangements adopted for closing openings in them, shall be to the satisfaction of the Administration. Watertight ventilators and trunks shall be carried at least up to the freeboard deck.

7 Testing main compartments by filling them with water is no compulsory. When testing by filling with water is not carried out, a hose test shall be carried out in the most advanced stage of the fitting out of the ship. In any case, a thorough inspection of watertight bulkheads shall be carried out.

8 The forepeak, afterpeak, double bottom tanks (including duct keels), and inner skins shall be tested with water to a head corresponding to the requirements of paragraph 2.

9 Tanks which are designed to hold liquids, and which form part of the subdivision of the ship, shall be tested for tightness with water to a head corresponding to two-third of the depth from the top of keel to the margin line in way of the tanks; provided that in no case shall the test head be less than 0.9 m above the top of the tank.

10 The tests referred to in paragraphs 8 and 9 are for the purpose of ensuring that the subdivision structural arrangements are watertight and are not to be regarded as a test of the fitness of any compartment for the storage of oil fuel or for other special purposes for which a test of a superior character may be required depending on the height to which the liquid has access in the tank or its connections.

11 In case of a ship not having a continuous bulkhead deck, the floodable length at any point may be determined to an assumed continuous margin line which at no point is less than 76 mm below the top of the deck at side to which the bulkheads concerned and the shell are carried watertight.

Regulation 5

Means for Sounding

1 Means for sounding to the satisfaction of the Administration, shall be provided for:

- .1 The bilges of those compartments which are not readily accessible at all times during the voyage; and
- .2 All tanks and cofferdams.

2 Where sounding pipes are fitted, their upper ends shall be extended to a readily position and, where practicable, above the freeboard deck. The opening shall be provide with permanently attached means of closing. Sounding pipes which are not extended above the freeboard deck shall be fitted with automatic self-closing device.

Regulation 6

Anchoring and Mooring Equipment

1 At least two anchors of sufficient weight shall be provided. One of these shall be provided with a chain cable or wire rope of adequate strength and size and windlass, capstan or winch of suitable size for the cable and other anchor handing equipment and arrangements shall be to the satisfaction of the Administration. The Administration may

permit carriage of only one anchor with adequate chain or wire and other arrangements taking into account the size of the ship and its area of operation.

2 Windlass, capstan, winches, fairleads, bollards, mooring bits and other anchoring mooring, towing and hauling equipment shall be:

- .1 properly designed to meet all foreseeable operational loads and conditions;
- .2 correctly seated; and
- .3 effectively secured by stoppers to a part of the ship's structure which is strengthened suitably.

Regulation 7

General Protection Measures against Accidents

1 Hinged covers of manholes and other similar opening shall be protected against accidental closing. In particular, heavy covers on escape hatches shall be equipped with counter weights. Escape doors and covers of escape and access of hatches shall be so constructed as to be capable of being opened from either side of the door or cover.

2 The dimensions of access hatches shall be such that it will allow a person to have a quick and easy escape to a safe place in the event of an emergency. Where practicable, the dimensions of access hatches machinery and accommodations spaces shall be such that they will facilitate expeditious rescue operation.

3 Handrails, grabrails and handholds of sufficient size and strength shall be provided to the satisfaction of the Administration as support for persons when the ship is severely rolling or pitching.

Regulation 8

Requirements of Towing and Pushing Arrangements Provided on Tugs

1 The design of the towing gear shall be such as to minimize the overturning moment due to the lead of the towline. It shall have a positive means of quick release which can be relied upon to function correctly under all operating conditions and released from the position from which towing operations are controlled.

2 Where a towing hook is provided with a quick release mechanism such mechanism shall be controlled, as far as practicable, from the navigating bridge, the after control position, if fitted, and at the hook itself.

3 When a pushed pushing tug and a barge pushed ahead are rigidly connected in a composite unit, the tug-barge coupling system shall be capable of being controlled and powered from the tug. Disassembly shall be capable of being made without causing damage to the tug or the barge.

4 Every tug shall be provided with at least one axe of sufficient size on each side of the ship so as to be readily available for cutting the towline free in an event of an emergency.

5 Sufficient spare equipment to completely remake the towing and mooring arrangements for the tow shall be available on the tug

6 Secondary or emergency towing arrangements shall be fitted on board the barge so as to be easily recoverable by the towing tug in the event of failure of the main towing wire or failure of ancillary equipment.

Regulation 9*Mooring and Towing Arrangements for Barges*

1 The towing and mooring arrangements shall be such as to reduce to a minimum any danger to personnel during towing or mooring operation. Such arrangements shall be suitable for the particular type of barge and of adequate strength.

2 The design and arrangements of fittings or equipment for towing and mooring of barges shall be to the satisfaction of the Administration and shall take into account both normal and emergency conditions.

3 In addition to the provisions of these Rules and Regulations, tugs and barges shall comply with the applicable requirements for the safety of towed ships and other floating objects recommended by the Organization.

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CHAPTER III

MACHINERY INSTALLATIONS

Regulation 1

General

- 1 Means shall be provided to ensure that the machinery can be brought into operation from the dead ship condition without external aid.
- 2 Adequate provisions shall be made to facilitate cleaning, inspection and maintenance of machinery installations including boilers and other pressure vessels.
- 3 Where risk from over speeding of machinery exists, means shall be provided to ensure that the safe speed is not exceeded.
- 4 Where main or auxiliary machinery including pressure vessels or any parts of such machinery are subjected to dangerous overpressure, means shall be provided practicable to protect against such excessive pressure.
- 5 All gearing and every shaft and coupling used for transmission of power to machinery essential for the propulsion and safety of the ship or for the safety of persons on board shall be so designed and constructed that they withstand the maximum working stresses which may be subjected in all service conditions, and due consideration shall be given to the type of engines by which they are driven of which they form apart.
- 6 Main internal combustion propulsion machinery and auxiliary machinery shall be provided with automatic shutoff arrangements in the case of failures such as lubricating oil supply failure, which could lead rapidly to complete breakdown, serious damage or explosion. The Administration may permit provisions for overriding automatic shut-off devices.
- 7 Internal combustion engines of a cylinder diameter of 200 mm or crankcase volume of 0.6m³ and above shall be provided with crankcase explosion relief area. The relief valves shall be arranged or provided with means to ensure that discharge from them is so directed as to minimize the possibility of injury to personnel.

Regulation 2

Machinery Controls

- 1 Main and auxiliary machinery essential for the propulsion and safety of the ship shall be provided with effective means for its operation and control.
- 2 Means shall be provided whereby normal operations of propulsion machinery can be sustained or restored even though one of the essential auxiliaries becomes inoperative. Special consideration shall be given to the malfunctioning of:
 - .1 an electrical power generator which serves as a main source of electrical power;
 - .2 the sources of lubricating systems oil pressure;
 - .3 the fuel oil supply systems for engines;
 - .4 the sources of water pressure;
 - .5 an air compressor and receiver for starting or for control purposes;

- .6 the hydraulic, pneumatic or electrical means for control in main propulsion machinery including controllable pitch propellers;
- 3 The Administration, having regard to overall safety considerations may accept a partial reduction in propulsion capability from normal operation.
- 4 Special consideration shall be given to the design, construction and installation of propulsion machinery system so that any mode of their vibrations shall not cause undue stresses in machinery in its normal operating ranges.

Regulation 3

Remote Control of Propulsion Machinery

1 Where remote control propulsion machinery from the navigating bridge is provided and the machinery spaces are intended to be manned, the following shall apply:

- .1 the speed, direction of thrust and, if applicable, the pitch of the propeller shall be fully controllable from the navigating bridge under all sailing conditions, including maneuvering;
- .2 the remote control shall be performed, for each independent propeller, by a control device so designed and constructed that its operation does not require particular attention to the operational details of the machinery. Where multiple propellers are designed to operate simultaneously, they may be controlled by one control device;
- .3 the main propulsion machinery shall be provided with an emergency stopping device on the navigating bridge which shall be independent of the navigating bridge control system;
- .4 propulsion machinery orders from the navigating bridge shall be indicated in the main machinery control room or at the maneuvering platform as appropriate;
- .5 remote control of the propulsion machinery shall be possible only from one location at a time; at such locations interconnected control positions are permitted. At each location there shall be an indicator showing which location is in control of the propulsion machinery. The transfer of control between the navigating bridge and machinery spaces shall be possible only in the main machinery space or the main machinery control room. This system shall include means to prevent the propelling thrust from altering significantly when transferring control from one location to another;
- .6 it shall be possible to control the propulsion machinery locally, even in the case of failure in any part of the remote control system;
- .7 the design of the remote control system shall be such that in case of its failure an alarm will be given. Unless the Administration considers it impracticable the preset speed and direction of thrust of the propellers shall be maintained until local control is in operation;
- .8 indicators shall be fitted on the navigating bridge for:
 - .1 propeller speed and direction of rotation in the case of fixed pitch propellers;

- .2 propeller speed and pitch position in the case of controllable pitch propellers; an alarm shall be provided and in the machinery space to indicate low starting air pressure or low electrical power which shall be set at a level to permit further main engine starting operation. If the remote control systems of the propulsion machinery is designed for automatic consecutive attempts which fail to produce a start shall be limited in order to produce a start shall be limited in order to safeguard sufficient starting air pressure of adequate electrical power for starting locally. In this context, the recommendations or instructions of the manufacturers for remote controlled starting have to be observed. In case these are not available, an organization, recognized by the Administration, has to conduct tests and shall issue a certification stipulating the capacity (number of starts) of the available air pressure or electrical supply.

2 In all ships where the main propulsion and associated machinery, including main electrical supply, are provided with various degrees of automatic or remote control and are under continuous manual supervision from a control room, the arrangements and controls shall be so designed, equipped and installed that the machinery operation will be as safe and effective as if it were under direct supervision. Particular consideration shall be given to protect such spaces against fire and flooding.

Regulation 4

Periodically Unattended Machinery Spaces

- 1 Ships having periodically unattended machinery spaces shall, as far as practicable and reasonable in the opinion of the Administration, comply with the applicable requirements of SOLAS'74, as amended for such machinery spaces.
- 2 Where alternative arrangements are provided the Administration shall ensure that:
 - .1 the safety of the ship in all conditions, including maneuvering, is equivalent to that of a ship having manned machinery spaces;
 - .2 documentary evidence indicating that such arrangements are satisfactory is provided.

Regulation 5

Air Pressure Systems

- 1 In every ship means shall be provided to prevent overpressure in any part of compressed air systems and wherever water jackets or casings of air compressors and coolers might be subjected to dangerous overpressure due to leakage into them from air pressure parts. Suitable pressure relief arrangements shall be provided for all systems.
- 2 The main starting air arrangements for main propulsion internal combustion engines shall be adequately protected against the effects of backfiring and internal explosion in the starting pipes.
- 3 All discharge pipes from starting air compressors shall lead directly to the starting air receivers, and all starting pipes from the air receivers to main or auxiliary engines shall be entirely separate from the compressor discharge pipe system.

4 Provision shall be made to reduce to a minimum the entry of oil into the air pressure systems and to drain these systems.

Regulation 6

Ventilation Systems in Machinery Spaces

1 Machinery spaces of category A shall be adequately ventilated so as to ensure that when machinery or boilers therein are operating at full power in all weather conditions including heavy weather, an adequate supply of air is maintained to the spaces for the safety and comfort of personnel and the operation of the machinery. Any other machinery space shall be adequately ventilated appropriate for the purpose of that machinery space.

2 In addition to complying with the requirements of paragraph 1, the ventilation of machinery spaces shall also be sufficient under all normal conditions to prevent accumulation of oil vapor.

Regulation 7

Protection against Noise

Measures shall be taken to reduce machinery noise in machinery spaces to acceptable levels as determined by the Administration. If this noise cannot be sufficiently reduced, the source of excessive noise shall be suitably insulated or isolated or a refuge from noise shall be provided if the space is required to be manned. Ear protectors shall be provided for personnel required to enter such spaces, if necessary. In case of ear protectors being applied, it must be made sure by appropriate optical means, then an alarm will be attended to by the person in charge.

Regulation 8

Means of Going Astern

1 Sufficient for going astern shall be provided to secure proper control of the ship in all normal circumstances.

2 The ability of the machinery to reverse the direction of thrust of the propeller in sufficient time and so to bring the ship to rest within a reasonable distance from maximum ahead service speed shall be demonstrated and recorded.

3 The stopping times, ship headings and distances recorded on trials, together with the results of trial to determine the ability of ships having multiple propellers to navigate and maneuver with one or more propellers inoperative shall be available on board for the use of the master or designated personnel.

4 Where the ship is provided with supplementary means for maneuvering or stopping, the effectiveness of such means shall be demonstrated and recorded to in paragraphs 2 and 3.

Regulation 9

Steering Gear

1 Unless expressly provided otherwise, every ship shall be provided with a main steering gear and subject to the provisions of paragraph 4, with an auxiliary means of steering the ship in the event of failure of the steering gear.

2 The main steering gear shall be of adequate strength and capable of steering the ship at maximum ahead service speed. The main steering gear and rudder stock shall be so designed that they will not be damaged at maximum astern speed.

3 The auxiliary means of steering shall be adequate strength and capable of steering the ship at navigable speed and of being brought speedily into action in an emergency.

4 Where the power-operated main and auxiliary steering gear units are provided, the main steering gear shall be capable of putting the rudder over from 35° on one side to 35° on the other side with the ship at its deepest seagoing draught and running ahead at maximum ahead service speed and, under the same conditions, from 35° on either side to 30° on the other side is not more than 28 seconds;

5 The main steering power failure unit shall be arranged to restart either by manual or automatic means when power

6 In the event of a power failure to any one of the steering gear power units, an audible and a visual alarm shall be given on the navigating bridge.

7 The angular position of the rudder, if the main steering gear is power-operated, shall be indicated on the navigating bridge. The rudder angle indicator shall be independent of the steering gear control system.

8 Where a non-conventional rudder is installed, the Administration shall give special consideration to the steering system, so as to ensure that an acceptable degree of reliability and effectiveness which is based on the provisions of these Rules and Regulations is provided.

9 A means of communication shall be provided, where necessary, between the navigating bridge and the steering gear compartment.

Regulation 10

Communication between Navigating Bridge and Machinery Spaces

1 Ships shall be provided with at least two independent means for communicating orders between navigating bridge and the machinery space or control room from which the main propulsion engines are normally controlled. One of the means shall be an engine-room telegraph. The arrangement of these means shall be to the satisfaction of the Administration.

2 The engine-room telegraph referred to in paragraph 1 may be dispensed with if the main propulsion engine is directly controlled from the navigating bridge under normal operating conditions.

3 In lieu of meeting the requirements of paragraph 1, ships of less than 24 m in length may be provided with only one means of communication referred to in paragraph 1, if the Administration is satisfied that, due to close proximity of the navigating bridge and the position of local control of the main propulsion machinery, two means of communication are not necessary.

4 Appropriate means of communication shall be provided to any position (other than navigating bridge) from which the engines may be controlled.

Regulation 11*Engineer's Alarm*

An engineer's alarm shall be provided to be operated from the engine control room or at the maneuvering platform as appropriate and shall be clearly audible in the engineer's accommodation. The Administration may dispense with this requirement if satisfied that, due to particular manning patterns adopted in the engine room or close proximity of the engine control room or the maneuvering platform and the engineer's accommodation, no engineer's alarm is necessary.

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CHAPTER IV

ELECTRICAL INSTALLATIONS

Regulation 1

General Electrical Requirements

- 1 Electrical installations on tugboat shall comply with the requirements of this Regulation, except as provided otherwise in Regulation IV/5.
- 2 Electrical installations shall be such that:
 - .1 all electrical auxiliary services necessary for maintaining the ship in normal operational and habitable conditions will be ensured without recourse to the emergency source of electrical power;
 - .2 electrical services essential for safety will be ensured under various emergency conditions; and
 - .3 the safety of the crew and ship from electrical hazards will be ensured.

Regulation 2

Safety Precautions

- 1 Exposed metal parts of electrical machines or equipment which are not intended to be live but which are liable under fault conditions to become live shall be earthed unless the machines or equipment are:
 - .1 supplied at a voltage not exceeding 55 V direct current or 55 V, root mean square between conductors. Auto-transformers shall not be used for the purpose of achieving this voltage; or
 - .2 supplied at a voltage not exceeding 250 V by safely isolating transformers supplying only one consuming device; or
 - .3 constructed in accordance with the principle of double insulation.
- 2 The Administration may require additional precautions for portable electrical equipment for use in confined or exceptionally damp spaces where particular risks due to conductivity may exist.
- 3 All electrical apparatus shall be constructed and so installed as not to cause injury when handled or touched in the normal manner.
- 4 Main and emergency switchboards shall be so arranged as to give easy access may be needed to apparatus and equipment, without danger to personnel. The sides and the rear and, where necessary, the front of switchboards shall be suitably guarded. Exposed live parts having voltages to earth exceeding a voltage to be specified by the Administration shall not be installed on the front of such switchboards. Where necessary, non-conducting mats or gratings shall be provided at the front and rear of the switchboard.
- 5 The hull return system of distribution shall not be used for any purpose in a tugboat
- 6 The requirement of paragraph 5 does not preclude under conditions approved by the Administration the use of:
 - .1 impressed current cathodic protective systems;
 - .2 limited and locally earthed systems (e.g. engine starting system);

- .3 limited and locally earthed welding systems; where the Administration is satisfied that the equipotential of the structure is assured in a satisfactory manner, welding systems with hull return may be installed without restriction imposed by paragraph 5; or
- .4 insulation level monitoring devices, provided the circulation current does not exceed 30mA under the most unfavorable conditions.

7 Where the hull return system is used, all final sub-circuits, i.e. all circuits fitted after the last protective device, shall be two-wire and special precautions shall be taken to the satisfaction of the Administration.

8 Earthed distribution system shall not be used in a tugboat. The Administration may permit the use of the following earthed system:

- .1 power supplied, control circuits and instrumentation circuits where technical or safety reasons preclude the use of a system with no connection to earth, provided the current in the hull is limited to not more than 5 A in both the normal fault conditions;
- .2 limited and locally earthed systems, provided that any possible resulting current does not flow directly through any of the dangerous spaces; or
- .3 alternating current power network of 1000 V root mean square (line to line) and over, provided that any possible resulting current does not flow directly through any of the dangerous spaces.

9 When a distribution system, whether primary or secondary, for power, heating or lighting, with no connection to earth is used, a device capable of continuously monitoring the insulation level to earth and of giving an audible or visual indication of abnormally low insulation values shall be provided.

10 Except as permitted by the Administration in exceptional circumstances, all metal sheaths and armor of cables shall be electrically continuous and shall be earthed.

11 All electric cables and wiring external to equipment shall be at least of a flame-retardant type and shall be so installed as not to impair their original flame-retarding properties. Where necessary for particular applications the Administrations may permit the use of special types of cables such as radio frequency cables, which do not comply with the foregoing.

12 Cables and wiring serving essential or emergency power, lighting, internal communications or signals shall so far as practicable be routed clear of galleys, laundries, machinery spaces of category A and their casings and other high fire risk areas. Cables connecting fire pumps to the emergency switchboard shall be of a fire-resistant type where they pass through high fire risk areas. Where practicable all such cables shall be run in such a manner as to preclude their being rendered unserviceable by heating of the bulkheads that may be caused by a fire in an adjacent space.

13 Where cables which are installed in hazardous areas introduce the risk of fire or explosion in the event of an electrical fault in such areas, special precautions against such risk shall be taken to the satisfaction of the Administration.

14 Cables and wiring shall be installed and supported in such a manner as to avoid chafing or other damage.

15 Terminations and joints in all conductors shall be so made as to retain the original electrical, mechanical, flame-retarding and, where necessary, fire-resisting properties of the cables.

16 Each separate circuit shall be protected against short circuit and against overload, except the circuit for the steering gear and where the Administration may exceptionally otherwise permit. The rating or appropriate setting of the overload protective device for each circuit shall be permanently indicated at the location of the protective device.

17 Lighting fittings shall be so arranged as to prevent temperatures rises which could damage the cables and wiring, and to prevent surrounding material from becoming excessively hot.

18 All lighting and power circuits terminating in a bunker or tugboat space shall be provided with a multiple-pole switch outside the space for disconnecting such circuits.

19 Accumulator batteries shall be suitably housed, and compartments used primarily for their accommodation shall be properly constructed and efficiently ventilated.

20 Electrical or other equipment which may constitute a source of ignition of flammable vapors shall not be permitted in those compartments except as permitted in paragraph 22.

21 Accumulator batteries except for batteries used in self-contained battery operated lights shall not be located in sleeping quarters except where hermetically sealed to the satisfaction of the Administration.

22 No electrical equipment shall be installed in any space where flammable mixtures are liable to collect or in compartments assigned principally to accumulator batteries, in paint lockers, acetylene stores or similar spaces, unless the Administration is satisfied that such equipment is:

- .1 essentials for operational purposes;
- .2 of a type which will not ignite the mixture concerned;
- .3 appropriate to the space concerned; and
- .4 appropriately certified for safe usage in the dusts, vapors or gases likely to be encountered.

23 Lighting conductors shall be fitted to all masts or topmasts constructed of non-conducting materials.

Regulation 3

Main Source of Electrical Power

1 A main source of electrical power of sufficient capacity to supply those services mentioned in Regulation IV/1 paragraph 2.1 shall be provided. This main source of electrical power shall consist of at least two generating sets (one could be accepted if driven by the main propulsion engine) and shall comply with the following:

- .1 the capacity of these generating sets shall be such that in the event of any one generating set being stopped it will be possible to supply those services necessary to provide normal operational conditions of propulsion and safety;

- .2 the arrangements of the ship's main source of electrical power shall be such that the services referred to in Regulation IV/1 paragraph 2.1 can be maintained regardless of the speed and direction of rotation of the propulsion machinery or shafting;
- .3 in addition, the generating sets can be such as to ensure that with any one generator or its primary source of power out of operation, the remaining generating sets shall be capable of providing the electrical services necessary to start the main propulsion plant from a dead ship condition. The emergency source of electrical power may be used for such electrical service if its capability is sufficient to provide at the same time those services required to be supplied by Regulation IV/4 paragraph 5.

2 A main electrical lighting system which shall provide illumination throughout those parts of the ship normally accessible to and used by crew shall be supplied from the main source of electrical power.

3 The arrangement of the main electric lighting system shall be such that a fire or other casualty in spaces containing the main source of electrical power, associated transforming equipment, if any, and the main switchboard will not render the emergency electric lighting system required by Regulation IV/4 paragraph 5 inoperative.

4 The arrangements of the emergency electrical lighting system shall be such that a fire or other casualty in spaces containing the emergency source of electrical power, associated transforming equipment, if any, and the emergency switchboard will not render the main electric lighting system required by this Regulation inoperative.

Regulation 4

Emergency Source of Electrical Power

- 1 A self-contained emergency source of electrical power shall be provided.
- 2 The emergency source of electrical power, associated transforming equipment, if any, and the emergency switchboard shall be located above the uppermost continuous deck and shall be readily accessible from the open deck. They shall not be located forward of the collision bulkhead, except where permitted by the Administration in exceptional circumstances.
- 3 The location of the emergency source of electrical power, associated transforming equipment, if any, the emergency switchboard in relation to the main source of electrical power, associated transforming equipment, if any, and the main switchboard shall be such as to ensure, to the satisfaction of the Administration, that a fire or other casualty in the space containing the main source of equipment, if any, and the main switchboard, or in any machinery space category A will not interfere with the supply, control and distribution of emergency electrical power.
- 4 Provided that suitable measures are taken for safeguarding independent emergency operation under all circumstances, the emergency generator may be used, exceptionally, and for short periods, to supply non-emergency circuits.
- 5 The electrical power available shall be sufficient to supply all those services that are essential for safety in an emergency, due regard being paid to such services as may have to be operated simultaneously. The emergency source of electrical power shall be capable, having regard to starting currents and the transitory nature of certain

loads, of supplying simultaneously at least the following services for the periods specified hereinafter, if they depend upon an electrical source for their operation:

- .1 For a period of three hours, emergency lighting at every muster and embarkation station and over the sides in the way of such stations;
- .2 For a period of 12 hours, emergency lighting;
 - .1 in all service and accommodation alleys, stairways and exits;
 - .2 in spaces containing propulsion machinery used for navigation, if any and main source of electrical power and their control positions;
 - .3 in all control stations, machinery control rooms and at each main and emergency switchboard;
 - .4 at all stowage positions for firemen's outfits;
 - .5 at the steering gear, if any; and
 - .6 at the emergency fire pump and its control position;
- .3 For a period of 12 hours, the navigation lights and other lights required by COLREG;
- .4 For a period of 12 hours:
 - .1 all communication equipment required for transmission of distress and safety messages, including ship's whistle and all internal communication equipment as required in an emergency;
 - .2 the fire detection and fire alarm systems; and
 - .3 operation of emergency fire pumps, if electrically operated.

6 In a ship regularly engaged in voyages of short duration, the Administration, if satisfied that an adequate standard of safety would be attained, may accept a lesser period than the 12-hour period specified in sub-paragraphs 5.2 to 5.4 of this Regulation but not less than three hours.

7 The emergency source of electrical power may be either:

- .1 an accumulator battery capable of carrying the emergency electrical load without recharging or excessive voltage drop; or
- .2 a generator driven by a suitable prime mover with an independent fuel supply and starting to the satisfaction of the Administration.

8 Where the emergency source of electrical power is an accumulator battery, it shall be capable of automatically connecting to the emergency switchboard in the event of failure of the main source of electrical power. Where an automatic connection to the emergency switchboard is not practical, manual connection may be acceptable to the satisfaction of the Administration.

9 Where the emergency source of power is a generator, it shall be automatically started and connected to the emergency switchboard within 45 seconds of the loss of the main source of electrical power. It shall be driven by a prime mover with an independent fuel supply having a flash point of not less than 43°C. Automatic starting of the emergency generator will not be required where a transitional source of power to the satisfaction of the Administration is provided.

Regulation 5*Special Considerations*

The Administration may waive any of the requirements specified in this chapter taking into account the requirements of electrical power for operating the propulsion machinery and the size of the ship.

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24 JANUARY 2019

CHAPTER V

FIRE PROTECTION, FIRE DETECTION AND FIRE EXTINCTION

Regulation 1

Fire Pumps

- 1 Every tugboat shall be provided with at least one power-operated fire pump.
- 2 Where two main fire pumps are provided, the capacity of one of the two shall not be less than 40 percent of their total capacity. One of which may be driven by the main engine.
- 3 In Tugboat of 150 gt and above, such pump shall be operated by means other than the propulsion machinery.
- 4 Sanitary, bilge, ballast or general service pumps may be accepted as fire pumps, provided that they are not normally used for pumping oil; Provided, if they are subject to occasional duty for the transfer or pumping of oil fuel, suitable change-over arrangements are fitted.
- 5 Location and arrangement of pumps required for the provision of water for other fire extinguishing systems required by this Regulation, their sources of power and their controls shall be installed outside the space or spaces protected by such systems and shall be so arranged that a fire in the space or spaces protected will not put any such system out of action.
- 6 Location and arrangements of pumps shall take into account:
 - .1 if a fire in any one compartment can put all the fire pumps out of action, there shall be an alternate means to extinguish the fire;
 - .2 an emergency fire pump shall be independently driven self-contained pump either with its own prime mover and fuel supply fitted in an accessible position outside the compartment which may be an emergency generator of sufficient capacity and positioned in a safe place outside the engine room and above the freeboard deck;
 - .3 the emergency fire pump, sea suction and other valves shall be operable from outside the compartment containing the main fire pump and in a position not likely to be cut off in that compartment;
 - .4 the capacity of the emergency pump shall not be less than 40 percent of the total capacity of the fire pumps required by this Regulation.

Regulation 2

Fire Mains, Water Service Pipes and Fire Hydrants

- 1 A fire main shall be provided where more than one hydrant is required to provide a jet of water under the provisions of paragraph 3 of this Regulation.
- 2 The diameter of the fire main and water service pipes shall be sufficient for the effective distribution of the maximum required discharge from the fire pump or where more than one pump is provided the discharge from at least two pumps operated simultaneously. Such diameter need only be sufficient for a discharge of 100m³/h with minimum pressure as indicated in paragraph 3.
- 3 Where only hydrant is required, the minimum pressure at the hydrant shall be 0.21 N/mm² (2.1kg/cm²). Where more than one hydrant is required, the main fire pump

shall be capable, when discharging the maximum amount through adjacent fire hydrants with nozzles of the sizes specified in Regulation VI/4, of maintaining at all hydrants a minimum pressure of 0.21 N/mm² (2.1 kg/cm²). In any case, the maximum pressure at any hydrant shall not exceed that at which the effective control of fire hose can be demonstrated.

4 In every tugboat, the number and position of hydrants shall be such that at least one jet of water from a single length of hose can reach any part of the Tugboat normally accessible to the crew while the tugboat is being navigated and any part of any tugboat space when empty.

5 Pipes and hydrants shall be arranged as follows:

- .1 the pipes and hydrants shall be so placed that the fire hoses may be easily coupled to them. Material readily rendered ineffective by heat shall not be used for fire mains and hydrants unless adequately protected.
- .2 a valve shall be fitted to serve each fire hose so that any fire hose may be removed while the fire pumps are at work;
- .3 fire mains shall have no connections other than those required for firefighting except for the purpose of washing the deck and anchor chains or operating the chain locker bilge ejector.

Regulation 3

Fire Hoses and Nozzles

1 Every tugboat shall be provided with a minimum of two fire hoses.

2 Where hydrants are required in any machinery spaces, each hydrant shall be provided with a fire hose. Where practicable, fire hoses shall be connected to the hydrants in such machinery spaces.

3 Notwithstanding the requirement of paragraph 1 and 2, the Administration may increase the required number of fire hoses so as to ensure that hoses in sufficient number are available and accessible at all times, having regard to the nature of trade in which tugboat is engaged.

4 A single length of fire hose shall not exceed 20 m.

5 Fire hoses shall be oil-resistant and of approved material.

6 Fire hoses of unlined canvas shall have a diameter of not less than 64 mm. Lined hoses of at least 45 mm internal diameter having a throughput comparable to that of 64 mm internal diameter unlined canvas at corresponding pressure may be used. Fire hoses of an internal diameter not less than 32 mm may be accepted in accommodation spaces of all tugboat.

7 Unless one fire hose and nozzle is provided for each hydrant, there shall be complete interchangeability of fire hose coupling or nozzles.

8 Fire hoses provided in compliance with this Regulation shall not use/be used for any purpose other than firefighting or testing of the fire appliances.

9 Every fire hose shall be provided with an approved nozzle and the necessary couplings.

10 Nozzles shall comply with the following requirements:

- .1 all nozzles shall be of dual purpose type and type-approved by the Administration;
- .2 nozzle sizes shall be 12 mm, 16 mm, 19 mm or as near thereto as possible. Larger diameter nozzles may be permitted at the discretion of the Administration.
- .3 for accommodation and services spaces, a nozzle size greater than 12 mm need not be used;
- .4 for machinery spaces and exterior locations, the nozzle size shall be such as to obtain the maximum discharge possible from the required jets at the pressure specified in Regulation V/2 paragraph 3 from the smallest pump, provided that a nozzle size greater than 19 mm need not be used.

Regulation 4

Portable Fire Extinguishers General Requirements

- 1 All fire extinguishers shall be of approved types and designs, as herein provided.
- 2 The capacity of required portable fluid extinguishers shall be not more than 13.5 liters and not less than nine liters.
- 3 The capacity of the required portable carbon dioxide extinguishers, the portable mechanical foam extinguishers and the portable dry powder fire extinguishers shall be equivalent at least equivalent to that of a nine liters fluid extinguisher.
- 4 All required portable fire extinguishers shall not exceed 23 kg in weight in a fully charged condition and shall be at least as portable as 13.5 liters fluid fire extinguisher.
- 5 Spare charges shall be provided for every required portable fire extinguisher provided in compliance with these Rules and Regulation, except that for each such fire extinguisher which is of a type that cannot readily be recharged while the tugboat is at sea, an additional fire extinguisher of the same type, or its equivalent, shall be provided in lieu of a spare charge.
- 6 Fire extinguishers containing an extinguishing medium which in the opinion of the Administration, either by itself or under expected conditions of use gives off toxic gasses in such quantities as to endanger persons shall not be permitted.
- 7 Fire extinguisher shall be periodically examined and subjected to such tests as follows:
 - .1 The condition of the charges of extinguishers other than carbon dioxide extinguishers shall be checked annually. If upon checking there is any indication of deterioration, the charges shall be renewed and, in any case, at least every five years. A record of the annual check is to be fixed to each fire extinguisher;
 - .2 Carbon dioxide extinguisher and gas propellant cartridges of other extinguishers shall be examined externally for corrosion and for loss of content annually. They shall be recharged or renewed if the loss of gas by weight exceeds 10 percent of the original charge as stamped on the bottles or cartridge, or have excessively corroded externally;
 - .3 All portable fire extinguishers, other than carbon dioxide extinguishers, shall be tested by hydraulic pressure once every five years and the date of such test legibly marked on the extinguisher;

- .4 New carbon dioxide extinguishers which do not require to be recharged, shall be tested by hydraulic pressure 20 years after manufacture and thereafter every five years;
 - .5 Carbon dioxide extinguishers which require recharging shall be pressure-tested before being recharged if five years have elapsed since the last hydraulic test was carried out.
- 8 One of the portable fire extinguishers intended for use in any space shall be stowed near the entrance to that space.
- 9 Halon fire extinguishers shall not be used.
- 10 Each fire extinguisher shall, as far as it is practicable, be clearly marked on the front with a label of durable material containing the following minimum information in English;
- .1 name of manufacturer, year of manufacture and serial number;
 - .2 type of fire for which the extinguisher is suitable;
 - .3 type and quantity of extinguishing medium;
 - .4 approval details;
 - .5 pictorial and legible operating instructions;
 - .6 intervals for recharging;
 - .7 temperature range over which the extinguisher will operate satisfactorily;
 - .8 test pressure; and
 - .9 date last tested.

Regulation 5

Portable Fire Extinguishers

1 Every tugboat shall be provided with sufficient number of approved portable fire extinguishers to ensure that at least one extinguisher will be readily available for use in any part of accommodation spaces, service spaces, and control stations.

2 The number of such fire extinguishers shall be as follows;

Length of Tugboat	No. of Extinguisher/ fire buckets
Not over 10 m	2/3
Over 10 m but not over 15 m	3/4
Over 15 m but not over 24 m	5/5
Over 24 m	*/6

* The Tugboat's approved fire control plan shall be the basis in determining the minimum number of portable fire extinguishers required.

3 In every tugboat, where, in the opinion of the Administration, electrical installations fitted in accommodation, service and control stations constitute hazard of fire or explosion, additional fire extinguishers suitable for extinguishing electrical fires shall be provided.

Regulation 6

Fire Extinguishing Systems in Machinery Spaces

1 Machinery spaces containing internal combustion machinery having a total power output of 750 kW and shall be provided with at least one portable extinguisher suitable for extinguishing oil fires for each 750 kW of engine power output or part thereof, but the total number of such fire extinguishers so supplied shall not be less than two and need not exceed 45 liters.

2 Machinery spaces containing internal combustion type machinery having a total power output of less than 750 kW which do not comply with the requirement of paragraph 1, shall at least be provided with:

- .1 at least one portable fire extinguisher suitable for extinguishing oil fires for each 75 kW or part thereof of such machinery, but the total number of such extinguishers so supplied shall not be less than two and need not exceed or
- .2 such other arrangements as the Administration considers adequate.

3 Machinery spaces containing electrical installations shall be provided with one or more fire extinguishers suitable for extinguishing electrical fire as deemed necessary by the Administration having regard to the fire hazards of electrical origin. One or more of the fire extinguishers required by this Regulation may be included in the fire extinguishers required by this paragraph.

4 Other than those prescribed in paragraphs 1-3, and where a fire hazard exists in any machinery there shall be provided in, or adjacent to that space, a number of approved portable fire extinguishers or other means of fire extinction to the satisfaction of the Administration.

5 Where tugboat are fitted with auxiliary oil-fired boilers, a receptacle shall be provided in each firing space of every such tugboat which shall contain at least 0.28 m³ of sand or other dry material suitable for quenching oil fires. Scoops shall be provided for distributing the contents of the receptacle.

Regulation 7

Fireman's Axe

Every tugboat shall be provided with at least one fireman's axe in an accessible location outside the machinery, accommodation and service spaces.

Regulation 8

Fire Control Plan

1 Tugboat having machinery spaces of Internal Combustion Engine (Category A), shall be provided a permanently exhibited fire control plan or equivalent to the satisfaction of the Administration,

2 In all such cases, fire control plan shall be kept up-to-date. Description in such plan shall be in English.

3 In addition, instructions concerning the maintenance and operation of all the equipment and installations on board for the fighting and containment of fire shall be kept under one cover, readily available in an accessible position.

Regulation 9

Fire Buckets

- 1 Tugboat shall be provided with fire buckets as follows:
 - .1 at least three fire buckets shall be provided of a non-flammable material. They shall be painted red, clearly marked with the word "FIRE" and provided with lanyard of sufficient length, having regard to the size of the tugboat;
 - .2 the capacity of each fire buckets referred to in this part shall be at least nine liters;
 - .3 fire buckets provided in compliance with this Regulation shall not be used for any other purpose than extinguishing fire;
 - .4 where the provision of fire extinguishing systems is considered to be impracticable, the Administration may accept alternate arrangements.

Regulation 10

Acceptance of Substitutes

Where in this Regulation, a type of appliance, apparatus, extinguishing medium or arrangement is specified, any other type of appliance may be allowed provided the Administration using their professional judgment, is satisfied that it is not less efficient.

DRAFT
24 JANUARY 2010

CHAPTER VI

LIFE-SAVING APPLIANCES

Regulation 1

Application

1 Life-saving appliances on tugboat shall be in compliance with the administration standards as applicable to the type of operation.

2 Existing survival crafts and their launching appliances shall as far as practicable provide for the tugboat's complement capacity on each side.

3 Tugboat shall comply with the requirements of regulations relating to the following to the extent prescribed therein within two years of the coming into force of these Rules and Regulation:

- .1 lifejackets;
- .2 lifebuoys;
- .3 liferafts and hydrostatic release units;
- .4 muster and abandon ship drill training

4 The Administration, in consideration of the sheltered nature and conditions of the voyage are such as to render the application of any specific requirements of this Regulation unreasonable or unnecessary, may approve alternative specifications that are considered equally effective under the circumstances.

Regulation 2

Exemptions

The Administration may, if it considers that the sheltered nature and conditions of the voyage are such as to render the application of any specific requirements of this chapter unreasonable or unnecessary, exempt from those requirements individual ships or classes of ships which, in the course of their voyage, do not proceed more than 20 miles from the nearest land.

Regulation 3

Training and Abandon Ship Drills

1 Every crew member shall be trained in launching and maneuvering life-saving appliances

2 The method and instructions for use of life-saving appliances and arrangements shall be exhibited at muster stations and common crew areas.

3 Muster stations and embarkation stations for lifeboats shall be provided with lighting supplied by the emergency source of power.

4 Every crew member shall participate in at least one abandon ship drill and one fire drill every month. Each drill shall be the occasion of a training session on the use of the corresponding equipment.

5 The conduct of the above drills and corresponding training shall be recorded in an official logbook

Regulation 4

Operational Readiness, Maintenance and Inspections

1 Before a tugboat leaves port and at all times during the voyage, shall be operational and manned, all life-saving appliances shall be in working order and ready for immediate use.

2 Instructions for on board maintenance of life-saving appliances shall be easily understood and illustrated where possible.

3 The following tests and inspections shall be carried out:

- .1 all survival craft, rescue boats and launching appliances shall be visually inspected to ensure that they are ready for use;
- .2 the general emergency alarm system shall be tested.

4 Inspection of the life-saving appliances, including lifeboat equipment, shall be carried out monthly using a checklist to ensure that such equipment is complete and in good order. A report of the inspection shall be entered in the log-book.

5 Hydrostatic release units shall be serviced at intervals not exceeding 12 months at an approved servicing station.

Regulation 5

Communications

1 Each tugboat shall carry:

- .1 at least two (2) two-way VHF radiotelephone apparatus;
- .2 an emergency means comprising either fixed or portable equipment or both for two-way communications between emergency control stations, muster and embarkation stations and strategic positions on board;
- .3 a general emergency alarm system for summoning the crew to muster stations capable of sounding a signal consisting of seven or more short blasts followed by a long blast on the Tugboat whistle or siren which shall be powered from the Tugboat/Dredge main or the emergency power. The system shall be operated from the Tugboat bridge and be audible throughout all the accommodation and normal crew spaces.

Regulation 6

Minimum Requirements of Life-Saving Appliances and Equipment

1 Tugboat engaged in open sea shall carry:

- .1 Survival Craft adequate for the total number of persons the ship is authorized to carry, as follows:
 - .1 Lifeboat or combination of liferaft, or
 - .2 Inflatable or Rigid Type or Equivalent Approved-Type liferaft:
- .2 Lifebuoys:
 - .1 at least two (2) lifebuoys;
 - .2 50% of the required lifebuoys, and in no case not less than one (1), shall be fitted with manually activated smoke signal as well as a buoyant line of at least 25 meters in length.
- .3 Lifejackets:

- .1 at least one (1) approved-type lifejacket for each and every person authorized on board.
 - .2 In addition to the requirement above, sufficient number of lifejackets of not less than 25% of the total number of persons on board for personnel on watch at work station shall be provided.
 - .4 Distress Flares:
 - .1 at least two (2) rocket parachute flares;
- 2 Tugboat engaged in Coastal waters shall carry:
- .1 Survival Craft adequate to cover the total number of persons the ship is authorized to carry, as follows:
 - .1 Lifeboat or combination of liferaft or
 - .2 Liferaft (inflatable/Rigid type or Equivalent approved-type)
 - .2 Lifebuoys:
 - .1 at least two (2) lifebuoys;
 - .2 50% of the required lifebuoys, and in no case at least one (1), shall be fitted with manually activated smoke signal as well as a buoyant line of at least 25 meters in length.
 - .3 Lifejackets:
 - .1 at least one (1) approved – type lifejacket for each and every person authorized on board,
 - .2 in addition to the requirement above, sufficient number of lifejackets of not less than 25% of the total number of persons on board for personnel on watch at work station, shall be provided.
 - .4 Distress Flares:
 - .1 at least two (2) rocket parachute flares.
- 3 Ship engaged in Protected Waters shall carry:
- .1 Survival Craft adequate to cover the total number of persons the ship is authorized to carry, as follows:
 - .1 Lifeboat or combination of liferaft, or
 - .2 Liferaft (Inflatable/Rigid type or equivalent approved-type)
 - .2 Lifebuoys:
 - .1 at least two (2) lifebuoys;
 - .2 50% of the required lifebuoys shall be fitted with a buoyant line of at least 25 meters in length.
 - .3 Lifejackets:
 - .1 Every ship shall carry at least one (1) approved-type lifejacket for each and every person authorized on board.
 - .4 Distress Flares:
 - .1 at least one (1) rocket parachute flare.

Regulation 7

Manning and Survival Procedures

- 1 All persons manning such tugboat shall be trained in launching and operating the survival crafts.
- 2 Illustrations and instructions relating to the use of life-saving appliances in appropriate languages shall be posted at muster stations and other crew spaces.
- 3 Posters or signs shall be provided on or in a vicinity of survival craft and their launching controls.
- 4 Muster stations shall be provided close to the embarkation stations. Both shall be adequately illuminated by lighting supplied from the emergency source of electric power.
- 5 Each member of the crew shall participate in at least one abandon ship drill and one fire drill every month. On board training in the use of life-saving appliances, including survival craft equipment shall be provided at such drills.
- 6 Records shall be maintained relating to abandon ship drills, fire drills and on board training in such-log-books as may be prescribed by the Administration.

Regulation 8

Marking of Survival Craft

All survival craft shall be marked in block capitals of the Roman alphabet with the:

- 1 name and port of registry of the tugboat;
- 2 name of approving authority;
- 3 number of persons it is permitted to accommodate.

Regulation 9

Stowage, Launching and Recovery of Survival Crafts

- 1 Survival craft shall be stowed:
 - .1 such that neither the survival craft nor its stowage arrangements will interfere with the operation of any other survival craft or rescue boat at any other launching station;
 - .2 such that the life boats and the rescue boats can easily be launched. Recovery arrangements for rescue boats shall be to the satisfaction of the Administration;
 - .3 in a state of continuous readiness so that crew members can carry out preparations for embarkation and launching in less than five minutes;
 - .4 Where the liferafts are not provided with launching appliances, they shall be stowed with its painter permanently attached to the tugboat with a float-free arrangement complying with recognized standards.

CHAPTER VII
RADIO COMMUNICATIONS

Regulation 1

General Requirements

1 The requirements prescribed by the National Telecommunications Commission (NTC) shall apply to all ships.

2 No provision in this Regulation shall prevent the use by any ship, survival craft or person in distress, of any means at their disposal to attract attention, make known their position and obtain help.

Regulation 2

Functional Requirements

- 1 Each tugboat while at sea, shall be capable of:
- .1 transmitting ship-to-shore distress alerts by at least two separate and independent means, each using a different radio communication service;
 - .2 receiving shore-to-ship distress alerts;
 - .3 transmitting and receiving ship-to-ship distress alerts;
 - .4 transmitting and receiving search and rescue coordinating communications;
 - .5 transmitting and receiving on-scene communications;
 - .6 transmitting and where applicable receiving signals for locating;
 - .7 transmitting and receiving maritime safety information;
 - .8 transmitting and receiving general radio communications to and from shore-based radio systems or networks; and
 - .9 transmitting and receiving bridge-to-bridge communications.

Regulation 3

Ship Requirements

- 1 Every radio installation shall be:
- .1 so located that no harmful interference of mechanical, electrical or other origin affects its proper use;
 - .2 so located as to ensure the greatest possible degree of safety and operational availability;
 - .3 be protected against harmful effects of adverse environmental conditions;
 - .4 provided with reliable permanently arranged electrical lighting for adequate illumination; and
 - .5 clearly marked with the call sign, the ship station identity and other qualified codes.
- 2 Control of the VHF radiotelephone channels required for navigational safety shall be available on the navigation bridge.

Regulation 4

Watches

- 1 Each tugboat, while at sea, shall maintain continuous distress and safety watch on the appropriate distress frequencies identified for the relevant sea area.
- 2 Each tugboat, while at sea, shall maintain a radio watch for broadcasts of maritime safety information on the appropriate frequency or frequencies on which such information is broadcast for the area in which the tugboat is navigating.
- 3 Each tugboat, while at sea, shall maintain a continuous listening watch on:
 - .1 VHF channel 16;
 - .2 radiotelephone distress frequency 2,182KHz.

Regulation 5

Maintenance Requirements

- 1 The Administration shall ensure that the radio equipment required by this Regulation is maintained to provide the availability of the functional requirements and to meet the recommended performance standards for such equipment.
- 2 Adequate information shall be provided to enable the equipment to be properly operated and maintained.
- 3 The availability of the radio equipment shall be ensured by using one of the following method:
 - .1 duplication of equipment
 - .2 shore-based maintenance, or
 - .3 at-sea electronic maintenance capability.

Regulation 6

Radio Equipment

- 1 Each tugboat shall be provided with:
 - .1 Ships operating in the protected areas:
 - .1 VHF radio Installation;
 - .2 Ships operating in coastwise voyage;
 - .1 VHF, MF/HF SSB Radio Installation (20 – 100 watts power output);
 - .2 GPS (150 GT and above);
 - .3 AIS (300 GT and above).

Regulation 7

Radio Logs

- 1 A radio log shall be maintained in accordance with the Radio Regulation in a Tugboat which is fitted with a radio communication station. Every qualified operator, master, officer or crew member maintaining a listening watch in accordance with Regulation VII/4 shall enter in the log his name and the details of all incidents connected with the radio service, which occur during his watch which may appear to be of importance to safety of life at sea. In addition, there shall be entered in the log:
 - .1 the details required by the Radio Regulation;
 - .2 the time listening watch begins when the tugboat leaves port, and the time at which it ends when the tugboat reaches port;

- .3 the time at which listening watch was discontinued for any reason together with the reason thereof, and the time at which listening watch was resumed thereafter; and
- .4 details of the maintenance of the batteries (if provided), including a record of the charging required.

2 Radio logs shall be available for inspection by the officers authorized by the Administration to make such inspection.

Regulation 8

Sources of Energy

There shall be available at all times, while the tugboat is at sea, a supply of electrical energy sufficient to operate the radio installations and to charge any batteries used as part of a reserve source or sources of energy for the radio installations for a period of 12 hours as specified in Regulation IV/4.5.4 of these Rules and Regulation.

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24 JANUARY 2019

CHAPTER VIII
SAFETY OF NAVIGATION

Regulation 1

General

Tugboat, including those towing or pushing non-propelled barges as far as practicable, should comply with the regulations relating to the routing measures adopted by the Administration and Chapter V (Safety of Navigation) of SOLAS 1974 as amended and the International Convention on Regulations for Preventing Collisions at Sea, (COLREG) 1972 including its annexes I, III and IV.

Regulation 2

Danger Messages

1 The master of each ship which meets with dangerous derelict, or any other direct danger to navigation, or a tropical storm (signal no. 1 and above) or winds of force 10 or above on the Beaufort scale shall communicate such information by all the means at his disposal to ships in the vicinity and to the competent authorities at the first point on the coast with which he can communicate.

2 All radio messages issued under this Regulation shall be preceded by the safety signal, using the procedure as prescribed by the Radio Regulations.

3 The information to be transmitted shall be as complete as practicable and may be sent in plain language preferably in English.

4 The following information is required in danger messages:

.1 Derelicts and other direct dangers to navigation:

.1 The kind of derelict or danger observed.

.2 The position of the derelict or danger when last observed.

.3 The time and date when the danger was last observed.

.2 Tropical cyclones (storms):

.1 A statement that a tropical cyclone has been encountered. This obligation should be interpreted in a broad spirit, and information transmitted whenever the master has good reason to believe that a tropical cyclone is developing or exists in the neighborhood.

.2 Time, date and position of ship when the observation was taken.

.3 As much of the following information as is practicable should be included in the message:

.1 barometric pressure, preferably corrected (stating millibars, millimeters, or inches, and whether corrected or uncorrected);

.2 barometric tendency (the change in barometric pressure during the past three hours);

.3 true wind direction;

.4 wind force (Beaufort scale);

.5 state of the sea (smooth, moderate, rough, high);

- .6 swell (slight, moderate, heavy) and the true direction from which it comes. Period or length of swell (short, average, long) would also be of value;
- .7 true course and speed of ship.
- .3 When a Master has reported a tropical cyclone or other dangerous storm, it is desirable, but not obligatory, that further observations be made and transmitted hourly, if practicable, but in any case at intervals of not more than 3 hours, so long as the ship remains under the influence of the storm.
- .4 Winds of force 10 or above on the Beaufort scale for which no storm warning has been received. This is intended to deal with storms other than the tropical cyclones referred to in paragraph 2; when such a storm is encountered, the message should contain similar information to that listed under the paragraph but excluding the details concerning sea and swell.

Regulation 3

Routeing

Ships shall comply with the traffic separation schemes or routeing requirements applicable to the area including avoidance of passage through areas designated as areas to be avoided by Ships or certain classes of ships.

Regulation 4

Misuse of Distress Signals

The use of any distress signal, except for the purpose of indicating that a ship, aircraft or person is in distress, and the use of any signal, which may be confused with any international distress signal, is prohibited.

Regulation 5

Distress Messages: Obligations and Procedures

1 The master of a tugboat at sea, on receiving a signal from any source that another ship or aircraft or survival craft thereof is in distress, is bound to proceed with all speed to the assistance of the persons in distress informing them if possible that he is doing so. If he is unable or, in the special circumstances of the case, considers it unreasonable or unnecessary to proceed to their assistance, he must enter in the log-book the reason for failing to proceed to the assistance of the persons in distress.

2 The master shall be released from the obligation imposed by paragraph 1 if he is informed by the persons in distress or by the master of another ship which has reached such persons that assistance is no longer necessary. If the Master of a ship receives such release, this has to be documented by him from the duty to render assistance.

3 A ship which receives any kind of distress message, shall simultaneously report this immediately to the nearest Coast Guard, Ports Authority or Coastal Radio Station under providing all relevant data to introduce immediate life-saving actions.

Regulation 6

Signaling Lamps

1 Tugboat shall be provided with signaling lamps and other visual and audible means of signaling required by the regulations in force to prevent collisions at sea,

applicable to their type and size.

2 All signaling lamps and audible means of signaling shall be of an approved type. Their positioning on board shall comply with the requirements of the regulations on preventing collisions at sea.

3 When the above-mentioned electric signaling lamps are not provided with two light sources, emergency electrical lamps shall be provided. Such emergency means are only required for masthead, side and stern lights.

4 The lamps shall be controlled from a lighting switchboard in the wheelhouse or other control post, equipped with a switch and indicator light.

5 The whistle required by the regulations in force to prevent collisions at sea shall be capable of being supplied by 2 sources of power. No obstacle shall interfere with the projection of the sound forward.

6 If there is an automatic device to activate the whistle, it shall be possible to override the automatic whistle control.

Regulation 7

Shipborne Navigational Equipment

1 Tugboat shall be fitted with:

- .1 standard magnetic compass, or other means, independent of power supply, to determine the ship's heading and display the reading at the main steering position;
- .2 a pelorus or compass bearing device, or other means of taking bearings as nearly as practicable over an arc of the horizon of 360°;

2 Each magnetic compass referred to in sub-paragraph 1.1 shall be properly adjusted and its table of curve of residual deviations shall be available at all times.

3 A spare magnetic compass, interchangeable with the standard compass or other means to perform the function mentioned in sub-paragraph 1.1 by means of replacement or duplicate equipment.

4 The Administration, if it considers it unreasonable or unnecessary to require a standard magnetic compass, may exempt tugboat from these requirements if the nature of the voyage or the ship's proximity to land does not warrant a standard compass. A suitable steering compass shall in all cases be carried with means for taking bearings according to the recognized standards.

5 A daylight signaling lamp, or other means, to communicate by light during day and night using an energy source of electrical power not solely dependent upon the ship's power supply.

6 Tugboat of 300 gt and above shall be fitted with a RADAR installation capable of operating in the 9 GHz frequency band. A ship may be exempted from compliance with the requirements of paragraph 6 at the discretion of the Administration, provided that the equipment is fully compatible, with the radar transponder for search and rescue.

7 Tugboat of 500 gt and above shall be fitted with a Class A Automatic Identification System capable of:

- .1 providing automatically to appropriately equip other ships, information including the ship's identity, type, position, course, speed, etc; and

.2 receiving automatically such information from similarly fitted ships.

8 All equipment fitted in compliance with this Regulation shall be of type-approved by the Administration. Equipment installed on board ships on or after the effectivity of these Rules and regulations shall conform to appropriate performance standards not inferior to the adopted standards. Equipment fitted prior to the adoption of related performance standards may be exempted from full compliance with those standards at the discretion of the Administration.

Regulation 8

Nautical Publications

1 Tugboat shall carry adequate and up-to-date nautical charts and nautical publications to plan and display the ship's route for the intended voyage and to plot and monitor positions throughout the voyage.

2 An electronic chart display and information system (ECDIS) is also accepted as meeting the chart carriage requirements.

Regulation 9

International Code of Signals

Ships required to carry radio installations shall carry the International Code of Signals. This publication may also be carried by any other ship, which, in the opinion of the Administration, has a need to use it.

Regulation 10

Life-Saving Signals

Life-saving signals shall be used by tugboat masters when communicating with other ships or persons in distress or when communicating with life-saving stations, maritime rescue units and aircraft engaged in search and rescue operations. An illustrated table describing the life-saving signals shall be readily available to the officer of the watch of every ship.

Regulation 11

Navigational Warnings

1 Tugboat masters shall take all necessary steps to ensure that, when intelligence of any dangers is received from whatever reliable source, it shall be promptly brought to the knowledge of those concerned and communicated.

2 Owners of tugboat shall be guided by Memorandum Circular No. 01-09 of the Philippine Coast Guard (PCG) dated 05 January 2009 relative to the no sailing policy for Philippine-registered ships/vessels when public storm signal no. 1 or stronger is hoisted by Philippine Atmospheric Geophysical, Astronomical Services Administration (PAGASA).

Regulation 12

Safe Navigation and Avoidance of Dangerous Situations

1 Prior to proceeding to sea, the master shall ensure that the intended voyage has been planned using the appropriate nautical charts and nautical publications for the area concerned.

2 The voyage plan shall identify a route which:

.1 takes into account any relevant ships' routing systems;

- .2 ensures sufficient sea room for the safe passage of the ship throughout the voyage;
- .3 anticipates all known navigational hazards and adverse weather conditions; and,
- .4 take into account the marine environmental protection measures that apply, and avoids, as far as possible, action and activities which could cause damage to the environment.

3 The owner, the charterer, or the company, operating the ship or any other person shall not prevent or restrict the master of the ship from taking or executing any decision which, in the master's professional judgment, is necessary for safe navigation and protection of the marine environment.

Regulation 13

Light Requirements When Towing and Pushing

1 Tugboat when towing shall exhibit:

- .1 two masthead lights in a vertical line. When the length of the tow, measuring from the stern of the towing vessel to the after end of the tow exceeds 200 metres, three such lights in a vertical line;
- .2 sidelights;
- .3 a sternlight;
- .4 a towing light in a vertical line above the sternlight;
- .5 when the length of the tow exceeds 200 metres, a diamond shape where it can best be seen.

2 When a tugboat and a vessel being pushed ahead are rigidly connected in a composite unit they shall be regarded as a power-driven vessel and exhibit the lights prescribed in Rule 21 of COLREG.

3 A tugboat when pushing ahead or towing alongside, except in the case of a composite unit, shall exhibit:

- .1 two masthead lights in a vertical line;
- .2 sidelights;
- .3 a sternlight.

4 Tugboat to which paragraph 1 or 3 of this Regulation applies shall also exhibit a second masthead light abaft of and higher than the forward one; except that a vessel of less than 50m in length shall not be obliged to exhibit such light but may do so.

5 A ship or object being towed, other than those mentioned in paragraph 7 of this Regulation, shall exhibit:

- .1 sidelights;
- .2 a sternlight;
- .3 when the length of the tow exceeds 200m, a diamond shape, where it can be seen.

6 Provided that any number of ships being towed alongside or pushed in a group shall be lighted as one ship.

- .1 a ship being pushed ahead, not being part of a composite unit, shall exhibit at the forward end, sidelights.
- .2 a ship being towed alongside shall exhibit a stern light and at the forward end, sidelights.

7 An inconspicuous, partly submerged ship or object, or combination of such ships or objects being towed, shall exhibit:

- .1 if it is less than 25 m in breadth, one all around white light at or near the forward end and one at or near the after end except that dracones need not exhibit a light at or near the forward end;
- .2 if it is 25 m or more in breadth, two additional all round white lights at or near the extremities of its breadth;
- .3 if it exceeds 100 m in length, additional all round white lights between the lights prescribed in subparagraphs 7.1 and 7.2 so that the distance between the lights shall not exceed 100 m;
- .4 a diamond shape at or near the aftermost extremity of the last vessel or object being towed and if the length of the tow exceeds 200 m an additional diamond shape where it can best be seen and located as far forward as is prescribed.

8 Where from any sufficient cause it is impracticable for a ship or object being towed to exhibit the lights or shapes prescribed in paragraph 5 or 7 of this Regulation, all possible measures shall be taken to light the ship or object towed or at least to indicate the presence of such ship or objects.

9 Where from any sufficient cause it is impracticable for a ship not normally engaged in towing operations to display the lights prescribed in paragraph 1 or 3 of this Regulation, such ship shall not be required to exhibit those lights when engaged in towing another ship in distress or otherwise in need of assistance. All possible measures shall be taken to indicate the nature of the relationship between the towing ship and the ship being towed as authorized by Rule 36 of COLREG, in particular by illuminating the towline.