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Ships and marine technology — Shipboard plans for fire control, damage control, life-saving appliances and means of escape

Navires et technologie maritime — Plans de sécurité à bord du navire, des moyens de lutte contre l'incendie, des engins de sauvetage et des moyens d'évacuation

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 8, *Ships and marine technology*, Subcommittee SC 1, *Maritime safety*.

This second edition cancels and replaces the first edition (ISO 17631:2002), which has been technically revised. It also incorporates the amendment ISO 17631:2002/Amd 1:2010 and the Technical Corrigendum ISO 17631:2002/Cor 1:2002.

The main changes are as follows:

— symbols have been revised to bring them in accordance with IMO A.1116 (30)[9] and ISO 24409-2;

— information for damage control plans have been added;

— bibliography updated and normative reference added.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

This document has been developed taking into account the existing International Maritime Organization (IMO) guidance on the subject as listed in the bibliography. It is intended to supplement IMO requirements and recommendations for arrangement of shipboard plans used on commercial vessels complying with the International Convention for the Safety of Life at Sea (SOLAS), 1974, as amended.

The symbols in Annex A generally conform to the corresponding symbols given in IMO Resolutions A.952 (23) [8] and A.1116 (30)[9], but, as far as the symbols for fire control plans are concerned, it was deemed necessary to carry out the following changes:

a) with the aim of rendering them more comprehensible to people on board and to shoreside fire-fighting personnel, who may be called to operate onboard, a small number of symbols [e.g. emergency equipment, muster and embarkation stations contained in IMO Resolution A.760 (18) [7] or IMO Resolution A.952 (23)] have been modified in order to harmonize them with ISO 24409-2 and with ISO 7010; and

b) damage control plan symbols have been introduced.

Ships and marine technology — Shipboard plans for fire control, damage control, life-saving appliances and means of escape

1 Scope

This document specifies the content, type, design, layout and usage of shipboard and marine installation plans made available and displayed for fire control appliances and arrangements, damage control, lifesaving appliances and arrangements, and means of escape. It also specifies graphical symbols and illustrations used in such plans.

It does not include signs and mimic signs that provide instructions for safe escape for general safety information.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

International Convention for the Safety of Life at Sea (SOLAS), 1974

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
booklet
compilation of shipboard plans

3.2
bulkhead deck
uppermost deck up to which the main bulkheads and the ship's shell are carried watertight

3.3
competent authority
administration whose flag the ship is entitled to fly, or an organization authorized by an Administration, to perform functions required by this document

3.4
cross-flooding device
equalization device
combination of ducts and pipes installed on ships to give means of equalization of the water in case of asymmetric damage condition

3.5
damage control plan
plan for the guidance of the officers in charge of the ship, showing the boundaries of the watertight compartments, the openings therein with relevant means of closure and position of any controls thereof, and the arrangements for the correction of any list due to flooding

Note 1 to entry: It is specified in SOLAS 74 (as amended), Chapter II-1.

3.6
escape plan
plan displaying general safety information of a ship, illustrating the escape routes and relevant means of escape and assembly stations

3.7
fire locker
locker containing fire-fighter outfits, portable fire-fighting equipment and relevant spare parts

3.8
fire control plan
plan, plans, or booklets containing information on fire-protection appliances and structural fire protection, for the guidance of the officer in charge of the ship and the firefighting team

Note 1 to entry: It is specified in SOLAS 74 (as amended), Chapter II-2.

3.9
fire-protection appliance
fixed fire-fighting system and portable equipment for use or activation in case of fire

Note 1 to entry: It is specified in SOLAS 74 (as amended), Chapter II-2.

3.10
graphical symbol
visually perceptible figure which is used for the purpose of transmitting information independent of the medium of language

3.11
illustration
use of line drawings for the depiction of a vessel's general arrangement

3.12
lifesaving appliance
system or appliance serving the purpose of saving the life of any person, in an emergency at sea when the ship must be abandoned or persons at sea must be rescued

Note 1 to entry: Lifesaving appliances are addressed by SOLAS 74 (as amended), Chapter III.

3.13
main vertical zone
MVZ
sections in which the hull, superstructures and deckhouses are divided by "A" class divisions

Note 1 to entry: MVZ characteristics are specified in SOLAS 74 (as amended), Chapter II-2.

3.14
means of escape
routes and additional aids so that persons on-board can safely and swiftly escape to the lifeboat and liferaft embarkation deck

3.15
mimic sign
sign which indicates the "you are here" position and incorporates a safety notice listing appropriate actions to be taken in an emergency

Note 1 to entry: "Mimic sign" has the same meaning as "simple mimic plan" also referred to in SOLAS regulation II-2/13.7.2.2; the cabin placard referred to in IMO Resolution A.752 (18); and the emergency instruction notices described by IMO MSC/Circ.699.

3.16
primary escape route
safest and protected route to the assembly station

Note 1 to entry: It complies with SOLAS 74, regulation II-2/13.

3.17
secondary escape route
alternate means of escape for use in cases where the *primary escape route* (3.16) is not available due to fire, smoke or flooding conditions

3.18
storm cover for windows
protective cover for ship's windows for use in case of extreme weather or sea conditions

3.19
structural fire protection
passive fire protection, including details of the fire divisions of the ship

3.20
watertight
capability of preventing the passage of water through the structure, in any direction, under the head of water likely to occur in intact and damaged conditions

3.21
watertight appliance
appliance having watertight characteristics to prevent the passage of water into the spaces or units

3.22
weather-deck
uppermost continuous deck exposed to the weather

3.23
weather-tight appliance
appliance designed to prevent the penetration of water into the ship in any sea conditions

4 Preparation of plans

4.1 General

4.1.1 The structure and execution of the plans is the result of a thorough evaluation of the regulatory compliance requirements, as well as an assessment of the relevant facilities for fire control, damage control, escape and embarkation on lifesaving appliances.

4.1.2 The number and types of plans to be carried on board a particular ship must meet the requirements of the competent authority.

4.1.3 In general, except for damage control plans, no illustration in any plan shall be made to a scale smaller than 1:200 with minimum line point size of 4,5 for main vertical zone divisions, 2,25 for A and B class and watertight divisions, and 0,75 for other lines. Large plans may be subdivided for clarity.

Damage control plans should be of a scale adequate to the size of the ship, or marine installation, in order to clearly show the required content of the plan; in general, the plan shall not be made to a scale smaller than 1:400.

4.1.4 The plans shall be in colour, and the detail of the symbols shall be clear.

4.1.5 Fire, lifesaving and damage control information should be placed in separate plans. However, depending on the quantity of information to be taken into account for presentation, more than one particular plan may be combined or consolidated, under the judgement of the competent authority, provided that the combined or consolidated plans are properly legible. In addition, consideration may be given to drawing up separate fire control plans for machinery spaces and deck areas.

4.1.6 A legend of symbols and explanations shall be a constituent part of any plan and contain a complete list of the graphical symbols used in the plan, together with the appropriate explanations, and may include, in some instances, additional special information such as the type of extinguishing media used in the fixed fire-extinguishing system(s). As a rule, the legend shall be inserted in the appropriate drawing. In case of a loose equipment – such as fire extinguishers, lifebuoys, or lifejackets – the legend shall indicate next to each symbol the quantity of each particular item and, if needed, the arrangement provided. For clarity, preferably only one font type should be used for text in plans. The minimum letter point size shall be 12. The legend should preferably be placed at the right-hand side of the plan.

4.1.7 The information required shall be shown deck by deck; names of internal and external spaces and cabin numbering shall also be shown.

4.1.8 The graphical symbols shown in Annex A shall be used when developing the plans. Table B.1 may be used for definitions of colour. A summary of all symbols included in Annex A is given in Table 1. The graphical symbols used in plans and booklets shall be of suitable size to ensure that they remain clear and recognizable, and shall not be smaller than 7 mm by 7 mm. Generally, symbols within the drawing should not have a defining border. All symbols shall be positioned on plans in a manner to clearly indicate the location on the vessel, but to avoid clutter, symbols may be placed outside the plan with a dot and line to indicate the actual position. In this case, the graphical symbols shall have the defined border, and the line shall have a point size greater than the minimum line point size adopted for the general arrangement plan.

4.1.9 Plans, including those consolidated in the form of a booklet, shall contain the following additional particulars:

a) ship's keel laying date or similar stage of construction, if applicable, as defined in SOLAS 74;

b) original method (e.g. for cargo ships, IC, IIC, or IIIC, as defined in SOLAS 74, as amended);

c) additional safety measures, if any;

d) dates and descriptions of any modifications to the ship which altered her fire, emergency and damage control;

e) IMO number.

4.1.10 For passenger ship modifications carried out before 1 October 1994, if the dates and descriptions of such modifications are not available, at least the fire safety construction method currently used in the ship shall be stated. Where more than one method or a combination of methods is used in different locations of the ship, this shall be specified.

4.1.11 Text in plans and booklets must be in the language or languages required by the competent authority. Where more than one language is used on plans, these separate languages shall be indicated with different font types. The languages used should take into account the requirements of the IMO ISM Code[6] with regard to the working languages of the ship.

4.1.12 In order to improve legibility, the plans should not include information that is not directly relevant to their scope and purpose.

4.2 Fire control plan

4.2.1 The plan shall show the arrangement of the structural fire protection boundaries as per A.1, and arrangement and location of fire-protection appliances as per A.2, together with means of access to compartments, decks, etc.

4.2.2 The content of each fire locker shall be indicated in the legend. Symbols of items contained in a fire locker need not be indicated on the deck views of the plan.

4.3 Structural fire-protection plan

The plan shall show the arrangement and location of the structural fire-protection details given in Annex A, symbols A.1.1 to A.1.11.

4.4 Means of escape plan

The plan shall show each means of escape within the ship, and identify assembly and embarkation stations. Primary and secondary escape routes, as applicable, shall be identified in the plan by arrows as indicated in Figures 1 and 2.

Figure 1 — Arrow for indicating the primary escape route

Figure 2 — Arrow for indicating the secondary escape route

NOTE 1 For means of escape on passenger ships, reference can be made to IMO resolution A.757(18)[8] and FSS Code chapter 13[12].

NOTE 2 For the use of escape signs, see ISO 24409-2.

4.5 Lifesaving appliances plan

4.5.1 The plan shall show the arrangement and location of the items given in Annex A, symbols A.3.1, A.3.2 and A.4.1 to A.4.34. In addition, the plan shall indicate the quantity of each particular item of lifesaving appliances and arrangements provided, and the capacity of each assembly station. The number and capacity of collective lifesaving appliance at each stowage position shall be indicated in the legend or at the bottom of the appropriate symbol.

4.5.2 Where lifejackets are located in cabins, this shall be clearly indicated on the plan.

4.5.3 Locations of all assembly stations and embarkation stations shall be clearly indicated on the plan.

4.6 Damage control plan

4.6.1 The plan is intended to provide clear and easy to understand information on the ship's watertight subdivision and equipment related to maintaining the boundaries and effectiveness of the subdivision. In the event of damage to the ship causing flooding, proper precautions can be taken to prevent progressive flooding through openings therein. Effective action can also be taken quickly to mitigate and, where possible, recover the ship's loss of stability.

4.6.2 The plan shall include tables in which the actions that must be done to seal any watertight compartment are clearly indicated.

4.6.3 The information required shall be shown deck-by-deck; where relevant equipment is located on other decks, the plan shall show appropriate sections of these decks within the drawing.

4.6.4 The plan should include a longitudinal section of the ship, plan views of each deck considered by the damage control arrangements and transverse sections in order to show:

— the watertight boundaries of the ship;

— any mechanical means to correct list due to flooding;

— all internal watertight appliances including, on ro-ro ships, internal ramps or doors acting as extension of the collision bulkhead and their controls and the locations of their local and remote controls, position indicators and alarms. The locations of those watertight closing appliances which are not allowed to be opened during the navigation and of those watertight appliances which are allowed to be opened during the navigation should be clearly indicated;

— the locations of all shell doors, including position indicators, leakage detection and surveillance devices;

— the locations of all weather-tight appliances in local subdivision boundaries above the bulkhead deck and on the lowest exposed weather-decks, together with locations of controls and position indicators, if applicable;

— the locations of all bilge and ballast pumps, their control positions and associated valves;

— the indication of compartments and decks;

— indicate whether an access point represents both up and down or only way transit (at the bottom of the stair or ladder);

— the indication of all hatches;

— any other relevant pumps and valves referred to the damage control booklet.

4.6.5 All stairs, ladders, watertight doors and hatches for access to, or escape from, each watertight compartment should be clearly marked and identified by the compartment number and stair number as shown in A.5.2 to A.5.4.

5 Documentation requirements

5.1 Availability of plans on board ship

The plans drawn up in accordance with the provisions of 4.2 to 4.6, which may also take the form of a combined or consolidated plan as referred to in 4.1.5, shall be kept readily available for the information of the ship's officers.