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**REVISION OF SOLAS REGULATION V/23 AND ASSOCIATED INSTRUMENTS  
TO IMPROVE THE SAFETY OF PILOT TRANSFER ARRANGEMENTS**

**Proposed amendments to SOLAS regulation V/23 and resolution A.1045(27)**

**Submitted by China and IMPA**

**SUMMARY**

*Executive summary:* This document proposes draft amendments to SOLAS regulation V/23 and resolution A.1045(27) to improve the safety of pilot transfer arrangements.

*Strategic direction,  
if applicable:* 7

*Output:* 7.44

*Action to be taken:* Paragraph 22

*Related documents:* Resolutions MSC.308(88), A.911(22); and A.1045(27);  
MSC 104/15/23; NCSR 6/INF.10; NCSR 7/INF.17; NCSR 8/INF.3;  
NCSR 9/INF.7 and III 8/19

**Background**

1 The Maritime Safety Committee, at its 106th session, considered document MSC 104/15/23 (China) which proposed amending SOLAS regulation V/23 and associated instruments to improve the safety of pilot transfer arrangements. Recognizing the urgent need to address this matter, the Committee agreed to include it in the biennial agenda of the NCSR Sub-Committee for 2022-2023 and in the provisional agenda for NCSR 10 an output on "Revision of SOLAS regulation V/23 and associated instruments to improve the safety of pilot transfer arrangements", with a target completion year of 2024.

**Introduction**

2 Despite great efforts having been made by the Organization to improve the safety of pilots by adopting amendments to SOLAS regulation V/23 (resolution MSC.308(88)) and standards for pilot transfers (resolution A.1045(27)), it is regrettable to see accidents involving the tragic loss of pilots continue to happen worldwide and statistics by IMPA over the past years suggest an unacceptable high rate of non-compliant pilot transfer arrangements installed

on all ship types (NCSR 6/INF.10, NCSR 7/INF.17, NCSR 8/INF.3 and NCSR 9/INF.7). There are a number of reasons why pilots continue to encounter unsafe transfer arrangements. Among others, unsafe and improper use of pilot ladders, as well as a lack of regular and effective maintenance and inspection, are found to be the major contributing factors. It is considered a more robust approval regime for equipment and arrangements for pilot transfer is needed to ensure that they are manufactured to the standards.

3 This document proposes draft amendments to SOLAS regulation V/23 and resolution A.1045(27) to address the issues identified.

### **Draft amendments to SOLAS regulation V/23**

#### **Operational readiness, inspection and maintenance**

4 Pilot transfer arrangements, in particular pilot ladders, are susceptible to damage and deformation due to frequent usage (III 8/19, paragraph 4.28.2 ), and unsafe and improper use and stowage of pilot ladders on board accelerate their deterioration with an increasing level of safety risks. Moreover, seafarers are likely to neglect pilot ladders during their daily maintenance, as pilot ladders are usually stowed when unused, and port State control officers (PSCOs), due to time limits, would often concentrate more on bridge navigation equipment, engine equipment, fire-fighting and life-saving equipment. As a result, non-compliant pilot transfer arrangements would not be identified or rectified in a timely way and consequently pose huge risks to the safety of pilots, often leading to severe injuries or loss of lives.

5 The inclusion of detailed maintenance and inspection requirements in SOLAS regulation V/23 would raise seafarers' awareness of the importance of pilot transfer arrangements to pilots, which is the same as that of fire-fighting or life-saving appliances to seafarers. Conducting regular maintenance and inspection on board would help ensure that pilot transfer arrangements are in good order and ready for use and safety risks can be identified and rectified at an earlier stage before tragic accidents occur. As such, requirements in relation to the operational readiness, inspection and maintenance of pilot transfer arrangements as well as training on their safe use are proposed to be included as new sections 9 and 10, respectively, in the draft amendments to SOLAS regulation V/23.

6 In this regard, it is believed that *ISO 799-2:2021: Maintenance, Use, Survey and Inspection* also provides appropriate standards which should be taken into account. A maintenance plan is suggested to be developed, which shall include at least a checklist, instructions and records of maintenance and inspection.

7 Equally, as noted in paragraph 4.28.1 of document III 8/19, regulations and associated instruments appeared at times to be unclear or ambiguous, resulting in different parties interpreting the rules differently. Ensuring the appropriate design, installation, inspection and maintenance of pilot transfer arrangements necessitates improvements to the clarity of the requirements in regulation V/23 and resolution A.1045(27).

8 Notwithstanding the allowance of periodic testing of pilot ladders by paragraph 10.4 of ISO 799-1:2019, the co-sponsors consider that there may be practical barriers preventing this from being effectively implemented through regulation V/23. Consequently, the draft amendments include a general requirement for periodic replacement of pilot ladders and possibly man-ropes. For the reasons outlined in paragraph 4 and given that periodic testing could weaken or damage a pilot ladder or man-rope, periodic replacement and the treatment of pilot ladders and man-ropes as consumables should be encouraged by regulation V/23 and resolution A.1045(27). This would not incur a substantial cost burden on the industry, given the existing costs of pilot ladders and man-ropes available on the market from reputable

manufacturers. This is a simple step to improve pilot transfer safety by removing already worn, damaged or otherwise unsafe pilot ladders and man-ropes from service, and to pre-empt the potential failure of pilot ladders and man-ropes when in use in the future. However, the co-sponsors have not agreed on the time period after which the pilot ladders shall be removed from service and two options are put in square brackets for consideration.

## Application

9 SOLAS regulation V/23.1.2 is amended to clearly reflect the relationship between regulation V/23 and resolution A.1045(27), as amended. It is the co-sponsors' view that the current approach to referencing resolution A.1045(27), as amended, in SOLAS regulation V/23 results in inconsistent application and enforcement of the requirements and the absence of a unified source of information on pilot transfer arrangements. This situation and the absence of such a source is reflected in the relevant findings in the report of III 8 (III 8/19, paragraph 4.28 ).

10 The co-sponsors consider that the Sub-Committee has two options to consider in order to address the finding of III 8:

- .1 Option 1: SOLAS V/23 should contain all the detailed requirements for design, installation, inspection, maintenance and rigging of pilot transfer arrangements, making resolution A.1045(27) redundant; or
- .2 Option 2: SOLAS V/23 contains fundamental provisions for design, installation, inspection, maintenance and rigging of pilot transfer arrangements and makes resolution A.1045(27), as amended, a performance standard for pilot transfer arrangements covering detailed technical aspects relevant to approval of equipment and arrangements. In this regard, resolution A.1045(27), as amended, would be referenced in the same way as performance standards in regulation V/18 and in accordance with paragraph 7 of the *Guidelines on methods for making reference to IMO and other instruments in IMO Conventions and other mandatory instruments* (resolution A.911(22)).

It is the co-sponsors' view that retaining the status quo with respect to the relationship between regulation V/23 and resolution A.1045(27) is inappropriate and would undermine the intent of the output agreed at MSC 106.

11 Furthermore, the Sub-Committee is invited to consider whether either option proposed in paragraph 10.2 above would be sufficient, or whether it is necessary to make resolution A.1045(27), as amended, mandatory by naming the resolution in regulation V/23.

12 In light of the discussion in paragraphs 9 to 11, the Sub-Committee will note an overlap in the content of the proposed amendments to regulation V/23 in annex 1 and the proposed amendments to resolution A.1045(27) in annex 2 to this document. It is the co-sponsors' intention to further consider the content of the amendments based on the outcome of consideration of options 1 and 2 with a view to avoiding unnecessary or inappropriate duplication of provisions, and ensuring the text and references are appropriately aligned with the guidance in resolution A.911(22).

13 Noting that both resolution A.1045(27), as amended, and ISO standards (*ISO 799-1:2019 Design and Specification*) are referenced in regulation V/23, it is important that these standards are clear and consistent. A comparison between the requirements of IMO and ISO standards is undertaken to identify the inconsistencies that may need to be addressed and consequential amendments to resolution A.1045(27) are presented in annex 3 to this

document. Notwithstanding, the co-sponsors are aware of elements of the ISO 799 series of standards that could be enhanced based on the contents of regulation V/23 and resolution A.1045(27). The co-sponsors consider that alignment with ISO 799 standards is desirable and appropriate, but that this should not prevent consideration of requirements which go beyond the ISO 799 series.

14 The expression "installed on or after [date]" is used in the application requirements and a clear understanding of the intended meaning is provided. For application to existing ships, a distinction is made between the equipment and arrangements for pilot transfer and those arrangements which may be considered constructional, such as rubbing bands and shipside door platforms, with the latter being retrospectively applied to not later than the first renewal survey after the date of entry into force.

15 Nevertheless, where constructional features would prevent the implementation of this regulation, special arrangements shall, to the satisfaction of the Administration, be provided to achieve a level of safety that is equivalent to this regulation. However, the co-sponsors have different views on whether alternative designs and arrangements shall be approved based on an engineering analysis which demonstrates that the alternative arrangements provide an equivalent level of safety.

### **Quality control system**

16 In order to ensure continuous compliance with the type approval conditions, it is proposed the manufacturers have a quality control system audited by a competent authority.

17 In addition to the above, a number of modifications are also made to provide more clarity to regulations that are difficult to understand and/or implement.

### **Draft amendments to resolution A.1045(27)**

18 Amendments to resolution A.1045(27) can be summarized as follows:

- .1 the interval between spreader steps and securing requirements of side ropes are modified to be consistent with the newly adopted ISO 799-1:2019 (paragraphs 2.1.4 and 2.2.3);
- .2 requirements for the position and securing of pilot ladders (paragraph 2.1.7) as well as the design, installation and rigging of a combination arrangement (paragraph 3.1) are moved from existing SOLAS regulation V/23 to the resolution;
- .3 permanent marking for pilot ladders is proposed (paragraph 2.1.8);
- .4 detailed requirements for a combination arrangement using an accommodation ladder with a trapdoor in the lower platform are included (paragraph 3.7);
- .5 the breaking strength of strongpoints, shackles and securing ropes are proposed to be increased from 24 kN to 48 kN (paragraph 3.7-1). The reason for this is that a subsequent review of ISO 799-3:2022 has indicated that 24 kN is actually insufficient. The application of this provision to securing ropes is yet to be informed by research into the appropriate methods for securing pilot ladders at intermediate length, commissioned by IMPA;
- .6 shipside doors requirements are included (paragraphs 4.1 and 4.2); and

- .7 technical requirements for handholds, stanchions and manropes are provided (sections 5 and 6-1).

In addition, IMPA has commissioned the study of securing pilot ladders at intermediate length. The results of this work may have implications for type, strength and position of securing arrangement which should be taken into account in the amendments to resolution A.1045(27). A place holder for this is included in annex 2.

19 In addition, noting the findings reported in paragraph 4.28.1 of document III 8/19, detailed technical and operational requirements are further clarified to reduce inconsistencies and ambiguities.

### **Proposals**

20 In light of the above, draft amendments to SOLAS regulation V/23 and resolution A.1045(27) are provided in annexes 1 and 2, respectively, with changes highlighted in grey-shading and deletions in strikethrough.

21 In addition to noting the progress being made by the co-sponsors, the Sub-Committee is requested to consider the options proposed in paragraphs 9 to 12 and advise accordingly, and endorse further work by the co-sponsors to develop the draft amendments for submission to NCSR 11.

### **Action requested of the Sub-Committee**

22 The Sub-Committee is invited to note the progress made and consider the proposals in paragraph 21 and take action, as appropriate.

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## ANNEX 1

### DRAFT AMENDMENT TO SOLAS REGULATION V/23

#### Regulation 23 – Pilot transfer arrangements

##### 1 Application

1.1 Ships engaged on voyages in the course of which pilots may be employed shall be provided with pilot transfer arrangements.

1.2 Equipment and arrangements for pilot transfer which are installed on or after [1 January 2028] ~~July 2012~~ shall be approved by the Administration as complying with the requirements of this regulation and conforming to performance standards not inferior to those adopted by,<sup>1</sup> or acceptable to<sup>2</sup> the Organization. Procedures adopted by the Administration for approval shall also include the conditions whereby approval would continue or would be withdrawn.

1.3 For the purpose of the present regulation, the expression *installed on or after [1 January 2028]* means:

- .1 for ships for which the building contract is placed on or after [1 January 2028], or in the absence of the contract, constructed on or after [1 January 2028], any installation date on the ship; or
- .2 for ships other than those ships prescribed in 1.3.1 above, a contractual delivery date for the equipment or, in the absence of a contractual delivery date, the actual delivery date of the equipment to the ship on or after [1 January 2028 +48 months].

~~1.34 Except as provided otherwise, Equipment and arrangements for pilot transfer which are installed provided on ships before [1 January 2028] ~~1 July 2012~~ shall at least comply with the requirements of this regulation, not later than the first survey required by regulation I/7 or I/8 after [1 January 2028]. 47<sup>3</sup> or 23, as applicable, of the Convention in force prior to that date, and due regard shall be paid to the standards adopted by the Organization prior to that date.~~

~~1.4 Equipment and arrangements installed on or after 1 July 2012, which are a replacement of equipment and arrangements provided on ships before 1 July 2012, shall, in so far as is reasonable and practicable, comply with the requirements of this regulation.~~

~~1.5 With respect to ships constructed before 1 January 1994, paragraph 5 shall apply not later than the first survey on or after 1 July 2012.~~

1.5 Notwithstanding paragraph 1.4, ships constructed before [1 January 2028], paragraphs 3.4 and 5.4.1 shall apply not later than the first renewal survey required by regulation I/7 or I/8 on or after [1 January 2028].

1.6 Paragraphs ~~6 9~~ and 10 apply ~~applies~~ to all ships.

<sup>1</sup> Resolution A.1045(27), as amended.

<sup>2</sup> Refer to the standards by the International Organization for Standardization, in particular publications ISO 799-1:2019, Ships and marine technology – Pilot ladders — Part 1: Design and specification and ISO 799-3:2022, Ships and marine technology — Pilot ladders — Part 3: Attachments and associated equipment.

## 2 General

2.1 All equipment and arrangements used for pilot transfer shall be used solely for the embarkation and disembarkation of personnel and shall be designed, installed, inspected, maintained and rigged to enable ~~efficiently fulfil their purpose of enabling~~ pilots to embark and disembark safely in all seagoing conditions of draught and trim, including the specific condition of an adverse list of 15° in the lightest seagoing condition. ~~The appliances shall be kept clean, properly maintained and stowed and shall be regularly inspected to ensure that they are safe to use. They shall be used solely for the embarkation and disembarkation of personnel.~~

2.2 The inspection, maintenance and rigging of the pilot transfer arrangements and the embarkation and disembarkation of a pilot shall be supervised by a responsible officer. During pilot transfers, the responsible officer shall have ~~having~~ means of communication with the navigation bridge and ~~who shall also arrange for the escort of the pilot by a safe route to and from the navigation bridge. Personnel engaged in rigging and operating any mechanical equipment shall be instructed in the safe procedures to be adopted and the equipment shall be tested prior to use.~~

2.2-1 Personnel engaged in inspection, maintenance, rigging or operation shall receive periodic training in the requirements associated with the equipment and arrangements of pilot transfer and their use. This shall form part of the ship's Safety Management System (SMS).

2.3 A pilot ladder installed to meet the requirements of this regulation or a trapdoor arrangement installed as part of a combination arrangement shall be type approved by the Administration ~~certified by the manufacturer~~ as complying with performance standards not inferior to those adopted by the Organization<sup>3</sup> or with an international standard acceptable to the Organization.<sup>4</sup> Equipment and arrangements for pilot transfer ~~Ladders~~ shall be inspected in accordance with regulations I/6, I/7 and I/8.

2.3-1 The Administration shall require that the manufacturers have a quality control system audited by a competent authority to ensure continuous compliance with the type approval conditions. Alternatively, the Administration may use final product verification procedures where the compliance with the type approval certificate is verified by a competent authority before the product is installed on board ships.

2.4 All pilot ladders used for pilot transfer shall be clearly identified with tags or other permanent marking so as to enable identification of each appliance for the purposes of survey, inspection and record keeping. ~~A record shall be kept on the ship as to the date the identified ladder is placed into service and any repairs effected.~~

2.5 Reference in this regulation to an accommodation ladder includes a sloping ladder used as part of the pilot transfer arrangements.

2.6 Where constructional features would prevent the implementation of this regulation, special arrangements shall, to the satisfaction of the Administration, be provided to achieve a level of safety that is equivalent to this regulation and ensure that personnel are able to embark and disembark safely. [Alternative design and arrangements for equipment and arrangements for pilot transfer shall be approved based on an engineering analysis which demonstrates that

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<sup>3</sup> A.1045(27), as amended.

<sup>4</sup> Refer to the standards by the International Organization for Standardization, in particular publications ISO 799-1:2019, Ships and marine technology – Pilot ladders — Part 1: Design and specification and ISO 799-3:2022, Ships and marine technology — Pilot ladders — Part 3: Attachments and associated equipment.



the alternative arrangements provide an equivalent level of safety. The engineering analysis shall be based on sound material science, engineering practice and human centred design incorporating accepted methods, data and calculations.]

### 3 Transfer arrangements

3.1 Arrangements shall be provided to enable the pilot to embark and disembark safely on either side of the ship.

3.2 In all ships, ~~where the distance from sea level to the point of access to, or egress from, the ship exceeds 9 m, and~~ when it is intended to embark and disembark pilots by means of the pilot ladder provided for in paragraph 3.3.1 or the combination arrangement provided for in paragraph 3.3.2 ~~accommodation ladder, or other equally safe and convenient means in conjunction with a pilot ladder,~~ the ship shall carry such equipment on each side, unless the equipment is capable of being transferred for use on either side.

3.3 Safe and convenient access to, and egress from, the ship shall be provided by either:

.1 a pilot ladder requiring a climb ~~to the point of access~~ of not less than 1.5 m and not more than 9 m above the surface of the water in any seagoing condition of draught and trim, which shall be so positioned and secured that:

.1 it is clear of any possible discharges from the ships and at all times hangs vertically, freely and without obstruction;

.2 it is within the parallel body length of the ship and ~~as far as practicable,~~ within the mid-ship half length of the ship;

.3 each step rests firmly against the ship's side; ~~where constructional features, such as rubbing bands, would prevent the implementation of this provision, special arrangements shall, to the satisfaction of the Administration, be made to ensure that persons are above embark and disembark safely~~ throughout the entire length of the ladder, including any part of the ladder above the point of access to, or egress from, the ship;

.4 the single length of pilot ladder is capable of reaching the surface of the water from the point of access to, or egress from, the ship in all seagoing conditions of draught and trim and the specific condition of an adverse list of 15° of the lightest seagoing condition and ~~due allowance is made for all conditions of loading and trim of the ship, and for an adverse list of 15°;~~ the securing strong points, shackles and securing ropes shall be at least as strong as the side ropes; and

.5 when used in conjunction with a ship-side opening, the ladder is secured in accordance with paragraph 5.2.

or

.2 a combination arrangement of an accommodation ladder in conjunction with the pilot ladder ~~(i.e., a combination arrangement),~~ or other equally safe and convenient means, whenever the distance from the surface of the water to the point of access to the ship is more than 9 m. The combination

arrangement shall be so positioned and secured that, in addition to the pilot ladder complying with the requirements of paragraphs 3.3.1.1 to 3.3.1.3: ~~[The accommodation ladder shall be sited leading aft. When in use, means shall be provided to secure the lower platform of the accommodation ladder to the ship's side, so as to ensure that the lower end of the accommodation ladder and the lower platform are held firmly against the ship's side within the parallel body length of the ship and, as far as is practicable, within the mid-ship half length and clear of all discharges.~~

~~.1 — when a combination arrangement is used for pilot access, means shall be provided to secure the pilot ladder and manropes to the ship's side at a point of nominally 1.5 m above the bottom platform of the accommodation ladder. In the case of a combination arrangement using an accommodation ladder with a trapdoor in the bottom platform (i.e. embarkation platform), the pilot ladder and manropes shall be rigged through the trapdoor extending above the platform to the height of the handrail.~~

- .1 the accommodation ladder leads aft;
- .2 the lower platform of the accommodation ladder is secured to the ship's side by means of permanent fixtures in the ship's side or removable fixtures;
- .3 the lower platform shall be in a horizontal position, clear of all discharges and secured to the ship's side when in use and shall be a minimum of 5 m above the surface of the water in all seagoing conditions of draught and trim;
- .4 the lower end of the accommodation ladder and the lower embarkation platform are held firmly against the ship's side within the parallel body length of the ship and within the mid-ship half length;
- .5 the pilot ladder and manropes are secured to the ship's side at a point of nominally 1.5 m above the lower platform of the accommodation ladder; and
- .6 the pilot ladder and manropes are not secured to the lower embarkation platform at any time.

.3 In the case of a combination arrangement having an accommodation ladder with a trapdoor in the lower platform, the lower platform shall be designed, positioned and rigged so that in addition to the requirements of paragraph 3.3.2:

- .1 the pilot ladder and man-ropes are rigged through the trapdoor aperture without obstruction or distortion so they remain in alignment with and against the ship side and extend to a height of at least 2 m above the lower platform and remain compliant with paragraph 3.3.1.3. The pilot ladder shall not be suspended from the deck of the lower platform of the accommodation ladder; and

- .2 the trapdoor shall be opened and positively secured flat on the embarkation platform or against a stanchion either aft or outboard of the aperture.

3.4 [Regardless of the arrangement used, equipment and arrangements shall be designed and rigged so that at no time is a pilot ladder side rope or manrope subject to contact with any part of the ship's hull or associated fixtures and fittings which bend, chafe or otherwise degrade their safe working load] [or regardless of the arrangement used, equipment and arrangements shall be designed and rigged so that they are not over a "knife-edge" or sharp edge that can chafe side ropes. In these and similar instances, a means of rounding, such as a pipe, shall be affixed to allow the side ropes to rest on the edge with a minimum of chafing.]

#### **4 Access to the ship's deck**

Means shall be provided to ensure safe, convenient and unobstructed passage for any person embarking on, or disembarking from, the ship between the head of the pilot ladder, or of any accommodation ladder or other appliance, and the ship's deck. Where such passage is by means of:

- .1 a gateway in the rails or bulwark, adequate handholds shall be provided;
- .2 a bulwark ladder, two handhold stanchions rigidly secured to the ship's structure at or near their bases and at higher points shall be fitted. The bulwark ladder shall be securely attached to the ship to prevent overturning.

#### **5 Shipline openings, doors and platforms**

5.1 Shipline doors used for pilot transfer shall not open outwards.

5.2 Pilot ladders rigged from ship side openings without a boarding platform shall not extend above the lowest deck of the opening and shall be secured using strongpoints inboard of the shipline opening and shall not be rigged from any other position, including the freeboard deck.

5.3 Pilot ladders rigged from ship side openings with a boarding platform complying with paragraph 5.4 shall be rigged aft of such platforms and may be rigged from the freeboard deck provided that the ladder and man-ropes are secured above the platform in accordance with paragraph 3.3.2.5.

5.4 Boarding platforms deployed from shipline openings and outboard of the ship in any event shall:

- .1 not be provided where the distance from the platform to the surface of the water in all seagoing conditions of draught and trim associated with the normal operation of the ship is less than 5 m; and
- .2 if provided, not be used for pilot transfer when the distance from the platform to the surface of the water is less than 5 m due to the seagoing condition of draught or trim of the ship.

#### **6 Mechanical pilot hoists**

Mechanical pilot hoists shall not be used.

## **7 Associated equipment**

7.1 The following associated equipment shall be kept at hand the point of access to or egress from the ship and shall be ready for immediate use when persons are being transferred:

- .1 two man-ropes of not less than 28 mm and not more than 32 mm in diameter properly secured to the ship if required by the pilot; man-ropes shall be fixed at the rope end to the ring plate strongpoints fixed on deck and shall be ready for use when the pilot disembarks, or upon request from a pilot approaching to board (the manropes shall reach the height of the stanchions or bulwarks at the point of access to the deck before terminating at the ring plate strongpoints on deck);
- .2 a lifebuoy equipped with a self-igniting light;
- .3 a heaving line.

7.2 When required by paragraph 4 above, stanchions and bulwark ladders shall be provided.

## **8 Lighting**

Adequate lighting shall be provided to illuminate the transfer arrangements overside and the position on deck where a person embarks or disembarks.

## **9 Operational readiness, onboard inspection and maintenance**

9.1 Equipment and arrangements for pilot transfer shall be in good order, free from contamination and ready for use.

9.2 Equipment and arrangements shall be subject to periodic inspection and maintenance that conform to standards acceptable<sup>5</sup> to the Organization. The pilot ladders shall be inspected before and after each use. Additionally, a detailed inspection shall be conducted at three-month intervals.

9.3 A maintenance plan shall be developed and shall be available for inspection whenever required by the Administration. The maintenance plan shall be easily understood, illustrated wherever possible, and as appropriate, shall include the following:

- .1 a checklist for use when carrying out the inspections required by paragraph 9.2;
- .2 maintenance, repair and storage instructions;
- .3 schedule of periodic inspection and maintenance;
- .4 list of sources of spare parts or replacements;
- .5 log for records of inspections and maintenance.

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<sup>5</sup> Refer to the standards by the International Organization for Standardization, in particular publications ISO 799-2:2021 Ships and marine technology — Pilot ladders —Part 2: Maintenance, use, survey, and inspection

9.4 Replacement of steps and fixtures shall be manufacturer approved steps and fixtures.

9.5 Pilot ladders [and man-ropes] shall be removed from service, either at any time not complying with this regulation, or [within 36 months after the date of delivery] [within 30 months after the date of manufacture], whichever occurs earlier and shall not be used for the embarkation and disembarkation of personnel.

## **10 Instructions and onboard training**

10.1 Personnel responsible for the inspection, maintenance, rigging or operation of any equipment for pilot transfer arrangements shall receive instructions and training so that they have the necessary knowledge and skills to perform their assigned duties.

10.2 The instructions and training shall include but not necessary be limited to:

- .1 operation and use of the equipment and arrangements of pilot transfer provided on board the ship;
- .2 the characteristics of pilot boarding arrangements which shall not be used for pilot transfer; and
- .3 requirements, regulations and standards associated with pilot transfer arrangements and equipment.

10.3 Records of instructions and training required in paragraph 10.1 shall be retained and shall be available for inspection whenever required by the Administration.

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## ANNEX 2

### DRAFT REVISION OF RESOLUTION A.1045(27), AS AMENDED

#### RECOMMENDATION PERFORMANCE STANDARDS FOR ON PILOT TRANSFER ARRANGEMENTS

## 1 GENERAL

~~Ship designers are encouraged to consider all aspects of pilot transfer arrangements at an early stage in design. Equipment designers and manufacturers are similarly encouraged, particularly with respect to the provisions of paragraphs 2.1.2, 3.1 and 3.3.~~

Equipment and arrangements for pilot transfer should comply with the general requirements set out in SOLAS regulation V/23 and with the following minimum standards.

## 2 PILOT LADDERS

~~A pilot ladder should be certified by the manufacturer as complying with this section or with the requirements of an international standard acceptable to the Organization.<sup>4</sup>~~

### 2.1 Position and construction

2.1.1 The securing strong points, shackles and securing ropes should be at least as strong as the side ropes specified in section 2.2 below.

2.1.2 The steps of the pilot ladders should comply with the following requirements:

- .1 if made of hardwood, they should be made in one piece, free of knots;
- .2 if made of material other than hardwood, they should be of equivalent strength, stiffness and durability to the satisfaction of the Administration;
- .3 the four lowest steps ~~may~~ **should** be of rubber of sufficient strength and stiffness or other material to the satisfaction of the Administration;
- .4 they should have an efficient non-slip surface;
- .5 they should be not less than 400 mm between the side ropes, 115 mm wide and 25 mm in depth, excluding any non-slip device or grooving;
- .6 they should be equally spaced not less than 310 mm or more than 350 mm apart; and
- .7 they should be secured in such a manner that each will remain horizontal.

2.1.3 No pilot ladder should have more than two replacement steps which are secured in position by a method different from that used in the original construction of the ladder, and any steps so secured should be replaced as soon as reasonably practicable by steps secured in position by the method used in the original construction of the pilot ladder. When any replacement step is secured to the side ropes of the pilot ladder by means of grooves in the sides of the step, such grooves should be in the longer sides of the step.

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<sup>4</sup> Refer to the recommendations by the International Organization for Standardization, in particular publication ISO 799-1:2019, *Ships and marine technology — Pilot ladders*.

2.1.4 Pilot ladders with more than five steps should have spreader steps not less than 1.8 m long provided at such intervals as will prevent the pilot ladder from twisting. The lowest spreader step should be the fifth step from the bottom of the ladder and the interval between any spreader step and the next should not exceed ~~eight~~ ~~nine~~ steps.

2.1.5 When a retrieval line is considered necessary to ensure the safe rigging of a pilot ladder, the line should be fastened at or above the last spreader step and should lead forward. The retrieval line should not hinder the pilot nor obstruct the safe approach of the pilot boat.

2.1.6 A permanent marking should be provided at regular intervals (e.g. 1 m) throughout the length of the ladder consistent with ladder design, use and maintenance in order to facilitate the rigging of the ladder to the required height.

2.1.7 The pilot ladder should be so positioned and secured that:

- .1 it is clear of any possible discharges from the ships and at all times hangs vertically, freely and without obstruction;
- .2 it is within the parallel body length of the ship and within the mid-ship half length of the ship;
- .3 each step rests firmly against the ship's side throughout the entire length of the ladder;
- .4 the single length of pilot ladder is capable of reaching the surface of the water from the point of access to, or egress from, the ship in all seagoing conditions of draught and trim and the specific condition of an adverse list of 15° of the lightest ship condition; and
- .5 when used in conjunction with a ship-side opening, conformity with paragraph 4.1.

2.1.8 Pilot ladders should be permanently marked by the manufacturer with at least the following information on the underside of the upper most step and on the topside of the lowermost spreader:

- .1 the name of the manufacturer;
- .2 an equipment serial number or other means of unique identification;
- .3 date of manufacture; and
- .4 statement of suitability, or otherwise, of the pilot ladder for use on winch reels and the minimum compatible winch drum diameter.

## 2.2 Side ropes

2.2.1 The side ropes of the pilot ladder should consist of two uncovered ropes not less than ~~48~~ 20 mm in diameter on each side and should be continuous, with no joints and have a breaking strength of at least 24 Kilo Newtons per side rope. The two side ropes should each consist of one continuous length of rope, the midpoint half-length being located on a thimble large enough to accommodate at least two passes of side rope.<sup>1</sup>

2.2.2 Side ropes should be made of manila or other material of equivalent strength, durability, elongation characteristics and grip which has been protected against actinic degradation and is satisfactory to the Administration.

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<sup>1</sup> Refer to the standards by the International Organization for Standardization, in particular publication ISO 799-1:2019, *Ships and marine technology — Pilot ladders*, ~~part 4.3a and part 3, paragraph 3.2.1.~~



2.2.3 Each pair of side ropes should be secured together both above and below each step with a ~~mechanical clamping device arrangement~~ properly designed for this purpose, or seizing method with step fixtures (chocks or widgets), which holds each step level when the ladder is hanging freely. Where a mechanical clamping device is used to secure each pair of side ropes together, it should grip each side rope in the pair independently and with the same grip force. Any surface of a mechanical clamping device that personnel may handle should be provided and should be no more abrasive than seizing.<sup>2</sup> Cable ties, u-clamps, worm driven clips are unacceptable.

### **3 COMBINATION ARRANGEMENT ACCOMMODATION LADDERS USED IN CONJUNCTION WITH PILOT LADDERS**

3.1 Arrangements which may be more suitable for special types of ships may be accepted, provided that they are equally safe. When a combination arrangement is used, it should be designed, installed and rigged such that:

- .1 the accommodation ladder leads aft;
- .2 the lower platform of the accommodation ladder is secured to the ship's side by means of permanent fixtures in the ship's side or removable fixtures;
- .3 the lower platform should be in a horizontal position and secured to the ship's side when in use and should be a minimum of 5 m above the surface of the water in all seagoing conditions of draught and trim;
- .4 the lower end of the accommodation ladder and the lower embarkation platform are held firmly against the ship's side within the parallel body length of the ship and within the mid-ship half length;
- .5 the lower platform is horizontal and is clear of all discharges;
- .6 the pilot ladder used should conform to the requirements in 2.1.7.1 and 2.1.7.3;
- .7 the pilot ladder and manropes are secured to the ship's side at a point of nominally 1.5 m above the lower platform of the accommodation ladder. Fixtures for the securing of the pilot ladder and man ropes should conform to standards referred to in paragraph 3.1.2; and
- .8 the pilot ladder and manropes are not secured to the lower embarkation platform at any time.

3.2 The length of the accommodation ladder should be sufficient to ensure that its angle of slope does not exceed 45°. In ships with large draft ranges, several pilot ladder hanging positions may be provided, resulting in lesser angles of slope. The accommodation ladder should be at least 600 mm in width.

~~3.3 The lower platform of the accommodation ladder should be in a horizontal position and secured to the ship's side when in use. The lower platform should be a minimum of 5 m above sea level.~~

3.3 Intermediate platforms, if fitted, should be self-levelling. Treads and steps of the accommodation ladder should be so designed that an adequate and safe foothold is given at the operative angles.

3.4 The ladder and platform should be equipped on both sides with stanchions and rigid handrails, but if handropes are used they should be tight and properly secured. The vertical space between the handrail or handrope and the stringers of the ladder should be securely fenced.

3.5 The pilot ladder should be rigged immediately adjacent to the lower platform of the accommodation ladder and the upper end should extend at least 2 m above the lower platform. The horizontal distance between the pilot ladder and the lower platform should be between 0.1 and 0.2 m.

~~3.7 If a trapdoor is fitted in the lower platform to allow access from and to the pilot ladder, the aperture should not be less than 750 mm x 750 mm. The trapdoor should open upwards and be secured either flat on the embarkation platform or against the rails at the aft end or outboard side of the platform and should not form part of the handholds. In this case the after part of the lower platform should also be fenced as specified in paragraph 3.5 above, and the pilot ladder should extend above the lower platform to the height of the handrail and remain in alignment with and against the ship's side.~~

3.6 In the case of a combination arrangement using an accommodation ladder with a trapdoor in the lower platform, in any event, the lower platform should:

- .1 have an aperture with dimensions not less than 750 mm x 750 mm which is open to the ship's hull on the inboard side and which is designed to ensure that the horizontal distance between the pilot ladder and adjacent edges of the aperture is not more than 0.2 m;
- .2 be designed to allow, and be rigged to ensure, the ladder and man-ropes pass through the aperture without obstruction or distortion so they remain in alignment with and against the ship side and extend to a height of at least 2 m above the lower platform and remain compliant with paragraph 2.1.7.3. The pilot ladder should not be suspended from the deck of the lower platform of the accommodation ladder;
- .3 on the inboard side, be open to the ship's hull to allow the pilot ladder to comply with paragraphs 2.1.7.1, 2.1.7.3 and 3.6.2;
- .4 have a trapdoor which opens upwards and which is positively secured flat on the embarkation platform or against a stanchion either aft or outboard of the aperture; and
- .5 be provided with sufficient handholds with a round diameter of no less than 28 mm and no more than 32 mm to allow safe mounting or dismounting of the pilot ladder. The structure of the platform itself should not be relied upon to provide handholds.

3.7 Strongpoints, shackles and securing ropes used to rig the arrangements provided for in sections 2 and 3 should have a breaking strength of not less than 48 kN and be positioned not less than 915 mm from the edge of the deck or platform.

3.8 Permanent or removable means of securing to the ship's hull provided to comply with paragraph 3.1.2 should not be used to support the weight of the boarding arrangement or pilot and should not be used for any other purpose than to secure the arrangement against the ship's side. Removable means of securing to the ship's side should be able to be applied and removed by a single person and should have a holding force of not less than 4 kN when used for the purpose in paragraph 3.1.2 or 3 kN when used for the purpose in 3.1.7.

3.9 Pilot boarding arrangements should be designed and rigged so that at no time is a pilot ladder side rope or manrope subjected to contact with any part of the ship's hull or associated fixtures and fittings which bend, chaff or otherwise degrade their safe working load.

3.10 Accommodation ladders, together with any suspension arrangements or attachments fitted and intended for use in accordance with this recommendation, should be to the satisfaction of the Administration.<sup>2</sup>

#### **4 MECHANICAL PILOT HOISTS**

~~The use of mechanical pilot hoists is prohibited by SOLAS regulation V/23.~~

#### **4 SHIPSIDE OPENINGS, DOORS AND PLATFORMS**

4.1 Pilot ladders used in conjunction with ship side openings without a boarding platform shall not extend above the lowest deck of the opening and shall be secured using strongpoints inboard of the shipside opening and shall not be rigged from any other position, including the freeboard deck.

4.2 Pilot ladders used in conjunction with ship side openings with a boarding platform complying with paragraph 4.3 should be rigged aft of such platforms and may be rigged from the freeboard deck provided that the ladder and man-ropes are secured above the platform in accordance with paragraph 3.1.7.

4.3 Boarding platforms deployed from shipside openings and outboard of the ship in any event shall:

- .1 not be provided where the distance from the platform to the surface of the water in all seagoing conditions of draught and trim associated with the normal operation of the ship is less than 5 m; and
- .2 if provided, not be used for pilot transfer when the distance from the platform to the surface of the water is less than 5 m due to the seagoing condition of draught or trim of the ship.

4.4 Stanchions should be provided when ladders are rigged from shipside openings and should be positioned no greater than 0.12 m inboard of the edge of the deck.

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<sup>2</sup> Refer to SOLAS regulation II-1/3-9 concerning accommodation ladders.

## 5 ACCESS TO DECK

Means should be provided to ensure safe, convenient and unobstructed passage for any person embarking on, or disembarking from, the ship between the head of the pilot ladder, or of any accommodation ladder, and the ship's deck; such access should be gained directly by a platform securely guarded by handrails. Where such passage is by means of:

- .1 a gateway in the rails or bulwark, adequate handholds with a diameter of not less than 32 mm and not more than 36 mm should be provided at the point of embarking on or disembarking from the ship on each side which should be not less than 0.7 m and not more than 0.8 m apart as measured from the centerline of the handholds. Each handhold should be rigidly secured to the ship's structure at or near its base and also at a higher point, not less than 32 mm in diameter and extend not less than 1.2 m above the top of the bulwarks. Stanchions or handrails should not be attached to the bulwark ladder and should be positioned no greater than 0.12 m inboard of the edge of the deck;
- .2 a bulwark ladder should be securely attached to the ship to prevent overturning. Two handhold stanchions with a diameter of not less than 32 mm and not more than 36 mm should be fitted at the point of embarking on or disembarking from the ship on each side which should be not less than 0.7 m or more than 0.8 m apart. Each stanchion should be rigidly secured to the ship's structure at or near its base and also at a higher point, ~~should be not less than 32 mm in diameter~~ and should extend not less than 1.2 m above the top of the bulwarks. Stanchions or handrails should not be attached to the bulwark ladder and should be positioned no greater than 0.12 m inboard of the edge of the deck; and
- .3 where manropes are used, a ring with an inner diameter not less than 60 mm at a height of 1.2 m above the deck should be provided to accommodate manropes.

## 6 SAFE APPROACH OF THE PILOT BOAT

Where rubbing bands or other constructional features might prevent the safe approach of a pilot boat, these should be cut back to provide at least 6 metres of unobstructed ship's side. Specialized offshore ships less than 90 m or other similar ships less than 90 m for which a 6 m gap in the rubbing bands would not be practicable, as determined by the Administration, do not have to comply with this requirement. In this case, other appropriate measures should be taken to ensure that persons are able to embark and disembark safely.

### 6-1 ASSOCIATED EQUIPMENT

6-1.1 Manropes provided should be not less than 28 mm and not more than 32 mm in diameter and should be grade one manilla rope and free from contamination and knots.

6-1.2 Heaving line provided should be free from contamination and have a length which means it can reach the waterline in any seagoing condition of draught or trim.

6-1.3 Strongpoints and shackles used to secure man-ropes should comply with paragraph 3.7-1.

## **7 INSTALLATION OF PILOT LADDER WINCH REELS**

Pilot ladders should not be stored on a winch drum if the pilot ladder is stated by the manufacturer as not being suitable for such storage; or the winch drum diameter of winch reels provided on board is less than the minimum stated as compatible by the manufacturer.

### **7.1 Point of access**

7.1.1 When a pilot ladder winch reel is provided it should be situated at a position which will ensure persons embarking on, or disembarking from, the ship between the pilot ladder and the point of access to the ship, have safe, convenient and unobstructed access to or egress from the ship.

7.1.2 The point of access to or egress from the ship may be by a ship's side opening, an accommodation ladder when a combination arrangement is provided, or a single section of pilot ladder.

7.1.3 The access position and adjacent area should be clear of obstructions, including the pilot ladder winch reel, for distances as follows:

- .1 a distance of 915 mm in width measured longitudinally;
- .2 a distance of 915 mm in depth, measured from the ship's side plating inwards; and
- .3 a distance of 2,200 mm in height, measured vertically from the access deck.

### **7.2 Physical positioning of pilot ladder winch reels**

7.2.1 Pilot ladder winch reels are generally fitted on the ship's upper (main) deck or at a ship's side opening which may include side doors, gangway locations or bunkering points. Winch reels fitted on the upper deck may result in very long pilot ladders.

7.2.2 Pilot ladder winch reels which are fitted on a ship's upper deck for the purpose of providing a pilot ladder which services a ship side opening below the upper deck or, alternatively, an accommodation ladder when a combination arrangement is provided should:

- .1 be situated at a location on the upper deck from which the pilot ladder is able to be suspended vertically, in a straight line, to a point adjacent to the ship side opening access point or the lower platform of the accommodation ladder;
- .2 be situated at a location which provides a safe, convenient and unobstructed passage for any person embarking on, or disembarking from, the ship between the pilot ladder and the place of access on the ship;
- .3 be situated so that safe and convenient access is provided between the pilot ladder and the ship's side opening by means of a platform which should extend outboard from the ship's side for a minimum distance of 750 mm, with a longitudinal length of a minimum of 750 mm. The platform should be securely guarded by handrails;

- .4 safely secure the pilot ladder and manropes to the ship's side at a point on the ship's side at a distance of 1.5 m above the platform access point to the ship side opening or the lower platform of the accommodation ladder; and
- .5 if a combination arrangement is provided, have the accommodation ladder secured to the ship's side at or close to the lower platform so as to ensure that the accommodation ladder rests firmly against the ship's side.

7.2.3 Pilot ladder winch reels fitted inside a ship's side opening should:

- .1 be situated at a position which provides a safe, convenient and unobstructed passage for any person embarking on, or disembarking from, the ship between the pilot ladder and the place of access on the ship;
- .2 be situated at a position which provides an unobstructed clear area with a minimum length of 915 mm and minimum width of 915 mm and minimum vertical height of 2.2 m; and
- .3 if situated at a position which necessitates a section of the pilot ladder to be partially secured in a horizontal position on the deck so as to provide a clear access as described above, then allowance should be made so that this section of the pilot ladder may be covered with a rigid platform for a minimum distance of 915 mm measured horizontally from the ship's side inwards.

### 7.3 Handrails and handgrips

Handrails and handgrips should be provided in accordance with section 5 to assist the pilot to safely transfer between the pilot ladder and the ship, except as noted in paragraph 7.2.2.3 for arrangements with platforms extending outboard. The horizontal distance between the handrails and/or the handgrips should be not less than 0.7 m or more than 0.8 m apart.

### 7.4 Securing of the pilot ladder

Where the pilot ladder is stowed on a pilot ladder winch reel which is located either within the ship's side opening or on the upper deck:

- .1 the pilot ladder winch reel should not be relied upon to support the pilot ladder when the pilot ladder is in use;
- .2 the pilot ladder should be secured to a strong point, independent of the pilot ladder winch reel; and
- .3 the pilot ladder should be secured at deck level inside the ship side opening or, when located on the ship's upper deck, at a distance of not less than 915 mm measured horizontally from the ship's side inwards.

### 7.5 Mechanical securing of pilot ladder winch reel

7.5.1 All pilot ladder winch reels should have means of preventing the winch reel from being accidentally operated as a result of mechanical failure or human error.

7.5.2 Pilot ladder winch reels may be manually operated or, alternatively, powered by either electrical, hydraulic or pneumatic means.

7.5.3 Manually operated pilot ladder winch reels should be provided with a brake or other suitable arrangements to control the lowering of the pilot ladder and to lock the winch reel in position once the pilot ladder is lowered into position.

7.5.4 Electrical, hydraulic or pneumatically driven pilot ladder winch reels should be fitted with safety devices which are capable of cutting off the power supply to the winch reel and thus locking the winch reel in position.

7.5.5 Powered winch reels should have clearly marked control levers or handles which may be locked in a neutral position.

7.5.6 A mechanical device or locking pin should also be utilized to lock powered winch reels.

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**ANNEX 3**

**Inconsistencies identified between IMO and ISO standards**

No.	IMO resolution A.1045(27)	ISO 799-1:2019	Proposals
1	2.1.3 No pilot ladder should have <u>more than two replacement steps which are secured in position by a method different from that used in the original construction of the ladder</u> , and any steps so secured should be replaced as soon as reasonably practicable by steps secured in position by the method used in the original construction of the pilot ladder.	10.1 Damaged steps shall be replaced with replacement steps meeting the relevant requirements in Clause 4 and of the type supplied or specified by the ladder manufacturer. <u>A ladder shall not include more than two replacement steps and one replacement spreader step.</u>	Resolution A.1045(27) is proposed to be amended to be consistent with that of ISO 799-1:2019.
2	2.1.4 Pilot ladders with more than five steps should have spreader steps not less than 1.8 m long provided at such intervals as will prevent the pilot ladder from twisting. The lowest spreader step should be the fifth step from the bottom of the ladder and <u>the interval between any spreader step and the next should not exceed nine steps.</u>	In accordance with 5.23, the positions of the spreader ladders are 5, 14, 23, 32..., which implies that the interval is not exceeding eight steps.	Resolution A.1045(27) is proposed to be amended to be consistent with that of ISO 799-1:2019.
3	2.2.3 Each pair of side ropes should be secured together both above and below each step with a <u>mechanical clamping device</u> properly designed for this purpose, or seizing method with step fixtures (chocks or widgets), which holds each step level when the ladder is hanging freely. The preferred method is seizing.	4.4 Step fixtures for securing each step of a ladder shall have rope seizing or purpose made arrangement such as solid nylon clamp blocks or hardwood clamp blocks to prevent the fasteners from loosening. <u>Cable ties, u-clamps, worm driven clips are unacceptable.</u>	Resolution A.1045(27) is proposed to be amended to be consistent with that of ISO 799-1:2019.
4	2.2.1 The side ropes of the pilot ladder should <u>consist of two uncovered ropes not less than 18 mm in diameter on each side</u> and should be continuous, with no joints and have a breaking strength of at least 24 Kilo Newtons per side rope.	4.2 Side ropes 4.2.1 General arrangement Each side rope shall have a breaking strength of at least 24 kN, and <u>the specification of the diameter of side ropes should be 20 mm (63 mm circumference).</u>	Resolution A.1045(27) is proposed to be amended to be consistent with that of ISO 799-1:2019.