Introduction

CHIRP has received many reports relating to failings when rigging accommodation ladders in conjunction with pilot ladders. Despite regulatory procedures from the International Maritime Organization in the form of SOLAS V Regulation 23, plus Assembly Resolution A.1045(27), as amended by A.1108(29), and much industry guidance from many sources, the lives of marine pilots and others using these arrangements continue to be put at risk. These poor practices make it clear that a more informed use of the correct methodology must be applied when rigging pilot ladders in combination with an accommodation ladder. This will lead to safer practices and outcomes.

Combination Ladders

The term “Combination Ladder” may refer to either an arrangement where the lower platform of the accommodation ladder is fitted with a trapdoor to allow “through” rigging of the pilot ladder (thus permitting the pilot to safely transfer to the platform or to deck), or a simple step over arrangement where the pilot ladder is rigged beside the lower platform.

In either case, the methodology of rigging the combination should be carefully assessed by conducting a thorough risk assessment. The arrangement should be properly planned and carefully supervised whilst being rigged and this should include a thorough inspection of all relevant fittings. At the time of transfer, an officer (not a cadet or rating), should oversee the operation and maintain direct communication with the bridge.

Combination Ladder – Trapdoor arrangement

A trapdoor designed to facilitate safe transfer may either be through an accommodation ladder platform, or it may lead to a platform directly to deck. In either case the following configuration should be put in place in order to facilitate a safe transfer. The platform or ladder combination must ensure that the pilot does not have to climb more than 9 metres, nor less than 1.5 metres by means of the pilot ladder. In addition, the accommodation ladder should be no lower than five metres above the waterline to enable the pilot launch to make a safe approach.

Figure 1 – A trapdoor arrangement through an accommodation ladder rigged correctly
Photo courtesy of Adam Roberts AMPI
For a trapdoor arrangement, the pilot ladder must extend above the lower platform to the ships side rails.

The pilot ladder must be firmly attached to the ship’s side at a height of 1.5 metres above the platform.

All steps of a pilot ladder must lie flat against the side of the ship.

If the trapdoor arrangement is in conjunction with an accommodation ladder, then the accommodation ladder should also be secured to the ship’s side in order to prevent it swinging. In addition, the platform of the accommodation ladder is to be horizontal. The trapdoor, (minimum 750mm x 750mm), should open upwards and be secured vertically.

The accommodation ladder angle is not to be greater than 45 degrees, and the ladder itself should lead aft.

The accommodation ladder and platform should have rigid handrails and stanchions on both sides. Any other arrangement should provide full safety for boarding, be properly secured and securely fenced.

If a vessel has been properly constructed and designed, or if sufficient attention has been paid to older ships when retro-fitting the equipment to comply with newer regulations, then the bulleted list is not difficult to comply with. However, in order to achieve this, the company management will need to ensure that effective processes for both new and existing ships are in place. Unfortunately, CHIRP continues to receive a high number of reports that indicate non-compliance and some of them are described below.

Figure 2 shows an arrangement where the pilot ladder has been rigged by connecting it to eyebolts welded below the trapdoor/hatch. In this case the regulatory failings are:

- The pilot ladder does not lie flush against the ship’s side.
- The ladder does not extend sufficiently past the trapdoor (to the ships side rails).
- The pilot ladder should be firmly attached to the ship’s side at a height of 1.5 metres above the trapdoor.

In addition, the pilot has no effective means of safely making the transition to the accommodation ladder platform from the pilot ladder.
All of the above were noted upon arrival and discussed on board with the vessel’s management. The vessel did offer a solution prior to departure and this is discussed in Figures 3 and 4.

Figure 3 shows the same ladder as Figure 2, but it has been raised to be flush with the maindeck. However, it still raises concerns as to the safety of the arrangement. For departure, the ladder had been removed from the eyebolts and rigged over the railing of the accommodation ladder prior to being reconnected to the eyebolts. This was done in order to comply with the requirement that a ladder must extend 1.5 metres above the platform. This configuration led to the ladder not being flush against the ship’s side as shown in Figure 4. It also led to the pilot ladder being angled outboard towards the trapdoor at the point of embarkation, so the pilot had to lean back in order to board/disembark. This in turn impacted upon the safety of the transfer of the pilot from pilot ladder to accommodation ladder and vice versa. Finally, the pilot ladder in its entirety is supported solely by the accommodation ladder railing, which it is a load it is not designed for.
Figure 4 shows the disembarkation arrangement with the ladder not resting flush with the ship’s side.

Having further discussed the arrangement with the vessel, it was requested that the vessel revert to the original eyebolt configuration until permanent modifications could be made to ensure compliance.

Whilst CHIRP appreciates the efforts of the vessel to try to comply with the request of the pilot in this case, the example does show the difficulties which can be experienced. Full compliance must be addressed either at the new building stage, or at a vessel’s dry docking when a retrofit can be implemented to ensure that the latest SOLAS regulatory requirements are adhered to. If not, issues like this will continue to occur. In this particular case, the vessel’s managers were contacted by the local Port Authority with full details of the issue.

**Combination Ladder – Step over arrangement**

The regulatory requirements for an arrangement where the pilot steps off a pilot ladder onto the platform of an accommodation ladder are similar to that of a trapdoor/hatch configuration, with the main difference being that the pilot ladder must extend at least 2 metres above the lower platform, (not necessarily all the way to the ship side rails). Non-compliant arrangements continue to be regularly reported to CHIRP.

Requirements are that;

- The pilot ladder **must** extend 2 metres above the lower platform.
- The pilot ladder **must** be firmly attached to the ship’s side at a height of 1.5 metres above the platform.
- All steps of a pilot ladder must lie flat against the side of the ship.

The following photos show examples of non-compliance which can be easily remedied.
In Figure 5, it can be seen that the Pilot Ladder is not secured to the ship’s side 1.5 metres above the accommodation ladder platform. Therefore, the only method that a pilot can use to transfer from the pilot ladder to the accommodation ladder is to make a grab for the outboard stanchion of the latter. CHIRP simply asks whether you would be prepared to risk your life on the effectiveness of a single pole on a platform that may or may not have been effectively rigged. The picture on the right shows the man ropes, which have also been incorrectly rigged.

The next picture shows the same pilot ladder from sea level as the pilot approaches to board. There is a spliced loop at the bottom of the ladder as opposed to the regulatory continuous length of rope. The third rubber step is damaged.
All of the evidence in Figures 5 and 6 indicate a complete lack of awareness of requirements, a lack of maintenance, a lack of supervision, and a lack of company oversight.

The ladder in Figure 7 is missing all forms of securing to the ship’s side. The ladder itself is in poor condition and obviously not horizontal. In addition, it was reported that this ladder was covered in palm kernel from a previous cargo. The pilot quite correctly refused to board until a compliant boarding arrangement was provided. It is reported that the crew had little understanding of what was required, which is probably a reflection of the attitude of the company’s management as well.
Sundry fittings and procedures

With both pilot ladders and combination arrangements, CHIRP continues to receive many reports of non-compliance. The diagrams below illustrate the only correct way of rigging a tripping line. The top two diagrams with the line attached to the bottom of the ladder are incorrect since the pilot boat gunwhale may become fouled on the rope. Regarding the bottom two pictures, the tripping line must be rigged at or above the lower spreader and must lead forward so that the line does not risk becoming entangled with the pilot boat as it approaches from aft.

Another area where CHIRP receives reports is related to the rigging of secure attachments. The most common methods are magnetic or vacuum pads as shown in Figure 9. Less common, but equally effective are eyebolts on the hull at the point of attachment to an accommodation ladder. All too often an arrangement of this type is not provided or is ineffective. This leaves a pilot against the ship’s side, and...
an accommodation ladder that can swing out if the vessel rolls. CHIRP appreciates that these fittings may not be easy to rig, but all a pilot requires is a safe and stable platform to be able to embark or disembark safely.

CHIRP also notes that it is a common but unsafe practice to attach the pilot ladder to the accommodation ladder. If the accommodation ladder and pilot ladder have been correctly secured to the ships side, then this practice is unnecessary since it has a tendency to move the pilot ladder away from the vertical and can also cause obstructions to effective boarding. For both a trap door combination arrangement and a “step over” combination the horizontal distance between pilot ladder and accommodation ladder should be between 0.1 metres and 0.2 metres.

ladder unstable or not resting

Judging the height when rigging a pilot ladder can be tricky. Marking off each metre of the ladder with different coloured tape is an effective method to ensure that the correct height is rigged as requested, since the vessel's freeboard is surely known. Marking a ladder in this way also ensures it is less likely to rig a ladder with the steps anything less than horizontal – refer to Figure 7

Conclusions

CHIRP is receiving far too many reports relating to deficiencies in pilot embarking and disembarking arrangements, including incorrect rigging of combination ladders and maintenance of the equipment. CHIRP believes that an inspection by a responsible officer prior to an operation should determine whether the arrangement is safe to use. After all, if you would not trust yourself with the arrangement why would you expect anybody else to use it? CHIRP actively encourages pilots, and all other personnel using combination ladders not to accept non-compliant arrangements and to refuse to embark or disembark until a compliant and safe arrangement has been provided.

Useful References
2. Pilot ladders – UKMPA – Reporting Non-Compliance
3. Safety at Sea – Safety Focus – Pilot ladder neglect
4. IMPA – Safety Campaign 2016
5. The Nautical Institute – Seaways 2016 – Securing Pilot Ladders
7. SOLAS Chapter V – Regulation 23
8. UKMPA The Embarkation and Disembarkation of Pilots – Code of Safe Practice - August 2017
The IMPA Pilots Boarding Poster is reproduced in Annex 1 below, and the IMO Resolutions A.1045 (27) and A.1108 (29) relating to safe pilot transfer arrangements are reproduced as Annexes 2 and 3.

Annex 1 – IMPA Pilot Boarding Poster

The pilot boarding poster shown in Figure 10 may be downloaded from the IMPA website by following this link – IMPA Downloads. The file is available for download in English, French, Spanish, and Chinese. A laminated version is also available from Witherbys Seamanship.

Figure 10 – Pilot Boarding Poster (Courtesy IMPA)
Annex 2 – IMO Assembly Resolution A.1045 (27)

ASSEMBLY
27th session
Agenda item 9

Resolution A.1045(27)
Adopted on 30 November 2011
(Agenda item 9)

PILOT TRANSFER ARRANGEMENTS

THE ASSEMBLY,

RECALLING Article 15(j) of the Convention on the International Maritime Organization regarding the functions of the Assembly in relation to regulations and guidelines concerning maritime safety,

NOTING the provisions of regulation V/23 of the International Convention for the Safety of Life at Sea (SOLAS), 1974, as amended,

HAVING CONSIDERED the recommendation made by the Maritime Safety Committee at its eighty-seventh session,

1. ADOPTS the "Recommendation on Pilot Transfer Arrangements", as set out in the Annex to the present resolution;

2. INVITES Governments to draw the attention of all concerned to this recommendation;

3. FURTHER INVITES Governments to ensure that mechanical pilot hoists are not used;

4. REQUESTS Governments to ensure that pilot ladders and their arrangements, use and maintenance conform to standards not inferior to those set out in the annex to the present resolution;

5. REVOCKES resolution A.889(21).
Annex

RECOMMENDATION 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.

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.¹

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 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.

¹ Refer to the recommendations by the International Organization for Standardization, in particular publication ISO 799:2004, 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 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.

2.2 Ropes

2.2.1 The side ropes of the pilot ladder should consist of two uncovered ropes not less than 18 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.\(^2\)

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.

2.2.3 Each pair of side ropes should be secured together both above and below each step with a mechanical clamping device 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.\(^2\)

3 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.

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.

3.4 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.

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\(^2\) Refer to the recommendations by the International Organization for Standardization, in particular publication ISO 799:2004, *Ships and marine technology — Pilot ladders*, part 4.3a and part 3, paragraph 3.2.1.
3.5 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.

3.6 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.

3.8 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.

4 MECHANICAL PILOT HOISTS

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

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 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 or more than 0.8 m apart. 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;

2. a bulwark ladder should be securely attached to the ship to prevent overturning. Two handhold stanchions 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.

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3 Refer to SOLAS regulation II-1/3-9 concerning accommodation ladders.
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.

7  INSTALLATION OF PILOT LADDER WINCH REELS

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:

\[
\begin{align*}
&1. \text{ a distance of 915 mm in width measured longitudinally;} \\
&2. \text{ a distance of 915 mm in depth, measured from the ship's side plating inwards; and} \\
&3. \text{ a distance of 2,200 mm in height, measured vertically from the access deck.}
\end{align*}
\]

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:

\[
\begin{align*}
&1. \text{ be situated at a location on the upper deck from which the pilot ladder is able to be suspended vertically, in a straight line, to a point adjacent to the ship side opening access point or the lower platform of the accommodation ladder;} \\
&2. \text{ be situated at a location which provides a safe, convenient and unobstructed passage for any person embarking on, or disembarking from, the ship between the pilot ladder and the place of access on the ship;}
\end{align*}
\]
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;

safely secure the pilot ladder and manropes to the ship’s side at a point on the ship’s side at a distance of 1,500 mm above the platform access point to the ship side opening or the lower platform of the accommodation ladder; and

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:

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;

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 2,200 mm; and

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:

the pilot ladder winch reel should not be relied upon to support the pilot ladder when the pilot ladder is in use;

the pilot ladder should be secured to a strong point, independent of the pilot ladder winch reel; and

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.
Annex 3 – IMO Assembly Resolution A.1108 (29) – Pilot Boarding Arrangements

Resolution A.1108(29)
Adopted on 2 December 2015
(Agenda item 10)

AMENDMENTS TO THE RECOMMENDATION ON PILOT TRANSFER ARRANGEMENTS (RESOLUTION A.1045(27))

THE ASSEMBLY,

RECALLING Article 15(j) of the Convention on the International Maritime Organization regarding the functions of the Assembly in relation to regulations and guidelines concerning maritime safety,

RECALLING ALSO the provisions of regulation V/23 of the International Convention for the Safety of Life at Sea (SOLAS), 1974, as amended,

RECALLING FURTHER resolution A.1045(27) by which it adopted the Recommendation on pilot transfer arrangements,

HAVING CONSIDERED the recommendation made by the Maritime Safety Committee at its ninety-fifth session,

1 ADOPTS the amendments to the Recommendation on pilot transfer arrangements (resolution A.1045(27)), set out in the annex to the present resolution;

2 INVITES Governments to draw the attention of all concerned to these amendments to the Recommendation;

3 REQUESTS Governments to ensure that pilot ladders and their arrangements, use and maintenance conform to standards not inferior to those set out in the annex to resolution A.1045(27), as amended by the present resolution.
Annex

AMENDMENTS TO THE RECOMMENDATION ON PILOT TRANSFER ARRANGEMENTS (RESOLUTION A.1045(27))

5 ACCESS TO DECK

The existing paragraphs 5.1 and 5.2 are amended to read as follows:

".1    a gateway in the rails or bulwark, adequate handholds 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 or more than 0.8 m apart. Each
handhold 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 deck to which it is fitted; and

.2    a bulwark ladder, two separate handhold stanchions 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. The bulwark ladder
should be securely attached to the ship to prevent overturning. 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."