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Ref. T1/3.02

RECOMMENDATION ON HELICOPTER LANDING AREAS
ON RO-RO PASSENGER SHIPS

1   The Maritime Safety Committee, at its sixty-eighth session (28 May to 6 June 1997), noted that the 1995 SOLAS Conference, having adopted amendments to the 1974 SOLAS Convention concerning safety of ro-ro passenger ships, adopted Conference resolution 7 - Development of requirements, guidelines and performance standards, whereby the Committee was requested to develop relevant requirements, guidelines and performance standards to assist the implementation of the amendments adopted by the Conference.

2   The Committee, having considered recommendations made by the Sub-Committee on Ship Design and Equipment, at its fortieth session, and recommendations made by the Working Group on Formal Safety Assessment at MSC 70, approved the Recommendation on helicopter landing areas on ro-ro passenger ships, set out in the annex.

3   Member Governments are invited to bring the annexed recommendation to the attention of those concerned and use the provisions contained therein, as appropriate, in conjunction with the relevant requirements of the 1974 SOLAS Convention, as amended.

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ANNEX

**RECOMMENDATION ON HELICOPTER LANDING AREAS
ON RO-RO PASSENGER SHIPS**

1.1   Application

This recommendation should apply to helicopter landing areas fitted on ro-ro passenger ships of 130 m in length and upwards, constructed on or after 1 July 1999, as required by SOLAS regulation III/28.2.

1.2   Definitions

1.2.1   "Helicopter landing area" means an area on a ship designed for emergency landing of helicopters.

1.2.2   "Diameter (d)" means the overall length of the helicopter with the rotors turning. The maximum value of "d" will depend on the type and size of the helicopter. This should be agreed by the Administration taking into account the particulars of the ship and its area of operation.

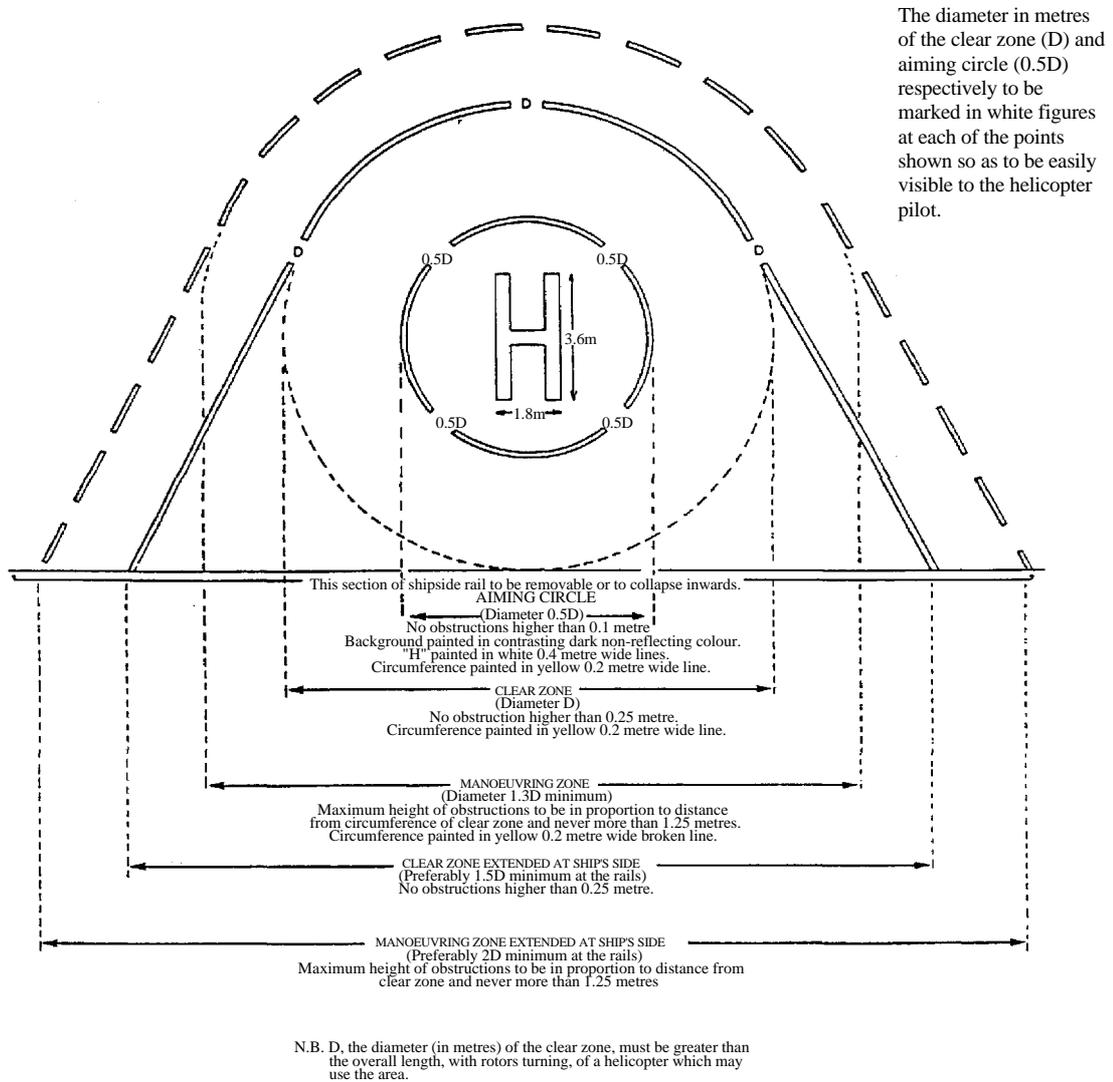**1.3   Positioning of landing area**

1.3.1   Helicopter landing areas should be located on an upper deck. The landing areas should consist of an outer manoeuvring zone and a clear zone. It is important that, whenever possible, the clear zone should be close to the ship's side.

1.3.2   The first requirement is to identify a location where there is clear access to the operating area and the exit to the ship's side.

1.3.3   Once that location has been identified, the second requirement is to establish the best position within the area for the manoeuvring zone that will give the largest clear zone.

2.2   Details of landing area

2.2.1   Landing area at ship's side

Landing areas should be as large as possible and set out to provide safe access for helicopters from the ship's side. Due account must be taken of possible helicopter slippage and wind and ship movement. Where the boundary of the clear zone is close to or in line with the ship's side, and where the height of fixed obstructions so permits (see 2.2.7 below), helicopter safety will be improved by extending the clear and manoeuvring zones to the ship's side symmetrically, thereby widening the approach to the landing area (see figure 1). This extended landing area at the ship's side is therefore the preferred operating area.
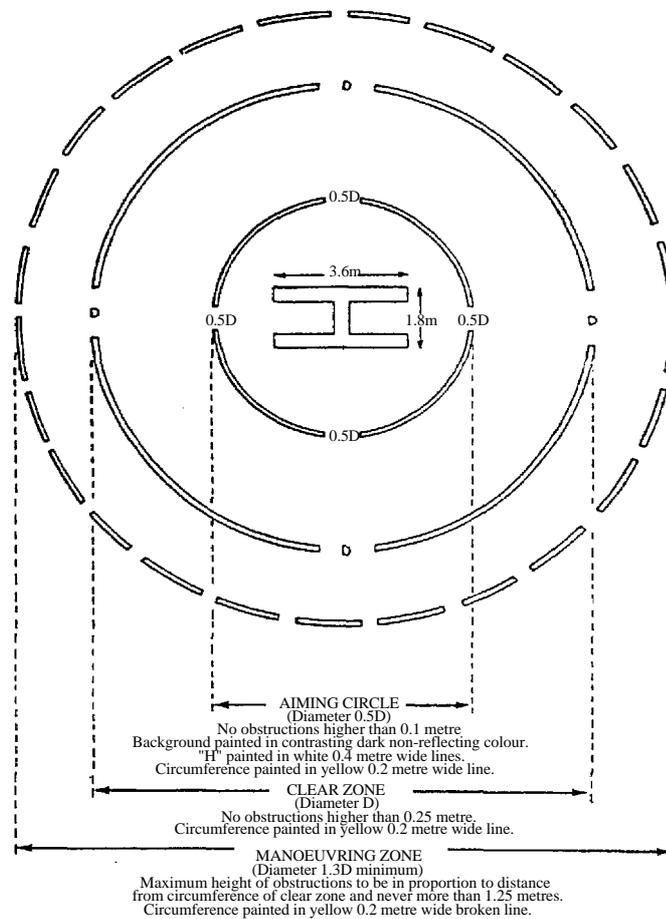
The diameter in metres of the clear zone (D) and aiming circle (0.5D) respectively to be marked in white figures at each of the points shown so as to be easily visible to the helicopter pilot.

D

0.5D   0.5D

3,6m

1.8m

0.5D   0.5D

This section of shipside rail to be removable or to collapse inwards.

AIMING CIRCLE
(Diameter 0.5D)
No obstructions higher than 0.1 metre
Background painted in contrasting dark non-reflecting colour.
"H" painted in white 0.4 metre wide lines.
Circumference painted in yellow 0.2 metre wide line.

CLEAR ZONE
(Diameter D)
No obstruction higher than 0.25 metre.
Circumference painted in yellow 0.2 metre wide line.

MANOEUVRING ZONE
(Diameter 1.3D minimum)
Maximum height of obstructions to be in proportion to distance
from circumference of clear zone and never more than 1.25 metres.
Circumference painted in yellow 0.2 metre wide broken line.

CLEAR ZONE EXTENDED AT SHIP'S SIDE
(Preferably 1.5D minimum at the rails)
No obstructions higher than 0.25 metre.

MANOEUVRING ZONE EXTENDED AT SHIP'S SIDE
(Preferably 2D minimum at the rails)
Maximum height of obstructions to be in proportion to distance from
clear zone and never more than 1.25 metres

N.B. D, the diameter (in metres) of the clear zone, must be greater than
the overall length, with rotors turning, of a helicopter which may
use the area.

Figure 1: Landing area at the ship's side

2.2.2 Landing area without unobstructed access from ship's side

Where it is not possible to provide an operating area with clear access from the ship's side, the landing area should be set out as shown in figure 2 and, if practicable, placed on the ship's centreline.

The diameter in metres
of the clear zone (D) and
aiming circle (0.5D)
respectively to be
marked in white figures
at each of the points
shown so as to be easily
visible to the helicopter
pilot.

0.5D

3.6m

0.5D   1.8m   0.5D

0.5D

AIMING CIRCLE
(Diameter 0.5D)
No obstructions higher than 0.1 metre
Background painted in contrasting dark non-reflecting colour.
"H" painted in white 0.4 metre wide lines.
Circumference painted in yellow 0.2 metre wide line.

CLEAR ZONE
(Diameter D)
No obstructions higher than 0.25 metre.
Circumference painted in yellow 0.2 metre wide line.

MANOEUVRING ZONE
(Diameter 1.3D minimum)
Maximum height of obstructions to be in proportion to distance
from circumference of clear zone and never more than 1.25 metres.
Circumference painted in yellow 0.2 metre wide broken line.

N.B. D, the diameter (in metres) of the clear zone, must be greater than
the overall length, with rotors turning, of a helicopter which may
use the area.

Figure 2: Landing area without unobstructed access from ship's side

2.2.3 **Dimensions of landing area**

In establishing a landing area, it is essential to ensure a safe correlation between:

.1   the dimensions of the aiming circle, clear zone and manoeuvring zone and the maximum permitted height of obstructions in these zones; and

.2   the sizes of helicopters expected to use the facility.

In particular, the clear zone of the landing area should be as large as practicable. Its diameter D should be not less than the overall length of a helicopter (with its rotors turning) (d) which may use it. Other dimensions of the landing area should be in proportion to the diameter of the clear zone, as illustrated in figures 1 and 2.

2.2.4   Aiming circle (Touch down zone)

2.2.4.1 The aiming circle is an area concentric to the centre of the clear zone and has a diameter half that of the clear zone itself. A circle of some 10 m diameter is required for the aiming circle of a landing area suitable for the larger helicopters in normal marine use. The circle should accommodate with safety the landing gear of helicopters for which it is intended and should therefore, if possible, be completely obstruction-free. If there are unavoidable obstructions, they should have rounded edges capable of being traversed without damaging the landing gear of a helicopter, and should be no higher than 0.1 m.

2.2.4.2 The aiming circle should be completely covered with a matt anti-slip surface painted in a dark non-reflecting colour which contrasts with the other deck surfaces. Its circumference should be marked with a yellow line 0.2 m wide, with the diameter in metres of the aiming circle clearly indicated in white figures at four points in the circumference line as shown in figures 1 and 2.

2.2.4.3 The letter 'H' should be painted at the centre of the aiming circle in 0.4 m wide white lines forming a letter of dimensions 3.6 x 1.8 m.

2.2.5   Clear zone

2.2.5.1 The diameter of the clear zone will depend upon the available landing area. The clear zone should however be as large as practicable recognizing that its diameter D must be greater than the overall length, with rotors turning, of a helicopter able to use the landing area (d). Where the landing area is at the ship's side safe helicopter access will be enhanced by widening, where possible, the boundaries of the obstacle-free clear zone at the ship's side to a dimension of at least 1.5D (see figure 1). The circumference of the clear zone should be marked by a yellow line of 0.2 m width, with the diameter D in metres indicated in white figures at points in the circumference line as shown in figures 1 and 2.

2.2.5.2 There should be no fixed obstructions in the clear zone higher than 0.25 m.

2.2.6   Manoeuvring zone

2.2.6.1 The manoeuvring zone of the landing area extends the area in which a helicopter may manoeuvre with safety by enlarging, to a diameter of at least 1.3D, the area over which the rotors of the helicopter may overhang without danger from high obstructions. When the landing area is at the ship's side, safe helicopter access will be enhanced by widening, where possible, the boundaries of the obstruction-free manoeuvring zone at the ship's side to a dimension of at least 2D (see figure 1).

2.2.6.2 If it is impossible to remove all obstructions from the manoeuvring zone, a graduated increase in the permitted height of obstructions, from 0.25 m at the circumference of the clear zone to a maximum of 1.25 m at the circumference of the manoeuvring zone, is acceptable. However, such height above 0.25 m should not exceed a ratio of one to two in relation to the horizontal distance of the obstruction from the edge of the clear zone (see figure 3). So, for example, an obstruction of 1 m in height (0.75 m more than the maximum obstruction height in the clear zone) should be at least 1.5 m outside the circumference of the clear zone. All obstructions in the manoeuvring zone should be clearly marked in contrasting colours.
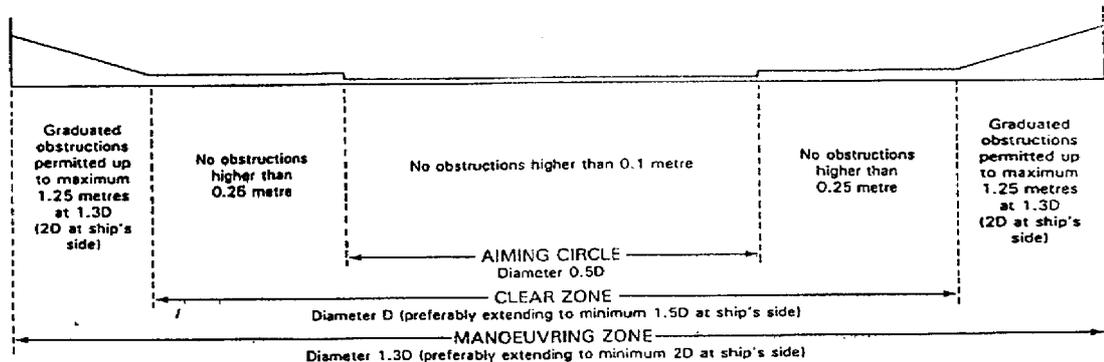
Figure 3: Landing area - permitted height of obstructions (elevation)

2.2.6.3 To assist the helicopter pilot in his positioning, the circumference of the manoeuvring zone should be indicated by a broken yellow line of 0.2 m width (see figures 1 and 2).

2.2.7   Use of landing areas for other purposes

It is considered that helicopter landing areas may be used for other purposes in normal circumstances. In the event of need, it should be possible to clear this area readily.

3   Night operations: Lighting

The following general remarks apply in all cases:

> .1   lighting should be arranged so as to illuminate the operating area and should not be directed towards the helicopter; and

> .2   a wind pennant or flag should be illuminated.

4   Fire-fighting appliances and rescue equipment

Where helicopters land or conduct winching operations on an occasional or emergency basis on ships with helicopter landing areas, equipment fitted in accordance with SOLAS chapter II-2 may be used. This equipment should be made readily available in close proximity to the landing or winching areas during helicopter operations, and should include the following:

> .1   at least two dry powder extinguishers having a total capacity of not less than 45 Kg;

> .2   carbon dioxide extinguishers of a total capacity of not less than 18 Kg or equivalent;

> .3   a suitable foam application system consisting of monitors or foam making branch pipes capable of delivering foam to all parts of the helicopter landing area;

  .4 at least two nozzles of an approved dual-purpose type (jet/spray) and hoses of sufficient length to reach any part of the helicopter landing area;

  .5 two sets of fireman's outfits; and

  .6 in addition, at least the following equipment:

    .1 adjustable wrench;
    .2 blanket (fire resistant);
    .3 cutters, bolt 60 cm;
    .4 hook, grab or salving;
    .5 hacksaw, heavy duty complete with 6 spare blades;
    .6 ladder;
    .7 life line 5 mm diameter x 15 m in length;
    .8 pliers, side cutting;
    .9 set of assorted screwdrivers; and
    .10 harness knife complete with sheath.

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