Offshore facilities (Helidecks)

- FATO & TLOF dimensions, load bearing (chapter 3)
- Obstacle Free Sector (chapter 4), Obstacle Limitation Sectors (chapter 4)
- Helideck markings & Helideck lights (chapter 5)
- Rescue & Fire fighting – Level of protection, Response time
- Fixed Foam Application Systems – Monitors, DIFFS & Ring-main systems

Offshore Facilities Definitions and General Notes

Helideck. A heliport located on a fixed or floating offshore facility such as an exploration and/or production unit used for the exploitation of oil or gas.

Shipboard heliport. A heliport located on a ship that may be purpose or non-purpose-built. A purpose-built shipboard heliport is one designed specifically for helicopter operations. A non-purpose-built shipboard heliport is one that utilizes an area of the ship that is capable of supporting a helicopter but not designed specifically for that task.

Winching area. An area provided for the transfer by helicopter of personnel or stores to or from a ship.

For helidecks that have a 1 D or larger FATO it is presumed that the FATO and the TLOF will always occupy the same space and have the same load bearing characteristics so as to be coincidental. For helidecks that are less than 1 D, the reduction in size is only applied to the TLOF which is a load bearing area. In this case, the FATO remains at 1 D but the portion extending beyond the TLOF perimeter need not be load bearing for helicopters. The TLOF and the FATO may be assumed to be collocated.

Guidance on the effects of airflow direction and turbulence, prevailing wind velocity and high temperatures from gas turbine exhausts or flare-radiated heat on the location of the FATO is given in the Heliport Manual (Doc 9261).


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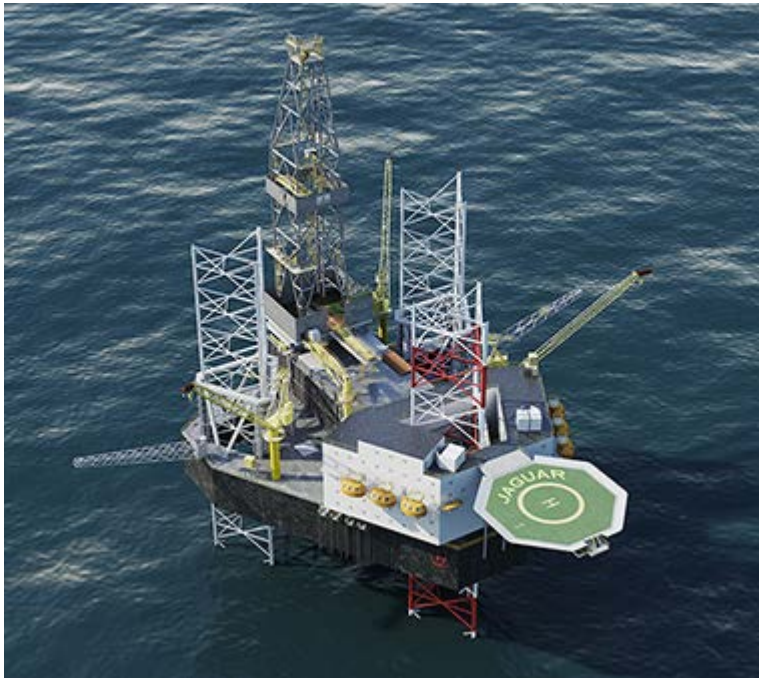
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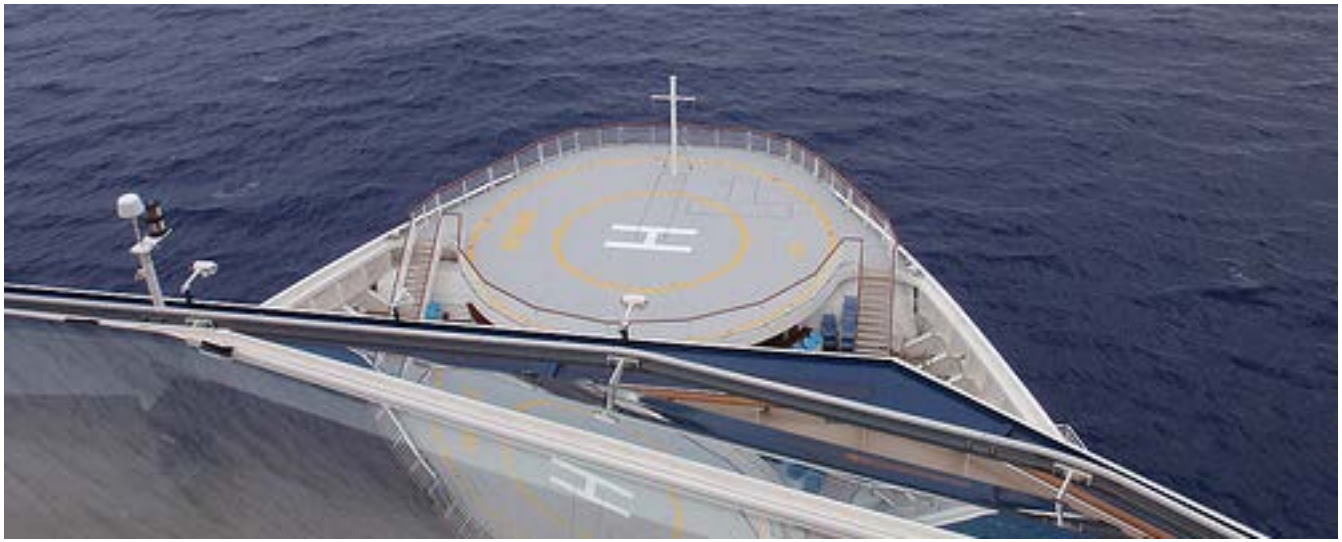

Helidecks

The specifications in paragraphs 3.3.14 and 3.3.15 shall be applicable for helidecks completed on or after 1 January 2012.

A helideck shall be provided with one FATO and one coincident or collocated TLOF.

A FATO may be any shape but shall be of sufficient size to contain an area within which can be accommodated a circle of diameter of not less than 1 D of the largest helicopter the helideck is intended to serve.

A TLOF may be any shape but shall be of sufficient size to contain:

a) for helicopters with an MTOM of more than 3 175 kg, an area within which can be accommodated a circle of diameter not less than 1 D of the largest helicopter the helideck is intended to serve; and

b) for helicopters with an MTOM of 3 175 kg or less, an area within which can be accommodated a circle of diameter not less than 0.83 D of the largest helicopter the helideck is intended to serve.

For helicopters with a MTOM of 3175 kg or less, the TLOF <u>should</u> be of sufficient size to contain an area within which can be accommodated a circle of diameter of not less than 1 D of the largest helicopter the helideck is intended to serve.

A helideck shall be arranged to ensure that a sufficient and unobstructed air-gap is provided which encompasses the full dimensions of the FATO.

Specific guidance on the characteristics of an air-gap is given in the Heliport Manual (Doc 9261). As a general rule, except for shallow superstructures of three stories or less, a sufficient air-gap will be at least 3 m.


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The FATO should be located so as to avoid, as far as is practicable, the influence of environmental effects, including turbulence, over the FATO, which could have an adverse impact on helicopter operations.

The TLOF shall be dynamic load-bearing.

The TLOF shall provide ground effect.

No fixed object shall be permitted around the edge of the TLOF except for frangible objects, which, because of their function, must be located thereon.

For any TLOF 1D or greater and any TLOF designed for use by helicopters having a D-value of greater than 16.0 m, objects installed in the obstacle- free sector whose function requires them to be located on the edge of the TLOF shall not exceed a height of 25 cm.

For any TLOF 1D or greater and any TLOF designed for use by helicopters having a D-value of greater than 16.0 m, objects installed in the obstacle-free sector whose function requires them to be located on the edge of the TLOF should be as low as possible and in any case not exceed a height of 15 cm.

For any TLOF designed for use by helicopters having a D-value of 16.0 m or less, and any TLOF having dimensions of less than 1D, objects installed in the obstacle-free sector whose function requires them to be located on the edge of the TLOF, shall not exceed a height of 5 cm.

~~For any TLOF having dimensions of less than 1 D, the maximum height of such objects in the obstacle-free sector whose function requires them to be located on the edge of the TLOF shall not exceed a height of 5 cm.~~

Lighting that is mounted at a height of less than 25 cm is typically assessed for adequacy of visual cues before and after installation.

Objects whose function requires them to be located within the TLOF (such as lighting or nets) shall not exceed a height of 2.5 cm. Such objects shall only be present if they do not represent a hazard to helicopters.

Examples of potential hazards include nets or raised fittings on the deck that might induce dynamic rollover for helicopters equipped with skids.

Safety devices such as safety nets or safety shelves shall be located around the edge of a helideck but shall not exceed the height of the TLOF.

The surface of the TLOF shall be skid-resistant to both helicopters and persons and be sloped to prevent pooling of water.

Guidance on rendering the surface of the TLOF skid-resistant is contained in the Heliport Manual (Doc 9261).

Shipboard Heliports

The specifications in paragraph 3.4.16 and 3.4.17 shall be applicable to shipboard heliports completed on or after 1 January 2012 and 1 January 2015, respectively.

When helicopter operating areas are provided in the bow or stern of a ship or are purpose-built above the ship's structure, they shall be regarded as purpose-built shipboard heliports.

Except for the arrangement described in 3.4.8 b), for shipboard heliports it is presumed that the FATO and the TLOF will be coincidental.

A shipboard heliport shall be provided with one FATO and one coincidental or collocated TLOF.

A FATO may be any shape but shall be of sufficient size to contain an area within which can be accommodated a circle of diameter of not less than 1 D of the largest helicopter the helideck is intended to serve.

The TLOF of a shipboard heliport shall be dynamic load-bearing.

The TLOF of a shipboard heliport shall provide ground effect.

For purpose-built shipboard heliports provided in a location other than the bow or stern, the TLOF shall be of sufficient size to contain a circle with a diameter not less than 1 D of the largest helicopter the heliport is intended to serve.

For purpose-built shipboard heliports provided in the bow or stern of a ship, the TLOF shall be of sufficient size to:
a) contain a circle with a diameter not less than 1 D of the largest helicopter the heliport is intended to serve; or
b) for operations with limited touchdown directions, contain an area within which can be accommodated two opposing arcs of a circle with a diameter of not less than 1 D in the helicopter's longitudinal direction. The minimum width of the heliport shall be not less than 0.83 D.

The touchdown heading of the helicopter is limited to the angular distance subtended by the 1 D arc headings, minus the angular distance which corresponds to 15 degrees at each end of the arc.

For non-purpose-built shipboard heliports, the TLOF shall be of sufficient size to contain a circle with a diameter not less than 1 D of the largest helicopter the heliport is intended to serve.

A shipboard heliport shall be arranged to ensure that a sufficient and unobstructed air-gap is provided which encompasses the full dimensions of the FATO.

The FATO should be located so as to avoid, as far as is practicable, the influence of environmental effects, including turbulence, over the FATO, which could have an adverse impact on helicopter operations.

No fixed object shall be permitted around the edge of the TLOF except for frangible objects, which, because of their function, must be located thereon.

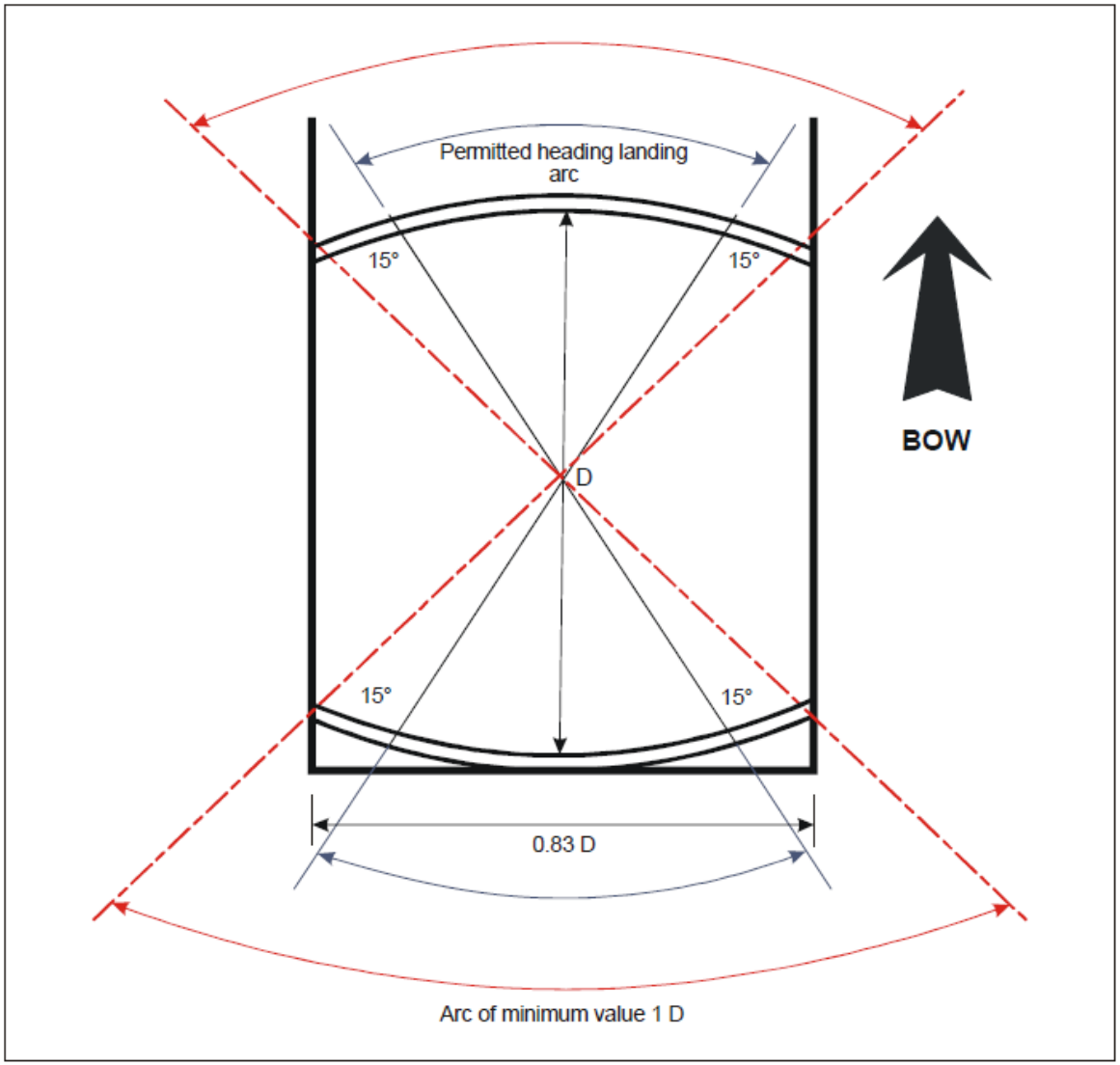

Figure 3-7. Shipboard permitted landing headings for limited heading operations


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For any TLOF 1D or greater and any TLOF designed for use by helicopters having a D-value of greater than 16.0 m, objects installed in the obstacle- free sector whose function requires them to be located on the edge of the TLOF shall not exceed a height of 25 cm.

For any TLOF 1D or greater and any TLOF designed for use by helicopters having a D-value of greater than 16.0 m, objects installed in the obstacle-free sector whose function requires them to be located on the edge of the TLOF should be as low as possible and in any case not exceed a height of 15 cm.

For any TLOF designed for use by helicopters having a D-value of 16.0 m or less, and any TLOF having dimensions of less than 1D, objects in the obstacle-free sector, whose function requires them to be located on the edge of the TLOF, shall not exceed a height of 5 cm.

~~For any TLOF having dimensions of less than 1 D, the maximum height of such objects in the obstacle-free sector whose function requires them to be located on the edge of the TLOF shall not exceed a height of 5 cm.~~

Objects whose function requires them to be located within the TLOF (such as lighting or nets) shall not exceed a height of 2.5 cm. Such objects shall only be present if they do not represent a hazard to helicopters.

Safety devices such as safety nets or safety shelves shall be located around the edge of a shipboard heliport, except where structural protection exists, but shall not exceed the height of the TLOF.

The surface of the TLOF shall be skid-resistant to both helicopters and persons.

Obstacle-free Sector/Surface - Helidecks

A complex surface originating at and extending from, a reference point on the edge of the FATO of a helideck. In the case of a TLOF of less than 1 D, the reference point shall be located not less than 0.5 D from the centre of the TLOF.

An obstacle-free sector/surface shall subtend an arc of specified angle.

A helideck obstacle-free sector shall comprise of two components, one above and one below helideck level:

a) Above helideck level. The surface shall be a horizontal plane level with the elevation of the helideck surface that subtends an arc of at least 210 degrees with the apex located on the periphery of the D circle extending outwards to a distance that will allow for an unobstructed departure path appropriate to the helicopter the helideck is intended to serve.

b) Below helideck level. Within the (minimum) 210-degree arc, the surface shall additionally extend downward from the edge of the FATO below the elevation of the helideck to water level for an arc of not less than 180 degrees that passes through the centre of the FATO and outwards to a distance that will allow for safe clearance from the obstacles below the helideck in the event of an engine failure for the type of helicopter the helideck is intended to serve.

For both the above obstacle-free sectors for helicopters operated in performance class 1 or 2, the horizontal extent of these distances from the helideck will be compatible with the one-engine-inoperative capability of the helicopter type to be used.

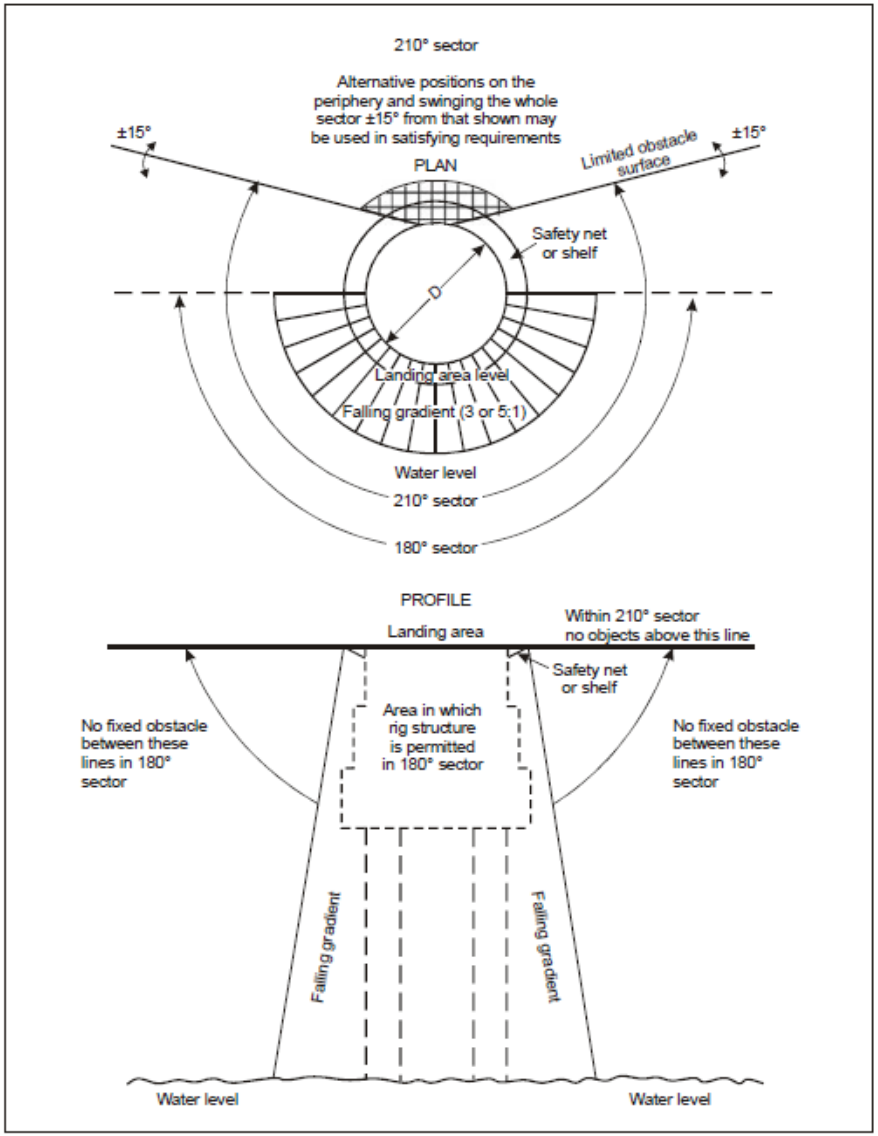

Figure 4-7. Helideck obstacle-free sector


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Limited Obstacle Sector/Surface – Helidecks

Where obstacles are necessarily located on the structure, a helideck may have a limited obstacle sector (LOS).

A complex surface originating at the reference point for the obstacle-free sector and extending over the arc not covered by the obstacle-free sector within which the height of obstacles above the level of the TLOF will be prescribed.

A limited obstacle sector shall not subtend an arc greater than 150 degrees. Its dimensions and location shall be as indicated in Figure 4-8 for a 1 D FATO with coincidental TLOF and Figure 4-9 for a 0.83 D TLOF.

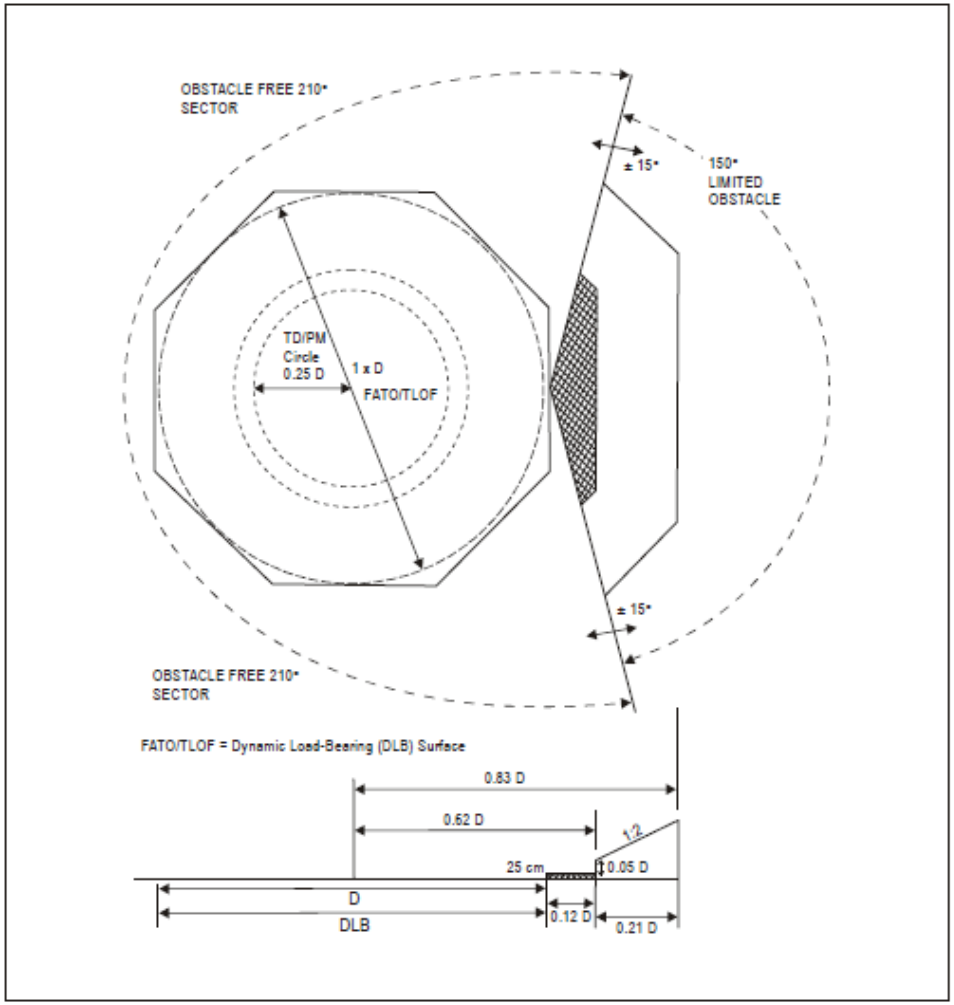


Figure 4-8. Helideck obstacle limitation sectors and surfaces for a FATO and coincidental TLOF of 1 D and larger

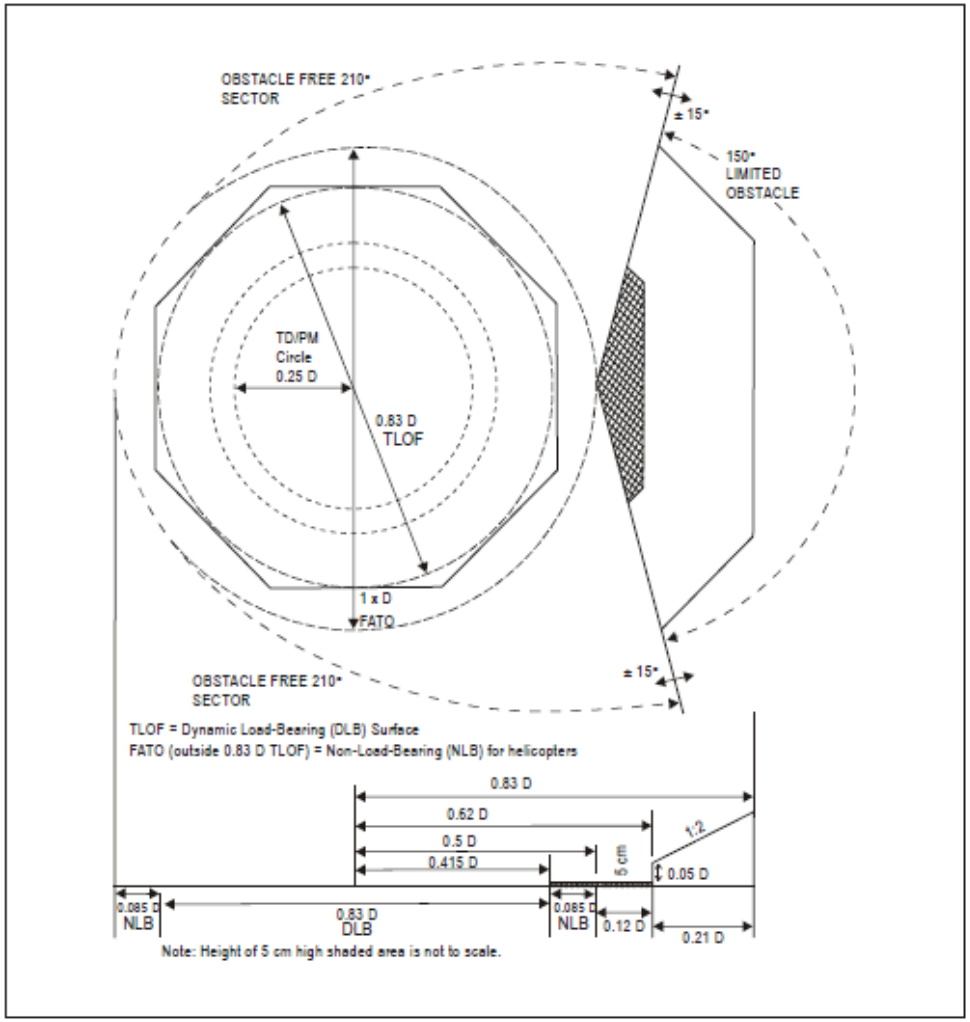


Figure 4-9. Helideck obstacle limitation sectors and surfaces for a TLOF of 0.83 D and larger

Shipboard Heliport – Obstacle Environment

The specifications in 4.2.20 and 4.2.22 shall be applicable for shipboard heliports completed on or after 1 January 2012.

When helicopter operating areas are provided in the bow or stern of a ship they shall apply the obstacle criteria for helidecks.

Forward and aft of a TLOF of 1 D and larger shall be two symmetrically located sectors, each covering an arc of 150 degrees, with their apexes on the periphery of the TLOF. Within the area enclosed by these two sectors, there shall be no objects rising above the level of the TLOF, except those aids essential for the safe operation of a helicopter and then only up to a maximum height of 25 cm.

Objects whose function requires them to be located within the TLOF (such as lighting or nets) shall not exceed a height of 2.5 cm. Such objects shall only be present if they do not represent a hazard to helicopters.

To provide further protection from obstacles fore and aft of the TLOF, rising surfaces with gradients of one unit vertically to five units horizontally shall extend from the entire length of the edges of the two 150-degree sectors. These surfaces shall extend for a horizontal distance equal to at least 1 D of the largest helicopter the TLOF is intended to serve and shall not be penetrated by any obstacle. (See Figure 4-10.)

No objects shall be located within the TLOF except those aids essential for the safe operation of a helicopter (such as nets or lighting) and then only up to a maximum height of 2.5 cm. Such objects shall only be present if they do not represent a hazard to helicopters.

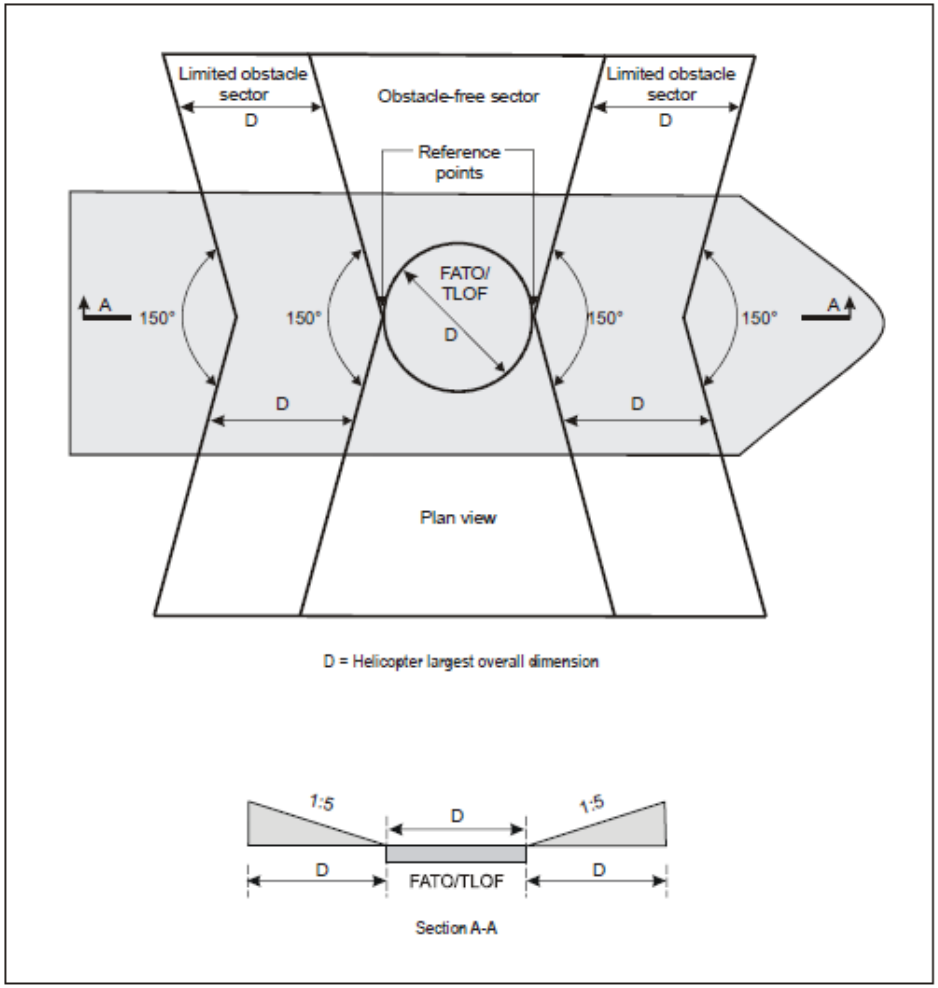


Figure 4-10. Amidship's location — Shipboard heliport obstacle limitation surfaces

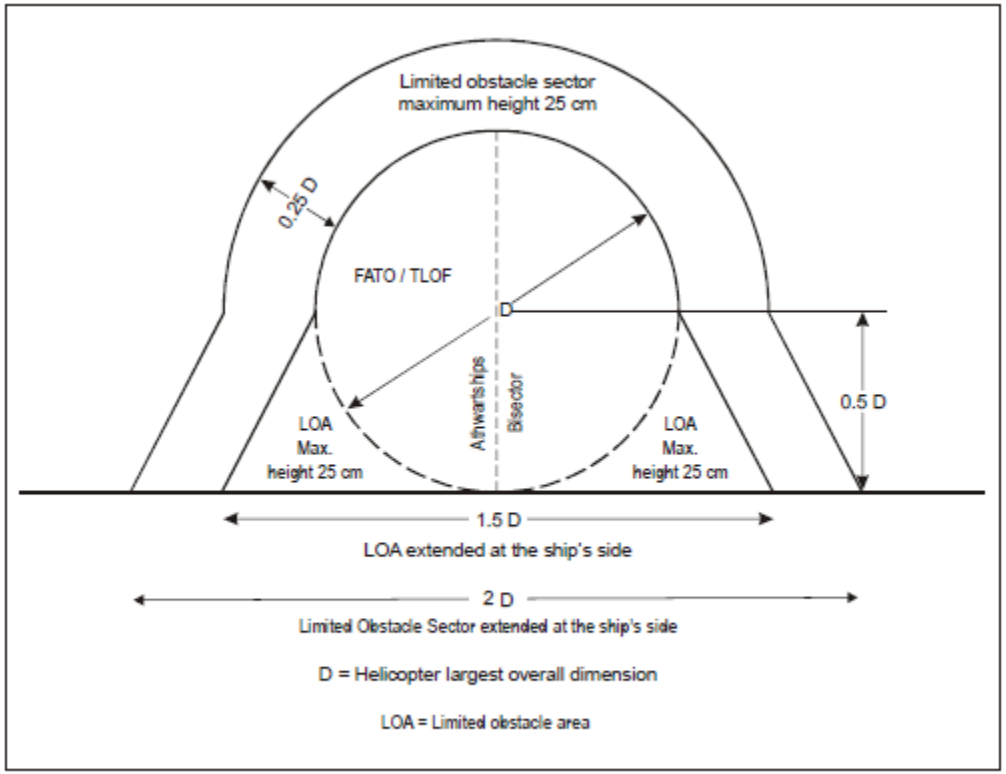
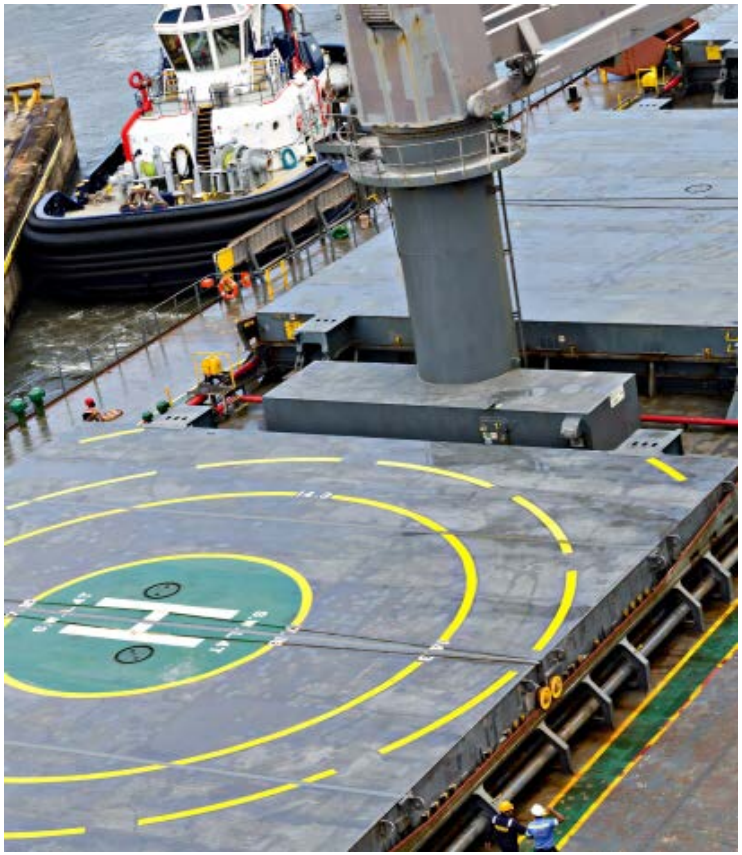


Figure 4-11. Ships-side non-purpose-built heliport obstacle limitation sectors and surfaces

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Winching Areas

An area designated for winching on-board ships shall be comprised of a circular clear zone of diameter 5 m and extending from the perimeter of the clear zone, a concentric manoeuvring zone of diameter 2 D. (See Figure 4-12.)

The manoeuvring zone shall be comprised of two areas:

a) the inner manoeuvring zone extending from the perimeter of the clear zone and of a circle of diameter not less than 1.5 D; and

b) the outer manoeuvring zone extending from the perimeter of the inner manoeuvring zone and of a circle of diameter not less than 2 D.

Within the clear zone of a designated winching area, no objects shall be located above the level of its surface.

Objects located within the inner manoeuvring zone of a designated winching area shall not exceed a height of 3 m.

Objects located within the outer manoeuvring zone of a designated winching area shall not exceed a height of 6 m.

Winching area floodlighting shall be provided at a winching area intended for use at night.

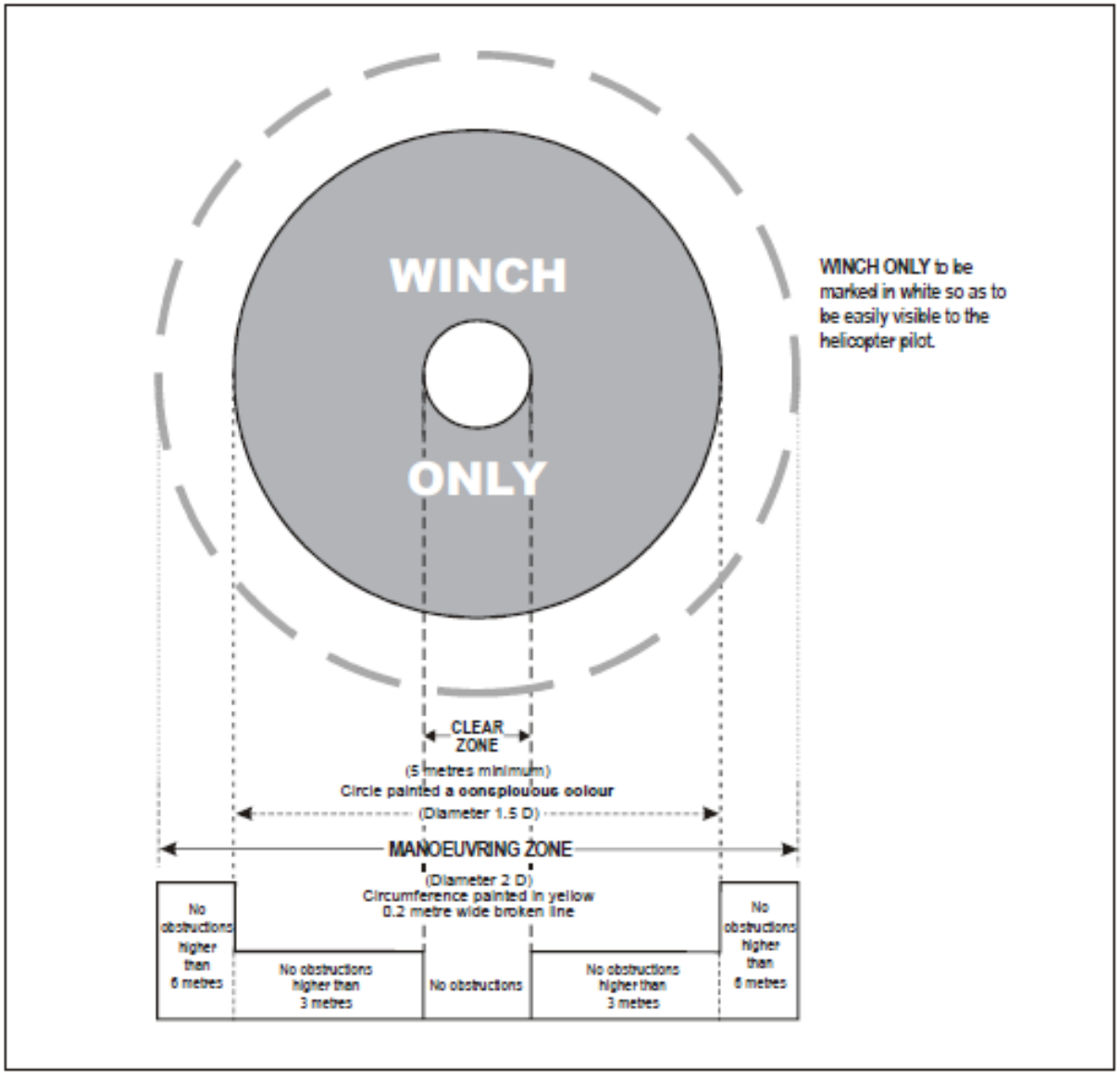

Figure 4-12. Winching area of a ship

Helidecks Identification Marking

On a helideck ~~and~~ or a shipboard heliport where the D-value is 16.0 m or larger the size of the heliport identification H marking should have a height of 4 m with an overall width not exceeding 3 m and a stroke width not exceeding 0.75 m. Where the D-value is less than 16.0 m, the size of the heliport identification 'H' marking should have a height of 3 m with an overall width not exceeding 2.25 m and a stroke width not exceeding 0.5 m.

Touchdown/Position Marking

A touchdown/positioning marking shall be a yellow circle and have a line width of at least 0.5 m. For a helideck and a purpose-built shipboard heliport with a D-value of 16.0 m or larger the line width shall be at least 1 m.

The inner diameter of the touchdown/positioning marking shall be 0.5 D of the largest helicopter the TLOF and/or the helicopter stand is intended to serve.


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Helidecks Prohibited Landing Sector Marking

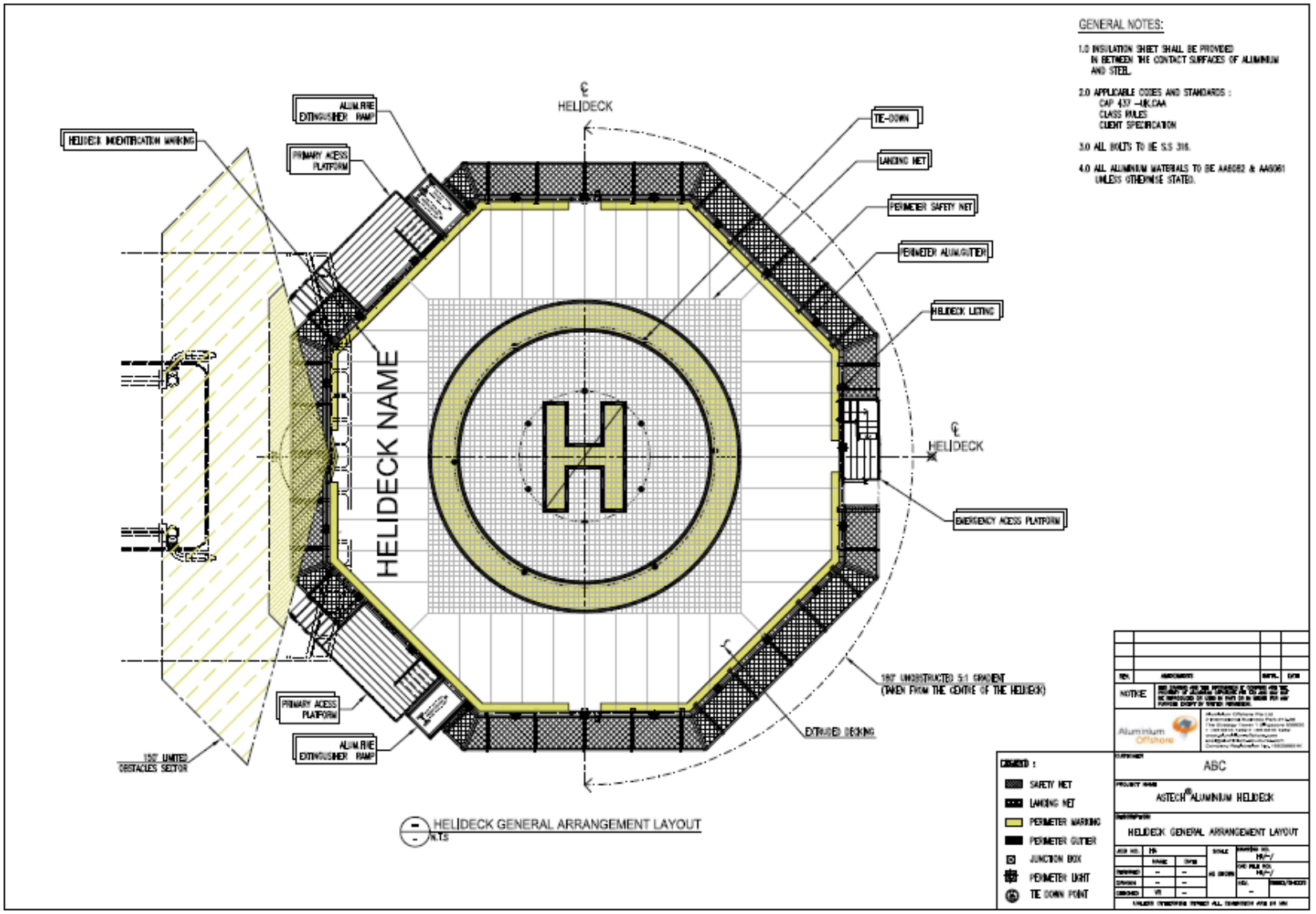
Helideck prohibited landing sector markings should be provided where it is necessary to prevent the helicopter from landing within specified headings.

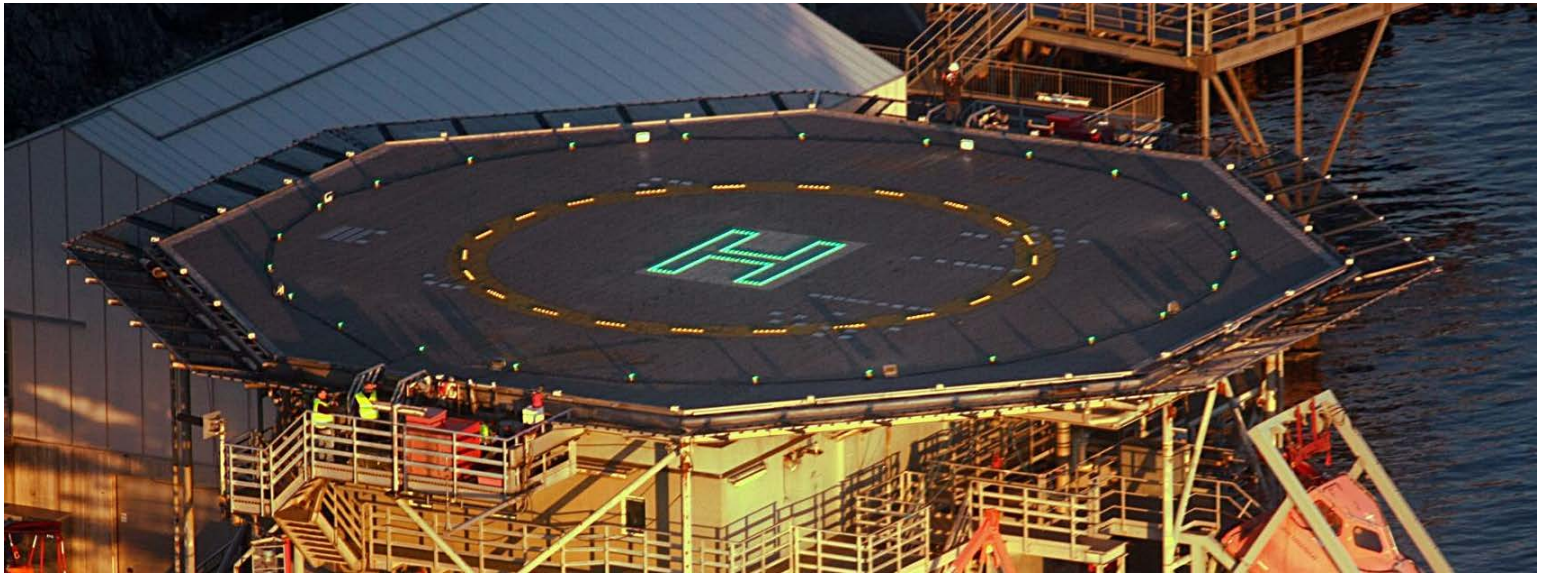
The prohibited landing sector markings shall be located on the touchdown/positioning marking to the edge of the TLOF, within the relevant headings.

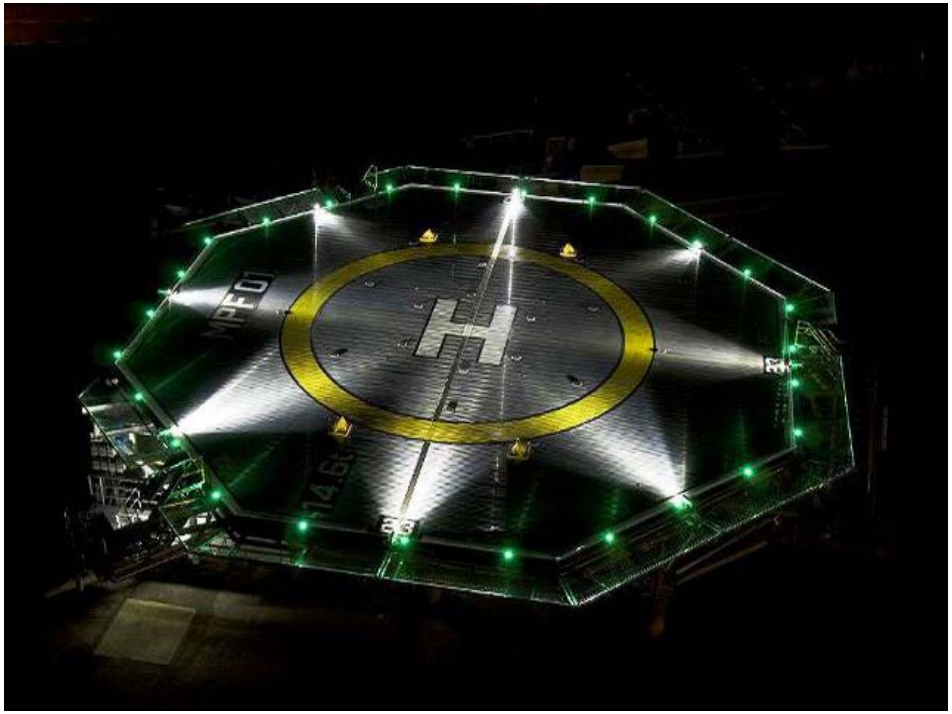
The prohibited landing sector markings shall be indicated by white and red hatched markings as shown in Figure 5-7.

Prohibited landing sector markings, where deemed necessary, are applied to indicate a range of helicopter headings that are not to be used by a helicopter when landing. This is to ensure that the nose of the helicopter is kept clear of the hatched markings during the manoeuvre to land.

Figure 5-7. Helideck prohibited landing sector marking


GENERAL NOTES:
1.0 INSULATION SHEET SHALL BE PROVIDED IN BETWEEN THE CONTACT SURFACES OF ALUMINUM AND STEEL.
2.0 APPLICABLE CODES AND STANDARDS :
CAP 437 –UK.CAA
CLASS RULES
CLIENT SPECIFICATION
3.0 ALL BOLTS TO BE S.S 316.
4.0 ALL ALUMINUM MATERIALS TO BE AA6082 & AA6061 UNLESS OTHERWISE STATED.
HELIDECK
HELIDECK IDENTIFICATION MARKING
ALUMINIUM EXTINGUISHER RAMP
PRIMARY ACESS PLATFORM
TIE-DOWN
LANDING NET
PERIMETER SAFETY NET
PERIMETER ALUM.GUTTER
HELIDECK LISTING
HELIDECK NAME
HELIDECK
EMERGENCY ACESS PLATFORM
PRIMARY ACESS PLATFORM
ALUMINIUM EXTINGUISHER RAMP
150° UNITED OBSTACLES SECTOR
210° UNOBSTRUCTED 5:1 GRADIENT (TAKEN FROM THE CENTRE OF THE HELIDECK)
EXTRUDED DECKING
HELIDECK GENERAL ARRANGEMENT LAYOUT
N.T.S
NOTICE
ABC
ASTECH® ALUMINIUM HELIDECK
HELIDECK GENERAL ARRANGEMENT LAYOUT
SAFETY NET
LANDING NET
PERIMETER WARNING
PERIMETER GUTTER
JUNCTION BOX
PERIMETER LIGHT
TIE DOWN POINT





Questions?

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