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ISBN 0 642 22434 X

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March 1995

1 APPLICATION

This code shall apply to all routine transfers of personnel or goods by helicopter to or from ships while under way or at anchor. It does not apply to fixed or floating structures, or vessels employed in the offshore oil or gas industry.

2 DEFINITIONS

helicopter landing officer	is the ship's officer in charge of, and forming part of, the helicopter landing party.
helicopter landing site (HLS)	is an area of deck which may be used as an aerodrome by helicopters for landing or taking-off by day or night (touch-down zone, clear zone and manoeuvring zone are defined in Appendix 1).
helicopter winching area (HWA)	is an area of deck which may be used for winching up or down of personnel or goods from or to a ship by a helicopter at hover.
hover	means to remain stationary at low altitude.
hover-taxi	means a slow (walking-pace) horizontal movement from one hover position to another.
overall length	of a helicopter is the horizontal distance with rotors turning from the foremost position of the main rotor blade tips to the aftermost position of the tail rotor blade tips of a single-rotor helicopter or other extremity of aircraft structure; or the horizontal distance from the foremost position of the forward rotor blade tips to the aftermost position of the after rotor blade tips of a tandem-rotor helicopter. This is the dimension referred to as 'D' in Appendix 1.
Helicopter VMC	conditions of visibility as defined in the Aeronautical Information Publication (AIP) (horizontal visibility of not less than 800 metres for operations below 700 feet, clear of cloud and outside controlled airspace)

3 SITE

(a) Helicopter-ship operations may be either by landing or winching. In the case of landing operations, the helicopter landing site (HLS) may be amidships (in the fore-and-aft line), shipside, or at bow or stern. An HLS or a helicopter winching area (HWA) shall be of the shape and dimensions, and shall be marked as shown in Appendix 1, except as provided in 4 and 11.4.

(b) Before an area of deck is designated and marked as an HLS, it is necessary to ascertain that the ship's structure under the proposed HLS is of sufficient strength to withstand the static and dynamic loads imposed on it by a helicopter landing; these stresses can significantly exceed those associated with supporting the gross weight of the helicopter.

As a guide, the HLS must be able to support an impact load of 1.5 x maximum take off weight (MTOW) for a heavy normal landing. For an emergency landing an impact load of 2.5 x MTOW should be supported in any position on the HLS.

(i) load distribution - for the purpose of design, it is to be assumed that a single main rotor helicopter will land on the wheels of the two main undercarriages or skids if fitted.

(ii) the maximum take-off weight and undercarriage centres for which the HLS has been designed should be stated in the Operations Manual for the helideck and the maximum size and weight of helicopter for which the helideck is suitable should be marked on the helideck.

(c) The HLS should have a non-slip surface.

(d) Rope netting should be laid to aid the landing of wheeled helicopters in adverse weather conditions. Such netting may be prohibited for skidded helicopters.

4 PILOT TRANSFER

Helicopter-ship operations solely for the purpose of effecting the transfer of a marine pilot may be exempted from the provisions of 3, subject to the following:

(i) a clear area of deck exists which must be no less than twice the main rotor diameter and preferably 2D wherever possible.

(ii) the helicopter pilot brings the aircraft to a hover clear of the ship's side and then hover-taxis to the landing position or the ship's master and the helicopter pilot agree that the landing may be safely made in another manner.

(iii) sea and weather conditions are such that the ship's master and the helicopter pilot agree that the operation may be carried out safely and in accordance with flight rules, Civil Aviation Regulations and the flight operations manual.

5 COMMUNICATIONS

The notice periods in (a) and (b) below are for guidance only, mariners should ensure they are familiar with the requirements of the particular transfer service or port with respect to notice of arrival.

(a) At least 12 hours prior to arrival, the master shall advise the helicopter operator, through the ship's agent:

(i) the ETA at the rendezvous and the anticipated true (ground-orientated) course and speed.

(ii) the diameter and location of the HLS or HWA clear zone ; the maximum weight of the helicopter for which the HLS is designed; the VHF frequencies to be used (if different from standard) and the frequency, number and type of any locating aids (such as a Non Directional Beacon) on board.

(b) At least six hours prior to arrival, the master shall:

(i) confirm or amend the ETA.

(ii) advise anticipated conditions of sea and spray, and the amount the vessel is pitching, rolling and heaving.

(c) When VHF contact is established between ship and helicopter, the master shall provide the helicopter pilot with the name of the ship, the true (ground-orientated) course and speed, the relative direction and speed of wind, an update on the pitch, roll and heave conditions and his authority to commence final approach and land. VHF contact is to be maintained until the helicopter is finally clear of the ship.

(d) If the helicopter pilot is satisfied that it is safe to do so, he will confirm that he is commencing final approach. He may request the master to alter his course or speed to facilitate his approach, and if it is safe to do so, the master should accede to such a request. Once the course and speed have been agreed, these shall be maintained by the ship until the helicopter is finally clear of the ship. The master shall also comply with any request from the helicopter pilot to switch on or off any deck or accommodation lighting.

(e) The master shall advise the helicopter landing officer by portable radio when the helicopter commences final approach, and the helicopter landing officer shall remain in radio contact with the bridge thereafter in readiness to signal the helicopter pilot to abort his approach if the master so orders.

(f) The helicopter landing officer shall if necessary signal the helicopter pilot visually by:

(i) moving arms repeatedly upward and backward beckoning onward, or by night flashing a green light, to indicate that the landing site is clear for final approach.

(ii) crossing and uncrossing arms repeatedly above head, or by night flashing a red light, to indicate that the helicopter pilot should abort final approach. This red light should be flashed directly at the aircraft.

6 AUTHORITY

Authority to commence helicopter-ship operations shall only be given by the master, and must be confirmed by the helicopter pilot. The master remains at all times responsible for the safety of the ship and the helicopter pilot remains at all times responsible for the safety of the helicopter. Both include a general responsibility to avoid any act or omission which might endanger life or limb, property, or the marine environment.

Authority to commence helicopter-ship operations shall only be given by the master and confirmed by the helicopter pilot if:

(a) Helicopter VMC exists. The assessment of this rests solely with the helicopter pilot in command in accordance with flight rules, Civil Aviation Regulations and the flight operations manual.

(b) Two-way VHF communication between ship and helicopter has been established (Initial contact normally made on channel 16).

(c) The ship is neither rolling nor pitching more than 5^{o} either side, nor heaving more than 5 metres. Chocks should be used if the pitch and/or roll exceeds 1.5^{o}.

(d) The HLS or HWA, as appropriate, has been prepared as prescribed in 7 and marked as prescribed in 3.

(e) Landing party prescribed in 8 is standing-by with equipment ready as prescribed in 7.

(f) The use of single-engine helicopters for passenger carrying operations is not normally permitted by CAA regulations:

  (i) for charter operations offshore, unless there is a suitable landing site overflown within 50 nm of the previous site.

  (ii) for charter operations during the hours of darkness unless exempted for pilot transfer.

  (iii) for offshore winching operations by day or night.

7 PREPARATION OF LANDING SITE

Before either landing or winching operations are authorised to commence:

(a) All loose objects within and adjacent to the manoeuvring zone shall be secured or removed.

(b) All aerials and standing or running rigging above or in the vicinity of the manoeuvring zone shall be lowered or secured.

(c) A pennant or windsock shall be hoisted where it can be clearly seen by the helicopter pilot, and brightly illuminated during the hours of darkness; this is not necessary if the ship can confirm the relative wind.

(d) Where necessary the decks should be washed down to avoid dust being raised by the down-draught from the helicopter rotors.

(e) A fire line consisting of two hoses coupled together, fitted with the foam generating nozzle and set up to make foam should be rigged and the fire main pressurised. This fireline should be near to but well clear of the clear zone ; up-wind and with the nozzle directed away from the area in case of inadvertent discharge; at least one 20 litre container of foam compound with eductor and dip-stick should be provided (unless the area is covered by a fixed foam fire control installation). The system shall be capable of delivering 1.5 m^3 of foam per minute.

(f) Other fire-fighting equipment to be in readiness near to but clear of the clear zone:
- 6 x 20 litre spare containers of foam compound.
- 1 fireman's outfit complying with 20.1 of Marine Orders Part 15.
- 1 x 9 kg dry powder extinguisher.

(g) Other emergency equipment to be in readiness at the stand-by zone includes axe, crowbar, hacksaw, bolt-cutters and a small ladder. (For use if the helicopter falls on its side)

NOTE: equipment prescribed in (f) and (g) may remain in a dedicated locker provided that it is adjacent to the clear zone and readily accessible.

(h) All personnel other than landing party shall be ordered well clear of the manoeuvring zone.

(i) At night all marking lights switched on and checked; all available deck and accommodation lights in the vicinity of the operating area switched on; deck and accommodation lights which could impair the vision of the helicopter pilot shall be appropriately shielded.

8 HELICOPTER LANDING PARTY

Shall consist of a minimum of one officer and two ratings.

(a) The officer in charge (OIC) of the landing party shall be equipped with a portable radio to maintain communication with the bridge, and at night a red and green emergency/signalling torch. The OIC is to remain in visual contact with the helicopter pilot at all times the helicopter is on board.

(b) All members of the landing party shall wear protective clothing consisting of:
   (i) flame-retardant overalls and leather or similar material gloves.
   (ii) a brightly coloured tabard (waistcoat) unless the overalls themselves are brightly coloured. In either case, these should be fitted with retro-reflective tape for night operations.
   (iii) a protective helmet with a face visor and **with the chin-strap securely fastened.**
   (iv) industrial boots to AS 2210.
   (v) ear protection.
   (vi) one member of the helicopter landing party shall be fully dressed in the fireman's suit.

(c) The hook-handler (if any) shall, in addition, wear rubber boots and heavy-duty rubber gloves.

(d) It is the master's responsibility to ensure that all crew members in the helicopter landing party have received adequate training as prescribed in Appendix 2.

(e) All members of the helicopter landing party shall, so far as their duties permit, remain throughout the operation in a sheltered position upwind out of the manoeuvring zone where they are protected from the possible danger from flying fragments of rotor blades shattered by contact with the ship's structure, or the intense heat radiated in the case of a fire. This position shall be no less than 25 metres from the clear zone and shall be known as the stand-by zone.

9 PROCEDURE DURING LANDING OPERATIONS

(a) After preparation of the manoeuvring zone as above, the helicopter landing party shall stand-by the designated fire appliances in the stand-by zone until the helicopter has landed.

(b) The master shall advise the helicopter landing officer by portable radio when the helicopter commences final approach, and the helicopter landing officer shall remain in radio contact with the bridge thereafter in readiness to signal the helicopter pilot to abort his approach if the master so orders.

(c) After landing, one member of the helicopter landing party shall, if required and signalled to do so by the helicopter pilot, approach the helicopter to assist personnel to embark or disembark.

Personnel approaching or leaving the aircraft shall only do so in the direction indicated by the pilot. Under no circumstances whatsoever shall a helicopter be approached from the rear.

(d) The helicopter landing party shall stand-by at the stand-by zone with the fire fighting appliances during take-off and remain there until the helicopter has safely cleared the manoeuvring area.

10 PROCEDURE DURING WINCHING OPERATIONS

(a) After preparation of the operating area as above, the helicopter landing party shall stand-by the designated fire appliances in the stand-by zone.

(b) The master shall advise the helicopter landing officer by portable radio when the helicopter commences final approach, and the helicopter landing officer shall remain in radio contact with the bridge thereafter in readiness to signal the helicopter pilot to abort his approach if the master so orders.

(c) As soon as the helicopter is at hover over the winching area, the hook handler shall be ready to assist in unhooking or hooking-on, but shall otherwise remain clear of the winching area during winching operations.

(d) **It is imperative that the hook and winch-wire must not be attached to any part of the ship's structure.**

(e) The helicopter landing party shall move back to the stand-by zone and stand-by the fire appliances after the operation has concluded and remain there until the helicopter has safely cleared the manoeuvring area.

11 PROCEDURE IN EMERGENCY SITUATIONS

11.1 Emergency shut-down

(a) The helicopter will not normally shut-down while landed on a ship's deck except in an emergency.

(b) The helicopter landing party should be aware that the rotor blades will be subject to flexing while slowing, and that they must not approach the helicopter until the rotors have stopped turning, and then only when signalled to do so by the pilot.

(c) The helicopter landing officer shall confer with the helicopter pilot regarding the need for lashing the helicopter in position.

11.2 Crashing on deck

(a) The master shall immediately sound the emergency muster signal, and advise crew of the nature of the emergency by the public address system.

(b) The fire support party shall assist the helicopter landing party.

(c) The master shall advise local authorities and MRCC Canberra by radio.

11.3 Ditching

(a) The master shall immediately sound the emergency muster signal, and advise crew of the nature of the emergency by the public address system.

(b) The ship should, if practicable and appropriate, commence the execution of a Williamson turn as quickly as possible.

(c) Rescue boat crew and launching party shall stand-by to carry out master's orders.

(d) The master shall transmit an Urgency signal (prefix "Pan-pan-pan"), and advise local authorities and MRCC Canberra by radio.

11.4 Medevac or other emergency

When it is necessary, due to medical or other emergency, either to evacuate a patient requiring urgent medical attention or to embark medical or other emergency personnel, the ship's master and the pilot in command of the helicopter may exercise their professional judgement in varying the recommendations in this document, always ensuring that safety is not compromised.

APPENDIX 1 LANDING SITES AND WINCHING AREAS

General

Dimensions quoted below are in terms of D, the overall length of the helicopter. It is recommended that the landing site or winching area should be laid out for D = 20 metres. This may be reduced to a figure not less than 12 metres if the former dimension is impracticable, but helicopter-ship operations shall be restricted to those aircraft whose overall length does not exceed the latter figure.

Helicopter landing sites consist of 3 zones

(a) Touch-down zone, which is the area in which the undercarriage is in contact after landing. The minimum area is the undercarriage contact area plus 1 metre all round.

Circumference marked by a continuous white or yellow line at least 0.01D wide, broken at 90° intervals to show figures indicating diameter.

Centre marked by white or yellow capital H measuring 0.2D x 0.1D formed of lines 0.02D wide.

Entire remaining area painted a contrasting colour to ship's deck and superstructure. Shall not contain obstacles more than 10 cm high, but tie-down points may be fitted.

The touch-down zone shall be 0.3D in diameter.

(b) Clear zone, which is the area required for safe rotation of the rotor blades. Minimum is a circle of diameter equal to the overall length of the helicopter.

Circumference marked by continuous white or yellow line at least 0.01D wide, broken at 90° intervals to show figures indicating diameter.

Entire area painted a contrasting colour to ship's deck and superstructure. Should not contain obstacles more than 25 cm high.

The clear zone shall be D in diameter.

(c) Manoeuvring zone, which is the extra area necessary to allow for such things as sudden up-draughts or cross-draughts due to ground-effect or turbulence caused by proximity to superstructure.

Outer limit marked by hatched white or yellow line at least 20 cm wide. Minimum width is three times the overall length of the helicopter. Should not contain obstacles higher than a gradient of 1:5 (amidships HLS) or 1:3 (shipside HLS) from inner to outer limit.

The closest point of the outer limit of the manoeuvring zone shall be D away from the circumference of the clear zone.

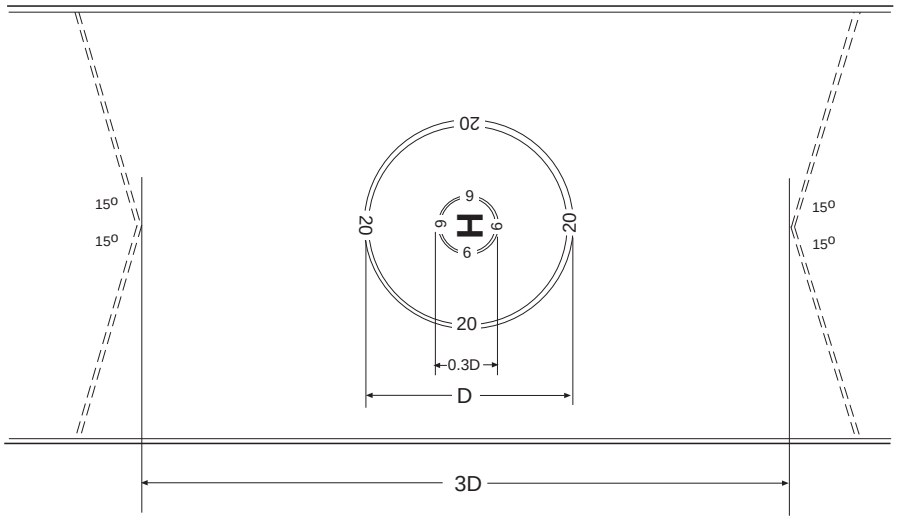
All paint used within the limit of the clear zone of an HLS or the manoeuvring zone of an HWA should be such as to provide a non-skid surface whether wet or dry.

An HLS or an HWA shall be of the shape, dimensions and markings as shown below

Amidships HLS

Clear zone shall be a circle D in diameter centred on fore-and-aft line.

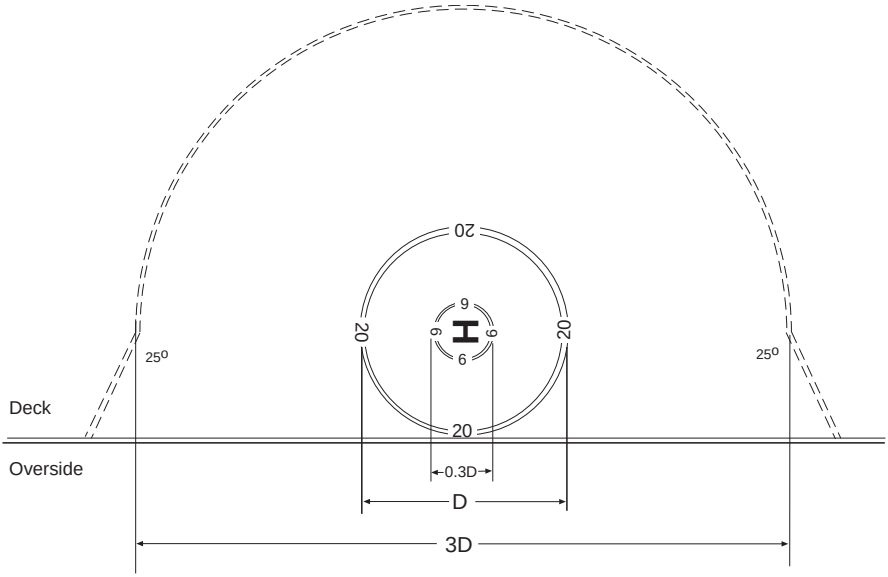
Manoeuvring zone shall be 3D wide on the fore-and-aft line on the same centre as the clear zone, increasing towards the ship's side at an angle of 15° to athwartships.



Shipside HLS

Clear zone shall be a circle D in diameter with ship's side tangential.

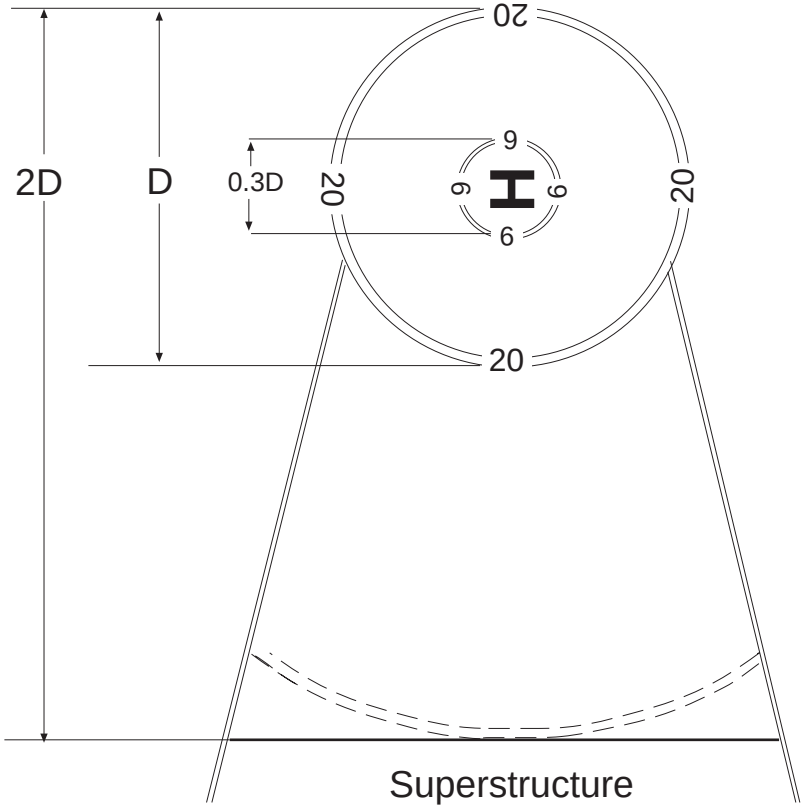
Manoeuvring zone shall be a semicircle 3D on a diameter parallel to the ship's side through the same centre as the clear zone; from the ends of the diameter the limits shall increase towards the ship's side at an angle of 25° to athwartships.



Bow or stern HLS

Clear zone shall be a circle D in diameter.

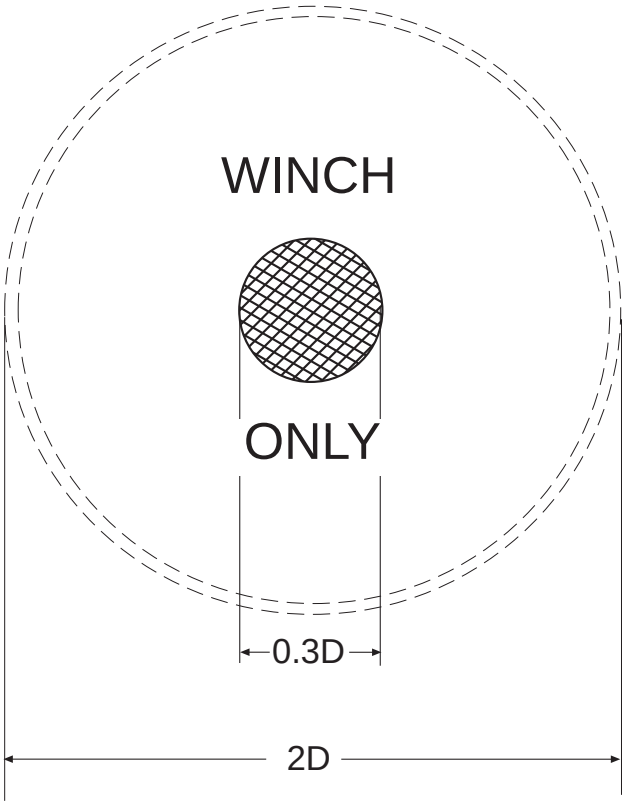
Manoeuvring zone shall be such that the nearest superstructure or other obstruction having a height extending above a gradient of 1:3 from the circumference of the clear zone.



Helicopter winching area (HWA)

A winching zone 0.3D in diameter painted white or yellow surrounded by a concentric manoeuvring zone 2D in diameter with the circumference marked by a hatched white or yellow line at least 0.01D wide.

The words “WINCH ONLY” should be marked within the manoeuvring zone in white or yellow capital letters 0.2D high in such a manner as to be clearly visible to the helicopter pilot.



APPENDIX 2 TRAINING OF HELICOPTER LANDING PARTY

It is the master's responsibility to ensure that no crew member forms part of a helicopter landing party unless he/she has received adequate training in the following:

1 Basic fire fighting and in the case of the HLS, helicopter fire fighting.

2 Preparation of helicopter landing site or winching area in accordance with part 7 of this code.

3 The provisions for a helicopter landing party in accordance with part 8 of this code.

4 Procedure for:
- (i) landing operations in accordance with part 9 of this code.
- (ii) winching operation in accordance with part 10 of this code.
- (iii) emergency situations in accordance with part 11 of this code.

5 Awareness of:
- (i) the requirement never to approach the helicopter from astern.
- (ii) the possible effect of down-draught from the rotors.
- (iii) the possible effect on the helicopter's flight path of ground-effect and turbulence round superstructure.
- (iv) the danger of rotor blades flexing during shut-down as stated in 1(b) of part 11.
- (v) the danger of shattered fragments of rotor blade flying like shrapnel following a mishap.
- (vi) the fine line between an explosion, which is unlikely following a crash, and a flash fire or fire-ball, which is more likely, and which can radiate sufficient heat to cause secondary burns at a range of 15 or 20 metres.
- (vii) the danger of a 'running liquid fire' caused by ignited leaking fuel spreading rapidly.
- (viii) the dangers associated with the discharge of static electricity if the winch-wire comes into contact with any part of the ship's structure, or any person standing on the ship's deck.
- (ix) the precautions normally taken to prevent the discharge of static electricity as in (viii).
- (x) the absolute necessity to avoid the winch-wire becoming attached, either intentionally or accidentally, to any part of the ship's structure; the dangers associated therewith.
- (xi) the dangers associated with fire hoses which are not pressurised with water lying on deck within the manoeuvring zone.