

Large Yacht Helicopter Operations Handbook

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On behalf of the Maritime and Coastguard Agency

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This handbook has been written on a voluntary basis by James Frean, on behalf of the Maritime and Coastguard Agency, as part of the project currently being undertaken by the Large Yacht Helideck Training Working Group. No responsibility or liability is accepted by any party connected with this handbook for the accuracy of any information or advice given herein or for the omission herefrom or for any consequences whatsoever resulting directly or indirectly from compliance with or adoption of guidance contained herein.

Information within this publication is intended to assist yachts with helidecks in meeting their responsibilities, while engaged in trade and operating under the rules of the Red Ensign Group. However, various helicopters and yachts have particular operating characteristics that fall outside the scope of this handbook.

All yachts operating helicopters must have written operating procedures for the helideck in accordance with the International Safety Management Code (Ref. 1).

This handbook is intended to be a guide only and not binding. In the interests of clarity, any procedures incorporated within a specific Safety Management System (SMS) for the helideck should overrule any guidance contained within this handbook. All personnel involved in the aspects of the helicopter operation remain responsible for acting in accordance with relevant national regulations and company instructions.

Note: For ease in reading, all terms referring to the personnel contained within this publication are for the male gender. It is understood that male and female personnel are equally capable of conducting the duties contained herein.

James Frean (April 2009)

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1. HELIDECK PHYSICAL CHARACTERISTICS

The helideck should meet the guidelines as described in *The Large Commercial Yacht Code (Ref. 2)* or the *Red Ensign Group A Code of Practice for Yachts Carrying 13-36 Passengers (The Passenger Yacht Code) (Ref. 8)*.

2. RESPONSIBILITIES OF THE MASTER

The presence of a helideck and/or helicopter on the yacht does not alter the overall responsibilities that the Master holds for the safety of the vessel.

The Master is responsible for the appointment of a Helicopter Landing Officer (HLO). The Master is to ensure that the HLO is in control of the deck, is competent and trained to carry out his duties. Where more than one HLO qualified person is available onboard, the Master should clearly designate which HLO is appointed to take charge of an operation. The Master should also designate an appropriate person to be responsible for the administration, documentation, maintenance and record keeping of the Helideck and its equipment.

It is recommended that the Master shall not appoint himself as HLO.

The Master is to ensure that adequate, competent and trained personnel are provided to assist the HLO in conducting helicopter operations to the helideck.

Training should be in compliance with the requirements stated in MSN 1792 – The Large Commercial Yacht Code (Ref. 2).

The Master is to ensure that suitable, functioning equipment relating to the helicopter operation is provided for the HLO and his Helideck Team to carry out their duties without risks to health and safety.

Note: Authority over the helicopter will always remain with the Aircraft Commander, unless it is specifically handed over to the Master. While the helicopter is embarked on the yacht, the Master is responsible to the Aircraft Commander to provide conditions that will not put the helicopter at risk. If the Master believes that he cannot provide these conditions, then he should notify the Aircraft Commander immediately. If the embarked helicopter is considered to be a risk to the safety of the yacht, the Master can order the removal of the helicopter, which the Aircraft Commander is to respect by either authorising a disembarkation flight or by any other means possible.

Note: While the Aircraft Commander retains authority over the helicopter, he must receive permission from the Master (or designated yacht officer) to perform any of the following:

- *Landing on the yacht helideck.*
- *Take-off from the yacht helideck.*
- *Performing winching to/from the yacht.*
- *Starting aircraft engine(s) while embarked.*
- *Starting rotors while embarked.*
- *Ground handling the helicopter while embarked.*
- *Conducting any fuelling/de-fuelling of the helicopter while embarked.*
- *Maintenance or other activities that have health & safety, environmental or operational implications.*

3. RESPONSIBILITIES OF THE HELICOPTER LANDING OFFICER (HLO)

The designated HLO is responsible to the Master for the safe operation of the yacht's helideck. The HLO is to be in control of the helideck operations and the helideck crew.

The designated HLO must be fully aware of relevant documentation, records and information relating to the helideck operation, including helideck crew training records, prevailing weather conditions and deck motion information.

3.1 General Duties of HLO

The HLO must keep the Master and Bridge fully advised of helicopter operations and planned movements;

Pre-arrival & Departure

a) Subject to the yacht's SMS and Helideck Operating Procedures, the HLO should contact the Helicopter Operator prior to departure from the airfield (or helideck) to notify them of the following:

- Landing/Departure permission will be granted (subject to subsequent emergencies)
- Any relevant restrictions to normal operations or safety services
- Present weather conditions (see Communications – Weather Reporting)
- Present aviation fuel state (if applicable)
- Acceptance of inbound passengers and/or cargo
- Intended departing passengers and/or cargo (if known)
- Any other relevant or useful information

b) Ensure that relevant personnel, including the rescue boat crew, are aware of the ETA (or ETD) of the helicopter.

c) Ensure that he remains alert for any situations that may affect the safety of the landing/departing helicopter.

d) Ensure that all equipment to be used in the helicopter operation is present, readily accessible and serviceable.

e) Ensure that all personnel required for the safe operation of the helideck, are present and those with emergency duties dressed correctly in fire suits to allow the performance of their duties.

f) Ensure that the following have been completed prior to the helicopter movement:

- The passenger manifests and any relevant documentation has been completed and checked for accuracy.
- Passengers departing the yacht on the helicopter have been appropriately briefed and attired for the journey.
- Positive control of relevant crane or other possible obstruction movements have been achieved and helideck access barriers have been erected.
- Ensure that a positive report has been made that the helideck and surrounding areas have been cleared of all obstructions and loose objects.
- Radio communication has been established between the Bridge, helideck and helicopter.

g) Provide a "deck available" call to the Aircraft Commander having checked the following:

- Relative wind velocity remains unchanged and within limits.
- The flight path is clear and safe.
- The fire equipment is manned and the helideck crew are alert.
- Rescue boat is to be prepared and at immediate readiness.
- The helideck and surrounding areas are clear.
- No unauthorised persons are on the helideck or surrounding areas.

Helicopter on Deck

During helicopter operations with the helicopter on the helideck, the HLO must:

- a) Ensure the Aircraft Commander is informed of any relevant change in situation or environmental conditions that may affect the safety of the helicopter.
- b) Maintain communications between the Master/Bridge, helideck and helicopter.
- c) Maintain positive control of all persons on the helideck.
- d) Ensure at least one member of the helideck crew is manning the fire equipment.
- e) Supervise the off loading and boarding of cargo and/or passengers.
- f) Supervise the provision of any required service for the helicopter.
- g) Ensure outgoing passengers are correctly dressed for flight.
- h) Ensure the passenger manifest is correct for out going passengers.
- i) Ensure that any cargo is compliant with dangerous goods regulations.
- j) Check that all the doors and panels on the helicopter are secured before flight.
- k) Check before take-off that there are no potential loose articles in the vicinity of the helideck that could jeopardise the safe flight of the helicopter, and that the rescue boat is prepared and at immediate readiness.
- l) Check before take-off that the surrounding airspace is clear for the helicopter to make a safe departure on the standard flight path.

After Take-off Helideck Checks

Once the helicopter has lifted and is departing the helideck, the HLO should:

- a) Observe the helicopter until it is established in a safe climb and report any unusual occurrence to the pilot.
- b) Check the helideck for cleanliness and loose objects.
- c) Ensure that all equipment is secured and stowed correctly and maintained as necessary. Report any shortage, replacement or repairs required to the Master.
- d) Ensure any post flight documentation for the yacht has been completed.

4. PROCEDURES

In accordance with the International Safety Management (ISM) Code, risks should be assessed, identified and instructions for key shipboard operations concerning the safety of the ship and the prevention of pollution should be developed. Any yacht specific operation or procedure must take account of characteristics of the yacht and mode of operation, i.e. underway, when dynamically positioned, at anchor or any other foreseeable condition.

Helideck operations should be fully risk assessed and procedures developed should include; communications, passenger movement, loading and unloading, refuelling of the helicopter (if applicable), resources available, characteristics of the vessel and personnel involved. These procedures are to be agreed to by the Designated Person Ashore, Master, HLO, helideck crew and the helicopter operator so that all personnel involved are aware of actions to be taken when the helicopter is approaching, landing and departing from the helideck. In developing these procedures it may be prudent to involve an appropriate organisation or specialist service provider.

The procedures should be incorporated into the yacht's Safety Management System (Ref. 1).

5. HELIDECK GENERAL PRECAUTIONS

Whenever a helicopter is on the helideck with its rotors turning, all personnel entering upon or moving about the helideck shall, except in case of emergency, remain within view of the pilot or the HLO, at a safe distance from the helicopter engine exhausts and tail rotor. It may be dangerous to pass close to the front of those helicopters that have a low main rotor profile.

Approaching the helicopter

In general, the approved routes to and from the helicopter are at the 2 o'clock and 10 o'clock positions.

Anti-Collision Lights

Personnel must not approach the helicopter while the helicopter anti-collision light is operating (this may be a rotating or strobe light), as this is a signal that the helicopter is completing post-landing checks or is about to depart.

Rotor Down Draught

The down draught produced by the main rotors can blow loose articles off the helideck. Loose articles may be lost, and may also cause damage to personnel, the yacht and the helicopter.

Flotation Equipment

The helicopter should have flotation equipment on the outside of the fuselage. The flotation equipment works by inflating bags attached to the fuselage. Personnel should be aware of the positions of this equipment and if possible stand clear of them in case of accidental deployment.

Flotation equipment should not be used as a footstep.

Particular caution should be given to the compressed gas cylinders connected to the flotation equipment during fires on deck/helicopter.

Air Intakes/Exhausts

Be aware of their positions and stand well clear.

Pitot Tubes

Pitot tubes extend out of the helicopter fuselage and measure pressure to supply information to the helicopter instruments. All personnel should avoid these tubes as they may be knocked out of alignment and damaged and they may be extremely hot to touch.

Static Electricity

Helicopters generate significant amounts of static electricity. It is important that this static electricity is discharged before touching the helicopter, or any item connected to the helicopter (such as a winching line).

Aerials

No one should touch aerials mounted on the helicopter.

Danger Areas

The helicopter should only be approached from certain directions and any dipping of the blades should be taken into account. A sample poster is provided below for guidance but an aircraft specific poster should be provided onboard.

HELICOPTER DANGER AREAS



6. COMMUNICATIONS

Clear communication plays a crucial role in the safety of the helideck operation.

6.1 Authority

Although the Aircraft Commander retains authority over the helicopter at all times, the Master remains the authority over all aspects of the yacht, its operation in conjunction with the helicopter and the helideck. The HLO is responsible to the Master.

Before landing on the helideck, the Aircraft Commander must receive and acknowledge clearance from the yacht, via the Bridge or the HLO as appropriate.

Before taking off from the helideck, the Aircraft Commander must receive and acknowledge clearance from the yacht, via the Bridge or the HLO

6.2 Radio – General

The HLO should be equipped with a handheld VHF (Air Band) Radio, including a headset and a Press to Transmit (PTT) switch for ease of use during the helicopter landing/take-off. This will enable the HLO to communicate with the Bridge and directly with the helicopter when close to the yacht.

For the purposes of clarity, when communicating on VHF (Air Band), the Bridge callsign will be the yacht's name. The HLO should use the same callsign.

The rescue boat should maintain communication with the Bridge via the internal radio network.

The Bridge should broadcast on the internal radio network to all personnel the status of the helicopter.

6.3 Weather reporting:

The helicopter may require the following information:

- True wind direction and speed – reported in degrees and knots, from the direction that the wind is coming.
- Relative wind direction and speed – reported in degrees Red/Green of the ship's head (so as to avoid confusion with True wind) and knots.
- Pitch, Roll and Heave of the yacht – reported as an average over the previous 10 minutes.
- Visibility – this should be measured by observation of selected objects at known distances. If the distance is greater than 10 kilometres then it is acceptable to give the visibility as "greater than 10 kilometres").
- Precipitation – any precipitation should be reported with a description of light, moderate or heavy.
- Cloud – normally expressed as amount of cloud coverage and the base of the lowest cloud in feet. Cloud coverage is measured in oktas, or expressed as Sky Clear, No Significant Cloud, Few (1-2 oktas), Scatter (3-4 oktas), Broken (5-7 oktas) or Overcast (8 oktas).
- Outside Air Temperature (OAT) – given in degrees centigrade.
- QNH – is the barometric pressure corrected to mean sea level, given in millibars.

6.4 Communication Routines

The radio procedures below should be used as a guideline for communications. Adopting these standard procedures are in the interests of conformity and help avoid mis-understandings.

Pre flight:

Before the flight commences, it is important that the helicopter operator and the yacht have certain pieces of information, including:

- Yacht and Aircraft Callsigns
- Frequencies to be used (primary and secondary)
- ETD/ETA
- Position of yacht (at time of operation)
- Course and speed of yacht (if applicable)
- Helicopter routing
- Number of Persons on Board and/or cargo (arriving/departing)
- Any specific requirements

As close to the departure time as is reasonable, the yacht should provide local weather information to the helicopter, including true wind, visibility, precipitation, outside air temperature, QNH (See section 6.3) and cloud coverage/base.

Between yacht and helicopter (on approaching yacht)

The yacht should maintain a listening watch on the primary frequency for 30 minutes before ETA (as part of preparations for flying operations).

The helicopter should attempt to make a joining call to the yacht with approximately 5 minutes to run to the expected yacht position. The joining call should be in the following format:

Helicopter:	"Callsign Yacht", this is helicopter "Callsign Helicopter", request your position.
Bridge:	"Callsign Helicopter", this is "Callsign Yacht", our position is
Helicopter:	"Callsign Helicopter", copied. We will be overhead your position in minutes, with persons on board.
Bridge:	"Callsign Helicopter", roger, my present course is degrees at Knots (or at anchor, ship's head degrees), with a relative wind of Port/Starboard degrees Knots. Our helideck has roll ... degrees left and degrees right, pitch degrees up and degrees down, and heave metres, and is in/out of limits.
Helicopter:	"Callsign Helicopter", copied.

When the yacht is in sight, the helicopter should report as follows:

Helicopter:	"Callsign Yacht", "Callsign Helicopter" has you in sight.
Bridge:	"Callsign Helicopter", roger, handing over to "Callsign Yacht Helideck".
HLO:	"Callsign Helicopter", this is "Callsign Yacht Helideck", the deck is ready (or, deck will be ready in minutes).
Helicopter:	"Callsign Helicopter", roger.

When the helicopter is on finals, the helicopter should report:

Helicopter:	"Callsign Helicopter" is finals, port/starboard approach.
HLO:	"Callsign Helicopter", helideck available (or as appropriate)

(The Bridge or HLO should give the command "Go Around" if for any reason the helideck availability needs to be withdrawn).

When the helicopter is ready to depart, the helicopter should report:

Helicopter:	"Callsign Helicopter" is ready to depart port/starboard side, with persons on board and minutes endurance.
Bridge:	"Callsign Helicopter", ship's head is Degrees, relative wind is Degrees port/starboard at knots. Helideck in limits(or as appropriate)

(Before lifting the helicopter will turn on the anti collision lights, to which the HLO will give an acknowledgement visually with a "thumbs up", before repositioning to a safe location.)

6.5 Hand Signals

Hand signals are the most effective way to communicate in high noise environments, and/or where the use of radios is difficult. To avoid misunderstandings, CAP 637 standard hand signals should be used (Ref 3).

6.6 Flight Watch

Flight watch is a monitoring service that ensures someone is listening should a helicopter declare some form of emergency. The HLO or bridge team must understand when they have responsibility for flight watch; this will generally be once the helicopter is leaving the area of an Air Traffic Control unit, changing frequency, or after departure.

During an initial call the pilot may request "Flight Watch". The HLO or bridge team should make a note of the details passed by the pilot and confirm "Flight Watch" in place with the helicopter.

Over water, and while the vessel is providing flight watch, "operations normal" calls are made by the helicopter every 20 minutes. If these calls are not heard at the appropriate time interval efforts must be made to contact the helicopter. If all attempts to communicate with the helicopter have failed and, in the absence of any further information, reference should be made to the expected time of arrival or departure and/or the flight endurance. Search And Rescue action must be initiated once the flight is 10 minutes overdue. Overdue action can be initiated before this time if the safety of the helicopter is in doubt.

6.7 Helicopter Loading and Passenger Movement

The Aircraft Commander is responsible for the safety of the helicopter. The HLO will liaise with the helicopter crew regarding the helicopter loading requirements. The HLO is responsible for the helicopter crew involved with the loading requirements.

6.8 Passenger and baggage loading

Number of passengers, number of cases, weight of passengers, cases and freight should be recorded on the passenger manifest, of which there must be 2 copies, one to be given to the Aircraft Commander and one to be retained on the yacht.

A set of scales able to cater for loads up to 150 KG should be provided for the weighing of freight, baggage etc. the platform should be large enough to handle packages securely and a readout provided for easy recording of the weight. Scales should be provided with an initial calibration certificate and calibrated after in accordance with manufacturers' instructions.

Passengers are normally taken at standard weights (in accordance with helicopter operator guidelines), however, if the standard weight is considerably inaccurate then actual weights should be used.

Note: Passengers and their baggage may be subject to immigration and custom control on arrival at the destination.

The Aircraft Commander is responsible for the safety and briefing of the passengers. However, it may be agreed that the HLO is given responsibility for briefing the passengers on safety equipment, including the wearing and operation of lifejackets, the wearing of immersion suits and the operation of seatbelts and emergency exits.

The HLO will be responsible for ensuring that passenger disembarkation and embarkation is carried out safely.

6.9 Stores, Luggage and Equipment Loading

It is essential that instructions provided by the helicopter operator on the carriage of stores, luggage and equipment are complied with. The helicopter crew must supervise the loading and securing of stores luggage and equipment.

Stores, luggage and equipment may be subject to customs control on arrival at the destination, and as such the correct documentation must be provided.

6.10 Dangerous Goods

Dangerous goods may only be transported in accordance with IATA "Dangerous Goods Regulations" (Ref. 4). Information on MSDS Sheets or contained in the IMDG Code should also be observed as appropriate.

Dangerous goods may be sent when accompanied by the form "Shippers Declaration for Dangerous Goods" The form must be completed and signed by trained and authorised personnel. Trained and authorised means personnel with an extended course.

Note: Additional regulations regarding the transport of dangerous goods differ between various countries, and are applicable to the country of registration for the helicopter, and the country within which the helicopter is flying. ALL regulations must be obeyed.

7. HELICOPTER MOVEMENTS

It is may be necessary to move a helicopter without using the aircraft's motive power i.e. without running the engines by pushing it i.e. man –handling or mechanical assistance. Both methods require the use of a helideck team called the HELICOPTER MOVEMENT TEAM. Additional information and advice on aircraft movements can be found in the manufacturer's instruction leaflets provided and should be incorporated within the Yacht's SMS.

7.1 Aircraft Movement Team.

When moving the helicopter, the prime objective is the safety of the HELICOPTER MOVEMENT TEAM and the helicopter.

- Only ever push, never pull a helicopter, you may fall underneath it.
- Never Jump on or off a moving aircraft you may fall underneath it.
- Only push on aircraft strong points normally indicated by a "PUSH HERE" sign.

Additional crew are to act as safety numbers and are to be placed adjacent to any obstacle in the intended path of aircraft move and warn the DIRECTOR of the move of the threat of collision.

Ideally the HELICOPTER MOVEMENT TEAM should consist of:

- DIRECTOR.
- BRAKE OPERATOR (if applicable).
- CHOCK OPERATORS.
- STEERING ARM OPERATOR.
- SAFETY NUMBERS (if applicable).
- PUSHERS.

The responsibilities of the HELICOPTER MOVEMENT TEAM are:

The DIRECTOR is in overall charge of the move. He is responsible for briefing all members of the team and selecting the route to be taken.

The BRAKE OPERATOR is responsible for:

- Operating the wheel brakes from the cockpit to slow down or stop the helicopter.
- Monitoring the wheel brake and rotor brake gauge where applicable and reporting insufficient pressure to the DIRECTOR.
- Knowing the signal to STOP the helicopter.

The CHOCK operators are responsible for:

- Removing and fitting chocks when ordered.
- Carrying chocks alongside a helicopter main wheel for use in a brake failure.

- Chaining chocks together on completion of the move.

The CHOKE operators should never walk in front of aircraft wheels

The STEERING ARM OPERATOR is responsible for:

- Fitting the steering arm.
- Prior to helicopter move, checking that the tail wheel lock is removed, or if applicable removing the main wheel locks or de-clutching the nose wheel steering.
- Ensuring that the maximum wheel angle is not exceeded.
- On completion of the move, checking the tail wheel lock is fitted, or fitting the main wheel locks or engaging the nose wheel steering.
- Removing and stowing the steering arm.
- Knowing that all orders are given with regard to the tail of the helicopter.

The SAFETY NUMBERS are to:

- Take up position as required by the DIRECTOR.
- Stand in a position with a clear view while the helicopter is in motion.
- Shout stop in plenty of time if in any doubt as to the safety of the helicopter or TEAM MEMBERS.

The PUSHERS should:

- Not push on "NO PUSH" areas or protruding objects such as pitot static pipes, footsteps, radio antennas etc. Any undue force exerted on these fragile parts will damage the aircraft.
- Always push on an aircraft's strong point, which is a strengthened part of the aircraft, such as the undercarriage.
- Always move the aircraft at no more than a walking pace.
- Never walk in front of the wheels.

PRECAUTIONS BEFORE AND DURING A MOVE

The movement team is to be fully briefed on the helicopter movement and final position.

- BRAKE OPERATOR present and sufficient brake pressure to complete the move. If not report to the director.
- All ground equipment ie Ground Power Unit etc, disconnected and removed from around the aircraft.
- All panels secured and clear of the deck.
- Serviceable steering arm fitted correctly.
- Tail wheel unlocked, nose wheel de-pressurised and tail wheel gag fitted, or nose wheel pin fitted.
- Main wheel ground locks fitted and secure.
- Note: When onboard, a minimum of four nylon lashings must remain attached to the aircraft immediately prior to the helicopter move.

PRECAUTIONS AFTER A MOVE

- Aircraft is properly secured before the removal of any towing equipment (minimum lashing onboard) 4 nylon lashings.
- Tail wheel locked and gag removed.
- Parking brake properly applied.
- Chocks fitted squarely up against the main wheels and chocks chains lashed.

THE SEQUENCE OF SIGNALS AND ORDERS

- The 'on brakes' and 'brakes on' signal is a raised, clenched fist, palm towards the cockpit or DIRECTOR.
- The 'off brakes' and 'brakes off' signal is raised, open hand, palm towards the cockpit or DIRECTOR.

The orders are to be given as follows:

- 'Standby to come ahead (or go astern)'
- 'On brakes' (BRAKE OPERATOR repeats the order) applies the aircraft brakes and gives 'brakes on' signal by hand.

- 'Away Fwd/After chock' (when this order is given only the chock in the direction of movement is to be removed until the aircraft has started to move in the direction). The second chock may then be removed.
- 'Off brakes' (BRAKE OPERATOR repeats the order) releases the aircraft brakes and gives the 'brakes off' signal by hand.
- 'Come ahead' or 'come astern' as applicable (in the direction of movement).
- 'Tail to port, starboard or midships' as required.
- Standby to stop.
- Stop (or whistle blast) BRAKE OPERATOR repeats the order, applies the aircraft brakes and gives the 'on brakes' signal by hand.
- 'In Chocks' CHOCK OPERATORS place chocks in front and behind the aircraft main wheels.
- Parking brake is finally applied at end of move, as ordered by DIRECTOR.

8. HELICOPTER REFUELING

Helidecks that have the capacity to conduct refuelling should follow the guidance given in the Large Yacht Helicopter Refuelling Handbook (*Ref. 5*).

9. EMERGENCY PROCEDURES

It is of vital importance that all personnel on the yacht are familiar with the emergency procedures relating to the helideck. Any specific emergency procedures should be developed in accordance with the risk assessments and the yacht's Safety Management System. Although the helideck crew will handle many of the potential emergencies initially, additional support from the yacht emergency team is likely to be necessary. The helideck crew must work together as a team when dealing with emergency situations, with the HLO co-ordinating the procedures. The HLO is to remain the "On Scene Commander", unless this duty is formally handed over in accordance with the yacht's emergency response plan.

It must be remembered that a helicopter incident may occur or spread to another area of the yacht that is not part of the helideck. The yacht should be inspected for damage, giving particular attention to areas in the vicinity of the incident, as soon as is practicable.

All members of the helideck crew should have received formal training in accordance with the requirements of the Large Commercial Yacht Code. Further training exercises on the helideck should also be organised to develop familiarity with the procedures.

The standard helideck response should be based on the following actions:

- Evaluate of the extent of the emergency situation.
- Secure own escape route.
- Call for assistance/sound the alarm.

The situation should then be resolved using the following actions:

- Localising the source of the problem.
- Extinguishing/eliminating the source of the problem.
- Rescuing personnel/reducing risk.
- Preventing spreading.
- Monitoring to prevent re-ignition/repetition.

9.1 Guidance on Emergency Actions

The following is a guide for dealing with potential incidents on the helideck.

9.1.1 *Fire in the helicopter/on the helicopter deck*

Immediate Actions	Subsequent Actions
Stop any refuelling that is taking place	Rescue crew/passengers (see "Rescue of Crew and Passengers")
Activate the fixed fire fighting equipment	Prevent fire spreading
Sound the alarm	Once fire is extinguished monitor to prevent re-ignition
Determine the source of the fire(s)	
Attack the fire with appropriate fire extinguishing medium	Secure aircraft

9.1.2 *Crash on the helicopter deck*

The engine(s) and the fuel tanks are positioned in the vicinity of the cabin area, and as such present a hazard to the occupants.

In the event of a crash the helicopter is likely to roll onto its side, which will cause the main rotor blades to contact the deck spreading debris across the area. The debris will be extremely sharp, and as such all personnel entering the helideck must wear appropriate footwear.

Immediate Actions	Subsequent Actions
Sound the alarm	Ensure the helicopter is completely shut down (see "Emergency Shut Down")
Cover the deck area around the aircraft with foam (use fixed fire fighting equipment if large fire)	Secure aircraft
Extinguish any fire using appropriate extinguishing medium	Rescue crew/passengers (see "Rescue of Crew and Passengers")
	Monitor to prevent re-ignition

9.1.3 *Rescue of Crew and Passengers*

In general, the rescue of crew and passengers should only take place when the aircraft is in a safe state, ie. shut down and secured. This will ensure that casualties onboard will receive the appropriate treatment and reduce the chances of causing further injury; However, if delaying the rescue until the aircraft is safe is considered likely to prevent the lives of the crew and passengers being saved, and rescue appears to be possible then this should be attempted, but the fire fighting equipment must be used to cover personnel involved in the rescue operation.

The helicopters doors and hatches are of a relatively simple construction and there is little probability of them jamming. However, the impact sustained from a crash may cause distortion preventing the doors and hatches opening easily. Should this be the case then they must be forced open. Should it be necessary to use more force to enter the helicopter, cutting must only take place at specific points e.g. emergency exits and windows.

Should a helicopter be lying on its side, which is the likely situation after a crash on deck, the casualties onboard must be supported when the seat belts are released.

9.1.4 *Emergency Shut Down*

In most circumstances the helicopter pilots will perform any actions required for an emergency shut down. However, should the pilots be incapacitated for any reason then the helideck team will need to be capable of performing the correct routine.

The procedures for emergency shut down differ between the helicopter types, and as such the helideck team must become familiar with the models that they normally service.

Helideck crew should be aware that rotor blades move closer to the deck as the rotation speed drops, which can be amplified by wind, causing the blades to unexpectedly drop below head height. Therefore, no personnel should be below the rotor disc area during shut down.

9.1.5 *Ditching into the sea*

If the helideck crew see the helicopter ditch into the sea, the HLO should immediately notify the Bridge to commence the emergency response plan.

The rescue boat crew should attend the incident in order to recover survivors using a standard man overboard technique.

Note: The role of the rescue boat crew does not include diving operations on the ditched helicopter in an attempt to assist passengers to escape.

Note: Due to the risks associated with flying helicopters over water, all helicopter crew and passengers should be encouraged to complete Helicopter Underwater Escape Training (HUET).

9.1.6 *Emergency landing with prior notification*

In general, a helicopter with a known problem should never attempt to land on the helideck, and should seek a safer alternative. In warm climates, a possible alternative would be to perform a controlled ditching in the vicinity of the yacht.

If no other safer alternative is apparent (considering only the survivability of the persons onboard), then the following preparations should be made:

- Sound the general alarm.
- All emergency teams are mustered and dressed appropriately.
- All yacht passengers are moved to a safe location away from the helideck area (possibly even off the yacht on a tender).
- Land based emergency services are notified.

10. GUIDANCE FOR CHECKLISTS

In order to standardise large yacht embarked helicopter operations, the following checklists may be used as a framework for the procedures on an individual yacht.

The helideck routines are normally conducted by the HLO, but may be conducted under the supervision of the HLO.

30 minutes before helicopter arrival/departure

Bridge	Helideck
Confirm flight information	Helideck team meet and brief on helideck
Confirm authorisation to use the deck from Master	Clear helideck and surrounding areas of obstructions
Update weather information	Complete inspection of helideck surface
Verify that all yacht crew are aware of helicopter arrival/departure time	Prepare fire fighting equipment
Conduct radio check with HLO	Prepare rescue equipment

10 minutes before helicopter arrival/departure

Bridge	Helideck
Initiate launch of Rescue Boat	Clear helideck of all personnel
Conduct radio check with Rescue Boat	Erect "No Entry" signs to helideck
Confirm helideck status	Don protective clothing
Ensure CCTV is positioned to face helideck	Give positive report to Bridge that all preparations are complete.

On helicopter joining call

Bridge	Helideck
Confirm helideck is in limits	Charge fire fighting equipment
Notify all yacht crew, via internal network, of approaching helicopter	Ensure all crane operations have ceased
Assume course/speed for landing as briefed	Helideck Assistants move to safe position

Immediately before landing (helicopter on finals)

Bridge	Helideck
Maintain watch on helideck limits	Conduct final check of helideck and surrounding area
Maintain heading/speed	Stand in centre of helideck, give a visual "thumbs up" and then reposition to safe area
	Observe final approach for anything abnormal on the helicopter, and to offer positioning advice through hand signals if required

If at anytime the clearance to land needs to be withdrawn, the Bridge or HLO should call "Go Around" on the radio, and the HLO should move to the center of the helideck and give the wave off signal, if safe to do so.

After landing

Bridge	Helideck
Notify all yacht crew via internal network of landing completed	If wheeled helicopter – insert chocks
Recall rescue boat	

All personnel must remain clear of the helideck and in a safe position until helicopter has landed and switched off the anti-collision lights.

After shut down

Bridge	Helideck
Close flight information sheet	Disembark passengers
	Erect safety handrails
	Unload cargo
	Assist helicopter crew

Helicopter start

Bridge	Helideck
Notify all yacht crew via internal network	Connect external power (if required)
	Ensure all crane movements are ceased
	Charge fire fighting equipment
	Stand by for engine start – CO ₂ extinguisher ready
	When ready for rotor start – check area is clear
	Disconnect external power when requested
	Give positive report that all preparations are complete.

Prior to take-off

Bridge	Helideck
Provide yacht's heading and relative wind	If wheeled helicopter – remove chocks
Give clearance to depart at pilot discretion	Helideck Assistants move to safe to safe position
	Check closure of doors and panels on helicopter
	Check surrounding area is clear – including flight path (particularly behind the helicopter as this is a blind spot for the pilot)
	Give final "thumbs up" and move to safe position

After take-off

Bridge	Helideck
Maintain listening watch on radio until helicopter changes frequency	Observe the helicopter depart, looking for any abnormalities
Notify all yacht crew via internal network	Prepare helideck for next evolution
Recall rescue boat	

11. REFERENCES

References:

- (1) International Convention for the Safety of Life at Sea (SOLAS)
- (2) MSN 1792 (M) The Large Commercial Yacht Code (LY2)
- (3) CAP 637
- (4) IATA Dangerous Goods Regulations (DGR)
- (5) The Large Yacht Helicopter Refuelling Handbook
- (6) International Chamber of Shipping Guide to Helicopter Ship Operations (4th Edition)
- (7) ICAO Annex 14 Volume 2 (Heliports)
- (8) The Red Ensign Group A Code of Practice for Yachts Carrying 13-36 Passengers (The Passenger Yacht Code).

ANNEX 1

Practical Helideck Exercises

The following is a list of exercises that could be used during on-board training and drills for helideck crews.

The scope of practical exercises has been divided into five (5) categories. Preparing for flight, routine helideck operations, emergency procedures, rescue techniques and helicopter refueling (where applicable).

Within each category is a list of topics that should be discussed with the helideck crew and included in some form of exercise or assessment.

The following are for guidance only and it is possible that other members of the Helideck Training Working party have additional tasks to be included.

1. Preparing for flight

Foreign Object Debris (FOD) check; both helideck and remainder of Yacht.

Securing Yacht loose articles on the upper decks.

Lowering or removal of guard rails.

Preparation of emergency equipment; fire fighting gear, BA, crash bag, branches, AFFF containers, inductors, clothing, rescue boat crew and equipment, radio communications, prime deluge system, assemble helicopter lashings (if applicable).

Apply signage and barriers to prevent unauthorized entry into danger areas.

Bridge briefing of relevant heads of department.

Carry out standard operator checks of helideck and bridge aviation systems; e.g. comms and CCTV.

Check helideck sensors and lighting (if applicable).

Practice helicopter marshalling signals.

2. Routine Operations

Landings (helicopter recovery)

Shutdown; rotors stopped.

Lash down helicopter (under direction of pilot).

Helicopter walk round indicating danger areas, refuel points, passenger and crew harnesses, emergency exits and methods of panel or door removal.

Explanation of HLO duties.

Passenger control and baggage handling on helideck post shut down.

Take off (helicopter launch)

Actions to be taken 30 mins/10 mins before scheduled take off time.

Engine start up and rotors engage (HLO responsibilities).

Briefing and strapping in of passengers and stowage of baggage.

Weather checks before helicopter departs.

Actions by HLO immediately after helicopter launch; visual check of airframe check and helideck for loose or missing items.

Helideck to remain in a state of readiness for half "trip time".

3. Emergency Procedures

Fuel spillage. *

Heavy landing. *

Hydraulic fluid leak under pressure. *

Engine fire on start-up.

Crash off deck close to yacht (helicopter ditching).

Crash off deck away from yacht. (helicopter ditching).

Crash on deck (end of the world scenario). *

(*) Indicates that any combination of these events can occur within a training scenario.

4. Rescue Techniques

First aid to casualties and extraction using correct methods.
Specialist helicopter fire fighting techniques to enable rescue.
Ventilation of poisonous gasses.
Preservation of evidence in the event of a helicopter incident.

5. Refuelling (when applicable)

Fuel checks: daily, weekly, six (6) monthly, bunkering onto yacht and when taken by helicopter.
Climatic and operational restrictions when refueling.
Whole yacht awareness of refueling dangers (secure upper deck doors and hatches, no naked flames due to vapour travel), particularly when gravity refueling.
Refueling procedure, focusing on bonding and emergency procedures.